PDP-8/e

ENGINEERING CHANGE ORDER LOG

A CUSTOMER SERVICE OF

digital DIGITAL EQUIPMENT CORPORATION
146 MAIN ST., MAYNARD, MASS. 01754

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E C DEC-O-LOG Engineering Change Order Log

ENGINEERING CHANGE ORDERS

Engineering Change Orders (**ECOs**) are written to make engineering changes to DEC products after the initial engineering design has been released for production. Most ECOs are issued for one of the following reasons:

To improve product performance.

To take advantage of new parts, materials, or production techniques that were not available during the initial design phase.

To solve problems that are encountered in the field after initial units have been installed.

To correct errors in the engineering drawings and documentation.

As a product evolves by means of ECOs, the effect of each proposed change to the product is evaluated on the basis of the current design, which is represented by the cumulative effect of all ECOs to the initial design. To record the current design status of a product, DEC maintains a complete history of the ECO activity for every product.

DEC-O-LOG

DECs *Field Service Information Center* processes each ECO that is issued for every product, to prepare a log of engineering change orders for that product, which is called DEC-O-LOG. The DEC-O-LOG for a product is essential documentation to DEC field service personnel responsible for maintaining and upgrading that product in the field. DEC customers who want to have the latest improvements incorporated into their equipment, or be aware of such improvements, can obtain the DEC-O-LOG for those products on a subscription basis.

Each entry in the DEC-O-LOG provides essential information about the ECO, including a description of the engineering change.

ECO IDENTIFIER

Every ECO that is issued for a product is entered in the DEC-O-LOG with an identification number that includes the equipment type of option number, followed by a unique sequential number. For example, the ECO identifier "LA30-00053" is assigned to the 53rd ECO issued for the LA30 DECwriter.

FIELD DISTRIBUTION

Depending upon the nature of the engineering change, ECOs are categorized in one of five groups, which are assigned letter codes *F, D, DF, P, and M.* The appropriate field distribution code for the ECO appears on the first line of the DEC-O-LOG entry.

F Code: When the ECO has been engineered for field retrofit, it is coded "F". A *Field Change Order* (FCO) is prepared by Field Service. The FCO provides a complete description of the engineering change and includes instructions for making the change to existing equipment installations.

When an F-coded ECO is issued, a letter code is inserted as the first character of the sequential ECO identifier number. The letter code indicates the level of urgency or importance of the ECO as follows:

A	Mandatory change - highest priority	D	Low Priority change
B	Mandatory change	E	Optional change for product improvement
C	Mandatory change if specified trouble symptoms are observed		

NOTE

All ECOs issued for a product are entered into the DEC-O-LOG. Usually, the publication process that produces updated DEC-O-LOG pages is triggered by an F-coded ECO. At that time, any D, DF, P, or M-coded ECOs that precede the latest FCO are also published to provide a complete history of all ECO activity for the product.

D Code: An ECO that changes the design of an equipment in production is coded "D". This category includes changes to:

Production models, as a normal step in the design phase of a new product.

All future production units of a specific equipment type or option, and the ECO is not to be retrofitted.

Production units that include special features ordered by a specific customer.

ECOs that are coded "D" are not retrofitted into existing units installed in the field. They are entered in the DEC-O-LOG for information purposes, and customers can purchase them from DEC.

DF Code: The "DF" field distribution code is assigned to ECOs that change the design of products that have been released to the field in limited quantity, when the retrofit is essentially a part of the design process.

P Code: When an ECO is issued solely for the purpose of changing engineering drawings or other engineering documentation, it is coded P (for Prints).

M Code: When an ECO is issued to change mechanical parts, structural components, or other items that do not affect existing units in the field, it is coded "M". M-coded ECOs cannot be purchased for retrofit.

ML, DD, and WL REVISIONS

A *Master Drawing List* (ML) or a *Drawing Directory* (DD) lists all engineering drawings included in the engineering drawing set for a specific product or option. If an ECO causes any drawing in that set to be revised, the ML or DD is revised to indicate the latest revisions of all drawings in the set. The revision code for the ML or DD that reflects the ECO is included in the first line of that ECO entry in the DEC-O-LOG.

A *Wire List* (WL) is used to indicate all wired connections for an equipment or option System Unit. If an ECO calls for changes in this wiring, the WL is appropriately revised. The revision code for the WL that reflects the ECO is included in the first line of that ECO entry in the DEC-O-LOG.

ECO INFORMATION

The DEC-O-LOG entry provides essential information about the ECO. Data entered in the log includes the following:

The date the ECO was issued.

A synopsis of the problem.

Corrective action taken by the ECO to solve the problem.

In-plant effectivity; an indication of when the ECO will implemented or phased into production units.

Field effectivity; an indication of which units in the field need to be retrofitted.

For F-coded ECOs, the entry also includes the estimated time to install and test the ECO, the cost to a customer to obtain the FCO kit and have it installed, and the contents of the FCO kit that is made up by *DEC Field Service Logistics.*

HOW TO MAINTAIN YOUR DEC-O-LOG

When you subscribe to the DEC-O-LOG for a particular PDP product, you receive a durable loose-leaf binder with tab index dividers. The DEC-O-LOG pages for the PDP central processor, and all associated peripherals, options, and modules are alphanumerically collated in the DEC-O-LOG by their type numbers.

NOTE

Although the present configuration of your PDP system may not include all the peripherals and options that are associated with that PDP product, it may be helpful to retain *all* pages of the DEC-O-LOG, in case of future expansion.

As ECOs are issued and processed, appropriate entries are made in the EDP data base that is maintained by the *Field Service Information Center.* Periodically, usually as a result of an F-coded ECO to the PDP or associated peripheral or option, the most current page of the DEC-O-LOG for that product is updated and reprinted. The reprinted DEC-O-LOG page is collated with other updated DEC-O-LOG pages within that PDP family, and packaged for distribution to all subscribers on record for that PDP family DEC-O-LOG service.

When you receive the update pages, insert them in your loose-leaf binder to replace outdated pages. Usually, only the most recent DEC-O-LOG page for a specific option is reprinted and distributed.

NOTE

Occasionally, as a result of ECO activity, entries on preceding pages are updated to provide additional important information about a previous ECO. When this is done, that page is supplied with an appropriate revision code adjacent to the page number.

A CUSTOMER SERVICE

OF

DIGITAL EQUIPMENT CORPORATION
FIELD SERVICE INFORMATION CENTER

INTRODUCTION

A significant factor in the continuing acceptance of DEC's products throughout the world is its commitment to customer service. Services which are essential to the reliable operation of DEC hardware systems are provided by a well trained and experienced Field Engineering staff. A wide variety of software is published by DEC in response to, and in anticipation of, customers' needs for both operational and interfacing instructions.

The Field Service Information Center was organized in January of 1970 to provide a direct communications link between DEC Field Service and its customers for the distribution of technical information. The ultimate goal of the Center is the operation of an automated, on-line information service. To the extent possible, all publication decisions are made to advance that prospect. It was decided that a challenging initial project for the Center would be a documentation of DEC's Engineering Change Orders. The DEC-ECO-LOG is the result of that decision. Its publication is automated to the extent that the ECO synopsis information is filed, processed, and formatted by a PDP-81 using a DEC typesetting program.

This statement of policies and procedures outlines the planned ECO customer service support program. The publication and updating of the DEC-ECO-LOG will be initiated in June, with the Field Change Order, kits, and EDP status reports to follow. These extensive revisions to the existing ECO procedure will occur in stages throughout 1970 AND 1971.

ENGINEERING CHANGE ORDERS

DEC supports an in-plant Design Engineering commitment to a continuous program of product evaluation and improvement.

In addition, DEC's world-wide Field Service Engineering staff reports operational and maintenance information for the thousands of devices which they install and service regularly. The results of this dual effort are published as Engineering Change Orders (ECO's).

Most ECO's modify manufacturing procedures and therefore affect future production. ECO's which may be retrofitted in the field are engineered and designated for that purpose. The systematic implementation of all applicable ECO's to a computer system in the field assures that it is maintained, essentially, at DEC's latest level of manufacturing specifications.

An ECO is identified by a hyphenated number which includes the logic or option designator and a sequential number, i.e., EM12-00013, EM12-00014, etc. When the engineering of an ECO has been completed, an ECO Speco is published. The primary in-plant purpose of the ECO Speco is to inform Production Engineering of a change ordered by Design Engineering. It defines print revision advances, parts added or deleted, and logic, electrical, or mechanical modifications.

THE DEC-ECO-LOG

The Field Service Information Center processes each ECO for inclusion in the DEC-ECO-LOG. Each entry is a summary of the essential details of the ECO but does not, of itself, provide sufficient information for implementation.

If the ECO has been engineered for field retrofitting, it is coded "F" and a ~~covering~~ Field Change Order (FCO) Form is prepared by Field Service. The FCO defines aspects of the ECO which are of specific concern in the field and gives instructions for field installation. The first digit (0) of the sequential number is replaced by a "Level of Urgency" code to indicate the relative importance of the FCO (A – Mandatory – Highest Priority; B * ~~Mandatory~~; C – Mandatory ~~if Symptoms are Observed~~; D ** Low Priority; E – Product Improvement – Optional). Only ECO's which are F coded and FCO modified are distributed to the field.

* B. High priority. If specific hardware, software or symptoms are present.

** D. Applicable if specific hardware, software or symptoms are present.

A *D* code is assigned to an ECO which orders a change to:

1. production models as a normal step in the design phase of a new product.
   A "DF" code is assigned when
2. a product released to the field in limited quantity when the retrofit is essentially a part of the design process.
   is AND
3. all future production of an existing logic or option and the ECO is not to be retrofitted.
4. specific items as ordered by a particular customer.

A *P* code is assigned if the ECO involves changes only to prints or other documentation.

An *M* code is assigned if the changes affect essentially mechanical or structural components.

If the ECO has brought about a revision advance to a Wire List (WL) or to the Master Drawing List (ML), this information is included in the DEC-ECO-LOG also. ML and WL revision tables are presented on each synopsis page and indicate the revision advances which occurred as a result of the ECO's itemized on that page. The Master Drawing List is a listing of all the prints which make up the print set for a particular logic or option. A revision advance to any print within the set results in a revision to the ML. The Wire List defines the wiring runs which are manually or machine wrapped onto the logic pins. A revision of the WL occurs whenever an ECO changes a wire run. The WL revision table is referenced to the "K" (automated) wire list whenever one exists; a manual wire list is referenced if there is no "K" list.

A price coding format has been devised for the DEC-ECO-LOG which permits a customer to purchase an ECO kit selected, according to his requirements, from several possible variations. If the ECO is available, the synopsis will include this coding in the following format:

(*$X, **$Y, ***$Z)

$X is the charge for the ECO Speco and a copy of each print which is revised by the ECO.

$Y is the charge for the parts needed to install the ECO.

$Z is the on-site labor charge for installation by DEC. This is exclusive of travel time and is intended to represent the time actually required for installing the ECO and performing the normal testing to verify proper installation. ($X is corequisite if $Z is ordered and DEC's ~~$60.00~~ then current minimum billing applies).

EDP

DEC maintains an EDP file of every computer and its associated options with customer identification and other significant data. An ancillary file contains ECO status information. When an ECO is released, these files are referenced and updated.

If the ECO is applicable to a particular logic or option which is covered by a warranty or a DEC maintenance contract or lease, an ECO Field Installation Order is generated for inclusion in the ECO kit. When the ECO has been installed, the notice is returned to the factory for posting to the ECO status file. Through this procedure, it is possible to maintain accurate system ECO status.

A blank installation notice is included in each ECO kit when the system for which it is intended has not been identified by the customer who has ordered the kit. If the kit order includes the system identification, the ECO Field Installation Order will include ECO status. In either case, if the form is completed and returned, DEC will post the ECO status file. As a standard procedure for long range record keeping, this information will enable DEC personnel to efficiently evaluate maintenance and operational problems when they are called upon to do so.

FCO KITS

Following the mailing of a master reference copy of the ECO Speco to each DEC field office, the Field Service Information Center begins preparation of the required ECO kits. A kit is prepared for each affected unit covered by warranty, a DEC maintenance contract, or lease. Each kit includes the ECO Speco, the revised ML and copies of the revised prints, the ECO Field Installation Order, and any required parts (~~unless the customer has specified that parts are not to be included~~).

The number of kits to be distributed is determined from the ~~EDP~~ DEC DATA CENTER hardware file; the ECO Field Installation Orders are ordered from ~~EDP~~ DDC; the updated prints are ordered from Reproduction; any required parts are ordered from the Field Service Stockroom. When all kit components have come together, after an indeterminate period, but averaging about two weeks, a distribution is made to the DEC branch offices. Each office schedules the installation of the ECO's. The kits may be shipped directly to a customer's computer site only with the consent of the local DEC office. A reserve supply of kits will be available to permit off-the-shelf delivery of kits in response to field service and customer orders.

ECO INSTALLATION POLICIES

DURING THE PERIOD OF WARRANTY COVERAGE

The ECO updating of computer systems provides DEC customers with significant operational and maintenance advantages. These are of such consequence that DEC will install, at no charge, every applicable ECO issued during the normal warranty period of the customer's computer system.

MAINTENANCE CONTRACT COVERAGE

DEC considers that system ECO updating is an essential element of an extended service commitment. Therefore, every applicable ECO is installed in any DEC equipment which is covered by a DEC maintenance contract or DEC lease agreement.

SYSTEMS WITHOUT CONTRACT COVERAGE

The following policies apply when customers elect to do their own maintenance, or to use DEC service on a "per-call" basis.

a. DEC recommends that the customer commit himself to the sequential installation of each applicable ECO. ECO kits may be ordered individually, or may be "shipped as released" on the basis of a standing purchase order.

b. ECO kits may be purchased as indicated in the DEC-ECO-LOG synopsis. In the USA they may be ordered through the DEC branch office or from the Field Service Information Center in Maynard. Kits are available only through DEC subsidiaries for shipment outside the USA. If payment is included with an order for a kit to be installed by the customer, DEC forwards the kit postage paid. Kits ordered from the Field Service Information Center for DEC installation are forwarded to the appropriate DEC branch office and that office contacts the customer to schedule the installation of the ECO.

c. *Each applicable ECO must be installed in sequence.*

Considerable engineering effort is expended in testing each ECO for sequential continuity. The nature of computer logic is such that the random installation of ECO's will negate that effort. An ECO selected at random may prove to be uninstallable as a result of the random by passing of an earlier prerequisite ECO. Random ECO installation almost invariabl variably produces system circuitry into which subtle, ghostly problems have been introduced. DEC revises each schematic sequentially as it is affected by an ECO; each revision presupposes the inclusion of each previous revision.

The severity of these problems can be such that an arbitrary decision to "pick and choose" must be made with a willingness to accept the consequences. DEC assumes no liability for operational or maintenance problems which occur as a result or random ECO installation. In these circumstances, DEC assumes no responsibility for providing technical information beyond that which is presented in the DEC-ECO-LOG and in the ECO kit, Speco and prints. If DEC is requested to render service to a computer system in which random ECO installation has been made, DEC may require that complete ECO updating be done prior to, or as a part of, any other service provided.

WARRANTY

DEC warrants that all equipment furnished in the installation of the ECO will be free from defects in workmanship and material under normal use and service as defined in DEC's standard terms and conditions for a period of 30 days from the date of installation of the ECO.

EXCEPT FOR THE EXPRESS WARRANTY STATED ABOVE, DEC DISCLAIMS ALL WARRANTIES WITH REGARD TO THE INSTALLATION, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, and the stated express warranties are in lieu of all obligations or liabilities on the part of DEC, including, but not limited to consequential damages arising out of or in connection with the use or performance of the ECO.

THE PROVISIONS OF THIS WARRANTY SHALL NOT APPLY IN THE EVENT THAT THE ECO IS INSTALLED BY THE CUSTOMER.

DEC's sole responsibility under this warranty shall be either to repair or replace any material found to be defective during the warranty period, said material to be supplied without cost, but with all labor and/or transportation charges to be borne by the customer.

DEC-ECO-LOG SUBSCRIPTION

The DEC-ECO-LOG has been published in loose-leaf format to facilitate periodic updating. Each copy of the log includes a synopsis of significant previously released ECO's for one product line or central processor and for the options which are available for use with it. As ECO's are released, the Field Service Information Center computer file is updated. The synopsis pages which are affected by ECO releases are reissued periodically and forwarded as discrete page updates for the DEC-ECO-LOG. Through this procedure the log provides a complete ECO history for the system and is current to within a few weeks. The DEC-ECO-LOG service is available on a subscription basis at a rate of $25.00 per year.

E C DEC-O-LOG Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

DIGITAL EQUIPMENT CORPORATION
FIELD SERVICE INFORMATION CENTER
MAYNARD, MASSACHUSETTS 01754

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

PDP8-E PROCESSOR **8E**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	AUGUST 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
8E 00001	N.A.	P	AUG 70 - ADDS COLOR VARIATIONS TO THE LEGEND.
8E 00002	>8E	M	SEP 70 - CHANGES THE MOUNTING OF THE COVER ASSEMBLY TO THE 8E CHASSIS.
8E 00003	>8E	M	SEP 70 - PROVIDES FURTHER CHANGES IN THE MOUNTING OF THE COVER ASSEMBLY TO THE 8E CHASSIS.
8E 00004	N.A.	P	SEP 70 - ADDS LOGO VARIATIONS TO THE PANEL LOGO PRINT.
8E 00005	N.A.	P	SEP 70 - CORRECTS AN ERROR ON THE WIRE TABLE FOR THE POWER WIRING HARNESS.
8E 00006	N.A.	P	SEP 70 - CORRECTS AN ERROR ON THE WIRE TABLE FOR THE POWER SWITCH HARNESS.
8E 00007	>8E	M	OCT 70 - CHANGES THE POSITION OF A HOLE IN THE COVER.
8E 00008	>8E	M	OCT 70 - CHANGES FABRICATION SPECIFICATIONS FOR THE MOUNTING BAR, PART #7408242.
8E 00009	N.A.	P	DEC 70 - ADDS A PDP-8E (BLANK) VERSION TO THE PANEL LOGO PRINT.
8E 00010	N.A.	P	DEC 70 - REVISES THE SOFTWARE LIST PRINT.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Spsco and updated prints only.
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
8E 00011	>8E	M	JAN 71 - CHANGES FABRICATION SPECIFICATIONS FOR THE SWITCH MOUNTING BAR AND THE GLASS SUPPORT.
8E 00012	N.A.	P	FEB 71 - ADDS PACKAGING INSTRUCTIONS TO THE 8E PRINT SET.
8E 00013	>8E	M	FEB 71 - CHANGES FABRICATION SPECIFICATIONS FOR THE CHASSIS, COVER, AND CONTROL PANEL.
8E 00014	N.A.	P	FEB 71 - UPDATES THE UA DRAWING TO SHOW THE LATEST PART NUMBERS FOR SEVERAL HARDWARE ITEMS.
8E 00015	>8E	M	FEB 71 - CHANGES FABRICATION SPECIFICATIONS FOR THE SUPER COVER.
8E 00016	>8E AS ORDERED	M	MAR 71 - DOCUMENTS THE CREATION OF A CUSTOMER-REQUESTED CONTROL PANEL VARIATION.
8E 00017	>8E	M	MAR 71 - ORDERS INCIDENTAL HARDWARE CHANGES.
8E 00018	N.A.	P	MAR 71 - CORRECTS TYPOGRAPHICAL ERRORS ON THE MASTER DRAWING LIST.
8E 00019	N.A.	P	APR 71 - CORRECTS THE 8E TIMING DIAGRAM.
8E 00020	N.A.	P	APR 71 - DEFINES CABINET VARIATIONS AND CONSOLE COLOR COMBINATIONS.
8E 00021	>LA88-E	M	APR 71 - CHANGES SILK SCREENS TO PROVIDE COLORS REQUIRED FOR THE LA88-E.
8E 00022	>8E	M	APR 71 - CHANGES FABRICATION SPECIFICATIONS FOR THE SWITCH SUPPORT BRACKET, PART #7408249.
8E 00023	ALL 8E	F	APR 71 - PROVIDES FOR FIELD RETROFITTING OF ECO 8E-00014. ADDS TWO PROTECTIVE SPACERS TO THE CONSOLE BOARD AND A TELETYPE CABLE CLAMP. (*$.00, **$.00, ***$.00)

LEGEND

FIELD CODE

F = Field action may be required
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P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

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$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	8E-00012		
B	8E-00014		
C	8E-00016		
D	8E-00018		
E	8E-00019		
F	8E-00020		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

PDP8-E PROCESSOR **8E**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	AUGUST 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
8E 00024	N.A.	P	APR 71 - ADDS IN-PLANT TEST AND INSPECTION PROCEDURES TO THE 8E PRINT SET.
8E 00025	N.A.	P	MAY 71 - ADDS PACKAGING INSTRUCTIONS FOR THE H919 OMNIBUS TO THE 8E PRINT SET.
8E 00026	>8E	M	MAY 71 - DEFINES A DIMENSIONAL TOLERENCE FOR THE CONNECTOR BLOCK MOUNTING BAR STOCK.
8E 00027	>8E	M	MAY 71 - ENLARGES THE COVER PLATE TO PROVIDE PROTECTION FOR THE ENTIRE CIRCUIT ON THE MEMORY BOARD.
8E 00028	N.A.	P	MAY 71 - ADDS A DIMENSION TO THE COVER DRAWING.
8E 00029	>8E	M	MAY 71 - CHANGES A MATERIAL THICKNESS SPECIFICATION FOR THE LATCH SPACER.
8E 00030	N.A.	P	MAY 71 - ADDS CLARIFICATION DETAILS TO THE CHASSIS TRACK SLIDE DRAWING.
8E 00031	>8E	M	MAY 71 - SPECIFIES THE USE OF 4-40 X 3/8" NYLON SCREWS FOR SECURING THE ROTARY SWITCH TO THE BOARD. ORDERS DELETION OF THE TWO WASHERS USED WITH THE ROTARY SWITCH.
8E 00032	>8E	M	JUN 71 - CHANGES MAXIMUM DIMENSIONAL TOLERENCES TO PREVENT THE OVERALL HEIGHT OF THE COMPUTER FROM EXCEEDING SPECIFICATIONS.

LEGEND

FIELD CODE

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D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
H	8E-00024		
J	8E-00025		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
8E 00033	N.A.	M	JUN 71 - ORDERS MODIFICATION OF THE SUPER COVER FOR USE WITH THE H945, LAB8-E EXPANDER BOX.
8E 00034	N.A.	P	JUN 71 - UPDATES THE MANUFACTURING TEST PROCEDURE.
			JUL 71 - REFERENCE ECO H724-C0012
8E 00035	>8E	M	JUL 71 - EXPANDS THE CABLE CLAMP SCHEME TO ALLOW FOR CABLES BEYOND NUMBER 8. PROVIDES FOR OTHER INCIDENTAL HARDWARE CHANGES.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
K	H724-C0012		
L	8E-00035		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

8E-00036 CODE: P ML: M
JUL-71 - PROBLEM: There is no power wiring drawing with PDP-8/E print sets.
CORRECTION: Add power wiring drawing D-IC-PDP8/E-0-10 to all future PDP-8/E print sets. This drawing has to be added to the PDP8/E Master Drawing List and Drawing Index.
In-plant effectivity -06 documentation change only.

8E-00037 CODE: P ML: N
JUL-71 - PROBLEM: The engineering specification, concerning recommended module assignments, provides only one slot for the KE8/E option. This option requires two adjacent slots, located between the M833 and the M8310.
CORRECTION: Reorder RECOMMENDED OMNIBUS MODULE ASSIGNMENTS specification to provide two locations for the KE8/E option. Also, add a zero suffix to the M834 module which appears before corrections.
In-plant effectivity -06 documentation change only.

8E-00038 CODE: P
AUG-71 - PROBLEM: Wrong color on UL decal print.
CORRECTION:CHANGE To white on clear.
In-plant effectivity -06 documentation phase-in.

8E-00039 CODE: D ML: P
AUG-71 - PROBLEM: High Quality power supply needed when LAB8/E options are added to a PDP-8/E or LAB8/E system.
CORRECTION: Add HQ power supplies as specified by this ECO.

NOTE: This ECO must be implemented in conjunction with ECO LAB8/E-00007.
In-plant effectivity -01 phase-in

8E-00040 CODE: M
SEP-71 - PROBLEM: Slide, chassis track D-MD-74-08861 revision "A ", has two "A " holes in wrong locations.
CORRECTION: Correct drawing by showing spring catch on side facing up.
In-plant effectivity -03 rework immediately

8E-00041 CODE: P ML: R
SEP-71 - PROBLEM: Master Drawing List for PDP-8/E incorrect.
CORRECTION: Adds two drawings and deletes one.
In-plant effectivity -06 documentation change only

8E-00042 CODE: P ML: S
OCT-71 - PROBLEM: LAB8/E software is not documented as part of a software list.
CORRECTION: Add LAB8/E Software List to drawing A-SL-PDP8/E-0-3 .
In-plant effectivity -06 documentation change only.

8E-00043 CODE: P
NOV-71 - PROBLEM 1: Drawing C-SS-7408327-0-2 should not include the word "CORPORATION ".
CORRECTION 1: Remove the word "CORPORATION " and the period from the silk screen.
PROBLEM 2: Drawing C-SS-7408244-0-5 should not include the word "CORPORATION ".
CORRECTION 2: Remove the word "CORPORATION " and the period from the silk screen.
In-plant effectivity -06 documentation change only .

8E-00044 CODE: P
NOV-71 - PROBLEM: Drawing C-SS-7409162-0-1 does not reflect latest ECO to the PDP-8/E panel screen and is improperly documented.
CORRECTION: Change drawing C-SS-7409162-0-1 to drawing C-SS-7408244-0-6 .

In-plant effectivity -06 documentation change only.

8E-00045 CODE: P
NOV-71 - PROBLEM: Drawing C-SS-7409163-0-1 is improperly documented.
CORRECTION: Change drawing C-SS-7409163-0-1 to drawing C-SS-7408327-0-3 .

In-plant effectivity -06 documentation change only .

8E-00046 CODE: P
NOV-71 - PROBLEM: Drawing C-SS-7408975-0-1 is improperly documented and does not reflect the latest ECO to the PDP-8/E panel screen.
CORRECTION: Change drawing C-SS-7408975-0-1 to drawing C-SS-7408244-0-7

In-plant effectivity -06 documentation change only.

8E-00047 CODE: P
NOV-71 - PROBLEM: Drawing C-SS-7408976-0-1 is improperly documented.
CORRECTION: Change drawing C-SS-7408976-0-1 to drawing C-SS-7408327-0-4 .

In-plant effectivity -06 documentation change only.

8E-00048 CODE: P
NOV-71 - PROBLEM: Customer variation prints do not call out all variations of PDP-8/E panels and inlays.
CORRECTION: Add variations as defined in drawing A-CV-PDP8-E-7 .
In-plant effectivity -06 documentation change only

8E-00049 CODE: P ML: T
NOV-71 - CORRECTION: Corrects errors in the Timing Diagram, Flow Diagram, and Master Drawing List.
In-plant effectivity -06 documentation change only.

8E-00050 CODE: P
NOV-71 - PROBLEM: There is no longer a need for drop testing the PDP-8/E.
CORRECTION: Eliminated the Mechanical Shock Test from PDP-8/E test procedure.
In-plant effectivity -06 documentation change only.

8E-00051 CODE: P
DEC-71 - CORRECTION: Create a logo for TYPESET 8/E systems.
In-plant effectivity -06 documentation change

8E-00052 CODE: P ML: U
NOV-71 - PROBLEM: The Master Drawing List and Drawing Index for PDP-8/E are incorrect.
CORRECTION: A new cable for the M8650 TTY control and a new timing generator, M8330, are included in the print updating.
In-plant effectivity -06 documentation change

8E-C0053 CODE: F ML: V
DEC-71 - PROBLEM 1: Power wiring for BA8XX is wired so that when power is applied to the PDP-8/E, the BA8XX power is delayed because of the power control.
CORRECTION 1: Rewire according to this fco; power to the BA8XX bypasses the power control.
PROBLEM 2: 230V systems have PDP-8/E power to the wrong side of the breaker.
CORRECTION 2: Rewire power according to this FCO using the other side of the breaker.
PROBLEM 3: Print error.
CORRECTION 3: Change 230V to 115V for fans.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all PDP-8/E's with BA8XX expander box.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

8E-00054 CODE: P ML: W
DEC-71 - PROBLEM: Incorrect module numbers on Recommended Omnibus Module Assignments drawing, A-SP-PDP8/E-0-4 .
CORRECTION: Change M833 to M8330, M835 to M8350, and M832 to M8320.
In-plant effectivity -06 documentation change only.

8E-00055 CODE: P
JAN-72 - PROBLEM: The Master Drawing Lists for the KA8/E, KK8/E, KL8/E, KM8/E, KP8/E and MM8/E do not indicate that they are used on the PDP-8/M.
CORRECTION: Add the PDP-8/M to the "USED ON OPTIONS " lists of the Master Drawing Lists.
In-plant effectivity -06 documentation change only

8E-00056 CODE: P ML: Y
JAN-72 - PROBLEM: There are no option power requirements in the PDP-8/E print set.
CORRECTION: Add option power requirements to print set.
In-plant effectivity -06 documentation change only.

8E-00057 CODE: P ML: Z
FEB-72 - PROBLEM: PDP-8/E Option Configuration drawing, E-AR-PDP8/E-0-2 , is outdated.
CORRECTION: Obsolete and replace with new Option Arrangement drawing, E-AR-PDP8M-0-1 .
In-plant effectivity -06 documentation change only.

8E-00058 CODE: M
MAR-72 - PROBLEM: After dimple on chassis slide is drilled out with a #38 drill, 0.101 diameter, there is still part of the dimple left which binds on the slide.
CORRECTION: Change Note #2 to indicate the use of a 0.125 diameter drill.
In-plant effectivity -02 phase-in

8E-00059 CODE: P ML: AA
MAR-72 - PROBLEM: PDP-8/E Software List is incorrect.
CORRECTION: Update and correct print A-SL-PDP-8E-0-3 .
In-plant effectivity -06 documentation change only

8E-00060 CODE: P ML: AB
APR-72 - PROBLEM: Drawing A-ML-H724-0 was obsoleted from the PDP-8/E Master Drawing List and the H724 power supply prints were not added.
CORRECTION: The H724 power supply prints are to be added to the PDP-8/E Master Drawing List and A-ML-H724-0 is to be deleted.
In-plant effectivity -06 documentation change only.

8E-00061 CODE: P
JUN-72 - PROBLEM: Too many PDP-8/E OMNIBUS assemblies being scrapped due to inspection rejections.
CORRECTION: Change procedure, paragraph 2.1.1. 2/2.8.7/ADD 2.8.9 to make requirements for protrusions of pins through solder on circuit board less restrictive. Changes acceptance and repair criteria on damage to connector blocks.
In-plant effectivity -Documentation change

8E-00062 CODE: P ML: AC
JUN-72 - PROBLEM: Field Service requests that a note be added to the recommended OMNIBUS module assignment.
CORRECTION: Add the note to the M8330 specification print which reads as follows: "M8330 timing board, always after control panel ".
In-plant effectivity -Documentation change only

8E-00063 CODE: M ML: AD
DEC-72 - PROBLEM 1: Strain relief is attached to top cover; when cover is removed, cables are not being held.
CORRECTION 1: Delete strain relief from cover and add new strain relief #74-10738 and bracket #74-10739 which mount on the H724 Power Supply chassis.
PROBLEM 2: Cable clamp on super cover being used improperly.
CORRECTION 2: Add views and notes to Unit Assembly drawing showing installation of super cover and cables.
In-plant effectivity -Break-in no later than March 1, 1973.

8E-00064 CODE: M
DEC-72 - PROBLEM 1: Captive screws in super cover too long.
CORRECTION 1: Add metal strip to cover to act as a spacer.
PROBLEM 2: Inserts in chassis work loose or strip when unit is lifted by the super cover.
CORRECTION 2: Add four more captive screws to mount the super cover.
In-plant effectivity -Break-in no later than January 15, 1973

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ECO DEC-O-LOG Engineering Change Order Log

Lab-8/E

Advanced PDP-8/E Lab System

PROCESSOR TYPE PDP-8/E

LAB8E-00001 CODE: M
MAY-71 CORRECTION: Updates the silk screen for the I/O panel.
In-plant effectivity -03 rework immediately

LAB8E-00002 CODE: P
MAY-71 - CORRECTION: Corrects prints for the AM8-EC , the AM8-ED , and the DK8-EF.
In-plant effectivity -Documentation change only

LAB8E-00003 CODE: M
JUN-71 - CORRECTION: Changes a mechanical dimension tolerance
In-plant effectivity -01 phase-in

LAB8E-00004 CODE: M
JUN-71 - CORRECTION: Changes tolerances on the weld studs.
In-plant effectivity -01 phase-in

LAB8E-00005 CODE: M
JUN-71 - CORRECTION: Changes a mechanical dimension tolerance
In-plant effectivity -01 phase-in

LAB8E-00006 CODE: M
JUL-71 - CORRECTION: Adds D holes to the clock panel.
In-plant effectivity -06 phase-in

LAB8E-00007 CODE: D ML: B
AUG-71 - PROBLEM 1: LAB8-E options on the PDP8-E do not have a convenient high quality power supply to use.
CORRECTION 1. Define the H945 without the high quality power supply. Define the use of the door mount and the PDP8-E mounted high quality power supply.
PROBLEM 2: High quality power supply in the H945 is too long to mount in the PDP8-E.
CORRECTION 2: Shorten the high quality power supply overall length.
PROBLEM 3: Door mount power supply assembly redundant to existing and easier to build unit.
CORRECTION 3: Redefine the door mount high quality power supply to use existing sub-assembly
PROBLEM 4: LAB8E-05 with added AM8-EC has added unusable panel.
CORRECTION 4: Define use of the AD8-EA to replace the AD8-ES when AM8-EC is added.
PROBLEM 5: Module utilization list does not show power connections to modules.
CORRECTION 5. Add power connection to modules.
PROBLEM 6: Power supply bracket thickness makes octal socket hard to insert.
CORRECTION 6 Reduce metal thickness of bracket.

NOTE: This ECO is to be installed in conjunction with ECO 8E-00039.
In-plant effectivity -01 phase-in

LAB8E-00008 CODE: P ML: D
OCT-71 CORRECTION: Orders the use of UL approved power cords
In-plant effectivity -Documentation change only

LAB8E-00009 CODE: P ML: C
OCT-71 - CORRECTION: Changes the module utilization drawing to reflect the true order of the modules.
In-plant effectivity -Documentation change only

LAB8E-00010 CODE: M ML: E
NOV-71 CORRECTION: Adds insulating grommets and holes for the power supply adjustment.
In-plant effectivity -Rework immediately

LAB8E-00011 CODE: P ML: F
NOV-71 - PROBLEM 1: An option cabinet is needed to be specified for the LAB8-E.
CORRECTION 1: Specify an H961-CA cabinet and include in the LAB8-E drawing index and the parts list.
PROBLEM 2: Wrong power cord is called out on the precision analog power supply assembly.
CORRECTION 2: Change the power cord part number.
In-plant effectivity -Documentation change only

LAB8E-00012 CODE: P
JAN-72 - PROBLEM: Revision 0 of 70-08477 , which is the higher assembly of the 70-08482 , was inactivated by ECO LAB8E-00007. Assembly 70-08482 is still on file as an active subassembly.
CORRECTION: Inactivate all drawings pertaining to the 70-08482 power supply assembly. Scrap any models that might exist of this unit.
In-plant effectivity -Documentation change only

LAB8E-00013 CODE: P ML: H
JAN-72 - CORRECTION: Updates the master drawing list and the parts list.
In-plant effectivity -Documentation change only

LAB8E-D0014 CODE: F
APR-72 - PROBLEM 1. The floating end of the shield used on the input lead to the AD8-EA and the AM8-EA can become a source of memory frequency pick-up during system test and installation.
CORRECTION 1: Ground the shield at the signal source end for better performance. The difference in chassis potential should be minimized by ground strapping the unit being measured to the computer to avoid ground loops. Ship a 5 foot length of shielded cable with the AD8-EA and the AD8-ES to facilitate this. Do not mark up prints in production to reflect this change
PROBLEM 2: The VC8-E engineering specification erroneously specifies placing the M869 polarity switch in the -Position when installing a Tektronix RM503 oscilloscope.
CORRECTION 2: The Tektronix RM503 requires the switch in the +position. Correct the specification.
In-plant effectivity -02 phase-in
Field effectivity -All LAB8-E print sets
(This FCO Is No Charge To Customer (Kit Contents -FCO/Prints

LAB8/E-D0015 CODE: F
JUN-72 - PROBLEM: Line fuse sometimes blows on power up surge.
CORRECTION: Replace 3/4 amp fast blow with 1 amp slow blow fuse.

NOTE 1: Replace decal if available , otherwise correct old decal. NOTE 2: The symptom is that upon power up , the 3/4 amp fuse on power supply assembly 70-08477-0-0 blows.
In-plant effectivity -03 rework immediately
Field effectivity -All LAB8/E as required
(Time To Install And Test .5 Hour. (This FCO Is No Charge To Customer (Kit Contents -FCO/Prints And Parts

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Engineering Change Order Log
DEC-O-LOG

PDP-8/M
Processor

PROCESSOR TYPE PDP-8/M

PDP8M-00001 CODE: P
AUG-71 - PROBLEM: No cabinet logo for the PDP-8/M.
CORRECTION: Add PDP-8/M variation to the #74-07936 logo drawing.
In-plant effectivity -Documentation/design change

PDP8M-00002 CODE: M
NOV-71 - CORRECTION: Adds extra holes in chassis slide so it will fit on PDP-8/M.

NOTE: See correction supplement ECO PDP8M-00004.
In-plant effectivity -06 documentation phase-in

PDP8M-00003 CODE: P
NOV-71 - PROBLEM 1: Wrong color panel logo for PDP-8/M.
CORRECTION 1: Change colors.
PROBLEM 2: No blank panel logo for PDP-8/M.
CORRECTION 2: Add blank panel logo.
In-plant effectivity -06 documentation phase-in

PDP8M-00004 CODE: M
NOV-71 - PROBLEM: ECO PDP8M-00002 called out wrong rework code for the #74-08861 chassis slides.
CORRECTION: Change rework code to 03, rework immediately.

NOTE: This is a supplement to ECO PDP8M-00002.
In-plant effectivity -03 rework immediately

PDP8M-00005 CODE: P
DEC-71 - CORRECTION: Correction to number shown on the Micro Switch Harness print C-IA-7008674-0-0 .
In-plant effectivity -06 documentation change only

PDP8M-00006 CODE: P
DEC-71 - CORRECTION: Add reference dimension missing from the #74-08861 track drawing.
In-plant effectivity -06 documentation change only

PDP8M-00007 CODE: P DD: A
FEB-72 - PROBLEM 1: The PDP-8/M Drawing Directory was created before DEC Standard 024 was released and does not conform to this Standard.
CORRECTION 1: Update the Drawing Directory in accordance with DEC Standard 024.
PROBLEM 2: No PDP-8/M Accessory List in print set.
CORRECTION 2: Include the Accessory List A-AL-PDP8M-0-6 in the print set.
In-plant effectivity -Documentation change only

PDP8M-00008 CODE: P
FEB-72 - PROBLEM: PDP-8/M fans noisy and expensive.
CORRECTION: Replace with DEC #12-05033.
In-plant effectivity -06 documentation phase-in

PDP8M-00009 CODE: M
FEB-72 - PROBLEM 1: PDP-8/M Power Supply chassis #74-09376: Transformer mounting holes too small and wrong inserts called out.
CORRECTION 1: Increase transformer mounting hole size and call out current inserts.
PROBLEM 2: PDP-8/M chassis #74-09379: Lip around top too wide and some tolerances are too tight.
CORRECTION 2: Reduce lip dimension and correct tolerances.
PROBLEM 3: PDP-8/M cover #64-09380: Tolerance too tight.
CORRECTION 3: Correct tolerance.
PROBLEM 4: PDP-8/M cover #74-09380: Tolerance too tight.
CORRECTION 4: Increase opening size from 2.00 to 2.25.
In-plant effectivity -02 phase in

PDP8M-00010 CODE: D
MAR-72 - CORRECTION: Make necessary changes to several prints.
In-plant effectivity -06 documentation change only

PDP8M-B0011 CODE: F
MAR-72 - PROBLEM: AC noise causing problems with power fail.
CORRECTION: Place a 0.02 ufd capacitor, #10-10767, across each fan.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all PDP-8M's shipped in January and February 1972.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

PDP8M-00012 CODE: M
MAY-72 - PROBLEM 1: Fabrication problem in punching obround slots on PDP-8/M chassis
CORRECTION 1: Make corrections as defined in the revised IA , Inseparable Assembly drawing..
PROBLEM 2: Support bracket shows up behind silk screened panel.
CORRECTION 2: Change finish specifications to black paint, 9200260-94.
In-plant effectivity -02 phase-in

PDP8M-D0013 CODE: F DD: B
JUL-72 - PROBLEM 1: Documentation errors in the PDP-8/M print set.
CORRECTION 1: Make corrections to the documentation.
PROBLEM 2: Switch bounce on the AC power switch affects machines with the Power Fail option causing memory locations to be modified.
CORRECTION 2: Add a capacitor (2X.02P.1KV) across the switch.
In-plant effectivity -Rework immediately
Field effectivity -All PDP-8/M with a Power Fail option
(Time To Install And Test 1.3 Hours.) (Kit Contents -FCO/Prints And Parts)

PDP8M-B0014 CODE: F DD: C
SEP-72 - PROBLEM: Potential shock hazard. Lack of ground continuity between power supply and PDP-8/M chassis when power supply is removed from chassis.
CORRECTION: Add a fifteen inch length of #18 AWG black stranded Teflon insulated wire from solder lug on right rear screw of power supply transformer to grounding lug on chassis by power input box.

NOTE: See correction supplement FCO PDP8M-B014A.
In-plant effectivity -Retrofit no later than 10/2/72.
Field effectivity -Retrofit all 7008714 power supplies in PDP-16/M, PDP-8/M and PDP-8/F on a "next service call " basis.
(Time To Install And Test .2 Hour.) (Kit Contents -FCO/Prints And Parts) Supplement FCO PDP8M-B014A will also be included in the kit.

PDP8M-B014A CODE: F
OCT-72 - PROBLEM: FCO PDP8M-B0014 calls out #18 AWG black stranded Teflon insulated wire. Digital does not use black wire or Teflon insulation for a chassis ground.
CORRECTION: Remove the word Teflon from FCO PDP8M-B0014 and change part description on print to green instead of black.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

PDP8M-00015 CODE: M DD: D
NOV-72 - PROBLEM 1: Kep nuts coming loose on fans.
CORRECTION 1: Replace with new mounting hardware.
PROBLEM 2: Lockwashers not necessary for top cover mounting.
CORRECTION 2: Delete lockwashers.
CORRECTION 3: Correct print error.

NOTE: See correction supplement ECO PDP8M-0015A.
In-plant effectivity -02 phase-in; all units shipped after December 4, 1972.

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PDP8M-0015A CODE: M
NOV-72 - PROBLEM: ECO PDP8M-00015 has incorrect wording for BREAK-IN EFFECTIVITY .
CORRECTION: Change BREAK-IN EFFECTIVITY to read "issued " instead of "shipped " .
In-plant effectivity -Unchanged

PDP8M-00016 CODE: M DD: E
JAN-73 - PROBLEM 1: It is difficult to align the key switch with the front panel.
CORRECTION 1: Design a new key switch bracket and support bracket that will allow adjustment in both vertical and horizontal planes.
CORRECTION 2: Change quantity of screws on Parts List.
In-plant effectivity -02 phase-in; all kits issued after March 5, 1973 and all machines shipped after April 2, 1973.

PDP8M-00017 CODE: D DD: F
FEB-73 - PROBLEM: Power supply is not easily accessible; assembly time is too long.
CORRECTION: Repackage PDP-8/M by adding variations PDP8M-DH, PDP8M-DJ, PDP8M-DK, PDP8M-DL, PDP8M-MH, PDP8M-MJ, PDP8M-MK and PDP8M-ML.
In-plant effectivity -* -All units shipped after July 1, 1973 must be the new variations.

PDP8M-00018 CODE: M DD: H
MAY-73 - CORRECTION 1: Update Drawing Directory, Unit Assembly drawing and Parts List; add Assembly Procedures.
PROBLEM 2: Grommet on power supply chassis difficult to install.
CORRECTION 2: Replace grommet with one that will fit in round hole.
PROBLEM 3: A gap exists between the cover and the bezel.
CORRECTION 3: Increase length of cover by 0.06 inch.
In-plant effectivity -All parts fabricated after 5/4/73 and all machines shipped after 10/1/73 to include these changes.

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E C DEC-O-LOG Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

DIGITAL EQUIPMENT CORPORATION
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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

POWER SUPPLY **716**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	DECEMBER 1971	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
716 B0001	>716	F	NOV 69 - CORRECTS DM-2 DIODE PACK PART NUMBER ON THE PARTS LIST. SPECIFIES THE MOUNTING OF ADDITIONAL TABS TO PERMIT PARALLELING OF BOTH THE AC AND THE DC SUPPLY LINES. ADDS FILTERING AND REGULATION TO THE +6.5 VDC SUPPLY; INDICATOR LAMP FLICKER IS INDICATIVE OF THE NEED FOR THIS FCO. ERRORS IN THIS FCO ARE CORRECTED BY FCO'S 716-B0002 AND BOTH ARE SUPERSEDED BY FCO 716-B0003. 716 CIRCUIT SCHEMATIC REVISION "A"
716 B0002	>RF09 ALL WITH FCO 5408458-B0001	F	MAR 70 - CORRECTS AN ERROR IN FCO 716-B0001; CHANGES "BREAK-IN POINT" TO ORDER PARTIAL RETROFITTING OF ALL UNITS. FCO 5408458-B0001 MAKES IT NECESSARY THAT ALL 716 POWER SUPPLIES BE REWIRED FOR THE 7 VAC TAP RATHER THAN THE 9 VAC TAP. THE OTHER PROVISIONS OF FCO 716-B0001 ARE ORDERED FOR FUTURE 716'S AND ARE UNNECESSARY FOR RETROFITTING. THIS FCO IS SUPERSEDED BY 716-B0003.
716 B0003	ALL RF09	F	MAR 70 - SUPERSEDES FCO'S 716-B0001 AND B0002; SPECIFIES THE REPLACEMENT OF ALL 716 POWER SUPPLIES IN THE FIELD. (*$.00, **$.00, ***$.00) (TIME TO INSTALL AND TEST - .5 HOUR)
716 B0004	>716 FIELD RETROFIT AS REQUIRED	F	MAR 70 - ADDS A 3/8 AMP FUSE TO THE AC LINE. ERRORS IN THIS FCO CORRECTED BY FCO 716-B0006. (*$5.00, **$2.00, ***$10.00) (TIME TO INSTALL AND TEST - 1.0 HOUR) 716 CIRCUIT SCHEMATIC REVISION "B"
716 00005	N.A.	P	APR 70 - ASSIGNS A PART NUMBER TO THE CAPACITOR BRACKET AND ADDS IT TO THE PARTS LIST.
716 B0006	ALL 716	F	SEP 70 - THIS FCO CORRECTS ERRORS IN FCO 716-B0004; CHANGES THE 3/8 AMP FUSE TO 1/2 AMP SLOW BLOW TO ELIMINATE NUISANCE FAILURE AT TURN -ON. (*$.00, **$.00, ***$.00 INCLUDED IN THE 716-B0004 KIT) (TIME TO INSTALL AND TEST - .1 HOUR) 716 CIRCUIT SCHEMATIC REVISION "C"

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
716 00007	>716	M	JAN 71 - ORDERS RELOCATION OF THE FUSE TO MAKE IT MORE ACCESSABLE.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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E C DEC-O-LOG Engineering Change Order Log

H724

Power Supply

PROCESSOR TYPE **PDP-8/E**

H724-00018 **CODE: D**
SEP-72 - PROBLEM: Part number 90-08856, 250V 15A 50 Hz Duplex Receptacle is not UL approved. Also, there is no way to keep these in stockrooms, where, because of high unit cost, they should be signed out.
CORRECTION: Change #90-08856 to #12-11204.
In-plant effectivity -02 -Phase-in -Move from "90 " class stockroom to "12 " class stockroom.

H724-00019 **CODE: D**
FEB-73 - PROBLEM: Purchasing wants to obsolete one of two power cord sets that differ only in color.
CORRECTION: Use grey cord set instead of black.
In-plant effectivity -02 phase-in

H724-00020 **CODE: P**
MAR-73 - CORRECTION: Add part number 70-09286 for cable in heat sink housing and update prints accordingly.
In-plant effectivity -06 documentation change only

H724-C0021 **CODE: F**
MAY-73 - PROBLEM 1: Fuse holder sometimes covers silk screen.
CORRECTION 1: Change silk screen.
PROBLEM 2: The +5V fuse holder gets excessively hot when the +5V power supply line is loaded to maximum, thereby causing the fuse to derate to a current value lower than the load current.
CORRECTION 2: A new fuse holder, Littlefuse #342-025AL, gray, DEC #12-11348, will replace the +5V fuse holder we now use, black, DEC #90-07212.
PROBLEM 3: Part numbers for 1/8A interlock fuse do not agree on the Circuit Schematic and Parts List.
CORRECTION 3: Change Item #48 to read: "90-08527 Fuse, 0.125A 125V 3AG Slow Blow " .
CORRECTION 4: Correct discrepancies between Circuit Schematic and Parts List and the original Parts List.

NOTE: Both FCO's H724-E0014 and H724-C0021 require power supply disassembly and can conveniently be installed together.
Quick Check -Original black fuse holder replaced with a gray one.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all H724's when +5V fuse holder runs hot, generally only systems with two Omnibuses.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

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725

TU56 Power Supply

PROCESSOR TYPE All

725-00001 **CODE: D**
FEB-70 - PROBLEM 1: Chassis not properly insulated from main chassis.
CORRECTION 1: Added insulation strips to chassis.
CORRECTION 2: Change hardware to facilitate replacement of rectifier bridges.
CORRECTION 3: Improved mounting of resistors R1 and R2.
CORRECTION 4: Changed location of power connectors to facilitate maintenance.
In-plant effectivity -Phase-in

725-00002 **CODE: D**
FEB-70 - PROBLEM: Decals have inconsistent quality and high cost.
CORRECTION: Layout artwork as it will be on supply; artwork will be silk screened onto the supply. "110 VAC " and "220 VAC " are to remain as decals. Artwork will be white on black.
In-plant effectivity -Phase-in

725-00003 **CODE: M**
JUN-70 - CORRECTION: Silk screen B-SS-5308605-0-1 is to have the following information on it: "CONNECT EITHER +10 OR +5 LINE -NOT BOTH " .
In-plant effectivity -Phase-in as of 6/19/70

725-00004 **CODE: D**
SEP-70 - PROBLEM: On silk screen B-SS-5308605-0-1 the 50/60 Hz designation is located over a hole in the 53-08605 chassis.
CORRECTION: Move the 50/60 Hz designation 3/8 inch to the left.
In-plant effectivity -Documentation/design change

725-00005 **CODE: D**
OCT-70 - PROBLEM: Terminals on the 35,000 mfd capacitor, #10-0098, are too high.
CORRECTION: Change capacitor to #10-0098-01 which has the same characteristics except it has a 3/32 inch high terminal instead of 5/16 inch.
In-plant effectivity -Phase-in

725-00006 **CODE: D** **CS: A**
DEC-70 - PROBLEM: Present method of wiring the 725 Power Supply is time consuming.
CORRECTION: The #70-06999 harness has been designed for use in the 725. The harness, along with other minor changes, must be added to the 725 Parts List and Unit Assembly drawings.
In-plant effectivity -06 documentation/design change

725-00007 **CODE: D** **CS: B**
JAN-71 - PROBLEM: Wires are cut out of the harness in order to modify the 725 for 220 VAC input.
CORRECTION: Have transformer vendor add tabs 1A and 4A. Change harness #70-06999 so that removal of one jumper and a location change of one end of one wire connector changes supply input requirement from 110 to 220 VAC.
In-plant effectivity -01 phase-in

725-C0008 **CODE: F** **CS: C**
AUG-71 - PROBLEM 1: With the left transport operating under program control, and the right transport moving tape in LOCAL control, an excess of data errors were committed. In a few units, with both right and left transports under program control, the data errors exceeded specifications.
CORRECTION 1: A ground loop between the motor supply ground and the logic supply ground was found to be the factor that caused the error condition. To correct the condition, the logic ground must be disconnected on all G848 modules in the TU56, by cutting the etch on these modules at pins AC2 and BC2. A jumper must be added in the 725 Motor Power Supply between the motor supply common and logic supply ground lug on the back of the 725. Reference ECO G848-00007.
PROBLEM 2: AC ground to chassis is inhibited by paint.
CORRECTION 2: Add note to mask the holes around AC connectors.
NOTE 1: Field Service should be aware that the paint must be scraped off the inside of the AC receptacle mounting position to make a good connection between the ground wire of the AC cord and chassis.

NOTE 2: It is imperative that all TU56's on a single system be modified at the same time. This also applies to any TU56 which has this FCO being added to a system having units without it.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all 725's as required
(Time To Install And Test 3.0 Hours.) (Documentation $ 5.00 , Parts $. 50) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO And Parts)

725-00009 **CODE: D**
JAN-73 - PROBLEM: Rating of 725 Power Supply is not in accordance with Underwriter's Laboratories standards.
CORRECTION: Re-rate the 725 Power Supply to 1.40 KVA and the convenience outlet to 1.05 KVA
In-plant effectivity -03 *: Units must have UL approved rating by 1/31/73.

725-B0010 **CODE: F** **CS: D**
MAR-73 - PROBLEM: The 220 VAC version of the 725 Power Supply is improperly fused. A short on the 18 volt secondary winding could damage the transformer and create a fire hazard.
CORRECTION: Change 3A slow blow line fuse to 1.5A slow blow fuse on all TU56's configured for 220 VAC operation. Add decal above fuse giving proper fuse value.
In-plant effectivity -03 retrofit immediately; put 1.5A slow blow fuse into TU56's operating at 220 vac; add decal.
Field effectivity -Retrofit all 725's in 220 VAC TU56's
(Time To Install And Test 3.0 Hours.) (Kit Contents -FCO/Prints And Parts)

725-00011 **CODE: D** **CS: E**
JUL-73 - PROBLEM: The TU56 uses 125 VAC plugs on both 250 VAC and 125 VAC units.
CORRECTION: Alter power supply to allow use of both 250 VAC and 125 VAC plugs. Create new 230 VAC version of 725 Power Supply, 725-A.
In-plant effectivity -02 phase-in

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DEC-O-LOG Engineering Change Order Log

725

TU56 Power Supply

PROCESSOR TYPE All

725-C0012 **CODE: F**

NOV-73 - PROBLEM 1: Grounding in the TU56 supply allows 1.5 volt differential to exist between power and logic ground. This may induce Mark Track errors which cannot be attributed to bad heads, bad tape, bad read/write amplifiers, etc Errors will be less frequent and may even go away if only one side of the dual drive is on. Also, there may be jerky motor operation; motors will turn but will vibrate excessively. It is expected that only extremely low number of TU56's will need to be retrofitted since only one occurence of this problem has been encountered so far.

CORRECTION 1: Delete wire connecting power ground and logic ground; add wire at output terminals.

PROBLEM 2: Terminations at points 61 and 62 must be changed because of ECO 725-00011.

CORRECTION 2: Change termination of points 61 and 62 from #90-06781 to #90-07930 on the #70-06999 harness.

NOTE: The hardware required for field retrofitting differs from that to be utilized in-plant for future production: Parts required in the field are two each #90-07917 Solderless Connectors and #90-07193 Double Faston Tabs.

In-plant effectivity -Phase-in on production machines. Field retrofit if intermittent mark track errors are occuring.

Field effectivity -Retrofit all 725's in TU56's when symptoms are present.

(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $. 30)

The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1090 - FCO/Prints And Parts)

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828-B

Power Receptacle Control

PROCESSOR TYPE All

828B-00001 CODE: D CS: A

DEC-69 - PROBLEM 1: Wrong type capacitors.
CORRECTION 1: Replace present capacitors with DYRB 103-1, 2 X .1 Mfd, 1000 VDC, 440 VAC, 60 cycle.
PROBLEM 2: The 828-B is not wired correctly; capacitors are not serving their purpose.
CORRECTION 2: Rewire 828-B as defined by this ECO.
CORRECTION 3: Modify present chassis as shown in revised prints.
CORRECTION 4: Change Parts List.
CORRECTION 5: Change decal to "828B ".
In-plant effectivity -02 phase-in

828B-D0002 CODE: F CS: B

FEB-72 - PROBLEM: Power receptacle circuit breaker rating too high for type of connector used.
CORRECTION: Change breaker from 20 AMPS to 15 AMPS.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all 828-B's
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

DEC-O-LOG

Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION
PC0 POWER REGULATOR BOARD **5408308**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	NOVEMBER 1971	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5408308 00001	ALL PC04 ALL PC05 FIELD RETROFIT AS REQUIRED	F	DEC 69 - ADDS A 1/10 OHM SERIES CURRENT LIMITING RESISTOR IN THE BRIDGE CIRCUIT. 5408308 CIRCUIT SCHEMATIC REVISION A ETCHED BOARD REVISION B
5408308 00002	>PC04 >PC05 FIELD RETROFIT AS REQUIRED	F	FEB 70 - SPECIFIES THAT AN ETCH REVISION IS TO BE MADE SO THAT CAPACITORS CAN BE ADDED WHICH WILL ELIMINATE NOISE ON THE +5 VDC LINE. PROVIDES INSTRUCTIONS FOR FIELD INSTALLATION OF THE CAPACITORS. (*$5.00, **$1.62, ***$20.00) 5408308 CIRCUIT SCHEMATIC REVISION B
5408308 00003	>PC04 >PC05 FIELD RETROFIT AS REQUIRED	F	APR 70 - CHANGES THE ZENER DIODE AND TWO RESISTORS TO BETTER REGULATE THE +5VDC SUPPLY VOLTAGE. THIS ECO IS TO BE FIELD RETROFITTED IN PC04 AND PC05 IF PROBLEMS ARE BEING CAUSED BY THE +5 VDC SUPPLY BEING LESS THAN +5 VOLTS OR IF THE VOLTAGE IS LESS THAN +4.5 VOLTS. A CORRECTION NOTICE WAS ISSUED SUBSEQUENT TO THE SPECO WHICH INDICATES THAT THE ZENER DIODE SHOULD BE 6.4 VOLTS AND THE RESISTOR VALUE SHOULD BE 82 OHMS. ECO 5408308-00004 EXPANDS UPON THIS ECO. (*$5.00, **$.73, ***$15.00) 5408308 CIRCUIT SCHEMATIC REVISION C ETCHED BOARD REVISION D
5408308 00004	ALL PCO FIELD RETROFIT AS REQUIRED	F	JUN 70 - EXPANDS UPON ECO 5408308-00003; ADDS A FIELD REWORKING PROCEDURE. (*$.00, **$.00, ***$.00 INCLUDED IN THE ECO 5408308-00003 KIT)

LEGEND

FIELD CODE
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- D = Design ECO
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- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

5408308

PC04/PC05 Power Regulator Board

PROCESSOR TYPE All

5408308-B0001 CODE: F CS: A ETCH: B
NOV-69 - PROBLEM: Surge current is greater than the rating of the MDA 960-3 bridge, DEC #11-09366.
CORRECTION: Add 1/10 ohm resistor, DEC #13-05872.

NOTE: See correction supplement FCO 5408308-C0003.
In-plant effectivity -Rework all 5408308's
Field effectivity -Rework all 5408308's as required
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $. 80 , DEC Labor $ 20.00) (Kit Contents -FCO And Parts) Supplement FCO 5408308-C0003 will also be included in the kit.

5408308-B0002 CODE: F CS: B ETCH: C
FEB-70 - PROBLEM 1: Noise on +5 volt line.
CORRECTION 1: Add a 39 mfd, 10V capacitor to the +5V line; add a 47 mfd, 20V capacitor to the -15V line.
CORRECTION 2: Install the added capacitors on the PC04 and PC05 logics until the new etch boards are available.
CORRECTION 3: Retrofit in the field when making service call if a problem exists in the +5V or -15 VDC line.
CORRECTION 4: If retrofitting is required in the field, use terminal points with capacitors.

NOTE: See correction supplement FCO 5408308-C0003.
In-plant effectivity -Rework all 5408308's
Field effectivity -All 5408308's in PC04's and PC05's as required.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $ 1.65 , DEC Labor $ 20.00) (Kit Contents -FCO And Parts) Supplement FCO 5408308-C0003 will also be included in the kit.

5408308-C0003 CODE: F CS: C ETCH: D
MAR-70 - PROBLEM 1: Low +5 volt line output, questionable -15 volt Zener bias.
CORRECTION 1: Change Zener from #11-02451-00, 6.2 volts, to #11-02451-01, 6.8 volts.. Change resistor R1 from #13-00260, 180 ohms 1/2 watt to #13-00225, 82 ohms 1/2 watt. Change resistor R4 from #13-00260, 180 ohms 1/2 watt to #13-00225, 83 ohms 1/2 watt.
PROBLEM 2: Revision "B " and "C " etch and component layout not compatible with next higher subassembly.
CORRECTION 2: Obsolete "B " and "C " revision artwork and reference this FCO from revision "A " artwork.

NOTE: See continuation supplement FCO 5408308-C0004.
In-plant effectivity -Rework immediately
Field effectivity -Rework all 5408308's when problem exists or if +5V line is less than 4.5 volts.
(Time To Install And Test .3 Hour.) (Documentation $ 5.00 , Parts $. 75 , DEC Labor $ 15.00) (Kit Contents -FCO/Prints And Parts) Supplement FCO 5408308-C0004 will also be included in the kit.

5408308-C0004 CODE: F
JUN-70 - PROBLEM: Incomplete Field Service information on FCO 5408308-C0003.
CORRECTION: Add a correction 3 to FCO 5408308-C0003 as follows: See attached Field Service rework procedure for power regulator wiring and fuse value change of F2 from 2A to 4A.
In-plant effectivity -None
Field effectivity -Unchanged
(Time To Install And Test N/A)
(Kit Contents -FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

PCO SWITCH BOARD **5408310**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	DECEMBER 1971	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5408310 C0001	>5408310 FIELD RETROFIT AS REQUIRED	F	JUN 70 - CORRECTS AN ERROR IN ECO 5408310-C0001; CORRECTS THE PART NUMBER FOR AN ADDED TRANSISTOR. (*$.00, **NONE, ***NONE INCLUDED IN THE 5408310-C0001 KIT)
5408310 C0002	>5408310 FIELD RETROFIT AS REQUIRED	F	JUN 70 - ADDS AN SCS CIRCUIT TO ELIMINATE THE EFFECTS OF READER FEED SWITCH CONTACT BOUNCE WHICH CAN CAUSE MOTOR STALLING. THIS FCO MUST BE INSTALLED IN CONJUNCTION WITH FCO'S PC04-C0025, M705-C0003, AND M705-C0005. ERRORS ARE CORRECTED BY ECO 5408310-C0002 AND C0003. (*$5.00, **$17.52, ***$20.00) (TIME TO INSTALL AND TEST - .7 HOUR) CIRCUIT SCHEMATIC REVISION "C" IS CREATED
5408310 C0003	>5408310 FIELD RETROFIT AS REQUIRED	F	JUL 70 - CORRECTS AN ERROR IN ECO 5408310-C0001; CORRECTS THE TAB NUMBER DESIGNATIONS. (*$.00, **NONE, ***NONE INCLUDED IN THE 5408310-C0001 KIT) CIRCUIT SCHEMATIC REVISION "D" IS CREATED
5408310 00004	>5408310	M	JUN 71 - ADDS A COVER FOR THE REAR OF THE SWITCH ASSEMBLY. CIRCUIT SCHEMATIC REVISION "E" IS CREATED

LEGEND

FIELD CODE
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- M = Mechanical ECO

SYMBOL
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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

TU56 CONTROL BOARD **5408500**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MARCH 1972	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5408500 00001	>5408500	D	JAN 70 - MODIFIES THE WRITE ENABLE CIRCUIT TO PROVIDE THE CURRENT REQUIRED (15 MA) FOR 550 AND TC08 CONTROLLERS. PROVIDES FOR AN INCREASE IN THE SIZE OF THE LAMP MOUNTING HOLES. ADDS TURN-ON SURGE PROTECTION FOR THE INDICATOR LAMPS. SPECIFIES THE CORRECT SWITCH MOUNTING LOCATION. REFERENCE ECO TU56-00008. 5408500 CIRCUIT SCHEMATIC REVISION A
5408500 00002	ALL TU56	F	SEP 70 - REPLACES A D664 DIODE WITH A ZENER TO PRODUCE A -.1 VOLT "WRT ENAB" SIGNAL IRRESPECTIVE OF VCE (SAT) AT THE OUTPUT OF THE M040. INSTALLATION ORDERS ARE CODED TU56-8X002. (*$5.00, **$2.64, ***$5.00) 5408500 CIRCUIT SCHEMATIC REVISION C

LEGEND

FIELD CODE
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- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

5408924

TU10 Power Control

PROCESSOR TYPE All

5408924-00001 CODE: M CS: B
DEC-70 - PROBLEM: Four Z holes which are used for mounting modules are not correctly located to the edges of the board, causing assembly difficulty of module into power supply H730.
CORRECTION: Relocate edges of board as defined by this ECO.
In-plant effectivity -01 use up present stock

5408924-00002 CODE: D CS: C
MAY-71 - PROBLEM: 5408924 does not function properly on 230VAC; R9 part number is incorrect.
CORRECTION: R9 should be 330K, 1/4, 5%, part number 13-02091.
In-plant effectivity -03 rework immmediately

5408924-00003 CODE: D CS: D
JUL-71 - PROBLEM: Component tolerances in the SCR phase control circuit vary too much to ensure proper speed of vacuum motor on the 230V versions of the TU-10.
CORRECTION: Add circuit to provide adjustment of vacuum motor speed.

NOTE: This ECO is cancelled by 04.
In-plant effectivity -03 rework immediately

5408924-00004 CODE: D CS: D
JUL-71 - PROBLEM: Excessive commutator wear and some loading failures on 240V machines caused by phase controlling a 115V motor at 240V.
CORRECTION: Add step-down transformer to run vacuum motor.

NOTE: This ECO cancels ECO 5408924-00003.

In-plant effectivity -06 documentation change only

5408924-00005 CODE: D CS: E
OCT-71 - PROBLEM: Board will not run vacuum motor from power supply transformer T9147B auto winding.
CORRECTION: Modify board to run vacuum motor from T9147D auto winding. This applies only to machines with the D version transformer. Do not relayout etch.
In-plant effectivity -03 rework immediately

5408924-D0006 CODE: DF CS: F
MAY-72 - PROBLEM: Failures have been reported where a Triac has shorted to the metal bracket.
CORRECTION: Add thermoplastic washers to underside of Triac's. Use, in addition, two layers of thermoplastic tape and do not trim.
In-plant effectivity -03 rework immediately
Field effectivity -All 5408924 as required
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

5408924-B0007 CODE: F CS: H
JUL-72 - PROBLEM: C4/C2 capacitors are prone to breakdown on high voltage transients on 240V systems.
CORRECTION: Replace with higher voltage capacitors. Use two dual .02 1000V capacitors in full parallel to equal .08 UFD 1000V to replace existing .1 Uf 400V capacitors.

NOTE: See supplement FCO 5408924-07A.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all transports as required
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $ 1.80 , DEC Labor $ 14.00) (Kit Contents -FCO/Prints And Parts) supplement FCO 0007A will also be included in the kit.

5408924-0007A CODE: F
JUL-72 - CORRECTION: Corrects an error on E-IA-5009423-0-0 print submitted with FCO 5408924-B0007.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

5408924-B0008 CODE: F CS: J
JUL-72 - CORRECTION: This FCO corrects an error on the circuit schematic and adds the H730, T-9147B option which was not shown on the prints.
In-plant effectivity -03 rework immediately by August 1.
Field effectivity -Retrofit all TU10's
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

PDP8-E CONSOLE BOARD **5409057**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	DECEMBER 1971	Ø

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5409057 00001	ALL 5409057	D	ECO RELEASE DATE DECEMBER 1970 PROBLEM 1: NO TEAR DROPS FOR IC'S CORRECTION: ADD TEAR DROPS TO PINS 7 & 14 ON IC'S. DRILL HOLES AS REQUIRED. PROBLEM 2: MOUNTING HOLES MISSING FOR ROTARY SWITCH (2) CORRECTION: ADD HOLES ON DRILL TAPE AND PADS ON TAPE PROBLEM 3: BOTH ENDS OF R58 CONNECTED TO +5 V. CORRECTION: DELETE ETCH LINE BETWEEN R58 AND C36 PROBLEM 4: GRD ETCH LINES MISSING CORRECTION: ADD ETCH LINES BETWEEN CLR AND CONT SWITCHES,C19 & BF2. PROBLEM 5: MOUNTING HOLES FOR LIGHT BEZEL INCORRECT CORRECTION: MOVE HOLES TO THE LEFT PROBLEM 6: MOUNTING HOLE FOR SWITCH BRACKET IS INCORRECT CORRECTION: MOVE HOLE TO THE RIGHT - - IN-PLANT EFFECTIVITY - IMPLEMENT IMMEDIATELY CS REVISION "C" AND ETCHED BOARD REVISION "D" ARE CREATED
5409057 00002	ALL 5409057	F	FCO RELEASE DATE JANUARY 1971 - - PROBLEM 1: PRESENT BOARD HAS OBSOLETED ROTARY SWITCH CORRECTION: REPLACE PRESENT ROTARY SWITCH (12-10128) WITH NEW SWITCH (12-10129). REMOVE EXISTING ETCH FROM BOARD FOR OLD ROTARY SWITCH. REMOVE EXISTING HOLES FROM BOARD FOR OLD ROTARY SWITCH. PROBLEM 2: TRANSISTOR Q15 SHOULD BE A DEC 6534 (15-0349) INSTEAD OF A DEC3009. (THIS IS CALLED OUT WRONG ON SCHEMATIC, NOT PHYSICAL) CORRECTION: TRANSISTOR Q15 SHOULD BE CHANGED TO A 15-03409 ON EXISTING SCHEMATIC. ALSO SHOULD BE CORRECTED ON PARTS LIST. PROBLEM 3: EXISTING BOARDS REQUIRE CHANGE OF ROTARY SWITCH. CORRECTION: RETROFIT ALL BOARDS IN FIELD WITH NEW ROTARY SWITCH (12-10129) PROBLEM 4: UPDATE BOARD TO PRODUCTION STANDARDS CORRECTION: RECHECK LAYOUT WITH REGARD TO PRODUCTION STANDARDS - - IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY CS REVISION "D" AND ETCHED BOARD REVISION "E" ARE CREATED TIME TO INSTALL AND TEST - 1.0 HOUR THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO'S AND PARTS
5409057 00003	ALL 5409057 "D" ETCH AND EARLIER	F	FCO RELEASE DATE MARCH 1971 - - PROBLEM 1: MODULE WILL NOT OPERATE PROPERLY WHEN INSTALLED IN A SYSTEM USING EAE. CORRECTION: CUT EXISTING ETCH ON IC PIN 4 AND INSERT JUMPER WIRE FROM PIN 4 OF IC E2 TO PIN DJ2 (SIGNAL PETCH) PROBLEM 2: IF CONTINUE SWITCH IS HELD DOWN FOR A GIVE PERIOD OF TIME, IT WILL RETRIGGER THE TIMING CHAIN. (CONTINUED - OVER)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5409057 00003 (CONT)			CORRECTION: CHANGE CIRCUITRY AS DEFINED IN THE FCO. THIS ALSO REQUIRES A PULL UP RESISTOR, 470 OHMS 1/4 WATT PROBLEM 3: THE +8 VOLT AND -15 V POWER TABS NEED TO HAVE AN EXTENSION OF ETCH AND ADDITION OF TWO PLATED THROUGH HOLES. CORRECTION: CORRECT AS DEFINED BY THE ECO. NOTE: RETROFIT CORRECTIONS 1 AND 2 ONLY. - - IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - REWORK ALL ETCH REV "D" AND EARLIER CS REVISION "E" AND ETCHED BOARD REVISION "F" ARE CREATED TIME TO INSTALL AND TEST - 0.8 HOUR THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO'S ONLY
5409057 00004	ALL 5409057 AS REQUIRED	F	FCO RELEASE DATE OCTOBER 1971 - - PROBLEM 1: WHEN PANEL LOCK IS ON WITH MACHINE RUNNING, HALT SWITCH HALTS THE MACHINE. CORRECTION: ADD 3K OHM RESISTOR FROM PANEL LOCK LINE TO +5V. PROBLEM 2: THE DECODING FOR "OSR" IS TOO SLOW CORRECTION: CHANGE IR BITS Ø, 1, AND 2 TO MD BITS Ø, 1, AND 2. - - IN-PLANT EFFECTIVITY - N.A. FIELD EFFECTIVITY - REWORK CS REV "E" AND EARLIER AS REQUIRED NO CS OR ETCHED BOARD REVISIONS ARE CREATED TIME TO INSTALL AND TEST - 0.6 HOUR THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO'S AND PARTS
5409057 00005	N.A.	P	FCO RELEASE DATE DECEMBER 1971 - - PROBLEM: CIRCUIT SCHEMATIC DRAWING IS INCORRECT. THE DECODING OF FOR OSR IS TOO SLOW. CORRECTION: ADD 3K RESISTOR TO CIRCUIT SCHEMATIC AND PARTS LIST. CHANGE IR BITS Ø, 1, AND 2 TO MD BITS Ø, 1, AND 2. - - IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES
- Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

Engineering Change Order Log
ECO DEC-O-LOG

5409057

PDP-8/E Console Board

PROCESSOR TYPE PDP-8/E

5409057-00006 CODE: M CS: J
FEB-72 - PROBLEM: Field Service Problem Report #272 states that the nylon screws holding the glass support bracket shear off in shipment.
CORRECTION: Replace with metal screws.
In-plant effectivity -02 phase-in

5409057-D0007 CODE: F CS: K
MAR-72 - PROBLEM: The +3 volt run of etch is incorrect on board.
CORRECTION: Add one jumper wire and make one etch cut.
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all etch revision "F " 5409057's in KC8/E's.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

5409057-00008 CODE: M CS: L
JUL-72 - PROBLEM 1: Two "V " holes for mounting switch S1 are incorrect size.
CORRECTION 1: Change the two "V " holes to "x " holes (. 128 .
PROBLEM 2: Two "A " holes on drawing E-IA-54009056-0-0 labeled incorrectly.
CORRECTION 2: Relabel the two "A " holes to "y " holes.
In-plant effectivity -02 phase-in

5409057-00006 CODE: M CS: J
FEB-72 - PROBLEM: Field Service Problem Report #272 states that the nylon screws holding the glass support bracket shear off in shipment.
CORRECTION: Replace with metal screws.
In-plant effectivity -02 phase-in

5409057-D0007 CODE: F CS: K
MAR-72 - PROBLEM: The +3 volt run of etch is incorrect on board.
CORRECTION: Add one jumper wire and make one etch cut.
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all etch revision "F " 5409057's in KC8/E's.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

5409057-00008 CODE: M CS: L
JUL-72 - PROBLEM 1: Two "V " holes for mounting switch S1 are incorrect size.
CORRECTION 1: Change the two "V " holes to "X " holes, 0.128.
PROBLEM 2: Two "A " holes on drawing E-IA-54009056-0-0 labeled incorrectly.
CORRECTION 2: Relabel the two "A " holes to "Y " holes.
In-plant effectivity -02 phase-in

5409057-C0009 CODE: F CS: M
DEC-72 - PROBLEM: Decoding for OSR is too slow. Documentation is correct but does not reflect board.
CORRECTION: Change IR bits 0, 1, and 2 to MD bits 0, 1 and 2.
In-plant effectivity -03 rework beginning 1/1/73.
Field effectivity -Rework all 5409057's in PDP-8/E with EAE, TA8 or a long bus.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

ECO DEC-O-LOG

Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of **ENGINEERING CHANGE ORDERS** for all DEC products and are available upon subscription from:

DIGITAL EQUIPMENT CORPORATION
FIELD SERVICE INFORMATION CENTER
MAYNARD, MASSACHUSETTS 01754

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

H724 CONTROL BOARD A2 **5409262**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	FEBRUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
			5409262 IDENTIFIES CONTROL BOARD A2, A SUB-ASSEMBLY OF AN H724 (-A) POWER SUPPLY. IT IS ASSEMBLED ON AN ETCHED CIRCUIT BOARD, PART #50-09261 AND THE PART NUMBER IS ETCHED ON THE BOARD. DOCUMENTATION ON THE 5409262, REQUIRED IN THE FIELD, IS PROVIDED PRIMARILY BY TWO DRAWINGS: 1) THE IA (INSEPERABLE ASSEMBLY) DRAWING PROVIDES A LISTING OF ALL PARTS USED IN ASSEMBLY OF THE MODULE AND A COMPONENT LOCATION DIAGRAM. THIS DRAWING IS IDENTIFIED AS E-IA-5409262-0-0. 2) THE CIRCUIT SCHEMATICS FOR THE 5409262 AND THE H724 (-A) ARE COMBINED INTO ONE DRAWING, D-CS-H724-0-1 (120V, 60 HZ) OR D-CS-H724-A-1 (240V, 50 HZ). THERE IS NO SEPARATE CIRCUIT SCHEMATIC FOR THE 5409262. THE ETCHED BOARD (50-09261) REVISION LEVEL IS ETCHED ONTO THE BOARD AND IS THEREFORE EASILY DETERMINED. THE IDENTIFICATION OF THE CIRCUIT REVISION LEVEL IS NOT AS EASILY DETERMINED OR EXPRESSED. IT MAY BE IDENTIFIED IN EITHER OR BOTH OF TWO WAYS: A) THE CS REVISION LEVEL OF THE H724 (-A) MAY BE ACCEPTED AS THE CS REVISION LEVEL OF THE 5409262. B) THE REVISION LEVEL OF DRAWING E-IA-5409262 MAY DEFINE THE CS LEVEL OF THE BOARD
5409262 00001	>5409262	D	ECO RELEASE DATE - FEBRUARY 1971 PROBLEM 1: BOARD PHYSICAL DOES NOT SHOW CORRECT NOTCHING. BOARD HEIGHT DOES NOT MEET SPECIFICATIONS. CORRECTION 1: LAYOUT BOARD TO SHOW CORRECT NOTCHING AND PULL IN ETCH SO OVERALL HEIGH IS 4.2 INCHES. PROBLEM 2: NOISE GETTING THROUGH THE VOLTAGE REGULATORS. CORRECTION 2: ADD DAMPING CIRCUIT TO INPUT OF VOLTAGE REGULATOR. PROBLEM 3: MAKE "DC VOLT OK" MORE STABLE. CORRECTION 3: CHANGE THE BIAS OF THE LOW VOLTAGE CIRCUIT TO MAKE IT MORE STABLE. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED H724 CIRCUIT SCHEMATIC REVISION "B" IS CREATED 5409262 ETCHED BOARD REVISION "C" IS CREATED
5409262 00002	>5409262	D	ECO RELEASE DATE - MARCH 1971 THIS ECO IS A SUPPLEMENT TO ECO 5409262-00001 AND PROVIDES FURTHER COMPONENT ADDITIONS AND DELETIONS. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5409262 00003	>5409262	D	ECO RELEASE DATE - APRIL 1971 PROBLEM 1: THE D44C3 TRANSISTORS ARE TOO FAST FOR THE APPLICATION IN THE H724 POWER SUPPLIES. CORRECTION 1: CHANGE TRANSISTORS TO A SLOWER (CHEAPER) TYPE, 2N5294. PROBLEM 2: TO ENSURE THAT THE NEW TRANSISTOR WILL NOT OSCILLATE IF ITS FT SHOULD BE INCREASED IN THE FUTURE, A BASE RESISTOR IS REQUIRED TO DETUNE THE CIRCUIT. CORRECTION 2: ADD A BASE RESISTOR TO Q10 SO THE CIRCUIT WON'T OSCILLATE. IN-PLANT EFFECTIVITY - PROBLEM 1 - REWORK IMMEDIATELY PROBLEM 2 - 01 PHASE-IN "D" CODED H724(A) ML REVISION "B" AND CS REVISION "D" ARE CREATED 5409262 ETCHED BOARD REVISION "D" IS CREATED
5409262 00004	DIST FOR FIELD SERVICE INFO ONLY	F	ECO RELEASE DATE - JUNE 1971 PROBLEM: ECO 5409262-00003 HAS LED TO SOME CONFUSION IN MANUFACTURING AND IN THE FIELD CONCERNING THE CIRCUIT SCHEMATIC LEVEL OF THE H724 POWER SUPPLY AND REQUIRES CLARIFICATION. CORRECTION: CIRCUIT SCHEMATIC REVISION "D", OUTLINED ON ECO 5409262-00003, CONSISTS OF PERFORMING THE RETROFIT PORTION (SOLVING PROBLEM #1, REPLACING TRANSISTOR 44C3 WITH A DEC 2N5294). THE PHASE-IN PORTION (ADDING 220 OHM RESISTOR) IS OPTIONAL AND WILL BE INCORPORATED ONLY ON ETCHED BOARD REVISION "D", NOT ETCHED BOARD REVISION "B". BOTH ETCHED BOARD REVISION "B", WITH TRANSISTOR CHANGE , AND ETCHED BOARD REVISION "D", WITH TRANSISTOR AND RESISTOR CHANGE, WILL BE IDENTIFIED AS CIRCUIT SCHEMATIC REVISION "D". IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY FIELD EFFECTIVITY - DISTRIBUTED FOR FIELD SERVICE INFORMATION ONLY "F" CODED
5409262 E0005	ALL 5409262 CS REV "E" & EARLIER	F	FCO RELEASE DATE - SEPTEMBER 1971 THIS FCO RESOLVES TRANSIENT NOISE PROBLEMS IN THE POWER SUPPLY WHICH CAN CAUSE A COMPUTER TO RUN IMPROPERLY UNDER SEVERE CONDITIONS. IT ALSO CORRECTS ERRORS ON THE PARTS LIST. NOTE 1: THIS FCO MUST BE INSTALLED IN CONJUNCTION WITH FCO'S 5409262-E0005 AND H724-E0014. NOTE 2: DEC FIELD SERVICE MAY ELECT TO IMPLEMENT THIS FCO BY BOARD EXCHANGE AT THE SAME TOTAL CHARGE LISTED BELOW, $44.05. IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITY - CS REV "E" AND EARLIER, FIELD RETROFIT AS REQUIRED "F" CODED H724(A) CIRCUIT SCHEMATIC REVISION "F" IS CREATED 5409262 ETCHED BOARD REVISION "E" IS CREATED TIME TO INSTALL AND TEST - 1.5 HOURS DOCUMENTATION $5.00 PARTS $1.05 DEC LABOR $38.00 ORDERED KITS WILL INCLUDE FCO AND PARTS.
5409262 C0006	ALL 5409262 IN H724 (-A) WITH BA8-EA	F	FCO RELEASE DATE - JANUARY 1972 PROBLEM: "POWER OK" DOES NOT WORK PROPERLY UPON POWER DOWN WHEN A BA8-BA IS USED. CORRECTION: ADD ONE DIODE, ONE TRANSISTOR AND ONE RESISTOR TO THE "POWER OK" CIRCUIT ON THE A2 CONTROL BOARD. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - ALL 5409262 IN H724 (-A) USED WITH BA8-EA "F" CODED H724 CIRCUIT SCHEMATIC REVISION "H" IS CREATED 5409262 ETCHED BOARD REVISION "F" IS CREATED TIME TO INSTALL AND TEST - 1.0 HOUR THIS FCO IS NO CHARGE TO CUSTOMER. ORDERED KITS WILL INCLUDE FCO, PRINTS, AND PARTS.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

EC DEC-O-LOG Engineering Change Order Log

5409262

Control Board A2 for H724

PROCESSOR TYPE PDP-8/E

5409262-00007 CODE: D
FEB-72 - PROBLEM: POWER OK is too low for specifications.
CORRECTION: Change values of resistor R32 and diode VR7 to bring POWER OK up to specifications.
In-plant effectivity -03 retrofit all boards which have FCO 5409262-C0006 installed as of 2/7/72.

5409262-00008 CODE: D
MAR-72 - PROBLEM: Etch revision "B " of #50-09261, the 5409262 etched board, was over produced and it is impractical to continue using it as we now have etch revision "F ".
CORRECTION: Scrap all etch revision "B " raw boards effective 2/29/72. Do not build any more etch revision "B " boards.
In-plant effectivity -09 scrap immediately.

5409262-D0009 CODE: F
NOV-72 - PROBLEM: +5 volts on the H724 Power Supply cannot be adjusted high enough to compensate for cable loss at maximum rated load.
CORRECTION: Change resistor R20 from 1.21K ohms to 825 ohms and potentiometer R21 to 1K ohms.

NOTE: This FCO creates H724 and H724-A CS revisions "J ".
In-plant effectivity -03 rework immediately
Field effectivity -Rework all 5409262's if unable to adjust H724 up to +5V.
(Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

New Board installed 4/08/74

ECO DEC-O-LOG

Engineering Change Order Log

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DIGITAL EQUIPMENT CORPORATION
FIELD SERVICE INFORMATION CENTER
MAYNARD, MASSACHUSETTS 01754

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

H724 CONTROL BOARD A1 **5409264**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	APRIL 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
			5409264 IDENTIFIES CONTROL BOARD A1, A SUB-ASSEMBLY OF AN H724 (-A) POWER SUPPLY. IT IS ASSEMBLED ON AN ETCHED CIRCUIT BOARD, PART #50-09263 AND THE PART NUMBER IS ETCHED ON THE BOARD. DOCUMENTATION ON THE 5409264, REQUIRED IN THE FIELD, IS PROVIDED PRIMARILY BY TWO DRAWINGS: 1) THE IA (INSEPARABLE ASSEMBLY) DRAWING PROVIDES A LISTING OF ALL PARTS USED IN ASSEMBLY OF THE MODULE AND A COMPONENT LOCATION DIAGRAM. THIS DRAWING IS IDENTIFIED AS E-IA-5409264-0-0. 2) THE CIRCUIT SCHEMATICS FOR THE 5409264 AND THE H724 (-A) ARE COMBINED INTO ONE DRAWING, D-CS-H724-0-1 (120V, 60 HZ) OR D-CS-H724-A-1 (240V, 50 HZ). THERE IS NO SEPARATE CIRCUIT SCHEMATIC FOR THE 5409264. THE ETCHED BOARD (50-09263) REVISION LEVEL IS ETCHED ONTO THE BOARD AND IS THEREFORE EASILY DETERMINED. THE IDENTIFICATION OF THE CIRCUIT REVISION LEVEL IS NOT AS EASILY DETERMINED OR EXPRESSED. IT MAY BE IDENTIFIED IN EITHER OR BOTH OF TWO WAYS: A) THE CS REVISION LEVEL OF THE H724 (-A) MAY BE ACCEPTED AS THE CS REVISION LEVEL OF THE 5409264. B) THE REVISION LEVEL OF DRAWING E-IA-5409264-0-0 MAY DEFINE THE CS LEVEL OF THE BOARD.
5409264 00001	>5409264	D	ECO RELEASE DATE - FEBRUARY 1971 PROBLEM 1: BOARD HEIGHT DOES NOT MEET SPECIFICATIONS. CORRECTION 1: PULL IN ETCH SO OVERALL HEIGHT IS NO GREATER THAN 4.2". PROBLEM 2: NOISE GETTING THROUGH THE VOLTAGE REGULATORS. CORRECTION 2: ADD CLAMPING CIRCUIT TO INPUT OF VOLTAGE REGULATOR. PROBLEM 3: MAKE "DC VOLT OK" MORE STABLE. CORRECTION 3: CHANGE THE BIAS OF THE LOW VOLTAGE CIRCUIT. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED ETCHED BOARD REVISION "C" IS CREATED
5409264 00002	>5409264	D	ECO RELEASE DATE - MARCH 1971 THIS ECO IS A SUPPLEMENT TO ECO 5409262-00001 AND PROVIDES FURTHER COMPONENT ADDITIONS AND DELETIONS. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED

LEGEND

FIELD CODE
- F = Field action may be required
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SYMBOL
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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5409264 00003	>5409264	D	ECO RELEASE DATE - APRIL 1971 PROBLEM 1: THE D44C3 TRANSISTORS ARE TOO FAST FOR THE APPLICATION IN THE H724 POWER SUPPLIES. CORRECTION 1: CHANGE TRANSISTORS TO A SLOWER (CHEAPER) TYPE, 2N5294. PROBLEM 2: TO ENSURE THAT THE NEW TRANSISTOR WILL NOT OSCILLATE IF ITS FT SHOULD BE INCREASED IN THE FUTURE, A BASE RESISTOR IS REQUIRED TO DETUNE THE CIRCUIT. CORRECTION 2: ADD A BASE RESISTOR TO Q10. IN-PLANT EFFECITIVTY - PROBLEM 1 - REWORK IMMEDIATELY PROBLEM 2 - 01 PHASE-IN "D" CODED ETCHED BOARD REVISION "D" IS CREATED
5409264 00004	DISTRIBUTED FOR FIELD SERVICE INFO ONLY	F	FCO RELEASE DATE - JUNE 1971 PROBLEM: ECO 5409264-00003 HAS LED TO SOME CONFUSION IN MANUFACTURING AND IN THE FIELD CONCERNING THE CIRCUIT SCHEMATIC LEVEL OF THE H724 POWER SUPPLY AND REQUIRES CLARIFICATION. CORRECTION: CIRCUIT SCHEMATIC REVISION "D" OUTLINED ON ECO 5409264-00003, CONSISTS OF PERFORMING THE RETROFIT PORTION (SOLVING PROBLEM #1, REPLACING TRANSISTOR 44C3 WITH A DEC 2N5294). THE PHASE-IN PORTION (ADDING 220 OHM RESISTOR) IS OPTIONAL AND WILL BE INCORPORATED ONLY ON ETCHED BOARD REVISION "D", NOT ETCHED BOARD REVISION "B". BOTH ETCHED BOARD REVISION "B", WITH TRANSISTOR AND RESISTOR CHANGE, WILL BE IDENTIFIED AS CIRCUIT SCHEMATIC REVISION "D". IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY FIELD EFFECITIVITY - DISTRIBUTED FOR FIELD SERVICE INFORMATION ONLY "F" CODED
5409264 E0005	5409264 CS REV E & EARLIER	F	FCO RELEASE DATE - SEPTEMBER 1971 THIS FCO RESOLVES TRANSIENT NOISE PROBLEMS IN THE POWER SUPPLY WHICH CAN CAUSE A COMPUTER TO RUN IMPROPERLY UNDER SEVERE CONDITIONS. IT ALSO CORRECTS ERRORS ON THE PARTS LIST. NOTE 1: THIS FCO MUST BE INSTALLED IN CONJUNCTION WITH FCO'S 5409262-E0003 AND H724-E0014. NOTE 2: DEC FIELD SERVICE MAY ELECT TO IMPLEMENT THIS FCO BY BOARD EXCHANGE AT THE SAME TOTAL CHARGE LISTED BELOW, $43.75. IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITY - CS REV "E" AND EARLIER, FIELD RETROFIT AS REQUIRED "F" CODED ETCHED BOARD REVISION "E" IS CREATED TIME TO INSTALL AND TEST - 1.5 HOURS DOCUMENTATION $5.00 PARTS $.75 DEC LABOR $38.00 ORDERED KITS WILL INCLUDE FCO AND PARTS.

LEGEND

FIELD CODE
- F = Field action may be required
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SYMBOL
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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

E C DEC-O-LOG Engineering Change Order Log

5409457

Nixie Display Board

PROCESSOR TYPE All

5409457-E0001 CODE: F CS: D

DEC-71 - PROBLEM: The diode clamp voltage across diodes D5, D6, D21, and D19, D20, D22, must be 148 VDC minimum to ensure ionization of the Nixie tubes. The diode tolerance, plus or minus 10%, could provide a minimum of 138 VDC.

CORRECTION: Replace diodes D21 and D22 with 62V zener's, 1N3039B, to provide the required 148 VDC minimum clamping voltage.

NOTE: This FCO will not be field implemented except by exchange of 5409475 boards as required; reworking will be done only at the depot level in Maynard.

In-plant effectivity -03 rework immediately

Field effectivity -Exchange 5409457's as required

(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

Engineering Change Order Log — DEC-O-LOG

5409503

+5 Volt Regulator (H734 and H743), (RK05 and RS64)

PROCESSOR TYPE PDP-8 Family and PDP-11 Family

5409503-00001 CODE: D CS: D ETCH: D
JUL-71 - PROBLEM 1: Schematic does not include heat sink circuitry.
CORRECTION 1: Add heat sink circuitry.
PROBLEM 2: Voltage regulation portion re-evaluated for worst-case conditions, found to be operating too close to tolerances.
CORRECTION 2: Change components for optimum operation.

NOTE: See correction supplement ECO 5409503-00002.
In-plant effectivity -03 rework immediately

5409503-00002 CODE: D
SEP-71 - PROBLEM: Inconsistency between resistor R5 and R10 on all revision "D " prints of 5409503.
CORRECTION: Resistor R5 should be 270 ohms, 1/4 watt, 5%, part number 13-01972; R10 should be 4.7 ohms, 1/2 watt, 5%, part number 13-00445.

NOTE: This is a supplement to ECO 5409503-00001.
In-plant effectivity -03 rework immediately

5409503-00003 CODE: D CS: E
OCT-71 - PROBLEM: Components' tolerances allow faulty circuit operation.
CORRECTION: Change values of capacitor C4, diode D1, and resistor R17.
In-plant effectivity -03 rework immediately

5409503-B0004 CODE: F CS: F
FEB-72 - PROBLEM 1: Crowbar trigger problem causes loss of +5 volts.
CORRECTION 1: Cut one etch, add one wire, change capacitor C9 .
PROBLEM 2: SCR power dissipation problem caused burned printed circuit boards.
CORRECTION 2: Use stud mount SCR (Q4) on new or reworked heat sinks, #53-09543.

NOTE 1: If problem 2 occurs in the field, replace the board with an in-plant reworked board.

NOTE 2: See correction supplement FCO 5409503-A0005.
In-plant effectivity -Rework immediately
Field effectivity -Rework all 5409503's on RS64's with H737 Power Supplies.
(Time To Install And Test .6 Hour.)
(Kit Contents -FCO/Prints And Parts)

5409503-A0005 CODE: F CS: H
AUG-72 - PROBLEM: Break-in effectivity on FCO 5409503-B0004 must take place immediately.
CORRECTION: Retrofit all boards up to and including etch revision "D ". Advance the revision level of all prints in order to identify those boards that were reworked and those that were not.

NOTE: In an emergency situation, a board can be reworked in the field using one 15-05867 SCR 2N4441 and one #90-08081 screw. All spare inventory boards should be returned to Field Service Logistics Maynard for reworking. Use RA #H2036.
In-plant effectivity -03 rework immediately
Field effectivity -Exchange all 5409503's, etch revision "D " and earlier.
(Time To Install And Test 1.0 Hour.)
(Kit Contents -FCO/Prints And Parts)

5409503-B0006 CODE: F CS: J
OCT-72 - PROBLEM: The +5 volt overvoltage protector (SCR) triggers on noise which reduces the +5 volt output to +1 volt. This disables the disk drive. The protector can only be reset by turning off disk drive and system power.
CORRECTION: Replace SCR circuit with a power Zener diode and remove SCR gate firing circuit.

NOTE: See correction supplement FCO 5409503-B006A.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all 5409503's in RK05 and RS64 as required.
(Time To Install And Test 1.0 Hour.)
(Kit Contents -FCO/Prints And Parts) Correction supplement FCO 5409503-B006A will also be included in the kit.

5409503-B006A CODE: F
OCT-72 - PROBLEM: The wording of the rework instructions in steps 4 and 5 for the revision "E " etch board is causing some confusion.
CORRECTION: Clarify the wording and replace those instructions with the ones given in this supplement.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

5409503-C0007 CODE: F CS: K ETCH: F
JAN-73 - PROBLEM: Occasionally the fuse, F1, blows without an apparent cause. This is the result of poor transient response to VCC changes on some 723 regulator chips. Thus, control and stability of the output is lost momentarily, allowing excessive current to pass through the fuse.
CORRECTION: Add VCC bypass filtering to the 733 chip's power inputs to prevent any possible oscillations and add some hysterisis to the current limiter chip, E1, to stabilize its operation.
In-plant effectivity -03 retrofit only 5409503's showing the problem until April 2, 1973. All modules made after that date must have this FCO.
Field effectivity -Rework all 5409503's as required.
(Time To Install And Test .5 Hour.)
(Kit Contents -FCO/Prints And Parts)

5409503-00008 CODE: D CS: L
APR-73 - PROBLEM: Thickness of fiber washer is such that excessive strain is being placed on etch at point where MATE-N-LOCK pins are soldered to printed circuit board.
CORRECTION: Replace fiber washer #90-06693 with thinner nylon, #90-06707.
In-plant effectivity -03 all new units in build, effective 4/27/73. Retrofit units displaying symptoms.

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EC DEC-O-LOG Engineering Change Order Log

5409503

+5 Volt Regulator

PROCESSOR TYPE ALL

5409503-00001 CODE: D CS: D
JUL-71 - PROBLEM 1: Schematic does not include heat sink circuitry.
CORRECTION 1: Add heat sink circuitry.
PROBLEM 2: Voltage regulation portion re-evaluated for worst-case conditions, found to be operating too close to tolerances.
CORRECTION 2: Change components for optimum operation.

NOTE: See correction ECO 5409503-00002.
In-plant effectivity -03 phase-in

5409503-00002 CODE: D
SEP-71 - PROBLEM: Inconsistency between resistor R5 and R10 on all revision "D " prints of 5409503.
CORRECTION: Resistor R5 should be 270 ohms, 1/4 watt, 5%, part number 13-01972; R10 should be 4.7 ohms, 1/2 watt, 5%, part number 13-00445.

NOTE: This is a supplement to ECO 5409503-00001.
In-plant effectivity -03 phase-in

5409503-00003 CODE: D CS: E
OCT-71 - PROBLEM: Component's tolerances allow faulty circuit operation.
CORRECTION: Change values of capacitor C4, diode D1, and resistor R17.
In-plant effectivity -03 phase-in

5409503-B0004 CODE: F CS: F
FEB-72 - PROBLEM 1: Crowbar trigger problem causes loss of +5 volts.
CORRECTION 1: Cut one etch, add one wire, change one capacitor (C9 .
PROBLEM 2: SCR power dissipation problem caused burned printed circuit boards.
CORRECTION 2: Use stud mount SCR (Q4) on new or reworked heatsinks, number 5309543.

NOTE: If problem 2 occurs in the field, replace the board with an in-plant reworked board. See correction FCO 5409503-A0005.
In-plant effectivity -Rework immediately
Field effectivity -All RS64's with H737 power supplies
(Time To Install And Test .6 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

5409503-A0005 CODE: F CS: H
AUG-72 - PROBLEM: Break-in effectivity on ECO 5409503-B0004 must take place immediately.
CORRECTION: Retrofit all boards up to and including revision "D " etch. Advance the revision level of all prints in order to identify those boards that were reworked and those that were not.

NOTE: In an emergency situation, a board can be reworked in the field using one 15-05867 "scr " 2N4441 and one 90-08081 screw. All spare inventory boards should be returned to field service logistics maynard for reworking. Use ra #H2036.
In-plant effectivity -03 phase-in
Field effectivity -Exchange all 5409503 etch revision "D " and earlier.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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MAYNARD MASSACHUSETTS

Engineering Change Order Log
DEC-O-LOG

5409668

PDP-8/F and PDP-8/M
Front Panel

PROCESSOR TYPE PDP-8/F and PDP-8/M

5409668-00001 CODE: D CS: D
NOV-71 - PROBLEM: There are no means of securing light emitting diodes to the board.
CORRECTION: Relayout the board to accept LED holders, DEC #12-10796.
In-plant effectivity -02 phase-in

5409668-00002 CODE: D CS: E
JAN-72 - CORRECTION 1: Updates the Circuit Schematic to agree with present board design
PROBLEM 2: Signal **LDD ADD ENABLE** does not enable the data path properly.
CORRECTION 2: Change the function of the **LDD ADD ENABLE** line on the board.

NOTE: See continuation supplement ECO 5409668-0002A.
In-plant effectivity -03 rework immediately

5409668-0002A CODE: D
JAN-72 - PROBLEM: Switch bounce from **LOAD ADDRESS** switch may cause an incorrect address to be loaded.
CORRECTION: Add a 1K resistor and a 1 ufd capacitor as an integrator to E5 pin 7. Change the value of C17 to 68 ufd and R57 to 7.5K. Jumper E8 pin 11 to E8 pin 9 and not to E9 pin 8.
In-plant effectivity -Unchanged

5409668-00003 CODE: P CS: F
MAR-72 - CORRECTION: Corrects errors in documentation of the front panel control board.
In-plant effectivity -Documentation change only

5409668-B0004 CODE: F CS: H
APR-72 - PROBLEM: DEPOSIT and EXAMINE keys with high switch bounce cause the computer to go into the RUN state.
CORRECTION: Add one-shots to EXAMINE and DEPOSIT circuits.

NOTE: See correction supplement FCO 5409668-B004A and FCO 5409668-D0005
In-plant effectivity -03 rework immediately
Field effectivity -Replace all 5409668 boards in the field with updated boards.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

5409668-B004A CODE: F CS: H1 Etch: H1
SEP-72 - PROBLEM: ECO 5409668-B0004 calls-out the addition of two capacitors, two resistors and one IC. The caps are physically located in the wrong area on the board, causing intermittent problems.
CORRECTION: Replace and relocate the capacitors.
In-plant effectivity -03 rework as of 9/29/72
Field effectivity -Retrofit all 5409668's which exhibit intermittent switch operation.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

5409668-D0005 CODE: F CS: J
APR-72 - PROBLEM 1: Pins on the #7440 are incorrect in FCO 5409668-B0004.
CORRECTION 1: Correct prints and model to reflect the proper pin numbers.
PROBLEM 2: FCO 5409668-B0004 does not completely fix the problem. DEPOSIT and EXAMINE sometimes cause the computer to go into the RUN state.
CORRECTION 2: Change capacitor C17 from 68 ufd to 47 ufd.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all front panels that have FCO 5409668-B0004.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

5409668-00006 CODE: D CS: K
MAY-72 - PROBLEM 1: DEPOSIT and EXAMINE keys with high switch bounce sometimes cause computer to enter the RUN state.
CORRECTION 1: Re-design the key logic to latch state of switches.
PROBLEM 2: Some users desire switch on -15 and not panel locked; others want the switch panel locked.
CORRECTION 2: Add split lugs to allow user a choice.

NOTE: See continuation supplement ECO 5409668-0006A.
In-plant effectivity -02 phase-in

5409668-0006A CODE: D
AUG-72 - PROBLEM 1: Nuts on light emitting diode (**LED**) holders show through the plexiglas panels.
CORRECTION 1: Replace with self-tapping screws.
PROBLEM 2: Only one type of LED, #11-10825, is called-out on the prints.
CORRECTION 2: Add second LED, #11-10864, to the print set.
In-plant effectivity -02 phase-in

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DEC-O-LOG Engineering Change Order Log

5409698

Indicator Control Panel

PROCESSOR TYPE ALL

5409698-00001 CODE: D CS: B
DEC-71 - PROBLEM: Layout of etch hinders production of module.
CORRECTION: Reduce size of pads on #2 side for "Y " and "W " holes so that drill bit completely drills out the pads.
In-plant effectivity -02 phase-in

5409698-D0002 CODE: F CS: C
AUG-72 - PROBLEM: Accidental actuation of the front panel on-off switch to "off ", while in system operation, causes power to be removed from the transmitter/receiver bus terminators if the drive is the last unit on a multi-drive system.
CORRECTION: Remove the power on-off switch.

In-plant effectivity -Break-in when front panel without switch hole is available. If retrofit, delete the switch button, bend back switch button tabs, and set S1 to "on " position.
Field effectivity -RK05's with FCO RK05-C0019 installed.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 6.00 , DEC Labor $ 14.00) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

5409728

H740 Regulator Board

PROCESSOR TYPE PDP-8 Family, PDP-11 Family

5409728-00001 CODE: D CS: B
DEC-71 - PROBLEM 1: POWER OK bad in heat.
CORRECTION 1: Resistors R9 and R13 changed from 10K, 1/4 watt, 5% to 470 ohms, 1/4 watt, 5%. Add 1,5K 1/4 watt, 5% resistor, R58.
PROBLEM 2: To improve cooling and reduce production cost.
CORRECTION 2: Use #12-10596-0-0 P05 until stock depleted, then use #12-10596-0-0 P06. Do not use mica washers with new heat sink.
PROBLEM 3: Excessive surge voltage during crowbar.
CORRECTION 3: Replace transistor Q11.
PROBLEM 4: Duplicated part already available in-plant.
CORRECTION 4: Use choke #16-10718 until stock depleted, then use #16-10849.

NOTE: See continuation supplement ECO's 5409728-0001A and 5409728-0001B
In-plant effectivity -03 rework immediately

5409728-0001A CODE: D
JAN-72 - PROBLEM: To lower +5 volt switching frequency.
CORRECTION: Change resistor R47 from 68 ohms, 1/4 watt 5% to 47 0HMS, 1/4 watt, 5%
In-plant effectivity -03 rework immediately

5409728-0001B CODE: P
JAN-72 - PROBLEM: Documentation error.
CORRECTION: Change connector J1 part number from 12-10822-03 to 12-09351-03.
In-plant effectivity -06 documentation change only

5409728-00002 CODE: D CS: C
JAN-72 - PROBLEM: To make unit compatible with PDP-11 UNIBUS and improve short circuit and crowbar characteristics.
CORRECTION: Relayout etch and correct documentation.

NOTE: See correction supplement ECO's 5409728-0002A and 5409728-0002B
In-plant effectivity -02 phase-in

5409728-0002A CODE: P
JAN-72 - PROBLEM: Documentation error.
CORRECTION: Change resistor R41 part number from 12-10709-1 to 13-10709-1. Change resistor R51 part number from 12-10927 to 13-10927. Delete fuse clips and wire. Change fuse F2 part number from 12-09070 to 12-05747. Change capacitor C17 and C18 part number from 10-00016 to 10-00042.
In-plant effectivity -06 documentation change only

5409728-0002B CODE: D
JAN-72 - PROBLEM: Excessive noise on +15 volt regulator and excessive ripple on +5 volt regulator.
CORRECTION: Change capacitors C17 and C18 from #10-00042, 1000 pfd, 100 volt, DM to #10-00026, 680 pfd, 100 volt DM .
In-plant effectivity -02 phase-in

5409728-A0003 CODE: F CS: B1
MAR-72 - PROBLEM: +5 volt crowbar on CS revision "B " boards was never updated resulting in component damage, Q5, R52 and D9, when the fuse, F1, blows.
CORRECTION: Retrofit CS revision "B " boards to update the +5V crowbar circuit.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all CS revision "B " 5409728's
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

5409728-00004 CODE: D CS: D ETCH: D
APR-72 - PROBLEM: Increased output current required by ME11, PDP-11/25, and H740-D. Improve producability. Add manufacturing procedures and production release.
CORRECTION: Modify etch and correct documentation

NOTE: See correction supplement ECO's 5409728-0004A, 04B, 04C, and 04D.
In-plant effectivity -02 phase-in

5409728-0004A CODE: D
APR-72 - PROBLEM: 24,000 pfd capacitors have moved out of position.
CORRECTION: Change capacitor holder.
In-plant effectivity -02 phase-in; use new capacitor holders on revision "D " 5409728's.

5409728-0004B CODE: P
MAY-72 - CORRECTION: Corrects mistakes on Parts List, items #11, #24, and #77.
In-plant effectivity -06 documentation change only

5409728-0004C
MAY-72 - SUPPLEMENT ECO 5409728-0004C was never released and was cancelled by supplement ECO 5409728-0004D.

5409728-0004D CODE: D
SEP-72 - PROBLEM 1: Reliability problems caused by etch revision "C " boards.
CORRECTION 1: Scrap all raw etch revision "C " boards. Also scrap capacitor brackets.
PROBLEM 2: ECO 5409728-0004C is invalid.
CORRECTION 2: Void ECO 5409728-0004C immediately, 9/12/72.
In-plant effectivity -09 scrap immediately

5409728-00005 CODE: P CS: E
JUN-72 - CORRECTION: Add packaging instructions to Assembly Drawing.
In-plant effectivity -06 documentation change only

5409728-00006 CODE: D CS: F
SEP-72 - PROBLEM: Crowbar trip voltage is too low.
CORRECTION: Change Zener diode D12 from #11-02808 (5.6 volt, 5%) to #11-11205 (5.7 volt, 2% .

NOTE: See correction supplement ECO's 5409728-0006A, and 5409728-0006B.
In-plant effectivity -03 rework CS revision "D " 5409728's

5409728-C006A CODE: F
OCT-72 - PROBLEM: Some CS revision "B1 " and "C " 5409728's in the field may require updating of crowbar circuit with 5.7V Zener diode.
CORRECTION: Change break-in/effectivity to : Rework all CS revision "D " 5409728'S; rework CS revision "B1 " and "C " 5409728's in the field.

NOTE: Rework all CS revision "B1 " and "C " 5409728's in the field which blow the 15 AMP fuse and readjust the +5 V no load output to 5.25 volts.
In-plant effectivity -03 rework all CS revision "C " and "D " 5409728's immediately
Field effectivity -Rework all CS revision "B1 ", "C ", and "D " 5409728's

5409728-C006B CODE: F
NOV-72 - PROBLEM: In-plant break-in/effectivity incorrect.
CORRECTION: Change to read as follows: Rework all CS revision "C " 5409728's for PDP-8 shipments.
In-plant effectivity -06 changed as noted.
Field effectivity -Unchanged

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DEC-O-LOG Engineering Change Order Log

5409728

H740 Regulator Board

PROCESSOR TYPE PDP-8 Family, PDP-12, PDP-11 Family

5409728-00007 CODE: D CS: H
NOV-72 - PROBLEM: Drilling of printed circuit board is too expensive.
CORRECTION: Reduce number of drill sizes and thereby reduce the number of drill and tape changes.
In-plant effectivity -02 phase-in

5409728-00008 CODE: D CS: J ETCH: E
DEC-72 - PROBLEM 1: Transistor Q1 inadequate in heat.
CORRECTION 1: Change Q1 from MJ900, #15-10712, to MJ2500, #15-11282.
PROBLEM 2: Voltage rating of capacitor C16 inadequate.
CORRECTION 2: Change capacitor C16 from 47 ufd 20V, #10-04814, to 22 ufd 35V, #10-02433.
PROBLEM 3: Crowbar may trip due to noise.
CORRECTION 3: Change capacitors C8 and C15 from 0.01 ufd 100V, #10-01610, to 0.22 ufd 50V, #10-10274.
PROBLEM 4: Diode D13 breaks due to physical placement.
CORRECTION 4: Relayout etch and relocate D13.

NOTE: See correction supplement ECO 5409728-0008A.
In-plant effectivity -02 phase-in before March 1, 1973.

5409728-0008A CODE: D
FEB-73 - PROBLEM: Parts for implementation of ECO 5409728-00008 will not be available by break-in date of March 1, 1973
CORRECTION: Change break-in date from March 1, 1973 to March 19, 1973.
In-plant effectivity -Delayed

5409728-00009 CODE: P CS: C1
JAN-73 - PROBLEM: No documentation exists for rework ECO's 5409728-00006, 5409728-0006A and 5409728-0006B.
CORRECTION: Generate new CS revision "C1 " reflecting change in diode D12 from #11-02808, 5.6V 5%, to #11-11205, 5.7V 2%.
In-plant effectivity -06 documentation change only

5409728-C0010 CODE: F CS: K
MAR-73 - PROBLEM: Capacitor holder, Item #73, hold down screws loosen during vibration test. Capacitors, Item #15, rub and cause wear on etch board.
CORRECTION: Add 1/8 inch spacer between capacitor holder and etch board. Add 1/8 inch thick by 1/2 inch wide by 1 inch long adhesive backed foam to each end of the capacitors.

NOTE: See continuation supplement FCO 5409728-C010A and correction supplement FCO 5409728-C010B.
In-plant effectivity -02 phase-in immediately
Field effectivity -Rework all #54-09728 and #54-09728-YA's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

5409728-C010A CODE: F
APR-73 - PROBLEM 1: No BREAK-IN DATE specified.
CORRECTION 1: Change BREAK-IN DATE to read "Phase-in to be completed by April 16, 1973.
PROBLEM 2: Incomplete " options affected "list.
CORRECTION 2: Update " options affected "listing.
In-plant effectivity -Phase-in delayed to April 16, 1973
Field effectivity -None

5409728-C010B CODE: F
MAY-73 - CORRECTION: Indicate that Field Service is affected by removing the " X "in the " NO "box and checking " YES "
In-plant effectivity -Unchanged
Field effectivity -Initiated

5409728-E0011 CODE: F CS: L
JUL-73 - PROBLEM 1: Excessive drift of +5V with temperature.
CORRECTION 1: Change PTC resistor R51 to a higher PPM ; change current limit resistor R41 to a lower value, from 0.025 ohms to 0.020 ohms.
PROBLEM 2: Three pin MATE-N-LOCK connector breaks off.
CORRECTION 2: Use new MATE-N-LOCK.

NOTE 1: All reworking will be done by the DEC depot. Field implementation will involve board exchange.

NOTE 2: See correction supplement FCO's 5409728-E011A, 5409728-E011B and 5409728-E011C.
In-plant effectivity -02 -Phase-in all units in-plant by September 1, 1973
Field effectivity -Exchange any 5409728's when symptoms are present.
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts $ 75.00) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -F977 FCO/Prints And Parts)

5409728-E011A CODE: F
AUG-73 - PROBLEM: Parts availability will not allow phase-in by September 1, 1973.
CORRECTION: Change break-in to October 1, 1973.
In-plant effectivity -Phase-in to all units in-plant by October 1, 1973.
Field effectivity -Unchanged

5409728-E011B CODE: F
OCT-73 - PROBLEM: Parts not available for phase-in of FCO 5409728-E0011 by October 1, 1973 as ordered.
CORRECTION: Change break-in date to November 1, 1973.
In-plant effectivity -Delayed to November 1, 1973
Field effectivity -Unchanged

5409728-E011C CODE: F
NOV-73 - PROBLEM: Parts will not be available by BREAK-IN date specified in FCO 5409728-E011B.
CORRECTION: Change BREAK-IN date to December 1, 1973.
In-plant effectivity -Implement FCO 5409728-E0011 by December 1, 1973
Field effectivity -Unchanged

5409728-B0012 CODE: F CS: M
DEC-73 - PROBLEM 1: Excessive heat at capacitor C7 and choke L1 circuit contact points caused by high current, causes G10 PCB material to compress and loosen bolted connections.
CORRECTION 1: Provide straps to conduct high current and radiate heat. Add flat washers between screw head and printed circuit board to increase contact area and reduce pressure.
PROBLEM 2: Tri-bath washes out thermal compound from under transistors on heat sink.
CORRECTION 2: Add note eliminating tri-bath on heat sink.

NOTE: See correction supplement FCO's 5409728-B012A and 5409728-B012B.
In-plant effectivity -Rework all etch revisions " C "" D "and " E "modules in Module Production, Module Test, Module Repair and Field Service Depot by 1/1/74. Rework all modules in computers, system checkout areas and all in-plant modules by February 1, 1974.
Field effectivity -Rework all #54-09728 boards
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 1.00)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1141 - FCO/Prints And Parts)

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5409728-B012A CODE: F
DEC-73 - CORRECTION 1: Provides a complete list of all options affected by this FCO.
CORRECTION 2: Corrects BREAK-IN/EFFECTIVITY which has an incorrect date for Module Test and Module Repair.

NOTE: See correction supplement FCO 5409728-B012B which corrects the BREAK-IN/EFFECTIVITY ordered by this supplement.
In-plant effectivity -Changed to : Rework all etch revision " C "" D "and " E "modules in Module Production and Field Service Depot by 1/1/74. Rework all modules in Module Test, Module Repair, modules in computers and system checkout area and modules in-plant by February 1, 1974.
Field effectivity -Unchanged

5409728-B012B CODE: F
DEC-73 - PROBLEM 1: Thermal strap #1, #55-10892, has had an engineering change.
CORRECTION 1: Show new strap on drawing E-IA-5409728-0-0.
CORRECTION 2: Change break-in dates as noted below.
In-plant effectivity -Changed to: Rework all etch revision " C "" D "and " E "modules in Module Production and Field Service Depot by 2/1/74. Rework all modules in Module Test, Module Repair, modules in computers and system checkout area and modules in-plant by March 1, 1974.
Field effectivity -Unchanged

5409728-B012C CODE: F
FEB-74 - CORRECTION: BREAK-IN/EFFECTIVITY date is changed for module test and modules in computers and system checkout areas.
In-plant effectivity -Rework all etch revision " C "" D "and " E "modules in Module Production by February 1, 1974. Rework all modules in Module Repair, Module Test, and Field Service Depot by March 1, 1974. Rework all modules in computers, system checkout area and modules in-plant in Ireland, Puerto Rico, Westminster, and Westfield by April 1, 1974.
Field effectivity -Unchanged

5409728-00013 CODE: D CS: N
JAN-74 - PROBLEM 1: Oscillation in +15V circuit causing possible premature failure of output capacitor due to excessive ripple current.
CORRECTION 1: Improve stability by changing components in the compensation circuitry.
PROBLEM 2: Possible failure of D14 under heat stress.
CORRECTION 2: Change D14 to new type bridge.
In-plant effectivity -Rework all etch revision " E "modules in module production and test after March 1, 1974, or earlier if possible.

5409728-00014 CODE: P CS: H1
FEB-74 - PROBLEM: CS revision " H "of etch board revision " D "does not show thermal strap additions noted in FCO 5409728-B0012.
CORRECTION: Update Circuit Schematic and Inseparable Assembly drawings to document the changes.
In-plant effectivity -Documentation change only

5409728-00015 CODE: P CS: C2
FEB-74 - PROBLEM: CS revision " C1 "of etch board revision " C "does not show thermal strap additions noted in FCO 5409728-B0012.
CORRECTION: Update Circuit Schematic and Inseparable Assembly drawings to document the changes.
In-plant effectivity -Documentation change only

5409728-00016 CODE: D CS: P, M1
FEB-74 - PROBLEM 1: Threaded stud on choke too short to properly seat spacer Item #40.
CORRECTION 1: Replace spacer with 6-32 Kep Nut #90-08185.
PROBLEM 2: Assembly of heat sink after tri bath causes too severe an impact on production line.
CORRECTION 2: Change Note 1 on Unit Assembly drawing so that heat sink does not have to be mounted after tri bath.
In-plant effectivity -Rework all modules fitted in-plant with spacers per ECO 5409728-0012B.

5409728-E0017 CODE: F CS: R
APR-74 - PROBLEM: C16, a 100 mfd 20V capacitor, #10-04815, is overstressed in circuit application.
CORRECTION: Change C16 to a 22 mfd, 35V, solid tantalum capacitor, #10-02433. Supplement FCO 017A specifies this a second choice, and #10-02781, 100 mfd, 25V, as first choice for replacement of the #10-04815.
In-plant effectivity -Rework all etch revision " E ", CS revision " P "modules in-plant and Field Service Depot after 5/1/74.
Field effectivity -Mandatory Depot rework. On etch revision " C ", CS revision " C2 "is reworked to " C3 "; on etch " D "CS " H1 "is reworked to H2; on etch " E ", CS " M1 "is reworked to " M2 "and " P "is reworked to " R "
(Time To Install And Test .5 Hour.) (Kit Contents -PF1265 -FCO/Prints And Parts)

5409728-E017A CODE: F CS: C3, H2, M2
MAY-74 - CORRECTION: This supplement specifies another substitution for C16, #10-02781, and provides a rework procedure.
In-plant effectivity -Unchanged except that additional special revisions are included.
Field effectivity -Unchanged except that additional special revisions are included.

5409728-00018
MAY-74 - THIS ECO was cancelled by ECO 5409728-0018A.

5409728-B0019 CODE: F CS: C4, H3, M3, S
MAY-74 - PROBLEM: ECO 5409728-00012 put hex spacers for the mounting hardware of Q7 and Q23, D45H8 transistors, so that the hardware could be tightened from the top of the module. However, with the hex spacers, it is possible to overtighten and physically damage the transistors, so that they may fail at a later date.
CORRECTION: Change mounting hardware for Q7 and Q23 back to 4-40 kep nuts. Field service will use #90-06013-1, 1/2 inch screw in this application.
In-plant effectivity -Rework module concurrent with ECO 5409728-0017A or immediately if ECO 5409728-0017A has already been installed. All units in-plant must be reworked immediately.
Field effectivity -Depot rework only when required. Field rework may be required as a prerequisite to FCO 5409728-B0020. When replacing Q7 or Q23, replace both of them if they are mounted using the long screw/threaded spacer technique.
(Time To Install And Test N/A) (Kit Contents -PF1253 -FCO/Prints And Parts)

5409728-B019A CODE: F
MAY-74 - CORRECTION: Changes BREAK-IN EFFECTIVITY to: Module Production: Phase-in by 5/31/74. Computer Line and Systems Area: Rework only if module needs ECO 5409728-0017A at the same time. Field Service Depot; Rework immediately; if a Q7 or Q23 failure occurs, replace both transistors and retrofit ECO 5409728-B0019.

5409728-B0020 CODE: F CS: C5, H4, M4, T
MAY-74 - PROBLEM: Because of thermal strap #55-10892 added by FCO 5409728-B0012, this module cannot be mounted into the H750 chassis.
CORRECTION: Obsolete strap #55-10892 and replace with new part #55-11105.

NOTE 1: FCO 5409728-B0019 is a mandatory prerequisite for this fco; the new thermal strap interferes with the threaded spacer added by FCO 5409728-B0012 and removed by FCO 5409728-B0019. As a supplement to FCO 5409728-B0012, this FCO makes it possible to use the modified #54-09728 board in systems with the H750 Power Supply, 10 1/2 inch PDP-11 chassis. Parts kits for FCO 5409728-B0012 will have the #55-11105 strap after 7-1-74.

(Continued)

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E C DEC-O-LOG Engineering Change Order Log

5409728

H740 REGULATOR BOARD

PROCESSOR TYPE PDP-8 FAMILY, PDP-12, PDP-11 FAMILY

(Continued from previous page.)

NOTE 2: A copy of this FCO will be included in the kit for FCO 5409728-B0012.

In-plant effectivity -Phase-in to 5409728 production by July 1, 1974 . Rework 5409728 modules for H750 module production area by May 20, 1974. If H750 chassis has been reworked per ECO 7400723-00002, rework to 5409728 is not necessary.

Field effectivity -This FCO should be implemented as a supplement to FCO 5409728-B0012 and/or when the #54-09728 board is used with the H750 power supply.

(Time To Install And Test N/A) (Documentation $ 5.00 , Parts None) (Kit Contents -NF1254 -FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

7005062
Reader/Punch Cable

PROCESSOR TYPE PDP-8 FAMILY

7005062-B0001 CODE F

JANUARY-74 – PROBLEM: The PP67-A and -B, PP67-C and -D, and PR68-D and -DA all have the same size Amphenol connector, but the voltages are different. If a cable for one is plugged into another, shorting occurs.

CORRECTION: Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED - PR68-D and -E and the BC01H cable; ORANGE - PP67-C and -D and the BC01F cable; GREEN - PP67-A and -B and the #70-05062 cable.

In-plant effectivity – none

Field effectivity – retrofit all #70-05062's used in systems with PR68-D, -DA, -E, PP67-A, -B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.

(Time To Install And Test .2 Hour) (Kit Contents – NF1177 – FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

7005474

Fan Housing Assembly

PROCESSOR TYPE PDP-8 Family, DECsystem 10, PDP-9 and PDP-15

This assembly is used on the following options: BA10, CP10, DA10, DC10-A, DC10-F, DF10, GP10-M, RAD8/E, RC10, RP10, TC08, TD10-A, TM10, TU30, and VP10.

7005474-C0001 CODE: F

FEB-73 - PROBLEM: Howard fans are rated 115 V, 60 Hz and can overheat and burn up in the field under 50 Hz operation. Fans were changed to 50/60 Hz rated Muffin or Boxer fans to be phased-in by ECO TD10A-00017 and its correction supplement ECO TD10A-00018 in December of 1971. CORRECTION: Howard fans used prior to those TD10A ECO's should not be used on 50 Hz. Retrofitting of the #70-05474 Fan Assembly is required on 50 Hz systems.

NOTE: The Howard fans are an open frame type; Muffin or Boxer fans are a thin, enclosed design.
In-plant effectivity -Use remaining stock of Howard fans on 60 Hz systems only.
Field effectivity -Retrofit all 50 Hz 7005474's.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

7006156

Disk Power and Motor Control

PROCESSOR TYPE PDP-8 FAMILY, 9, 11, 12, 15

7006156-00001 CODE: M
SEP-71 - PROBLEM: The screw which secures the chassis track is too long and hits the cable in slot A1.
CORRECTION: Change the screw from 3/8 to 5/16 inch.
In-plant effectivity -Retrofit immediately

7006156-00002 CODE: M
JAN-73 - PROBLEM: Small cooling fans rub on fan screens.
CORRECTION: Use washers between fan and fan screen to space screens off fan.
In-plant effectivity -02 phase-in. Apply as soon as possible to units in production.

7006156-D0003 CODE: F CS: F
SEP-73 - PROBLEM: Transformer T1 has taps numbered incorrectly. Connection in the present configuration causes overheating of the drive motor and possible speed variation.
CORRECTION: Relocate incoming line to terminal #1 of T1.
In-plant effectivity -Retrofit all systems before shipment.
Field effectivity -Retrofit all #70-06156's at next PM .
(Time To Install And Test N/A) (Kit Contents -F1046 -FCO/Prints)

7006156-A0004 CODE: F
AUGUST-74 – PROBLEM: There is evidence that the plastic spider 4-1/2 inch fan may overheat under certain conditions, thereby presenting a potential hazard unique to the following equipment: An RS08 which is in the RF08 option, an RS09 which is in the RF09, RF11, or RF15 option.
CORRECTION: Replace the plastic spider fan with a metal fan, #12-09403-1.
In-plant effectivity – Immediate retrofit in house. Perform an immediate inspection of all above options and replace all plastic spider fans.
Field effectivity – Immediately inspect all RF08, RF09, RF11, and RF15 options and replace indicated fans if present.
(Time To Install And Test 1.0 Hour.) (Kit Contents – PF1318 WWW – FCO/Prints and Parts)

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Engineering Change Order Log
EC DEC-O-LOG

7006247

PC04/PC05
READER
ASSEMBLY

PROCESSOR TYPE ALL

7006247-D0001 CODE: F

JUN-74 - CORRECTION: Phase-in use of fiber optics light source #12-11722-00 in place of Osran bulb source.
In-plant effectivity -Phase-in
Field effectivity -Retrofit all PC04/PC05's if present Osran light source is difficult to align or if unit exhibits marginal operation.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $ 51.30)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1285 - FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

7006320

TU56 PANEL ASSEMBLY

PROCESSOR TYPE ALL EXCEPT PDP-14

7006320-C0001 CODE: F

MAY-74 - PROBLEM: TU56 DEC tape drive causes excessive tape edge wear, resulting in short tape life, excessive mark track, and data errors.
CORRECTION: Change cover plates, tape guides, springs, and dowel pins to provide less force to guide edge of tape.

NOTE 1: The new springs, #12-11821, measure 7/16 inch in diameter; the cover plate must be removed to verify ECO installation.

NOTE 2: A typographical error in the original ECO indicated that the part number for the right hand cover plate was 74-07882-1; supplement ECO 7006320-0001A provides the correct number, 74-07282-1.
In-plant effectivity -Phase-in to production on May 15, 1974. Supplement ECO 7006320-00001 corrects this to exclude Ireland production.
Field effectivity -Retrofit all TU56's which exhibit symptoms of excessive tape edge wear. Typically, TU56's used as a "systems device " EDU-25, COSS 300 will be affected.
(Time To Install And Test 2.0 Hours.) (Kit Contents -PF1275 - FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

7006756

TU10 TAPE TRANSPORT ASSEMBLY

PROCESSOR TYPE PDP-8 & 11 FAMILIES – PDP-10

7006756-00001 CODE: D
JANUARY-73 – PROBLEM: When ECO H730-00011 is implemented, the TU10 will meet the requirements for UL listing, so UL/NFPA decal must be added.
CORRECTION: Add UL/NFPA decal.
In-plant effectivity – phase-in when ECO H730-00011 is fully implemented

7006756-C0002 CODE: F
APRIL-74 – PROBLEM: Noise from reel motor brushes causes intermittent data errors. Problem is evidenced by CRC, LRC, parity status errors, or data errors in which a zero is transformed into a one.
CORRECTION: Place ferrite tubes over reel motor leads and ground reel motors firmly to logic mounting bar. The parts required are one each #12-05724-02 grounding strap and #90-08887 braid strap and four #16-05147 ferrite sleeves.
In-plant effectivity – phase-in to production. Do not retrofit any machine in Westminster which will successfully pass acceptance criteria.
Field effectivity – Retrofit TU10's when symptoms are present
(Time to Install and Test .5 hour.) (Kit Contents – PF1242 – FCO/prints and parts)

7006756-00003 CODE: M
APRIL-74 – PROBLEM: The heads of the screws at the rear of the slides hit and require filing at assembly. There is no hole for the new vacuum system.
CORRECTION: Change from 1/4-20 to 10-32 on back holes only and use 10-32 well-nut. Drill hole for new vacuum system.
In-plant effectivity – phase-in

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Engineering Change Order Log
DEC-O-LOG

7008674

Microswitch Harness

PROCESSOR TYPE PDP-8/F and PDP-8/M

7008674-00001 CODE: D
DEC-71 - CORRECTION: Correct drawing C-IA-7008674-0-0 to show wire going to correct pin on mate-n-lok connector.
In-plant effectivity -03 documentation/design change

7008674-00002 CODE: D
MAR-73 - PROBLEM 1: Wire pulling out of solderless connector.
CORRECTION 1: Change wire size from #22 AWG to #18 AWG.
PROBLEM 2: Screws become loose and fall off micro switch.
CORRECTION 2: Remove screw and lockwasher from NC terminal and put shrinkable tubing over COM and NO terminals.

NOTE: See correction supplement FCO 7008674-00003.
In-plant effectivity -All units issued to kits after March 1, 1973 must reflect this eco; rework if necessary.

7008674-D0003 CODE: F
FEB-73 - PROBLEM: ECO 7008674-00002 did not adequately fix problem of screws coming loose on microswitch.
CORRECTION: Add two internal tooth lockwashers and delete the two external tooth lockwashers supplied with the microswitch.
In-plant effectivity -All units issued to kits after March 1, 1973 must reflect this FCO.
Field effectivity -Rework all #70-0s674's on systems in vibrational environment or whenever switch assembly is accessible for service.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $. 50 , DEC Labor $ 15.00) (Kit Contents -FCO/Prints And Parts)

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ECO DEC-O-LOG Engineering Change Order Log

7009014

TU60 Transport Assembly

PROCESSOR TYPE All

7009014-C0001 CODE: F
APR-73 - PROBLEM: Wrong loctite on drawing.
CORRECTION: Change drawings D-AD-7009014-0-0 and A-PL-7009014-0-0 to correctly identify loctite.
In-plant effectivity -06 documentation/design change
Field effectivity -Retrofit any units in process as of March 12, 1973.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

7408244

KC8-EA Control Panel

PROCESSOR TYPE PDP-8/E

7408244-00001 CODE: M
JAN-73 - PROBLEM: PDP-8/E control panel glass does not align properly with the console board.
CORRECTION: Drop all switch cut-outs and indicator holes on the control panel 0.125 inch.
In-plant effectivity -02 all panels fabricated after January 29, 1973

7408244-00002 CODE: D
MAR-73 - PROBLEM: Silk screens do not line up with cut outs.
CORRECTION: Redimension front panel drawing and lower silk screen by 0.125 inch.
In-plant effectivity -02 phase-in all panels silk screened after April 1, 1973.

7408244-C0003 CODE: DF
MAY-73 - PROBLEM 1: The PDP-8/E Front Panel Console Board rotary switch is being changed by ECO 5409057-00010 causing the switch position indicator lines on the Plexiglas panel to be out of alignment.
CORRECTION 1: Correct artwork to align with new switch; will be the same as PDP-8/M.
PROBLEM 2: The block over the run light is off by 0.06 inch.
CORRECTION 2: Move 0.06 inch to the right.
PROBLEM 3: Artwork on some screens does not match the IA drawing.
CORRECTION 3: Make corrections so that silk screens conform to drawing D-IA-7408244-0-0.
In-plant effectivity -02 * -#74-08244 Plexiglas control panels dated June 15, 1973 or later must be used with #54-09057 etch revision "J " console boards which include the new rotary switch, #12-10627. These panels may not be used with earlier revision console boards.
Field effectivity -Install new console panel Plexiglas when console module with new status switch is installed.
(Time To Install And Test N/A) (Documentation $ 5.00 , Parts $ 39.00 , DEC Labor $ N/A) (Kit Contents -FCO/Prints And Parts)

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ECO SYNOPSES FOR LOGIC OR OPTION

KSR35
DEC MODIFICATION **7505043**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
7505043 00001	ALL KSR35 AND ALL ASR35 ON PDP10,11,OR 15	F	FCO RELEASE DATE - DECEMBER 1970 PROBLEM: PDP-15 PRODUCT LINE MARKETING REQUESTS THAT A VERTICAL TAB OF 6 LINES BE AVAILABLE ON KSR35'S AND ASR35'S. CORRECTION: CHANGE SET-UP NOTES ON KSR35 PRINT. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY THIS FCO IS NO CHARGE TO CUSTOMER FSIC WILL NOT INITIATE DISTRIBUTION ORDERED KITS WILL INCLUDE - FCO'S ONLY

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

7605845

Module Rework Standard

PROCESSOR TYPE All

7605845-B0001 CODE: F
JUL-72 - PROBLEM: Present module rework standard is outdated, in view of current board size and complexity.
CORRECTION: Replace current specifications with the new revision A .
In-plant effectivity -Documentation change only
Field effectivity -All DEC field personnel
(This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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E C DEC-O-LOG Engineering Change Order Log

7606025

Winding Assembly
Machine Interface

PROCESSOR TYPE PDP-8/E

7606025-B0001 CODE: DF ML: A
OCT-73 - CORRECTION 1: Correct drawing errors.
PROBLEM 2: Timing critical on XD3, YD3, and WD3.
CORRECTION 2: Change one-shot time by adding the following wires:
E10K2 to E10A2, F06V1 to F06K2, and F06K2 to F06A2.
In-plant effectivity -All future 7606025'S; #02 has been modified
Field effectivity -Retrofit 7606025's #01, #03, and #04
(Time To Install And Test .5 Hour.) (Kit Contents -NF1074 -FCO/Prints
)

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EC DEC-O-LOG Engineering Change Order Log

7606377

4096 Word Count Board

PROCESSOR TYPE PDP-8/E

7606377-C0001 CODE: DF ML: A WL: A
JUL-73 - PROBLEM: WRITE flip-flop not properly controlled on error conditions.
CORRECTION: Change the clear condition of the WRITE flip-flop to be more inclusive. The ADD/DELETE's are as follows: DELETE F0402 to F0415, F0415 to F2001, and E0811 to HP01; ADD F0402 to F2001, E0906 to F0415, E0811 to E0905, and E0905 to HP01.
In-plant effectivity -03 -All future #76-06377's
Field effectivity -Rework 7606377's in RKS8-E serial numbers #1 thru #7.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

7665049

Wiring Rework/Splice Standard

PROCESSOR TYPE All

7665049-00001 CODE: P
NOV-71 - PROBLEM: Cable standard not up to date.
CORRECTION: Replace standard.
In-plant effectivity -06 documentation change only.

7665049-00002 CODE: P
DEC-70 - PROBLEM : Pages two and three of drawing A-SP-7665049-0-0 have their sheet numbers reversed sheet eleven is missing photo number three.
CORRECTION: Retype sheets number two and three and type " this illustration is the same as illustration four, (below) minus vertical wire "on sheet number eleven.
In-plant effectivity -06 documentation change only.

7665049-E0003 CODE: F
FEB-72 - PROBLEM: Electrical details and subassemblies, such as motors and solenoids, are being rejected because of the use of splices. They are used when a wire is too short, insulation is chafed, or a wire is cut.
CORRECTION: Delete the word " harness "from item 2,0 paragraph 2.8 of Engineering Specification drawing A-SP-7665049-0-0 . Add: " acceptable rework of a harness or wiring other than cables: 1) loop-to-loop soldered connection with shrinkie, 2) double-ended crimp splice. (splices, however, must be at least 6 inches from any stress point) —.
In-plant effectivity -Documentation change only
Field effectivity -Distributed for field service information only
(Kit Contents -FCO Only)

E C DEC-O-LOG

Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

D/A CONVERTER CONTROL
64 CHANNEL

AA05-A

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 PDP-8I PDP 8S	MARCH 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSES
PDP-8 #259	>AA05-A	D	APR 68 - MAKES A CORRECTION TO THE AA05-A LOGIC WHICH ADDS "CLDA" AND DELETES "LDAC".
AA05-A 00001	AA05-A 103>	D	OCT 68 - CHANGES IOT 656X TO 652X TO ELIMINATE CONFLICT WITH AF04. THE RESULTING CONFLICT IS WITH THE PLOTTER WHICH IS CONSIDERED TO BE A LESS LIKELY SYSTEM COMPANION OF THE AA05-A.
AA05-A 00002	AA05-A 103>	D	OCT 68 - CHANGES WIRING AND BUSSING TO ELIMINATE CHANNEL INTERACTION AND GROUND NOISE.
AA05-A 00003	AA05-A 1-105>	P	NOV 68 - ADDS ENGINEERING SPECIFICATIONS, CALIBRATION AND ACCEPTANCE PROCEDURES TO THE AA05-A PRINT SET.
AA05-A 00004	N.A.	P	NOV 68 - UPDATES THE CALIBRATION PROCEDURE.
AA05-A 00005	AA05-A 1, 100-115>	F	APR 69 - DELETES A MARGIN PLUG AND A DPDT SWITCH FROM THE POWER SUPPLY.
AA05-A 00006	N.A.	P	MAY 69 - ADDS AA05-B AND AA05-C VARIATIONS TO ASSEMBLY DRAWINGS.

LEGEND

FIELD CODE

F - Field action may be required
D Design ECO
P Print or Wire List change
M Mechanical ECO

SYMBOL

> - ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X - Charge for Speco and updated prints only
$Y Charge for necessary parts only
$Z - Charge for on site labor only, installation by DEC
NOTE Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8-#259		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8-#259		

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EC DEC-O-LOG Engineering Change Order Log

AD01-A

10 Bit ADC With 32 Channels Multiplexed

PROCESSOR TYPE PDP-8 Family

AD01A-00001 CODE: P
JAN-70 - CORRECTION: Updates prints to reflect current AD01-A logic.
In-plant effectivity -06 documentation change only.

AD01A-00002 CODE: D WL: A
JAN-70 - CORRECTION: Updates prints and the Wire List to correct errors and reflect design updating.

NOTE: All ML and WL revisions are going from "0 " to "A ".
In-plant effectivity -All AD01-A's

AD01A-00003 CODE: M
MAY-70 - PROBLEM: A module retention bar cannot be used because of the depth of the power supply and A/D converter module.
CORRECTION: Add 9 1/2 inch end plates so that a retention bar can be used for high vibration environments.

NOTE: This ECO creates AD01-AP ML revision "B " and AD01-AN ML revision "C ".
In-plant effectivity -Phase-in

AD01A-00004 CODE: D ML: A WL: B
MAY-70 - PROBLEM 1: SAMPLE AND HOLD and SIGN BIT options do not work as indicated, due to timing problems.
CORRECTION 1: Changed wiring and timing on modules.
PROBLEM 2: Inverters shown with option AH05 are also required with other options.
CORRECTION 2: Deleted inverters and added them to basic AD01-A.

NOTE: This ECO creates AD01-AN ML revision "D " and AD01-AP ML revision "C ".
In-plant effectivity -Retrofit all units.

AD01A-00005 CODE: D WL: C
JUN-70 - PROBLEM 1: Ground wiring insufficient.
CORRECTION 1: Add soldered ground wires to F2 which is analog ground and provide parallel bussing.
PROBLEM 2: M206 module should not be used in systems.
CORRECTION 2: Change M206 to M216.
PROBLEM 3: One drawing error, a pin number.
CORRECTION 3: Correct Wire List: A07D1 is shown twice; one entry should be changed to A07D2.

NOTE: This ECO creates AD01-AN ML revision "E " and AD01-AP ML revision "D ".
In-plant effectivity -Rework all AD01-A's #1 thru #35 and all future.

AD01A-B0006 CODE: F WL: D
AUG-70 - PROBLEM: PDP-8 I/O bus not completely passed on to next option on bus.
CORRECTION: Add nine wires to relay missing signals on the bus.

NOTE: This FCO creates AD01-AN ML revision "F " and AD01-AP ML revision "E ".
In-plant effectivity -All future AD01-A's.
Field effectivity -Retrofit AD01-A's #1 thru #35.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO Only)

AD01A-C0007 CODE: DF ML: B WL: E
JAN-71 - PROBLEM: AH05 sign option unstable as implemented.
CORRECTION: Replace A315 sign and magnitude module with A862 10 bit and sign A/D converter.

NOTE: This FCO creates AD01-AN ML revision "H " and AD01-AP ML revision "F ".
In-plant effectivity -03 rework immediately.
Field effectivity -Exchange logic frames for AD01-A #1 thru #10 if AH05 is present.
(Time To Install And Test 3.0 Hours.) (Kit Contents -FCO/Prints And Parts)

AD01D-00008 ML: C

AD01A-00008 CODE: P
MAR-71 - CORRECTION: Add Calibration and Acceptance Procedures into the AD01-A print set.

NOTE: This ECO creates AD01-AN ML revision "J " and AD01-AP ML revision "H ".
In-plant effectivity -06 documentation change only.

AD01A-00009 CODE: D WL: F
JUL-71 - PROBLEM: The AD01-A must be modified to fit Clinical Lab installations.
CORRECTION: This ECO adds a G820 in slot B20; adds slot A20 for connection of cable to AD01; describes modification to BCL2B cable needed in conjunction with this ECO.

NOTE: This ECO creates AD01-AN ML revision "K " and AD01-AP ML revision "J ".
In-plant effectivity -Rework AD01-A #1 only

AD01A-00010 CODE: P ML: D WL: H
NOV-71 - PROBLEM 1: RAD8-E requires N BIT UNIPOLAR A/D Converter.
CORRECTION 1: Modify AD01 with A861 in place of A862. Change adjustment procedure.
PROBLEM 2: Modifications to AD01-A serial #1 should not be applied to the general print set.
CORRECTION 2: Eliminate modifications from print set.
PROBLEM 3: Variations -FA , Complex Analog, and -FB , Extended Analog are new options.
CORRECTION 3: Add -FA and -FB variations to Master Drawing List.
In-plant effectivity -06 documentation change

AD01F-00001 ML: E

AD01F-00002 ML: F

AD01F-00003 ML: H

AD01F-00004 ML: J

AD01F-00005 ML: K

AD01A-00011 CODE: P ML: L
MAY-72 - CORRECTION: Changes section #10 of the Adjustment Procedure.
In-plant effectivity -Documentation change only

AD01F-00006 ML: M

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AD01A-00012 CODE: D
SEP-72 - PROBLEM: When an AD01-A is installed on a PDP-8/S: There is a race condition between I/O AC CLEAR and data on the data lines; conversion time is too fast for PDP-8/S timing; the micro-instruction in diagnostic location 252 is illegal on a PDP-8/S.
CORRECTION: Shorten I/O AC CLEAR from 500 nsec to 110 nsec. Increase END OF CONVERSION level from 29 usec to 40 usec. Toggle-change diagnostic location 251 to 7340 and location 252 to 7010.

NOTE: This ECO creates AD01-0 ML revision "N ".
In-plant effectivity -06 documentation/design phase-in

AD01A-00013 CODE: P
JAN-73 - PROBLEM: When configuring an AD01-AN on a PDP-8/S system, changes must be made to the AD01-AN, its timing, and software.
CORRECTION: Update Engineering and Acceptance Specifications to reflect special print sets for the specific configurations.

NOTE 1: This ECO creates AD01-0 ML revision "R ".

NOTE 2: See supplement ECO AD01A-0013A, which cancels this ECO.
In-plant effectivity -06 documentation change

AD01A-0013A CODE: P
FEB-73 - PROBLEM: Problem described in ECO AD01A-00013 was previously covered by AD01A-00012.
CORRECTION: Disregard ECO AD01A-00013.
In-plant effectivity -Cancelled

AD01A-E0014 CODE: F WL: J
JUN-73 - PROBLEM 1: Wire missing from AD01-A Wire List.
CORRECTION 1: Correct Wire List to add wire from A09U2 to A10H2.
PROBLEM 2: Option jumper list incorrect.
CORRECTION 2: Correct option jumper list by deleting B11E2 to A07A1.

NOTE 1: See correction supplement AD01A-E014A.

NOTE 2: This FCO creates AD01 ML revision "T ".
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Update documentation for all AD01-A's installed before September 1, 1973.
(Kit Contents -FCO/Prints)

AD01A-E014A CODE: F
JUL-73 - CORRECTION: Distribute FCO AD01A-E0014 to the field.
In-plant effectivity -None
Field effectivity -Initiated

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DEC-O-LOG

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ECO SYNOPSES FOR LOGIC OR OPTION

A/D CONVERTER **AD08-A**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 PDP-8I PDP-8S	FEBRUARY 1972	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-8 #159	ALL AD08-A	D	JUN 67 - ADDS AN R123 MODULE IN SLOT B10 TO SUPPLY POWER CLEAR TO THE "A/D DONE" FLIP-FLOP.
PDP-8 #209	AD08-A 1-119>	F	NOV 67 - CORRECTS THE "POWER CLEAR" RUN IN THE AD08-A LOGIC. THIS FCO IS NO CHARGE TO CUSTOMER (TIME TO INSTALL AND TEST - .3 HOUR)
PDP-8 #219	N.A.	P	DEC 67 - OBSOLETES AN AD08-A BLOCK SCHEMATIC AND ADDS A NEW ONE FOR THE AH02.
PDP-8 #221	AD08-A 1-119>	F	DEC 67 - CHANGES THE DRESSING OF ANALOG POWER WIRING TO IMPROVE SWITCHING POINT ACCURACY. (*$5.00, **NONE, ***$20.00) (TIME TO INSTALL AND TEST - .8 HOUR)
PDP-8 #238	N.A.	P	JAN 68 - REMOVES A200 AND A400 MODULES FROM THE AD08-A PARTS LIST AS OPTIONS.
AD08-A E0001	AD08-A 1-119>	F	DEC 69 - ADDS AN R111 IN SLOT A13 TO MAKE "A/D CONVERT" AND "ADRB" SIGNALS AVAILABLE EXTERNALLY. (*$5.00, **$14.00, ***$25.00) (TIME TO INSTALL AND TEST - 1.0 HOUR)
AD08-A E0002	>AD08-A FIELD RETROFIT AS REQUIRED	F	FEB 70 - SPECIFIES THAT A CS REVISION "D" A801 MODULE (ECO A801-B0004) OR LATER, IS TO BE INSTALLED IF AN A801 IS FOUND TO BE ERRATIC IN OPERATION OR DIFFICULT TO ADJUST. THIS FCO IS INCLUDED IN THE A801-B0004 KIT
AD08-A 00003	>AD08-A	D	FEB 70 - ADDS A 3 AMP SLOW BLOW FUSE TO THE AC POWER LINE. THE VALUE OF THIS FUSE IS CHANGED TO 1.5 AMP BY ECO AD08A-00004.
AD08-A 00004	>AD08-A	D	JUL 70 - CHANGES THE VALUE OF THE AC FUSE, WHICH WAS ADDED BY ECO AD08A-00003, FROM 3 AMP TO 1.5 AMP SLOW BLOW. REFERENCE FCO A801-B0004

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8 - #159	L	MISC - #75
B	PDP8 - #209	M	AD08A-00004
C	PDP8 - #219		
D	PDP8 - #221		
E	PDP8 - #238		
F	AD08A-00002		
H	AD08A-00001		
J	AD08A-00003		
K	MISC - #64		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8 - #159		
B	PDP8 - #209		
C	AD08A-00001		

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ECO SYNOPSES FOR LOGIC OR OPTION

A/D CONVERTER
10 BIT 1 USEC/BIT **AD08-B**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 PDP-8I PDP-8S	FEBRUARY 1972	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-8S #50	>AD08-B	D	FEB 68 - ADDS LOGIC TO GENERATE AN A/D CONVERSION WITH EITHER AN IOT INSTURCTION (6532, ADCV) OR MULTIPLEXER CHANNEL SELECTION. IN-PLANT EFFECTIVITY - AD08-B #101-104> "D" CODED ML REVISION "A" AND WL REVISION "A" ARE CREATED
PDP-8S #59	>AD08-B	D	APR 68 - CHANGES WRAPPED POWER WIRING TO HAND WIRED, STRANDED. IN-PLANT EFFECTIVITY - AD08-B #101-124> "D" CODED ML REVISION "B" AND WL REVISION "B" ARE CREATED
PDP-8S #63	ALL AD08-B	F	APR 68 - CHANGES DELAY, R302 AT B12V, FROM .4 USEC TO .8 USEC. (ERROR CORRECTED BY FCO PDP8S-#64) IN-PLANT EFFECTIVITY - AD08-B #101-124> FIELD EFFECTIVITY - ALL AD08-B "F" CODED ML REVISION "C" IS CREATED TIME TO INSTALL AND TEST - .3 HOUR DOCUMENTATION $5.00 PARTS - NONE DEC LABOR $8.00 ORDERED KITS WILL INCLUDE THIS FCO AND CORRECTION FCO 8S-#64
PDP-8S #64	ALL AD08-B	F	MAY 68 - CORRECTS FCO PDP8S-#63; B12V DELAY SHOULD BE .6 USEC AND B12M SHOULD BE .8 USEC. IN-PLANT EFFECTIVITY - AD08-B #101-124> FIELD EFFECTIVITY - ALL AD08-B "F" CODED ML REVISION "D" IS CREATED THIS FCO IS INCLUDED IN THE KIT FOR FCO 8S-#64
AD08-B 00001	>AD08-B	D	AUG 68 - CHANGES LOGIC TO MEET CUSTOMER REQUIREMENT FOR PLUS OR MINUS .5 VOLT INPUT. IN-PLANT EFFECTIVITY - AD08-B #102 ONLY "D" CODED
AD08-B 00002	N.A.	P	SEP 68 - CHANGES ENGINEERING SPECIFICATIONS. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8S- #50		
B	PDP8S- #59		
C	PDP8S- #63		
D	PDP8S- #64		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8S- #50		
B	PDP8S- #59		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
AD08-B B0003	ALL AD08-B	F	NOV 68 - ADDS CAPACITORS TO THE ANALOG GROUND TO ELIMINATE TRANSIENT INTERACTION BETWEEN THE A801 AND THE A200 WHICH CAUSES STATES ERRORS. ADDS GAIN COMPENSATION TO THE A200. (ERROR CORRECTED BY ECO AD08B-B0004) IN-PLANT EFFECTIVITY - AD08-B #110-132> FIELD EFFECTIVITY - ALL AD08-B "F" CODED ML REVISION "E" IS CREATED TIME TO INSTALL AND TEST - .3 HOUR DOCUMENTATION $5.00 PARTS $2.80 DEC LABOR $8.00 ORDERED KITS WILL INCLUDE FCO, PARTS, AND CORRECTION FCO AD08B-B0004
AD08-B B0004	ALL AD08-B	F	NOV 68 - CORRECTS FCO AD08B-B0003; PROVIDES AN EXTERNAL COMPONENT LIST WHICH IS NECESSARY FOR IMPLEMENTATION OF THE FCO. IN-PLANT EFFECTIVITY - AD08B #110-132> FIELD EFFECTIVITY - ALL AD08-B "F" CODED ML REVISION "F" IS CREATED THIS FCO IS INCLUDED IN THE KIT FOR FCO AD08B-B0003
AD08-B B0005	ALL AD08-B	F	JAN 69 - SPECIFIES A NEW POWER SYSTEM TO ELIMINATE THREE STATING IN-PLANT EFFECTIVITY - AD08-B #105-132> FIELD EFFECTIVITY - ALL AD08-B "F" CODED ML REVISION "H" IS CREATED TIME TO INSTALL AND TEST - .5 HOUR DOCUMENTATION $5.00 PARTS $450.00 DEC LABOR $13.00 ORDERED KITS WILL INCLUDE FCO, PRINTS, AND PARTS
AD08-B 00006	N.A.	P	FEB 69 - MAKES TWO INCIDENTAL CORRECTIONS TO THE BS-4 PRINT. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "J" IS CREATED
AD08-B 00007	>AD08-B	D	JAN 70 - REPLACES THE A200 IN SLOT B20 WITH AN A207YM. THE TWO MODULES ARE PIN COMPATIBLE AND INTERCHANGEABLE. IN-PLANT EFFECITIVITY - AD08-B #101-220> "D" CODED ML REVISION "K" IS CREATED
AD08-B B0008	>AD08-B FIELD RETROFIT AS REQUIRED	F	FEB 70 - SPECIFIES THAT A CS REVISION "D" A801 MODULE IS TO BE INSTALLED IF AN EARLIER REVISION A801 IS FOUND TO BE ERRATIC OR DIFFICULT TO ADJUST. (*$5.00, **$450.00, ***$10.00) (TIME TO INSTALL AND TEST - .4 HOUR) IN-PLANT EFFECTIVITY - ALL FUTURE AD08-B FIELD EFFECTIVITY - ALL FUTURE AD08-B FIELD RETROFIT AS REQUIRED "F" CODED TIME TO INSTALL AND TEST - .4 HOUR DOCUMENTATION $5.00 PARTS $450.00 DEC LABOR $10.00 ORDERED KITS WILL INCLUDE FCO AND PARTS REFERENCE A801-B0004

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES
- Charges are coded within the synopsis. (*$X,**$Y,***$Z)
- $X = Charge for Specs and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	AD08B-00003		
F	AD08B-00004		
H	AD08B-00005		
J	AD08B-00006		
K	AD08B-00007		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

A/D CONVERTER
10 BIT 1 USEC/BIT

AD08-B

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 PDP-8I PDP-8S	FEBRUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
AD08-B 00009	>AD08-B	D	FEB 70 - ADDS A 3 AMP SLOW BLOW FUSE TO THE AC INPUT LINE. IN-PLANT EFFECTIVITY - ALL FUTURE AD08-B "D" CODED ML REVISION "L" IS CREATED
AD08-B 00010	>AD08-B	D	JUL 70 - CORRECTS ECO AD08B-00009; CORRECTS FUSE VALUE FROM 3 ASB TO 1.5 ASB. IN-PLANT EFFECTIVITY - ALL FUTURE AD08-B "D" CODED ML REVISION "N" IS CREATED

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	AD08B-00009		
M	MISC - #86		
N	AD08B-00010		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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EC DEC-O-LOG Engineering Change Order Log

AF16

Control for Eight AF17

PROCESSOR TYPE Family of 8

AF16-00001 CODE: D ML: A WL: A
NOV-68 - PROBLEM 1: Since -15V takes longer to come up than +5V, the **POWER CLEAR** pulse generated by the 8/I is not seen by a periferal device.
CORRECTION 1: Add an R303 module to generate a **POWER CLEAR** level.
PROBLEM 2: Must run 4X line frequency module on fixed +10V, -15V.
CORRECTION 2: Place 4X line frequency module at end of power bus. Replace bus with hard wiring to power end plate. Move R107 inverter.
CORRECTION 3: Adds maintenance and **CAL** logic.
In-plant effectivity -All AF16

AF16-00002 CODE: D ML: B WL: B
DEC-68 - PROBLEM 1: One wire missing on chrom cables, **POWER CLEAR** .
CORRECTION 1: Add wire to drawing.
PROBLEM 2: Missing information on clock drawing.
CORRECTION 2: Correct clock drawing to provide missing details.
CORRECTION 3: Corrects the wiring card deck.
In-plant effectivity -Serial #1 and #2 and all future

AF16-00003 CODE: DF ML: D WL: C
APR-69 - PROBLEM 1: **TP** , time pulse, comes at a time when the signal ripple is at a peak.
CORRECTION 1: Move TP to be generated when the signal ripple is at a zero crossing.
PROBLEM 2: **CLK ENABLE** cannot be adjusted to less than 70 msec.
CORRECTION 2: Remove ground from pin N, ground pin M.
PROBLEM 3: **CAL FLG** input gate pins labeled backward. Pin R has wrong signal on it.
CORRECTION 3: Correct block schematic and wire list. Pin R should come from A21F.
PROBLEM 4: **PWR CLRD** not long enough.
CORRECTION 4: Change note to read Typically 300 msec.
In-plant effectivity -Serial #30 and all future
Field effectivity -Serial #1-#29
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO)

AF16-B0004 CODE: DF ML: H
MAY-69 - CORRECTION: Correct existing system to allow proper programming.
In-plant effectivity -All AF16, #30 and all future
Field effectivity -All AF16, #1-#29, install only when GLC-8 system program version 12 & maindec 8I-D6BB-(D) are available
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

AF16-00005 CODE: F ML: E WL: D
JAN-71 - PROBLEM: The AM08-AM03 relay multiplexer maximum speed exceeds the relay manufacturers timing. Operation at 240/SEC causes relay mal-functioning and excessive GLC-8 field service calls.
CORRECTION: Change DK01 to reduce system sampling to 120/SEC . This change requires deletion of two wires from AF16. Reference AM08-00006 ECO and AF06A-00013 for timing and specification change.
In-plant effectivity -Rework
Field effectivity -Retrofit all AF16 with DK01-A's
(Time To Install And Test .4 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO)

AF16-E0006 CODE: DF ML: H
JUL-72 - PROBLEM: The clock is set-up for 60 Hz operation; **CLK ENABLE** is short for 50 Hz operation.
CORRECTION: Add notation for 50 Hz setting of **CLK ENABLE** .
In-plant effectivity -03 rework immediately
Field effectivity -Update customer prints for 50 Hz systems.
(Time To Install And Test Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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AIP12

Analytical Instrumentation Package

PROCESSOR TYPE PDP-8 Family and PDP-12

AIP12-D0015 CODE: DF ML: B WL: M

JUL-73 - PROBLEM 1: There is a possibility of double setting any of the buffer flags, depending on software and buffer length. There is no sensing or prevention of such a condition.
CORRECTION 1: If a double setting of a buffer flag occurs, an error flag will be raised. These errors are sensed by the SEF instruction.
PROBLEM 2: A glitch on ERRS CLD signal causes erroneous interrupts and SEF skips. The glitch occurs when a channel error flag is set at the same time the ERROR SEEKER is changing states.
CORRECTION 2: Synchronize the channel errors with the ERROR SEEKER by a flip-flop via the AIP12's timing structure.
PROBLEM 3: Because of the programmable capability of setting the "S " bits, it is possible to scramble the data and its ID code.
CORRECTION 3: Buffer the channels and synchronize them into the "S " bits when the MULTIPLEXER SEEKER is in the "LOAD " condition.
PROBLEM 4: If the AIP12's GO BIT is cleared during an acquisition operation, there is the possibility of hanging up in Break Request.
CORRECTION 4: Clear the AIP12's timing generation when the GO BIT is cleared.
CORRECTION 5: Correct print errors.
PROBLEM 6: Some AIP12's require an A216 filter on channels 44 to 46.
CORRECTION 6: Add note to print A1P12-0-AMPL specifying optional use of an A216 filter on channels 44 to 46.

NOTE: See correction supplement FCO A1P12-D015A.
Quick Check -M216 in slots F23 and F28; M205 in slot F21.
In-plant effectivity -03 -Rework AIP12's #45 and #46 and all future.
Field effectivity -Exchange wired panel when symptoms are present.
(Time To Install And Test 20.0 Hours.) (Kit Contents -F980 FCO/Prints And Parts)

AIP12-D015A CODE: DF

AUG-73 - CORRECTION: Additional ADD/DELETE wiring changes are provided for FCO AIP12-D0015.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

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ECO SYNOPSES FOR LOGIC OR OPTION
A TO D CONVERTER
4 CHANNEL - SAMPLE & HOLD
AX08

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 PDP-8I	MARCH 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSES
AX08 00001	AX08 101-120>	D	JUL 68 - CORRECTS LOGIC ERRORS AND UPDATES THE WIRE LIST.
AX08 00002	AX08 141>	M	JUL 68 - CHANGES BEZEL DIMENSIONS.
AX08 00003	ALL AX08	P	JUL 68 - CLEARS ACCUMULATED ERRORS FROM VARIOUS AX08 PRINTS.
AX08 00004	AX08 121>	M	AUG 68 - CHANGES DIMENSIONS FOR A HOLE.
AX08 00005	AX08 101-161>	P	OCT 68 - CORRECTS AN ERROR IN THE AX08 WIRE LIST.
AX08 00006	>AX08	M	OCT 68 - CHANGES A MECHANICAL DIMENSION.
AX08 00007	AX08 101-161>	F	OCT 68 - REWIRES THE FINE SENSE POT, CHANGES DELAYS TO ELIMINATE SCOPE FLICKER AND WIRES IN A PA, R603 AT D23, TO SPEED UP ADC.
AX08 00008	N.A.	P	OCT 68 - ADDS TEST AND ACCEPTANCE PROCEDURE AND ENGINEERING SPECIFICATIONS TO THE AX08 PRINT SET.
AX08 00009	N.A.	M	DEC 68 - ADDS A LOGO FOR AX08-8 INSTALLATION IN AN H950-A CABINET.
AX08 00010	>AX08	M	JAN 69 - CHANGES SPECIFICATIONS TO REPLACE WELDED STUDS WITH 10/32 STUDS.
AX08 00011	N.A.	P	JAN 69 - CHANGES AX08 SCHMITT TRIGGER TEST PROCEDURE.
AX08 00012	N.A.	M	JAN 69 - INCREASES MECHANICAL TOLERANCE.
AX08 00013	AX08 1-169>	F	APR 69 - CORRECTS A WIRING ERROR FOR THE LOAD X1 AND LOAD X2 LOGIC AND UPDATES THE WIRE LIST.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

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$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	AX08-00001		
B	AX08-00003		
C	AX08-00005		
D	AX08-00007		
E	AX08-00008		
F	AX08-00009		
H	AX08-00010		
J	AX08-00011		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	AX08-00001		
B	AX08-00005		
C	AX08-00007		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
AX08 00014	>AX08	M	APR 69 - CHANGES THE PART NUMBER FOR CHASSIS TRACKS.
AX08 00015	N.A.	P	JUN 69 - CHANGES WIRING PRINTS.
AX08 00016	AX08 1-236>	F	AUG 69 - CONNECTS "CNEN (1)" TO THE DIRECT CLEAR INPUTS OF CL4 THROUGH CL0 TO PROVIDE THE PULSE NECESSARY TO CLEAR THEM WHEN "RC CLOCK" IS ENABLED.
AX08 00017	N.A.	M	AUG 69 - MODIFIES INSTRUCTIONS FOR SILK SCREENING OF LOGOS.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	AX08-00014		
M	AX08-00015		
N	AX08-00016		
P	AX08-00017		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	AX08-00016		

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E C DEC-O-LOG Engineering Change Order Log

BC01 F

CABLE,
PP67-C TO PA63

PROCESSOR TYPE Family of 8

BC01F-00001 CODE: P
DEC-70 - CORRECTION: Add diodes to the wire table for the connector cable.
In-plant effectivity -06 documentation change only

BC01F-A0002 CODE: F
APR-71 - PROBLEM: Removed +30V, 30 AWG bussing on PA63 thus using fewer conductors on cable. This increased overall resistance on +30V line.
CORRECTION: Add two jumpers to parallel the conductors on +30V line. Add jumpers from PI-PI to PI-UI and PI-VI to PI-NI on M908.
This FCO is to be installed in conjunction with FCO's PA68F-00013 or PA63-00011 and PR68D-00015 and PP67C-00008.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all BC01-F
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO)

BC01F-00003 CODE: D
DEC-71 - PROBLEM: When using long cables, there is no filtering on the data lines; thus the device will not work correctly.
CORRECTION: Replace M908 module with M979 module and add the M979 circuit schematic to the PA63 print set.

NOTE: See supplement ECO BC01F-0003A.
In-plant effectivity -01 phase-in

BC01F-0003A CODE: D
JUN-72 - PROBLEM: ECO BC01F-00003 has incorrect code. The ECO replaces M908 modules with M979 modules on a phase-in basis.
CORRECTION: Change ECO BC01F-00003 code from 01, phase-in, to 03, rework immediately.
In-plant effectivity -Changed to: 03 rework immediately

BC01F-B0004 CODE: F
FEBRUARY-74 – CORRECTION 1: Make corrections to drawing D-UA-BC01F-0-0.
PROBLEM 2: New cable clamp with handle replaces the old one without the handle under the same part number.
CORRECTION 2: Update models and build future cables using new clamp specified under #12-02790-00.
PROBLEM 3: BC01F, using Amphenol plug, needs color code.
CORRECTION 3: Add orange color code to P2. Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED – PR68-D and -E and the BC01H cable; ORANGE – PP67-C and -D and the BC01F cable; GREEN – PP67-A and -B and the #70-05062 cable.
In-plant effectivity – all future BC01F's should have this FCO installed.
Field effectivity – retrofit BC01F cables used on systems with PR68-D, -DA, -E, PP67-A, -B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.
(Time To Install And Test .2 Hour) (Kit Contents -NF1189 – FCO/Prints)

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Engineering Change Order Log
EC DEC-O-LOG

BC01 H

CABLE,
PR68-D TO PA63

PROCESSOR TYPE PDP-8 FAMILY

BC01H-A0001 CODE: F
APR-71 - PROBLEM: Removed +30V, -15V, 30 AWG bussing on PA63, thus using fewer conductors on cable. This increased overall resistance on +30V and -15V lines.
CORRECTION: Add two jumpers to parallel the conductors on +30V and -15V lines. Add jumpers from PI-U-SIDE 1 to PI-U-SIDE 2 and PI-P-SIDE 1 to PI-B-SIDE 2

NOTE: This FCO is to be installed in conjunction with FCO's PA68F-00013 or PA63-00011 and PR68D-00015 and PP67C-00008.
In-plant effectivity -03 rework immediately
Field effectivity -All BC01-H
(Time To Install And Test 4 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO)

BC01H-00002 CODE: D
DEC-71 - PROBLEM: When using long cables, there is no filtering or noise suppressor on data lines. This causes modules to be destroyed in logic.
CORRECTION: Replace M908 module with M978 module and add the M908 circuit schematic to the PA63 print set.

NOTE: See supplement ECO BC01H-0002A.
In-plant effectivity -01 phase-in

BC01H-0002A CODE: D
JUN-72 - CORRECTION: Change ECO BC01H-00002 disposition code from 01, phase-in, to 03, rework immediately.
In-plant effectivity -Changed to 03 rework immediately

BC01H-B0003 CODE: F
FEBRUARY-74 - CORRECTION 1: Make correction to drawing D-UA-BC01H-0-0.
PROBLEM 2: New cable clamp with handle replaces the old one without the handle under the same part number.
CORRECTION 2: Update models and build future cables using new clamp specified under #12-02790-00.
PROBLEM 3: BC01H using Amphenol plug needs color code.
CORRECTION 3: Add red color code to P2. Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED – PR68-D and -E and the BC01H cable; ORANGE - PP67-C and -D and the BC01F cable; GREEN – PP67-A and -B and the #70-05062 cable.
In-plant effectivity – all future BC01H's should have this ECO installed.
Field effectivity - retrofit all BC01H cables used in systems with PR68-D, -DA, -E, PP67-A, -B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.
(Time To Install And Test .2 Hour) (Kit Contents – NF1188 - FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

CR04

Card Reader

PROCESSOR TYPE All

CR04-A0001 **CODE: F**
DEC-72 - PROBLEM: This is a DEC distribution of vendor ECO's : Documation #EO-2091, 2099, and 3000. Card stacking problems with model M200 card readers in low humidity environments.
CORRECTION: Add new stacker plates.
In-plant effectivity -02 phase-in
Field effectivity -Retrofit all CR10-F, CR11, CR12-F, CR15-F, CR8-F, CR8/I-F with serial numbers under 720400.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

CR04-B0002 **CODE: F**
JAN-73 - PROBLEM: This is a DEC distribution of a vendor ECO : Documation #EO-2009. Picking problems may occur under low humidity operation.
CORRECTION: Add new riffle cap and follower.

NOTE: For DEC SYSTEM-10, reference FCO CR10-A0009.
In-plant effectivity -03 retrofit
Field effectivity -Retrofit all CD11's, CR15-D's and CR15-E's, M1000's and M1200's, with serial numbers under 720400.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

CR04-B0003 **CODE: F**
JAN-73 - PROBLEM: This is a DEC distribution of a vendor ECO : Documation #EO-2009. Picking problems may occur under low humidity operation.
CORRECTION: Add new riffle cap and follower.

NOTE: For DEC SYSTEM-10, reference FCO CR10-A0009.
In-plant effectivity -03 retrofit all CD11 and CR8/I-F. Retrofit CR11 as required.
Field effectivity -Retrofit all CD11's, CR8/I-F, CR8/F and CR15-F, M200's, with serial numbers under 720400. Retrofit CR11's as required.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

CR04-B0004 **CODE: F**
JAN-73 - PROBLEM: This is a DEC distribution of a vendor ECO : Documation #EO-2009. Last card may not pick when using new riffle cap.
CORRECTION: Add new input follower.

NOTE: FCO CR10-A0009, which adds a new riffle cap, is a prerequisite to this FCO.
In-plant effectivity -03 retrofit
Field effectivity -Retrofit all CR10-D's and CR10-E's, M1000's and M1200's, with serial numbers under 720400.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

CR04-B0005 **CODE: F**
JAN-73 - PROBLEM: This is a DEC distribution of a vendor ECO : Documation #EO-2009. Last card may not pick when using new riffle cap.
CORRECTION: Add new input follower.

NOTE: FCO CR10-A0009, which adds a new riffle cap, is a prerequisite to this FCO.
In-plant effectivity -03 retrofit
Field effectivity -Retrofit all CR10-F's, M200's, with serial numbers under 720400.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

CR04-E0006 **CODE: F**
MAY-73 - PROBLEM: This is a DEC distribution of a vendor FCO : Documation ECO #00000896. Drive motor shutdown may be desired.
CORRECTION: Rewire so that drive motors shutdown when last card is read.
In-plant effectivity -Install at customer request.
Field effectivity -Optional: Install only at customer request on CR04-H and CR04-J.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 45.00 , DEC Labor -See Note) NOTE: The DEC on-site labor charge will be the time required to install and test the FCO at the current hourly rate. (Kit Contents -FCO/Prints And Parts)

CR04-B0007 **CODE: F**
MAY-73 - CORRECTION: This is a DEC distribution of a vendor ECO, Documation ECO M/L1140769J K1. Changes the blower motor capacitor from 10 ufd, 365 volts to 10 ufd, 370 volts; the new part required is Documation #45F276.
In-plant effectivity -None
Field effectivity -Retrofit all 230 volt, 50 Hz CR04's with serial number below 7301001.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

CR04-E0008 **CODE: F**
MAY-73 - CORRECTION: This is a DEC distribution of a vendor ECO : Documation ECO #101393-01. It shuts off drive motors after the last card has been read. This FCO is applicable to CR04-E, CR04-F, CR10-D, and CR15-D.
In-plant effectivity -None
Field effectivity -Optional; install only at customer request.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 30.00) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO/Prints And Parts)

CR04-E0009 **CODE: F**
MAY-73 - CORRECTION: This is a DEC distribution of a vendor ECO : Documation ECO #00000895. It shuts off drive motors after the last card has been read. This FCO is applicable to CR04-A, CR04-B, CR04-C, CR04-D, CR8-F, CR8/I-F, CR10-F, CR11, CR12-F, and CR15-F.
In-plant effectivity -None
Field effectivity -Optional; install only at customer request.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 15.00)
the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents --FCO/Prints And Parts)

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ECO SYNOPSES FOR LOGIC OR OPTION

BUFFERED ASYNCHRONOUS LINE INTERFACE **DC02-F**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8	JANUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DC02F 00001	DC02F 2-16>	P	JUN 70 - CORRECTS VARIOUS PRINT ERRORS. CORRECTS ENGINEERING SPECIFICATIONS. DOCUMENTS THE NEED FOR AN M850 MODULE IN SLOT A24 FOR USE BY FIELD PERSONNEL IN CHECKING DATA TRANSFERS WHEN INSTALLING AND TESTING THE DC02F.
DC02F 00002	DC02F 2-16>	D	JUL 70 - CHANGES FROM "BB INITIALIZE" ON I/O CABLE #4 TO "BA INITIALIZE" ON I/O CABLE #1. CORRECTS THE WIRE TABLE TO INDICATE THE CORRECT GUAGE OF POWER WIRING. CORRECTS VARIOUS PRINTS.
DC02F 00003	N.A.	P	SEP 70 - ADDS INSTALLATION PROCEDURES TO THE ENGINEERING SPECIFICATIONS DRAWING, A-SP-DC02-F-5.
DC02F E0004	ALL DC02F PRINT SETS	F	SEP 70 - ORDERS THE ADDITION OF THE H716 POWER SUPPLY SCHEMATIC TO THE CUSTOMER PRINT SET (PRINT C-CS-3009282-0-0). (*$.00, **NONE, ***$.00)
DC02F C0005	DC02F 1-31>	F	NOV 70 - SPECIFIES THAT THERE IS TO BE NO COMMON CONNECTION BETWEEN EITHER THE +5 OR -15 VOLT SOURCES FROM THE TWO POWER SUPPLIES. PROVIDES ADDITIONAL BAUD RATE CAPABILITIES FROM THE M921 SLOT B05 BAUD RATE SELECTOR MODULE FOR THE VT06. ADDS A PRINT REFERENCE NOTE DEFINING REQUIRED CHANGES FOR 10 BIT WORD CAPABILITY WITH THE PREWIRED 11 BIT WORD. MODIFIES THE ENGINEERING SPECIFICATIONS TO DEFINE ACCEPTABLE TRANSMISSION DISTANCES. (*$5.00, **NONE, ***$25.00) (TIME TO INSTALL AND TEST - 1.0 HOUR)
DC02F E0006	ALL DC02F FIELD RETROFIT AS REQUIRED	F	AUG 71 - DOCUMENT S LOGIC AHANGES REQUIRED TO PERMIT FIVE DATA BIT OPERATION. (*$5.00, **NONE, ***$50.00) (TIME TO INSTALL AND TEST - 2.0 HOURS)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	DC02F-00001		
B	DC02F-00002		
C	DC02F-00003		
D	DC02F-E0004		
E	DC02F-C0005		
F	DC02F-E0006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	DC02F-00002		
B	DC02F-C0005		
C	DC02F-E0006		

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DDO1

UDC Control and Interface

PROCESSOR TYPE PDP-8 FAMILY

DD01-00001 CODE: D ML: A WL: A
MAR-71 - PROBLEM 1: B INITIALIZE , used in synthesizing C START , is wrong polarity from the PDP-8/I.
CORRECTION 1: PWR CLR 2 L from C06N1, inverted by the M112 gate in A07, is substituted as input to A07L1. This signal is correct polarity from either PDP-8/I or PDP-8/L.
PROBLEM 2: Double bussing of "T " pins is poor risk.
CORRECTION 2: Eliminate double bussing. Remove wiring from "T1 " pins of "D ", "E ", and "F " sets, slots 11 through 14.
PROBLEM 3: Signal names incorrect on print.
CORRECTION 3: Change X OUT to ADRX and Y OUT to ADRY .
In-plant effectivity -03 rework immediately

DD01-00002 CODE: P ML: B
APR-71 - PROBLEM: Print D-AD-70068250-0-0 shows E11T2 through E14T2 grounded.
CORRECTION: Remove from ground.
In-plant effectivity -06 documentation change only

DD01D-00003 ML: C

DD01-00003 CODE: D ML: D
JUL-72 - CORRECTION: Replace M302 modules with M3020's.
In-plant effectivity -Retrofit as of 6/26/72 .

DD01-B0004 CODE: F ML: E WL: B
AUG-72 - PROBLEM: Wires missing from LOAD DATA circuit. Input to one-shot floating.
CORRECTION: Add wire changes to complete circuit.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all UDC-8 systems shipped before August 15, 1972
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints)

DD01D-00004 ML: F

DD01D-00005 ML: H

DD01D-00006 ML: J

DD01-C0005 CODE: F ML: K WL: C
MAY-73 - PROBLEM: If an interrupt occurs during a SKP instruction, the INTERRUPT flip-flop will be cleared and the UDC interrupt will be disabled, and may not issue an INT REQUEST to the PDP-8.
CORRECTION: Double buffer the UDC INTERRUPT FLAG and inhibit interrupting during a SKP instruction.
In-plant effectivity -03 retrofit
Field effectivity -Retrofit all systems when symptoms are present and all systems using INDAC software with interrupt modules.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

DD01D-00007 ML: L

DD01D-00008 ML: M

DD01-C0006 CODE: F ML: N WL: D
AUGUST-74 – PROBLEM: Crosstalk and noise on WD00 line.
CORRECTION: Reroute WD00 line, B12C1 to E11F2, to right side of logic assembly; the FCO provides a diagram of the routing.
In-plant effectivity – Retrofit all DD01's in-plant.
Field effectivity – Retrofit DD01 if noise or crosstalk problems are present.
(Time To Install And Test 1.0 Hour.) (Documentation $5.00, parts none)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents – NF1322 5N* – FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

CONTROLER FOR THE UDC-11 **DDØ1-D**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-11	APRIL 1972	Ø

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DDØ1-D A0001	ALL DDØ1-D IN UDC-11	F	FCO RELEASE DATE - FEBRUARY 1972 PROBLEM 1: "C INIT L" SOURCE DRIVES EXCESSIVE LOADS. CORRECTION 1: CHANGE LOAD DISTRIBUTION TO MEET DRIVE CAPABILITY. PROBLEM 2: IMMEDIATE INTERRUPT HAS FIXED PRIORITY LEVEL 6. CORRECTION 2: ADD A G736 PRIORITY OPTION CARD. CORRECTION 3: DELETES G827 WHICH DOES NOT MEET POWER FAIL SPECIFICATIONS. PROBLEM 4: M782 IS BEING PHASED OUT OF PRODUCTION. CORRECTION 4: REPLACE THE M782 WITH AN M7821 WHEN THE M7821 IS AVAILABLE. CORRECTION 5: CORRECTS ERRORS IN THE WIRE LIST RUNS. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - RETROFIT ALL DDØ1-D IN UDC-11 "F" CODED ML REVISION "A" AND WL REVISION "A" ARE CREATED TIME TO INSTALL AND TEST - 5.Ø HOURS THIS FCO IS NO CHARGE TO CUSTOMER. ORDERED KIT WILL INCLUDE FCO, PRINTS AND PARTS.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	DDØ1D-00001		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	DDØ1D-00001		

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DD02

EXPANSION FILE UNIT, UDC8, UDC11

PROCESSOR TYPE PDP-8 & 11 FAMILIES, 12, 15

DD02-00001 CODE: D ML: A
MARCH-71 – PROBLEM: Quad size printed circuit cards are breaking the ends out of the 288 pin connector blocks.
CORRECTION: The 288 pin block is to be reworked with the block ends slotted, therefore, there is no end to break out. Add rework drawing D-AD-7007253 to the drawing set.
In-plant effectivity – phase-in

DD02-00002 CODE: D ML: B WL: A
MARCH-71 – PROBLEM 1: Signal lines missing from Wire List.
CORRECTION 1: Add signal lines BPCL and BPOP.
PROBLEM 2: Double bussing of "T" pins is poor risk.
CORRECTION 2: Eliminate double bussing.
PROBLEM 3: Signal names incorrect on print.
CORRECTION 3: Change X OUT to ADRX and Y OUT to ADRY.
In-plant effectivity – retrofit immediately

DD02-B0003 CODE: DF ML: C WL: B
MARCH-71 – PROBLEM: Crosstalk on initialize lines in DD02 system unit.
CORRECTION: Reroute critical lines away from data lines; the signal lines affected are **LOAD, START H, X,** and **Y.**
In-plant effectivity – retrofit immediately
Field effectivity – retrofit all DD02's
(Time to Install and Test .5 hour.) (Kit Contents – FCO/prints)

DD02-00004 CODE: P ML: D
NOVEMBER-71 – PROBLEM: Data bits on UDC11 systems are reversed from UDC-8/15 systems.
CORRECTION: Change notation on DD02 print to reflect UDC11 data notation.
In-plant effectivity – Documentation change only

DD02-C0005 CODE: F ML: E
MARCH-74 – PROBLEM: +5 volt power distribution is inadequate.
CORRECTION: Add a G772 Power Connector to the DD02. The add/delete's are as follows: DELETE A03A2 to B03A2, B03A2 to C03A2, C03A2 to D03A2, D03A2 to E03A2, and E03A2 to F03A2; ADD A03H2 to B03A2, A03J2 to C03A2, A03K2 to D03A2, A03L2 to E03A2, and A03M2 to F03A2.

NOTE: In the field, this FCO must be installed in conjunction with FCO IDAC-C0004.
In-plant effectivity – retrofit all units in-plant. This ECO must be installed in conjunction with ECO's DD01D-00007 and IDAC-00004.
Field effectivity – retrofit all DD02 Expander Files if power problems are present.
(Time to Install and Test 1.0 hour.) (Documentation $5.00, parts $7.00)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.
(Kit Contents – PF1221 – FCO/prints and parts)

DD02-C0006 CODE: F ML: F WL: C
AUG-74 - PROBLEM: Crosstalk and noise on WD00 line.
CORRECTION: Reroute WD00 line, B02C1 to E01F2, to right side of logic assembly. The FCO provides a diagram showing the new routing.
In-plant effectivity -Rework all DD02's in-plant
Field effectivity -Retrofit DD02's if noise or crosstalk problems are present.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -NF1324 5N * -FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

DEC DISK AND CONTROL
32K - 12 BIT & PARITY

DF32

PRODUCT LINE		PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8	PDP-8S	APRIL 1970	0
PDP-8I	PDP-12		
PDP-8L	LINC-8		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSES
PDP-8 #166	DF32 6-21>	P	JUL 67 - CORRECTS THE RUN FOR THE SIGNAL EWL. CORRECTS AND BRINGS THE EXTERNAL COMPONENT LIST UP TO DATE.
PDP-8 #174	DF32 6-21>	P	AUG 67 - CORRECTS PRINTS TO AGREE WITH ACTUAL MANUFACTURING PROCEDURES.
PDP-8 #178	DF32 1-56>	F	SEP 67 - CHANGES THE WLO LINE AND ADDS A CLAMP. ADDS A CIRCUIT ON THE UNIT SELECT SWITCH. CHANGES 8S TERMINATION ON THE W028 MODULE. (ERROR CORRECTED BY ECO PDP-8 #178A)
PDP-8 #178A	DF32 1-121>	F	OCT 67 - CORRECTS ECO PDP-8 #178; CHANGES TWO 7.5K OHM RESISTORS TO 4.7K.
PDP-8 #222	DF32 1-3, 5-121>	F	DEC 67 - ADDS CLAMP LOADS. ADDS GATING OF W1A AND W1B.
DF32 00001			JUL 68 - THIS ECO IS SUPERCEDED BY ECO DF32-00002.
DF32 00002	N.A.	M	JUL 68 - ADDS VARIATIONS B AND C, FOR 50 AND 60 CYCLE, TO FIT THE NEW 950-A CABINET.
DF32 00003	>DF32	M	JUL 68 - ADDS A HOLD DOWN BAR AND NECESSARY HARDWARE TO PROTECT THE UNIT DURING SHIPMENT.
DF32 00004	DF32 1-310>	F	SEP 68 - SPECIFIES PROPER PDP-8, 8S, AND 8I TERMINATION. CHANGES LOGIC TO PREVENT AN INVALID DATA BREAK DURING A SYSTEM POWER-UP. THIS ECO SPECO INCLUDES CONSIDERABLE MATERIAL WHICH IS OF CONCERN ONLY TO IN-PLANT PRODUCTION PERSONNEL. A FIELD SERVICE ADDENDUM EXPLAINS THE EXTENT OF FIELD SERVICE INVOLVEMENT.
DF32 00005	>DF32	M	SEP 68 - DELETES MACHINING GUIDE HOLES IN THE DISK DECK.
DF32 00006	DF32 433>	M	OCT 68 - IMPLEMENTS A REDESIGN OF THE RIGHT SWITCH PLATE ASSEMBLY.

LEGEND

FIELD CODE

F = Field action may be required
D Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X - Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z Charge for on site labor only, installation by DEC
NOTE Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8- #166		
B	PDP8- #174		
C	PDP8- #178		
D	PDP8-#178A		
E	PDP8- #222		
F	DF32-00004		
H	DF32-00006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8- #166		
B	PDP8- #178		
C	PDP8- #222		
D	DF32-00004		
E	DF32-00006		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DF32 00007	>DF32	M	OCT 68 - INCREASES LEG MASS TO PROVIDE VIBRATION ISOLATION.
DF32 00008	DF32 116,400> ALL WITH CR03	F	NOV 68 - ORDERS INSTALLATION OF A MAINTENANCE SWITCH WHICH DISABLES IOT'S 63X IN THE DF32 TO ELIMINATE CONFLICT WITH THE CR03. (ERRORS CORRECTED BY ECO DF32-00009)
DF32 00009	DF32 116,400> ALL WITH CR03	F	NOV 68 - CORRECTS ERRORS IN ECO DF32-00008; REVERSES LABELS ON THE MAINTENANCE SWITCH AND CHANGES THE DESIGNATION "NORMAL" TO "OPERATE".
DF32 00010	N.A.	M	NOV 68 - ALTERS PROTRUSION OF THE PLASTIC COVERS.
DF32 00011	DF32 1-474>	P	JAN 69 - CLARIFIES NOTES ON THE PRINTS WHICH REFER TO USE WITH BI.
DF32 00012	>DF32	M	JAN 69 - ADDS AN ADHESIVE TO THE ENDS OF THE TIMING TAPE ON THE PERIPHERY OF THE DISK.
DF32 00013	N.A.	P	JAN 69 - ADDS A CABLE DRAWING.
DF32 00014	>DF32	M	JAN 69 - ADDS A SPACER TO PREVENT BOWING OF THE COVER ASSEMBLY WHEN THE SHIPPING SCREW IS TIGHTENED.
DF32 00015	>DF32	M	FEB 69 - MODIFIES THE MECHANICAL ASSEMBLY TO ACCEPT THE NEW LEGS.
DF32 00016	>DF32	M	APR 69 - CHANGES HOLE SPECIFICATIONS TO FACILITATE MOUNTING OF THE NEW LEGS.
DF32 00017	N.A.	P	APR 69 - ADDS "WRITE LOCK OUT" AND "UNIT SELECT" SWITCH PIN LOCATIONS AND SIGNAL NAMES TO THE PRINTS.
DF32 00018	N.A.	M	APR 69 - CHANGES HEAD AND DISK ASSEMBLY PROCEDURES.
DF32 00019	N.A.	P	MAY 69 - CHANGES THE WIRING PRINT FOR 115 VAC, 50 HZ UNITS.
DF32 00020	>DF32	M	JUN 69 - ADDS HOLES WHICH ARE REQUIRED FOR THE MOUNTING OF SHIPPING HARDWARE IN THE DFMA.
DF32 00021	N.A.	P	JUN 69 - ADDS A CIRCUIT SCHEMATIC OF THE POWER PANEL AND CORRECTS THE PARTS LIST.
DF32 00022	>DF32	M	JUL 69 - ADDS SPECIFICATIONS FOR THE USE OF A NEW PLASTIC BEZEL.

LEGEND

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ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
J	DF32-00007	T	DF32-00021
K	DF32-00008	U	DF32-00022
L	DF32-00009		
M	DF32-00010		
N	DF32-00011		
P	DF32-00014		
R	DF32-00017		
S	DF32-00018		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

E C DEC-O-LOG

Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

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MAYNARD, MASSACHUSETTS 01754

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

DEC DISK AND CONTROL
32K - 12 BIT & PARITY

DF32

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-12	JULY 1971	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DF32 00023	>DF32	M	AUG 69 - INCREASES THE LENGTH OF THE DATA HEAD HARNESS TO 22", WHICH ELIMINATES STRAIN.
DF32 00024	N.A.	M	OCT 69 - UPDATES MOTOR AND HUB ASSEMBLY DRAWINGS TO AGREE WITH ACTUAL MANUFACTURING PROCEDURES.
DF32 00025	>DF32	M	OCT 69 - CHANGES THE INSTRUCTIONS FOR THE DRILLING OF HOLES IN THE DISK DECK.
DF32 A0026	DF32 1100>	F	OCT 69 - CONNECTS "POWER CLEAR" TO A18L TO CLEAR THE PARITY FLIP-FLOP WHEN POWER IS FIRST APPLIED, WHICH WILL ELIMINATE THE POSSIBILITY OF AN ERRONEOUS INITIAL PARITY ERROR INDICATION. CORRECTS THE WIRE LIST. (*$5.00, **NONE, ***$13.00)
DF32 00027	>DF32	M	DEC 69 - CHANGES A CHASSIS DIMENSION.
DF32 00028	>DF32	M	DEC 69 - CHANGES THE MECHANICAL DIMENSIONS OF A MOUNTING PANEL BRACKET.
DF32 00029	>DF32	M	DEC 69 - MAKES SEVERAL CORRECTIONS TO THE POWER PANEL ASSEMBLY: CHANGES THE WIRE SIZE SPECIFICATION; ADDS A DECAL; SPECIFIES THE USE OF SOLDERLESS CONNECTORS.
DF32 00030	>DF32	M	DEC 69 - REDUCES TOLERANCE FOR THE MACHINING OF THE DISK HUB TO FACILITATE ACCURATE SETTING OF THE HEADS.
DF32 00031	>DF32	M	JAN 70 - SPECIFIES FINISH FOR THE RIGHT BLANK PLATE.
DF32 00032	>DF32 >DF32-D	M	FEB 70 - CHANGES THE POWER PANEL TO BE DF32 AND DF32-D COMPATIBLE.
DF32 00033	>DF32	M	FEB 70 - SPECIFIES THAT FLAME RETARDANT MATERIAL IS TO BE USED FOR TOP AND BOTTOM COVERS.

LEGEND

FIELD CODE

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SYMBOL

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ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
V	DF32-A0026		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
F	DF32-A0026		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DF32 00034	ALL FUTURE DF32	M	FEB 70 - MODIFIES THE #70-05316 TIMING CABLE FOR SECURING IT TO THE W023-A CONNECTOR, AND TO PREVENT SHORTING AND BROKEN CONDUCTORS.
DF32 00035	ALL FUTURE DF32	M	APR 70 - SPECIFIES THAT LEADS NOT BE SOLDERED TO THE 120 VAC RECEPTACLE TERMINALS, BUT THAT SOLDERLESS CRIMP LUGS BE USED.
DF32 00036	ALL FUTURE DF32	M	MAY 70- EXTENDS THE LENGTH OF THE 7005316 TIMING HEAD CABLE TO FACILITATE SERVICING OF THE LOGIC.
DF32 00037	ALL FUTURE DF32	M	JUN 70 - DELETES A NO-LONGER-NEEDED CUTOUT.
DF32 00038	ALL FUTURE DF32	M	JUL 70 - SPECIFIES THE USE OF A W077 CONNECTOR CARD RATHER THAN THE W033 FOR THE DATA HEAD HARNESS. PROVIDES THAT THE FLEX PRINT CABLE IS TO BE SOLDERED IN SUCH A WAY THAT THERE WILL BE NO FOLDS.
DF32 00039	ALL FUTURE DF32	M	NOV 70 - CHANGES A MECHANICAL RELIEF ON THE MOTOR HUB TO FACILITATE MACHINING.
DF32 00040	N.A.	M	JAN 71 - PROVIDES PACKAGING INSTRUCTIONS FOR INTERPLANT SHIPMENT OF THE DF32 WRITE LOCKOUT SWITCH ASSEMBLY.
DF32 00041	N.A.	P	FEB 71 - ADDS PACKAGING INSTRUCTIONS TO THE MECHANICAL DRAWINGS FOR THE DF32.
DF32 00042	ALL FUTURE DF32	M	APR 71 - CHANGES THE DISK DECK TO A CASTING.

LEGEND

FIELD CODE

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M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
W	MISC- #64		
Y	MISC- #75		
Z	DF32-00038		
AA	DF32-00040		
AB	DF32-00041		
AC	DF32-00042		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

DF32-B0004 CODE: F ML: F WL: D
AUG-68 - CORRECTION 1: Correct prints and add notes for DF32 use with PDP-8/I.
PROBLEM 2: Invalid data break possible with system turn-on.
CORRECTION 2: Change buffered WCOP line from direct set input of WCO to the zero output of the flip-flop. Add PCL to the direct set input.
PROBLEM 3: Nylon screws do not immobilize disk during transport.
CORRECTION 3: Correct Parts List and Unit Assembly drawings to show new shipping hardware.
CORRECTION 4: Lengthen right and left switch wires which are too short.
In-plant effectivity -DF32 #310 and future
Field effectivity -Retrofit DF32's #1 thru #309, correction 2 only; correction 1 as required.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts None , DEC Labor $ 30.00) (Kit Contents -FCO/Prints)

DF32-C0043 CODE: F
JUL-71 - PROBLEM: Replacement of photo diode block and amplifier will become difficult because these items are no longer being manufactured. Photo diode amplifier drifts and is the cause of 50% of all DF/DS32 service calls.
CORRECTION: Delete photo diode amplifier and platter tape and replace with an integrating delay to detect the gap area. This FCO cannot be installed in DF/DS32 serial numbers 1 thru 433.

NOTE: See correction supplement FCO DF32-E0047.
In-plant effectivity -N/A
Field effectivity -Retrofit all units in the field above serial #433.
(Time To Install And Test 4.0 Hours.) this FCO is available only for installation by DEC at $ 350.00 (Kit Contents -FCO/Prints And Parts) Supplement FCO DF32-E0047 will also be included in the kit.

DF32-00044 CODE: P ML: AD
AUG-71 - PROBLEM: Power Panel prints not included in print set.
CORRECTION: Add the Power Panel assembly prints to the Master Drawing List so they will become part of the DF32 print set.
In-plant effectivity -06 documentation change only.

DF32-00045 CODE: P
SEP-71 - PROBLEM: Incorrect note on drawing E-MD-7405535-0-0 .
CORRECTION: Remove note 2 from drawing.
In-plant effectivity -06 documentation change only.

DF32-00046 CODE: P ML: AE
OCT-71 - PROBLEM: Print D-IC-DF32-0-8 calls out the wrong Power Supply.
CORRECTION: Change print to call out the 799 Power Supply.
In-plant effectivity -06 documentation change only.

DF32-E0047 CODE: F ML: AF WL: H
FEB-72 - PROBLEM 1: FCO DF32-C0043 is marked field retrofit only. New DF/DS32's are being shipped without the update.
CORRECTION 1: Modify all new DF/DS32's as per ECO DF32-C0043.
PROBLEM 2: FCO DF32-C0043 has an error in the ADD/DELETE sheet.
CORRECTION 2: Modify all future field retrofitting as follows: The ADD C27P to C27L must be changed to ADD C27P to C27C.

NOTE: This FCO creates DF32-B ML revision "Z " and DF32-C ML revision "Y ".
In-plant effectivity -All future DF/DS32's
Field effectivity -Correction to FCO DF32-C0043

DF32-E0048 CODE: F
JAN-73 - PROBLEM: When the power switch is in the "off " position, an 80 volt potential exists between the green and the blue or red terminals of the disk motor, resulting in danger to technical personnel making motor connections.
CORRECTION: Change position of red wire connection to switch as follows: There are two red wires on the center pole of the on/off switch. Remove the one going to pin 7 of the relay and reconnect it to the bottom pole of the switch.
In-plant effectivity -03 retrofit
Field effectivity -Retrofit all DF32's during routine maintenance.
(Time To Install And Test .3 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

E C
DEC-O-LOG

Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

32K DEC DISK **DF32-D**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-12	NOVEMBER 1971	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
			FEB 70 - REFERENCE ECO DF32-00032
DF32-D 00001	>DF32-D	M	FEB 70 - CORRECTS AN INCIDENTAL ERROR ON THE DF32-D PARTS LIST. CHANGES A DECAL TO ELIMINATE UNNECESSARILY RESTRICTIVE PANEL MANUFACTURING SPECIFICATIONS.
DF32-D 00002	DF32-D 1>	P	MAR 70 - MAKES VARIOUS CORRECTIONS, ADDITIONS, AND MODIFICATIONS THROUGHOUT THE PRINT SET.
DF32-D 00003	ALL DF32-D	D	MAR 70 - MODIFIES ASSEMBLY PROCEDURES TO FACILITATE PRODUCTION.
DF32-D 00004	ALL DF32-D	M	APR 70 - CORRECTS BOTH THE PARTS LIST AND THE MACHINING DIMENSIONS FOR THE LEFT END PANEL.
DF32-D 00005	>DF32-D	M	APR 70 - REMOVES INCORRECT LABELING FROM THE MOUNTING PANEL AND ADDS CORNER MARKS.
DF32-D 00006	>DF32-D	M	MAY 70 - REDUCES THE SIZE OF THE DECAL FOR THE POWER PANEL.
DF32-D 00007	DF32-D 1-47>	P	JUN 70 - ADDS ENGINEERING SPECIFICATIONS TO THE DF32-D PRINT SET.
DF32-D 00008	>DF32-D	M	JUL 70 - SPECIFIES A CHANGE IN THE LAYOUT OF THE SILK SCREEN.
DF32-D E0009	DF32-D 1-47 AND 48>	F	SEP 70 - ADDS GROUND WIRES TO ELIMINATE FLOATING CLOCK INPUTS OF THE EXTENDED ADDRESS FLIP-FLOPS; THIS IS ORDERED FOR ALL DF32-D #1 THROUGH #47 AND FUTURE. THE POWER SUPPLY SPECIFICATION IS CHANGED FOR DF32-D #48 AND FUTURE, NOT FOR FIELD RETROFITTING, TO REPLACE THE 705 WITH AN H709 AND THE 705B WITH AN H709B. (*$5.00, **NONE, ***$15.00)
DF32-D E0010	ALL DF32-D	F	SEP 70 - ADDS A DECAL TO THE DF32-D WHICH WARNS OF POSSIBLE DAMAGE TO THE DISK IF A TIMING TRACK WRITER IS IMPROPERLY OPERATED. (*$.00, **$.00, ***$.00)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	DF32D-00002		
B	DF32D-00007		
C	DF32-00038		
D	DF32D-E0009		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	DF32D-00002		
B	DF32D-E0009		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DF32-D A0011	ALL DF32-D	F	NOV 70 - ADDS A CAPACITOR AND TWO DIODES (EXTERNAL COMPONENTS) AND CORRECTS LOGIC TO PROVIDE PROPER LOADING OF SIGNAL LINES AND ELIMINATE RACE CONDITIONS. ADD/DELETE ERRORS ARE CORRECTED BY ECO DF32D-00012. (*$5.00, **$3.20, ***$30.00)
DF32-D A0012	ALL DF32-D	F	NOV 70 - CORRECTS ERRORS IN ECO DF32D-00011; CORRECTS TYPOGRAPHICAL ERRORS IN THE LISTING OF PIN DESIGNATIONS AND EXTERNAL ADD/DELETES. (*$.00, **$.00, ***$.00 INCLUDED IN THE DF32D-00011 KIT)
DF32-D C0013	ALL DF32-D	DF	DEC 70 - CHANGES LOGIC TO ALLOW THE "TRC" FLIP-FLOP TO BE SET ON A TRANSFER TO THE LAST ADDRESS ON THE DISK. RESOLVES A TIMING PROBLEM WHICH IS A RESULT OF "ADD ACC" OCCURRING EARLIER IN THE PDP-8, DEPENDING UPON MEMORY TIMING. FIELD IMPLEMENTATION THIS ECO IS ORDERED BY ECO DF32D-A0017. (*$.00, **NONE, ***$.00)
DF32-D 00014	ALL DF32-D	P	FEB 71 - CORRECTS THE WIRE LIST; THERE ARE NO CORRESPONDING MACHINE WIRING ERRORS IN THE FIELD.
DF32-D 00015	N.A.	P	FEB 71 - REFERENCES THE TIMING TRACK WRITER MASTER DRAWING LIST ON THE DF32-D MASTER DRAWING LIST.
DF32-D 00016	N.A.	P	FEB 71 - ADDS THE MANUFACTURING CHECK-OUT PROCEDURE, THE FIELD SERVICE ACCEPTANCE PROCEDURE, AND THE ACCESSORY LIST TO THE DF32-D MASTER DRAWING LIST.
DF32-D A0017	ALL DF32-D	F	MAY 71 - SPECIFIES THAT ALL DF32'S AND DS32'S ON A SYSTEM ARE TO OPERATE FROM A COMMON H721 POWER SUPPLY. REPLACES EXTERNAL TERMINATORS AND TERMIPOINT CONNECTIONS WITH A CARD CONNECTOR FROM THE FRONT PANEL SWITCHES INTO THE WIRED LOGIC. REPLACES AN M002 WITH AN M906 CLAMP LOAD MODULE. ORDERS FIELD IMPLEMENTATION OF ECO DF32D-C0013. (*$.00, **$.00, ***$.00)
DF32-D A0018	ALL DF32-D	F	MAY 71 - CORRECTS THE STATUS ERROR LOGIC SO THAT AN ERROR OCCURS ONLY WHEN THE WRITE LOCKOUT SWITCH IS ON AND A WRITE IS BEING ATTEMPTED THAT PORTION OF THE 16K DISK MEMORY. (*$.00, **NONE, ***$.00)
DF32-D C0019	ALL DF32-D ALL DF32-E	F	JUN 71 - CHANGES LOGIC TO INCREASE THE SLICE RANGE. DELETES THE DUPLICATED ADDITION OF DIODE D17 TO THE G085 BY ECO'S G085-00005 AND G085-00006 AND NOTES THAT BOTH THESE ECO'S ARE OTHERWISE IN G085'S USED IN DF32-D AND DF32-E. MODIFIES THE DF32-D ADJUSTMENT PROCEDURE. SPECIFIES THAT THE MANUFACTURING SPECIFICATIONS ARE NOT TO BE ROUTINELY INCLUDED IN CUSTOMER PRINT SETS. (*$.00, **NONE, ***$.00)
DF32-D 00020	N.A.	P	AUG 71 - ADDS DRAWINGS FOR CABINET CONFIGURATION, AC AND DC POWER WIRING, AND THE POWER PANEL TO THE DF32-D PRINT SET.

LEGEND

FIELD CODE

F = Field action may be required
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M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	DF32D-A0011	P	DF32D-00020
F	DF32D-C0013		
H	DF32D-00014		
J	DF32D-00015		
K	DF32D-00016		
L	DF32D-A0017		
M	DF32D-A0018		
N	DF32D-C0019		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
C	DF32D-A0011		
D	DF32D-C0013		
E	DF32D-00014		
F	DF32D-A0017		
H	DF32D-A0018		
J	DF32D-C0019		

DF32D-C0021 CODE: F ML: R WL: K
FEB-72 - PROBLEM: DRL was being set at the wrong time and successful breaks after DRL was set were clearing it, so at the end of a transfer DRL was cleared even though data was wrong.
CORRECTION: Change the setting of DRL to: If the end of the break cycle has not cleared NO BRK flip-flop at the time of address compare, ADC 1 , once DRL is set, don't clear it until next system clear, SCL .
In-plant effectivity -02 phase-in
Field effectivity -Retrofit all DF32-D's
(Time To Install And Test 2.0 Hours.) (Kit Contents –FCO/Prints)

DF32D-D0022 CODE: F ML: S WL: L
JUL-72 - PROBLEM 1: IOT ' S are not fully decoded. If instruction 6614 is issued while the Disk Extended Address register is counting, the count operation may be incorrect. Symptoms are the EXT DMA not finishing at the correct value.
CORRECTION 1: Decode IOT 6615 fully to separate it from 6614.
PROBLEM 2: Race conditions between AC bits changing and IOT width on PDP-8/E.
CORRECTION 2: Add pulse amplifier to shorten IOT 614 width for loading DISK EMA , etc.

NOTE: This FCO adds an M112 module in slot C27 and an M602 module in slot C26.
In-plant effectivity -03 -Retrofit immediately as of July 1, 1972.
Field effectivity -Retrofit all DF32-DN's and DF32-DP's
(Time To Install And Test 3.0 Hours.) (Kit Contents -F376 -FCO/Prints And Parts)

DF32D-C0023 CODE: F ML: T WL: M
APR-73 - PROBLEM 1: Race condition exists in adder circuit causing incorrect addresses to be formed.
CORRECTION 1: Hold bit eleven for one additional shift pulse and trigger the CARRY flip-flop later in time.
PROBLEM 2: External noise causing an increase or decrease in the number of shift pulses causes the disk memory address to be shifted out of position at TPI time.
CORRECTION 2: Add a redundant register to check for the error, add logic to correct if the error is detected, and generate a window to allow pulses only at specified times. The following modules are added by this fco: An M115 in slot C28, an M302 in slot D26, an M205 in slot D27, and an M233 in slot D28.

NOTE 1: See correction supplement FCO DF32D-C023A.

NOTE 2: MAINDEC 08-DIDFA-A, DF32 diskless, will not run with this FCO installed; a new or modified diskless MAINDEC will be released.

NOTE 3: This FCO creates DF32-EP and -EN ML revision "R ".
In-plant effectivity -03 retrofit -All machines out of Westfield by the end of April must have this FCO. Westminster -Retrofit only if symptoms are present.
Field effectivity -Retrofit all DF32-D's when symptoms are present
(Time To Install And Test 20.0 Hours.) (Kit Contents -F819 -FCO/Prints And Parts)

DF32D-C023A CODE: F
APR-73 - PROBLEM: Two wires missing on FCO DF32D-C0023.
CORRECTION: Add two wires: DMA IN L , A15H2 to D27E2 and D27E2 to D28H2.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

DF32D-C0024 CODE: F ML: U WL: N
JUN-73 - PROBLEM 1: It is still possible to write one bad word on the disk.
CORRECTION 1: Since error cannot be detected until after the fact, flag the error with a DATA REQUEST LATE .
CORRECTION 2: Clean up documentation errors.

NOTE 1: This FCO creates DF32-EP and -EN ML revision "S ".

NOTE 2: See correction supplement FCO DF32D-C024A.
In-plant effectivity -03 * -Retrofit all machines in-house and in field which have FCO DF32D-C0023 already installed
Field effectivity -Retrofit all DF32-D's which have FCO DF32D-C0023.
(Time To Install And Test 1.0 Hour.) (Kit Contents -F1012 -FCO/Prints)

DF32D-C024A CODE: F
JUL-73 - PROBLEM: DRL clocked clear due to initial ADD/DELETE sheet for FCO DF32D-C0024.
CORRECTION: Disregard initial ADD/DELETE sheet and use new one included in this supplement.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

DF32D-C0025 CODE: F ML: V WL: P
JUL-74 - PROBLEM: When turning power on, the gap may not be detected unless an IOT is sent.
CORRECTION: Hold the SHIFT OK flip-flop set until the IOT is sent. The ADD/DELETE's are as follows: DELETE D27D1 to B15L2, B14M1 to B10U2, D27D1 to B14M1, B15L2 to A22K1, A15C1 to B16B1, D28C1 to B17J2, and B16B1 to D28C1; ADD B14M1 to B15L2, B10U2 to B14M1, B15L2 to A22K1, D27D1 to D28C1, A15C1 to B16B1, B16B1 to D27D1, and D28C1 to B17J2.
In-plant effectivity -All units in-plant by August 15, 1974 unless problem exists.
Field effectivity -Retrofit all DF32's which have FCO's DF32D-C0023, C023A, and C0024 installed.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -NF1291 -FCO/Prints)

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DF32D-TA

TIMING TRACK WRITER AND TESTER

PROCESSOR TYPE 8 FAMILY, PDP-12

DF32DTA-00001 CODE: D WL: A
APRIL-74 – PROBLEM 1: Print set does not reflect new packaging of tester.
CORRECTION 1: Update print set by adding new prints.
PROBLEM 2: False triggering of **WRITE ENABLE.**
CORRECTION 2: Add one-shot flip-flop.
CORRECTION 3: Update Wire List.

DF32DTA-E0002 CODE: DF DD: A WL: B
JULY-74 – CORRECTION 1: Update Parts List to indicate correct part number.
PROBLEM 2: Write Switch not drawn properly.
CORRECTION 2: Connect NC of switch shown on print.
PROBLEM 3: Does not address as manual states.
CORRECTION 3: Add appropriate gating. The ADD/DELETE's are as follows: DELETE A13H1 to A15R1, A15R1 to A16E1, A13A1 to A13J1, A14J1 to A15D1, A15E1 to A15F2, and A07V2 to A15F1; ADD A15R1 to A16F1, A15R1 to A13H1, A13J1 to A14N2, A14J1 to A14P2, A15F2 to A14R2, and A07V2 to A14S2.

NOTE: This FCO does not affect the operation of the disk. It allows the addressing special words to be written as stated in the manual. The disk will work the same as it presently does with the special word addresses.
In-plant effectivity – Retrofit as required.
Field effectivity – Optional, install only if desired in older model testers.
(Time To Install And Test .5 Hour.) (Kit Contents –NF1305 – FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

32K, 12 BIT + PARITY
DEC DISK

DS32

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-12	JULY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-8 #167	DS32 1-7 AND ALL FUTURE	D	JUL 67 - ADDS WIRING FOR WIA, WIB, AND EWL SIGNALS.
PDP-8 #177	DS32 1-25 AND ALL FUTURE	DF	SEP 67 - ADDS A CIRCUIT CONSISTING OF FOUR DIODES AND FOUR RESISTORS TO THE UNIT SELECT SWITCH. CHANGES THE GATING OF THE SIGNALS WIA AND WIB. THIS ECO IS CORRECTED BY ECO PDP8-#177A. (*$.00, **$.00, ***$.00)
PDP-8 #177A	DS32 1-25 AND ALL FUTURE	DF	OCT 67 - CORRECTS AN ERROR IN ECO PDP8-#177; CHANGES A RESISTOR VALUE FROM 7.5K OHMS TO 4.7K. (*$.00, **NONE, ***$.00 INCLUDED IN THE ECO PDP8-#177 KIT)
PDP-8 #223	DS32 1-47 AND ALL FUTURE	F	DEC 67 - ADDS TWO CLAMP LOADS. (*$5.00, **NONE, ***$5.00)
DS32 00001			THIS ECO WAS SUPERSEDED BY ECO DS32-00002.
DS32 00002	N.A.	M	JUL 68 - ADDS VARIATIONS DS32-B FOR 60 CYCLE AND DS32-C FOR 50 CYCLE AND DETAILS THEIR INSTALLATION IN THE NEW H950A CABINET.
DS32 00003	ALL FUTURE DS32	M	AUG 68 - SPECIFIES THAT LONGER WIRES ARE TO BE PROVIDED ON THE LEFT SWITCH. UPDATES THE PARTS LIST AND U.A. DRAWINGS.
DS32 00004	>DS32	M	NOV 68 - DEFINES THE USE OF PLASTIC COVERS TO ENSURE PROPER ALIGNMENT.
DS32 00005	ALL FUTURE DS32	M	FEB 69 - CHANGES A MATERIAL SPECIFICATION.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8- #167		
B	PDP8- #177		
C	PDP8-#177A		
D	PDP8- #223		
E	DS32-00003		
F	DS32-00004		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8- #167		
B	PDP8- #177		
C	PDP8- #223		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DS32 00006	N.A.	P	MAR 69 - ADDS A WIRED ASSEMBLY DRAWING.
DS32 00007	ALL FUTURE DS32	M	JUL 69 - ORDERS THE USE OF A NEW PLASTIC BEZEL.
DS32 00008	ALL FUTURE DS32	M	APR 71 - CHANGES THE DISK DECK TO A CASTING.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, Installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
H	DS32-00006		
J	DS32-00007		
K	MISC- #64		
M	DS32-00008		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

DS32-C0009 CODE: F
JUL-71 - PROBLEM: Replacement of photodiode block and amplifier will become difficult because these items are no longer being manufactured. Photodiode amplifier drifts and is the cause of 50% of all DF/DS32 service calls.
CORRECTION: Delete photodiode amplifier and platter tape and replace with an integrating delay to detect the gap area.

NOTE: See correction supplement ECO DS32-00010.
In-plant effectivity -N/A
Field effectivity -Retrofit all DS32's.
(Time To Install And Test 4.0 Hours.) this FCO is available only as a DEC installed kit at $ 200.00 (Kit Contents -FCO/Prints And Parts)

DS32-00010 CODE: D ML: P WL: D
FEB-72 - PROBLEM: FCO DS32-C0009 was written as field retrofit only. New DS32's are being shipped without this modification.
CORRECTION: Modify all DS32's as specified by that FCO.
In-plant effectivity -03 rework immediately.

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ECO SYNOPSES FOR LOGIC OR OPTION

32K, 12 BIT + PARITY
DEC DISK

DS32-D

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-12	JULY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
DS32-D 00001	>DS32-D AFTER 6-8-70	M	JUN 70 - SPECIFIES THAT THE WIRED ASSEMBLY IS TO BE MOUNTED ON A PIVOTING MOUNTING PANEL RATHER THAN A FIXED PANEL.
DS32-D 00002	DS32-D 0-10>	D	AUG 70 - CORRECTS THE WRITE LOCKOUT LOGIC. EXTENDS THE +5V BUS ON "D" RACK.
DS32-D 00003	ALL DS32-D ALL DS32-E	D	NOV 70 - ADDS 68 PFD CAPACITORS TO DAMP NOISE ON THE READ AMPLIFIERS.
DS32-D 00004	N.A.	P	FEB 71 - ADDS A MANUFACTURING CHECK-OUT PROCEDURE, A FIELD SERVICE ACCEPTANCE PROCEDURE, AND AN ACCESSORY LIST TO THE MASTER DRAWING LIST.
DS32-D A0005	ALL DS32-D ALL DS32-E	F	MAY 71 - SPECIFIES THAT ALL DF32'S AND DS32'S ON A SYSTEM ARE TO OPERATE FROM A COMMON H721 POWER SUPPLY. REPLACES EXTERNAL TERMINATORS AND TERMIPOINT CONNECTIONS WITH A CARD CONNECTOR FROM THE FRONT PANEL SWITCHES INTO THE WIRED LOGIC. REPLACES AN M002 WITH AN M906 CLAMP LOAD MODULE. SPECIFIES THAT ALL G085'S IN DF32'S AND DS32'S ARE TO BE REPLACED WITH G0850 OR REWORKED AS DESCRIBED IN ECO G085-00000. (*$.00, **$.00, ***$.00)
DS32-D B0006	ALL DS32-D ALL DS32-E	F	MAY 71 - CORRECTS THE STATUS ERROR LOGIC SO THAT AN ERROR OCCURS ONLY WHEN THE WRITE LOCKOUT SWITCH IS ON AND A WRITE IS BEING ATTEMPTED TO THAT PORTION OF 16K DISK MEMORY. (*$.00, **NONE, ***$.00)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
ML	FOR DS32-D	ML	FOR DS32-E
A	DS32D-00001	A	DS32D-00001
B	DF32 -00038	B	DS32D-00002
C	DS32D-00002	C	DS32D-00004
D	DS32D-00003	D	DS32D-00003
E	DS32D-00004	E	DS32D-B0006
F	DS32D-A0005		
H	DS32D-B0006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
WL	FOR DS32-D,-E		
A	DS32D-00002		
B	DS32D-A0005		
C	DS32D-B00006		

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DS32-D

32K 12 Bit and Parity DEC Disk

PROCESSOR TYPE Family of 8 and PDP-12

DS32D-C0007 CODE: F ML: J WL: D
JUN-71 - PROBLEM 1: FCO G085-C0005 added diode D17 and so did FCO G085-A0006 (for DF32-D only .
CORRECTION 1: Delete the addition of diode D17 in FCO G085-A0006.
PROBLEM 2: Need increased slice range.
CORRECTION 2: Make change to logic panel to include slice grounds.

NOTE: All G085's should have FCO G085-C0005 and G085-A0006 (less diode D17) in all DS32-D and -E .
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all DS32-D's and DS32-E's.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

DS32D-00008 CODE: P
AUG-71 - PROBLEM: DS32-D switch panel cable length too short.
CORRECTION: Add 2 inches to 7008411 cable length.
In-plant effectivity -06 documentation change

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Engineering Change Order Log
DEC-O-LOG

DW8-E

Omnibus Interface

PROCESSOR TYPE PDP-8 Family

DW8E-00001 CODE: M
OCT-72 - PROBLEM: To use slides, #74-09100, BM8L, on the DW8-E; the "T " handle is too long.
CORRECTION: Cut "T " handle to 1 3/4 inch length; tap end to 4-40 thread for 3/16 inch depth.
In-plant effectivity -06 documentation/mechanical change

DW8E-E0002 CODE: DF DD: A WL: A
APR-73 - PROBLEM 1: Changes to M7101 module affect control drawings.
CORRECTION 1: Change control drawings to reflect latest revision of M7101 module.
PROBLEM 2: Minor errors and vague areas in print set.
CORRECTION 2: Clean up print set and Wire List.

NOTE: This FCO does not affect the operation of the DW8-E.
In-plant effectivity -03 * -Do not retrofit ADD/DELETE's unless requested by a customer.
Field effectivity -Retrofit all DW8-E's with revision "" Wire List.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts None)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO/Prints)

DW8E-00003 CODE: P DD: B
APR-73 - CORRECTION: Add ECO LINC8M-00008 to Accessory List and Engineering Specifications.
In-plant effectivity -06 documentation change only

DW8E-00004 CODE: D
MAY-73 - PROBLEM: The Parts Lists for #70-09155 AC harness and #70-09288 DC harness specify Nylon tie wraps and Teflon insulated wires.
CORRECTION: Delete the Nylon and Teflon specifications.
In-plant effectivity -06 documentation change only

DW8E-00005 CODE: M DD: C
MAY-73 - PROBLEM 1: Chassis will not rotate fully because of fan screws and filter.
CORRECTION 1: Use slotted, binder-head screws on fans and cable trough, mount filter inside chassis; use spacers provided with slides.
PROBLEM 2: Slides won't unlock to push fully in; no shipping tie down.
CORRECTION 2: Use 10-32 screws and flat washers in tie down holes with 10-32 keynuts and captive tie-wraps.
In-plant effectivity -06 documentation/mechanical change

DW8E-00006 CODE: D
MAY-73 - PROBLEM 1: Rework to bolts provided with chassis slides no longer necessary.
CORRECTION 1: Disregard items #3 and #4 on rework print for chassis slide.
PROBLEM 2: I/O cable hole not large enough for flat coax; fan filter conflicts with slide when chassis is rotated; slides do not always unlock when chassis is pushed into cabinet.
CORRECTION 2: Change location and size of hole in chassis; mount filter inside chassis; mount slides near back of chassis.
In-plant effectivity -02 -Phase-in

DW8E-00007 CODE: D DD: D WL: B
JUN-73 - PROBLEM: Data is not on bus with sufficient time to charge the MB DCD gates on PDP-8 or LINC-8.
CORRECTION: Bring data onto bus at beginning of break cycle.
In-plant effectivity -03 * retrofit only DW8-E's to be installed on a PDP-8 or LINC-8.

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Engineering Change Order Log
DEC-O-LOG

GT40

Graphic Terminal

PROCESSOR TYPE All

GT40-00001 CODE: M
OCT-72 - CORRECTION: Corrected paint specifications and areas on several mechanical components.
In-plant effectivity -02 phase-in immediately

GT40-00002 CODE: P
OCT-72 - CORRECTION: Makes several corrections to Power Control Assembly drawing D-AD-7008930-0-0.
In-plant effectivity -06 documentation change only

GT40-00003 CODE: D
OCT-72 - CORRECTION: Corrects scope cable and drawing D-IA-7008993-0-0 with respect to deflection input signals which are reversed.
In-plant effectivity -03 rework immediately

GT40-00004 CODE: P WL: A
NOV-72 - PROBLEM: Wire List documentation incorrect.
CORRECTION: Change Wire List to correct name runs.
In-plant effectivity -06 documentation change only

GT40-00005 CODE: D
DEC-72 - PROBLEM: INT 2 on the W684 module was moved from pin V to pin 1; this causes INT 2 on the cable to be moved from P1-14 to P1-1.
CORRECTION: Move P1-14 to P1-1.
In-plant effectivity -03 retrofit immediately

GT40-A0006 CODE: F
FEB-73 - PROBLEM 1: GT40's NPR priority is too high.
CORRECTION 1: With FCO M7014-B0003 make the GT40 appear as last NPR device on the bus.
PROBLEM 2: Length of dash lines changes with change in vector length.
CORRECTION 2: With FCO M7013-B0002 use **DOWN COUNT CLK** to control dash lines.
PROBLEM 3: Possibility of 15 volts being applied to M7013 logic.
PROBLEM 4: Intensity flashes on scope on power-down.
PROBLEM 5: Double size characters to be removed.
PROBLEM 6: Vectors drawn off edge overdrive analog.
CORRECTIONS 3, 4, 5, 6: Make changes in conjunction with FCO's M7014-A0002, M7014-B0003, M7013-B0002 and A320-B0001.

NOTE: Do not install this FCO until the in-plant reworked boards, required for the prerequisite FCO's, are available. They are an A320 at CS revision "C ", an M7013 at CS revision "B ", and an M7014 at CS revision "C ".
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all GT40's #1 thru #136.
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints)

GT40-00007 CODE: D DD: B WL: B
FEB-73 - PROBLEM 1: Errors in etch back panel.
CORRECTION 1: Add and delete etch and wires as defined by this ECO.
PROBLEM 2: "Z " level of signal **PWR SUPPLY L CLK INT H** is incorrect.
CORRECTION 2: Correct "Z " level as shown in the ADD/DELETE sheet.
CORRECTION 3: FCO GT40-A0006 ADD/DELETE's must be added to GT40 Wire List.
In-plant effectivity -06 documentation change; all back panels have been wired correctly.

GT40-00008 CODE: P DD: C
MAR-73 - CORRECTION: Added options and prints to the GT40 Drawing Directory.
In-plant effectivity -06 documentation change only

GT40-00009 CODE: P DD: D WL: C
MAR-73 - CORRECTION: Change Wire List to correct errors; all back panels have been wired correctly.
In-plant effectivity -06 documentation change only/previously implemented

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E C DEC-O-LOG Engineering Change Order Log

H743

Power Supply

PROCESSOR TYPE All

H743-C0001 CODE: F CS: B

AUG-72 - PROBLEM: The heads and carriage assembly in the linear motor/ positioner of the RK05 may oscillate after the heads have been retracted by the battery.

CORRECTION: Add a 6,000 uf 10 VDC capacitor to the H743 power supply. The capacitor will be mounted on the power supply bracket and will be connected to the motor relay board by the power supply harness. The capacitor will be effectively across the linear positioner coil and will damp the head oscillations.

In-plant effectivity -03 rework immediately

Field effectivity -Retrofit all H743's in RK05's when symptoms are present. This FCO creates master drawing list revision B . (Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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ECO SYNOPSES FOR LOGIC OR OPTION
JOY STICK **H306**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8I	APRIL 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSES
H306 00001	>H306	M	FEB 69 - CHANGES THE POSITION OF TERMINALS ON THE BASE PLATE ASSEMBLY.
H306 00002	>H306	D	FEB 69 - SPECIFIES A CHANGE IN POT VALUE FROM 2500 OHMS TO 5000 OHMS. ADDS NOTES WHICH INDICATE HOW THE POT SHAFTS ARE TO BE REWORKED.
H306 00003	N.A.	P	FEB 69 - CHANGES THE DRAWING NUMBER FOR THE TERMINAL BOARD ASSEMBLY.
H306 00004	ALL H306	D	MAR 69 - SPECIFIES THE WIRING GAUGE AND COLOR CODING.
H306 00005	ALL H306	D	MAR 69 - CHANGES RESISTORS AND ADDS FOUR DIODES IN THE GAIN CONTROL CIRCUIT AND REVERSES THE WIRING OF R9.
H306 00006	>H306	M	APR 69 - ADDS SET SCREWS TO RETAIN THE HINGE ROD IN ITS HOUSING.
H306 00007	ALL H306	D	MAY 69 - CHANGES POT VALUE FROM 5000 OHMS TO 2500 OHMS. ELIMINATES CONTACT BOUNCE ON THE INTERRUPT BUTTON BY CHANGING C5 FROM 1 MFD. TO 6.8 MFD.
H306 00008	>H306	M	JUN 69 - SPECIFIES ZINC CHROMATE FINISH FOR THE BOTTOM PLATE. ORDERS THE USE OF A DIFFERENT MINI-HEX CONNECTOR.
H306 00009	ALL H306	D	JUL 69 - MODIFIES THE MOUNTING OF BOTH THE SWITCH AND ITS LEVER. ORDERS RELOCATION OF THE CONNECTOR.
H306 00010	ALL H306 FIELD RETROFIT AS REQUIRED	F	DEC 69 - ORDERS REPLACEMENT OF THE SWITCH BECAUSE OF SEVERE CONTACT BOUNCE. REPLACES THE TERMINAL BOARD WITH AN ETCHED BOARD.

LEGEND

FIELD CODE
- F Field action may be required
- D Design ECO
- P Print or Wire List change
- M Mechanical ECO

SYMBOL
- * ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses (**$X,**$Y,***$Z)
- $X Charge for Specs and updated prints only
- $Y Charge for necessary parts only
- $Z Charge for on site labor only, installation by DEC

NOTE Charges are additive ($X+$Y+$Z Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

H721

Power Supply

PROCESSOR TYPE PDP-8 Family, PDP-15

H721-00001 **CODE: M**
SEP-70 - PROBLEM: Hole layout for fuses would make it necessary to use a shorter fuse holder.
CORRECTION: Change layout from horizontal to vertical; update Silk Screen drawing C-SS-5309024-0-1.
In-plant effectivity -Phase-in as of 9-14-70

H721-00002 **CODE: D**
APR-71 - PROBLEM 1: Connector P3, Item #5, is too far away from harness.
CORRECTION 1: Shorten length of wires on P3 connector by 5/8 inch.
PROBLEM 2: Connector P3 is a potential problem because of quality of pins.
CORRECTION 2: Change type of connector used from a #12-10034 to #12-10380 and change the pins from #12-10036 to #12-10381.
In-plant effectivity -01 -Phase-in

H721-00003 **CODE: P**
MAY-71 - PROBLEM: Packaging instructions for the H721 Power Supply are not included in the print set.
CORRECTION: Add packaging instructions to the H721 Parts List.
In-plant effectivity -06 documentation change

H721-D0004 **CODE: F** **CS: A**
OCT-71 - PROBLEM 1: Grounded devices are being connected to the auto tap.
CORRECTION 1: Change silk screen and generate decal, for retrofit, to say "NO GROUNDED DEVICES TO BE USED ON AUTO TAP ".
CORRECTION 2: Update Circuit Schematic to show nine terminals.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all H721's
(Time To Install And Test .2 Hour.) (Kit Contents --FCO/Prints And Parts)

H721-00005 **CODE: P**
MAR-72 - CORRECTION: Update drawing E-IA-5309038-0-0 to add the welding symbol which is missing from BP/4B; it is the same as on BP/7B.
In-plant effectivity -Documentation/mechanical change

H721-00006 **CODE: D** **CS: B**
JUL-73 - CORRECTION 1: Correct Circuit Schematic errors.
PROBLEM 2: Changes are needed on Wire List due to changes in harness #1.
CORRECTION 2: Update Wire List accordingly.
CORRECTION 3: Relocate resistors R300, R310, and R200 to permit proper fitting of cover.
In-plant effectivity -Break-in of this ECO must coincide with implementing the following ECO's : 5409062-00001; 5408999-00001, 5409000-00001, 7007041-00001, 7007202-00001, and 5309022-00001.

H721-00007 **CODE: D** **CS: C**
OCT-73 - PROBLEM: The H721 Power Supply is to be used as a supplemental +5V source for some PDP-8/E systems. An OMNIBUS compatible +5V DC LOW signal must be available as an output from the H721 for this application.
CORRECTION: Add +5V low detection circuit to the Circuit Schematic and change the wiring table.
In-plant effectivity -Break-in of this ECO must coincide with the break-in of ECO 5408990-00005.

H721-00008 **CODE: M**
OCT-73 - PROBLEM: QC specifications, A-SP-7665099, require the use of internal tooth lockwashers for assembly of fuse holders to chassis.
CORRECTION: Add #90-08980 internal tooth lockwashers to Parts List and assembly drawings.
In-plant effectivity -Phase-in immediately

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ECO SYNOPSES FOR LOGIC OR OPTION

POWER SUPPLY FOR PDP8-E **H724**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	FEBRUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
			REFERENCE DEC-O-LOG FOR 5409264 CONTROL BOARD A1 AND 5409262 CONTROL BOARD A2.
H724 00001	>H724	D	DEC 70 - CHANGES ELECTRICAL POSITION OF FILTER CAPACITORS AND AC TIE POINTS TO ELIMINATE +5V LINE NOISE SPIKES RESULTING FROM THE USE OF THE CONVENIENCE OUTLETS. H724 CIRCUIT SCHEMATIC REVISION "A"
H724 B0002	ALL H724 RETROFIT ALL H724-A	DF	APR 71 - ORDERS THE USE OF A NEW BATHTUB CAPACITOR PART #10-02153 TO REPLACE PART #10-10193 WHICH CAN LEAK OIL. SPECIFIES THE USE OF PART #12-10364 CIRCUIT BREAKERS IN THE H724-A'S SHIPPED PRIOR TO 3-29-71. DEFINES SEVERAL INCIDENTAL HARDWARE CHANGES. ECO H724-C0007 EXPANDS UPON THIS ECO TO ORDER FIELD RETROFITTING OF THE BATHTUB CAPACITOR. H724 CIRCUIT SCHEMATIC REVISION "C"
H724 00003	>H724	M	APR 71 - SPECIFIES THE USE OF SOUTHCO FLOATING NUTS.
H724 00004	>H724	M	APR 71 - CHANGES FABRICATION SPECIFICATIONS FOR THE CHASSIS, FRONT PLATE, AND REAR PLATE.
H724 00005	>H724	M	APR 71 - ORDERS THE USE OF ADDITIONAL SOUTHCO FLOATING NUTS.
H724 00006	>H724	M	APR 71 - CHANGES FABRICATION SPECIFICATIONS FOR THE COVER.
H724 C0007	ALL H724 AND ALL H724-A SHIPPED PRIOR TO 3-29-71	F	MAY 71 - EXPANDS UPON ECO H724-B0002 TO ORDER FIELD RETROFITTING OF THE BATHTUB CAPACITOR. THIS FCO IS NO CHARGE TO CUSTOMER.
H724 00008	>H724	M	MAY 71 - CORRECTS A FABRICATION INSTRUCTION.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	H724 -00002		
B	5409262-00003		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
H724 00009	>H724	M	JUN 71 - MODIFIES THE FABRICATION OF THE COVER TO FACILITATE ASSEMBLY.
H724 00010	>H724	M	JUN 71 - PROVIDES A HOLE IN THE COVER FOR MOUNTING OF THE ROTATING RACK SLIDE.
H724 00011	N.A.	P	JUN 71 - PROVIDES OVERALL DOCUMENTATION UPDATING.
H724 C0012	ALL H724 CS A,B,C,&D	F	JUL 71 - REQUIRES THAT ALL H724'S CIRCUIT SCHEMATIC REVISION "D" OR EARLIER, BE RETROFITTED TO PROVIDE A SLOW BLOW FUSE (1/8 AMP) IN THE INTERLOCK CIRCUIT. CORRECTS PRINTS TO CORRECTLY INDICATE TRANSFORMER SECONDARY VOLTAGES. ADDS A1 AND A2 CONTROL BOARD OVERLAY PRINTS TO THE 8E PRINT SET. THIS FCO IS NO CHARGE TO CUSTOMER. H724 CIRCUIT SCHEMATIC REVISION "E"
H724 00013	>H724	M	JUL 71 - MAKES INCIDENTAL HARDWARE CHANGES AND MODIFIES THE PARTS LIST ACCORDINGLY.
H724 E0014	ALL H724 ALL H724-A CS REVS A-E FIELD RETROFIT AS REQUIRED	F	SEP 71 - CHANGES HARDWARE, WIRING AND LEAD DRESS TO ELIMINATE OPERATIONAL PROBLEMS CAUSED BY TRANSIENT LINE NOISE. NOTE: THIS FCO MUST BE INSTALLED IN CONJUNCTION WITH FCO'S 5409262-E0005 AND 5409264-E0005. IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITY - RETROFIT ALL H724 (-A) CS REV A-E "F" CODED TIME TO INSTALL AND TEST - 8.0 HOURS DOCUMENTATION $5.00 PARTS $2.50 DEC LABOR $200.00 ORDERED KITS WILL INCLUDE FCO, PRINTS AND PARTS.
H724 00015	N.A.	P	NOV 71 - DELETES WIRE #8 FROM THE 70-07191 HARNESS.
H724 00016	N.A.	P	JAN 72 - DELETES THE MASTER DRAWING LIST FROM THE H724 PRINT SET.
H724 00017	>H724	M	JAN 72 - ORDERS THAT THE CAPACITOR BUS PLATE NOT BE CHROMOCOATED.
			H724 CS REVISIONS A H724 -00001 B 5409262-00001 C H724 -00002 D 5409262-00003 E H724 -00012

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
C	H724-00011		
D	H724-C0012		
E	H724-00013		
F	H724-E0014		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

H737

RS64 Power Supply

PROCESSOR TYPE PDP-8/E, PDP-11 Family

H737-00001 **CODE: M**
MAR-72 - PROBLEM: In zone D-7, spot welding symbol is incorrect; 2120 pounds pull on aluminum is too much.
CORRECTION: Spot weld symbol should be changed to 750 pounds pull on three spot welds.
In-plant effectivity -02 phase-in

H737-00002 **CODE: M**
MAR-72 - PROBLEM: In zone, A-B-7 , double "D " punch is called out incorrectly.
CORRECTION: The double "D " punch should be 0.570 X 0.656.
In-plant effectivity -02 phase-in

H737-C0003 **CODE: F** **ML: A**
MAR-73 - PROBLEM: Random noise from power supply causing data and block check errors.
CORRECTION: Removal of supply from drive chassis and installing supply on rear of cabinet.

NOTE: This FCO must be installed in conjunction with FCO RS64-C0013.
In-plant effectivity -03, when problem exists, but Rework Code 03 by April 15.
Field effectivity -Retrofit all RS64's
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

H737-00004 **CODE: P** **ML: B**
MAR-73 - CORRECTION: Correct Circuit Schematic for H737 Power Supply which is not correct; units are wired correctly.

NOTE: This ECO creates H737 CS revision "A ".
In-plant effectivity -06 documentation change only

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E C DEC-O-LOG Engineering Change Order Log

H743

Power Supply

PROCESSOR TYPE All

H743-C0001 CODE: F DD: B CS: B
AUG-72 - PROBLEM: The heads and carriage assembly in the linear motor/positioner of the RK05 may oscillate after the heads have been retracted by the battery.
CORRECTION: Add a 6,800 ufd 10 VDC capacitor to the H743 Power Supply. The capacitor will be mounted on the power supply bracket and will be connected to the motor relay board by the power supply harness. The capacitor will be effectively across the linear positioner coil and will damp the head oscillations.

NOTE: See continuation supplement FCO H743-C001A.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all H743's in RK05's when symptoms are present. (Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints And Parts)

H743-C001A CODE: F
JAN-73 - PROBLEM: Retrofit instructions not explicit enough for Field Service use in item #7, sections "C " and "D " of ECO H743-C0001.
CORRECTION: Additional retrofit instructions are provided, item #7, sections "E ", "F ", and "G " .
In-plant effectivity -Unchanged
Field effectivity -Unchanged

H743-00002 CODE: D DD: C CS: C
FEB-73 - CORRECTION: Correct hardware called out and provide sufficient documentation.

NOTE: This ECO creates H743-O DD revision "C ".
In-plant effectivity -02 phase-in

H743-00003 CODE: D DD: D
MAR-73 - PROBLEM: We are buying two cord sets that are identical except in color; we would like to use gray only.
CORRECTION: Change #17-00005-06, black, to #17-00016-06, gray.
In-plant effectivity -02 phase-in

H743-00004 CODE: D DD: E CS: D
MAY-73 - PROBLEM: Power cord length is not sufficient when 861 Power Control is used in the cabinet.
CORRECTION: Increase length of power cord.

NOTE: This ECO creates H743-T ML revision "E ".
In-plant effectivity -02 phase-in

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H748

PROCESSOR TYPE ALL

POWER SUPPLY

H748-00001 **CODE: P**
OCT-72 - CORRECTION: Correct #53-09995 chassis drawing errors, drawing D-IA-5309995-0-0.
In-plant effectivity -06 documentation change only

H748-00002 **CODE: D**
DEC-72 - CORRECTION: Change decal color from black on clear to white on clear.
In-plant effectivity -Documentation/design change

H748-00003 **CODE: D** **CS: H**
APR-73 - PROBLEM: DC power supply ground floating.
CORRECTION: Remove spacer, MATE-N-LOCK corner, and replace with 8-32 kep nut (teeth toward base plate) to ensure bond between PC board and base plate. DC ground should be tied to AC power (green) ground.
In-plant effectivity -Retrofit

H748-B0004 **CODE: F** **CS: J**
DEC-74 - PROBLEM: Spurious characters will appear on VT20-B monitor screen due to marginal voltage level in the H748 monitor power supply. This problem may be verified as follows: Run VT20 diagnostic MAIN-DEC-11-DBVTA-A, FK test #16, and cause all FK keys to become lighted. Then, using a 1% accuracy voltmeter (do not use a scope) measure the +5 voltage between pins DA2 and DC2, ground, of the monitor wired assembly #70-10080. If this voltage is 4.90 volts or less, this ECO is needed.
CORRECTION: Change resistor R22, which is 1.47K ohms, 1% to 1.21K ohms, 1%. The FCO includes important field retrofit instructions as follows: DO NOT dismount board. DO NOT remove resistor from bottom of board. DO cut resistor leads from top side of board. DO fasten new resistor leads to lead stubs remaining on board.
In-plant effectivity -If described symptoms are present, this ECO applies.
Field effectivity -Perform test defined in the ECO, and install the FCO if +5V is 4.90 volts or less and/or if symptoms are present.
(Time To Install And Test .5 Hour.) (Kit Contents -PF1404 Www - FCO/Prints And Parts)

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ECO DEC-O-LOG Engineering Change Order Log

IDAC

Industrial Data Acquisition and Control

PROCESSOR TYPE PDP-8 & 11 Families

IDAC-00001 **CODE: P**
AUGUST-71 – PROBLEM: Various IDAC configurations require the use of UDC-8, AFC-8, and AFC-11 configuration drawings.
CORRECTION: Replace UDC-8, AFC-8, and AFC-11 configuration drawings with IDAC Arrangement drawing, D-AR-IDAC-0-0.
In-plant effectivity – documentation change only

IDAC-00002 **CODE: P** **ML: A**
APRIL-72 – PROBLEM: IDAC Arrangement drawings do not reflect the change of the H721 power supplies to H740-D's.
CORRECTION: Update IDAC Arrangement drawing D-AR-IDAC-0-0.
In-plant effectivity – update drawings immediately – documentation change only

IDAC-00003 **CODE: D**
MAY-72 – PROBLEM: H721 Power Supplies in IDAC systems are too expensive and do not have power fail capabilities.
CORRECTION: Use H740-D Power Supplies in IDAC systems instead of H721's as per the IDAC arrangement ECO's IDAC-00002 and H964-00007.
In-plant effectivity – build all new AFC8, UDC8, AFC11, and UDC11 systems as per above ECO's effective May 8, 1972.

IDAC-C0004 **CODE: F** **ML: B**
MARCH-74 – PROBLEM: Due to new high current modules, the +5 volt power distribution is inadequate.
CORRECTION: Power distribution losses are being reduced by FCO DD02-C0005. However, additional wiring is required in the IDAC system.

NOTE: In the field, this FCO must be installed in conjunction with FCO's DD01D-C0007 and DD02-C0005. An H740-D Power Supply may be ordered separately if required.
In-plant effectivity – retrofit all units in house. This ECO must be installed in conjunction with FCO's DD01D-C0007 and DD02-C0005.
Field effectivity – retrofit all UDC Files if power problems are present.
(Time To Install And Test 4.0 Hours.) (Documentation $5.00, Parts None)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.
(Kit Contents – NF1223 – FCO/Prints)

IDAC-C004A **CODE: F**
FEBRUARY-74 – PROBLEM: ADD/DELETE sheets missing from FCO IDAC-C0004.
CORRECTION: The eight ADD/DELETE sheets are included in this supplement.
In-plant effectivity –unchanged
Field effectivity – unchanged

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IDC8

INDUSTRIAL DATA ACQUISITION SYSTEM

PROCESSOR TYPE PDP-8/E FAMILY

IDC8-00001 **CODE: D**
APRIL-73 – PROBLEM: Wiring, cable routing, and minor mechanical changes were made to the prototype system.
CORRECTION: Change Unit Assembly drawing to comply with prototype system.
In-plant effectivity – all systems will be built according to the corrected print.

IDC8-00002 **CODE: D** **DD: A**
OCTOBER-73 – PROBLEM: IPG has adopted new color schemes; prints must be updated.
CORRECTION: Correct drawings to show new logos, consoles, side panels, and Arrangement drawing. Also correct miscellaneous drawing errors.
In-plant effectivity – Documentation/design change

IDC8-00003 **CODE: P**
FEBRUARY-74 – PROBLEM: Part number description is in error.
CORRECTION: Change Item 34, description, from H952-AA to H952-AC.
In-plant effectivity – Documentation change only

IDC8-C0004 **CODE: F** **DD: B**
APRIL-74 – PROBLEM: Voltage drop on M851 module, due to large currents of ADU01, causes false operation on I/O modules because of low +5V line voltage.
CORRECTION: Rewire +5V and ground power lines. A G772 was installed in the DD02 system unit to assist in correcting the problem. Refer to FCO DD02-C0005.

NOTE: This FCO must be installed in conjunction with FCO's DD01D-C0007 and DD02-C0005.
In-plant effectivity – This ECO must be installed in all future IDC8-A and IDC8-C systems.
Field effectivity – Retrofit all IDC8's if power problems are present.
(Time to Install and Test 4.0 hours.) (Kit Contents – PF1231 – FCO/prints and parts)

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EC DEC-O-LOG Engineering Change Order Log

LA30

DECwriter
Data Terminal

PROCESSOR TYPE ALL

LA30-00001 to LA30-00045 were in-plant engineering design ECO's which were implemented prior to initial shipment They are of no interest to the field and therefore are not published in DEC-ECO-LOG

LA30-D0046 CODE: DF ML: K
JAN-72 PROBLEM: Excessive vibration in motor drive assembly
CORRECTION Redesign belt tension arm to new configuration and material to perform present function and to be a damper for the drive assembly also
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all LA30's as required
Time To Install And Test 1.5 Hours. This FCO Is No Charge To Customer Kit Contents FCO/Prints And Parts

LA30-00047 CODE M
JAN 72 CORRECTION Changes the milling of the base to allow clearance for the tinnerman clip.
In-plant effectivity -All future LA30

LA30-00048 CODE. D ML: L
JAN-72 PROBLEM 1 The M7714 is obsolete due to limited supply of Motorola MC4015P quad D flip-flops
CORRECTION 1 Use M7724 in place of M7714 which is identical with respect to specification and test procedure
CORRECTION 2 Update drawing D-BS-LA30-0-4
In-plant effectivity -02 phase-in

LA30-00049 CODE: D ML: M
JAN 72 PROBLEM 1 A feeler gauge is required to install an LA30 print head The person installing the head may not have knowledge of or access to an appropriate gauge
CORRECTION 1 Include the proper feeler gauge and installation instructions in the shipping container for each head The feeler gauge is to be taped to the top of the head
PROBLEM 2 Necessary to select current limiting resistors in test
CORRECTION 2 Add resistor part numbers to the parts list for print head and reference test procedure.
In-plant effectivity -02 phase-in

LA30-00050 CODE: M
JAN 72 PROBLEM Slots (4) and groove being machined at great expense
CORRECTION Slots and groove will be cast in place.
In-plant effectivity -02 phase-in

LA30-C0051 CODE: F ML: N WL: E
JAN 72 PROBLEM Demand line does not cycle on power-up. PDP-11 and PDP8-E interfaces may come on with flag down.
CORRECTION Add B INIT L to control logic B module M7712.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all LA30's as required
Time To Install And Test 1.0 Hour This FCO Is No Charge To Customer Kit Contents -FCO/Prints

LA30-B0052 CODE: F ML. P
JAN-72 PROBLEM. Printer carriage may overtravel limit switches and allow print head to print off of platen possibly damaging the print head
CORRECTION Add bumper to prevent overtravel
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all LA30 as required
Time To Install And Test .5 Hour This FCO Is No Charge To Customer Kit Contents -FCO/Prints And Parts

LA30-00053 CODE: M
JAN-72 PROBLEM Vendor's optional tooling slots on the outside edge allow the solenoid housing to be compressed at assembly so that an interference occurs between the spring , the solenoid and the solenoid housing
CORRECTION Remove these slots from the piece
In-plant effectivity -02 phase-in

LA30-00054 CODE: M
FEB-72 PROBLEM 1 Features unobtainable in casting must be machined.
CORRECTION 1 Add features to machine drawing from casting drawing.
CORRECTION 2 Relax tolerances on initial machining dimensions.
In-plant effectivity -02 phase-in

LA30-00055 CODE P
FEB-72 PROBLEM Print head decal A-DC-7409585 should be made on special CRACK-N-PEEL paper
CORRECTION Call out FASSON CRACK-N-PEEL paper on decal drawing
In-plant effectivity -Documentation change only

LA30-00056 CODE: P ML. R
JAN-72 CORRECTION Updates documentation to call for the latest hardware to be used
In-plant effectivity -Documentation change only

LA30-00057 CODE M ML. S
FEB-72 PROBLEM Need to provide for serializer interfacing on the LA30
CORRECTION Change base assembly and control housing assembly to provide for serial interfacing
In-plant effectivity -03 rework immediately all LA30-S 02 phase-in all LA30-P

LA30-00058 CODE. P
FEB-72 CORRECTION Corrects error in the 70-07274 power harness print
In-plant effectivity -Documentation change only

LA30-00059 CODE. M
FEB-72 PROBLEM Present design calls for separate parts for two sides back and top
CORRECTION Manufacturing has the capability to fabricate the above as one piece construction This lowers the cost and gives a cleaner appearance
In-plant effectivity -02 phase in

LA30-00060 CODE. M
FEB-72 PROBLEM Difficulty in threading self-tapping screw into bracket during assembly
CORRECTION Enlarged holes to facilitate assembly of rocker switches
In-plant effectivity -All future LA30

LA30-00061 CODE: M
FEB-72 PROBLEM A line to line fit condition is present on the LA30 limiter solenoid spring and the solenoid housing
CORRECTION Change the outside diameter on the solenoid spring limiter
In-plant effectivity -02 phase-in

LA30-00062 CODE: F ML T WL. F
MAR-72 PROBLEM 1 A race condition exists between write strobe and data being written
CORRECTION 1 Make necessary wiring changes and update drawings
CORRECTION 2 Correct block schematic drawing errors
In-plant effectivity -03 rework immediately
Field effectivity -Distribution for field service information only
. This FCO Is No Charge To Customer Kit Contents FCO/Prints

LA30-00063 CODE. M ML: L
MAR-72 PROBLEM Possible interference of LA30 cover to base Fiberglass sidewalls of cover tend to flatten out
CORRECTION Attach two cover bumpers to the LA30 base Use Eccobond # 26 adhesive and clean area of bonding and bumper with alchol prior to bond Allow 24 hours before applying any pressure to the bumper
In-plant effectivity -02 phase in

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E C DEC-O-LOG Engineering Change Order Log

LA30

DECwriter Data Terminal

PROCESSOR TYPE All

LA30-00064 CODE: M
MAR-72 - CORRECTION: Relocates bends farther away from holes.
In-plant effectivity -02 phase-in

LA30-00065 CODE: P ML: V
MAR-72 - PROBLEM 1: Option designation for serial interface LA30 has been changed from LA30-SA, -SB, -SC, -SD to LA30-CA, -CD, -EA, and -ED .
CORRECTION 1: On LA30-S specifications, drawing index, and the master drawing list, change the current LA30 serial designations to new designations.
PROBLEM 2: LA30 block schematics have drawing errors.
CORRECTION 2: Make necessary changes on the block schematic.
CORRECTION 3: Add M7720, G380 and keyboard circuit schematics to the master drawing list.
In-plant effectivity -Documentation change only

LA30-00066 CODE: M
APR-72 - PROBLEM 1: Print head nose causes smudged print.
CORRECTION 1: Allow jewel to protrude beyond nose so that nose effectivly becomes recessed away from paper.
PROBLEM 2: Solenoid backstops are not crimped tightly. Resulting print has missing dots.
CORRECTION 2: Use thicker backstop and tighten tolerance on important crimp dimension.
In-plant effectivity -03 rework immediately

LA30-00067 CODE: M ML: W
APR-72 - CORRECTION: This ECO covers redesign of several specific areas of the LA30 to improve its operation: 1. Ribbon idler fails to rotate with dried ink. 2. Print bar bushings and shafts are hard to assemble. 3. Sprocket fails by fretting on spline shaft. 4. Interlock switch needed on print bar lock. 5. LA30 print quality specification and LA30 head life test procedure did not exist.
In-plant effectivity -02 phase-in

LA30-0067A CODE: M
APR-72 - CORRECTION 1: Add missing keyboard drawings to the master drawing list.
CORRECTION 2: Corrects the part number for the keyboard.
In-plant effectivity -02 phase-in

LA30-00068 CODE: M ML: Y
MAY-72 - PROBLEM 1: Assembly of leaf springs to pin becomes loose in use.
CORRECTION 1: Use flat head rivets, "C " sink holes in the pin and revise clearance hole diameters for rivet assembly.
PROBLEM 2: Clamps are coming off at assembly.
CORRECTION 2: Extend length of radius to give a larger area of contact at assembly.
PROBLEM 3: Retaining rings are not staying in the groove.
CORRECTION 3: Correct the groove size.
PROBLEM 4: Tapped holes full of paint.
CORRECTION 4: Mask tapped holes before painting.
PROBLEM 5: Material specification not clear.
CORRECTION 5: Add legend to material specification.
In-plant effectivity -02 phase-in

LA30-00069 CODE: M ML: Z
MAY-72 - CORRECTION 1: Corrects weld stud part numbers on the drawings.
CORRECTION 2: Deletes the #10 flat washer from the parts list.
CORRECTION 3: Corrects drawing errors or omissions on several prints.
In-plant effectivity -02 phase-in

LA30-E0070 CODE: F ML: AA
MAY-72 - PROBLEM: Present gear motors run hot because of motor overload due to high speeds. This causes lubrication breakdown and oil leakage. Due to the above inherent characteristics the motors generate excessive noise.
CORRECTION: Replace present gear motors with slow speed 4.3 RPM motors. Delete fan and also use standard, closed end, flanged construction bearing to prevent oil leakage. Current has been lowered from .29 And .48 To .16 AMPS. This will allow motor to run cooler.
In-plant effectivity -02 phase-in
Field effectivity -All LA30 as required
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) When ordering a kit from FSIC specify CW or CCW motor.

LA30-C0071 CODE: F ML: AB
JUN-72 - PROBLEM: Intermittent failure of line feed necessitates design change.
CORRECTION: Redesign the line feed solenoid assembly. Change to solid detent arm. Change from pawl torsion spring to compression spring.
In-plant effectivity -02 phase-in
Field effectivity -Install on problem machines or when symptoms are present.
(Time To Install And Test 3.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) Kits #1, #2, and #3 will be shipped unless a kit number is specified. Kit #1 is line feed retrofit. Kit #2 is damper retrofit. Kit #3 is ribbon tracking washer.

LA30-00072 CODE: P ML: AC
JUN-72 - PROBLEM: Documentation required for read only LA30A DECWRITER.
CORRECTION: Create two bezel drawings, one serial no keyboard, one parallel no keyboard. Update all documentation.
In-plant effectivity -Documentation change only

LA30-C0073 CODE: F ML: AD WL: H
JUL-72 - PROBLEM: LP30P generating burst of interupts when it alone is powered down.
CORRECTION: Add power fail module G8004 and associated wiring. The modul is to be added to LA30P's only, wiring to all LA30's.

NOTE: This FCO is to be installed in conjunction with ECO M7711-00007. On the PDP-11's, this FCO is to be installed in conjunction with ECO M791-00003.
In-plant effectivity -03 rework immediately
Field effectivity -All LA30P's with exhibit problem or at customer request (Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

LA30-00074 CODE: P
JUL-72 - CORRECTION: Updates assembly procedure LA30-0-3 to the latest ECO.
In-plant effectivity -Documentation change only

LA30-E0075 CODE: F ML: AE WL: J
SEP-72 - PROBLEM 1: Customer request for an audible signal.
CORRECTION 1: Add electronic "bell " to LA30.
PROBLEM 2: Items missing on Accessory List.
CORRECTION 2: Update Accessory List.
PROBLEM 3: Drawing error on unit harness.
CORRECTION 3: Correct unit harness.
PROBLEM 4: Wiring for second interlock switch not documented.
CORRECTION 4: Update Assembly Drawing.
PROBLEM 5: Decals call-out incorrect amperages.
CORRECTION 5: Correct decals.
PROBLEM 6: LA30-CB, -CC, -EB , and -EC not documented.
CORRECTION 6: Update drawings to include -EB, -CC, -EB , and -EC .
In-plant effectivity -02 phase-in
Field effectivity -Retrofit all LA30's at customer request.
(Time To Install And Test 3.0 Hours.) (Documentation $ 5.00 , Parts $ 75.00 , DEC Labor $ 90.00) (Kit Contents -FCO/Prints And Parts)

LA30-00076 CODE: M
SEP-72 - PROBLEM: Lock screw on control box door does not line up with chassis control box.
CORRECTION: Redesigned rear door and method of fabrication.
In-plant effectivity -02 phase-in

LA30-00077 CODE: M
OCT-72 - PROBLEM 1: Possible breakage of detent arm pivot shaft. High cost of line feed parts. High cost of base casting and machining.
CORRECTION 1: Increased pivot shaft diameter. Line feed parts to be injection molded. Redesign to produce base in the die cast process and reduce the cost of machining.
CORRECTION 2: General updating of LA30 documentation.
In-plant effectivity -02 phase-in

LA30-D0078 CODE: F ML: AH WL: K
OCT-72 - PROBLEM 1: The latest revision M7712 available, etch revision "F ", eliminates the need for the M113 module in slot A17.
CORRECTION 1: Remove M113 and associated wiring.
CORRECTION 2: Add Timing Diagram to print set.
PROBLEM 3: Confusion as to which character generator to reference.
CORRECTION 3: Show M7714 or M7724 on Block Schematic drawing, Module Utilization drawing, and Parts List; include both Circuit Schematics in print set.
PROBLEM 4: UL requirements not included in drawing set.
CORRECTION 4: Add UL requirements to drawing set and Master Drawing List.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework LA30's when M7712 etch revision "D " or "E " is being replaced by an M7712 etch revision "F ".
(Time To Install And Test 2.0 Hours.) (Kit Contents -F295 -FCO/Prints And Parts)

LA30-00079 CODE: M
OCT-72 - PROBLEM 1: Die cast base casting does not conform to drawings.
CORRECTION 1: Correct drawing to conform with casting.
PROBLEM 2: Switch bracket interferes with gusset on casting.
CORRECTION 2: Change switch bracket to fit base casting.
In-plant effectivity -02 phase-in

LA30-B0080 CODE: F ML: AJ
OCT-72 - PROBLEM 1: Possibility of overheating line feed driver and/or solenoid.
CORRECTION 1: Add fuse to wiring to open current drive source.
PROBLEM 2: ST SW NO has no logic "1 " source, floating input could terminate line before column 80.
CORRECTION 2: Use +3V resistor divider, M113, to provide logic "1 " source.

NOTE: Correction #1 is a production phase-in change and is not to be field retrofitted.
In-plant effectivity -03 -Rework immediately
Field effectivity -Retrofit correction #2 to all LA30 wire wrap panels, revision "J " or earlier.
(Time To Install And Test 1.0 Hour.) (Kit Contents -F496 -FCO/Prints)

LA30-00081 CODE: D
NOV-72 - PROBLEM 1: Head tester instruction manual required.
CORRECTION 1: Add instruction manual to tester documentation.
PROBLEM 2: Solenoid armature springs are being rejected for blemishes and appearances of rust. Life tests, using parts with this defect, have not failed during normal life.
CORRECTION 2: Eliminate notes from print relating to these defects.
PROBLEM 3: Method of fabricating the #74-08684 solenoid spring limiter changed from powdered metal to screw machine requires change. Increased swaging pressure has resulted in solenoids with stroke out of specification. Result is solenoids will not function in positions 3 and 5.
CORRECTION 3: Change material specified on drawing from EMP iron to AISI 12L14 cold drawn steel. Other changes are to be made as indicated to correct solenoid stroke.

NOTE: This ECO created LA30-TA DD revision "A ".
In-plant effectivity -02 phase-in

LA30-00082 CODE: M ML: AK
DEC-72 - PROBLEM 1: Zinc plate is wrong color.
CORRECTION 1: Change finish to 0.0005 zinc plate, clear chromate coating.
PROBLEM 2: Double handling of parts to make up assembly.
CORRECTION 2: Delete drawings B-MD-7408924-0-0 and B-MD-7408923-0-0, incorporate into drawing B-IA-7409003-0-0.
PROBLEM 3: Drawing of bezel does not agree with manufacturing.
CORRECTION 3: Delete Note 1 on bezel diagram.
PROBLEM 4: Die cast base does not show injector pin location.
CORRECTION 4: Update base drawing per vendor tooling print.
In-plant effectivity -02 phase-in

LA30-00083 CODE: D
DEC-72 - PROBLEM: Harness being manufactured with incorrect terminals and wire lengths.
CORRECTION: Change terminals and lengths as indicated.

NOTE: See continuation supplement ECO LA30-0083A.
In-plant effectivity -03 retrofit

LA30-0083A CODE: D
FEB-73 - PROBLEM 1: Harness has pin and socket terminals that are used on the wrong gauge wire.
CORRECTION 1: Establish new terminals to allow proper quality crimps to be performed.
CORRECTION 2: Change terminal points 40A and 40B to ring type solderless connections.

NOTE: See correction supplement ECO LA30-00085.
In-plant effectivity -02 phase-in as of March 15, 1973.

LA30-B0084 CODE: F ML: AL
JAN-73 - PROBLEM: Quick blow 2 1/2 AMP fuse opens in approximately one second when the line feed control switch is operated to eject paper.
CORRECTION: Replace 2 1/2 AMP quick blow fuse with a 2 1/2 slow blow fuse. This will extend the one second opening time to approximately eight seconds.

NOTE: See correction supplement FCO LA30-B084A.
In-plant effectivity -03 -Retrofit all units having 2 1/2 AMP fuse.
Field effectivity -Retrofit all LA30's that have 2 1/2 AMP fuse.
(Time To Install And Test .5 Hour.) (Kit Contents -F691 -FCO/Prints And Parts)

LA30-B084A CODE: F
FEB-73 - PROBLEM: Slow blow 2-1/2 AMP fuse, used in the line feed module G381, is taking too long to blow.
CORRECTION: Replace 2-1/2 AMP slow blow fuse with 1-1/2 AMP slow blow.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

LA30-00085 CODE: D
APR-73 - PROBLEM: Incorrect length given on front cover of ECO LA30-0083A
CORRECTION: Change to read "14.5 " instead of "4.5 " .
In-plant effectivity -Unchanged

LA30-00086 CODE: M
MAY-73 - PROBLEM: Original drawing of carriage casting and machining drawing not up to date with vendor requested changes. Print bar casting drawing ambiguous as far as cast surface quality.
CORRECTION: Updated casting and machine drawings to agree with the actual part. Added note on casting print for print bar casting surface quality.
In-plant effectivity -06 -Documentation/mechanical change; Next run in DEC's Westfield machine shop, June 1, 1973.

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LA30-00087 CODE: P ML: AM
MAY-73 - PROBLEM: Specification for UL requirements does not reflect the latest equipment changes.
CORRECTION: Update the specification to incorporate all changes made to the equipment.
In-plant effectivity -06 documentation change only

LA30-00088 CODE: M ML: AN
SEP-73 - CORRECTION 1: Delete Note #1 and associated dimensions from drawing D-IA-7409848-0-0. It is not necessary to mask and paint because we can silk screen over textured paint.
CORRECTION 2: Increase material thickness to 0.063 inch for the #55-09946 switch bracket.
In-plant effectivity -Phase-in by October 1

LA30-00089 CODE: M ML: AP
NOV-73 - PROBLEM 1: Packaging instructions are needed for the LA30 cover to improve the yield rate of covers from vendors to us and from our paint shop to our production area.
CORRECTION 1: Add new packaging instructions for in-plant, inter-plant and vendor packaging to LA30 cover.
PROBLEM 2: Cracking in thin section of cover causes high rejection rate; inserts are pulling out of cover in normal use.
CORRECTION 2: Add 1/8 inch of material to the thin area; change insert to improve strength capabilities; add new process of manufacturing and variation.
In-plant effectivity -Phase-in November 30,1973

LA30-D0090 CODE: F ML: AR
NOV-73 - PROBLEM: Earlier versions of the LK01 keyboard may be unreliable; the current version is both costly to build and to repair.
CORRECTION: Replace #54-09945 LK01 keyboard with #54-10541 LK01-R keyboard. In the field, keyboards at etch revision "E " and earlier are directly replaceable with etch revision "F " and "G " keyboards.
In-plant effectivity -Phase-in commencing November 19, 1973 and by March 31, 1974 all keyboards will be LK01-R.
Field effectivity -Retrofit, as required, all LA30's with etch revision "E " and earlier keyboards.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 370.60)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1180 - FCO/Prints And Parts)

LA30-C0091 CODE: F ML: AS
FEB-74 - PROBLEM: Noise picked up on the interlock line in the wiring harness is causing LA30 operation failures.
CORRECTION: Add a 0.01 ufd filter capacitor, #70-09786, between the interlock line, A16-R2, and ground, A16-C2, to filter out noise spikes.
In-plant effectivity -Commencing 2-16-74
Field effectivity -Retrofit all LA30's when symptoms are present
(Time To Install And Test 1.5 Hours.) (Kit Contents -PF1212 - FCO/Prints And Parts)

LA30-00092 CODE: P ML: AT
FEB-74 - CORRECTION: Add Packing Instructions and Purchase Specifications to the Parts List, Drawing Index and Unit Assembly drawing.
In-plant effectivity -Documentation change only

LA30-00093 CODE: P ML: AU
MAR-74 - PROBLEM: Paper shortage and greatly increased costs make it difficult to ship 3200 sheets of paper per printer.
CORRECTION: Update Accessory List to require 800 sheets of paper for each printer.
In-plant effectivity -Phase-in to commence April 8, 1974, Westfield.

LA30-00094 CODE: D ML: AV WL: L
MAR-74 - PROBLEM: Implementation of the LA30 "DURA HEAD ". The latest print head solenoids are referenced to +10V as opposed to the present head which uses ground.
CORRECTION: Modify the LA30 power harness and LA30 wired assembly. This requires removing three #18 black wires, GND , and adding one #14 green wire, +10V, to the LA30 power harness. It also requires adding two #18 green wires to the wired assembly for +10V reference distribution. The new head is part #70-09488.

NOTE: All orders from the field for replacement heads, even if the original head part number 70-07273 is specified, will be filled by shipment of this new "DURA HEAD ", #70-09488.
In-plant effectivity -Westfield, immediately. Ireland, use up existing kits. New kits, with this ECO installed, will be available from Westfield no later than May 1, 1974.

LA30-00095 CODE: D ML: AW
MAY-74 – PROBLEM 1: Specified hardware for installation of LK01-R in LA30 is not proper; the LK01-R sets too high.
CORRECTION 1: Specify new hardware.
PROBLEM 2: Documentation error on drawing D-AD-7007280-0-0; jumpers shown on wrong connection location.
CORRECTION 2: Remove the jumpers from A06 K1 to P1 to V1 and add them to A05 K1, to P1 to V1.
In-plant effectivity – Phase-in to Ireland and Westfield production immediately.

LA30-0095A CODE: D
JUNE-74 – PROBLEM: ECO LA30-00095 inadvertently deleted item 70 from the Base Assembly. Item 70, #54-10541, is the LK01-R Keyboard. Item 71, #90-06026-1, is a 6-32 X 3/4 inch screw, and it should have been deleted instead of the keyboard.
CORRECTION: Re-add #54-10541, LK01-R Keyboard, and delete #90-06026-1, 6-32 X 3/4 screw.
In-plant effectivity – Unchanged.

LA30-00096 CODE: P ML: AY
JUNE-74 – CORRECTION: Change Accessory List to require one hundred sheets of packaged paper with each printer.
In-plant effectivity – As of June 1 or when package available.

LA30-00097 CODE: P ML: AZ
AUG-74 – CORRECTION: Update present specification to meet present UL requirements.
In-plant effectivity – Documentation change only.

LA30-E0098 CODE: F
OCT-74 – CORRECTION: Provides parts and procedure for conversion of LA30 parallel to LA30 serial. There is a Basic Kit #1 which will suffice if the following conditions are true: The unit to be converted has a 70-07280 backplane, and, LOCAL/LINE FEED switch is the rocker type, and, the READY light is the round type. If these criteria are not true, the Optional Kit #2 will be required. A parts kit order will be processed as a request for Basic Kit #1 only, unless Optional Kit #2 is specifically ordered.

(Continued on next page)

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(Continued from previous page)

In-plant effectivity – None.
Field effectivity – Implement the FCO when conversion from parallel to serial operation is required.
(Time to Install and Test 1.5 or 3.0 hours.) (Documentation $5.00, parts see note.) (NOTE: Basic Kit #1, parts $390.00; DEC Installation Labor $126.00. Optional Kit #2, parts $520.00; DEC Installation Labor $180.00.) (Kit Contents – PF1388 5$$ – FCO/prints and parts.)

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DEC-O-LOG Engineering Change Order Log

LK01

KEYBOARD

PROCESSOR TYPE ALL

LK01-D0001 CODE: F CS: B
APR-72 - CORRECTION 1: Delete the existing rom number and add the correct number.
CORRECTION 2: Corrects parts list to show correct quantities.
CORRECTION 3: Change a timing capacitor to eliminate a timing problem on the 8/E interface which sometimes produces double characters.

NOTE: See supplement FCO LK01-0001A.
In-plant effectivity -03 rework immediately
Field effectivity -All LK01 as required
(Time To Install And Test .1 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) supplement FCO LK01-0001A will also be included in the kit

LK01-0001A CODE: F
APR-72 - CORRECTION: Corrects errors on FCO LK01-D0001 ; corrects the rom part number on the parts list and changes the drawing sheet number on drawing D-CS-5409917-0-1.
In-plant effectivity -Documentation change only.
Field effectivity -Unchanged

LK01-00002 CODE: P
APR-72 - PROBLEM: LK01 schematic number does not agree with LK01 documentation.
CORRECTION: Change the circuit schematic number to conform to documentation.
In-plant effectivity -Documentation change only

LK01-00003 CODE: P
MAY-72 - CORRECTION: Correct the print revision , the part number , and add the correct number of windings.
In-plant effectivity -Documentation change only

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E C DEC-O-LOG Engineering Change Order Log

LPC8-B

Interface to Photon 713-200

PROCESSOR TYPE PDP-8 Family

LPC8B-B0001 CODE: F DD: A WL: A
MAY-73 - PROBLEM: Device codes 64 and 67 conflict with existing options.
CORRECTION: Change device codes 64 and 67 to 34 and 35. An M623 Bus Driver module is added in slot A05.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all LPC8-B's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

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LPC8-C

Interface to Photon 7000

PROCESSOR TYPE PDP-8 Family

LPC8C-B0001 CODE: F DD: A WL: A

MAY-73 - PROBLEM: Device codes 64 and 67 conflict with existing options.

CORRECTION: Change device codes 64 and 67 to 34 and 35. An M623 Bus Driver module is added in slot A05.

In-plant effectivity -03 retrofit immediately

Field effectivity -Retrofit all LPC8-C's

(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

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LPC8-D

Interface to Photon Pacesetter

PROCESSOR TYPE **PDP-8 Family**

LPC8D-B0001 CODE: F DD: A WL: A
MAY-73 - PROBLEM 1: Errors on drawings.
CORRECTION 1: Make overall clean-up changes to drawings.
PROBLEM 2: Device codes 64 and 67 conflict with existing options.
CORRECTION 2: Change device codes 64 and 67 to 34 and 35.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all LPC8-D's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints)

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LPC8-E

Interface to Harris Intertype TXT

PROCESSOR TYPE PDP—8 Family

LPC8E-B0001 CODE: F DD: A WL: A
MAY-73 · PROBLEM: Device codes 64 and 67 conflict with existing options.
CORRECTION: Change device codes 64 and 67 to 34 and 35. An M623 Bus Driver module is added in slot A05.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all LPC8-E's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

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LPC01

TYPESET-8, -11
PHOTOCOMP
INTERFACE

PROCESSOR TYPE PDP-8 AND 11 FAMILIES

LPC01-00001 CODE: D DD: A WL: A
JUNE-74 – CORRECTION: M302 Circuit Schematic added to Drawing Directory; logic changed for system 2 remote off line; signal name added; cable clamp number changed; and one harness lead changed to #26 wire.
In-plant effectivity – Immediate retrofit.

LPC01-D0002 CODE: DF DD: B WL: B
NOV-74 – CORRECTION 1: Print errors corrected for LPC01-A.
CORRECTION 2: Add two new versions to print set, LPC01-K and LPC01-L.
PROBLEM 3: LPC01-F cables mislabeled and wired incorrectly.
CORRECTION 3: Correct LPC01-F cable prints.
CORRECTION 4: Add new signal, ON LINE H; the ADD/DELETE's are as follows: DELETE B04S1 to B06S1; ADD A01S1 to B04S1.
CORRECTION 5: Change Silk Screen paint to enamel and hard coat.
In-plant effectivity – Rework all in-plant.
Field effectivity – Retrofit all LPC01's to Correction 4.
(Time to Install and Test .5 hour.) (Kit Contents – NF1396 WNW – FCO/prints.)

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ECO SYNOPSES FOR LOGIC OR OPTION

LINE PRINTER **LP01**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-9 PDP-11 PDP-12 PDP-15	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
LP01 00001	N.A.	M	ECO RELEASE DATE - JUNE 1970 PROBLEM 1: FRAME LARGER THAN LINE PRINTER FRAME. CORRECTION 1: DECREASE FRAME WIDTH. PROBLEM 2: HOLE LOCATION FOR LOWER HINGE IS INCORRECT. CORRECTION 2: RELOCATE HINGE HOLES. PROBLEM 3: NOTE 3 ON 7407813 INCORRECT, ALSO NEED FURTHER REFERENCE. CORRECTION 3: CHANGE 7407813 REFERENCE POINTS. PROBLEM 4: NEED ADDITIONAL PARTS ON A-PL-LP01-0-0. CORRECTION 4: ADD TO A-PL-LP01-0-0. PROBLEM 5: REFERENCE POINTS ON PAPER GUIDE 7407840 NEED CORRECTION. CORRECTION 5: CHANGE 7407840 REFERENCE. PROBLEM 6: ALL PRINTS SHOULD REFER TO LP01 AS NEXT HIGHER ASSEMBLY. CORRECTION 6: REFERENCE ALL PRINTS TO LP01 AS NEXT HIGHER ASSEMBLY. PROBLEM 7: DRAWINGS 7407812, 13, & 14 HAVE WRONG FINISH DESIGNATIONS. CORRECTION 7: CHANGE FINISH FROM FLAT TO TEXTURED. IN-PLANT EFFECTIVITY - PHASE-IN
LP01 00002	N.A.	P	ECO RELEASE DATE - JULY 1970 PROBLEM 1: SHIPPING SKIDS FOR LP08 LINE PRINTERS NEED AN IN-HOUSE DRAWING TO BE FABRICATED BY DIGITAL OR PURCHASED FROM OUTSIDE VENDOR. IN-HOUSE DRAWING IS BEING CREATED. CORRECTION 1: CHANGE PARTS LIST, ITEM 2, FROM 9905009 TO C-IA-7605824-0-0 TO REFLECT NEW DRAWING. PROBLEM 2: PRINTER PART NUMBER BEING CHANGED FROM LP08 TO LP01 ON PRINT #D-AD-7505037-0-0. CORRECTION 2: CHANGE DRAWING TITLE AS MARKED. IN-PLANT EFFECTIVITY - PHASE-IN
LP01 00003	N.A.	P	ECO RELEASE DATE - AUGUST 1970 PROBLEM: PART NUMBERS AND OPTION DESIGNATION NUMBERS DO NOT AGREE WITH PURCHASE SPECIFICATIONS AND OPTION DESIGNATION LIST. CORRECTION: DELETE ALL DASH VARIATIONS FOR 3009766, 3009767, 3009768, AND 3009769. DELETE ALL REFERENCES TO NEGATIVE BUS LINE PRINTERS. DELETE ALL REFERENCES TO LP01-FC, FD, HC, AND HD. CHANGE PART NUMBER 15 TO AGREE WITH PURCHASE SPECIFICATION.
LP01 00004	N.A.	P	ECO RELEASE DATE - AUGUST 1970 PROBLEM: PACKAGING INSTRUCTIONS NOT DOCUMENTED ON LP01 MASTER LIST. CORRECTION: ADD DRAWINGS A-PI-3700016-0-0 TO DRAWING A-ML-LP01-0 FOR PACKAGING DATA PRODUCTS AND DEC LINE PRINTERS.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	00001		
B	00002		
C	00003		
D	00004		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
LP01 00005	>LP01	M	ECO RELEASE DATE - OCTOBER 1970 PROBLEM 1: DRAWINGS 7407811 AND 7407815 HAVE WRONG FINISH DESIGNATIONS. CORRECTION 1: CHANGE FINISH. PROBLEM 2: D-AD-7505037-0-0 MUST HAVE SHIPPING BOLT INVERTED. CORRECTION 2: INVERT SHIPPING BOLT. PROBLEM 3: MAKE CHANGE TO A-PL-LP01-0-0 AS PER ATTACHED PRINT. CORRECTION 3: CORRECT A-PL-LP01-0-0. PROBLEM 4: ON E-UA-LP01-0-0 CHANGE TWO RIVNUTS TO 10-32 KEPNUTS AND DELETE WASHER IN VIEW C-C. CORRECTION 4: CONVERT TO 10-32 KEPNUTS. PROBLEM 5: NO TEST PROCEDURE OR SOFTWARE KITTING LIST. CORRECTION 5: ADD TEST PROCEDURE AND SOFTWARE KITTING LIST TO THE MASTER DRAWING LIST.
LP01 00006	>LP01	M	ECO RELEASE DATE - JANUARY 1971 PROBLEM 1: ITEM #2 DIFFICULT TO WELD ON PART NUMBER 7407815. CORRECTION 1: CHANGE LENGTH OF ITEM #2 FROM 10.99 TO 11.06. PROBLEM 2: REAR COVER (7407814) TOO WIDE. CORRECTION 2: CHANGE REAR COVER (PART #7407814) WIDTH. PROBLEM 3: SIDE PANEL (7407813) DIFFICULT AND COSTLY TO WELD. CORRECTION 3: CHANGE HIDDEN LINES AS SHOWN. .. IN-PLANT EFFECTIVITY - 01 PHASE-IN
LP01 B0007	ALL LP01 MODEL 2310 1-350	F	FCO RELEASE DATE - MARCH 1971 PROBLEM: HAMMER DRIVERS OVERHEATING. CORRECTION: ADD FAN AND MTG. BRACKET BENEATH HAMMER DRIVER MODULES. IN-PLANT EFFECTIVITY - NONE TIME TO INSTALL AND TEST - 2.0 HOUR FIELD RETROFIT ANTICIPATED - 100% THIS FCO IS NO CHARGE TO CUSTOMER. FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE FCO'S AND PARTS.
LP01 00008	>LP01	M	ECO RELEASE DATE - JUNE 1971 PROBLEM: ADDITIONAL "B" HOLE REQUIRED FOR VENDOR TO MOUNT ADDED EQUIPMENT. CORRECTION: ADD ONE "B" (.19) HOLE. .. IN-PLANT EFFECTIVITY - 03 REWORK
LP01 A0009	ALL LP01 DATA PRODUCTS 2310 PRINTERS	F	FCO RELEASE DATE - JUNE 1971 PROBLEM: IF +22V SUPPLY GOES DOWN (EXAMPLE, FUSE BLOWS) A CURRENT LEADAGE PATH IS CREATED, WHICH TURNS ON THE HAMMER DRIVER CIRCUITS TO 100% DUTY CYCLE. THIS CONDITION CAUSES OVERHEATING OF HAMMER DRIVERS. CORRECTION: ADD A CIRCUIT WHICH SENSES +12V LINE (+12V IS DERIVED FROM +22V). IF THE +12V OR +22V LINE FAILS, THE LEAKAGE CURRENT FROM +28V IS CLAMPED TO GROUND. KIT #214278-1 IS SUPPLIED BY DATA PRODUCTS. INSTALL BRACKET MODIFIED BY LP01-00008. INSTALL FAN BENEATH CARD CAGE PER LP01-B0007 (NOT SUPPLIED WITH KIT FOR THIS FCO). IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - 2.0 HOUR FIELD RETROFIT ANTICIPATED - 100% THIS FCO IS NO CHARGE TO CUSTOMER. FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE FCO'S AND PARTS.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Specs and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	00005		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

LINE PRINTER **LP01**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-9 PDP-11 PDP-12 PDP-15	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
LP01 00010	>LP01	D	ECO RELEASE DATE - JULY 1971 PROBLEM: THE AUTOMATIC TOP OF FORM FUNCTION, AS DESIGNED INTO THE DATA PRODUCTS PRINTER, IS CORRECT ONLY FOR PAPER WHOSE FOLDS ARE ELEVEN INCHES APART. IN MANY OF OUR INSTALLATIONS THE FORMS USED ARE NOT ELEVEN INCHES LONG AND THEREFORE THE AUTOMATIC TOP OF FORM IS INITIATED AT AN UNDESIRABLE POSITION ON THE PAPER. CORRECTION: DISABLE THE AUTOMATIC TOP OF FORM. IN-PLANT EFFECTIVITY - 01 PHASE-IN
LP01 B0011	LP01 1-79, 81-88, 90-26,268-502, 507,509,515 517,521,524-528	F	FCO RELEASE DATE - OCTOBER 1971 PROBLEM: STATIC BUILD-UP ON PAPER TENSIONER ASSEMBLY. CORRECTION: ADD GROUND STRAP TO PAPER TENSIONER AS PER DATA PRODUCTS FCO #6275. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - 1.0 HOUR FIELD RETROFIT ANTICIPATED - 100% DOCUMENTATION $5.00 PARTS $1.00 DEC LABOR $25.00 PARTS AVAILABILITY DELAY EXPECTED - 60 DAYS FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE FCO'S AND PARTS.
LP01 00012	N.A.	P	ECO RELEASE DATE - OCTOBER 1971 PROBLEM: DEC REQUESTED ECO'S TO DATA PRODUCTS PRINTERS MAKE A CHANGE TO THE TEST PROCEDURES NECESSARY. A TEST PROCEDURE WAS NEEDED FOR THE LP02. CORRECTION: GENERATE A TEST PROCEDURE THAT APPLIES TO BOTH LP01 AND LP02.
LP01 B0013	LP01 93,100,156 157, & 185	F	FCO RELEASE DATE - OCTOBER 1971 PROBLEM: UNRELIABLE RIBBON REVERSING DUE TO MECHANICAL TOLERENCES. CORRECTION: INSTALL DATA PRODUCTS FCO #6171. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - 1.5 HOURS FIELD RETROFIT ANTICIPATED - 100% DOCUMENTATION $5.00 PARTS $45.00 DEC LABOR $38.00 FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE FCO'S AND PARTS. PARTS AVAILABILITY DELAY EXPECTED - 60 DAYS.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
F	00012		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

LP01-00014 CODE: P ML: H

OCT-72 - PROBLEM: Documentation not adequate for shipping software. CORRECTION: Obsolete Software List and add Accessory List to the LP01 print set.

In-plant effectivity -06 -Documentation change

LP01-C0015 CODE: F

SEP-73 - PROBLEM: To prevent erroneous zone changes.

CORRECTION: Add Data Products Field Change kit #6328 which implements Data Products ECO's 18367, 18412, and 18478. The reworking involves wiring changes to the 212801-2 back panel: DELETE A005 25 1 to A009 21 1, signal CONT ; ADD A004 37 1 to A009 21 1, signal PFCM . The 212530-1 circuit card, in slot 4 in the card cage assembly, is to be reworked as follows: Cut etch from Z12 pin 9 to Z16 pin 1. Add jumper from Z12 pin 9 to Z18 pin 6 using 30 AWG wire. Add jumper from Z17 pin 2 to connector pin 37 using 30 AWG wire.

In-plant effectivity -None

Field effectivity -Retrofit LP01's at next PM ; serial numbers affected are: 001 thru 1304, 1306 thru 1435, 1438, 1439, 1441 thru 1459, 1461, 1463 thru 1506, 1508 thru 1511, and 1513 thru 1516.

(Time To Install And Test 1.0 Hour.) (Kit Contents -NF1134 - FCO/Prints)

LP01-A0016 CODE: F

MARCH-74 -- PROBLEM: Excessive hammer bank current has resulted in destruction of many hammers. This is a potential fire hazard should the burning hammer ignite the paper.

CORRECTION: Install Data Products kit #231107-1 into all units that were shipped without this feature. The purpose of this kit is to detect erroneous hammer drive current which results from a malfunction in a hammer or hammer drive circuit. In event of failure, the printer power is interrupted.

In-plant effectivity – retrofit all units that do not have hammer current sensing kits.

Field effectivity – retrofit all LP01's

(Time To Install And Test 1.5 Hours.) (Kit Contents – PF1215 – FCO/Prints and Parts)

LP01-A0017 CODE: F

OCTOBER-74 – PROBLEM: Paper guide on top of LP01 has protruding ends which could cause injury.

CORRECTION: Cover protruding ends with 5/8 inch diameter plastic ball.

In-plant effectivity – Retrofit all units.

Field effectivity – Retrofit all LP01's.

(Time to Install and Test .1 hour.) (Kit Contents – PF1347 WWW – FCO/Prints and Parts.)

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EC DEC-O-LOG Engineering Change Order Log

LP02

Data Products
Line Printer

PROCESSOR TYPE All

LP02-A0001 **CODE: F**
JUN-71 - PROBLEM: This is a DEC distribution of a vendor FCO : Data Products #6286. If the +22V supply fails, a fuse blows for example, a current leakage path is created which turns on the hammer driver circuits to 100% duty cycle which causes overheating of the hammer drivers.
CORRECTION: Add a circuit which senses the +12 volt line condition ; +12V is derived from +22V. If either the +12V or the +22V line fails, the leakage current from +28V is clamped to ground. Kit #214278-2 is supplied by Data Products.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all LP02's
(Time To Install And Test 2.0 Hours.) (Kit Contents --FCO/Prints And Parts)

LP02-00002 **CODE: D**
JUN-71 - PROBLEM: The Automatic Top of Form function, as designed into the Data Products printer, is correct only for paper whose folds are eleven inches apart. In many of our installations, the forms used are not eleven inches long and therefore, the Automatic Top of Form is initiated at an undesirable position on the paper.
CORRECTION: Disable the Automatic Top of Form.
In-plant effectivity -Phase-in

LP02-C0003 **CODE: DF**
NOV-71 - PROBLEM: There is no means of holding the printer top glass up for service.
CORRECTION: Install Data Products FCO #6173.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit serial numbers 2002,2011,2013, 2015,AND 2019
(Time To Install And Test .5 Hour.) (Kit Contents --FCO Only And Parts)

LP02-00004 **CODE: D**
APR-72 - PROBLEM: A paper receptacle is to be included on all LP02 Line Printers.
CORRECTION: Add necessary drawings to include paper receptacle.
In-plant effectivity -Phase-in to all LP02's after April 30, 1972

LP02-0004A **CODE: M**
MAY-72 - PROBLEM: Break-in/effectivity incorrect on ECO LP02-00004.
CORRECTION: Correct break-in/effectivity to read "when available ".
In-plant effectivity -02 phase-in

LP02-00005 **CODE: P**
OCT-72 - CORRECTION: Add Accessory List A-AL-LP02-0-1 to the LP02 drawings.
In-plant effectivity -Documentation change only

LP02-A0006 **CODE: F**
AUG-73 - PROBLEM: This is a DEC distribution of a vendor FCO : Data Products EO 19443, kit #6348.
CORRECTION: It eliminates a personnel hazard by adding a guard over the pick off bar, which will act as a cutter if not covered.
In-plant effectivity -03 -Retrofit immediately, August 6, 1973. Retrofit only those printers listed by vendor serial number.
Field effectivity -Retrofit all units as itemized in the vendor FCO.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

LP02-D0007 **CODE: F**
SEP-73 - PROBLEM: This is a DEC distribution of a vendor FCO ; Data Products FCO #6334. A timing problem in the AT-18 module can cause the second of two identical, consecutive characters, not to print.
CORRECTION: Install Data Products Field Change Order #6334. The rework procedure for the #214560-1 card, AT-18, in slot A20, is as follows: On the circuit side of the board, cut etch between Z9-10 and P1-6 at the Z9-10 end. On the component side of the board, add jumper from Z13-2 to P1-6 and from Z13-1 to Z13-10.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit LP02's as required and as specified by the listing of affected serial numbers which is included in the ECO.
(Time To Install And Test 1.0 Hour.) (Kit Contents -PF1077 - FCO/Prints And Parts)

LP02-A0008 **CODE: F**
MARCH-74 – PROBLEM: Excessive hammer current has resulted in destruction of many hammers. This is a potential "fire hazard" should the burning hammers ignite the paper.
CORRECTION: Install Data Products kit #231108-1 into all units that were shipped without this feature. The purpose of the kit is to detect erroneous hammer drive current which results in a malfunction in a hammer or hammer drive circuit. In event of failure, the printer power is interrupted.
In-plant effectivity – retrofit all units that do not have hammer current sensing kits.
Field effectivity – retrofit all LP02's
(Time to Install and Test 1.5 hours.) (Kit Contents – PF1219 – FCO/prints and parts)

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E C DEC-O-LOG Engineering Change Order Log

LP05

DATA PRODUCTS
2230 LINE PRINTER

PROCESSOR TYPE 8 FAMILY, DECsystem-10, PDP-11, 12, and 15

LP05-C0001 CODE: F

AUG-74 - PROBLEM: This is a DEC distribution of a vendor fco: Improve stability in hammer bank actuator. Without this FCO, hammer bank instability may be evident; the bank will oscillate after moving left or right.

CORRECTION: Install data products FCO kit #6392 in LP05's with the following serial numbers: C0039, C0097, C0178, C0179, C0357, C0358, C0359, C0360, C0361, C0362, C0362, C0364, C0365, C0366, C0367, C0368, C0369, C0370, C0371, C0372, C0373, C0374, C0375, C0376, C0504, C0505, C0506, C0507, C0508, C0509, C0510, C0511, C0512, C0513, C0514, C0515, C0516, C0517, C0518.

QUICK-CHECK : Aluminum clamp on hammer bank coil.

In-plant effectivity -Retrofit according to serial number list above.

Field effectivity -Retrofit LP05's in accordance with listing of serial numbers affected.

(Time To Install And Test .5 Hour.) (Kit Contents -PF1308 -FCO/Prints And Parts)

LP05-A0002 CODE: F

JAN-75 - PROBLEM: This is a DEC distribution of a vendor ECO ; Data Products ECO #24717. Excessive heat from resistors causing damage. These resistors, R2, R4, and R6, are included in a parallel bleeder resistor network.

CORRECTION: Install Data Products ECO #24717, FCO #6403, which removes resistors R2, R4, and R6. This FCO is applicable to LP05's with the following vendor serial numbers: C0016-C1241, C1243-C1293, C1295-C1642, C1644-C1805, C1808-C1893, C1895-1903, C1905, C1928-C1930, C1932, C1933, C1937, C1938, C1940-C1942, C1944, C1947-C1951, C1959-C1969, C1971-C1974, C1978, C1980, C1981, C1983-C1985, C2010, C2011, C2044, C2045.

In-plant effectivity -This is an immediate retrofit to all units. Retrofit all units below serial number 2045 with the exception of these units which have been reworked; 1292, 1294, 1643, 1806, 1807, 1897, 1904, 1906-1927, 1931, 1934-1936, 1939, 1943, 1945, 1946, 1952-1958, 1970, 1975-1977, 1979, 1982, 1986-2009, 2012-2043.

Field effectivity -Retrofit all LP05's per serial number effectivity listed in the vendor FCO ; note ECO listing of serial numbers of units which have been reworked.

(Time To Install And Test .5 Hour.) (Kit Contents -NF1405 Wnw -FCO Only)

LP05-C0003 CODE: F

JAN-75 - PROBLEM: This is a DEC distribution of a vendor FCO : Data Products FCO #6399. Erratic line feed, garbage print out, and format errors which cause the unit to go off line.

CORRECTION: Install Data Products FCO #6399 on units with the following serial numbers: C0039, C0097, C0178, C0179, C0357-C0376, C0504-C0536, C0550-C0586, C0588-C0593, C0699-C0713, C0736-C0767, C0795-C0818, C0830-C0839, C0863-C0878, C0902, C0921-C0952, C1028-C1038, C1093-C1108, C1127-C1152, C1154-C1156, C1158, C1264, C1269, C1270, C1272, C1275, C1365, C1375, and C1383.

In-plant effectivity -Retrofit per serial number effectivity

Field effectivity -Retrofit LP05's if symptoms are present

(Time To Install And Test 2.0 Hours.) (Kit Contents -PF1412 5WW - FCO/Prints And Parts)

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LP08-00032 CODE: D

DEC-72 - PROBLEM: High noise level existing in the LP08 line printer cable, #70-08755.
CORRECTION: Twenty-four conductor cable #70-08755 is to be assembled from components described in this ECO.
In-plant effectivity -All existing cables should be scrapped by March 16, 1973.

LP08-B0033 CODE: F ML: E WL: L

FEB-73 - PROBLEM 1: Bit 05 must be set to select channel 1 following a MODE instruction. No other channels have this restriction
CORRECTION 1: Allow 001 to select channel 1 if already in VFU MODE .
PROBLEM 2: Empties paper supply if a channel greater than 7 is selected.
CORRECTION 2: Force MSB of channel select bits to ground if in VFU MODE and data bit 07 is zero.
CORRECTION 3: Add mention of LP08-LA, -LB, -LC , and -LD on appropriate prints.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all LP08's with vertical format control.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

LP15-F

PROCESSOR TYPE All

LP15F-00001 CODE: D ML: A WL: A
JUL-70 - CORRECTION: Adds necessary gating to provide PI on LP ALARM .
In-plant effectivity -All LP15F

LP15F-00002 CODE: D ML: B WL: B
AUG-70 - PROBLEM: Crosstalk on the line printer cable causes random interlock error.
CORRECTION: Provide necessary clamp loads on the interlock line.
In-plant effectivity -All LP15-F

LP15F-00003 CODE: D ML: C WL: C
AUG-70 - PROBLEM: Insufficient width of CLR CC shifting CC in maintenance mode during LF .
CORRECTION: Prevent clearing of CC in maintenance mode by LF .
In-plant effectivity -All LP15-F

LP15F-B0004 CODE: DF ML: D WL: D
NOV-70 - PROBLEM: Automatic line feeds given with carriage return.
CORRECTION: Convert the carriage return command to print without a paper advance.
In-plant effectivity -03 rework immediately
Field effectivity -All LP15-FA & LP15-FB
(Time To Install And Test 1.5 Hours. (This FCO Is No Charge To Customer (Kit Contents -FCO/Prints

LP15F-00005 CODE: D ML: E WL: E
DEC-70 - PROBLEM: Horizontal tab function will not operate on the 132 column line printer.
CORRECTION: Decode illegal halt at 128 columns.
In-plant effectivity -03 rework immediately

LP15F-00006 CODE: D ML: F WL: F
FEB-71 - PROBLEM 1: Automatic line feed with illegal or lineover is not wanted.
CORRECTION 1: Remove the line feed command at error time so that only altmode is issued.
CORRECTION 2: Add documentation to AC/DC wiring , adding a service loop to the H721 power supply.
In-plant effectivity -03 rework immediately

LP15F-B0007 CODE: DF ML: H WL: H
APR-71 - NOTE: This FCO is voided and superseded by FCO LP15F-B0008.

LP15F-B0008 CODE: DF ML: J WL: J
JUN-71 - CORRECTION: Ties floating inputs and corrects the wire list.

NOTE: This FCO supersedes and voids FCO LP15F-B0007.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all LP15-F as required
(Time To Install And Test .5 Hour. (This FCO Is No Charge To Customer (Kit Contents -FCO

LP15F-B0009 CODE: F ML: K WL: K
SEP-71 - PROBLEM: SHIF (COUNTER gets one behind when CR without LF is issued in IOPS MODE .
CORRECTION: Remove CR from DISABLE SHIFT .
In-plant effectivity -03 rework immediately
Field effectivity -All LP15-F
(Time To Install And Test 1.0 Hour. (This FCO Is No Charge To Customer (Kit Contents -FCO/Prints

LP15F-00010 CODE: D
JAN-72 - PROBLEM: Special customer order for two LP15's on one PDP-15 system.
CORRECTION: Change API , DCH , and IOT's for this special order only. Master documentation will not be affected.
In-plant effectivity -LP15-F # 83

LP15F-B0011 CODE: F ML: M WL: L
JAN-72 - PROBLEM: LP15-F hangs when running SIS test for any length of time.
CORRECTION: Delay LP02 NORMAL STB L and LP02 MAINT STB L an additional 250 nsec.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all LP15-F as required
(Time To Install And Test .5 Hour. (This FCO Is No Charge To Customer (Kit Contents -FCO/Prints

LP15F-00012 CODE: P ML: N
FEB-72 - CORRECTION: Documents the power wiring for the CR15.
In-plant effectivity -Documentation change only

LP15F-00013 CODE: P
MAR-72 - CORRECTION: Corrects the description and part number for the PEM stud , item # 3 on the 74-6115 name plate.
In-plant effectivity -Documentation change only

LP15F-00014 CODE: P
MAR-72 - CORRECTION: Corrects the description and part number for the PEM stud , item # 3 on the 74-6135 name plate.
In-plant effectivity -Documentation change only

LP15F-00015 CODE: DF
MAR-72 - PROBLEM: Special customer order for two LP15's on one PDP-15 system.
CORRECTION: Change API , DCH , and IOT's for this special order only. Master documentation will not be affected.
In-plant effectivity -LP15-F # 92

LP15F-B0016 CODE: F ML: P WL: M
MAY-72 - CORRECTION: Terminate API ENABLE and DCH ENABLE .
In-plant effectivity -03 rework immediately
Field effectivity -All LP15F
(Time To Install And Test .3 Hour. (This FCO Is No Charge To Customer (Kit Contents -FCO/Prints

LP15F-C0017 CODE: F ML: R WL: N
JUN-72 - PROBLEM: The line following an overlength line may not be printed.
CORRECTION: Clear the column counter with CR [1] L .
In-plant effectivity -03 rework immediately
In-plant effectivity -03 rework immediately
Field effectivity -All LP15-F's
CS revision F is created (Time To Install And Test .5 Hour. (Documentation $ 5.00 , Parts None , DEC Labor $ 14.00 (Kit Contents -FCO/Prints

LP15F-00018 CODE: P ML: S
JUL-72 - CORRECTION: Adds documentation for putting LP15F on negative bus.
In-plant effectivity -Documentation changes only

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Engineering Change Order Log
DEC-O-LOG

LS01

LINE PRINTER

PROCESSOR TYPE PDP-8/E, PDP-11

LS01-00001 **CODE: P**
JAN-73 - PROBLEM: No Incoming Inspection Procedure for Centronics 101A Printers.
CORRECTION: Include 101A Printers on existing 101 Incoming Inspection Procedure.
In-plant effectivity -06 documentation change only

LS01-C0002 **CODE: F**
JUL-74 - PROBLEM: Static discharge causing random logic errors.
CORRECTION: Add ground strap from rear cover assembly to main frame.
In-plant effectivity -Retrofit all units in-plant with structural frame covers.
Field effectivity -Retrofit all LS01-FA, -FB, -JA, and -JB.
(Time To Install And Test .5 Hour.) (Kit Contents -PF1315 -FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

INTERPROCESSOR BUFFER CABLE SET **LT19-H**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-9 PDP-9L PDP-12 PDP-15	OCTOBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
			DEC 69 - REFERENCE ECO LT19D-00001.
LT19-H 00001	>LT19H	D	DEC 69 - ADDS JUMPERS, PINS T TO V AND S TO H, TO PROVIDE ADDITIONAL CLAMPS.
LT19-H 00002	>LT19-H	M	JUN 71 - ADDS A FILTER/SLOWDOWN NETWORK TO THE DRIVING END OF EACH SIGNAL PATH TO ELIMINATE A POTENTIAL CROSS TALK PROBLEM AT HIGH BAUD RATES.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Specs and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	LT19D-00001		
B	LT19H-00001		
D	LT19H-00002		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

LT73

IBM 735 SELECTRIC INTERFACE

PROCESSOR TYPE 8 FAMILY

LT73-00001 CODE: D ML: A WL: A
NOV-71 - PROBLEM: The present LT73 is designed to be used only with two magnet ribbon shift and energize to lock IBM Selectric options. Some customers want one magnet shift and/or energize to unlock options.
CORRECTION: Add an M908 jumper board in slot B14 to allow the LT73 to be used with any combination of lock and ribbon shift options.
In-plant effectivity -Rework immediately

LT73-00002 CODE: D ML: B
MAR-73 - PROBLEM: Design improvements needed to satisfy customer requirements.
CORRECTION: Create new variation and add design improvements to existing print set.
In-plant effectivity -Phase-in

LT73-00003 CODE: D ML: C
OCT-73 - PROBLEM 1: Production of cable inefficient because cable is in two parts.
CORRECTION 1: Combine two parts of cable, #70-08539 and #70-08540, into one cable, #70-09522.
CORRECTION 2: Correct drawing errors.
In-plant effectivity -New cables will be used when stock of old cables in exhausted.

LT73-00004 CODE: DF ML: D
MAY-74 - PROBLEM 1: Ordering of replacements for "W960 ", Power Fail Relay Board, located in B20, is very difficult due to improper documentation.
CORRECTION 1: Replace "W960 " handle with magenta handle marked P/F, POWER FAIL and stenciled with part number 70-09879 on back of handle. Add Assembly Drawing E-IA-7009879-0-0. The "W960 " is now identified as #70-09879.
CORRECTION 2: Correct pin assignment on cable drawing, D-IA-7009522-0-0.
In-plant effectivity -Retrofit immediately
Field effectivity -FCO distribution to Regional Offices for information purposes; customer print sets may be updated as required.
(Time To Install And Test N/A) (Kit Contents -NF1251 -FCO/Prints)

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E C DEC-O-LOG Engineering Change Order Log

MR8-FE

4K CONTENT ALTERABLE, ROM

PROCESSOR TYPE PDP-8/E, PDP-14

MR8FE-C0001 CODE: F

OCT-74 - PROBLEM: When programming an IND 14/35, the VT14 does not overflow into the upper field of the 14/35 if four or more locations are left in the lower 4K field unused.

CORRECTION: Reprogram board #2 (M8349YE-2) of the MR8-FE with DEC-14-IPANA-D-PB .

In-plant effectivity -Retrofit all units in stock, in production, all VT14's in stock and VT14's ready for shipment.

Field effectivity -Exchange entire MR8-FE, not just one board, when symptoms are present or upon customer request.

(Time To Install And Test 1.5 Hours.) (Kit Contents -PF1364 5WW - FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

NN01-A

PHA INTERFACE FOR THE FAMILY OF 8

PROCESSOR TYPE FAMILY OF 8

NN01A-00001 CODE: D ML: A WL: A
MAY-71 - PROBLEM: The ND2200 ADC's no longer hold their data bit outputs at a positive 3 volts , thus causing a mismatch without NN01-A interface.
CORRECTION: Add M002 as a pull up for each of the data bits (ADC 00 -ADC 12 .
In-plant effectivity -01 phase-in

NN01A-B0002 CODE: F ML: B WL: B
SEP-71 - PROBLEM 1: The ADC flag and the live time clock flag can both be set at the same time. This is illegal.
CORRECTION 1: Logically and ADC FLAG [0] H with CONV COMP H . This will keep the ADC from accepting another conversion complete until the previous ADC flag is cleared , thus eliminating a race condition.
PROBLEM 2: DEC does not have an internal live time clock option on the NN01-A option.
CORRECTION 2: Addition of an internal live time clock option consisting of an M401 clock and an M236 binary 12 bit up/down counter. The standard live time clock frequency will be 1000 pulses per minute. (M401 Set To 68.269 KHz)
In-plant effectivity -03 rework immediately
Field effectivity -All NN01-A
(Time To Install And Test 4.0 Hours.) (Documentation $ 5.00 , Parts $ 105.00 , DEC Labor $ 100.00) (Kit Contents -FCO/Prints And Parts)

NN01A-C0003 CODE: F ML: C WL: C
APR-72 - PROBLEM: Conversion complete from ADC generates transfer data , disallowing any program control of A/D conversion.
CORRECTION: Add an M113 module in location A14. Gate RESET ADC H with ENABLE [1] H .
In-plant effectivity -All future NN01-A
Field effectivity -All NN01-A's with Packard 960 ADC's
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

PA63

16 Channel MUX for Typesetting

PROCESSOR TYPE 8 Family

PA63-00001 CODE: D
DEC-69 - CORRECTION: Changes Silk Screen to conform to PDP-8 family format.
In-plant effectivity -All PA63's.

PA63-00002 CODE: P ML: A
MAR-70 - PROBLEM 1: Aluminum casting is expensive.
CORRECTION 1: Change to plastic bezel.
PROBLEM 2: Delete print E-MD-7406767-0-0 from Unit Assembly drawing, Parts List and Drawing Index.
CORRECTION 2: Add D-SC-1209181 in place of 7406767-0-0. Make
CORRECTIONS: D-IA-7406758-0-0 should read D-IA-7406756 and B-MD-7809816-0-0 should read B-MD-1809819-0-0 .
In-plant effectivity -06 documentation change only.

PA63-00003 CODE: M
APR-70 - PROBLEM 1: "READER DATA BUFFER " and "READER SELECT " wording is missing from the Silk Screen print.
CORRECTION 1: Change second line to include that wording.
PROBLEM 2: Size of screen does not agree with drawing D-AI-7407639 .
CORRECTION 2: Change screen to agree with the drawing.
In-plant effectivity -All PA63's .

PA63-0004 CODE: D ML: B WL: A
JUN-70 - PROBLEM 1: Wire List not up to date.
CORRECTION 1: Generate new Wire List.
PROBLEM 2: Print changes required to agree with Wire List changes.
CORRECTION 2: Update prints.
PROBLEM 3: Filter networks not shown or called-out on Unit Assembly drawing.
CORRECTION 3: Add filter network components on Unit Assembly drawing D-UA-PA63-0-0 and Parts List A-PL-PA63-0-0 .
PROBLEM 4: PUNCH MATRIX print not included in print set.
CORRECTION 4: Assign drawing number to punch matrix, -BS-PA63-0-18 , and add it to the Master Drawing List and Drawing Index.
In-plant effectivity -Retrofit PA63 #1 thru #12 and future.

PA63-00005 CODE: M ML: C
JUL-70 - PROBLEM: Plastic bezel is too flexible.
CORRECTION: Cement indicator panel and plastic bezel together.
In-plant effectivity -Retrofit all PA63's.

PA63-00006 CODE: M
SEP-70 - PROBLEM: Cost reduction by using standard panel.
CORRECTION: Call-out drawing D-MD-7408182-1-0 for item #1, blank panel.
In-plant effectivity -Phase-in

PA63-B0007 CODE: DF ML: D
NOV-70 - PROBLEM 1: Need more current on the -15V line; the H716 supply will not supply it.
CORRECTION 1: Remove -15V from H716 supply and add -15V from 799 supply to the PA63.
PROBLEM 2: Need heavier gauge wire on 30V line connecting racks "C " and "D ".
CORRECTION 2: Add 18 AWG wire from "C " rack to "D " rack.
PROBLEM 3: Orientation of NTTA and 6-8 level switches not shown (S1 and S2 .
CORRECTION 3: Add assembly view of S1 and S2.
PROBLEM 4: Engineering Specifications, Acceptance Criteria not called-out.
CORRECTION 4: Add Engineering Specifications, Acceptance Criteria, and Accessory List to PA63 Master Drawing List and Drawing Index.
PROBLEM 5: Various pieces of hardware not called-out.
CORRECTION 5: Add lockwashers, sleeving, etc where indicated.
PROBLEM 6: M710 module changed to M710-YA.
CORRECTION 6: Make " -YA " changes to all prints.
In-plant effectivity -03 rework immediatedly
Field effectivity -Retrofit all PA63.
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

PA63-B0008 CODE: DF ML: E WL: B
DEC-70 - PROBLEM: When the typesetting program is scanning the sixteen reader locations it is possible not to hang up on a flag even when checking readers that are not as yet part of the system.
CORRECTION: Invert the **OUT-OF-TAPE** signal from the reader and invert the output of the **OUT-OF-TAPE** matrix. Also change all **FEEDHOLE [FH]** signal names to **OUT-OF-TAPE [OT]** .
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all PA63.
(Time To Install And Test 2.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

PA63-00009 CODE: D ML: F
DEC-70 - PROBLEM 1: The MAINDEC which checks out the NTTA option of the PA63 is not called-out on the Engineering Specification or Acceptance Criteria.
CORRECTION 1: Call-out MAINDEC 08-D27A-D on Engineering Specification and Acceptance Criteria.
PROBLEM 2: Protection bracket has incorrect Silk Screen.
CORRECTION 2: Change the Silk Screen for the protection bracket.
In-plant effectivity -03 rework immediately.

PA63-00010 CODE: M ML: H
DEC-70 - PROBLEM: Sand cast aluminum bezel is too expensive.
CORRECTION: Replace with zinc die cast bezel.
In-plant effectivity -01 phase-in

PA63-A0011 CODE: F ML: J WL: C
MAR-71 - PROBLEM 1: #30 AWG -30V and -15V wiring was inadequate.
CORRECTION 1: Change #30 AWG -30V and -15V to #24 AWG -30V and -15V.
PROBLEM 2: M710 revision "E " was inadequate.
CORRECTION 2: Replace M710 revision "E " with M710 etch revision "F " and CS revision "H " or later. Remove K303.
PROBLEM 3: DEC H716 and D799 power supplies and grounding were inadequate.
CORRECTION 3: Replace power supplies with DEC 778 and DEC H720-C
PROBLEM 4: Reader clock timing too fast.
CORRECTION 4: Slow timing to 2.3 msec.
PROBLEM 5: Check Out and Acceptance Procedures inadequate.
CORRECTION 5: Revise Check Out and Acceptance Procedure.

NOTE 1: See correction supplement FCO PA63-B0012. NOTE 2: This FCO must be installed in conjunction with FCO's BC01F-00001; PR68D-A0015; BC01H-00002; PP67C-A0008 and G930-00002.
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all PA63's.
(Time To Install And Test 3.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

PA63-B0012 CODE: F ML: K WL: D
MAY-71 - PROBLEM 1: The new photocell, part #7006267, detects the presence of tape by a level change.
CORRECTION 1: Rewire OUT-OF-TAPE circuitry.
PROBLEM 2: A #30 AWG wire was deleted from B01N2 to C21S1 in FCO PA63-A0011.
CORRECTION 2: Add #24 AWG wire to front panel filter capacitor (B01N2 .
PROBLEM 3: The sixteen 1K resistors and sixteen .01 Ufd capacitors are not needed.
CORRECTION 3: Remove all sixteen 1K resistors and sixteen .01 Ufd capacitors.
PROBLEM 4: The 6/8 level M623 gates are not needed.
CORRECTION 4: Rewire 6/8 level circuitry.
PROBLEM 5: Drawing A-SP-PA63-0-21 was not updated by FCO PA63-A0011.
CORRECTION 5: Update A-SP-PA63-0-21 .
PROBLEM 6: Too much loading on **INITIALIZE L** signal.
CORRECTION 6: Distribute **INITIALIZE L** signal by adding three gates.
PROBLEM 7: C12A1 is floating.
CORRECTION 7: Add +3V to C12A1.

PROBLEM 8: SEL RDR signal name was inadvertently changed to RDR SEL on print D-IC-PA63-0-11 only; the Wire List is not affected.
CORRECTION 8: Change RDR SEL signal name on D-IC-PA63-0-11 only; do not change the Wire List.

NOTE 1: This FCO must be installed in conjunction with FCO PR68D-A0015. NOTE 2: This FCO is applicable, in its entirety, only to PA63's with PR68-D or -DA readers. On PA63's with PR68-B's, only steps 2,3,4,6,7, and 8 are applicable. Before you begin installation of this FCO, you must have FCO PR68D-A0015 and all parts.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all PA63's.
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

BC01H-00002 **ML: L**

PA63-B0013 **CODE: F** **ML: M** **WL: E**
DEC-71 - PROBLEM 1: Possibility of over-driving reader select lines.
CORRECTION 1: Add M623 bus driver to READER SEL line, with M002 pull-ups included.
PROBLEM 2: On some typeset programs it is desirable to delay the SELECT IOT (6312 .
CORRECTION 2: Add M302 delay and correct test procedures accordingly.
PROBLEM 3: Possibility of PUNCH AVAIL signal floating.
CORRECTION 3: Add M002 as pull-up for PUNCH AVAIL lines.
PROBLEM 4: Possibility of OUT-OF-TAPE line from readers not floating high enough when the reader is disconnected.
CORRECTION 4: Add M002 pull-up on OUT-OF-TAPE .
PROBLEM 5: Wire run "B28D1 to B28F1 " not called-off on Wire List.
CORRECTION 5: Add "B28D1 to B28F2 " as a separate run on the Wire List.
PROBLEM 6: Nomenclature for a gate left off of the punch control print.
CORRECTION 6: Add nomenclature to M623-C14 (location 2-D) on drawing PA63-0-08 .
PROBLEM 7: +5V on R1 of reader cables undesirable.
CORRECTION 7: Remove +5V from D21R1 to D36R1.
CORRECTION 8: Add notes to drawings PTS8-I-0 and PTS8-L-0 .
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all PA63's.
(Time To Install And Test 8.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

PA63-B0014 **CODE: F** **ML: N** **WL: F**
JAN-72 - PROBLEM 1: SEL RDR 16 [H] signal cannot drive +3V (B21V1 .
CORRECTION 1: Delete B21V1 from D21V1 and add 1K ohm pull-up resistor to D21V1. PROBLEM 2: B21U1 is used for two different signals per FCO PA63-B0013 ADD/DELETE sheet.
CORRECTION 2: Delete B21U1 to A12U2. Add B22UI to A12U2. Only ADD/DELETE sheets for FCO PA63-B0013 were wrong. Drawings and Wire List show B22U1 connected to A12U2.
In-plant effectivity -Rework immediately
Field effectivity -Retrofit all PA63's
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

PA63-00015 **CODE: M**
MAR-72 - PROBLEM: Drawing D-IA-7407857-0-0 shows hem around opening in zone C-7-6; also shows 45 degree corners (2 places) in zone C-B-7.
CORRECTION: Remove hem from around opening in zone C-7-6. Also remove 45 degree corners in zone C-B-7.
In-plant effectivity -02 phase-in

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PA68-F

Typesetting Reader and Punch Control

PROCESSOR TYPE PDP-8 Family

PA68F-00001 CODE: D ML: A WL: A
JUN-69 - PROBLEM 1: Punch and reader control logic has wiring errors.
CORRECTION 1: Wiring corrections to be made on original prints and Wire List.
PROBLEM 2: Drafting print has identification errors.
CORRECTION 2: Identification points are corrected.
In-plant effectivity -Retrofit PA68-F #2 thru #18, and all future.

PA68F-00002 CODE: D ML: B WL: B
JUL-69 - PROBLEM 1: M302 delay was interrupting constant running speed of paper tape punch due to the recovery time of the delay.
CORRECTION 1: Use K303 timer which has a time-out characteristic not inherent to the M302.
PROBLEM 2: Print set has no power wiring diagram drawing.
CORRECTION 2: Generate new print and add to PA68-F print set.
In-plant effectivity -Retrofit PA68-F, #1 thru #31 and future

PA68F-00003 CODE: P ML: C
JUL-69 - PROBLEM: Parts List is not complete.
CORRECTION: Change Parts List to include H716 Power Supply, BC08A-11 Cables and a 779 Power Supply.
In-plant effectivity -06 -Documentation change only

PA68F-00004 CODE: D ML: D WL: C
AUG-69 - PROBLEM 1: Connector blocks are shown mounted on mounting bar in positions 25 thru 32.
CORRECTION 1: There are to be no connector blocks mounted in positions 25 thru 32; this space is reserved for power supply mounting.
CORRECTION 2: Corrects several incorrectly listed signal names on the Block Schematic drawings.
In-plant effectivity -Retrofit PA68-F, #1 thru #3 and future

PA68F-00005 CODE: P ML: E WL: D
SEP-69 - PROBLEM: PA68-F logic is being wired incorrectly.
CORRECTION: Corrects errors in the PA68-F Wire List.
In-plant effectivity -Retrofit PA68-F, #1 thru #6 and future.

PA68F-00006 CODE: D ML: F WL: E
OCT-69 - PROBLEM 1: There are no Engineering Specifications or Acceptance Criteria on the PA68-F Master Drawing List.
CORRECTION 1: Adds Engineering Specifications and Acceptance Criteria to Master Drawing List; also, on Master Drawing List, include this statement, "Do not include Engineering Acceptance Specifications or Acceptance Criteria in customer print set. "
PROBLEM 2: Tape can be read thru reader with pressure foot in the "UP " position, thus causing errors because of tape disengaging the sprocket wheel.
CORRECTION 2: Connects pressure foot switch on reader so when in the "UP " position it will create a "NO TAPE " condition, thus stopping the reader.
CORRECTION 3: Make necessary pin connection correction on the D-BS-PA68-F-1 print.
In-plant effectivity -Retrofit PA68-F, #2 thru #31 and all future

PA68F-00007 CODE: P ML: H
OCT-69 - PROBLEM: Power wiring diagram is incorrect.
CORRECTION: Show -15V going only to B16B2, with no bus.
In-plant effectivity -06 -Documentation change only

PA68F-00008 CODE: P ML: J
DEC-69 - PROBLEM: Module Utilization drawing not correct.
CORRECTION: Correct Module Utilization drawing to agree with Option Designation List.
In-plant effectivity -06 -Documentation change only

PA68F-00009 CODE: P ML: K
FEB-70 - PROBLEM: Documentation for the PA68-F was not complete or precise enough to establish a standard procedure for assembly.
CORRECTION: Update prints so as to accomplish the above.
In-plant effectivity -06 -Documentation change only

M1SC-00064 ML: L

PA68F-A0010 CODE: F ML: M WL: F
APR-70 - PROBLEM 1: A 1K, 1/4 watt resistor is required for operation.
CORRECTION 1: Add a 1K, 1/4 watt resistor to the Unit Assembly drawing Parts List, External Component Table, and call out logic print D-BS-PA68-F-2.
PROBLEM 2: G773 module not called out on Module Utilization drawing.
CORRECTION 2: Add G773 to Module Utilization drawing in slot A17, and to the Parts List.
PROBLEM 3: Power wiring print does not show use of G773 module.
CORRECTION 3: Add wires to Wire List for use of G773 module; add G773 to power wiring print.

NOTE: PA68-F, serial #1 thru #17 were modified before shipment.
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Retrofit all PA68-F's, #18 thru #76
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

PA68F-A0011 CODE: F ML: N WL: H
AUG-70 - PROBLEM: An intermittent error is showing up, causing strobing of wrong data.
CORRECTION: Take the strobe from the zero side of the "B " flip-flop instead of the "A " flip-flop in the reader control.
In-plant effectivity -PA68-F, #79 and all future
Field effectivity -Retrofit PA68-F #1 thru #78.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO Only)

PA68F-B0012 CODE: DF ML: P WL: J
DEC-70 - PROBLEM: Because the readers used with the PA68-F are always selected and have power applied, they tend to become heated to a point that may cause reader errors.
CORRECTION: Keep the reader deselected until tape has been inserted in the reader, thus keeping the reader from becoming heated.
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Retrofit PA68-F #3 and #15.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

PA68F-A0013 CODE: F ML: R WL: K
APR-71 - PROBLEM 1: OUT OF TAPE L is not brought to ground by the rocker switch on the PR68-DA.
CORRECTION 1: Change out-of-tape logic.
PROBLEM 2: SYNC PUNCH signal had no shaping network.
CORRECTION 2: Add R/C network on SYNC PUNCH circuit.
CORRECTION 3: Remove K303 module.
CORRECTION 4: Replace M710 with M710 CS revision "F " or later.
CORRECTION 5: Ensure adequate system grounds.

NOTE: This FCO must be installed in conjunction with FCO's BC01H-A0001, BC01F-A0002, PR68D-A0015 and PP67C-A0008.
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Retrofit all PA68-F's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts) Note: An M710, CS revision "F " will only be included in the kit if requested specifically.

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PA68F-B0014 CODE: F ML: S WL: L
MAY-71 - PROBLEM 1: The new photocell, part #70-06267, detects the presence of tape by a level change.
CORRECTION 1: Rewire OUT-OF-TAPE circuitry.
PROBLEM 2: The 1K resistor and the 0.01 mfd capacitor on A16T2 are not needed.
CORRECTION 2: Remove 1K/0.01 R/C network from A16T2.
PROBLEM 3: The G773 power connector sometimes shorts against the punch cable.
CORRECTION 3: Move the G773 from slot A17 to slot A20.

NOTE: This FCO must be installed in conjunction with FCO PR68D-A0015.
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Retrofit all PA68-F's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

PA68F-00015 CODE: P ML: T WL: M
NOV-71 - PROBLEM 1: Signal names to reader motor labeled wrong.
CORRECTION 1: Correct motor signal labels on Master Drawing List, D-BS-PA68-F-1.
CORRECTION 2: Add PA68-F Field Acceptance Criteria to the Master Drawing List.
In-plant effectivity -06 documentation change only

PA68F-D0016 CODE: DF ML: U WL: N
MAR-72 - PROBLEM: **READER RUN** flip-flop will sometimes be set upon power-up. This will cause the **READER FLAG** to be set after a character is read. This makes it impossible to run Power Fail Test, MAINDEC 83-D0KC.
CORRECTION: Remove +3V from the clear input of **READER RUN** and replace it with **INITIALIZE** . Rewire **RDR STROBE L** signal since the two gates on the M115, now being used, are no longer required.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all PA68-F's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

PA68F-E0017 CODE: F ML: V
AUG-72 - PROBLEM 1: Mismatched names between interface and peripherals; signal names and levels missing.
CORRECTION 1: Signal names corrected.
CORRECTION 2: "B " flip-flop reset side is connected to +3V.

NOTE: Part 1 of this FCO is to clear up an area of confusion, namely descrepancies in signal names between various typesetting interfaces and peripherals. Part 2 is to tie the reset side of a flip-flop to +3V. No trouble is encountered at the present and no field retrofitting of part 2 is required.
In-plant effectivity -06 documentation change only
Field effectivity -Update all PA68-F customer print set.
(Time To Install And Test N/A) (Kit Contents -FCO/Prints)

PA68F-00018 CODE: D ML: W
APR-73 - PROBLEM: External bleeder resistor mounted across the -30 volt supply on Typeset systems dissipates sufficient heat to create a potential personnel hazard.
CORRECTION: Permanently mount the bleeder resistor above R1 so as to avoid the possibility of accidental contact.
In-plant effectivity -03 retrofit immediately

PA68F-E0019 CODE: F ML: Y WL: P
AUG-73 - PROBLEM: PUNCH OUT OF TAPE feature not used on PA68-F.
CORRECTION: Wire in IOT instruction 6311, Skip on Punch Not Available.

NOTE: This FCO must be installed in conjunction with FCO PA68F-E0020 for correct operation of PUNCH OUT OF TAPE . The addition of two resistors, ordered by this FCO, is negated by FCO PA68F-E0020.
In-plant effectivity -Retrofit all production and all future PA68-F's
Field effectivity -Retrofit PA68F's as required
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -F1068 - FCO/Prints)

PA68F-E0020 CODE: F ML: Z WL: R
OCT-73 - PROBLEM: FCO PA68F-E0019 must be corrected. It incorporates IOT 6311, Skip on Punch Not Available, but the **NOT AVAIL H** signal will not be high if the punch is unplugged from the logic. Punch cables longer than 50 feet can have sufficient drop so that when **NOT AVAIL H** is low, it will be 300 to 500 mv above ground.
CORRECTION: Remove the 220 ohm and 330 ohm resistor network added by FCO PA68F-E0019 and connect the **NOT AVAIL H** signal to an M501 Schmitt Trigger module, added in slot A15, with an unused clamp load for a pull-up.

NOTE: This FCO must be installed in conjunction with FCO PA68F-E0019 for correct operation of PUNCH OUT OF TAPE .
In-plant effectivity -Retrofit all production PA68-F's.
Field effectivity -Retrofit PA68-F's as required
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts $ 25.00)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -F1069 - FCO/Prints And Parts)

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ECO SYNOPSES FOR LOGIC OR OPTION

PAPER TAPE READER AND PUNCH **PCØ**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	JULY 1970	Ø

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PCO 00001	N.A.	P	JAN 69 - ADDS CLARIFYING NOTES TO THE MECHANICAL DRAWING FOR THE PUNCH.
PCØ 00002	>PCØ	M	MAR 70 - ADDS PART NUMBER 5308818 TO THE PARTS LIST; THIS IS THE #1509364 PHOTO TRANSISTOR WHICH HAS BEEN REWORKED AS IS REQUIRED FOR INSTALLATION INTO THE 5408306 ASSEMBLY.
PCØ 00003	PC01, 3,4,5,9,&10 FIELD RETROFIT AS REQUIRED	F	MAR 70 - SPECIFIES THE USE OF A SMALLER NYLON KNOB ON THE PUNCH; THE PRESENTLY USED KNOB PRESENTS AN EXCESSIVE INERTIAL LOADING WHICH CAN CAUSE BURRING OF FEED HOLES. THIS ECO IS TO BE INSTALLED IN CONJUNCTION WITH ECO PC04-00021 AND EITHER PC04-00022 (FOR PC04) OR PC05-00016 (FOR PC05). (*$1.00, **$1.80, ***$5.00)

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

PAPER TAPE READER AND PUNCH **PC04**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 PDP-8S PDP-8I LINC-8 PDP-8L	MARCH 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSES
PC04 00001	>PC04	M	APR 69 - CHANGES FINISH SPECIFICATION FOR THE TAPE FEED CHUTE.
PC04 00002	ALL PC04	M	APR 69 - CHANGES WORDING ON THE SWITCH BEZEL.
PC04 00003	>PC04	M	MAY 69 - ADDS DARK OLIVE GRAY AS A NEW COLOR FOR THE ROCKER SWITCH HANDLE.
PC04 00004	N.A.	M	JUN 69 - MODIFIES THE BEZEL SCREEN.
PC04 00005	>PC04	M	JUN 69 - ADDS A NEW BEZEL CASTING AND CHANGES TOLERANCES.
PC04 00006	N.A.	P	JUN 69 - UPDATES PRINTS TO SHOW BB, BC, AND RB VARIATIONS WHICH ARE REQUIRED FOR THE PDP-8I LINE.
PC04 00007	>PC04	M	JUL 69 - CHANGES THE READER BLOCK TO REDUCE MANUFACTURING COSTS.
PC04 00008	>PC04	M	AUG 69 - CHANGES MOUNTING OF THE I/O CABLE CLAMP.
PC04 00009	N.A.	P	SEP 69 - ASSIGNS A "70" NUMBER TO THE POWER REGULATOR ASSEMBLY.
PC04 00010	PC04 1>	M	SEP 69 - CHANGES SPECIFICATION TO REQUIRE THE USE OF HIGH TEMPERATURE SOLDER TO PREVENT MELTING AT THE 20 WATT RESISTORS.
PC04 00011	N.A.	P	SEP 69 - CLEARS UP GENERAL DESIGN AND DOCUMENTATION PROBLEMS.
PC04 00012	N.A.	P	OCT 69 - ADDS REFERENCES TO THE NEW PC04 TO THE PC8I, PC8L, PP8L PR8I, PR8L, PC01, PC02, AND PC03 PARTS LISTS.

LEGEND

FIELD CODE

F Field action may be required
D Design ECO
P Print or Wire List change
M Mechanical ECO

SYMBOL

> : ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses (*$X,**$Y,***$Z)
$X - Charge for Soeco and updated prints only
$Y Charge for necessary parts only
$Z Charge for on site labor only, installation by DEC
NOTE Charges are additive ($X+$Y+$Z Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M705 00003	>M705 FIELD RETROFIT AS REQUIRED	F	NOV 69 - ADDS A 39 MFD. CAPACITOR TO ELIMINATE THE PROBLEM OF CONTACT NOISE FROM THE READER FEED SWITCH CAUSING THE READER STEPPING MOTOR TO BIND. (ERROR CORRECTED BY ECO M705-00004) M705 CIRCUIT SCHEMATIC REVISION F ETCHED BOARD REVISION E
5408308 00001	>PC04 FIELD RETROFIT AS REQUIRED	F	DEC 69 - ADDS A .1 OHM SURGE CURRENT LIMITING RESISTOR TO THE 5408308 REGULATOR BOARD.
PC04 00013	>PC04	M	DEC 69 - CHANGES SEVERAL MINOR MECHANICAL SPECIFICATIONS. (ERROR CORRECTED BY ECO PC04-00017)
PC04 00014	>PC04	M	DEC 69 - ADDS TWO HOLES IN THE TAPE CONTAINER.
TU55 00014	TU55	M	DEC 69 - ADDS A SPACER STRIP TO PREVENT BOWING OF THE CASTING WHEN THE HOLD DOWN SCREWS ARE TIGHTENED; PC04 INTERFERENCE IS ELIMINATED.
G918 00002	ALL PC04	F	DEC 69 - CHANGES A RESISTOR VALUE AND ADDS A CAPACITOR TO MORE ACCURATELY MATCH THE CIRCUIT TO THE PHOTO-TRANSISTOR. G918 CIRCUIT SCHEMATIC REVISION E
PC04 00015	N.A.	P	JAN 70 - ADDS PC04 REFERENCES TO THE PC8I AND PC8L DRAWING LISTS.
M705 00004	>M705 FIELD RETROFIT AS REQUIRED	F	JAN 70 - CORRECTS ECO M705-00003; ADDS A 47 OHM RESISTOR AND A 39 MFD CAPACITOR TO THE FEED SWITCH CIRCUIT AT PIN BM1 TO PREVENT THE READER MOTOR STALLING WHEN THE FEED SWITCH IS ACTUATED.
M715 00003	>M715 FIELD RETROFIT AS REQUIRED IN PC04 AND PC05	F	JAN 70 - RESOLVES THE PROBLEM OF BIT DROPPING IN THE PC04 AND PC05. CHANGES CAPACITOR C15 TO 39 MFD TO BRING THE ONE-SHOT DELAY TIME OUT TO THE SPECIFIED 40 MSEC.
PC05 00011	>PC04 >PC05	P	FEB 70 - SPECIFIES CORRECT TERMINATOR FOR #70-6310, I/O WIRING HARNESS.
PC05 00013	>PC04 >PC05	M	FEB 70 - CHANGES MOUNTING BAR ASSEMBLY PROCEDURE WHICH ELIMINATES THE USE OF ROLL-PINS.
PC04 00016	N.A.	M	FEB 70 - CORRECTS DRAFTING ERROR ON READER PLATE DRAWING.
PC04 00017	N.A.	M	FEB 70 - CORRECTS AN ERROR IN ECO PC04-00013; CHANGES MECHANICAL FABRICATION INSTRUCTION FROM "1/4R 4 PLACES" TO "1/4R 8 PLACES".

LEGEND

FIELD CODE
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SYMBOL
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ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
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- $Z = Charge for on site labor only, installation by DEC

NOTE Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

E C DEC-O-LOG Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

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ECO SYNOPSES FOR LOGIC OR OPTION
PAPER TAPE READER, PUNCH AND POWER SUPPLY **PC04**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	JULY 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5408308 00002	>PC04 >PC05 FIELD RETROFIT AS REQUIRED	F	FEB 70 - SPECIFIES THAT AN ETCH REVISION IS TO BE MADE SO THAT CAPACITORS CAN BE ADDED TO ELIMINATE NOISE ON THE +5VDC LINE. PROVIDES INSTRUCTIONS FOR FIELD INSTALLATION OF THE CAPACITORS. (*$5.00, **$1.62, ***$20.00) 5408308 CIRCUIT SCHEMATIC REVISION B
PC04 00018	PC04-C, CA 1-538>	F	MAR 70 - ORDERS THE IMPLEMENTATION OF ECO M710-00003 TO ELIMINATE THE PROBLEM OF DOUBLE PUNCHING WHICH RESULTS FROM "SCR ENABLE" AFFECTING THE OPERATION OF THE SCHMITT TRIGGER. (*$.00, **$.00, ***$.00 INCLUDED IN ECO M710-00003 KIT)
M710 00003	ALL PC04-C, CA	F	MAR 70 - SPECIFIES THE ADDITION OF A 3K OHM RESISTOR FROM +5VDC TO THE JUNCTION OF Q3 COLLECTOR, Q7 BASE, AND ONE SIDE OF R20 WHICH ELIMINATES THE DOUBLE PUNCHING PROBLEM WHICH IS A RESULT OF THE OPERATION OF THE SCHMITT TRIGGER BEING AFFECTED BY "SCR ENABLE". REFERENCE ECO PC04-00018. (ERROR CORRECTED BY ECO M710-00004) (*$5.00, **$.15, ***$10.00) M710 CIRCUIT SCHEMATIC REVISION F
M715 00004	ALL M715	F	MAR 70 - REPLACES A 2K OHM POT WITH 5K OHM TO INCREASE THE RANGE OF THE ACCELERATOR CONTROL. THE POT WAS ADDED BY ECO M715-00002. (*$5.00, **$2.25, ***$5.00)
PC04 00019	>PC04	M	MAR 70 - CHANGES A PART NUMBER ON THE READER ASSEMBLY PARTS LIST AND ADDS A LENS DRAWING TO THE PC04 PRINT SET.
PC04 00020	N.A.	F	MAR 70 - CORRECTS ALL ML'S WHICH ARE BEING AFFECTED BY THE PHASE-IN OF THE PC04. IT INCLUDES A TABLE WHICH CROSS REFERENCES THE VARIOUS OPTION DESIGNATORS AND VARIATIONS. (*$5.00, **$.00, ***$.00)

LEGEND

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ECO CHARGES

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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PC0 00003	ALL PC0 PUNCHES FIELD RETROFIT AS REQUIRED	F	MAR 70 - SPECIFIES THE USE OF A SMALLER NYLON KNOB ON THE PUNCH; THE PRESENTLY USED KNOB PRESENTS AN EXCESSIVE INERTIAL LOADING WHICH CAN CAUSE BURRING OF FEED HOLES. THIS ECO IS TO BE INSTALLED IN CONJUNCTION WITH ECO PC04-00021 AND EITHER PC04-00022 (FOR PC04) OR PC05-00016 (FOR PC05). (*$1.00, **$1.80, ***$5.00)
M710 00004	ALL M710	F	APR 70 - CORRECTS AN ERROR IN ECO M710-00003; SPECIFIES THAT ETCH IS TO BE CHANGED AND CHANGES THE BREAK-IN POINT TO READ "IMMEDIATE RETROFIT". (*$.00, **$.00, ***$.00, INCLUDED IN M710-00003 KIT)
PC04 00021	>PC04 FIELD RETROFIT AS REQUIRED	F	APR 70 - PROVIDES A NEW TAPE FEED BRACKET WHICH RESOLVES A PROBLEM OF UNEVEN TENSION WHICH HAS CAUSED REGISTRATION PROBLEMS. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH ECO PC0-00003 AND EITHER PC04-00022 OR PC05-00016. (*$5.00, **$1.80, ***$10.00)
PC04 00022	PC04 1-865>	F	APR 70 - PROVIDES A NEW RESISTOR MOUNTING BRACKET FOR THE STEPPING MOTOR DRIVE RESISTORS; THE RESISTORS ARE CHANGED FROM 50 OHMS, 20 WATTS TO 25 OHMS, 40 WATTS. THE CHANGES WILL PROVIDE IMPROVED HEAT DISSIPATION. THIS ECO IS TO BE INSTALLED IN CONJUNCTION WITH ECO'S PC0-00003 AND PC04-00021. (*$5.00, **$23.10, ***$25.00)
PC04 00023	PC04 & PC05 750-880> FIELD RETROFIT AS REQUIRED	F	APR 70 - CHANGES CONNECTION OF THE WIRING HARNESS TO THE POWER SUPPLY AND REGULATOR ASSEMBLY. CHANGES FUSE VALUES. THIS ECO IS REQUIRED WHEN +5VDC IS FOUND TO BE LESS THAN 4.5 VOLTS. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH ECO 5408308-00003. (*$5.00, **$.05, ***$15.00)
5408308 00003	PC04 PC05 FIELD RETROFIT AS REQUIRED	F	APR 70 - CHANGES THE ZENER DIODE AND TWO RESISTORS TO BETTER REGULATE THE +5VDC SUPPLY VOLTAGE. THIS ECO IS TO BE FIELD RETROFITTED IN PC04 AND PC05 IF PROBLEMS ARE BEING CAUSED BY THE +5VDC SUPPLY BEING LESS THAN +5V OR IF THE VOLTAGE IS LESS THAN +4.5 VOLTS. A CORRECTION NOTICE WAS ISSUED SUBSEQUENT TO THE SPECO WHICH INDICATES THAT THE ZENER DIODE SHOULD BE 6.4 VOLTS AND THE RESISTOR VALUE SHOULD BE 82 OHMS. ECO 5408308-00004 EXPANDS UPON THIS ECO. ($5.00, **$.73, ***$15.00) 5408308 CIRCUIT SCHEMATIC REVISION C ETCHED BOARD REVISION D
PC04 00024	>PC04 FIELD RETROFIT AS REQUIRED	F	MAY 70 - SPECIFIES REPLACEMENT OF THE ROYTRON PUNCH PLASTIC LID AND HINGE ASSEMBLY AND THE CHAD CHUTE WITH A NEWLY-DESIGNED ASSEMBLY. THIS IS A PRODUCT IMPROVEMENT MODIFICATION WHICH WILL INCREASE RELIABILITY AND MTBF. EARLY VERSIONS OF THE PC01 CANNOT BE RETROFITTED BECAUSE THE TAPE DEPRESSOR IS DIFFERENT. (*$5.00, **$15.43, ***$7.00)

LEGEND

FIELD CODE

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SYMBOL

>= ECO applicable to future production

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

PAPER TAPE READER, PUNCH AND POWER SUPPLY **PC04**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	JULY 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5408308 00004	ALL PC8 FIELD RETROFIT AS REQUIRED	F	JUN 70 - EXPANDS UPON ECO 5408308-00003; ADDS A FIELD REWORKING PROCEDURE. (*$.00, **$.00, ***$.00 INCLUDED IN THE ECO 5408308-00003 KIT)
PC04 00025	PC04 & PC05 WITH ECO 5408310-00001	F	JUN 70 - DEFINES THE PC04 AND PC05 SWITCH CIRCUIT WIRING CHANGES WHICH ARE REQUIRED WHEN ECO 5408310-00001 IS IMPLEMENTED. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH ECO'S 5408310-00001, M705-00003 AND M705-00005. (*$5.00, **$.00, ***$20.00)
PC04 00026	N.A.	M	JUN 70 - ADDS ANGLE TOLERANCES TO THE DRAWING FOR THE FEED BRACKET.
PC04 00027	>PC04	D	JUN 70 - PROVIDES A NEW WIRE HARNESS.
M705 00005	>M705	F	JUN 70 - THIS ECO CANCELS AND SUPERCEDES ECO M705-00004. SPECIFIES THAT THE NEW CIRCUIT SCHEMATIC REVISION "J" IS TO BE IDENTICAL TO THE "D" REVISION. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH ECO'S 5408310-00001 AND PC04-00025 TO RESOLVE THE PROBLEM OF THE PCO READER STEPPING MOTOR STALLING WHEN THE FEED SWITCH IS DEPRESSED. (*$5.00, **$.00, ***$5.00) CIRCUIT SCHEMATIC REVISION J ETCHED BOARD REVISION H
5408310 00001	>5408310 FIELD RETROFIT AS REQUIRED	F	JUN 70 - ADDS AN SCS CIRCUIT TO ELIMINATE READER FEED SWITCH CONTACT BOUNCE WHICH CAN CAUSE MOTOR STALLING. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH ECO'S PC04-00025, M705-00003, AND M705-00005. ERRORS CORRECTED BY ECO 5408310-00002 AND 00003. (*$5.00, **$.99, ***$20.00) 5408310 CIRCUIT SCHEMATIC REVISION C
5408310 00002	>5408310 FIELD RETROFIT AS REQUIRED	F	JUN 70 - CORRECTS AN ERROR IN ECO 5408310-00001; CORRECTS THE PART NUMBER FOR AN ADDED TRANSISTOR. (*$.00, **$.00, ***$.00 INCLUDED IN THE 5408310-00001 KIT)
5408310 00003	>5408310 FIELD RETROFIT AS REQUIRED	F	JUL 70 - CORRECTS AN ERROR IN ECO 5408310-00001; CORRECTS THE TAB NUMBER DESIGNATIONS. (*$.00, **$.00, ***$.00, INCLUDED IN THE 5408310-00001 KIT)

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

PC04-00028 CODE: M
JUL-70 - PROBLEM: A slot is needed in heat sink #7407069 for securing the bridge rectifier on the 5408918 board.
CORRECTION: Add slot to heat sink.
In-plant effectivity -Rework all 7407069 heat sinks.

PC04-00029 CODE: M
AUG-70 - PROBLEM: A clear passivate finish is undesireable on the tape depressor because of the color of the stainless steel.
CORRECTION: Change finish from clear passivate to black.
In-plant effectivity -Documentation phase-in

PC04-00030 CODE: P
AUG-70 - PROBLEM: Wrong termination stated for wire #7.
CORRECTION: Correct Index Assembly drawing, D-IA-7006309-0-0 revision "C ".
In-plant effectivity -Print change only.

PC04-00031 CODE: M
AUG-70 - PROBLEM: Slotted hole for rectifier is in wrong position on the 7407069 power regulator heat sink.
CORRECTION: Change slot position.
In-plant effectivity -Documentation phase-in.

PC04-00032 CODE: P
AUG-70 - PROBLEM 1: New power regulator board 5408918 replaces 5408308 on 7006512 assembly.
CORRECTION 1: Change Parts List and assembly drawing to call-out new regulator board.
PROBLEM 2: Bridge rectifier 1109366 is to be assembled to heat sink as part of 7006512 assembly.
CORRECTION 2: Add 1009366 to 7006512 Parts List.

NOTE: This ECO creates PC04-B, -BA, -C, -CA, -P, -PA , and -R ML revision "U ". Also creates PC04-BB, -BB, -BC, -BL, -BM, -PL , -PM , and -RB ML revision "T ". Also creates PC05-C, -CA , -P, -PA , and -R ML revision "w ".
In-plant effectivity -06 documentation change only.

PC04-00033 CODE: M
SEP-70 - PROBLEM: Material used on tape depressor #7407121 distorts too easily.
CORRECTION: Change material to #20 gauge, .0359 Thickness.
In-plant effectivity -Phase-in

PC04-00034 CODE: P
OCT-70 - PROBLEM: New power regulator assembly now being phased-in on all PCO ' S.
CORRECTION: Change power regulator Circuit Schematic to B-CS-5408918-0-1 .

NOTE: This ECO creates PC04-BB, -BC, BL, -BM, -PL, -PM , and -RB ML revision "U ". Also creates PC04-BA, -B, -C, -CA, -P, -PA , and -R ML revision "V ". Also creates PC05-C, -CA, -P, -PA , and -R ML revision "y ".
In-plant effectivity -06 documentation change only.

PC04-00035 CODE: P
NOV-70 - PROBLEM: Dimension on drawing 7408088 is shown as 1.56; it should be 1.65. dimension lines shown are not understandable.
CORRECTION: Change 1.56 dimension to 1.65. add a symbol to clearify dimension lines. Add a wire diameter notation to the material block.
In-plant effectivity -06 documentation change only

PC04-00036 CODE: D
NOV-70 - PROBLEM: Reader feed switch 5408310-2 causes reader stepping motor to stall when switch is first activated.
CORRECTION: Replace the 5408310-2 switch with a 5408935 switch which has an anti-bounce circuit.

NOTE: This ECO creates PC04-BB, -BC, -BL, -BM, -PL, -PM , and -RB ML revision "V ". Also creates PC04-B, -BA, -C, -CA, -P, -PA , and -R ML revision "w ".
In-plant effectivity -02 phase-in

PC04-00037 CODE: M
NOV-70 - PROBLEM 1: Tighter tolerance needed on .042 Dimension on tape path guide, #7407076.
CORRECTION 1: Give .042 Dimension a tolerance of plus or minus .002
PROBLEM 2: Squared-off slot costly to mill out as currently shown.
CORRECTION 2: Allow radii on corners of slot to ease milling operation.
In-plant effectivity -Documentation phase-in

PC04-00038 CODE: M
DEC-70 - PROBLEM: Cost reduction.
CORRECTION: Provides for several incidental changes to facilitate mechanical procedures.
In-plant effectivity -01 phase-in

PC04-00039 CODE: D
JAN-71 - PROBLEM: Phototransistor currently used has high loss rate at soldering operation.
CORRECTION: Replace 5408306 with 5409227 which is supplied to us already mounted on an etch board and ready for cable assembly.
In-plant effectivity -01 phase-in

PC04-00040 CODE: P
JAN-71 - PROBLEM: Prints do not accurately reflect purchased phototransistor.
CORRECTION: Update prints to improve vendor yield.
In-plant effectivity -06 documentation change only.

PC04-00041 CODE: M
JAN-71 - PROBLEM: Modules not held tightly in logic block and loosen during shipment, causing adjustment problems.
CORRECTION: Install module hold-down bar.

NOTE: This ECO creates PC04-BB, -BC, -BM, -RB, -BL, -PL , and -PM ML revisions "w ". Also creates PC04-B, -BA, -C, -CA, -P, -PA , and -R ML revision "y ".
In-plant effectivity -01 phase-in

PC04-00042 CODE: M
JAN-71 - PROBLEM: It is possible that the PCO punch motor may build up a static charge which would discharge through the motor pulley to the side of the chassis.
CORRECTION: Ground the punch motor, using a ground strap from motor bolt to motor mounting bracket.
In-plant effectivity -01

PC04-00043 CODE: M
JAN-71 - PROBLEM 1: Part #74-05300 is purchased outside. Need to specify DEC part number.
CORRECTION 1: On chad box, C-MD-7405300 , call-out in note 1, "DEC part #12-10272 ".
PROBLEM 2: E-IA-7407074-0-0 chassis cost reduction.
CORRECTION 2: Redesign detail "A ", change "L " hole to "A " hole, add four "J " holes to detail "B ", add welding to area shown, and change 1/4 inch dimension to 3/16 inch.
In-plant effectivity -01 phase-in

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EC DEC-O-LOG Engineering Change Order Log

PC04

Paper Tape Reader, Punch and Power Supply

PROCESSOR TYPE All

PC04-00044 CODE: P ML: Z
FEB-71 - PROBLEM: Packaging instructions are not included in print set.
CORRECTION: Add packaging instructions to print set.

NOTE: This ECO creates PC04-BB, -BC, -BL, -BM, -PL , and -RB ML revision "y ". Also creates PC04-BA, -C, -CA, -P, -PA , and -R ML revision "z ".
In-plant effectivity -06 documentation change only.

PC04-00045 CODE: M
MAR-71 - PROBLEM: PC04 and PC05 have a potential horizontal vibrational problem while shipped in system cabs.
CORRECTION: Have two holes drilled on each flange of chassis track and use these two additional mounting holes to fasten chassis tracks to cabinet post to provide more rigidity. Vendor has been notified of change.
In-plant effectivity -03 rework immediately.

PC04-C0046 CODE: F
FEB-71 - PROBLEM: Reader difficult to set up, will not tolerate greatly mis-registered tapes, and may be temperature sensitive above 90 degrees Fahrenheit.
CORRECTION: Convert reader to feed hole strobing to improve overall performance, to make set up easier, to allow greater registration tolerance and to increase reliability.

NOTE 1: This FCO creates PC04-BB, -BC, -BL, -BM, -PL, -PM , and -PM ML revision "z ". Also creates PC04-B, -BA, -C, -CA, -P, -PA , and -R ML revision "A " . NOTE 2: This FCO must be installed in conjunction with ECO PDP8/I-000114 when the PC04 is installed on a PDP-8/I and ECO PDP8/L-00109 when on a PDP-8/L. The ADD/DELETE sheets for these ECO's are included in the FCO kit and are not available separately. NOTE 3: This FCO is not applicable to PC04's used on the PDP-8 or PDP-8/S.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit if symptoms are present: On PDP-8/I, PC04-BB, -BC, -RB, -P , and -PA ; on PDP-8/L, PC04-BL, -BM, -PL, -PM , and -RB ; on PDP-8/E, PC04-BL, -BM, -PL, -PM , and -RB .
(Time To Install And Test 2.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) circuit Schematics for M715, M7050 and G918 and a revised Adjustment Procedure will also be included in the kit.

PC04-00047 CODE: P
MAR-71 - PROBLEM: Wiring Table contains wrong information on solderless connectors.
CORRECTION: Change Wiring Table.
In-plant effectivity -06 documentation change only.

PC04-00048 CODE: P
MAR-71 - CORRECTION 1: Add note #4 to drawing C-MD-3404748-0-0 .
CORRECTION 2: Change item #2 and #3 part numbers on drawing E-IA-7407074-0-0 .
In-plant effectivity -06 documentation change only.

PC04-00049 CODE: P
APR-71 - CORRECTION: Delete note #1 on hinge drawing B-MD-7407063-0-0 .
In-plant effectivity -06 documentation change only.

PC04-00050 CODE: P
APR-71 - CORRECTION: Update drawing D-AD-7006246-0-0 to reflect change to regulator board and switch.
In-plant effectivity -06 documentation change only.

PC04-00051 CODE: M
JUN-71 - PROBLEM: Jones strip cover currently used does not meet UL standards.
CORRECTION: New cover has been designed; redraw the drawing and assign a number. Replace the currently used cover with the new one.

NOTE: This ECO creates PC04-BB, -BC, -BL, -BM, -PL, -PM , and -RB ML revision "AA ". Also creates PC04-B, -BA, -C, -CA, -P, -PA , and -R ML revision "AE ". Also creates PC05-C, -CA, -P, -PA , and -R ML revision "AD ".
In-plant effectivity -01 phase-in

PC04-00052 CODE: P
JUL-71 - CORRECTION: Correct dimension on chassis drawing E-IA-7407074-0-0 .
In-plant effectivity -06 documentation change only.

PC04-00053 CODE: P ML: A
DEC-71 - PROBLEM 1: PC04 cannot be built from prints. Wire connections missing, terminal details out of date, etc.
CORRECTION 1: Revise and redraw prints to bring them up to date.
PROBLEM 2: Add details for PC04-CL and -CM for future production.
CORRECTION 2: Revise drawings to include PC04-CL and -CM .

NOTE: This ECO does not affect any units in the field or in production. It changes drawings to match production units. This ECO is required for the future release of the PC04-CL and -CM for the KI10.
In-plant effectivity -06 documentation change only.

PC04-00054 CODE: D ML: B
FEB-72 - PROBLEM: PC04 is currently being hand wired.
CORRECTION: Generate three NC tapes to allow the three variations of PC04 wired assembly to be wrapped semi-automatically.
In-plant effectivity -02 phase-in

PC04-D0055 CODE: F ML: C WL: A
APR-72 - PROBLEM 1: Punch solenoids overheat (100% duty cycle) when punch control cable is removed or if processor alone is powered down.
CORRECTION 1: Add gating and components to disable punch solenoid drivers when punch control cable is removed or processor alone is powered down. PROBLEM 2: Revision "0 " Wire List (K-WL-PC04-0-6) incorrect.
CORRECTION 2: Correct Wire List.
CORRECTION 3: Corrects drawings D-BS-PC04-0-2 sheet 1, 2, and 3 and E-AD-7006268-00.

NOTE: See ADD/DELETE correction supplement FCO PC04-D055A.
In-plant effectivity -03 rework immediately
Field effectivity -All PC04's that do not have their AC power controlled by the processor's power switch.
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) supplement PC04-D055A will also be included in the kit

PC04-D055A CODE: F
APR-72 - PROBLEM: Typographical errors in FCO PC04-D0055.
CORRECTION: Correct errors in ADD/DELETE sheet.
In-plant effectivity -03 rework immediately
Field effectivity -Unchanged

PC04-00056 CODE: P ML: D WL: H
MAY-72 - PROBLEM 1: Present Wire Lists, when created 2-15-72, were issued at revision "0 "; actually should have been issued at current wired assembly revision.
CORRECTION 1: Update all three Wire List revisions to the revision carried by the present wired assembly. Each must carry revisions independently from this point on.
CORRECTION 2: Corrects omissions on the Master Drawing List.
CORRECTION 3: Update the Master Drawing List with the new power regulator Circuit Schematic.
In-plant effectivity -Documentation change only

PC04-00057 CODE: D ML: E

MAR-73 - PROBLEM: High cost of manufacturing and assembly of aluminum bezel, reader plate, and tape path guide.
CORRECTION: Change from aluminum bezel to plastic; change from machined reader plate and tape path guide to die cast design.
In-plant effectivity -02 phase-in by March 30

PC04-D0058 CODE: F ML: F

SEP-73 - PROBLEM 1: Manuals and engineering drawings do not include prints of Power Regulator Board; Field Service is handicapped without it.
CORRECTION 1: Add drawing of the #54-08310 PC04 Regulator Board to manuals and engineering drawing set.
PROBLEM 2: Potential blowing of 4 AMP fast blow fuse F2 by turning the PC04 on and off.
CORRECTION 2: Replace the fast blow fuse with a 4 AMP slow blow fuse #90-07220 on the #70-06512 Power Regulator Assembly.
PROBLEM 3: Illustrated Parts Breakdown not included with drawing set.
CORRECTION 3: Add I P B to the Accessory List, A-AL-PC04-0-08.
In-plant effectivity -Fuse is being changed by production
Field effectivity -Retrofit all PC04's if symptoms are present
(Time To Install And Test .3 Hour.) (Kit Contents -F1058 -FCO/Prints And Parts)

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PC05-00024 CODE: D ML: B
MAR-72 - PROBLEM: Electronic parts on the punch motor driver assembly are no longer required as a result of a redesign of the driver.
CORRECTION: Revise prints to depict new Triac Driver and change title from SCR DRIVER ASSEMBLY to TRIAC DRIVER ASSEMBLY .
In-plant effectivity -Phase-in when revision "B " 5408384's are available.

PC05-00025 CODE: M ML: C
DEC-72 - PROBLEM: High cost of aluminum bezel.
CORRECTION: Change from aluminum bezel to plastic bezel and use an ultrasonic weld to bond cover to bezel.
In-plant effectivity -02 phase-in

PC05-D0026 CODE: F ML: D
SEP-73 - PROBLEM 1: Potential blowing of 4 AMP fast blow fuse F2 by turning PC05 on and off.
CORRECTION 1: Replace the fast blow fuse with a 4 AMP slow blow fuse #90-07220 on the #70-06512 Power Regulator.
PROBLEM 2: Illustrated Parts Breakdown not included with drawing set.
CORRECTION 2: Add I P B to drawing A-AL-PC05-0-05.
In-plant effectivity -Fuse is being changed by production.
Field effectivity -Retrofit all PC05's if symptoms are present.
(Time To Install And Test .3 Hour.) (Kit Contents -F1059 -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

PP67-A

PAPER TAPE PUNCH, TYPESETTING

PROCESSOR TYPE PDP-8 FAMILY

PP67A-B0001 **CODE: F**

FEBRUARY-74 PROBLEM: The PP67-A and -B, PP67-C and -D, and PR68-D and -DA all have the same size Amphenol connector, but the voltages are different. If a cable for one is plugged into another, shorting occurs.

CORRECTION: Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED – PR68-D and -E and the BC01H cable; ORANGE – PP67-C and -D and the BC01F cable; GREEN – PP67-A and -B and the #70-05062 cable.

In-plant effectivity – none

Field effectivity – retrofit PP67-A's used in systems with PR68-D, -DA, -E, PP67-B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.

(Time To Install And Test .2 Hour) (Kit Contents – NF1185 FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

PP67-C

Typesetting Paper Tape Punch, 6-Level

PROCESSOR TYPE 8 Family

PP67C-00001 CODE: D
JUL-69 - PROBLEM 1: Difficulty in setting stop on wafer switch.
CORRECTION 1: Draw top view of switch for easier stop ring setting.
PROBLEM 2: Confusion in wiring the switch due to inadequate Wire Table.
CORRECTION 2: Additions and corrections to Wire Table.
In-plant effectivity -Rework all PP67-C.

PP67C-00002 CODE: M
JUL-69 - PROBLEM: Punch control mounting bracket could not be assembled due to a missing hole and inadequately dimensioned holes
CORRECTION: Add necessary hole and dimension properly.
In-plant effectivity -Rework all PP67-C

PP67C-00003 CODE: P ML: A
JUL-69 - PROBLEM: Unit would not work due to inadequate Wire Table.
CORRECTION: Made additions and deletions to Wire Table.
In-plant effectivity -All PP67-C's

PP67C-00004 CODE: P
JAN-70 - PROBLEM: To update PP67-C print set to include variations of the standard device and to eliminate parts on the Unit Assembly Parts List not used in assembly.
CORRECTION: Add variation column to Unit Assembly Parts List.
In-plant effectivity -06 documentation change only

PP67C-B0005 CODE: F ML: B
APR-70 - PROBLEM: The purpose of the upper half of S1 (j,k,l,m,p) is to simulate an out-of-tape condition in positions 2,3,4 and to provide a "RUN " condition in position 1. Thus, positions 2,3,4 should go to +5 volts, not ground. Also, the out-of-tape switch should only go to position 1; J1-21, which carries the simulated condition back to the PA63 logic, should be connected to the wiper of the switch (S1-P . J1-17 is a ground coming into J1 and should not be connected to +30 volts, whereas J1-10 is a 30 volt line coming in and should be shown connected to the other 30 volt lines.
CORRECTION: Redraw D-CS-PP67-C-1 as shown, deleting the wire from G915-H, the wire from G915-E to J1-13 is deleted and rerun G915-E to G915-F. On D-UA-PP67-C-0 , J1-21 goes to S1-P; add two notes, one showing proper bussing of 30 volt line of J1 and the other showing the correct wiring of the out-of-tape switch. Remove the sketch of J1, it is confusing and not necessary. On D-AD-7006385-0-0 , S1-K now goes to CONNI-A (+ 5 volts) and S1-C is grounded directly now and not thru S1 k-l-m. Delete connection of CONNI-H , it is no longer used.

NOTE: This FCO creates PP67-C Circuit Schematic revision "A " .
In-plant effectivity -Rework PP67-C #164 and all future.
Field effectivity -Retrofit PP67-C #101 thru #163.
(Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

PP67C-00006 CODE: M
APR-70 - PROBLEM: Drawing D-MD-7407364-0 is incorrect for manufacture of the mounting bracket. Print requires new dimensions and all revision "A " pieces in stock or kits must be reworked.
CORRECTION: Change the drawing and rework all pieces.
In-plant effectivity -Rework

PP67C-00007 CODE: P ML: C
NOV-70 - PROBLEM: Cable layout and punch control schematic not called-out. There has been no Accessory List made up.
CORRECTION: Generate Accessory List A-AL-PP67-C-3 . List the cable drawing and G915 Circuit Schematic on the PP67-C Accessory List.
In-plant effectivity -06 documentation change only

PP67C-A0008 CODE: F ML: D
APR-71 - PROBLEM 1: Damping diodes were not called out on prints.
CORRECTION 1: Specify damping diodes per D-CS-PP67-C-1 .
PROBLEM 2: No Set Up, Adjustment, or Acceptance Procedure was available.
CORRECTION 2: Add procedures to Master Drawing List (not field retroactive .
PROBLEM 3: When punch "N " is put in CONTINUOUS MODE , it will punch data when another punch is selected.
CORRECTION 3: Delete wire from G915 pin F to pin E and add wire from pin E to tab A on wiper per D-CS-PP67-C-1 .
PROBLEM 4: No pertinent Circuit Schematics are sent with customer prints.
CORRECTION 4: Made ADDITIONAL CUSTOMER PRINTS sheet 2 of Master Drawing List.
CORRECTION 5: Incorporate new Acceptance Procedures (not field retroactive .
CORRECTION 6: Add resistor (ik ohms) from G915 pin E to +5 VDC on connector block per drawing D-CS PP67-C-1 .

NOTE: This ECO creates PP67-C Circuit Schematic revision "B ".
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all PP67-C's
(Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

PP67C-00009 CODE: P ML: E
FEB-72 - PROBLEM 1: There are no Checkout Procedures for use on the PA611-P Controller.
CORRECTION 1: Add new Checkout Procedure to Master Drawing List.
PROBLEM 2: SCR position is not specified. Anode could possibly be positioned to short against the low-tape arm.
CORRECTION 2: Specify SCR position.
PROBLEM 3: Acceptance Procedure can't be used on PA611.
CORRECTION 3: Change Acceptance Procedure.
PROBLEM 4: Listing of additional customer prints not up To date.
CORRECTION 4: Update additional listing of customer prints.
In-plant effectivity -06 documentation change only

PP67C-00010 CODE: P
MAR-72 - PROBLEM: Drawing shows the assembly of two part numbers to be one part. This cannot be done unless part number C-MD-7407346-0-0 becomes an assembly drawing number, or item #2, which is C-MD-7405198-0-0 is disregarded as #7405198 and changed to just a fabricated part as item #2.
CORRECTION: Change title to "Bracket Mounting Assembly " (Punch Control . Leave part number as D-MD-7407346-0-0 and erase item #2 part number. Change quantity of pop rivets from one to three.
In-plant effectivity -06 documentation change

PP67C-00011 CODE: P ML: F
AUG-72 - CORRECTION 1: Signal names revised and corrected.
PROBLEM 2: Acceptance Criteria does not make use of latest diagnostics and test procedures.
CORRECTION 2: New Acceptance Criteria incorporated.

NOTE: This ECO creates PP67-C Circuit Schematic revision "C ".
In-plant effectivity -06 documentation change only

PP67C-B0012 CODE: F ML: H

JANUARY-74 – PROBLEM: The PP67-A and -B, PP67-C and -D, and PR68-D and -DA all have the same size Amphenol connector, but the voltages are different. If a cable for one is plugged into another, shorting occurs.

CORRECTION: Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED – PR68-D and -E and the BC01H cable; ORANGE – PP67-C and -D and the BC01F cable; GREEN – PP67-A and -B and the #70-05062 cable.

In-plant effectivity – none

Field effectivity – retrofit all PP67-C's in systems with PR68-D, -DA, -E, PP67-A, -B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.

(Time To Install And Test .2 Hour) (Kit Contents – NF1181 – FCO/Prints)

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ECO DEC-O-LOG Engineering Change Order Log

PR68-A

TYPESETTING
PAPER TAPE READER

PROCESSOR TYPE PDP-8 FAMILY

PR68A-00001 CODE: D ML: E
JAN-69 - PROBLEM: Hole in rear screen assembly is in wrong place, causing cable strain.
CORRECTION: Relocate hole.
In-plant effectivity -Phase-in

PR68A-00002 CODE: D
MAY-69 - PROBLEM: Hole size and location must be changed to prevent wires from scraping.
CORRECTION: Change hole size and location accordingly.
In-plant effectivity -Phase-in

PR68A-00003 CODE: M
OCT-69 - CORRECTION: Change tape spring slot size from 1/8 inch wide by one quarter inch long to 5/32 inch wide by one quarter inch long.
In-plant effectivity -Phase-in

PR68A-00004 CODE: D
SEP-70 - PROBLEM: The cable type used on the reader and punch is no longer available.
CORRECTION: Change to Belden cable #91-07684; wiring color codes are changed accordingly.
In-plant effectivity -Phase-in

PR68A-00005 CODE: M
OCT-70 - PROBLEM: Wrong type of material being machined for reader head. Phenolic material consists of cotton cloth, grade "C " or "ce ", and when holes are drilled for photocell apertures, shredding causes a rough hole.
CORRECTION: Change to better grade of phenolic. Use linen base material, phenolic NEMA grade "le " .
In-plant effectivity -Phase-in immediately

PR68A-00006 CODE: D
NOV-70 - PROBLEM: Cable not properly called out on drawing. Also, some parts are not labeled. Some new parts must be added.
CORRECTION: Redraw G773 Cable Connector Card. Add Notes 1, 7, and 8 to help in assembling cable. Note 8 is to call out a separate wire assembly to go from G773 to power terminal.
In-plant effectivity -Phase-in

PR68A-00007
DEC-70 - DOCUMENTATION for this in-plant ECO has been deleted from the microfilm files.

PR68A-00008 CODE: M
JAN-71 - PROBLEM 1: Tape Spring material is too thin.
CORRECTION 1: Change #74-04984 Tape Spring material from 266A, .019 Inch to 226A, .0299 Inch thick.
PROBLEM 2: Not enough center lines for "H " holes in Bottom Reader Plate causes manufacturing difficulties.
CORRECTION 2: Add center lines for "H " holes.
In-plant effectivity -Phase-in

PR68A-00009 CODE: D
MAY-71 - PROBLEM: Dimension called out for length of lens not adequate for PR68-A, PR68-B, PR68-D and PR68-DA.
CORRECTION: Add variation box and make changes to prints as required.
In-plant effectivity -Documentation change only

PR68A-00010 CODE: M
JAN-73 - CORRECTION: Changes an incorrect hole diameter in the reader head.
In-plant effectivity -Phase-in

PR68A-B0011 CODE: F ML: F
NOV-73 - PROBLEM 1: Solar cell assembly unreliable.
CORRECTION 1: Replace solar cell assembly #29-20672-0 with tape guide assembly #70-09382-0.
PROBLEM 2: Noise on data lines of reader cable.
CORRECTION 2: Add filtering to #70-05063 reader cable.

NOTE: A complete print set, including the assembly and adjustment procedure for the new tape guide, is included in the parts kit for this FCO.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all PR68-A's, as required, at next PM or service call.
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts $ 50.24)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1097 - FCO/Prints And Parts)

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PR68B-B0006 CODE: F ML: F

JAN-73 - PROBLEM 1: Pin B01V2 of the PR68-B is a ground that, when plugged into the PA63, causes shorts on the +5V line when the NTTA switch is put into its "off " position.

CORRECTION 1: Swap wire from B01V2 to B01T1. Run #30 AWG wire to B01C2 from B01T1.

PROBLEM 2: The reader on/off switch puts a ground directly to the outputs of gates (an M161 in the PA63 and an M115 in the PA68-F) which could shorten the life of those particular gates.

CORRECTION 2: Put on/off switch in the **FEEDHOLE** line. Position 1 would let the reader run, position 2 would send a positive potential back to the controls, stopping the reader.

In-plant effectivity -03. Retrofit immediately

Field effectivity -Retrofit all PR68-B's on the following systems: PDP-8/I's #2798 and #2805, PDP-8/L's #3149, #3207, and #3300.

(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO Only)

PR68B-B0007 CODE: F ML: H

NOV-73 - PROBLEM: Solar cell assembly unreliable.

CORRECTION: Replace solar cell assembly #29-20672-0 with tape guide assembly, #70-09382-1.

NOTE: A complete print set, including the assembly and adjustment procedures for the new tape guide, is included in the parts kit for this FCO.

In-plant effectivity -Retrofit immediately

Field effectivity -Retrofit all PR68-B's, as required, at next PM or service call.

(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts $ 135.00)

The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1098 - FCO/Prints And Parts)

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PR68D-00017 CODE: D ML: J WL: C
MARCH-72 – CORRECTION 1: Correct Engineering Specifications and Manufacturing Test Procedures.
CORRECTION 2: Correct motor signal names.
PROBLEM 3: Front cover plate does not fit properly.
CORRECTION 3: Correct dimensions on front cover.
CORRECTION 4: Change color of switch handle.
PROBLEM 5: Wrong color wire called out
CORRECTION 5: Change color of wire.

NOTE: This ECO creates PR68-DA ML revision "H"
In-plant effectivity – 02 phase-in

PR68D-00018 CODE: P ML: K
AUGUST-72 – CORRECTION: Signal names revised and corrected because of missing names, wrong names, and different names between peripheral and interfaces.

NOTE: This ECO creates PR68-DA ML revision "J".
In-plant effectivity – 06 documentation change only

PR68D-00019 CODE: D ML: L
APRIL-73 – PROBLEM: There is a possibility that either a faulty G930 module or a miswired BC01H cable can feed –15V through the RDR SELECT line and blow modules in the PA63. Some BC01H cables were manufactured with the 1 MFD capacitor connected to P1, –15V, rather than T1, ground; this puts a –15V spike on the select lines.
CORRECTION: Install a D664 diode from B04J2 to B04T1 on the PR68-D backplane with the cathode on B04J2.

NOTE: This ECO creates PR68-DA ML revision "K".
In-plant effectivity – 03 retrofit immediately

PR68D-00020 CODE: P ML: M
JULY-73 – PROBLEM: Front cover plate print calls out Item #5 as #90-08894-1, tape, 1/8 inch wide, double adhesive. This item is put on in the actual assembly, not in fabrication assembly.
CORRECTION: Delete Item #5 and Note #3 from the cover plate print and add it to the Unit Assembly drawing.
In-plant effectivity – documentation change

PR68D-00021 CODE: P ML: N
JANUARY-74 – CORRECTION: Add packaging instructions and purchase specifications to Parts List, Unit Assembly, and Drawing Index.
In-plant effectivity – documentation change only

PR68D-B0022 CODE: F ML: P
FEBRUARY-74 PROBLEM: The PP67-A and -B, PP67-C and -D, and PR68-D and -DA all have the same size Amphenol connector, but the voltages are different. If a cable for one is plugged into another, shorting occurs.
CORRECTION: Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED – PR68-D and -E and the BC01H cable; ORANGE – PP67-C and -D and the BC01F cable; GREEN – PP67-A and -B and the #70-05062 cable.
In-plant effectivity – none
Field effectivity – retrofit PR68-D's used in systems with PR68-E, PP67-A, -B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.
(Time To Install And Test .2 Hour) (Kit Contents – NF1187 – FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

PR68-E

PAPER TAPE READER, TYPESETTING

PROCESSOR TYPE PDP-8 FAMILY

PR68E-00001 CODE: P ML: A
APR-72 - PROBLEM: Drawing directory, customer listing and drawings specified to be pulled do not agree.
CORRECTION: Adds and deletes drawings to customer list and removes redundant listing in index portion of Drawing Directory.
In-plant effectivity -Documentation change only

PR68E-E0002 CODE: F ML: B
AUG-72 - PROBLEM 1: Signals have missing names, erroneous names and different names between reader and controller.
CORRECTION 1: Signal names revised and corrected.
PROBLEM 2: Acceptance procedures refer to PA63 controller which is no longer applicable, and do not have the latest diagnostics and test procedures incorporated.
CORRECTION 2: New acceptance procedures written.
In-plant effectivity -06 documentation change only
Field effectivity -Update customer print set.
(This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

PR68E-B0003 CODE: F DD: C
FEBRUARY-74 – PROBLEM: The PP67-A and -B, PP67-C and -D, and PR68-D and -DA all have the same size Amphenol connector, but the voltages are different. If a cable for one is plugged into another, shorting occurs.
CORRECTION: Apply paint to the connector end of the cable, do not paint the pins, and to the sheet metal near the plug on the option. RED – PR68-D and -E and the BC01H cable; ORANGE – PP67-C and -D and the BC01F cable; GREEN – PP67-A and -B and the #70-05062 cable.
In-plant effectivity – none
Field effectivity – retrofit PR68-E's used in systems with PR68-D, -DA, PP67-A, -B, -C, and -D. This FCO should be implemented immediately if the customer has mixed negative and positive systems. Otherwise, this FCO should be implemented at the next PM.
(Time To Install And Test .2 Hour.) (Kit Contents – NF1184 – FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

DEC DISK CONTROL FOR RS08 **RF08**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 LINC-8 PDP-8I PDP-8L	APRIL 1971	B

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-8 #271	RF08 1-3>	D	MAY 68 - CORRECTS DESIGN AND DRAFTING ERRORS AND MAKES LOGIC CHANGES TO FACILITATE PROGRAMMING.
RF08 00001	N.A.	M	SEP 68 - CORRECTS DRAFTING ERRORS ON THE GLASS SUPPORT DRAWING.
RF08 00002	RF08 121>	D	OCT 68 - DETAILS AN EXTENSIVE REDESIGN OF THE RF08.
			REFERENCE DM01-B0002
RF08 00003	RF08 112-150>	F	FEB 69 - ADDS AN S202 AT C15 TO EXTEND THE TIME COUNTER COUNT AND ALLOW FULL RECOVERY OF THE G085 BETWEEN READ AND WRITE CYCLES. ADDS A B134 AND REPLACES G711'S WITH G719 AND G720 TO IMPROVE MULTIPLE UNIT RELIABILITY. CHANGES GATING OF "MRS" AND "DRE". GENERATES "C" TRACK AND DATA WITH DELAYED "TCP". (*$5.00, **$56.20, ***$60.00)
RF08 00004	>RF08 AFTER 3-1-69	M	FEB 69 - ELIMINATES UNNECESSARY HOLES AND INSERTS IN THE GLASS SUPPORT.
RF08 00005	RF08 121-182>	D	MAR 69 - DETAILS SEVERAL MINOR RF08 DESIGN CHANGES. ALL B163 MODULES ARE REPLACED BY S123'S. THE G711 MODULE IN SLOT C26 IS REPLACED BY A G719. THE G711 IN SLOT C32 IS REPLACED BY A G720.
RF08 00006	ALL RF08	F	APR 69 - CORRECTS A "DC R/W (0)R" SIGNAL WIRE LIST ERROR. ADDS A G906 IN D24 TO SENSE -15VDC IN THE RF08 AND INHIBIT ERRONEOUS WRITE SIGNALS TO THE RS08 UNDER POWER UP/DOWN CONDITIONS. (*$5.00, **$18.00, ***$10.00)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8- #271		
B	RF08-00001		
C	RF08-00003		
D	RF08-00005		
E	RF08-00006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP8- #271		
B	RF08-00002		
C	RF08-00003		
D	RF08-00005		
E	RF08-00006		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
RF08 00007	>RF08 AFTER 6-9-69	P	MAY 69 - ADDS RF08 AND RS08 ENGINEERING SPECIFICATIONS.
RF08 00008	RF08 121-336>	P	MAY 69 - CORRECTS THE RF08 WIRE LIST.
RF08 00009	N.A.	P	JUN 69 - CHANGES THE PART NUMBER FOR THE W250 TO W012 CABLE.
RF08 00010	N.A.	M	AUG 69 - DELETES A GLASS SUPPORT SANDING REQUIREMENT.
RF08 00011	>RF08	M	SEP 69 - ADDS A JONES STRIP PLATE TO THE RF08 CABINET.
RF08 00012	>RF08 AFTER 10-1-69	M	SEP 69 - ALTERS HINGE MOUNTINGS TO ELIMINATE BINDING.
RF08 A0013	RF08 101-408>	F	OCT 69 - DELAYS "BMBI" TO ELIMINATE DATA ERRORS WHICH RESULT FROM THE COINCIDENCE OF "TC TAP" AND "BMBI". THIS ECO WILL BE FACTORY INSTALLED ON ALL RF08'S ABOVE SERIAL NUMBER 227. (*$5.00, **NONE, ***$15.00)
RF08 A0014	RF08 101-509>	F	JAN 70 - ADDS A B133 AT D14 TO SET "MRS" WITH "PCA-LDMAP" TO ELIMINATE THE POSSIBILITY OF AN ERRATIC SETTING OF "DRE" WHEN INITIATING THE 16-WORD COUNTER. (*$5.00, **$23.50, ***$15.00)
RF08 00015	N.A.	P	JAN 70 - ADDS A TIMING DIAGRAM AND A SYSTEM FLOW CHART TO THE RF08 PRINT SET.
RF08 00016	N.A.	M	FEB 70 - CORRECTS ARTWORK DEVIATION FROM INDICATOR PANEL STANDARDS
RF08 00017	>RF08 AFTER 2-12-70	M	FEB 70 - SPECIFIES THAT SLATTED SHIPPING SKIDS ARE TO BE USED TO PREVENT DAMAGE TO THE DISK CABINET.
RF08 00018	N.A.	M	APR 70 - ADDS THREE INSERTS TO THE PARTS LIST.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
F	RF08-00007		
H	RF08-00008		
J	RF08-00011		
K	RF08-A0013		
L	RF08-A0014		
M	RF08-00015		
N	RF08-00017		
P	MISC-00064		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
F	RF08-00009		
H	RF08-A0013		
J	RF08-A0014		

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ECO SYNOPSES FOR LOGIC OR OPTION

DEC DISK CONTROL FOR RS08 **RF08**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAG. REVIS)N
PDP-8 LINC-8 PDP-8I PDP-8L	APRIL 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
RF08 A0019	RF08 121-509>	F	APR 70 - CHANGES LOGIC TO INCLUDE THREE CYCLE BREAK IN THE CONDITIONS FOR SETTING "DRL" TO ELIMINATE "DRL" BEING SET WHEN TRANSFERS CROSS DISKS OR NOT BEING SET WHEN DATA IS TRANSFERRED INCORRECTLY BETWEEN AN RF08 AND A PDP-8 WHEN THE SYSTEM INCLUDES EAE. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH RS08P-A0012 IN MULTIPLE DISK SYSTEMS. (*$5.00, **$.00, ***$30.00)
RF08 00020	>RF08	M	MAY 70 - ADDS HOLD-DOWN BARS TO VARIOUS RF08 PRINTS.
RF08 00021	N.A.	P	NOV 70 - ADDS THE 7005820-4 CABLE TO THE RF08 DRAWINGS. MAKES INCIDENTAL CORRECTIONS TO THE DI AND UA DRAWINGS.
RF08 A0022	ALL RF08 MULTI DISK SYSTEMS	F	JAN 71 - ADDS A FLIP-FLOP, "WSM" (A B212 IN SLOT A16) TO SYNC A SECOND DISK AT ITS "PCA" TIME, THEREBY INHIBITING AN EXTRA INCREMENTING OF THE "DMA". ADDS A .01 MFD CAPACITOR FROM THE SIGNAL "NXD" TO GROUND TO ELIMINATE NOISE WHICH CAN RESULT FROM BUS DELAYS. DELETES ERRONEOUS NEGATIVE SIGNAL NOTATIONS FROM THE CLEAR INPUTS OF ALL S203 MODULES. (*$5.00, **$1.50, ***$40.00)

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
R	RF08-A0019		
S	RF08-00020		
T	RF08-00021		
U	RF08-A0022		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
K	RF08-A0019		
L	RF08-A0022		

RF08-00023 CODE: D
MAR-71 - PROBLEM 1: Customer operation requires a device code change and a CURRENT ADDRESS/WORD COUNT change.
CORRECTION 1: Clip W103 diodes for device code change and wire in the new WORD COUNT/CURRENT ADDRESS .
PROBLEM 2: Customer operation requires RF08 to work in connection with special RS08 SELECTION INHIBIT logic.
CORRECTION 2: Provide cable connection for the RS08 SELECTION INHIBIT logic.
In-plant effectivity -Retrofit RF08 #5024 only.

RF08-B0024 CODE: F ML: V WL: M
MAR-71 - PROBLEM: On multi-disk units: If a disk is deselected between MINUS TC and PLUS TC , **WDE** will be set just before deselection. If the new disk is selected during the timing gap, there is no pulse to clear **WDE** , thus causing **SAD** to remain set which does not allow **ABC** to set which allows **ADC** to set for address "0 " instead of the proper address, causing data to be written in address "0 " rather than the proper address. May cause system crashes; ESP , TSS-8 and CLINI LAB PDP-12

CORRECTION: Clear **WDE** with the end of PCA to simulate the missing pulse.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RF08's on multi-disk systems.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

RF08-E0025 CODE: F
JUN-71 - PROBLEM: After a **DRL** is generated, usually caused by **EAE** , the disk must be re-initialized. This FCO will allow hardware to handle any **DRL** and complete the entire transfer.
CORRECTION: When a possible **DRL** is sensed, zero **DRE** and one-set **MRS** , allowing the processor 33 msec to accept data from or to the disk.

NOTE 1: Before implementation of this FCO, the RF08 should have all ECO's up to and including RF08-A0022.

NOTE 2: Implementation of the FCO to an RF08 in the field will convert it to an RF08-M.

NOTE 3: Installation kits are available only to DEC Field Service personnel. No customer kits will be supplied. Total installation charge including parts and on-site labor is $ 800.00.
In-plant effectivity -None
Field effectivity -Retrofit all RF08's as required
(Time To Install And Test 12.0 Hours.) (Kit Contents -FCO/Prints And Parts)

RF08-00026 CODE: P ML: W
JUN-71 - PROBLEM: Existing External Component List, drawing A-CP-RF08-0-15, is out of date on the RF08.
CORRECTION: Revise External Component List and associated Block Schematic.
In-plant effectivity -06 documentation change only.

RF08-00027 CODE: M
SEP-71 - PROBLEM: Indicator assembly E-AD-7005741-0-0 will not close when assembled to cabinet. Screw head interferes with bezel and glass support, requiring considerable filing by hand.
CORRECTION: Change 29/32 inch dimension to 31/32 inch on drawing D-IA-7407021-0-0 .
In-plant effectivity -02 phase-in

RF08-A0028 CODE: F ML: Y
OCT-71 - PROBLEM: Race condition exists between IOP pulses and strobe when RF08 is used with PDP-8/E. Pulse amplifier on W103 depends upon line delays to generate a concurrent signal.
CORRECTION: Modify pulse amplifier on W103 to standard amplifier. W103 to be replaced with W123 when available.
In-plant effectivity -All RF08's beginning 10-25-71
Field effectivity -Retrofit all RF08's on PDP-8/E's
(Time To Install And Test 1 Hour) (Documentation $ 5.00 Parts $ 52.00 DEC Labor $ 25.00) (Kit Contents -FCO's And Parts)

RF08-A0029 CODE: F
OCT-71 - PROBLEM: Slow computer cycle times may cause the DRL flag to set when the CP is doing certain instructions during a disk transfer. PDP-12 computers are marginal when doing a SET instruction. PDP-8/L computers are marginal when a processor IOT is followed by an IOT instruction.
CORRECTION: The DRL is currently being set at approximately 2.2 usec before the next word from the disk actually destroys the last word. Words are assembled approximately every 16 msec. Change the control logic on a read so that the DRL is set when the CP has failed to finish a break cycle and is jamming the next word (to mbh) on top of the one that had requested the break. This gives the CP about 2.2 usec more time to answer a break request.
In-plant effectivity -03 rework
Field effectivity -Retrofit all RF08's
(Time To Install And Test 2 Hours) (Documentation $ 5.00 Parts None DEC Labor $ 25.00) (Kit Contents -FCO Only)

RF08-00030 CODE: M
NOV-71 - PROBLEM: When machined according to print, cutter breaks through front of bezel casting. Experience shows 40% to 70% scrap because of this.
CORRECTION: Change dimensions to remove less stock when machining.
In-plant effectivity -01 phase-in

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Engineering Change Order Log
EC DEC-O-LOG

RK01-X

Interface for RK01 Disks

PROCESSOR TYPE PDP-8 Family

RK01X-00001 CODE: D ML: B WL: A
JUL-70 - PROBLEM 1: Error in Wire List connects pulse from E11C2 to +3V, 108, H .
CORRECTION 1: Correct Wire List.
PROBLEM 2: 200 usec track seek delay too wide.
CORRECTION 2: Change to 50 usec.
PROBLEM 3: M211's missing from Module Utilization drawing.
CORRECTION 3: Add two M211's to the Module Utilization drawing and add part numbers for M405 parts to the Parts List.
In-plant effectivity -All RK01-X's

RK01X-B0002 CODE: F ML: D WL: B
SEP-70 - PROBLEM 1: Wire List errors leave points unclamped.
CORRECTION 1: Wire in points to be clamped to correct clamp load.
PROBLEM 2: No notation on M206 jumpers.
CORRECTION 2: Add note to Module Utilization drawing and Parts List about M206 jumpers.
PROBLEM 3: No signal index.
CORRECTION 3: Add signal index to print set.
PROBLEM 4: Print error in Track Address Register and basic format.
CORRECTION 4: Correct gate and basic format print.
PROBLEM 5: DISK NOT READY levels float with no disk present. This causes DISK READY condition on nonexistent driver.
CORRECTION 5: Clamp DISK NOT READY levels.

NOTE: This FCO creates RK01 ML revision "E ".
In-plant effectivity -RK01-X #115 and all future
Field effectivity -Retrofit RK01-X's #100 thru #114.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

RK01X-A0003 CODE: F ML: E WL: C
SEP-71 - PROBLEM: TIME-OUT ERROR COUNTER is wired incorrectly and does not agree with print D-BS-RK01-X-02.
CORRECTION: Change Wire List to agree with print. The ADD/DELETE sheet released with this FCO is in error: it is replaced by a new sheet released with FCO RK01X-A003A. The ADD/DELETE information, included in the synopsis of 03A which follows, is complete and is correct.

NOTE: See correction supplement FCO RK01X-A003A.
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Retrofit all RK01-X's
(Time To Install And Test 2.0 Hours) (Documentation $ 5.00 , Parts None ,) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.. (Kit Contents -FCO Only) Supplement RK01X-A003A will also be included in the kit.

RK01X-0003A CODE: F
JAN-73 - PROBLEM: RK01X-00003 ADD/DELETE sheet is in error.
CORRECTION: Use new ADD/DELETE information as follows: Signal E01M1, DELETE F10S1 to E01M1. Signal F10S1, ADD F10S1 to E01L1.

NOTE: The run now named E01M1 was originally named F10S1 ; it was renamed as a result of the deletion of pin F10S1 from the run.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

RK01X-A0004 CODE: F ML: F WL: D
OCT-71 - PROBLEM: FCO RK01X-A0003 which changed the Wire List is in error.
CORRECTION: Ignore the DELETE E01M1 TO E01L2 and the ADD E01L2 TO E01L1 , only do the DELETE F10S1 TO E01M1 and the ADD E01L1 TO F10S1 .
In-plant effectivity -Retrofit all RK01-X's
Field effectivity -Retrofit all RK01-X's
(Time To Install And Test 2.0 Hours.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO Only)

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Engineering Change Order Log
DEC-O-LOG

RK05

DEC Pack Disk

PROCESSOR TYPE PDP-8 Family and PDP-11 Family

RK05-D0020 CODE: F
AUG-72 - PROBLEM: Removal of the front panel power on-off switch by FCO's 5409698-D0002 and RK05-D0019 necessitates the removal of one cutout on the front panel.
CORRECTION: Redesign panel to eliminate cutout.
In-plant effectivity -02 phase-in
Field effectivity -Retrofit all RK05's with FCO 5409698-D0002
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

RK05-00021 CODE: M
AUG-72 - CORRECTION: During shipment, the baseplate has to be clamped to the chassis to avoid overstressing the shock mounts. The air inlet to the blower was changed to get a positive seal between the blower and the chassis.
In-plant effectivity -02 phase-in

RK05-00022 CODE: P
AUG-72 - CORRECTION: Corrects documentation errors in the mechanical drawings for the cartridge door bracket and the shipping bracket.
In-plant effectivity -06 documentation change only

RK05-00023 CODE: P DD: C
AUG-72 - CORRECTION: Two earlier ECO's, RK05-00018 and RK05-00021, require changes on the Parts List, Drawing Directory and Unit Assembly drawing which are accumulated in this ECO.
In-plant effectivity -06 documentation change only

RK05-00024 CODE: M
AUG-72 - PROBLEM: UL approval of the RK05 necessitates a change to the decal.
CORRECTION: Change drawing B-DC-7409600-0-0
In-plant effectivity -02 phase-in

RK05-00025 CODE: M
SEP-72 - PROBLEM: Shipping brackets, #74-10523 and #74-10524, are bending; they are not strong enough.
CORRECTION: Material thickness is changed from 13 gauge to 11 gauge and the width is increased.
In-plant effectivity -02 phase-in

RK05-C0026 CODE: F DD: D
OCT-72 - PROBLEM: Some RK05's on multiple drive systems may unload heads when the RUN/LOAD switch in one of the other drives has been moved from the LOAD to the RUN position. Noise generated by the spindle motor at turn-on is getting onto the DC LOW line and traveling down the bus into the other drives.
CORRECTION: Add a 1000 mmfd 1000V 20% capacitor (# 10-00043) to the DECpack wired assembly to filter the DC LOW line. The capacitor goes from DC LOW , B08F2 to ground, B08C2.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RK05's on multiple drive systems
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

RK05-00027 CODE: M
NOV-72 - CORRECTION: Material thickness tolerance of Plexiglas sheets being used for door panels is specified on drawing C-SC-7409136-0-0.
In-plant effectivity -02 phase-in

RK05-00028 CODE: P DD: E
DEC-72 - CORRECTION: Update drawing D-OC-RK05-0-15 by adding Note #8 for mounting hardware and hole location. Add views to show cable clamping and folding.
In-plant effectivity -06 documentation change

RK05-00029 CODE: M
DEC-72 - PROBLEM: There is an unsatisfactory locating diameter on the drawing for #9305480, magnet alignment fixture.
CORRECTION: Add new locating flange 4.000/3.999 diameter as documented on drawing C-AD-9305480-0-0.
In-plant effectivity -02 phase-in

RK05-00030 CODE: P DD: F
JAN-73 - CORRECTION: Inactivate existing Assembly Procedure which is incomplete and no longer reflects current practice; replace with new procedure.
In-plant effectivity -06 documentation change only

RK05-00031 CODE: D DD: H WL: B
JAN-73 - PROBLEM 1: Not all of the UNIBUS ground pins are connected to ground on the wire-wrap block in the two slots provided for the terminator module.
CORRECTION 1: Add the missing wires to ground.
CORRECTION 2: Die cast bezel is introduced as an alternate to sandcast bezel.
CORRECTION 3: Correction of Unit Assembly drawing and Parts List.
In-plant effectivity -02 phase-in no later than March 1, 1973 in the Wire-wrap Production area.

RK05-00032 CODE: P DD: J
FEB-73 - CORRECTION: Add missing reference information needed for clarification.
In-plant effectivity -06 documentation change only

RK05-C0033 CODE: F
FEB-73 - PROBLEM: The sector pulse signal wires are in the same wire bundle as the low level servo signals. Noise coupling, on some machines, is large enough to cause seek errors from erroneous positioning. The FCO includes instructions for a test to determine if an RK05 needs this fco: If an RK05 is experiencing seek errors, perform the following test: 1) Load a cartridge, bring the machine to a RUN state. 2) Sync scope EXT to SECTOR L , pin A02-52. 3) Examine the servo signals on pins A05-S1 and A05-M1 for a noise pulse that synchronizes to index/sector pulses. 4) If the noise pulse exceeds 75 mv, this FCO is necessary to reduce the noise and prevent seek errors.
CORRECTION: Remove the sector pulse wire and a ground wire from the "A " cable. Twist these wires together and relace to the outside of the "A " cable. This isolates the noise source from adjacent pick up leads.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all RK05's when symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

RK05-B0034 CODE: F DD: K
MAR-73 - PROBLEM: Spindle motor relay voltage protecting diode D2 blows up under high line voltage conditions. One side of D2 is connected to the start winding which produces about 60 volts from magnetic coupling. The other side of D2 is connected to the high input line. The sum of these two, voltage plus noise, exceeds the device power rating.
CORRECTION: Reconnect D2 from across R1 relay switch contacts to a configuration across the start winding. The purpose of diode D1 is to shunt main winding noise spikes to ground. When D2 is rewired,it will perform a similar function and noise from each side of R1 will be shunted directly to ground.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all RK05's at next scheduled pm
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints)

RK05-00035 CODE: P DD: L
APR-73 - PROBLEM: Inseparable Assembly drawings are required for existing inseparable assemblies.
CORRECTION: Drawings D-IA-7410707-0-0 and D-IA-7410708-0-0 are created.
In-plant effectivity -06 documentation change

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DEC-O-LOG Engineering Change Order Log

RK05

DEC Pack Disk

PROCESSOR TYPE PDP-8 and 11 Families, PDP-15

RK05-B0036 CODE: F
APR-73 - PROBLEM 1: A cartridge which has been used extensively may have a flap that has been bent to such an extent that, upon insertion into the RK05, the cartridge door opener slips underneath the flap and traps the cartridge inside the drive.
CORRECTION 1: Change cartridge receiver so that it will hold the door opener in a higher position so that it cannot slip underneath the flap. Disposition code: 02 .
CORRECTION 2: Retrofit all RK05's in Westfield and Westminster with a piece of rubber sleeve. Disposition code: 03 .

NOTE: FCO RK05-B0041 is a correction supplement to this fco; the end result of the two FCO's is that two sleeves will be added to the cartridge receiver. This FCO orders one, FCO RK05-B0041 orders the second; the parts kit for FCO RK05-B0041 will include two sleeves so that implementation of FCO RK05-B0041 will effectively implement this FCO also. FCO's RK05-B0036, RK05-A0037, RK05-C0039 and RK05-B0041 are closely related and require identical disassembly of the RK05; it is therefore recommended that these FCO's be implemented in one operation
In-plant effectivity -02/03 -See text
Field effectivity -Retrofit all RK05's on next scheduled PM
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

RK05-A0037 CODE: F
MAY-73 - PROBLEM 1: The plastic cartridge shells are now produced from several different molds. This requires some changes to the RK05 to assure proper operation with the various cartridges.
CORRECTION 1: Duckbill tool is to be modified. As soon as new pieces are available, approximately four weeks, retrofit all RK05's that are in-plant at that point in time. Disposition Code 03
CORRECTION 2: Rework all cartridge support posts presently in stock. New parts to be used at the assembly line no later than May 14, 1973. Retrofitting machines that have been assembled before the new parts are available is not necessary. Disposition Code 02.
CORRECTION 3: With the phase-in of the shorter cartridge support post it is to be assured that the finger on the airduct does not exceed the tolerances of revision "B " (2.36 plus or minus 0.020 A change to the #93-05703 airduct, at the assembly line in Westfield, is necessary.

NOTE 1: The cartridge that causes the problem is recognizable by its light grey-greenish color with a contrasting white access door latch. The problem of not being able to insert the cartridge and/or rubbing of the disk inside the shell is not present in all RK05's It is dependent upon the way the cartridge receiver is built and set up. If a customer receives one of these cartridges and has a probelm with it, this FCO should be implemented.

NOTE 2: The parts kit for field retrofitting of this FCO consists of one #12-10744 Duckbill and two #74-09134 Cartridge Support Posts. The FCO form is in error in that it includes additionally the in-plant phase-in components, a #12-10681 Air Duct and a #74-09254 Air Duct Gasket.

NOTE 3: FCO's RK05-B0036, RK05-A0037, RK05-C0039, and RK05-B0041 are closely related and require identical disassembly of the RK05; it is therefore recommended that these FCO's be implemented in one operation.
In-plant effectivity -Correction 1 is 03-REWORK immediately and Correction 2 and 3 are 02 phase-in.
Field effectivity -Retrofit all RK05's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

RK05-00038 CODE: M DD: M
MAY-73 - CORRECTION: Solenoid #12-10806 and Arm Solenoid #74-08140 can be combined into one part.
In-plant effectivity -02 phase-in

RK05-C0039 CODE: F DD: N
MAY-73 - PROBLEM: Cartridge door opener spring, #12-10844, is not strong enough to keep the access door open on certain cartridges.
CORRECTION: Use two stronger springs, #12-11384-00, right hand, and #12-11384-01, left hand, in place of #12-10844.

NOTE: FCO's RK05-B0036, RK05-A0037, RK05-C0039, and RK05-B0041 are closely related and require identical disassembly of the RK05; it is therefore recommended that these FCO's be implemented in one operation.
In-plant effectivity -03 * retrofit as soon as new springs are available.
Field effectivity -This FCO should be installed immediately in conjunction with FCO RK05-A0037 on all RK05's when symptoms are present. All other RK05's should be updated on the next service or PM call.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

RK05-00040 CODE: D DD: P
MAY-73 - PROBLEM: New Item #12, Drive Identification Numbers, being added to the Accessory List.
CORRECTION: Modify the front panel to include the dimple for the Identification Number.
In-plant effectivity -02 phase-in

RK05-B0041 CODE: F DD: R
JUL-73 - CORRECTION: This is a modification to FCO RK05-B0036. On the earlier FCO, one rubber sleeve was added to the cartridge receiver as a temporary solution. The final solution was to have been a change to the cartridge receiver. Since the proposed change to the cartridge receiver is not practical, this FCO makes the additional rubber sleeves a permanent solution;two sleeves are to be used. The change on cartridge receiver E-PS-1210679-0-0 of FCO RK05-B0036 will be reversed to the previous state. That is, revision "F " is same as revision "D ", revision "E " is not to be implemented. There are no cartridge receivers at revision "E " and no tooling change was made.

NOTE 1: An extra sleeve is included in the FCO parts kit for use in the event that FCO RK05-B0036 has not been implemented.

NOTE 2: FCO's RK05-B0036, RK05-A0037, RK05-C0039, and RK05-C0041 are closely related and require identical disassembly of the RK05; it is therefore recommended that these FCO's be implemented in one operation.
In-plant effectivity -03 * -Add two rubber sleeves to cartridge receivers in Westfield and Westminster immediately. The introduction of the two stiff torsion springs FCO RK05-C0039 makes it necessary to have a sleeve on both sides of the cartridge receiver. When retrofitting drive to FCO RK05-C0039, add the second sleeve to the cartridge receiver.
Field effectivity -Retrofit all RK05's at next scheduled PM
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

RK05-00042 CODE: D DD: S
AUG-73 - PROBLEM: Threaded quarter turn receptacles are difficult to adjust; this results in noninterchangeable plenum covers.
CORRECTION: Use spring loaded and pressed in receptacles and a longer quarter turn stud.
In-plant effectivity -02 -Phase-in by September 17, 1973

RK05-00043 CODE: D
SEP-73 - CORRECTION: The configuration drawing, D-OC-RK05-0-15, must be changed to indicate use of the 861 Power Control.
In-plant effectivity -Documentation/design change

RK05-00044 CODE: D
SEP-73 - PROBLEM: The tolerance spread of read signal amplitude, specified in Section J, Basic Read/write Test, is too tight for the realistic combination of disk surface, head amplitude, and amplifier tolerance.
CORRECTION: Increase tolerance spread as specified in Engineering Specification A-SP-RK05-0-16.
In-plant effectivity -Documentation/design change

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RK05-C0045 CODE: F DD: T

SEP 73 - PROBLEM: After a momentary power failure, an RK05 can recover to a ready state but SEEK INCOMPLETE may be set, which prevents programs from running unless a RESTORE command is issued. The slightly lowered +5V allows the SEEK INCOMPLETE counter to fill, setting the ERROR flip-flop. A logic race condition removes the flip-flop clear before the set is removed.
CORRECTION: Delay the removal of **READY H** by approximately 100 nsec with the addition of a 1000 pfd capacitor to the wirewrap block between A02C1 and A01T1. This will allow **R/W/S READY L**, M7700, to remove the **SEEK INCOMPLETE** flip-flop set before **READY H**, the flip-flop clear, is removed, as sent from the M7701. The rework instructions are as follows: Install the capacitor with terminal pushed tight to wirewrap and wire tabs toward positioner. Bend capacitor toward positioner so as not to touch any wire wrap pins, and down into space between wirewrap block and sheet metal.
Quick Check - A 1000 pfd capacitor from A02C1 to A01T1
In-plant effectivity -Retrofit in systems area as necessary if problem is present, in manufacturing area, must add after October 31, 1973.
Field effectivity -Retrofit all RK05's
(Time To Install And Test .5 Hour,) (Kit Contents -PF1038 -FCO/Prints And Parts)

RK05-00046 CODE: D DD: U

OCT 73 - CORRECTION: New light caps #12-11334-00 and #12-11334-01 are to be introduced into the assembly in place of the original light caps, #12-10798-01 and #12-10798-02.
In-plant effectivity -Use original light caps until stock is depleted. Do not intermix new and old light caps in the same machine. Use RK05's with the same style light caps in the same system.

RK05-00047 CODE: P

OCT 73 - CORRECTION 1: Important steps in the procedure are to be made to stand out to readers to emphasize their importance.
PROBLEM 2: When used with RK8-E and RK11-D controllers, the lower head cannot be selected off-line unless the interface cable is disconnected.
CORRECTION 2: Modification to the procedure for operation off-line.
CORRECTION 3: Correction of two instances of test point number error.
In-plant effectivity -Documentation change only

RK05-00048 CODE: D DD: V

OCT 73 - PROBLEM: The unslotted ends of the wirewrap block can be broken or cracked accidentally unless care is taken to remove or insert modules "in-line" with the block.
CORRECTION: Use the slotted end wirewrap block so that modules may be inserted or removed with a rocking motion.
In-plant effectivity -In wirewrap build area, phase-in no later than February 1, 1974. Other areas may use present stock until new is available.

RK05-00049 CODE: D

OCT 73 - PROBLEM: Margin testing of several drives has shown that the closed loop data window potentiometer setting could be more appropriately placed at 440 nsec instead of 420 nsec. This setting would allow the drive to be more tolerant to varying circumstances, ie, heat, peak shift, and component tolerances.
CORRECTION: Change the setting as described in the RK05 Production Checkout Procedure, A-SP-RK05-0-16.
In-plant effectivity -Document/design change

RK05-00050 CODE: P DD: W

NOV-73 - PROBLEM: The following are included in Accessory List A-AL-RK05-0-17 and should not be included in Parts List A-PL-RK05-0-0; Item 107, 74-09691-1-0 Shipping Bracket, Right Hand, and Item 140, 74-09691-2-0 Shipping Bracket, Left Hand. According to the Accessory List, these brackets are only to be included if the RK05 is shipped in a rack; they are not to be included with every RK05. Material is to be ordered according to the Accessory List.
CORRECTION: Remove these items from the Parts List.
In-plant effectivity -Stop shipping these items with every RK05 leaving Westfield; add in Westminster as necessary according to system configuration.

RK05-00051 CODE: D DD: Y

DEC-73 - PROBLEM: A cost reduction may be gained if the present multipart sector transducer assembly is replaced by a molded plastic assembly which includes the internal electronic components and attached output wire harness.
CORRECTION: Add new part to Parts List and a note to the Unit Assembly drawing to explain the interchangeability.
In-plant effectivity -Phase-in

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E C DEC-O-LOG Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

DIGITAL EQUIPMENT CORPORATION
FIELD SERVICE INFORMATION CENTER
MAYNARD, MASSACHUSETTS 01754

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

CONTROL FOR
RK01, RK02 & RK03 DISKS **RK08**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8	MAY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
5408458 00001			REFERENCE ECO 5408458-00001 5408458-00002 716-00004
RK08 00001	N.A.	P	MAY 70 - CORRECTS ERRORS ON THE MAIN WIRING AND UNIT ASSEMBLY DRAWINGS.
RK08 00002	ALL RK08	D	JUN 70 - SPECIFIES INCREASED LENGTHS FOR THE CABLES IN THE LIGHT BOARD CABLE ASSEMBLY TO PERMIT PROPER DRESSING.
RK08 00003	ALL RK08	M	JUL 70 - PROVIDES SEVERAL INCIDENTAL HARDWARE MODIFICATIONS FOR THE CABINET ASSEMBLY.
RK08 00004	RK08 10-41>	D	JUL 70 - CORRECTS THE WIRE LIST TO COMPLETE THE POWER WIRING. CORRECTS PRINTS TO ELIMINATE REDUNDANT GATING AND SIGNALS. CORRECTS LOGIC TO SET "DONE" IF AN ATTEMPT IS MADE TO READ OR WRITE BEFORE ERROR STATUS IS CLEARED. CLEARS SHIFT INPUT AND WORD PARITY WHENEVER THE BIT COUNTER IS CLEARED.
RK08 A0005	ALL RK08 10-35>	F	SEP 70 - CHANGES A 100 OHM TERMINATOR TO 220 OHMS TO REDUCE LOADING OF A PULSE AMPLIFIER. CLAMPS THE M214 CLEAR LINE. ADDS A SIGNAL INDEX TO THE RK08 PRINT SET. DEFINES M206 JUMPERING. (*$5.00, **$.15, ***$10.00)
RK08 00006	ALL RK08 10-35>	P	OCT 70 - ADDS AN EXTERNAL COMPONENTS LIST TO THE RK08 PRINT SET.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	RK08-00001		
B	RK08-00004		
C	RK08-A0005		
D	RK08-00006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	RK08-00004		
B	RK08-A0005		

RK08-00007 CODE: P ML: E
JUL-71 - PROBLEM: On production machines, a .01 Ufd capacitor has been installed on the **B RUN** signal where it comes in on the cable; its purpose is to eliminate spikes. The addition has not as yet been documented.
CORRECTION: Update the cable print and external component list to reflect the addition of this capacitor.
In-plant effectivity -Documentation change only

RK08-A0008 CODE: F ML: F WL: C
SEP-71 - PROBLEM 1: **INH ERROR** flip-flop comes up in random state when disk is powered-on.
CORRECTION 1: Set **INH ERROR** with **B INITIALIZE** .
PROBLEM 2: **WRITE** flip-flop remains on (1) after a write operation and **WRITE LOCK ERROR** is set if a write lockout switch is then set.
CORRECTION 2: Clear **WRITE** flip-flop with **TRANSFER DONE FLAG** [( ] .
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RK08
[Time To Install And Test 2.0 Hours] [Documentation $ 5.00 , Parts None , DEC Labor $ 50.00] [Kit Contents -FCO Only]

RK08-B0009 CODE: F ML: H WL: D
APR-72 - PROBLEM 1: Changing drive selection bits of the command register, while a drive is in a new select cycle, causes errors.
CORRECTION 1: Initiate a new select cycle with **IOT START** .
PROBLEM 2: Data break requests during a break cycle cause data errors but no data rate errors.
CORRECTION 2: Check **BREAK REQUEST** flip-flop at bit 11 time of a disk transfer.
PROBLEM 3: Glitches from PDP-8/E periodically set bit 01 or 02 of the command register.
CORRECTION 3: Strobe bits 01 and 02 with a pulse amplifier.
In-plant effectivity -Rework immediately
Field effectivity -Retrofit all RK08's
(Time To Install And Test 5.0 Hours) (Documentation $ 5.00 Parts - None DEC Labor $ 135.00) (Kit Contents -FCO/Prints)

RK08-D0010 CODE: F ML: J WL: E
JUL-72 - PROBLEM: Slow IC's or wide tolerance on delay line can cause incorrect long parity check sum during a write.
CORRECTION: Increase time between **GO TO MAJOR 1 H** and **WRITE 13 H** by 50 nsec.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RK08's
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

RK08-00011 CODE: P ML: K
JUL-72 - CORRECTION: Add H721 power supply prints to RK08 Master Drawing List.
In-plant effectivity -Documentation change only

RK08-B0012 CODE: F ML: L
SEP-72 - PROBLEM: Spurious noise in WC and CA register can cause intermittent failures which destroy programs.
CORRECTION: Change the WC and CA M206 modules to M215's in slots B03, B04, B08, and B09.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RK08's.
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

installed 1/14/74

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

Engineering Change Order Log
DEC-O-LOG

RP08-C

Moving Head Disk Controller

PROCESSOR TYPE PDP-8/E

RP08C-C0001 **CODE: DF** **ML: A** **WL: A**
SEP-72 - PROBLEM: READ and WRITE not cleared on initialization.
CORRECTION: Clear READ and WRITE with INITIALIZE .

In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RP08-C
(Time To Install And Test .8 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

262K, 12 BIT DEC DISK **RS08**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-12 FAMILY OF 8	APRIL 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
RS08 00001	>RS08	M	NOV 68 - CHANGES THE SILK SCREEN SO IT WILL AGREE WITH THE WRITE LOCK OUT LOGIC.
RS08 00002	>RS08	D	NOV 68 - DOCUMENTS AN OVERALL DESIGN AND PRINT SET UPDATING OF BOTH THE RF08 AND RS08.
RS08 00003	>RS08	M	MAY 69 - ADDS A FILET WELD TO SEAL CORNERS AND PREVENT AIR LOSS.
RS08 00004	>RS08	M	MAY 69 - PROVIDES A NEW DECAL TO CAUTION THAT THE MOTOR LOCK MUST BE INSTALLED BEFORE THE UNIT IS MOVED.
RS08 00005	N.A.	P	MAY 69 - UPDATES THE CABINET CONFIGURATION DRAWINGS FOR BOTH THE RF08 AND RS08.
RS08 00006	N.A.	P	MAY 69 - PROVIDES AN UPDATING OF PRINT D-CS-7006156-0-1 TO CORRECT ERRORS.
RS08 00007	N.A.	P	JUN 69 - CORRECTS PARTS LISTED FOR THE CHASSIS ASSEMBLY. ELIMINATES THE VARIATION RS08-PA WHICH WAS IMPROPERLY ASSIGNED.
RS08 00008	>RS08	M	JUN 69 - ADDS WELDING INSTRUCTIONS TO A MECHANICAL PRINT.
RS08 00009	>RS08	D	JUN 69 - ADDS A 230 VAC TO 115 VAC STEP DOWN TRANSFORMER AND A LINE FILTER TO PERMIT OPERATION ON 230 VAC.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
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SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	RS08-00005		
B	RF08-00007		
C	RS08-00007		
D	RS08-00009		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
RS08 00010	>RS08	M	AUG 69 - MODIFIES THE ETCHING OF IDENTIFICATION NUMBERS ON THE FLEXIBLE ETCH BOARD. ETCH REVISION LEVEL INFORMATION IS INCLUDED IN ECO RS08-00014.
RS08 00011	>RS08	M	AUG 69 - ADDS INPUT AND OUTPUT POWER LINE CORDS TO THE H718A LINE FILTER TO FACILITATE ASSEMBLY. ADDS A NEW END BRACKET.
RS08 00012	>RS08	M	SEP 69 - ADDS A STOP TO PREVENT THE RS08-P CHASSIS BEING PUSHED TOO FAR INTO THE CABINET.
RS08 00013	N.A.	P	SEP 69 - ADDS A TIMING DIAGRAM TO THE RS08 PRINT SET.
RS08 00014	N.A.	P	SEP 69 - PROVIDES ETCH REVISION LEVEL INFORMATION FOR THE 5004478 FLEXIBLE ETCH BOARD WHICH WAS OMITTED FROM ECO RS08-00010.
RS08 00015	>RS08	M	OCT 69 - ADDS THREE STATEMENTS TO THE WARNING DECAL.
RS08 00016	N.A.	P	OCT 69 - PROVIDES AN UPDATING OF THE RS08 PRINTS TO AGREE WITH UNITS AS THEY ARE BEING MANUFACTURED.
RS08 00017	N.A.	P	NOV 69 - ADDS THE DOUBLE AIR FILTER HOSE GUARD TO THE UNIT ASSEMBLY PARTS LIST.
RS08 00018	N.A.	P	NOV 69 - UPDATES THE PARTS LIST TO AGREE WITH MANUFACTURING PROCEDURES.
RS08 00019	>RS08	M	NOV 69 - CORRECTS THE PRINTS WHICH DEFINE THE WIRING FOR THE H718A LINE FILTER.
RS08 00020	N.A.	P	DEC 69 - ASSIGNS RS08 AND RS09 MOTOR PART NUMBERS. CHANGES THE PART NUMBER OF THE FILTER ASSEMBLY.
RS08 00021	>RS08	M	JAN 70 - CHANGES HUB MACHINING TOLERANCES.

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	RS08-00011		
F	RS08-00012		
H	RS08-00013		
J	RS08-00017		
K	RS08-00018		
L	RS08-00019		
M	RS08-00020		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

262K, 12 BIT DEC DISK **RS08**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-12 FAMILY OF 8	APRIL 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
RS08 00022	RS08	M	JAN 70 - CHANGES A DISK CASTING TOLERANCE.
RS08 00023	>RS08	P	JAN 70 - ADDS A MOTOR LOCK TO THE PARTS LIST AND THE ASSEMBLY DRAWING.
RS08 00024	>RS08	M	JAN 70 - MODIFIES A CASTING TO INCREASE AIR SUPPLY TO THE HEADS. ELIMINATES A TOP SURFACE GRINDING OPERATION.
RS08 00025	>RS08	M	JAN 70 - CHANGES DIMENSIONING OF THE COVER MOUNTING HOLES.
RS08 00026	N.A.	P	FEB 70 - ADDS CHASSIS SLIDE SPACERS TO THE PARTS LIST.
RS08 00027	N.A.	P	MAR 70 - CHANGES THE IA DRAWING TO INDICATE THE CORRECT POWER CORD PART NUMBER.
RS08 00028	>RS08	M	APR 70 - MODIFIES THE MACHINING OF THE DECK CASTING.
RS08 00029	N.A.	P	APR 70 - SPECIFIES VARIATIONS OF THE C-IA-7006481 CABLE FOR INTRA-UNIT POWER CONNECTIONS IN THE RS08 AND RS09. CORRECTS A POWER CORD NOTATION ON THE IC PRINT.
RS08 00030	>RS08	M	APR 70 - MODIFIES THE LOWER CASTING TO PERMIT ATTACHMENT OF A MOTOR SHIPPING BRACKET.

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
N	RS08P-00009		
P	RS08 -00026		
R	MISC - #64		
S	RS08 -00029		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
RS08 00031	>RS08	P	APR 70 - PROVIDES A CABLE FOR CONNECTING THE RS08-P TO THE JONES STRIP. DELETES A 50 CYCLE CABLE FROM THE 60 CYCLE SYSTEM PARTS LIST. DELETES NO LONGER USED STOPS FROM THE PARTS LIST.
RS08 00032	RS08 101-541>	P	MAY 70 - ADDS SHIPPING INSTRUCTIONS TO THE DRAWING INDEX.
RS08 00033	N.A.	P	JUN 70 - CORRECTS VARIOUS DRAWINGS TO IDENTIFY THE RS08 CABINET AND CABINET HARDWARE.
RS08 00034	>RS08	M	JUN 70 - CHANGES A DIMENSION ON THE BLOWER MOUNT TO FACILITATE INSTALLATION OF THE CAPACITOR BRACKET.
RS08 00035			VOID
RS08 00036	N.A.	P	JUL 70 - CORRECTS THE BLOWER MOTOR ASSEMBLY PART NUMBER ON THE PARTS LIST.
RS08 00037	>RS08	M	NOV 70 - MODIFIES THE TMING TRACK HARNESS TO ALLOW THE DISK COVER TO FIT OVER IT PROPERLY.
RS08 00038	N.A.	M	DEC 70 - ADDS A DETAIL AND A NOTE TO THE IA DRAWING TO ENSURE PROPER INSTALLATION OF THE HOLD DOWN PANEL.
RS08 00039	N.A.	P	JAN 71 - CORRECTS AN ERRONEOUS DIMENSION SHOWN ON THE IA PRINT.

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
T	RS08-00031		
U	RS08-00032		
V	RS08-00033		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

RS08

262K 12 Bit DEC Disk

PROCESSOR TYPE PDP-8 Family and PDP-12

RS08-00040 CODE: M
MAR-71 - PROBLEM: Assembly problems with the #74-07001 cover.
CORRECTION: Change Item #2 to casting #12-10321. Delete Item #5 and call out spot welding for assembly of Item #4. Change Item #3 from Southco inserts to floating nuts.
In-plant effectivity -01 phase-in

RS08-00041 CODE: P
APR-71 - CORRECTION 1: Correct a dimension on drawing C-MD-7407428-0-0.
CORRECTION 2: Correct an insert call out on drawing C-IA-7407425-0-0.
In-plant effectivity -06 documentation change only

RS08-00042 CODE: M
APR-71 - PROBLEM 1: Eliminate the nylon insert, nut, in the header shoe mounting block.
CORRECTION 1: Use 2-56 cap screws with nylon coating.
PROBLEM 2: Poor grounding between head and body.
CORRECTION 2: Change coating on head block to chromocoat.
In-plant effectivity -01 phase-in

RS08-00043 CODE: P
MAY-71 - PROBLEM 1: Need additional variation of the #70-06481 power cord.
CORRECTION 1: Add dash four (-4) variation to print C-IA-7006481-0-0.
CORRECTION 2: Correct variation table.
In-plant effectivity -06 documentation change only

RS08-00044 CODE: M
MAY-71 - PROBLEM: Deck #74-07068 presents manufacturing problems in checking motor mounting hole locations.
CORRECTION: Rotate motor mounting holes.
In-plant effectivity -01 phase-in

RS08-00045 CODE: M
MAY-71 - PROBLEM 1: Machining the bottom surface of the #12-09222 bottom deck mounting is not required.
CORRECTION 1: Change to agree with revised drawing E-SC-1209222-0-0.
PROBLEM 2: Change the #74-07008 deck mounting to agree with the casting drawing.
CORRECTION 2: Change to agree with revised drawing D-IA-7407008-0-0, eliminate finish on bottom surface, and show bore depth from top surface.
In-plant effectivity -01 phase-in

RS08-A0046 CODE: F
JUL-71 - CORRECTION: Adds foam tape gaskets to the air filters to prevent leakage of unfiltered air around the absolute filter.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all RS08's manufactured August 1971 or earlier (Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 1.00 , DEC Labor -See Note) Note: The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO/Prints And Parts)

RS08-00047 CODE: M
AUG-71 - PROBLEM: Shipping bracket holes in bottom casting do not line up with mounting holes in motor due to rotating of motor.
CORRECTION: Change hole location.
In-plant effectivity -03 retrofit immediately

RS08-00048 CODE: P
SEP-71 - PROBLEM: The logic standoff print shows and calls for one insert #90-07606; the Parts List for Item #2 lists a quantity of two.
CORRECTION: Change Item #2 quantity to one.
In-plant effectivity -06 documentation change only

RS08-00049 CODE: M
NOV-71 - CORRECTION: Correct improper dimension on end bracket drawing B-IA-7407246-0-0.
In-plant effectivity -03 retrofit immediately

RS08-00050 CODE: M
DEC-71 - CORRECTION: Change dimensions on the #74-07183-0-0 blower mount.
In-plant effectivity -09 scrap immediately

RS08-00051 CODE: D
NOV-72 - PROBLEM 1: Plug used with #70-06419 cable assembly is not UL approved.
CORRECTION 1: Use UL approved plug.
PROBLEM 2: New power cord available.
CORRECTION 2: Use new power cords, #17-00025 and #17-00027.

NOTE: See correction supplement ECO's RS08-0051A, RS08-0051B, and RS08-0051C.
In-plant effectivity -02 phase-in both items at the same time.

RS08-0051A CODE: D
NOV-72 - PROBLEM 1: On ECO RS08-00051, two part numbers are reversed.
CORRECTION 1: On Item #8, change #12-11192 to #12-11193; on Item #9, change #12-11193 to #12-11192.
CORRECTION 2: Disregard "FIELD SERVICE AFFECTED " notation.

NOTE: Correction #1 is cancelled by supplement ECO RS08-0051B.
In-plant effectivity -Unchanged

RS08-0051B CODE: D
NOV-72 - PROBLEM: Correction 31 in supplement ECO RS08-0051A is in error.
CORRECTION: The following information applies to the Assembly Parts List: #17-00025 variation 2, #17-00027 variation 1, #12-11192 variation 1, and #12-11193 variation 2.
In-plant effectivity -Unchanged

RS08-0051C CODE: D
FEB-73 - PROBLEM: BREAK-IN/EFFECTIVITY needs updating on ECO RS08-00051.
CORRECTION: For cords, make BREAK-IN/EFFECTIVITY Code 02, Phase-in; for plugs, Code 03, retrofit effective 2/1/73.
In-plant effectivity -Updated

RS08-B0052 CODE: F
APR-73 - PROBLEM: A potential shock hazard exists in the RS08 in that neither side of line is neutral for 230 VAC operation. External equipment plugged into the RS08 will also be without a connection to neutral.
CORRECTION: Add caution warning to rear panel silk screen.
In-plant effectivity -03 * -Ship all 110 VAC systems with existing silk screen until used up. Add decal to all 230 VAC systems until new silk screen is available.
Field effectivity -Add decal to all RS08's used on 220/240 volt systems. (Time To Install And Test N/A) (Kit Contents -FCO/Prints And Parts)

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ECO SYNOPSES FOR LOGIC OR OPTION

262K - 12 BIT DEC DISK **RS08-P**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8 LINC-8 PDP-8I PDP-8L	MARCH 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSES
RS08-P 00001	N.A.	M	MAY 69 - CHANGES A DIMENSION.
RS08-P 00002	N.A.	P	MAY 69 - CORRECTS NOMENCLATURE SEQUENCE ON PRINTS.
RS08 00007	N.A.	P	JUN 69 - CORRECTS PRINTS.
RS08-P 00003	RS08-P 102-256>	D	JUN 69 - CORRECTS WIRE LIST, CARD DECK, AND PRINTS.
RS08-P 00004	ALL RS08-P	D	JUN 69 - ADDS A CURRENT-LIMITING RESISTOR IN SERIES WITH THE RUNNING FIELD OF THE MOTOR.
RS08-P 00005	>RS08-P	F	AUG 69 - CHANGES FROM A 20 VOLT TO A 50 VOLT CAPACITOR IN THE POWER CONTROL.
RS08-P 00006	>RS08-P	M	SEP 69 - DELETES INSERTS FROM THE "C HOLES" PRINT.
RS08-P 00007	>RS08-P	M	SEP 69 - CORRECTS THE PART NUMBER OF THE SHOCK MOUNT.
RS08-P 00008	RS08-P 167-350>	F	SEP 69 - MODIFIES LOGIC TO DELETE AN UNNECESSARY BUS SIGNAL WHICH CAUSES PARITY ERRORS WHEN RUNNING MULTI-DISK DIAGNOSTICS. CHANGES THE WIDTH OF THE PULSE DRIVING "WFF" TO 500 NSEC.
RS08-P 00009	>RS08-P	P	DEC 69 - CHANGES THE PRINTS TO SHOW TRACK SELECTORS, TERMINATOR CONFIGURATION, AND WIRING COLOR CODE.

LEGEND

FIELD CODE

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O = Design ECO
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SYMBOL

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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	RS08P-00002		
B	RS08 -00007		
C	RS08P-00003		
D	RS08P-00008		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	RS08P-00003		
B	RS08P-00008		

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

DEC-O-LOG Engineering Change Order Log

RS64

65K, 16-Bit DECdisk

PROCESSOR TYPE PDP-8/E and PDP-11

RS64-C0008 CODE: F ML: K WL: C
OCT-71 - PROBLEM: Frequency of switching regulators on H737 Power Supply is approximately equal to writing frequency of G291 writer resulting in data bits being either added or dropped.
CORRECTION: All unused pins on the data cable will be tied to ground on logic rack when the H737 Power Supply is installed.

NOTE: This FCO must be installed in conjunction with FCO RS64P-C0004
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RS64's with FCO RS64P-C0004
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

RS64-C0009 CODE: F ML: L WL: D
DEC-71 - PROBLEM: Race condition of power-up of drive and other system power supplies causes occasional bus hang-up by RC11.
CORRECTION: Add DCLO signal and provide it to the RC11
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all RS64's with H737 Power Supply.
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

RS64-00010 CODE: M
FEB-72 - PROBLEM: Present locking bracket #7408979 is made from .093 Aluminum. This is not strong enough to prevent RS64 cabinet mounted drives from sliding forward during transportation.
CORRECTION: Change locking bracket from .093 Aluminum to .125 Steel.
In-plant effectivity -Phase-in

RS64-00011 CODE: P ML: N
JUL-72 - PROBLEM 1: Cable on Parts List should go with RC11.
CORRECTION 1: Delete cable from RS64 and supply existing cable with RC11 control.
PROBLEM 2: Module schematics needed in customer print set.
CORRECTION 2: Add module Circuit Schematics and Accessory List to customer prints.
In-plant effectivity -Documentation change

RS64-C0012 CODE: F
JANUARY-73 PROBLEM: Occasional data and block check errors from RC11/RS64 occur during systems diagnostic check. Errors always occur on data tracks near the power supply. Investigation shows high noise level on failing track signal.
CORRECTION: The high noise level can be eliminated immediately by placing a shield around the switching regulator portion of the H737 Power Supply.

NOTE 1: This FCO applies only to units which include the DEC H737 Power Supply.

NOTE 2: This FCO is cancelled by correction supplement FCO RS64-C012A.
In-plant effectivity - 03 retrofit immediately
Field effectivity – retrofit all RS64's if symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents – FCO/Prints and Parts)

RS64-C012A CODE: F
APRIL-73 - PROBLEM: FCO RS64-C0013 removed the H737 Power Supply from drive and mounted the supply to back of cabinet causing FCO RS64-C0012 to be invalid.
CORRECTION: Disregard FCO RS64-C0012.
In-plant effectivity - cancelled
Field effectivity - cancelled

RS64-C0013 CODE: F ML: P
MARCH-73 - PROBLEM: Random noise from H737 Power Supply causing data and block check errors.
CORRECTION: Relocation of supply from drive chassis to rear of cabinet.

NOTE 1: This FCO must be installed in conjunction with FCO H737-C0003.

NOTE 2: This FCO creates RS64-A and -B ML revisions "P".
In-plant effectivity – 03; Westfield – Code 03; Westminster - When problems exist, but Code 03 by April 15, 1973.
Field effectivity – retrofit all RS64's
(Time To Install And Test .8 Hour) (Kit Contents – FCO/Prints and Parts)

RS64-00014 CODE: P ML: R
APRIL-73 – CORRECTION: Illustrated Parts Breakdown for RS64 is to be called out on the Accessory List for RS64-A and RS64-B.
In-plant effectivity – 06 documentation change only.

RS64-D0015 CODE: F
APRIL-73 – PROBLEM 1: Cable print does not show true scale.
CORRECTION 1: Redraw print to scale on both sides of break-out point.
PROBLEM 2: Part number of Item #14 is incomplete on cable print.
CORRECTION 2: Correct Parts List on print.
PROBLEM 3: No protective covering for Item #15 on cable print.
CORRECTION 3: Add protective covering for ferrite tubes.
In-plant effectivity – all new cables built after June 1, 1973 must have this FCO. Cables built before June 1, 1973 will require this FCO only if ferrite tubes, Item #15, on cable are broken.
Field effectivity – retrofit all RS64's
(Time To Install And Test .5 Hour) (Kit Contents – NF772 FCO/Prints)

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RS64-M

RS64 Mechanical Assembly

PROCESSOR TYPE PDP-8/E and PDP-11

RS64M-00001 CODE: M
APR-71 - PROBLEM 1: Cast surfaces left in machined motor hub #7408148 cause imbalance in motor and hub assembly #7408212.
CORRECTION 1: Finish all motor hub surfaces to specified dimensions.
PROBLEM 2: In motor and hub assembly #7408212, tolerance on motor flange to motor hub spacing, .375 Plus or minus ,005 is unnecessary and cannot be readily maintained.
CORRECTION 2: Make motor flange to hub spacing a reference dimension.
PROBLEM 3: Alignment pin holes in DEC #7408147 are individually dimensioned off center lines of deck and require unmaintainable location tolerances; alignment pin part number is incorrect.
CORRECTION 3: Relocate and redimension alignment pin hole locations. Renumber alignment pin as #9008323.
PROBLEM 4: On motor lock C-MD-7408858-0-0, no overall part length dimension is given and .500 Hole location is improperly dimensioned.
CORRECTION 4: Dimension motor lock overall length as 2 inches and redimension .500 Hole location.
PROBLEM 5: Cast and machined counter sink of deck mounting holes unnecessary.
CORRECTION 5: Eliminate cast and machined counter sink on deck mounting holes.
In-plant effectivity -03 rework immediately

RS64M-00002 CODE: M ML: H
JUN-71 - PROBLEM 1: Vendor cannot hold flatness as specified on casting print for deck D-SC-1210053 .
CORRECTION 1: Change flatness specification and add material to thickness of casting to allow for finishing operation.
PROBLEM 2: Deck machining drawing, E-IA-7408147-0 -0, calls-out wrong part number for alignment pin, dimension also incorrect from last ECO.
CORRECTION 2: Change to correct part number for alignment pin, change to correct dimension.
PROBLEM 3: Problem in balancing hub when made from casting.
CORRECTION 3: Change to completely machined part.
PROBLEM 4: Disk retaining flange not meeting tolerance because tolerance too tight.
CORRECTION 4: Change tolerance from .0001 To .001 On bore perpendicularity to flange periphery.
PROBLEM 5: Bracket for disk cover not to scale and confusing, also can be problem because of tolerance buildup.
CORRECTION 5: Redraw bracket to scale and increase dimension to allow for tolerances.
In-plant effectivity -01 phase-in

RS64M-E0003 CODE: F ML: M
FEB-72 - PROBLEM: Occasional static discharge between disk and ground causes data errors.
CORRECTION: Provide low resistance path to ground between disk and motor housing by use of grounding brush assembly.
In-plant effectivity -02 phase-in
Field effectivity -Retrofit all RS64-M's.
(Time To Install And Test .3 Hour.) (Documentation $ 5.00 , Parts $ 2,60 DEC Labor $ 13.00) (Kit Contents -FCO/Prints And Parts)

RS64M-00004 CODE: P
MAR-72 - CORRECTION: Change #7408858-0-0 motor lock material to 3/16 x 3/4, 6061-T6 aluminum.
In-plant effectivity -06 documentation change

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RS64-P

Power Control and Logic for RS64

PROCESSOR TYPE PDP-8/E and PDP-11

RS64P-00001 CODE: M
APR-71 - PROBLEM 1: Dimension on control panel guard, C-MD-7408314-0-0, incorrect
CORRECTION 1: Change to proper dimension.
PROBLEM 2: Holes in pivot, D-IA-7408312-0-0, labeled incorrectly.
CORRECTION 2: Change to proper hole designation.
PROBLEM 3: Reference dimensions shown incorrectly on board retainer, C-IA-7408307-0
CORRECTION 3: Change to show reference dimensions from proper points.
PROBLEM 4: Length of module cover causes interference with chassis when logic is pivoted.
CORRECTION 4: Shorten length of module cover.
PROBLEM 5: Holes in item #3 of chassis, E-IA-7408146-0-0, shown in wrong location.
CORRECTION 5: Change view to show holes in proper location.
PROBLEM 6: No adequate method of packaging product for shipment.
CORRECTION 6: Add threaded inserts to bottom of chassis to facilitate shipping.
In-plant effectivity -03 rework immediately

RS64P-00002 CODE: M
JUN-71 - PROBLEM 1: Purchased pivot spacer #1210251 costly and unnecessary.
CORRECTION 1: Use expendable washer #90-07962.
PROBLEM 2: Socket head screws on shock mounts unnecessary.
CORRECTION 2: Use phillips head screws.
PROBLEM 3: Documentation does not show assembly of WLO/US cable to switch plate.
CORRECTION 3: Add detail and four screws.
PROBLEM 4: Tabs on fan wiring uninsulated.
CORRECTION 4: Insulate with heat shrink tubing.
PROBLEM 5: Chassis fabrication and assembly subject to error because of symmetry of parts.
CORRECTION 5: Change assembly holes in chassis and cable shield to be asymmetric.
PROBLEM 6: Capacitor in control panel leaks.
CORRECTION 6: Mount capacitor vertically on guard of control panel.
PROBLEM 7: Control panel and WLO/US switch plate cut cables passing under their edges.
CORRECTION 7: Trim off excess material on bottom of both panels.
PROBLEM 8: No rating on fan terminals on control panel.
CORRECTION 8: Add terminal rating to silk screen of control panel plate.
PROBLEM 9: Wires chafing on power harness.
CORRECTION 9: Add spiral wrap to harness.

NOTE: This ECO creates RS64-A and RS64-B ML revisions "F. "
In-plant effectivity -01 phase-in

RS64P-00003 CODE: M
JUL-71 - PROBLEM 1: Capacitor attached to control panel guard caused distortion.
CORRECTION 1: Add holes to control panel plate for mounting capacitor. Remove mounting holes from guard.
PROBLEM 2: Improper part number of capacitor called-out on schematic of control panel.
CORRECTION 2: Add correct part number to schematic.
PROBLEM 3: Lock washers not used in assembly of control panel.
CORRECTION 3: Add lock washers to control panel assembly where necessary.
In-plant effectivity -01 phase-in

RS64P-C0004 CODE: F ML: K WL: C
OCT-71 - PROBLEM 1: Power cable (70-07238) is 6 inches too long when H736 Power Supply is replaced with H737 Power Supply in the RS64 Disk Drive.
CORRECTION 1: When the H737 is installed in the field, shorten the power cable (70-07238) according to this FCO (RS64 power cable modification procedure . All future production of power cable will be done according to the changes shown on drawing J-IA-7007238-0-0. All existing cables in stock are to be reworked when it is determined that the H737 Power Supply will be used.
PROBLEM 2: Frequency of switching regulators on H737 Power Supply is approximately equal to writing frequency of G291 writer, resulting in data bits being either added or dropped.
CORRECTION 2: Add shielding to data cables (70-07049 . All unused pins on data cable will be tied to ground on the logic rack. Retrofit only the units having an H737 Power Supply installed.
PROBLEM 3: The RS64 drive contains an H736 Power Supply purchased from an outside vendor. Digital has [illegible] an H737 Power Supply that is interchangeable with the H736
CORRECTION 3: The production line will install the H737 Power Supplies when they become available. The H737 Power Supply will replace the H736 Power Supply in the field only when the H736 has been determined to be inoperative in the drive in question. Before the H737 is installed in the RS64 drive, corrections 1, 2, and 7 of this FCO must have been implemented.
PROBLEM 4: Two parts frequently being used are not called-out in the prints.
CORRECTION 4: Add one screw and one nut to the Parts List, A-PL-RS64-P-0, and show the parts locations on drawing E-UA-RS64-P-0.
PROBLEM 5: Drawing E-UA-RS64-P-0 does not show angle bracket.
CORRECTION 5: Show angle bracket on drawing E-UA-RS64-P-0.
PROBLEM 6: The signal bus cable (70-076074-6) is not long enough to enable the drive to be fully extended when connected to a daisy chain configuration.
CORRECTION 6: Change drawing C-BD-RS64-0-9 to show correct cable length. Retrofit any drives in the field used in a daisy chain configuration.
PROBLEM 7: The H737 Power Supply has an AC LOW voltage detector signal output of +20 volts to +35 volts, whereas the signal output from the H736 Power Supply is -4 volts to -10 volts. The H737 is interchangeable with the H736 in the RS64 Disk Drive, but the drive contains a G8001 (AC Low Voltage Detector) module which requires a -4 volt to -10 volt input signal. RS64, the G8001 module in slot C02 must be replaced with a G8002 module (AC Low Voltage Detector) which requires an input voltage of +20 volts to +35 volts.
PROBLEM 8: Timing cable (70-07050) tubing pulls out of cable clamp.
CORRECTION 8: Add a strip of tape between the top of the tubing and the cable clamp on both ends as shown in drawing D-IA-7007050-0-0.

NOTE 1: Cable, Power Supply and module are to be returned to Maynard on RA #20497. NOTE 2: This FCO must be installed in conjunction with FCO RS64-C0008.
In-plant effectivity -Phase-in
Field effectivity -Retrofit all RS64-P's
(Time To Install And Test 6.0 Hours.) (Documentation $ 5.00 , Parts $ 615.00 , DEC Labor $ 150.00) (Kit Contents -FCO And Parts)

RS64P-00005 CODE: M
NOV-71 - PROBLEM 1: R1 and J3 are shown incorrectly on drawings.
CORRECTION 1: Correct drawings D-AD-7006858-0-0 and A-PL-7006858-0-0.
PROBLEM 2: The control panel plate has two "A " holes dimensioned incorrectly.
CORRECTION 2: Correct print E-IA-7408162-0-0.
In-plant effectivity -03 rework

RS64P-00006 CODE: D
FEB-72 - PROBLEM: Difficulty in purchasing of slide switch with 6-32 pierced and tapped holes.
CORRECTION: Change to slide switch with thru holes and mount with self tapping screws.
In-plant effectivity -02 phase-in

RS64P-00007 CODE: D
APR-72 - PROBLEM: Occasional tripping of 2.5 AMP circuit breaker at 240 VAC 50 Hz operation due to high inrush current of power supply.
CORRECTION: Change circuit breaker to 5 AMP rating to avoid nuisance tripping.
In-plant effectivity -03 rework immediately

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Engineering Change Order Log
EC DEC-O-LOG

RS64-TA

Timing Track Writer

PROCESSOR TYPE PDP-8 and 11 Families

RS64TA-00001 CODE: D
MAR-72 - CORRECTION: Repackage tester and phase-in new tester documentation.

NOTE: This ECO creates DD revision "*".
In-plant effectivity -02 phase-in

RS64TA-00002 CODE: D DD: A
OCT-72 - PROBLEM: Addition of RC8/E portion of tester.
CORRECTION: Change and add to silk screen RC8/E nomenclature and add new circuitry.
In-plant effectivity -03 retrofit immediately

RS64TA-B0003 CODE: F DD: B
JAN-73 - PROBLEM: When using the RS64-TA Timing Track Writer, there is no ground connection between power supply and disk drive logic rack.
CORRECTION: Add ground between power supply and disk drive logic rack.

NOTE: The RS64 Power Supply and the Timing Track Writer must have a common ground or the timing tracks will have excessive noise at the zero crossover point.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all RS64-TA's
(Time To Install And Test .3 Hour.) (Kit Contents -FCO/Prints)

RS64TA-A0004 CODE: F DD: C
JUN-73 - PROBLEM: Potentiometer R1 is not large enough to cause Zener diode, IN753, to turn on. This results in unstable operation of gap adjust.
CORRECTION: Change the value of R1 to 200 ohms to ensure that Zener diode will turn on.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all RS64-TA's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

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DEC-O-LOG Engineering Change Order Log

RT01

16 Key Remote Terminal

PROCESSOR TYPE All

RT01-00001 CODE: P
JUL-71 - PROBLEM 1: Hole to view Nixie display out of position.
CORRECTION 1: Move display viewing area up to 1.50 inch from 1.30 inch.
PROBLEM 2: Logo not centered on keyboard.
CORRECTION 2: Move logo to 10.8 inch from 10.50 inch.
In-plant effectivity -06 documentation phase-in

RT01-00002 CODE: P
AUG-71 - PROBLEM: The back plate was formerly part of another assembly. It is now a separate part, D-IA-7409184-0-0. Consequently, the drawing number of the silk screen has to be changed to match the new drawing number for the back plate.
CORRECTION: Change drawing number from B-SS-7408945-0-1 to B-SS-7409184-0-1.
In-plant effectivity -06 documentation change only

RT01-00003 CODE: P
AUG-71 - PROBLEM 1: Part number for tie wrap incorrect.
CORRECTION : Change part number from 90-07880 to 90-07031, SST-1.5M to SST1-M.
CORRECTION 2: Change indicated position of wire points #9, and #13, thru #16.
CORRECTION 3: Add two wires, items #6 and #7.
CORRECTION 4: Remove Brady Marker notes #2 and #3.
CORRECTION 5: Change part number for item #1 (pin housing) from 12-09340-00 to 12-09340-01.
In-plant effectivity -06 doumentation phase-in

RT01-00004 CODE: P
AUG-71 - PROBLEM: Legend "1/2 A " over fuse is incorrect for 220 VAC operation. Crop marks are in wrong location for new size of piece.
CORRECTION: Change "1/2 A " to "FUSE " and move crop marks.
In-plant effectivity -06 documentation phase-in

RT01-C0005 CODE: DF ML: A
NOV-71 - PROBLEM: Modification to the M7390 module used in the RT01 requires a corresponding wire change due to new pin assignment.
CORRECTION: Delete wire from B02S2 to B02C2, add wire from B02S2 to B02P2.

NOTE: This FCO must be installed in conjunction with FCO M7390-C0001
In plant effectivity -03 rework immediately
Field effectivity -Retrofit RT01 #101
(Time To Install And Test 0.5 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

RT01-00006 CODE: P
NOV-71 - CORRECTION: Correct minor print errors on mechanical drawings.
In-plant effectivity -06 documentation change only

RT01-E0007 CODE: DF ML: B WL: B
NOV-71 - PROBLEM 1: When using new UART (E13) on the M7390, as described in FCO M7390-E0002, the **STATUS WORD ENABLE** line (SWE), pin BJ1, must have a "low " to place the status word bits onto the output lines.
CORRECTION 1: Add a wire from B02J1 (SWE) to B02C2 (ground .
PROBLEM 2: NB1 and NB2 must be "high " in order to select eight data bits per character.
CORRECTION 2: Delete a wire from A02R2 (NB1) to A02C2 (ground); add a wire from A02R2 (NB1) to A02S2 (NB2 or +3 VDC .

NOTE: This FCO must be installed when an M7390 CS revision "D " module is used.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit RT01's with M7390 CS revision "D " as required.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

RT01-00008 CODE: P
DEC-71 - PROBLEM 1: The location of the +10 volt orange wire, (item #23), is incorrect as listed in the Wire Table of drawing D-AD-7008505-0-0.
CORRECTION 1: Change item #23 from A04V2 to A02V2.
PROBLEM 2: TB1, view "A-A " on drawing D-AD-7008506-0-0, is drawn incorrectly.
CORRECTION 2: Redraw TB1, view "A-A " as defined by this ECO.
In-plant effectivity -06 documentation change only

RT01-00009 CODE: M
DEC-71 - PROBLEM: Studs in back plate do not align with holes in bottom pan. Studs in back plate interfere with removal of mounting plate.
CORRECTION: Change center distance of holes in bottom pan. Remove rear corners of mounting plate.
In-plant effectivity -03 rework immediately

RT01-00010 CODE: D
JAN-72 - PROBLEM: LED Status Lights are too dim when viewed through present indicator light panel. The plexiglas inlays do not have a hard coat protective covering, thus the plexiglas is very susceptible to marking.
CORRECTION: Change from tinted plexiglas to clear; eliminate diffuser from light openings; use glossier hardcoat. A protective coating is to be applied to front and rear surface of part. The protective coating is to be "80% gloss hard coat " .
In-plant effectivity -09 phase-in

RT01-00011 CODE: D
MAR-72 - PROBLEM: Field Service finds components showing through clear plexiglas inlay unacceptable.
CORRECTION: Change to light green.
In-plant effectivity -02 phase-in

RT01-00012 CODE: D
MAR-72 - PROBLEM: RT01 tester unable to test M7390 CS revision "D " boards. FCO M7390-E0002 created this problem.
CORRECTION: Add S6 to RT01 module test station #9307482. See final release of print D-BS-9307482-0-1. Delete wire A20R2 to ground and add wires A20R2 and B20J1 to ground. Replace module in tester N/M7390 CS revision "D ". The Wire List is also updated.

NOTE: This FCO creates 9307482-O (' general Wiring Sheet For RT01 Test Socket) wl revision "A " ; also creates 9307482-O (' general Wiring Sheet For RT01 Module Test Station Tester) wl revision "A " .
In-plant effectivity -03 rework immediately

RT01-D0013 CODE: DF ML: C
MAR-72 - PROBLEM: Drawing D-BD-RT01-02 does not reflect actual RT01 model used in production. The Wire Table in drawing D-UA-RT01-0-0 does not coincide with the model built for production.
CORRECTION: Change drawing D-BD-RT01-0-2 for clarification. Change the following wire designations on the Wire Table of drawing D-UA-RT01-0-0. Change PS1-4 to PS1-1, S1-4 to S1-5, PS1-1 to PS1-4, S1-5 to S1-6, S1-2 to S1-1, and S1-3 to S1-2.
In-plant effectivity -06 documentation change only
Field effectivity -Documentation change only for all RT01's prior to 3-30-72
(Time To Install And Test N/A) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

RT01-00014 CODE: D ML: D
APR-72 - PROBLEM: Decal needed to identify fuse in different models of RT01.
CORRECTION: Generate decal and add to bottom pan assembly.
In-plant effectivity -02 phase-in

RT01-00015 CODE: M
JUN-72 - PROBLEM: Back plates do not fit bottom pans because of conflicting dimensions.
CORRECTION: Change center distance of mounting holes on bottom pan.
In-plant effectivity -03 rework immediately

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RT01

16 Key Remote Terminal

PROCESSOR TYPE All

RT01-00016 CODE: P ML: E
JUN-72 - CORRECTION: Adds Test Procedure, Acceptance Procedure, and Accessory List to print set.
In-plant effectivity -Documentation change only

RT01-00017 CODE: P
JUN-72 - CORRECTION: Change top cover spot welding to tack welding.
In-plant effectivity -06 documentation change only

RT01-00018 CODE: D ML: F
AUG-72 - PROBLEM 1: Incorrect pin name on drawing A-WL-RT01-0-3, pin A08E1 is incorrect.
CORRECTION 1: Change pin name A08E1 to A02E1 on Wire List.
PROBLEM 2: RT01 terminal is unable to accept M7496 NKR Encoder module.
CORRECTION 2: Add aditional runs so that the M7496 NKR Encoder module may be accepted.
PROBLEM 3: Several unused pins on the transceiver are floating.
CORRECTION 3: Tie the three unused runs on the transceiver to -3V.

NOTE: See correction supplement ECO RT01-0018A.
In-plant effectivity -02 phase-in

RT01-0018A CODE: D WL: C
AUG-72 - PROBLEM 1: A-WL-RT01-0-3, the Hand Wiring List for the RT01, has been proven undesireable because of the high incidence of mistakes in hand wiring.
CORRECTION 1: Inactivate A-WL-RT01-0-3 Hand Wiring List and, in its place, substitute an Automatic Wiring List, K-WL-RT01-0-3.
PROBLEM 2: There are two errors in ECO RT01-00018. They involve -3V and a run named **TBML** .
CORRECTION 2: On ECO RT01-00018, change -3V to read +3V and ' TBML ' to read ' TBMT ' .
In-plant effectivity -Unchanged

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RT02-A

Remote Data Terminal

PROCESSOR TYPE All

RT02A-00001 CODE: D DD: A
MAY-73 - PROBLEM: I/O port to be added to RT02 back plate. Clamp plate needed to provide strain relief.
CORRECTION: Add hole above Teletype connector hole. Generate new drawing for cable clamp and add to Parts List.
In-planf effectivity -03 * -Rework 200 unassembled back plates, build 200 cable clamps. Note: These reworked parts to be in finished goods for August build.

RT02A-00002 CODE: P
MAY-73 - PROBLEM: The Engineering Specification for RT02 acceptance has incorrect octal code designations for key figures "7 " thru "SHIFT/CLEAR " .
CORRECTION: Correct octal code designations on A-SP-RT02-A-AP, page 9 of 9.
In-plant effectivity -Documentation change only

RT02A-00003 CODE: D DD: B WL: A
MAY-73 - PROBLEM: Unused module slot to be wired for possible future use.
CORRECTION: Add to existing Wire List as required.

NOTE: See continuation supplement ECO RT02A-00004.
In-plant effectivity -Rework all existing logics as soon as possible. The term "existing logic " meaning logic panels which are not installed in RT02 terminals. Start with serial number 5500.

RT02A-00004 CODE: P DD: C
AUG-73 - CORRECTION: Update Block Diagram drawing D-BD-RT02-A-BD to reflect changes which were brought about by previous ECO RT02A-00003.
In-plant effectivity -Documentation change only, should be completed by September 14, 1973.

RT02A-00005 CODE: D DD: D
NOV-73 - PROBLEM: The ground wire on the RT02-A should be attached to the Bottom Pan Assembly to conform to UL standards.
CORRECTION: Rework to upgrade any revision P00 Bottom Pans #74-09826 by drilling a 7/32 inch hole in the Bottom Pan. Remove green AC ground wire from Back Plate Assembly #70-08956.
In-plant effectivity -Rework all existing RT02-A's in process and in Stockroom #10.

RT02A-D0006 CODE: F DD: E
NOV-73 - PROBLEM: The RT02-A Keyboard, in conjunction with the M7396 Keyboard Encoder, has intermittent problems with shifted characters only. Failure symptom is an unshifted character, a "space " character, or an incorrect character when attempting to generate a shifted character.
CORRECTION: Remove sixteen pad keyboard #12-11101 as explained in the RT02-A Maintenance Manual, page 5-24, paragraph 5.5.5. replace with keyboard #54-10813 and four new screws, #90-06011-1, #4-40, 3/8 inch long.
In-plant effectivity -Retrofit all RT02-A's as soon as possible. Test all units in process and in stockroom #10.
Field effectivity -Retrofit RT02-A's at customer request if symptoms are present
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $ 60.00)
* the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1092 - FCO/Prints And Parts)

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TC01-00002 CODE: P ML: P
JUN-72 - CORRECTION 1: Replace Accessory List with new revision "A ".
CORRECTION 2: Update Parts List to add cables.
In-plant effectivity -Documentation change

TC01-C0003 CODE: F ML: R WL: J
NOV-74 - PROBLEM: Different combinations of LOAD STATUS A and CLEAR STATUS A may cause select errors if no unit "0 " exists, such as in typesetting systems.
CORRECTION: Remove CLEAR STATUS A from XSADLY input. Gate UNIT SELECT DECODER with XOR STATUS A and CLEAR STATUS A . An S202 module is added in slot C23; there are nine wiring delete's and fourteen wiring add's.
QUICK CHECK -An S202 in slot C23.
In-plant effectivity -None
Field effectivity -Retrofit TC01's in the field when symptoms are present.
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts $ 28.00)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1406 5 $* -FCO/Prints And Parts)

TC01-C003A CODE: F
JAN-75 - CORRECTION: Change revision level of drawing A-WT-7005202-0 from "E " to "J ".
In-plant effectivity -Immediately
Field effectivity -Unchanged

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Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

DECTAPE CONTROL
VARIATIONS -A, -N, & -NA

TC08

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
8 FAMILY	JANUARY 1972	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TC08 00001	TC08 101-110>	D	SEP 69 - PROVIDES AN OVERALL DESIGN AND PRINT UPDATING FOR THE TC08. - - IN-PLANT EFFECTIVITY - TC08 #101-110 "D" CODED ML REVISION "A" AND WL REVISION "A" ARE CREATED
TC08 00002	TC08 101-110>	D	NOV 69 - DELAYS STROBING OF THE "BMB" BUS TO PERMIT DESKEWING. DELAYS MOTION BITS TO ELIMINATE TAPE SLAPPING. - - IN-PLANT EFFECTIVITY - TC08 #101-110 AND FUTURE "D" CODED ML REVISION "B" AND WL REVISION "B" ARE CREATED
TC08 00003	>TC08 >TC15	D	JAN 70 - UPDATES THE TC08 AND TC15 INDICATOR SYSTEM TO THE NEW NUMBER SYSTEM - - IN-PLANT EFFECTIVITY - ALL FUTURE TC08 AND TC15 "D" CODED ML REVISION "C" IS CREATED OTHER OPTIONS AFFECTED - TC09 AND TC15
TC08 00004	TC08 101-127>	D	JAN 70 - ADDS AN M101 MODULE IN SLOT C01 TO PERMIT OPERATION ON A POSITIVE BUS. - - IN-PLANT EFFECTIVITY - ALL TC08 #101-127 AND FUTURE "D" CODED ML REVISION "D" AND WL REVISION "C" ARE CREATED
			REFERENCE M307-00002
TC08 00005	N.A.	P	MAR 70 - UPDATES THE WIRELIST AND THE PRINT SET TO REFLECT ACTUAL PRODUCTION STATUS OF ALL UNITS TO DATE. - - IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "E" AND WL REVISION "D" ARE CREATED
TC08 00006	TC08 101-199>	D	APR 70 - ADDS AN M302 MODULE IN SLOT A14 AND REVISES THE CROSSTALK PROTECTION LOGIC TO ELIMINATE THE POSSIBILITY OF TIMMING TRACK ALTERATION WHILE WRITING DATA. SHORTENS THE "XSTA" SIGNAL TO 110 NSEC TO ELIMINATE A RACE CONDITION BETWEEN ITS FALLING EDGE AND THE BUFFERED AC LINES AND THEREBY ENSURE PROPER XORING OF THE "STATUS A" REGISTER. - - IN-PLANT EFFECTIVITY - TC08 #101-199 AND FUTURE "D" CODED ML REVISION "F" AND WL REVISION "E" ARE CREATED

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis, (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	TC08-00001		
B	TC08-00002		
C	TC08-00003		
D	TC08-00004		
E	TC08-00005		
F	TC08-00006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	TC08-00001		
B	TC08-00002		
C	TC08-00004		
D	TC08-00005		
E	TC08-00006		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TC08 C0007	ALL TC08	DF	FCO RELEASE DATE - APRIL 1970 - - PROBLEM 1: LOGIC POWER AND TRANSPORT POWER TURN OFF SIMULTANEOUSLY CAUSING DECTAPE DATA ERRORS. CORRECTION 1: CHANGE AC WIRING TO SEPARATE SOURCES (FAST ON AND SLOW ON) AND SEPARATE DC WIRING TO TRANSPORTS. CORRECTION 2 ADDS AC AND DC WIRING PRINTS TO MASTER DRAWING LIST. - - IN-PLANT EFFECTIVITY - ALL FUTURE TC08 FIELD EFFECTIVITY - TC08 #101-216 "DF" CODED ML REVISION "H" IS CREATED TIME TO INSTALL AND TEST - .3 HOURS DOCUMENTATION $5.00 PARTS-NONE DEC LABOR 8.00 ORDERED KITS WILL INCLUDE FCO'S AND PRINTS
TC08 C0008	TC08 101-216>	F	FCO RELEASE DATE - JULY 1970 - - PROBLEM: RANDOM FAILURES WHILE RUNNING THE VERIFY PASS OF THE DEC-TAPE FORMATTER PROGRAM. FAILURE SHOWS AS READING THE SAME BLOCK TWICE. CORRECTION: CORRECT CIRCUITRY AS INDICATED BY THE ADD/DELETES - - IN-PLANT EFFECTIVITY - ALL TC08 #217 AND FUTURE FIELD EFFECTIVITY - ALL TC08 #101-216 "F" CODED ML REVISION "J" AND WL REVISION "F" ARE CREATED TIME TO INSTALL AND TEST - .6 HOURS DOCUMENTATION $5.00 PARTS-NONE DEC LABOR $15.00 ORDERED KITS WILL INCLUDE FCO'S AND PRINTS
TC08 C0009	TC08 101-216>	F	FCO RELEASE DATE - JULY 1970 - - PROBLEM 1: MOTION BIT CLEARS WHEN RUNNING PHASE 3 OF THE DECTAPE FORMATTER PROGRAM. PROBLEM 2: DATA ERRORS OCCUR ON PHASE 3 OF FORMATTER PROGRAM. CORRECTION 1 & 2: CLEAR "WREN" FLIP-FLOP WITH THE SIGNAL "PC + ES L" INSTEAD OF "POWER CLEAR L". - - IN-PLANT EFFECTIVITY - ALL TC08 #217 AND FUTURE FIELD EFFECTIVITY - ALL TC08 #101-216 "F" CODED ML REVISION "K" AND WL REVISION "H" ARE CREATED TIME TO INSTALL AND TEST - .6 HOURS DOCUMENTATION $5.00 PARTS-NONE DEC LABOR $15.00 ORDERED KITS WILL INCLUDE FCO'S AND PRINTS
TC08 00010	N.A.	P	OCT 70 - CORRECTS THE WIRELIST TO REFLECT THE ACTUAL WIRING STATUS OF ALL UNITS PRODUCED TO DATE. - - IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "L" AND WL REVISION "J" ARE CREATED
TC08 00011	N.A.	P	OCT 70 - ADDS ENGINEERING SPECIFICATIONS AND AN IN-PLANT ACCEPTANCE PROCEDURE TO THE TC08 PRINT SET. - - IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "M" IS CREATED
TC08 00012	>TC08	D	ECO RELEASE DATE - NOVEMBER 1970 - - PROBLEM: TIMING PROBLEMS WITH IOT 6764 WHEN TC08 IS OPERATED ON A PDP8-E. CORRECTION: USE THE SIGNAL "B-XSTA L" IN PLACE OF "XSTA L" (PRINT D-BS-TC08-0-3). - - IN-PLANT EFFECTIVITY - 01 PHASE-IN "D" CODED ML REVISION "N" AND WL REVISION "K" ARE CREATED

LEGEND

FIELD CODE

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M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
H	TC08-C0007		
J	TC08-C0008		
K	TC08-C0009		
L	TC08-00010		
M	TC08-00011		
N	TC08-00012		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
F	TC08-C0008		
H	TC08-C0009		
J	TC08-00010		
K	TC08-00012		

E C DEC-O-LOG Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

DECTAPE CONTROL
VARIATIONS -A, -N, & -NA

TC08

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
8 FAMILY	JANUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TC08 00013	N.A.	P	ECO RELEASE DATE - DECEMBER 1970 - - PROBLEM: CHECKOUT PROCEDURE DOES NOT CALL OUT SWITCH SETTINGS FOR THE M307 CIRCUIT SCHEMATIC REVISION "B" MODULE IN LOCATION D14. CORRECTION: ADD THE FOLLOWING TO A-SP-TC08-0-16. UNDER PARAGRAPH C6- 'THE UPPER SWITCH ON REV B M307 SHOULD BE SET TO POSITION 1'. C7- 'THE LOWER SWITCH ON REV B M307 SHOULD BE SET TO POSITION 4'. - - IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "P" IS CREATED
TC08 C0014	>TC08	F	ECO RELEASE DATE - MARCH 1971 - - PROBLEM 1: WHEN DECTAPE SYSTEM IS POWERED UP, SOMETIMES TAPE RUNS OFF THE REEL. CORRECTION 1: REWIRE AC POWER WIRING SO THAT THE LOGIC SUPPLY COMES UP IMMEDIATELY, WITH NO DELAY, SO THE LOGIC CAN RECEIVE POWER CLEAR FROM THE COMPUTER. PROBLEM 2: CORRECTING ABOVE PROBLEM UNCOVERS THIS PROBLEM: WHEN POWERING UP, "WREN" FLIP-FLOP GLITCHES, ERASING THE TAPE THAT'S OVER THE HEAD AT THAT TIME. CORRECTION 2: REMOVE THE TWO 783 POWER SUPPLIES AND REPLACE WITH ONE H721 SUPPLY IN TC08; ADD G829, REMOVE G821 POWER CONNECTOR. ALSO IN TC08 REPLACE G879 WITH A G8790 AND REWIRE THE "WREN (0) H" AND "WREN (1) H" RUNS AND CREATE "BWR EN (1) H" RUN AS INDICATED BY THE ADD/DELETES. PROBLEM 3: DON'T NEED N9M TRANSFORMER(S) WHEN TU56'S ARE USED IN 230 VAC SYSTEM. CORRECTION 3: REPLACE N9M TRANSFORMER WITH H722 UNIT IN 230 VAC 50 HZ UNITS (PRODUCTION ONLY, NO FIELD RETROFIT). - - IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITY - ALL TC08 IF SYMPTOMS ARE OBSERVED "F" CODED ML REVISION "R" AND WL REVSION "L" ARE CREATED TIME TO INSTALL AND TEST - 3 HOURS DOCUMENTATION $5.00 PARTS $498.00 DEC LABOR $75.00 ORDERED KITS WILL INCLUDE ECO'S, PRINTS AND PARTS
TC08 00015	>TC08	D	ECO RELEASE DATE - JUNE 1971 - - PROBLEM: MISSING WIRES ON WIRE LIST. CORRECTION: NO RETROFIT REQUIRED. ADD WIRES TO NEXT PRODUCTION RUN OF TC08 LOGICS. - - IN-PLANT EFFECTIVITY - 01 PHASE-IN "D" CODED ML REVISION "S" AND WL REVISION "M" ARE CREATED REFERENCE SUPPLEMENT ECO TC08-0015A

LEGEND

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SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
P	TC08-00013		
R	TC08-C0014		
S	TC08-00015		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	TC08-C0014		
M	TC08-00015		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TC08 0015A	>TC08	D	ECO RELEASE DATE - JUNE 1971 - - PROBLEM: ECO TC08-00015 NEGLECTED TO DELETE "GND 26" RUN. CORRECTION: THIS ECO IS SUPPLEMENTAL TO ECO TC08-00015 AND DELETES THE "GND 26" RUN. NOTE: PRINTS AND WIRE LIST (REVISION "N") ARE CORRECT - - IN-PLANT EFFECTIVITY - 01 PHASE-IN "D" CODED
TC08 C0016	>TC08	F	ECO RELEASE DATE - JUNE 1971 - - PROBLEM: SOME DECTAPE PROGRAMS CAUSE EXCESSIVE TAPE SLAP ON TU55'S AND EXTRAORDINARILY LONG STOP TIMES ON THE TU56'S. CORRECTION: CLOCK THE BUFFERED DIRECTION BIT IN STATUS "A" REGISTER ONLY IF THE "GO" BIT IS SET. - - IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITY - ALL TC08 AS REQUIRED "F" CODED ML REVISION "T" AND WL REVISION "N" ARE CREATED TIME TO INSTALL AND TEST - 2.0 HOURS DOCUMENTATION $5.00 PARTS-NONE DEC LABOR $50.00 ORDERED KITS WILL INCLUDE FCO'S ONLY
TC08 00017	N.A.	P	ECO RELEASE DATE - JULY 1971 - - PROBLEM 1: WHEN IOT 6762 IMMEDIATELY PRECEEDS IOT 6764, FALSE SELECT ERRORS ARE GENERATED. THIS PROBLEM HAS BEEN OBSERVED MOSTLY ON "TYPSET 8" SYSTEMS. CORRECTION 1: RESET "XSA" DELAY (M302 AT LOCATION D16). FOR 8/E SYSTEMS, 6.5 MSEC; FOR 8/I SYSTEMS, 6.5 MSEC; FOR 8/L SYSTEMS, 7.0 MSEC CORRECTION 2 UPDATES PRINTS - - IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "U" IS CREATED
TC08 A0018	>TC08	F	FCO RELEASE DATE - AUGUST 1971 - - PROBLEM 1: INTERMITTENT AND RANDOM MARK TRACK ERRORS, MOSTLY WHEN RUNNING WITH TU56 TRANSPORTS. CORRECTION 2: (A) CHANGES THE SOURCE PIN FOR THE "C01 (1) H" RUN FROM B13P2 TO C13V2 AND ADDS AN INVERTER FROM B13R2. (B) CHANGES THE SIGNAL ON D10E2 FROM "MC01 (0) H" TO "MC01 (1) H". (C) STRETCHES THE "SYNC-P L" SIGNAL OUT TO 200 NSEC BY ADDING A DELAY AND AN INVERTER FROM B10J2 TO THE "SYNC-P L" SIGNAL RUN. CORRECTION 2 ADDS A MISSING GATE AND SIGNAL NAMES ON DRAWING BS-TC08-0-7. - - IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - ALL TC08 "F" CODED ML REVISION "V" AND WL REVISION "P" ARE CREATED TIME TO INSTALL AND TEST - 2.0 HOURS THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO'S AND PRINTS
TC08 00019	>TC08	D	ECO RELEASE DATE - AUGUST 1971 - - CORRECTION 1 CREATES DRAWING D-AR-TC08-0-24 FOR TU56'S. PROBLEM 2: 853F (E) NOT REQUIRED IN SYSTEM. CORRECTION 2: REPLACE WITH 854 (B). - - IN-PLANT EFFECTIVITY - 01 PHASE-IN "D" CODED ML REVISION "W" IS CREATED

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
T	TC08-C0016		
U	TC08-00017		
V	TC08-A0018		
W	TC08-00019		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
N	TC08-C0016		
P	TC08-A0018		

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ECO SYNOPSES FOR LOGIC OR OPTION

DECTAPE CONTROL
VARIATIONS -A, -N, & -NA

TC08

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
8 FAMILY	JANUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TC08 B0020	ALL TC08 AS REQUIRED	F	FCO RELEASE DATE - NOVEMBER 1971 - - PROBLEM 1: DUE TO VARIOUS MECHANICAL FACTORS (BUSHINGS, SPRINGS, AND TAPE CONDITION), TAPE MAY NOT BE TRULY UP-TO-SPEED WHEN THE U & M DELAY TIMES OUT, THUS GIVING TIMING ERRORS ON SOME TU56 TRANSPORTS DURING START UP OR TURN AROUND. CORRECTION: CHANGE U & M DELAY FROM 120 NSEC TO 140 NSEC TO ENSURE A TRUE UP-TO-SPEED CONDITION BEFORE QUALIFYING THE TC08 (D14E2 TOP POT). - - IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITY - ALL TC08 AS REQUIRED "F" CODED ML REVISION "Y" IS CREATED TIME TO INSTALL AND TEST - .25 HOURS DOCUMENTATION $5.00 PARTS-NONE DEC LABOR $8.00 ORDERED KITS WILL INCLUDE FCO'S ONLY
TC08 C0021	ALL TC08	F	FCO RELEASE DATE - DECEMBER 1971 - - PROBLEM: "XSA DY" MUST BE SET TO DIFFERENT VALUES FOR DIFFERENT MACHINES. CERTAIN COMBINATIONS OF "CSTA" AND "XSTA" WILL INDICATE SELECT ERRORS INCORRECTLY. CORRECTION: CHANGE "CSTA" OR INIT. FUNCTION TO SELECT NO DECTAPE TRANSPORT RATHER THAN UNIT 0. REMOVE "CSTA" FROM "XSA DY" INPUT GATING. SET "XSA DY" TO 3 USEC. - - IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - ALL TC08 "F" CODED ML REVISION "Z" AND WL REVISION "R" ARE CREATED TIME TO INSTALL AND TEST - 1.0 HOURS DOCUMENTATION $5.00 PARTS-NONE DEC LABOR $25.00 ORDERED KITS WILL INCLUDE FCO'S ONLY

LEGEND

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ECO CHARGES
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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
Y	TC08-B0020		
Z	TC08-C0021		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
R	TC08-C0021		

TC08-00022 CODE: P ML: AA
MAR-72 - PROBLEM: UNIT AND MOTION delay setting wrong.
CORRECTION: Change UNIT AND MOTION delay, M302 in slot D14, top pot, from 140 msec to 120 msec on drawing D-BS-TC08-0-3.
In-plant effectivity -06 documentation change only

TC08-C0023 CODE: F ML: AB WL: S
JUN-72 - PROBLEM: Not enough time between finding a block and reading the first word of data in READ ALL mode when latest revision TC08 used on PDP-8, PDP-8/L and PDP-8/I. Results in intermittent READ ALL errors when running DECtape Random Exerciser for long periods of time.
CORRECTION: Separate **BLK IN SYNC** signal from **IDLE** to **BLK MK SH ST** pulse allowing additional 16 usec, plus or minus 30%, for processor to respond.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all TC08's when used with PDP-8, PDP-8/I, and PDP-8/L.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 35.00 , DEC Labor $ 27.00) (Kit Contents -FCO/Prints And Parts)

TC08-00024 CODE: P ML: AC
JUN-72 - CORRECTION: Add cable to Parts List and Accessory List.
In-plant effectivity -Documentation change only

TC08-00025 CODE: P ML: AD
JUN-72 - PROBLEM: System drawings do not show how to cable TU56's to the TC08 or to other TU56's.
CORRECTION: Revise drawings D-IC-TC08-0-12 and D-IC-TC08-0-20.

NOTE: This ECO creates TC08-A ML revision "AC " also creates TC08-N ML revision "M ".
In-plant effectivity -06 documentation change only

TC08-C0026 CODE: F ML: AE WL: T
OCT-72 - PROBLEM: Random mark track errors while doing a write function, especially with General Instrument heads.
CORRECTION: Reduce crosstalk delays from 10 usec to 6 usec on module M302 at location A14.

NOTE: This ECO creates TC08-A ML revision ' AD .
IN-PLANT EFFECTIVITY -03 REWORK IMMEDIATELY
FIELD EFFECTIVITY -RETROFIT ALL TC08'S WITH GENERAL INSTRUMENT READ/WRITE HEADS.
(TIME TO INSTALL AND TEST 1.0 HOUR.) (THIS FCO IS NO CHARGE TO CUSTOMER) (KIT CONTENTS -FCO/PRINTS)

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ECO SYNOPSES FOR LOGIC OR OPTION

MAGTAPE CONTROL FOR TD20

TC58

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-12	JULY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-1 #430	ALL TC58 1>	D	AUG 67 - PROVIDES AN OVERALL DESIGN AND PRINT UPDATING OF THE TC58.
PDP-1 #431	ALL TC58 1-15>	D	SEP 67 - CORRECTS THE TC58 WIRE LIST. SPECIFIES THAT AN R603 IS TO BE REPLACED BY AN S603 AND TWO R107'S BY S107'S IN THE TC58 LOGIC.
PDP-1 #432	ALL TC58 1-15>	D	OCT 67 - ORDERS A TC58 DESIGN UPDATING TO CORRECT END OF FILE SENSING DURING SPACING AND PROVIDE NINE TRACK OPERATION. PRINT AND WIRELIST ERRORS ARE CORRECTED BY ECO PDP9-#151.
PDP-8 #151	ALL TC58	D	NOV 67 - CORRECTS PRINT AND WIRELIST ERRORS IN ECO PDP1-#432.
PDP-8 #228	ALL TC58	D	DEC 67 - MODIFIES THE TC58 FOR CONNECTION TO AUTOMATED IN-HOUSE TEST FACILITIES.
PDP-8 #242	TC58 1-19>	D	FEB 68 - CHANGES THE "DF" LEVELS TO "ADDRESS EXTENSION" IN THE TC58 FOR OPERATION OF THE TC58 ON SYSTEMS WITH EXTENDED MEMORY.
PDP-8 #244	ALL TC58 1-17>	D	FEB 68 - CHANGES TC58 LOGIC TO ALLOW A WRITE END OF FILE IN CONTINUE MODE FOLLOWING A NON-WRITE OPERATION.
PDP-8 #247	TC58 1-19>	D	MAR 68 - INTERCHANGES THE SIGNALS "ADDRESS EXTENSION 1" AND "ADDRESS EXTENSION 3" IN THE TC58 FOR OPERATION ON SYSTEMS WITH EXTENDED MEMORY.
PDP-8 #255	ALL TC58 1-23>	D	APR 68 - PROVIDES TC58 LOGIC TO ALLOW THE PROGRAM TO FORCE READ COMPARE ERRORS.

LEGEND

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SYMBOL
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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP1- #430	K	PDP8- #255
B	PDP1- #431		
C	PDP1- #432		
D	PDP8- #151		
E	PDP8- #228		
F	PDP8- #242		
H	PDP8- #244		
J	PDP8- #247		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP1- #430		
B	PDP1- #431		
C	PDP1- #432		
D	PDP9- #151		
E	PDP8- #228		
F	PDP8- #242		
H	PDP8- #244		
J	PDP8- #247		
K	PDP8- #255		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-8 #262	TC58 1-24>	D	APR 68 - CHANGES TC58 LOGIC TO PERMIT CONTINUED OPERATION WITH WORD COUNT LESS THAN RECORD LENGTH AND DB REQUIRED FOR FUTTHER INFORMATION WHILE READING OR COMPARING.
PDP-8 #265	N.A.	P	APR 68 - ADDS TC58 ENGINEERING SPECIFICATIONS AND ACCEPTANCE CRITERIA TO THE PRINT SET FOR IN-PLANT USE ONLY.
PDP-8 #279	TC58 1-34>	D	JUN 68 - CHANGES THE TC58 LOGIC TO ADD A STATUS BIT, "TRANSPORT SETTLING DOWN". ADDS A JUMPER TO PROVIDE A 400 MSEC IOP FOR TC58 OPERATION WITH A PDP-8I. ERROR CORRECTED BY ECO TC58-00001. REFERENCE ECO'S TC59-00001 AND TU20-00002.
TC58 00001	ALL TC58 1-38>	D	AUG 68 - CORRECTS AN ERROR IN ECO PDP8-#279; CHANGESS WIRING TO UTILIZE THE R113 IN SLOT A29 RATHER THAN THE ONE IN SLOT A13.
TC58 00002	ALL TC58 1-52>	D	DEC 68 - ADDS A COUNTER (AN R203 IN SLOT B29) TO PROVIDE AN END OF FILE DELAY AND ELIMINATES FALSE EOF DETECTION ON NINE TRACK UNITS OPERATING IN REVERSE. CHANGES LOGIC TO CLEAR THE "INTO RECORD" FLIP-FLOP WITH "IRD OVER" TO PROVIDE DETECTION OF EOF WHEN SPACING GREATER THAN ONE RECORD ON NINE TRACK UNITS.
TC58 00003	TC58 1-140>	D	JAN 70 - MODIFIES LOGIC SO THAT "RESET COMMAND" IS GENERATED PRIOR TO REMOVAL OF I/O BUS DATA INDEPENDENTLY OF MARGIN VOLTAGE. REQUIRED CHANGES TO TC50 DOCUMENTATION ARE INCLUDED IN ECO TC59-00006.
5408458 00001			FEB 70 - REFERENCE ECO 5408458-00001
TC58 B0004	TC58 1-145>	F	JUL 70 - SETS THE ERROR FLAG FLIP-FLOP DIRECTLY WHEN THE BEGINNING OF TAPE MARKER IS SENSED WHILE SPACING REVERSE. THIS ELIMINATES ERRATIC SETTING OF THE "ERROR FLAG" FLIP-FLOP BECAUSE OF INADEQUATE SET-UP TIME FOR THE DCD GATE ON ITS INPUT. (*$.00, **NONE, ***$.00)
TC58 C0005	>TC58 ALL TC58 ON SYSTEMS WITH RK08	F	APR 71 - ADDS A SWITCH TO DISABLE IOT 6731 IN THE TC58 WHEN RUNNING RK08 DIAGNOSTICS OR SYSTEMS PROGRAMS. THE IOT IS TO BE ENABLED ONLY WHEN RUNNING THE TC58 DIAGNOSTICS. (*$.00, **$.00, ***$.00)

LEGEND

FIELD CODE

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SYMBOL

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	PDP8- #262		
M	PDP8- #265		
N	PDP8- #279		
P	TC58-00001		
R	TC58-00002		
S	TC58-00003		
V	TC58-B0004		
W	TC58-C0005		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	PDP8- #262		
M	PDP8- #279		
N	TC58-00001		
P	TC58-00002		
R	TC58-00003		
S	TC58-B0004		

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TC58

Magtape Control for TU20

PROCESSOR TYPE PDP-8 Family and PDP-12

TC58-00006 CODE: P ML: Y
JUL-71 - PROBLEM: PDP-8/E System TU10 Acceptance Procedure not included in TC58 Master Drawing List.
CORRECTION: Add PDP-8/E System TU10 Acceptance Procedure, A-SP-TC58-0-8 , to Master Drawing List.
In-plant effectivity -06 documentation change only.

TC58-B0007 CODE: DF ML: Z WL: T
OCT-71 - PROBLEM 1: Newer circuits allow earlier clocking of MB into TC58.
CORRECTION 1: Clock MB on trailing edge of BT1 (TS3) .
PROBLEM 2: Ra's on W103 modules shorten IOP's for PDP-8/E.
CORRECTION 2: Replace W103's with W123's.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit PDP-8/E with TC58 as required (do not install in PDP-8 systems), all PDP-12's with TC58's
(Time To Install And Test 2 Hours) (Documentation $ 5.00 Parts $ 208.00 DEC Labor $ 50.00) (Kit Contents -FCO And Parts)

TC58-00008 CODE: P
DEC-71 - CORRECTION: Corrects description and adds part number for concealed stud on indicator panel detail, item #3 on Parts List.
In-plant effectivity -06 documentation change only.

TC58-C0009 CODE: F ML: AA WL: U
JUN-72 - PROBLEM: TC58 may space reverse an incorrect number of records because of noise in the gap between records.
CORRECTION: Increase, from three to six, the number of zero characters that need to be detected before **RECORD OVER** is set.

NOTE: See correction supplement FCO's TC58-C009A and TC58-C009B.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all TC58's.
(Time To Install And Test 5.0 Hours.) (Documentation $ 5.00 , Parts $ 29.00 , DEC Labor $ 135.00) (Kit Contents -FCO/Prints And Parts) Supplement FCO's TC58-C009A and TC58-C009B will also be included in the kit.

TC58-C009A CODE: F
JUN-72 - PROBLEM: FCO TC58-C0009 Mandatory ADD/DELETE sheet #3 is in error.
CORRECTION: Signal name EOR-3 0-should not have been changed. Disregard this change on sheet #3 of FCO TC58-C0009. Instead, a new signal, EOR-3 1-, connecting pins A11T to C25J should be added.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

TC58-C009B CODE: F
AUG-72 - PROBLEM: FCO TC58-C0009 assumes that a similar change, backspace incorrect, has already been made to the TC59 and does not duplicate the changes to the TC50. The TC59 ECO has not yet been generated.
CORRECTION: Update TC50 prints and add R205 to the Master Drawing List.

NOTE: This FCO creates TC50 ML revision "S ".
In-plant effectivity -Unchanged
Field effectivity -Unchanged

TC58-00010 CODE: P ML: AB
JUL-72 - CORRECTION: Revise and redraw the Accessory List drawing.
In-plant effectivity -06 documentation change only

TC58-00011 CODE: P ML: AC
JUL-72 - PROBLEM: TU10 acceptance criteria for PDP-8/E systems are unnecessarily strict in certain areas, causing rejection of good machines.
CORRECTION: Change acceptance criteria to agree with criteria for PDP-8 systems.
In-plant effectivity -06 documentation change only

TC58-C0012 CODE: F ML: AD WL: V
DEC-72 - PROBLEM 1: If a READ COMPARE error occurs, a RECORD LENGTH error is erroneously indicated.
CORRECTION 1: Make RC ERROR inhibit '÷ 1 to ca , but allow data breaks.
PROBLEM 2: DCD level input to READ COMPARE ERROR flip-flop has insufficient set-up time, causing RC ERRORS to be indicated when the compare is good.
CORRECTION 2: Delay CHECK DB NOT EQUAL TO 0 1 usec rather than 400 nsec from **BMB TO DB** .

NOTE: This FCO creates TC50-O ML revision "U ".
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all TC58's when symptoms are present.
(Time To Install And Test 2.0 Hours)
(Kit Contents -FCO/Prints)

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TR05

Control for PEC 6000/7000

PROCESSOR TYPE PDP-8, PDP-11, PDP-12 and PDP-15

TR05-B0001 CODE: DF ML: A WL: A
JUL-71 - PROBLEM 1: The TR05 Magtape Controller does not write the correct CRC character at the end of a record on a nine track transport. Error occurred in Wire List. Prints show correct signal.
CORRECTION 1: Change Wire List and field retrofit all logics.
PROBLEM 2: SKIP ON TCR instruction will skip when indicator for TCR is off.
CORRECTION 2: Drive the input to the TCR indicator driver from the other side of the MOVE flip-flop.
PROBLEM 3: It is not always possible to set the STOP PULSE delay to 1 usec.
CORRECTION 3: Change delay tap connections on M302 and readjust.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all TR05's
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts None) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents - FCO/Prints)

TR05-C0002 CODE: DF ML: B WL: B
JUL-71 - PROBLEM: When a DM04 is used, the B BREAK signal is removed at the end of TS3; this causes a marginal condition when loading REG .
CORRECTION: Clear REG at the beginning of TS3 and load it at the end of TS3.

NOTE: This FCO is superseded by FCO TR05-C0004.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all TR05's on systems with DM04
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints)

TR05-00003 CODE: P ML: C
SEP-71 - CORRECTION: Correct drawing D-BS-TR05-0-03 to show the ILLEGAL flip-flop, M205, correctly.
In-plant effectivity -06 documentation change only

TR05-C0004 CODE: DF ML: D WL: C
SEP-71 - PROBLEM: SET REG H is asserted for 50 nsec prior to CL REG L . This is incorrect. CL REG L should occur on the leading edge of TS3 H , and SET REG H on the trailing edge of TS3 H . Propagation time in the enabling circuitry of the B31T2 delay circuit is the cause of the unwanted SET REG H pulse.
CORRECTION: This FCO supersedes FCO TR05-C0002 and is to be installed instead. Change the circuitry to eliminate the propagation time problem; also change the delay circuitry to allow greater flexibility in setting the CL REG and SET REG times.

NOTE 1: The following ADD/DELETE's are applicable if FCO TR05-C0002 has not been installed: DELETE D09H2 to D08L1, ADD D09H2 to B31P2, B31M2 to B31N2, B31N2 to A26U1, B31T2 to C01N1, and C01P1 to D08L1.

NOTE 2: See continuation supplement FCO TR05-D0007.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all TR05's
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts None , DEC Labor -See Note) Note: The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO Only)

TR05-00005 CODE: P ML: E WL: D
DEC-71 - PROBLEM: This ECO has been installed in all TR05's since initial testing. Prints were updated but Wire List never changed.
CORRECTION: Update the Wire List accordingly.
In-plant effectivity -06 documentation change only

TR05-00006 CODE: D
DEC-71 - PROBLEM: A customer wants to use PEC 6 X 60 ips synchronous read/write magnetic tape transports on a TR05 controller in place of the usual 37.5 ips transports.
CORRECTION: Change motion timing and the write clock frequency to handle faster transport.
In-plant effectivity -TR05 #34 only

TR05-D0007 CODE: DF ML: F
FEB-72 - PROBLEM 1: ECO TR05-00004 did not specify the delay setting for the M302, location B31, output T2.
CORRECTION 1: Delay setting should be .1 Usec. PROBLEM 2: Wire run missing from sheet 4 of 6 in ECO TR05-00004.
CORRECTION 2: Add wire run.
In-plant effectivity -Retrofit immediately
Field effectivity -Retrofit all TR05's
(Time To Install And Test .5 Hour) (Kit Contents -FCO/Prints)

TR05-00008 CODE: D
APR-72 - PROBLEM: TR05 maintenance device code 73 conflicts with RK8 when both units are in same system.
CORRECTION: Add switch to disable device code 73 in TR05 when running RK8 diagnostics or RK8 system programs. Enable device code 73 in TR05 only when running TR05 diagnostics. The switch is wired from A01T1 to A28V2..
In-plant effectivity -03 * -Only in systems with TR05 and RK8

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ECO SYNOPSES FOR LOGIC OR OPTION

MAG TAPE UNIT **TU10**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MARCH 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00001	>TU10	D	ECO RELEASE DATE - MAY 1970 CORRECTION: ORDERS THE SCRAPPING OF ALL 7407700 SILK SCREENS. IN-PLANT EFFECTIVITY - SCRAP IMMEDIATELY "D" CODED
TU10 00002	N.A.	P	ECO RELEASE DATE - JULY 1970 CORRECTION: INATIVATES THE SC DRAWING. IT WILL BE REPLACED LATER WITH A PURCHASE SPECIFICATION. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00003	>TU10	M	ECO RELEASE DATE - JULY 1970 CORRECTION: CHANGES DIMENSIONS TO MAKE FABRICATION OF THE PART EASIER. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00004	>TU10	M	ECO RELEASE DATE - JULY 1970 CORRECTION: INCREASES MATERIAL THICKNESS FOR THE CLIP. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00005	>TU10	M	ECO RELEASE DATE - JULY 1970 CORRECTION: CHANGE SEPARATOR DIMENSTION TO ENSURE PROPER FIT AND TO AGREE WITH DIE SETUP WHICH THE SHOP IS USING. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00006	>TU10	M	ECO RELEASE DATE - AUGUST 1970 CORRECTION: CHANGES MECHANICAL DIMENSIONS TO ENSURE CORRECT HOLE ALIGNMENT. IN-PLANT EFFECTIVITY - IMMEDIATE REWORK "M" CODED
TU10 00007	N.A.	P	ECO RELEASE DATE - AUGUST 1970 PROBLEM: DESCRIPTION OF FOAM PART DOES NOT AGREE WITH TYPE NOW BEING USED. CORRECTION: CHANGE POLYURETHANE FOAM 1/2" THICKNESS TO READ POLYETHELENE WHITE FOAM 1/2" THICKNESS. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED

LEGEND

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SYMBOL
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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00008	>TU10	M	ECO RELEASE DATE - AUGUST 1970 CORRECTION: CHANGE MATERIAL TO STAINLESS STEEL TO ELIMINATE FINISHING OPERATION. ENLARGE HOLES TO PROVIDE BETTER FIT. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00009	>TU10	M	ECO RELEASE DATE - AUGUST 1970 PROBLEM: COST TO MACHINE HOLES IN DECK PLATE WAS TOO EXPENSIVE BOTH IN TIME AND MONEY. CORRECTION: ADDED TWO THRU HOLES AND ONE C'BORED HOLE WHICH REQUIRES LESS MACHINING TIME. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00010	>TU10	M	ECO RELEASE DATE - SEPTEMBER 1970 PROBLEM 1: ROLLER COVER THICKNESS NOT REQUIRED TO SUPPORT PRIMARY FUNCTION OF THE PART. CORRECTION 1: REDUCED THICKNESS OF ROLLER COVER. PART CAN NOW BE MADE FROM STANDARD STOCK. PROBLEM 2: FINISH ON COVER, HEAD; HINGE TOP AND BOTTOM; BRACE AND BUFFER COVER TOO COSTLY AND NOT UNIFORM IN APPEARANCE. CORRECTION 2: CHANGED FINISH TO PANEL. ALUMINUM LESS EXPENSIVE IN BOTH MATERIAL LAND TIME. PROBLEM 3: HOLE PATTERNS ON POWER CONTROL BRACKET DID NOT CONFORM WITH MODULE BOARD LAYOUT. CORRECTION 3: CORRECTED HOLE PATTERN LAYOUT. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00011	>TU10	M	ECO RELEASE DATE - SEPTEMBER 1970 PROBLEM: MINIATURE PCB RETAINERS ARE BEING MOUNTED WRONG. CORRECTION: MOUNT PCB RETAINERS TO BRACKET WITH LARGER FLARE AT OPEN SIDE. IN-PLANT EFFECTIVITY - IMMEDIATE REWORK "M" CODED
TU10 00012	>TU10	M	ECO RELEASE DATE - SEPTEMBER 1970 PROBLEM: THIRD DATUM PLANE IS NOT DEFINED ON PRINT. DIMENSIONS ALLOW VENDOR TO ADD MATERIAL FOR CASTING PART AT HIS OWN DISCRETION. CORRECTION: ADDED "2" DATUM PLANE TO DRAWING AND CLARIFIED AMOUNT OF STOCK ADDED TO SURFACES WHICH ARE MACHINED. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED
TU10 00013	N.A.	P	ECO RELEASE DATE - OCTOBER 1970 CORRECTION: CORRECTS AN MD DRAWING THAT WAS IN ERROR. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00014	>TU10	M	ECO RELEASE DATE - NOVEMBER 1970 PROBLEM 1: INTERFERENCE OF TAPE WITH BOTTOM EDGE OF ROLLER RAMP. CORRECTION 1: APPLY A BEVEL CUT TO BOTTOM OF ROLLER RAMP TO CLEAR TAPE PATH. PROBLEM 2: HOLE SIZES AND TOLERANCE NOT CLOSE ENOUGH TO GUARANTEE CLEARANCE AT ASSEMBLY IN ALL CONDITIONS. CORRECTION 2: CORRECTED HOLE SIZES AND REDUCED TOLERANCE ON HOLE PATTERN. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

MAG TAPE UNIT **TU10**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MARCH 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00015	>TU10	M	ECO RELEASE DATE - NOVEMBER 1970 CORRECTION: ADDS MOUNTING HOLES FOR ELASPED TIME METER. RELOCATES RELAY TO ELIMINATE INTERFERENCE WITH WIRING. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED
TU10 00016	>TU10	M	ECO RELEASE DATE - DECEMBER 1970 PROBLEM: MORE THAN ONE HOLE PATTERN WAS REQUIRED TO USE MORE THAN ONE TYPE OF READ/WRITE HEAD AVAILABLE FOR USE ON THE UNIT. CORRECTION: STANDARDIZED HOLE PATTERN FOR ALL READ/WRITE HEADS. IN-PLANT EFFECTIVITY -PHASE-IN "M" CODED
TU10 00017	N.A.	P	ECO RELEASE DATE - DECEMBER 1970 PROBLEM 1: TWO "G" HOLES SHOULD NOT BE SO DESIGNATED ON PRINT E-IA-5308786-0-0. FOUR "G" HOLES ARE NOT REQUIRED. CORRECTION 1: CHANGE TWO "G" HOLES TO "A" HOLES; REMOVE FOUR "G" HOLES AND INSERTS. PROBLEM 2: "B" HOLES HAVE UNCLEAR DIMENSIONS ON PRINT D-IA-5308784-0-0. CORRECTION 2: ADD DIMENSIONS FOR "B" HOLES. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00018	>TU10	M	ECO RELEASE DATE - DECEMBER 1970 PROBLEM: SATIN PAINT ON DOOR SHOWS FINGER PRINTS AND BURNISH MARKS. CORRECTION: ELIMINATE SILK SCREEN AND PAINT DOOR BLACK TWEED. IN-PLANT EFFECTIVITY - 03 REWORK "M" CODED
TU10 00019	>TU10	M	ECO RELEASE DATE - DECEMBER 1970 PROBLEM 1: ON DRAWING 7407950 A CLOSE TOLERANCE DIMENSION IS SHOWN FOR A NON-CRITICAL DIAMETER AND IT IS A DIFFICULT DIMENSION TO INSPECT. CORRECTION 1: RELAX TOLERANCE ON THIS DIMENSION. PROBLEM 2: ON DRAWING 5309183, UNIT IS TOO DIFFICULT TO MAKE FROM STOCK BY SHOP. CORRECTION 2: ALLOW THE SHIELD TO BE PUNCHED BY A PROFESSIONAL STAMPING HOUSE WITH A STANDARD DIE. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00020	>TU10	M	ECO RELEASE DATE - DECEMBER 1970 PROBLEM 1: ADDED STOCK ON MACHINED SURFACES IS TOO MUCH AND REQUIRES EXTRA MACHINING IN ORDER TO OBTAIN DIMENSIONS REQUIRED. CORRECTION 1: REVISED DIMENSIONING OF CASTING TO GIVE MACHINE SHOP LEAST AMOUNT OF STOCK TO BE REMOVED IN MACHINING OF CASTING. PROBLEM 2: NOT ENOUGH CONTROL ON CRITICAL SURFACES AND SOME DIMENSIONAL TOLERANCES TOO TIGHT FOR APPLICATION. CORRECTION 2: REVISED DIMENSIONS ON MACHINING DRAWING FOR GREATER CONTROL IN MACHINING. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00021	>TU10	M	ECO RELEASE DATE - JANUARY 1971 PROBLEM: TWO "C" HOLES ARE LOCATED INCORRECTLY ON PRINT D-IA-5308948-0-0. CORRECTION: RELOCATE TWO "C" HOLES. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED
TU10 00022	>TU10	M	ECO RELEASE DATE - JANUARY 1971 PROBLEM 1: DIFFICULTY IN ASSEMBLING UNIT HARNESS INTO UNIT. REQUIRES ADDED HOLES FOR LOCATION OF HARNESS SUPPORTS (7407989). CORRECTION 1: ADD "C" HOLES PER DRAWING #7407989. PROBLEM 2: LOGIC BRACKET 7407992 DIFFICULT TO ADJUST AND INTERFERES WITH WIRING . CORRECTION 2: ADD NOTCH AND REMOVE INSERTS FROM 7407992. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED
TU10 00023	>TU10	M	ECO RELEASE DATE - JANUARY 1971 CORRECTION: CHANGES THE FINISH SPECIFICATION ON NOTE 3 OF DRAWING D-IA-7407942-0-0 TO 9200150-94 (BLACK TWEED). IN-PLANT EFFECTIVITY - 03 REWORK "M" CODED
TU10 00024	>TU10	M	ECO RELEASE DATE - FEBRUARY 1971 CORRECTION: CHANGES DIMENSIONS TO MEET FABRICATION SPECIFICATIONS. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00025	>TU10	M	ECO RELEASE DATE - FEBRUARY 1971 CORRECTION: UPDATES DRAWINGS TO REFLECT FINAL MANUFACTURING PROCEDURES. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00026	N.A.	P	ECO RELEASE DATE - MARCH 1971 CORRECTION: CLARIFIES THE WIRE LENGTHS ON PRINT E-IA-7007250-0-0. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00027	>TU10	M	ECO RELEASE DATE - MARCH 1971 CORRECTION: CORRECTS SEVERAL PRINT ERRORS. CHANGES A DIAMETER TO EASE ASSEMBLY AND FABRICATION. IN-PLANT EFFECTIVITY - PHASE-IN "M" CODED

LEGEND

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

MAG TAPE UNIT **TUI0**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MARCH 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00028	N.A.	P	ECO RELEASE DATE - MARCH 1971 CORRECTION: CORRECTS PARTS ERRORS ON PRINT D-IA-7007057-0-0. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00029	>TU10	D	ECO RELEASE DATE - MARCH 1971 PROBLEM 1: TU10 WIRED ASSEMBLY 7006755-0-0 DOES NOT CONTAIN WIRE WRAP FOR TU10 MASTER SYSTEMS. CORRECTION 1: CHANGE TU10 WIRED ASSEMBLY BUSSING AND WIRE LIST ADD EXTERNAL COMPONENTS PER ITEMS 9 AND 10 EXTERNAL COMPONENT TABLE. PROBLEM 2: ALL TU10 WIRED ASSEMBLIES REQUIRE FILTER CAPACITORS ON VOLTAGE SUPPLY LINES TO INCREASE NOISE IMMUNITY OF TU10 SYSTEMS. CORRECTION 2: RETROFIT ALL TU10 LOGIC ASSEMBLIES WITH "LUF" CAPACITORS AS SPECIFIED IN THE EXTERNAL COMPONENT TABLE, DRAWING C-AD-7006754-0-0. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED ML REVISION "A" AND WL REVISION "A" ARE CREATED
TU10 00030	>TU10	D	ECO RELEASE DATE - APRIL 1971 PROBLEM: REPLACE G934 BRAKE ACTUATOR WITH G9340 AND G9341. CORRECTION: CHANGE TU10 WIRING AND PRINTS ACCORDINGLY. REWORK P03 PER THIS ECO. REWORK REVISION "A" PER THIS ECO. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED ML REVISION "B" AND WL REVISION "B" ARE CREATED
TU10 00031	>TU10	M	ECO RELEASE DATE - APRIL 1971 CORRECTION: CORRECTS SEVERAL PRINTS TO DEFINE VARIOUS MECHANICAL OPERATIONS. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00032	>TU10	M	ECO RELEASE DATE - APRIL 1971 PROBLEM 1: ACCEPTANCE CRITERIA AND ASSEMBLY & TEST PROCEDURE MISSING FROM PRINT SET. CORRECTION 1: ADD ACCEPTANCE AND ASSEMBLY & TEST PROCEDURE. PROBLEM 2: UNIT REQUIRES CUSHIONED SKID IN SHIPMENT TO REDUCE SHOCK AND VIBRATION. CORRECTION 2: INITIATE NEW CABINET CONFIGURATION TO INCLUDE NEW SKID AND ADD TO TU10 DRAWINGS. PROBLEM 3: LOCATION OF UNIT ASSEMBLY IN CABINET IS NOT SPECIFIED. CORRECTION 3: ADD NOTES TO UNIT ASSEMBLY DRAWING TO SPECIFY LOCATION OF MOUNTING HARDWARE IN CABINET. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED ML REVISION "C" IS CREATED

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	TU10-00029		
B	TU10-00030		
C	TU10-00032		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	TU10-00029		
B	TU10-00030		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00033	N.A.	P	ECO RELEASE DATE - MAY 1971 PROBLEM: CHECKOUT PROCEDURE DOES NOT SHOW HOW TO TEST A MASTER TAPE DRIVE. CORRECTION: MODIFY DOCUMENTS TO SHOW MASTER AND SLAVE CHECKOUT PROCEDURE. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "D" IS CREATED
TU10 00034	N.A.	P	ECO RELEASE DATE - MAY 1971 CORRECTION: INCORPORATE NEW MASTER LIST A-ML-TU10-0. OBSOLETE MASTER LISTS TU10-EE/EJ AND TU10-FE/FJ. UPDATE THE DRAWING INDEX TO REFLECT THIS CHANGE. IN-PLANT EFFECTIVITY - DOCUEMNTATION CHANGE ONLY "P" CODED ML REVISION "0" IS CREATED
TU10 00035	>TU10	M	ECO RELEASE DATE - MAY 1971 CORRECTION: DOCUMENTS CHANGES TO VARIOUS MECHANICAL SPECIFICATIONS. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED
TU10 00036	N.A.	P	ECO RELEASE DATE - MAY 1971 CORRECTION: UPDATES DRAWINGS TO THE LATEST REVISIONS. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "A" IS CREATED
TU10 00037	>TU10	D	ECO RELEASE DATE - MAY 1971 PROBLEM 1: SIGNAL ON B12H2 SHOULD BE "RWCLR H" INSTEAD OF "ERWS H". CORRECTION 1: CHANGE WIRING AND WIRE LIST PER ADD/DELETE LIST. CORRECTION 2: CHANGE INCORRECT SIGNAL NAMES ON WIRE LIST. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED ML REVISION "B" AND WL REVISION "C" ARE CREATED
TU10 00038	>TU10	M	ECO RELEASE DATE - JUNE 1971 CORRECTION: CHANGES A DIMENSION SPECIFICATION. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00039	>TU10	M	ECO RELEASE DATE - JUNE 1971 CORRECTION: CHANGES SEVERAL DIMENSION SPECIFICATIONS. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00040	>TU10	M	ECO RELEASE DATE - JUNE 1971 CORRECTION: CHANGES HOLE SIZES IN THE HEAD MOUNTING PLATE. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00041	>TU10	M	ECO RELEASE DATE - JUNE 1971 CORRECTION: CHANGES SEVERAL DIMENSION SPECIFICATIONS. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED

LEGEND

FIELD CODE

F = Field action may be required
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P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
D	TU10-00033		
0	TU10-00034		
A	TU10-00036		
B	TU10-00037		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
C	TU10-00037		

E C DEC-O-LOG Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

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ECO SYNOPSES FOR LOGIC OR OPTION

MAG TAPE UNIT **TUIØ**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MARCH 1972	Ø

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 B0042	ALL TU10	DF	ECO RELEASE DATE - JUNE 1971 PROBLEM 1: ON TU10 MASTER, POWER INDICATOR LIGHT IS NOT PRESENTLY CONTROLLED FROM TU10 POWER SWITCH. CORRECTION 1: REWIRE THE LAMP DRIVER SLOT TO POWER LAMPS FROM UNREGULATED SUPPLY. PROBLEM 2: G933 REQUIRES DIFFERENT INPUT SIGNAL. CORRECTION: CHANGE A SIGNAL RUN ON EACH G933. NOTE: THIS FCO MUST BE INSTALLED IN CONJUNCTION WITH FCO'S G9340-80002 AND G933-B0006. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - RETROFIT ALL TU10 "DF" CODED TIME TO INSTALL AND TEST - 2.0 HOURS ML REVISION "C" IS CREATED TIME TO INSTALL AND TEST - 2.0 HOURS THIS FCO IS NO CHARGE TO CUSTOMER. ORDERED KITS WILL INCLUDE FCO AND PRINTS.
TU10 00043	N.A.	P	ECO RELEASE DATE - JULY 1971 PROBLEM: PROCEDURE FOR ASSEMBLING AND TESTING THE TU10 ARE NOT VALID FOR 240 VAC TU10'S. CORRECTION: UPDATE PROCEDURE FOR ASSEMBLING AND TESTING THE TU10. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00044	>TU10	M	ECO RELEASE DATE - JULY 1971 PROBLEM: SUPPORT FOAM ON VACUUM MOTOR CLEAT IS BEING APPLIED WITH STRIP FOAM. PROCESS IS TEDIOUS AND PRONE TO MISALIGNMENT. CORRECTION: NEW SUPPORT FORAM PIECE IS STAMPED OUT WITH AN INEXPENSIVE STEEL RULE DIE ALLOWING EASY APPLICATION AND CORRECT ALIGNMENT. IN-PLANT EFFECTIVITY - Ø1 PHASE-IN "M" CODED ML REVISION "D" IS CREATED
TU10 00045	>TU10	M	ECO RELEASE DATE - JULY 1971 PROBLEM: EXCESSIVE COMMUTATOR WEAR AND SOME LOADING FAILURES ON 240V MACHINES CAUSED BY PHASE CONTROLLING A 115V MOTOR AT 240V. CORRECTION: ADD STEP-DOWN TRANSFORMER TO RUN VACUUM MOTOR. IN-PLANT EFFECTIVITY - Ø3 REWORK "M" CODED ML REVISION "E" IS CREATED

LEGEND

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SYMBOL
- >= ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
C	TU10-00042		
D	TU10-00044		
E	TU10-00045		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
D	TU10-00042		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00046	>TU10	M	ECO RELEASE DATE - JULY 1971 PROBLEM: CUSHIONED TU10 SHIPPING SKIDS BECOME DELAMINATED AND DECK CAN SEPARATE FROM SKID STRINGERS. CORRECTION: ADD FOUR BOLTS AS SPECIFIED TO PREVENT DELAMINATION. IN-PLANT EFFECTIVITY - 03 REWORK "M" CODED
TU10 00047	N.A.	P	ECO RELEASE DATE - JULY 1971 CORRECTION: UPDATES THE TU10 PRINT SET. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "F" IS CREATED
TU10 00048	>TU10	M	ECO RELEASE DATE - AUGUST 1971 CORRECTION: CORRECTS ERRORS ON DRAWING 7407941 AND DOCUMENTS A MECHANICAL CHANGE ON DRAWING 7408003. IN-PLANT EFFECTIVITY - 01 PHASE-IN "M" CODED
TU10 00049	>TU10	D	ECO RELEASE DATE - AUGUST 1971 CORRECTION: CORRECTS SEVERAL ERRORS IN THE TU10 WIRE LIST. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED ML REVISION "H" AND WL REVISION "E" ARE CREATED
TU10 00050	>TU10	D	ECO RELEASE DATE - AUGUST 1971 CORRECTION: CORRECTS SEVERAL PRINT ERRORS WITH RESPECT TO TERMINATORS, M896, AND CHECKOUT PROCEDURE. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED ML REVISION "J" IS CREATED
TU10 00051	>TU10	M	ECO RELEASE DATE - OCTOBER 1971 CORRECTION: CHANGES SEVERAL DIMENSION SPECIFICATIONS. IN-PLANT EFFECTIVITY - 01 PHASE -IN "M" CODED
TU10 00052	>TU10	M	ECO RELEASE DATE - OCTOBER 1971 PROBLEM 1: FAN CONNECTOR COMPATIBLE WITH POWER CONTROL REMOTE TURN ON. CORRECTION 1: CHANGE FROM 3 PIN MATE-N-LOCK TO 4 PIN MATE-N-LOCK. PROBLEM 2: STEP DOWN TRANSFORMER NOW BEING USED TO RUN VACUUM MOTOR ON 230V SYSTEMS. CORRECTION 2: DELETE TRANSFORMER ASSEMBLY FROM BACK OF CABINET. PROBLEM 3: ELAPSED TIME INDICATOR FOR HEAD WEAR IS TO BE ADDED. CORRECTION 3: ADD ELAPSED TIME INDICATOR ASSEMBLY 12-10721. PROBLEM 4: NEW H603 REQUIRES TAPE TRANSPORT ASSEMBLY DRAWINGS D-AD-7006756-0-0 AND A-PL-7006756-0-0. CORRECTION 4: CHANGE D-AD-7006756-0-0 AND A-PL-7006756-0-0 PER ECO. CORRECTION 5: CORRECTS SPECIFICATIONS ON DRAWING A-SP-TU10-0-19. PROBLEM 6: MASTERS USING POWER FROM CONTROLLER POWER SUPPLY. CORRECTION 6: USE H730 POWER FOR COMPLETE MASTER. IN-PLANT EFFECTIVITY - REWORK WHEN USING T-9147-D TRANSFORMER ON H730 "M" CODED ML REVISION "K" IS CREATED

LEGEND

FIELD CODE

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
F	TU10-00047		
H	TU10-00049		
J	TU10-00050		
K	TU10-00052		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	TU10-00049		

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ECO SYNOPSES FOR LOGIC OR OPTION

MAG TAPE UNIT **TU10**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MARCH 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU10 00053	N.A.	P	ECO RELEASE DATE - NOVEMBER 1971 CORRECTION: CORRECTS FINAL RELEASE DRAWINGS IN ECO TU10-00051. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED
TU10 00054	>TU10	M	ECO RELEASE DATE - DECEMBER 1971 CORRECTION: ADDS SPECIAL LOGO'S, UNIVERSAL NAMEPLATE AND HARDWARE TO TU10. IN-PLANT EFFECTIVITY - 02 PHASE-IN "M" CODED ML REVISION "L" IS CREATED
TU10 00055	N.A.	P	ECO RELEASE DATE - FEBRUARY 1972 PROBLEM: CERTAIN PARTS REQUIRED FOR BUILDING THE TU10 CABINET ARE NOT CALLED OUT ON THE PARTS LIST NOR THE KIT LIST. CORRECTION: ADD NECESSARY PARTS TO PRINT. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY "P" CODED ML REVISION "M" IS CREATED
TU10 00056	>TU10	M	ECO RELEASE DATE - FEBRUARY 1972 CORRECTION 1: COST REDUCE THE CASTING BY ELIMINATING EXHAUST TUBE AND BACK THUS SIMPLIFYING CASTING PROCEDURE. CORRECTION 2: REDIRECT EXHAUST WITH PLENUM COVER AND DEFLECTOR TO REDUCE HEAT AT CRITICAL AREA. CORRECTION 3: ELIMINATE NEED TO REMOVE MOTOR TO CHANGE BRUSHES. IN-PLANT EFFECTIVITY - 02 PHASE-IN "M" CODED ML REVISION "N" IS CREATED
TU10 00057	>TU10	M	ECO RELEASE DATE - FEBRUARY 1972 CORRECTION: CHANGES SEVERAL DIMENSION SPECIFICATIONS. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "M" CODED ML REVISION "P" IS CREATED

LEGEND

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SYMBOL
- > = ECO applicable to future production

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	TU10-00054		
M	TU10-00055		
N	TU10-00056		
P	TU10-00057		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

TU10-0057A CODE: M
MAY-72 - PROBLEM: Wrong disposition code on ECO TU10-00057.
CORRECTION: Change disposition code on TU10-00057 from 03 (rework) to 02 (phase-in .
In-plant effectivity -02 phase-in

TU10-00058 CODE: M
MAR-72 - PROBLEM: Stripped threads on hose fitting which mates with the vacuum channel cover. There is not enough thread length on present insert due in part to thread relief on hose fitting.
CORRECTION: Change insert to #90-7605 and change hole size to .281.
In-plant effectivity -02 phase-in

TU10-00059 CODE: P
MAR-72 - PROBLEM: A-II-1209786-0-1 is incorrect.
CORRECTION: Replaces the original procedure with a revision "A " version.
In-plant effectivity -06 documentation change only

TU10-00060 CODE: M
APR-72 - CORRECTION: Enlarges height of the DEC magtape logo inlay which is too small for the casting.
In-plant effectivity -02 phase-in

TU10-00061 CODE: M
MAY-72 - PROBLEM: Present color of paint (panel aluminum) is impractical. It is too difficult to match, is difficult to clean, is impractical to paint on our conveyorized painting system due to special color.
CORRECTION: Change color to 92-00110-68 gray.
In-plant effectivity -02 phase-in

TU10-00062 CODE: P
MAY-72 - CORRECTION: Changes the color code number to 92-00150-68.

NOTE: This is a limited distribution ECO.
In-plant effectivity -02 phase-in

TU10-B0063 CODE: F
JUL-72 - PROBLEM 1: Shorting of Triac to chassis on power control board.
CORRECTION 1: Implement FCO 5408924-D0006.
PROBLEM 2: DV/DT limiting capacitor on power control board underrated.
CORRECTION 2: Implement FCO 5408924-B0007.
PROBLEM 3: Publicity inadequate when published under a "54 " number.
CORRECTION 3: Publish this ECO.
In-plant effectivity -None
Field effectivity -All TU10's requiring FCO's 5408924-D0006 and 5408924-B0007
(Time To Install And Test N/A) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

TU10-00064 CODE: D ML: R
JUL-72 - PROBLEM: A further ECO is necessary to implement ECO M7670-00002.
CORRECTION: Make changes to the Wire List and Bussing Print. M7676 revision "C " boards must be used when the TU10 logic is modified to this ECO level; revision "C " boards may also be used in all TU10's not so modified.
In-plant effectivity -02 phase-in

TU10-00065 CODE: P ML: S
JUL-72 - CORRECTION 1: Update the Accessory List to include cable requirements.
CORRECTION 2: Correct designation of note on the Module Utilization drawing.
CORRECTION 3: Update the Parts List.
In-plant effectivity -Documentation change only

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EC DEC-O-LOG Engineering Change Order Log

TU20

Datamec 7 or 9 Track 2020 Mag Tape

PROCESSOR TYPE All

TU20-00001 CODE: M
JUL-68 - PROBLEM: The sharp corners of the transport handle can cause injury or damage clothing.
CORRECTION: Add rounding to the corners.
In-plant effectivity -Phase-in

TU20-00002 CODE: DF ML: H WL: E
JUL-68 - PROBLEM: **MOTION** flip-flop can remain set when vacuum is lost. Programmers cannot tell difference between **SETTLING DOWN TIME** and a **NOT READY** condition that requires manual intervention.
CORRECTION: Added inverter clears **MOTION** flip-flop with **NOT VAC ON** . Added gating to produce a signal called **TRANSPORT SETTLING DOWN** . This signal is sent to the control unit.
In-plant effectivity -All future TU20's
Field effectivity -TU20's #1 thru #166
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

TU20-00003 CODE: P
NOV-68 - CORRECTION: Corrects paint specification
In-plant effectivity -Documentation change only

TU20-00004 CODE: P ML: J
NOV-68 - CORRECTION: Corrects errors in several prints.
In-plant effectivity -06 documentation change

TU20-00005 CODE: M
JAN-69 - PROBLEM: Three pronged switches are not secure enough.
CORRECTION: Add holes to spacer bar so that we can screw switches down to better secure them.
In-plant effectivity -All future TU20

TU20-E0006 CODE: F ML: K WL: F
APR-69 - PROBLEM: Need rewind/unload feature, as requested by PDP-10 customers.
CORRECTION: Add logic including an R202 in slot B21. Update Wire List and card deck. (on TM10, **CONO** 340,011000 is rewind/unload .
In-plant effectivity -Rework immediately
Field effectivity -All TU20 serial #1 thru 361
(Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

TU20-00007 CODE: M
JUN-69 - CORRECTION 1: Change the number of "B " holes to four in the top brace, 7406942.
CORRECTION 2: Correct the view of the right cover flange 7407104.
In-plant effectivity -All TU20's in process and all future

TU20-00008 CODE: M
JUN-69 - PROBLEM: Installation of inserts mars finish.
CORRECTION: Change note #4 to read: "install item #4--4 B places before finish ".
In-plant effectivity -Phase-in

TU20-00009 CODE: M ML: L
AUG-69 - PROBLEM 1: 50 cycle transformer assembly not shown on parts list and unit being installed breaks loose from mounting.
CORRECTION 1: Add new transformer assembly.
PROBLEM 2: Power distribution bracket not called out on assembly.
CORRECTION 2: Add bracket and mounting holes.
In-plant effectivity -Phase-in

TU20-00010 CODE: M
SEP-69 - CORRECTION: Specifies mounting bracket material and finish.
In-plant effectivity -All units

TU20-00011 CODE: M ML: B
SEP-69 - PROBLEM: Transport sags.
CORRECTION: Add upright stiffener to right front post.
In-plant effectivity -All units in process

TU20-00012 CODE: P
SEP-69 - CORRECTION: Specify direction of mounting bracket inserts.
In-plant effectivity -Phase-in

TU20-00013 CODE: P
SEP-69 - CORRECTION: Corrects prints to agree with manufacture of the glass support.
In-plant effectivity -Phase-in

TU20-00014 CODE: M
OCT-69 - PROBLEM: Right and left flange cover incorrect.
CORRECTION:ADD Slots and change hole locations on the left cover. Change hole location and show right hand instead of left hand on the right cover.
In-plant effectivity -Replace all in stock

TU20-B0015 CODE: F ML: M WL: H
DEC-69 - PROBLEM: Excessive skew or bad tape may cause the skew delays (R302's) to become paralized during their recovery period, thereby not clearing the read buffer and locking-out the tape control.
CORRECTION: Addition of R303 module with zero recovery time will always allow the read buffer to be cleared. **ERROR FLAG** will be raised. TC59 will retain control over unit. WC and CA may be incorrect. Programs must attempt a re-read of the data.

NOTE: This FCO must be installed on all real time systems.
In-plant effectivity -All future
Field effectivity -All TU20's serial #1 thru #537
(Time To Install And Test 1.3 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

TU20-00016 CODE: P
JAN-70 - PROBLEM: TU20-C and TU20-D configurations to be replaced by the TU10.
CORRECTION: Obsolete all TU20-C and TU20-D drawings.
In-plant effectivity -06 documentation change only

TU20-00017 CODE: P ML: N
FEB-70 - PROBLEM 1: Off line checkout procedure not documented on Master Drawing List.
CORRECTION 1: Assign number to new Check Out Procedure and Quality Control Check List.
CORRECTION 2: Add the TU20 Quality Control Check List to the Master Drawing List.
In-plant effectivity -Documentation change only

MISC-00064 ML: P

MISC-00075 ML: R

TU20-00018 CODE: P ML: S
JUL-71 - PROBLEM: External component list does not list all terminations.
CORRECTION: Add the following notes to the CP drawing: 1) C03V to ground, 100 ohm, (last drive on bus only); 2) A09P to ground, 100 ohm and .01 Uf in series, (last drive on bus only. Install on first and last if more than two drives .
In-plant effectivity -06 documentation change only

TU20-00019 CODE: D ML: T
AUG-71 - PROBLEM: Output of N59M transformer incorrect. Output voltage, when measured using cabinet as a reference ground, measures 55 VAC on each side of the plug. White wire should be neutral and red should be 100 volts to meet Field Service specifications.
CORRECTION: Add a wire from output N59M transformer to chassis ground; the wire to ground is from the white side of output.
In-plant effectivity -Phase-in as of September 17, 1971.

MISC-00086 ML: U

TU20-B0020 CODE: F ML: V
JUL-72 - PROBLEM: Not enough bus drive when operating a TU20 on the same bus as a TU10-A, TU40 and TU41.
CORRECTION: Change bus driver modules for DECSYSTEM-10 use. Replace R123's in slots B17, B18, and B24 with R663's. Replace R111 in slot B22 with R1110. Replace R113 in slot A22 with R1130.

NOTE: This FCO is to be implemented in conjunction with FCO TM10-B0019.
In-plant effectivity -Retrofit all drives that are operating on a DECSYSTEM-10.
Field effectivity -Retrofit all TU20's.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

TU20-00021 CODE: P ML: W
JUL-72 - CORRECTION: Update Accessory List.
In-plant effectivity -06 -Documentation change only

TU20-B0022 CODE: F ML: Y WL: J
MAR-73 - PROBLEM: Read/write thresholds on TU20 read amplifiers, G084, are not adjustable.
CORRECTION: Replace G084's with G087's and add a slice level control, G0870, in slot A29.

NOTE 1: When ordering parts kits for implementation of this ECO, 7 or 9 track must be specified. The kits are identical, except that for 7 track, seven G087's are required, and for 9 track, nine G087's are required, in addition to the G0870. Prices for the modules, as of the date of FCO release, are: G0870 $ 66.00 ; G087 $61.00 EACH. THE DEC ON-SITE LABOR CHARGE WILL BE THE TIME Required to install and test the FCO at the then current hourly labor rate.

NOTE 2: See continuation supplement FCO TU20-D0023 and correction supplement FCO TU20-C0024.
In-plant effectivity -Documentation/design change
Field effectivity -Retrofit all TU20's on DECSYSTEM-10
(Time To Install And Test 3.0 Hours.) (Documentation $ 5.00 , Parts -See Note , DEC Labor -See Note) (Kit Contents -FCO/Prints And Parts) Supplement FCO's TU20-D0023 and TU20-C0024 will also be included in the kit.

TU20-D0023 CODE: F
AUG-73 - PROBLEM: New G0870 Slice Control and G087 Read Amplifier are not compatible with present margin specifications.
CORRECTION: Change margin specifications.
In-plant effectivity -06 -Document correction
Field effectivity -Update TU20 documentation when FCO TU20-B0022 has been implemented.
(Time To Install And Test N/A) (Kit Contents -F992 FCO/Prints)

TU20-C0024 CODE: F ML: Z WL: K
AUG-73 - PROBLEM 1: Error in ADD/DELETE sheet and in Wire List of FCO TU20-B0022.
CORRECTION 1: Correct Wire List and ADD/DELETE sheet #6 of FCO TU20-B0022.
PROBLEM 2: Error in logic drawing D-BS-TU20-0-3.
CORRECTION 2: Correct print to new revision "J ".

NOTE: The only purpose of this FCO in the field is to correct ADD/DELETE errors in FCO TU20-B0022. ADD/DELETE sheet 2 of 3 of this FCO is to be substituted for sheet 6 of FCO TU20-B0022.
In-plant effectivity -Unchanged
Field effectivity -Unchanged
(Time To Install And Test N/A) (Kit Contents -F1007 FCO/Prints)

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E C DEC-O-LOG Engineering Change Order Log

TU30

Datamec 3030 Mag Tape Transport

PROCESSOR TYPE PDP-8, PDP-8/E, PDP-9, DECsystem-10, PDP-11, and PDP-15

TU30-00015 CODE: P
SEP-69 - CORRECTION: Correct Parts List and Assembly Drawing.
In-plant effectivity -06 documentation change only

TU30-00016 CODE: P
SEP-69 - PROBLEM: Drawing error.
CORRECTION: Corrects the Interconnection and Unit Assembly drawings, and the Parts List.

NOTE: This ECO creates TU30-AA ML revision "J ".
In-plant effectivity -06 -Documentation change only

TU30-00017 CODE: D
NOV-69 - PROBLEMPOWER receptacle on rear of fan housing wired for improper polarity.
CORRECTION: Change taps of AC wire from 728 Power Supply.

NOTE: This ECO creates TU30-AA ML revision "K ".
In-plant effectivity -All TU30's

TU30-B0018 CODE: F
JAN-70 - PROBLEM: Read amplifier gain set too low in early production TU30's. The transport fails to read certain worst-case data patterns that R TEST , Reliability Test, does not generate. M TEST usually fails.
CORRECTION: Increase the read amplifier gain and change the Checkout Procedure accordingly.

NOTE: This FCO creates TU30-AA and -BA ML revision "L ".
In-plant effectivity -TU30, #43 and all future
Field effectivity -Retrofit all TU30's, #1 thru #42
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO Only)

TU30-B0019 CODE: F
APR-70 - PROBLEM: R303 in rack "A " is being margined to wrong voltage.
CORRECTION: Correct TU30 specifications so that +10V margins will be +5V to +15V in rack "A ".

NOTE: This FCO creates TU30-AA ML revision "N "; also creates TU30-AB, -BA , and -BB ML revisions "M ".
In-plant effectivity -06 documentation change
Field effectivity -Update all customer print sets
(Time To Install And Test N/A) (Kit Contents -FCO Only)

TU30-B0020 CODE: F
JAN-71 - PROBLEM: This is a DEC distribution of a vendor FCO ; Hewlett Packard #13011A. EOT detection (set and clear of EOT flip-flop) not compatible with TU20, causes software problems.
CORRECTION: Change EOT printed circuit board operation to set EOT at the trailing edge of EOT pulse in FWD direction and reset EOT at same edge of EOT pulse in REV direction.
In-plant effectivity -05 retrofit
Field effectivity -Retrofit all TU30's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO And Parts)

TU30-00021 CODE: P
FEB-71 - PROBLEM: REWIND and UNLOAD delay times mis-labeled on COMMAND print.
CORRECTION: Change delay times notation from 12 usec to 20 usec on COMMAND print.

NOTE: This ECO creates TU30-AA, -AB, -BA , and -BB ML revisions "P ".
In-plant effectivity -06 documentation change only

TU30-B0022 CODE: F WL: H
AUG-71 - PROBLEM: Race condition; REWIND STATUS LEVEL sometimes inhibits LOAD POINT SEARCH .
CORRECTION: Add a delay (R303) in slot B25 to REWIND STATUS LEVEL .

NOTE: This FCO creates TU30-AA, -AB, -BA , and -BB ML revisions "R ".
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all TU30's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

TU30-B0023 CODE: F ML: A
JUL-72 - PROBLEM: Not enough bus drive when operating on the same bus as a TU10-A/TU40/TU41.
CORRECTION: Change bus driver modules as follows: Change B135's in slots A14 and B17 to B635's. Change B163's in slots C14, C16, D07, and D10 to R663's. Change B163's in slots C15 and D09 to B663's.
In-plant effectivity -Retrofit all TU30's on all DECSYSTEM-10's
Field effectivity -Retrofit all TU30's on all DECSYSTEM-10's
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

TU30-B0024 CODE: F ML: B WL: J
MAR-73 - PROBLEM: Read/write thresholds on TU30 read amplifiers, G084, are not adjustable.
CORRECTION: Replace G084's with G087's and add slice level control, G0870, in slot D25.

NOTE: When ordering parts kits for implementation of this FCO, 7 or 9 track must be specified. The kits are identical, except that for 7 track, seven G087's are required, and for 9 track, nine G087's are required, in addition to the G0870. Prices for the modules, as of the date of FCO release, are: G0870 $ 66.00 ; G087 $61.00 EACH. THE DEC ON-SITE LABOR CHARGE WILL BE THE TIME Required to install and test the FCO at the then current hourly labor rate.
In-plant effectivity -Documentation/design change
Field effectivity -Retrofit all TU30's
(Time To Install And Test 3.0 Hours.) (Documentation $ 5.00 , Parts -See Note , DEC Labor -See Note) (Kit Contents -FCO/Prints And Parts)

TU30-D0025 CODE: F ML: C
AUG-73 - PROBLEM: New G0870 Slice Control and G087 Read Amplifier are not compatible with present margin specifications.
CORRECTION: Change specifications accordingly.
In-plant effectivity -06 Document correction only
Field effectivity -Update TU30 documentation when FCO TU30-B0024 has been implemented.
(Time To Install And Test N/A) (Kit Contents -FCO/Prints)

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DEC-O-LOG

Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

DECTAPE TRANSPORT **TU55**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL EXCEPT PDP-8S	MAY 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
PDP-8 #45	TU55 1-51>	P	FEB 66 - REVISES ALL OF THE TU55 ELECTRICAL DRAWINGS.
PDP-8 #85	TU55 286>	F	AUG 66 - ADDS A CAPACITOR TO BYPASS THE AC SWITCH TO ELIMINATE NOISE.
PDP-8 #89	TU55 1-334>	F	SEP 66 - ADDS A RESISTIVE LOAD TO INSURE THAT THE SCR CIRCUIT WILL LATCH FASTER AND BE CONSISTENT.
PDP-8 #226	TU55 1100>	D	DEC 67 - ADDS A POWER-UP DELAY TO THE TU55 TO ELIMINATE TAPE SLAPPING.
PDP-8 #253	N.A.	P	MAR 68 - ADDS A NOTE TO THE TU55 BS PRINT SPECIFIYING THE USE OF A W512 WITH A RELAY DRIVER TYPE CONTROL OR A JUMPERED W990 OTHERWISE.
PDP-8 #254	N.A.	P	APR 68 - CORRECTS A NOTATIONAL REFERENCE TO W030 AND REFERS TO W990 INSTEAD. DEFINES THE INTERNAL JUMPERING CONFIGURATION OF THE W990. (ERROR CORRECTED BY ECO TU55-00001)
TU55 00001	N.A.	P	AUG 68 - CORRECTS AN ERROR IN ECO PDP-8 #254; DELETES AN ERRONEOUS REFERENCE TO A W512 AND SPECIFIES A W513 INSTEAD.
TU55 00002	>TU55	M	SEP 68 - MODIFIES THE TU55 FOR THE "NEW LOOK" IN DEC OPTIONS.
TU55 00003	>TU55	M	OCT 68 - CHANGES TRACK INSTALLATION TO FACILITATE IN-PLANT HANDLING.
TU55 00004	>TU55	M	NOV 68 - CHANGES THE BLACK-PAINTED SURFACE FINISH SPECIFICATION. (ERROR CORRECTED BY ECO TU55-00006)
TU55 00005	>TU55	M	NOV 68 - REPLACES THE ALUMINUM DISK ON THE HUB WITH PLASTIC.
TU55 00006	N.A.	M	NOV 68 - CORRECTS AN ERROR IN ECO TU55-00004; ADDS A SILK SCREEN CHANGE.

LEGEND

FIELD CODE
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- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES
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- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only. Installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP7- #46	K	PDP8- #254
B	#378	L	TU55-00001
C	PDP8- #45	M	TU55-00002
D	#2613	N	TU55-00005
E	PDP8- #85		
F	PDP8- #89		
H	PDP8-#226		
J	PDP8-#253		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	PDP7- #46		
B	#378		
C	PDP8- #45		
D	PDP8-#226		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU55 00007	>TU55	M	NOV 68 - INCREASES MECHANICAL TOLERANCES.
TU55 00008	AS ORDERED	D	JAN 69 - ADDS AN EMERGENCY "POWER OFF" SWITCH AS REQUIRED BY A CUSTOMER ORDER.
TU55 00009	>TU55	M	FEB 69 - CORRECTS FINISH SPECIFICATIONS.
TU55 00010	>TU55	M	MAR 69 - ENLARGES HOLES TO RECEIVE 10/32" INSERTS.
TU55 00011	>TU55	M	AUG 69 - CHANGES A THICKNESS DIMENSION.
TU55 00012	>TU55 FIELD RETROFIT AS REQUIRED	M	SEP 69 - SPECIFIES TU56 TAPE GUIDE #7407283 TO REPLACE TU55 GUIDE #7405112 AND TU56 COVER PLATE #7407282-1 AND -2 TO REPLACE TU55 PLATE #7405113-1 AND -2.
TU55 00013	>TU55	D	SEP 69 - SPECIFIES ROTRON OR BOXER FAN TO ELIMINATE THE POSSIBILITY OF STRAY FIELD NOISE AFFECTING CERTAIN TYPES OF LOGIC WHEN MOUNTED IN CLOSE PROXIMITY TO THE FAN MOTOR. CHANGES TU55 MOUNTING IN THE PDP-12.
TU55 00014	>TU55	M	DEC 69 - ADDS A SPACER STRIP TO PREVENT BOWING OF THE CASTING WHEN HOLD-DOWN SCREWS ARE TIGHTENED.
TU55 00015	>TU55	P	JAN 70 - CHANGES DIMENSIONS FOR MACHINING OF THE BASE PLATE.
PDP-12 00057	ALL PDP-12 WITH TU55	F	FEB 70 - PROVIDES A DECAL "0" TO BE PLACED OVER THE NUMERAL "8" ON THE UNIT SELECT SWITCH ON TU55 USED IN PDP-12 SYSTEMS. (*$.00, **$.00, $***.00)
TU55 00016	>TU55	M	MAR 70 - REPLACES ROLL PINS WITH DOWEL PINS IN THE TAPE GUIDE ASSEMBLY.
TU55 00017	>TU55	M	APR 70 - CHANGES HOLE DIMENSIONING FOR THE HINGED DOOR.
TU55 00018	>TU55	D	APR 70 - REPLACES THE ALUMINUM HUB WITH A NEW DESIGN PLASTIC TYPE WHICH SIMPLIFIES THE MOUNTING AND REMOVAL OF TAPE REELS.
TU55 00019	N.A.	P	JUN 70 - ADDS AN ACCESSORY LIST TO THE TU55 PRINT SET.

LEGEND

FIELD CODE

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SYMBOL

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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
P	TU55-00012		
R	TU55-00014		
S	TU55-00018		
T	TU55-00019		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

DUAL DECTAPE **TU56**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	SEPTEMBER 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU56 00001	>TU56	M	SEP 69 - MODIFIES MOUNTING, DIMENSIONS, FABRICATION, AND FINISH OF THE TRANSPORT AND POWER SUPPLY.
TU56 00002	>TU56	M	SEP 69 - DELETES "FWD" AND "REV" FROM DIRECTION-INDICATING ARROWS; THEY ARE NOT APPLICABLE TO ALL PRODUCT LINES.
TU56 00003	N.A.	M	OCT 69 - CORRECTS AND MODIFIES MECHANICAL PRINTS.
TU56 00004	>TU56	M	NOV 69 - ADDS CABLE CLAMPS AND CHANGES MACHINING DIMENSIONS.
TU56 00005	TU56 101-110>	D	DEC 69 - ADDS CABLE GROUNDS. CHANGES THE LOCATION OF AN EXTERNALLY-MOUNTED RESISTOR. ADDS DETAILS TO THE BS PRINT.
TU56 00006	>TU56	M	DEC 69 - CHANGES A CAST-HOLE DIMENSION.
TU56 00007	>TU56	M	DEC 69 - ADDS TERMINAL DESIGNATING DECALS TO THE #725 POWER SUPPLY.
TU56 00008	TU56 211>	D	JAN 70 - MODIFICATION OF THE 54-08500 PRINTED CIRCUIT MODULE MAKES IT NECESSARY THAT PRINT D-BS-TU56-0-TLD BE UPDATED. REFERENCE ECO'S 5408500-00001 AND TU56-00009.
TU56 00009	TU56 112>	D	JAN 70 - REPLACES AN M507, WHICH IS INEFFECTIVE IN THIS APPLICATION, WITH AN M531. MAKES CORRECTIONS TO LOGIC WIRING.
5408500 00001	>5408500	D	JAN 70 - MODIFIES THE WRITE ENABLE CIRCUIT SO THAT IT CAN DELIVER SUFFICIENT CURRENT (15 MA) TO 550 AND TC08 CONTROLLERS. ENLARGES THE LIGHT MOUNTING HOLES. ADDS TURN-ON SURGE PROTECTION FOR THE INDICATOR LAMPS. SPECIFIES CORRECT SWITCH MOUNTING LOCATION. REFERENCE ECO TU56-00008.

LEGEND

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SYMBOL
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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	TU56-00005		
B	TU56-00008		
C	TU56-00009		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	TU56-00005		
B	TU56-00009		

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU56 00010	>TU56	M	FEB 70 - CHANGES THE PROTECTION BLOCK MATERIAL TO ALUMINUM.
TU56 00011	>TU56	M	FEB 70 - CHANGES THE OVERLAY DIMENSIONS TO FIT THE P.M. CASTING MORE TIGHTLY.
TU56 00012	TU56 112>	P	FEB 70 - ADDS A NEW WIRING HARNESS TO THE TU56 PRINT SET.
TU56 00013	TU56 112>	M	FEB 70 - ADDS POWER WIRING TO THE LOGIC ASSEMBLY.
TU56 00014	TU56 112>	M	FEB 70 - PROVIDES SUPPORT BRACKETS FOR USE WHEN INSTALLING THE TU56 IN A CABINET. DEFINES THE CORRECT SPACING OF THE HUBS ON THE MOTOR SHAFTS.
TU56 00015	>TU56	M	FEB 70 - MAKES CHANGES AND CORRECTIONS TO HARDWARE WHICH RESOLVE VARIOUS MECHANICAL PROBLEMS.
TU56 00016	>TU56	M	FEB 70 - MAKES CHANGES AND CORRECTIONS TO HARDWARE WHICH RESOLVE VARIOUS MECHANICAL PROBLEMS.
TU56 00017	>TU56	M	FEB 70 - CHANGES THE PARTS LIST TO INDICATE THOSE COMPONENTS WHICH REQUIRE TERMIPOINT CONNECTORS.
TU56 00018	>TU56	M	MAR 70 - ADDS A FABRICATION INSTRUCTION: "DOWEL PIN HOLES ARE TO BE MASKED BEFORE HARDCOATING".
TU56 00019	TU56 112>	D	MAR 70 - MAKES SEVERAL CORRECTIONS TO THE DRAWING OF THE INTERCONNECTING CABLE.
TU56 00020	N.A.	P	MAR 70 - CHANGES PRINTS TO SHOW THE BUTTON, ROCKER SWITCH ASSEMBLY AS PART OF THE MAIN ASSEMBLY.
TU56 00021	TU56 112-482>	D	APR 70 - ADDS A CABLE TO FACILITATE SERVICING OF THE LOGIC. REMOVES DC DYNAMIC BRAKING AND CAPACITOR DISCHARGE CIRCUITRY TO SLOW BRAKING.

LEGEND

FIELD CODE

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
D	TU56-00012		
E	TU56-00013		
F	TU56-00014		
H	TU56-00015		
J	TU56-00017		
K	TU56-00021		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
C	TU56-00021		

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ECO SYNOPSES FOR LOGIC OR OPTION

DUAL DECTAPE **TU56**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	SEPTEMBER 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU56 00022	N.A.	P	APR 70 - CORRECTS SEVERAL DRAWINGS WITH RESPECT TO HUBS AND THE PANEL SUPPORT ARM.
TU56 00023	>TU56	M	APR 70 - CORRECTS SEVERAL INCIDENTAL HARDWARE PROBLEMS.
TU56 00024	>TU56	D	MAY 70 - ADDS A SPRING AND BUSHING ASSEMBLY TO PROVIDE DRAG TO THE MOTOR AND PREVENT CREEPING.
TU56 00025	TU56 100-482>	D	MAY 70 - REMOVES "DUMP" WIRING.
TU56 00026	TU56 100-482>	D	MAY 70 - CHANGES LOGIC TO CLEAR "MO" WHEN THE UNIT IS SET TO "OFF LINE".
TU56 00027	>TU56	M	MAY 70 - CLARIFIES MECHANICAL DIMENSIONS FOR THE SUPPORT BRACKET ASSEMBLY.
TU56 00028	TU56 100-482>	D	MAY 70 - REPLACES A W990 WITH A W941 JUMPER/EXTENDER CARD TO ELIMINATE MANUAL INSERTION OF JUMPER WIRES AND TO FACILITATE TESTING.
TU56 00029	>TU56	M	MAY 70 - ELIMINATES SPACERS AND SPECIFIES THAT THE FAN SCREEN IS TO BE MOUNTED DIRECTLY TO THE HOUSING.
TU56 00030	>TU56	M	JUN 70 - ADDS INCIDENTAL SURFACE FINISHING AND HOLE DRILLING DETAILS TO A TU56 MECHANICAL DRAWING.

LEGEND

FIELD CODE

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SYMBOL

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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
L	TU56-00022		
M	TU56-00025		
N	TU56-00026		
P	TU56-00028		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
TU56 00031	>TU56	M	JUN 70 - SPECIFIES THAT THE BLACK OXIDE COATING PROCESS IS TO INCLUDE THE LOCK-PIN HEAD.
TU56 00032	N.A.	P	JUN 70 - ADDS AN ACCESSORY LIST TO THE TU56 PRINT SET.
TU56 00033	>TU56	M	JUL 70 - CORRECTS A MECHANICAL DRAWING TO INCLUDE CORRECT MACHINING INSTRUCTIONS.
TU56 00034	>TU56	M	JUL 70 - PROVIDES ADDITIONAL HOLES IN BOTH THE MAIN CHASSIS AND POWER SUPPLY FOR THE MOUNTING OF A SHIPPING BRACKET.
TU56 00035	>TU56	M	JUL 70 - ADDS A GUARD PLATE OVER THE SWITCH CONTROL PANEL TO PROTECT THE +5 VOLT AND -15 VOLT ETCH LINES WHEN THE FRONT PANEL IS OPEN.
TU56 00036	>TU56	M	JUL 70 - EASES TOLERANCES ON NONCRITICAL MECHANICAL DIMENSIONS.

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
R	TU56-00032		
S	TU56-00035		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

TU56-00037 CODE: M ML: T
JUL-70 - PROBLEM: Bracket 7408007 could not be used in 30 inch cabinets.
CORRECTION: Replaced old bracket with new bracket for mounting in any size cabinets.
In-plant effectivity -Retrofit all TU56's as of august 1, 1970.

TU56-00038 CODE: M
AUG-70 - PROBLEM: Head cleaning solvent dissolves paint on overlay and cover plates.
CORRECTION: Hard coat the overlay and cover plates.
In-plant effectivity -Retrofit all TU56's immediately.

TU56-00039 CODE: P ML: U
AUG-70 - PROBLEM: Accessory List incomplete. Shows no variations for 12 or 18 bit formatted DECtape. Customer should receive two dectapes with each TU56.
CORRECTION: Add part numbers for certified DECtape for 12 and 18 bit versions. Specify variations. Add two dectapes to Accessory List. Add part number for head cleaning kit.

NOTE: This ECO creates TU56-H ML revision "T ".
In-plant effectivity -06 documentation change only.

TU56-00040 CODE: M
AUG-70 - PROBLEM 1: Rear check plate requires stocking of two separate parts, left hand and right hand.
CORRECTION 1: Add 3/8 inch square bevel to both sides; part is universal to machine and requires stocking of one part only.
PROBLEM 2: Filler cover did not fit panel casting after machining procedure was changed.
CORRECTION 2: Changed dimension of clip on filler cover to fit panel casting.
PROBLEM 3: Locating dimensions for first machining step result in a poor alignment of switch board assembly with windows in casting.
CORRECTION 3: Changed locating dimensions of first machining operation from edge of casting to edge of window which eliminates excessive tolerance buildup and allows consistent alignment of switch board assembly with windows.
PROBLEM 4: Chassis wire harness design changed to reduce number of chassis mounting connections.
CORRECTION 4: Relocate harness feed-thru holes in chassis.
In-plant effectivity -Phase-in

TU56-00041 CODE: M
SEP-70 - PROBLEM: Spacer support assembly, item #2, is difficult to weld.
CORRECTION: Omit .31 Dimension and replace with .81 Maximum dimension; locate from opposite side as shown.
In-plant effectivity -Phase-in

TU56-00042 CODE: M
SEP-70 - CORRECTION: Changes several dimensions to ease manufacture of the 7408322 spacer block.
In-plant effectivity -Phase-in

TU56-00043 CODE: M
SEP-70 - PROBLEM: Cost reduction in the fabrication of the half cover plate.
CORRECTION: Change item #2 from FHS STUDS to AL WELD STUDS 10-32 x 1 inch, part #9008359-0.
In-plant effectivity -Phase-in

TU56-00044 CODE: P ML: V
SEP-70 - CORRECTION: The TU56 print set is changed to indicate positive logic jumper card, G742, and to include all modifications to modules.

NOTE: This ECO creates TU56-H ML revision "U ".
In-plant effectivity -06 documentation change only.

TU56-00045 CODE: M
SEP-70 - PROBLEM: Space under head is not consistent to fit filler plate edge under it.
CORRECTION: Reduced width of material to clear head.
In-plant effectivity -Phase-in

TU56-00046 CODE: M
OCT-70 - PROBLEM 1: Incorrect paint specification called-out on drawings.
CORRECTION 1: Apply correct paint specification which will withstand exposure to head cleaner.
PROBLEM 2: Fine thread set screw not holding hub to motor shaft.
CORRECTION 2: Replace fine thread tap with coarse thread.
PROBLEM 3: Incorrect self clinching stud called-out for holes in chassis.
CORRECTION 3: Changed self clinching stud to correct size required.
In-plant effectivity -03 rework immediately.

TU56-00047 CODE: M
NOV-70 - CORRECTION: Finish called-out incorrectly. Change mounting bracket finish from black passivate to black oxide.
In-plant effectivity -01 phase-in

TU56-00048 CODE: M
NOV-70 - PROBLEM: Metal TU56 hub gauges scratch the plastic overlay.
CORRECTION: Change gauge material to vinyl.
In-plant effectivity -01 phase-in

TU56-00049 CODE: P
DEC-70 - PROBLEM: Type of terminals and location of some terminals on Harness Assembly drawing not too clear.
CORRECTION: Add clarification notes to Harness Drawing.
In-plant effectivity -06 documentation change only.

TU56-00050 CODE: D ML: W
JAN-71 - PROBLEM: Four separate harnesses are expensive, hard to install, and prone to assembly errors.
CORRECTION: Combine three small harnesses into one simplified harness, #7006981.

NOTE: This ECO creates TU56-H ML revision "V ".
In-plant effectivity -01 phase-in

TU56-00051 CODE: P
JAN-71 - PROBLEM: Wrong head assembly called-out on TU56 front panel assembly.
CORRECTION: Change head assembly from #1209601 to #1209691, print correction only.
In-plant effectivity -06 documentation change only

TU56-00052 CODE: P ML: Y
JAN-71 - PROBLEM: Acceptance Procedure not documented on TU56 Master Drawing List.
CORRECTION: Add Acceptance Procedure A-SP-TU56-0-6 to TU56 and TU56-H Master Drawing Lists.

NOTE: This ECO creates TU56-H ML revision "w ".
In-plant effectivity -06 documentation change only.

TU56-00053 CODE: M
JAN-71 - PROBLEMS 1 thru 4: Cost reduction in the fabrication of the #1209562 and #7407282 cover plates and the #1209564 and #7407283 tape guides.
CORRECTIONS 1 thru 4: For the #1209562 cover plate, change material from SST type 303 to die cast #218 aluminum and add holes and slots as shown. For the #7407282 cover plate, move all holes and cutout to casting drawing #1209562 and delete clear passivate and hardcoat from Note 2. For the #1209564 tape guide, decrease opening in part as shown and add perpendicular tolerance of .010 To sides indicated. Change minimum radial dimension from 2.414 to 2.424. for the #7407283 tape guide, add .52R To slot, call-out chamfer 45 degrees x .19 Diameter for "B " and "C " holes and chamfer 45 degrees x .22 Diameter for "D " hole. Change diameters and call-out the installation of dowel pins. Change drawing from Mechanical Detail to Inseparable Assembly.
PROBLEM 5: #7405136 rear check tape guide cost reduction.
CORRECTION 5: Make from casting drawing C-SC-1210300-0-0 and delete all unnecessary dimensions.
CORRECTION 6: C-SC-1210300 , rear check tape guide is the drawing generated by this ECO for the #7405136 casting.
PROBLEM 7: #7407534 half cover plate is difficult to manufacture because tolerance is too tight.
CORRECTION 7: Relieve tolerance by changing dimensions 4.158 to 4.15 plus or minus .015 And 2.989 to 2.98 plus or minus .015.
PROBLEM 8: The #7407400 pin lock grinding operation is not as simple as possible.
CORRECTION 8: Change print by adding grinding relief to two places.
PROBLEM 9: #7006320 panel front assembly installed prior to this assembly.
CORRECTION 9: Delete note #4.
PROBLEM 10: #7006320 panel front assembly installed prior to this assembly.
CORRECTION 10: Delete item #17.
CORRECTION 11: D-DI-TU56-0-1 Drawing Index, drawing C-MD-7407283 changed to C-IA-7407283 .
In-plant effectivity -01 phase-in

TU56-00054 CODE: P ML: AA
FEB-71 - PROBLEM 1: The customer option of having the read/write amplifiers in the TU56 is going to be used by the PDP-8/E system; therefore, we must give this option a literal designation.
CORRECTION 1: Add the designation "M " for the TU56 or TU56-H which is to include the read/write amplifiers.
PROBLEM 2: OEM versions of TU56 required on variation sheets.
CORRECTION 2: Add OEM versions of TU56 to the Parts List, Module Utilization drawing and Accessory List.

NOTE: This ECO creates TU56-H ML revision "z ".
In-plant effectivity -06 documentation change only.

TU56-00055 CODE: M ML: AB
FEB-71 - CORRECTION 1: Change mounting panel #7407395 .820 Dimension to .870 .
CORRECTION 2: Lengthen #7407399 panel lock slots from .38 Long to .50 Long.
CORRECTION 3: Change #7407393 mounting bar 8-32-2B tapped holes to .147 Diameter thru ten "B " holes.
CORRECTION 4: Change #7006321 wired assembly items #7 and #10 to self tapping screws.

NOTE: This ECO creates TU56-H ML revision "aa ".
In-plant effectivity -01 phase-in

TU56-00056 CODE: P ML: AC
MAR-71 - PROBLEM: Wrong connector part numbers called-out on Unit Assembly drawing and Harness Parts Lists.
CORRECTION: Correct Parts List.

NOTE: This ECO creates TU56-H ML revision "ab ".
In-plant effectivity -06 documentation change only.

TU56-00057 CODE: P ML: AD
MAR-71 - CORRECTION: Corrects nomenc ure for slots A10 and B10.

NOTE: This ECO creates TU56-H ML revision "AC ".
In-plant effectivity -06 documentation change only.

TU56-00058 CODE: M
APR-71 - CORRECTION 1: Cover plate #1209562; add chamfer 1/32 x 45 degrees to "B " hole.
CORRECTION 2: Rear check tape guide #1210300; change 1/64 x 45 degree chamfer to .040/.050 X 45 degree chamfer. Change 1/32 x 45 degree chamfer to .040/.050 X 45 degree chamfer.
In-plant effectivity -01 phase-in

TU56-00059 CODE: M
APR-71 - PROBLEM: Reel stops on hub occasionally break.
CORRECTION: Increase radius between reel stops and fingers (twelve places .
In-plant effectivity -01 phase-in

TU56-00060 CODE: M
APR-71 - PROBLEM: Lock pin and lock pin retaining ring interfere with the lamp housing on the switch control panel.
CORRECTION: Remove extended end of lock pin. Change size of retaining ring and install on main body of lock pin.
In-plant effectivity -03 rework immediately.

TU56-00061 CODE: M
JUL-71 - PROBLEM 1: Dowel pin on tape guide bottoming in hole on mounting panel, causing misalignment of tape guide.
CORRECTION 1: Change dimension on four "H " holes from .33 Depth (do not break thru) to thru hole.
PROBLEM 2: "C " hole dimensions not correct for press fit of 1/8 dowel.
CORRECTION 2: Change two "C " hole dimensions.
PROBLEM 3: Dimension does not agree with pin tolerance.
CORRECTION 3: Change dimension.
In-plant effectivity -01 phase-in

TU56-C0062 CODE: F ML: AE
AUG-71 - PROBLEM: Poor grounding is possible due to moveable mechanical connection (hinges) between front panel and main chassis.
CORRECTION: Connect a ground wire between right side of logic mounting bar, via lug, and right lid support arm front screw, via lug. (wire should be AWG #18 black teflon insulated .

NOTE 1: This FCO creates TU56-H ML revision "ad ". NOTE 2: See reference FCO's G848-C0007 and 725-00008.
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all TU56's as required.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $. 25 , DEC Labor $ 13.00) (Kit Contents -FCO And Parts)

TU56-00063 CODE: M
AUG-71 - PROBLEM: Cable marking not consistent. No specific label is called-out ON the Parts List of the Inseparable Assembly drawing.
CORRECTION: Make decals for cable marking and attach them to cable ends. Change the IA, Inseparable Assembly drawing, to specify the decals and their locations.
In-plant effectivity -01 phase-in

TU56-00064 CODE: M
AUG-71 - PROBLEM 1: #7408008 -Cost reduction and ease of production applications
CORRECTION 1: Change #7408008 material to facilitate fabrication and add tape for ease of assembly.
PROBLEM 2: #7407391 -Paint specification per note #2 should be 92-00120-94, sheet 1 of 3. 18.71 dimension, because of tolerance buildup, should be referenced and 17.59 as reference, should be the working dimension.
CORRECTION 2: Change #7407391 note #2 paint specification.
PROBLEM 3: #7407395 mounting panel, missing dimension for location of "A " and "J " holes.
CORRECTION 3: Add missing dimension to #7407395 mounting panel.
In-plant effectivity -01 phase-in

TU56-00065 CODE: M
FEB-72 - PROBLEM 1: Overlay .nounting problem and interference with cabinet end panel caused by locking pin head interferring with end panel.
CORRECTION 1: Increase pad height and provide "C " bore to clear end panel.
PROBLEM 2: Wrong paint specification called-out.
CORRECTION 2: Correct paint specification error.
In-plant effectivity -02 phase-in

TU56-00066 CODE: M
FEB-72 - PROBLEM: Excessive wear on wear plate during operation.
CORRECTION: Change material of wear plate to ceramic P-3864.
In-plant effectivity -02 phase-in

TU56-00067 CODE: P ML: AF
MAR-72 - PROBLEM 1: Parts List and Accessory List for TU56 do not give adequate detail for various options.
CORRECTION 1: Revise and update lists.
PROBLEM 2: Master Drawing Lists do not exist for all variations.
CORRECTION 2: Create new Master Drawing List showing variations.

NOTE: This ECO creates TU56-H ML revision "ad ".
In-plant effectivity -06 documentation change only.

TU56-00068 CODE: P ML: AH
MAY-72 - CORRECTION: Adds new packaging instruction for interplant shipping.
In-plant effectivity -06 documentation change

TU56-00069 CODE: M
MAY-72 - CORRECTION: Eliminate the Brady Markers from the main chassis harness.
In-plant effectivity -02 phase-in

TU56-00070 CODE: P ML: AJ
MAY-72 - PROBLEM: Brake adjustment shown on the Block Schematic drawing does not cover the entire range of correct settings.
CORRECTION: Show a nominal value for brake delay and add a note indicating the need for adjustment to obtain optimum setting.
In-plant effectivity -Documentation change only

TU56-00071 CODE: D ML: AK
JUN-72 - PROBLEM 1: Modules fall out during shipment. Logic mount weak, requires extra support during shipment. Power supply mounting requires extra support during shipment.
CORRECTION 1: Change present shipping bracket to provide support. Add bracket to Parts List thus calling for its use on all transports.
PROBLEM 2: Documentation does not reflect use of G500 in skew testing. No instructions for shimming heads exists.
CORRECTION 2: Upgrade skew testing procedure.
PROBLEM 3: Transport logic diagram shows incorrect termination for signal **R OFF** .
CORRECTION 3: Show correct termination **R OFF** on transport logic diagram.
In-plant effectivity -03 rework immediately

TU56-00072 CODE: P ML: AL
JUL-72 - CORRECTION 1: Update prints.
CORRECTION 2: Obsolete old Accessory List and add new one.
CORRECTION 3: Add module Circuit Schematic to the customer print sets.
PROBLEM 4: Additional prints needed to facilitate maintenance in the field.
CORRECTION 4: Add prints to the customer print set.
In-plant effectivity -06 documentation change

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ECO DEC-O-LOG Engineering Change Order Log

TW32

32K Timing Track Writer

PROCESSOR TYPE 8 Family and PDP-12

TW32-00001 CODE: P ML: C WL: C

MAY-69 - PROBLEM: Existing wiring sheets will not allow automatic wrapping of panel.
CORRECTION: Create computer Wire List from hand wiring sheets.
In-plant effectivity -06 documentation change

TW32-B0002 CODE: F ML: D WL: D

AUG-73 - PROBLEM: Can not use present tester to write timing tracks on DF32 without photo cell input.
CORRECTION: Add circuitry to enable the writing of timing tracks on DF32 without cell input. The ADD/DELETE's are as follows: DELETE A13V to A15P, B11C to B11F, B11F to B11P, A15F to A15N, A15U to A14T, and A15N to A15U. ADD B05P to A15P, A15F to A15U, A15U to A14T, B11P to A15T, B05V to B11F, and B01U to A15N.

NOTE 1: Following FCO implementation, there may be a lead dress problem; if no erase cycle occurs, separate the wires from each other until both write and erase cycles occur. This applies to older type writers only.

NOTE 2: To eliminate the modification of R401 modules to write timing, connector block "C1" may be hard wired to allow any R401 to be used. Jumpers F to H, L to R, and T to U may be wired onto "C1".
In-plant effectivity -03 -Retrofit immediately
Field effectivity -Retrofit all TW32's
Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

7" X 9" DISPLAY **VR12**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8I PDP-12	JUNE 1970	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
VR12 00001	ALL VR12	M	JUN 69 - ADDS MISSING INFORMATION TO A DECAL.
VR12 00002	ALL VR12	M	JUN 69 - SPECIFIES THAT MISSING DECALS ARE TO BE INCLUDED.
M701 00001	ALL VR12	F	JUN 69 - RESOLVES SPEED PROBLEMS WHICH ARE CREATED IN MAGNETIC DISPLAYS AS A RESULT OF THE CLEARING, THEN LOADING OF THE X AND Y REGISTERS BY THE DISPLAY CONTROL. THIS ECO UTILIZES SPARE GATES TO PERMIT REGISTER CLEAR LINES TO BE ASSERTED ONLY IF THE REGISTER IS NOT BEING LOADED BY THE SAME IOT. THE EARLIER REVISIONS CAN STILL BE USED IN VC8I AND VC8LJ VR12 REQUIRES THE D REVISION OR LATER. M701 CIRCUIT SCHEMATIC REVISION D
VR12 00003	ALL VR12	M	JUL 69 - PROVIDES A HARDWARE DESIGN CHANGE TO FACILITATE FABRICATION.
VR12 00004	ALL VR12	M	AUG 69 - SPECIFIES THE RELOCATION OF A HOLE TO ELIMINATE MOUNTING HARDWARE INTERFERING WITH THE SLIDES.
VR12 00005	ALL VR12	M	AUG 69 - ADDS A FINISH SPECIFICATION.
VR12 00006	N.A.	P	AUG 69 - PROVIDES A DESIGN UPDATING OF VARIOUS PRINTS TO AGREE WITH THE MODEL.
VR12 00007	VR12 10-80>	F	SEP 69 - SPECIFIES THE USE OF A NEW YOKE ASSEMBLY WHICH INCORPORATES A COMPENSATION SHIELD SPACED 1.25" FROM THE YOKE.
VR12 00008	>VR12	M	OCT 69 - MAKES A MINOR DIMENSION CHANGE ON THE LOGIC FRAME DRAWING.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	VR12-00006		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
VR12 00009	VR12 1-100>	F	OCT 69 - SPECIFIES THE USE OF A NEW HIGH VOLTAGE POWER SUPPLY TO ELIMINATE BLOOMING. CORRECTS AC WIRING. REFERENCES ANALOG CIRCUITS TO A COMMON GROUND TO REDUCE 120 HZ HUM. ADDS WIRING TO FACILITATE IMPLEMENTATION OF THE EIGHT LEVEL BRIGHTNESS OPTION. MAKES VARIOUS CORRECTIONS TO THE PARTS LIST, SEVERAL PRINTS AND THE BUSSING SCHEDULE.
VR12 00010	N.A.	P	OCT 69 - CORRECTS A DRAWING FOR THE BOTTOM MOUNTING PLATE TO SHOW A 60 DEGREE ANGLE CORRECTLY.
VR12 00011	>VR12	M	NOV 69 - PROVIDES THE DRAWINGS FOR THE NEW SUPER COVER AND ITS MOUNTING HARDWARE. MAKES SEVERAL INCIDENTAL HARDWARE MODIFICATIONS.
VR12 00012	>VR12	P	DEC 69 - CORRECTS PRINTS TO SHOW CORRECT LENGTHS OF WIRES. CORRECTS THE PARTS LIST.
W682 00001	ALL VR12	D	DEC 69 - SOME W682'S WERE RELEASED WITH AN INCORRECT ZENER DIODE, #IN3039B. THIS ECO ORDERS REPLACEMENT WITH THE CORRECT #IN4757 ZENER DIODE. THIS CORRECTION WILL ELIMINATE THE POSSIBILITY OF A CRT BURN.
VR12 00013	>VR12	M	DEC 69 - CHANGES MINOR HARDWARE SPECIFICATIONS FOR THE TOP MOUNTING PLATE.
VR12 00014	>VR12	M	DEC 69 - ADDS INSULATING WASHERS TO THE PARTS LIST AND CHANGES ONE WASHER TO ALLOW BNC CONNECTORS TO BE TIGHTENED PROPERLY.
VR12 00015	>VR12	M	DEC 69 - CHANGES MATERIAL SPECIFICATIONS TO INSURE THAT INSERTS WILL BE RETAINED SECURELY IN THE HIGH VOLTAGE MOUNTING PLATE.
PDP-12 00047	VR12 10>	F	DEC 69 - REVISES THE PDP-12 PRINT SET TO INDICATE THAT THE VF12-A OPTICAL FILTER FOR VR12 DISPLAY IS NOW STANDARD EQUIPMENT ON PDP12-A AND PDP12-B.
VR12 00016	N.A.	P	JAN 70 - ADDS POWER SUPPLY ASSEMBLY AND CIRCUIT SCHEMATIC DRAWINGS TO THE VR12 PRINT SET.
VR12 00017	>VR12	M	FEB 70 - ADDS A HOLD-DOWN ASSEMBLY TO INSURE THAT THE G912 DEFLECTION AMPLIFIERS REMAIN SECURELY IN PLACE.

LEGEND

FIELD CODE

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M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
B	VR12-00009		
C	VR12-00016		
D	VR12-00017		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

DISPLAY **VR12**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL EXCEPT PDP-11	SEPTEMBER 1971	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
VR12 C0018	ALL VR12	F	FEB 70 - REPLACES 7.5K OHM RESISTORS AT THE INPUT SENSITIVITY SWITCHES WITH 5.6K OHM RESISTORS TO PROVIDE SUFFICIENT X AXIS GAIN. WITHOUT THIS ECO, PICTURE SIZE WILL BE INADEQUATE WITH THE X GAIN SWITCH IN THE NORMAL "LOW" POSITION IN A PDP-12 SYSTEM WITH TWO VR12'S. THIS ECO APPLIES TO VR12 VARIATIONS A, B, C, D AND E. (*$5.00, **$.60, ***$20.00)
VR12 00019	>VR12	M	MAR 70 - REDUCES AN INSERT HOLE SIZE IN THE SUPER COVER.
VR12 00020	>VR12	M	MAR 70 - CHANGES THE FLIP CHIP BOARD MOUNTING BRACKET DRAWING TO AGREE WITH ACTUAL PRODUCTION.
VR12 00021	>VR12	M	APR 70 - ORDERS THE COMPARATIVELY FRAGILE PLASTIC GUIDE SLEEVES REPLACED WITH ALUMINUM.
VR12 00022	N.A.	P	APR 70 - CORRECTS THE STATEMENT OF RIPPLE SPECIFICATION TO READ ".5% OF FULL SCALE DEFLECTION".
VR12 00023	N.A.	P	APR 70 - CORRECTS SUB-ASSEMBLY DRAWINGS TO AGREE WITH THE MODEL.
VR12 B0024	ALL VR12	F	APR 70 - OBSOLETES THE DISPLAY FILTER AS AN OPTION (VF12) AND ADDS IT TO THE PARTS LIST AS STANDARD EQUIPMENT. (*$.00, **$.00, ***$.00)
VR12 00025	>VR12	P	MAY 70 - SPECIFIES THAT THE PROTECTIVE PAPER IS NOT TO BE REMOVED FROM THE FILTER UNTIL FINAL IN-PLANT CHECKOUT.

LEGEND

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SYMBOL
- > = ECO applicable to future production

ECO CHARGES
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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
E	VR12-C0018		
F	MISC-00064		
H	VR12-00021		
J	VR12-B0024		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
VR12 00026	>VR12	M	MAY 70 - SPECIFIES THE RELOCATION OF MOUNTING SCREWS TO ELIMINATE THEIR INTERFERING WITH THE SLIDES.
VR12 00027	ALL VR12	M	JUN 70 - SPECIFIES A REWORKING OF REVISION "A" CONTROL PANELS.
VR12 00028	>VR12	M	JUN 70 - SPECIFIES THE USE OF A DIFFERENT TYPE OF MOUNTING SCREW TO ELIMINATE BINDING AGAINST ADJACENT COMPONENTS. THE ECO NUMBER IS INCORRECTLY SHOWN ON THE SPECO FACE SHEET AS "12-00028".
VR12 00029	VR12 1-441>	P	JUN 70 - DELETES THE COMMON MODE REJECTION TEST (#9) FROM THE ACCEPTANCE TEST PROCEDURE. THE TEST IS INVALID FOR CMR AND ACTUALLY TESTS ONLY THE BALANCE OF THE G917 INPUT AND FEEDBACK RESISTORS.
VR12 C0030	VR12 1-410>	F	JUL 70 - REPLACES -30VDC BUSSING WITH WIRE (ORANGE) TO ELIMINATE CROSS COUPLING BETWEEN X AND Y DEFLECTION CIRCUITRY. AN FCO WAS GENERATED IN AUGUST, 1971 PROVIDEING REWORK INSTRUCTIONS FOR THIS ECO. THE NOTE ON THE FACE OF THE ECO SPECO INDICATING THAT CO-REQUISITE ECO'S ARE REQUIRED SHOULD BE DISREGARDED. (*$5.00, **NONE, ***$5.00)
VR12 00031	N.A.	P	SEP 70 - CORRECTS DIMENSIONS ON THE SC PRINT.
VR12 00032	>VR12	M	JAN 71 - PROVIDES FOUR HOLES IN THE COVER FOR THE ADJUSTMENT OF POTS.
VR12 00033	N.A.	P	FEB 71 - ADDS PACKAGING INSTRUCTIONS TO THE VR12 PRINT SET.

LEGEND

FIELD CODE
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SYMBOL
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ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
K	VR12-00028		
L	VR12-00029		
M	VR12-C0030		
N	VR12-00033		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

DISPLAY **VR14**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-11 PDP-12 PDP-15	SEPTEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
VR14 00001	N.A.	P	DEC 70 - CORRECTS THE PARTS LIST WITH RESPECT TO PART NUMBERS AND DESCRIPTIONS.
VR14 00002	N.A.	P	DEC 70 - PROVIDES AN OVERALL UPDATING OF THE VR14 PRINT SET.
VR14 00003	N.A.	P	FEB 71 - PROVIDES FURTHER UPDATING OF THE VR14 PRINT SET.
VR14 00004	>VR14	M	FEB 71 - ADDS NOMENCLATURE TO THE BLACK-ON-CLEAR DECAL AND ADDS A WHITE-ON-CLEAR DECAL.
VR14 A0005	ALL VR14	DF	MAR 71 - REPLACES DEC 3790 DIODES WITH 2N4399'S TO INCREASE RELIABILITY. SPECIFIES A NEW TYPE OF FRONT PANEL ON-OFF SWITCH. THIS ECO MUST BE INSTALLED IN CONJUNCTION WITH ECO G836-00002 AND G838-00001. (*$.00, **$.00, ***$.00)
VR14 00006	N.A.	P	APR 71 - ADDS PACKAGING INSTRUCTIONS TO THE VR14 PRINT SET.
VR14 00007	>VR14	M	MAY 71 - SPECIFIES THE USE OF THUMB SCREWS TO REPLACE 10-32 MACHINE SCREWS FOR SECURING THE G838. ADDS SWITCH STOPS TO PREVENT ACCIDENTAL CHANGING OF THE POLARITY SWITCH.
VR14 00008	>VR14	D	JUN 71 - CHANGES DRAWINGS TO REFLECT MODIFICATIONS WHICH HAVE BEEN MADE TO THE DEFLECTION COIL, PART #12-09631. ORDERS THE PHASE-IN OF A NEW HIGH VOLTAGE POWER SUPPLY, PART #12-09666, AND A NEW HIGH VOLTAGE SHIELD, PART #12-10169. THIS ECO SPECO WAS DISTRIBUTED TO DEC FIELD OFFICES FOR INFORMATION PURPOSES ONLY.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER
A	VR14-00002		
B	VR14-00003		
C	VR14-A0005		
D	VR14-00006		
E	VR14-00007		

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

VR14-00009 CODE: P ML: F
JUN-71 - PROBLEM: The 374-B Light Pen Panel Assembly must be added to the VR14 print set.
CORRECTION: Make additions to print set to document the change.
In-plant effectivity -06 documentation change only

VR14-00010 CODE: D ML: H
JUL-71 - PROBLEM: Present construction of VR14 does not have the prerequisites necessary to convert it to a VR20.
CORRECTION: Rework VR14 parts so VR14 will be convertable to VR20.

NOTE: This ECO creates 7007084-0-1 (Power Supply Circuit Schematic) CS revision "C ".
In-plant effectivity -01 phase-in

VR14-00011 CODE: D
JUL-71 - PROBLEM: FCO G836-A0002 changes size of transistors Q2 and Q4: as a result heat sink #7408587 will not fit.
CORRECTION: Inactivate revision "0 " heat sink, implement new revision "A ".
In-plant effectivity -02 phase-in

VR14-00012 CODE: D
AUG-71 - PROBLEM: Hot side of yoke wiring going to wrong pin.
CORRECTION: Reverse gray and white wires on yoke assembly.
In-plant effectivity -03 rework immediately

VR14-00013 CODE: D ML: J
SEP-71 - PROBLEM 1: Heat sink on G836 has wrong dimensions.
CORRECTION 1: Correct dimensions of heat sink.
PROBLEM 2: Power supply cable too short at AC switch.
CORRECTION 2: Lengthen wires on cable.
PROBLEM 3: AC wires on high voltage supply too short.
CORRECTION 3: Lengthen wires on supply.
CORRECTION 4: Add Checkout and Acceptance Procedure to print set.
CORRECTION 5: Add A225-YA variation to Block Schematic.
In-plant effectivity -03 rework immediately

VR14-B0014 CODE: F ML: K
OCT-71 - PROBLEM: Channel 1 and channel 2 are wired wrong on wired assembly.
CORRECTION: Change channel 1 from A04M to A04N; change channel 2 from A04N to A04M.

NOTE: This FCO must be installed in conjunction with FCO EM12-A0054 where applicable.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all VR14's except, for PDP-12 use, see FCO EM12-A0054.
(Time To Install And Test 2.0 Hours.) (Documentation $ 5.00 , Parts None , DEC Labor $ 54.00) (Kit Contents -FCO/Prints)

VR14-A0015 CODE: F ML: L
MAR-72 - PROBLEM 1: X DEFLECTION heat sink is not receiving enough air for proper cooling.
CORRECTION 1: Reverse X AND Y DEFLECTION heat sinks. PROBLEM 2: Production is not putting sufficient amount of thermal compound on power transistors.
CORRECTION 2: Add thermal compound to Parts List and amount to be used per transistor. "NOTE : Thermal compound to be put on with a flux cleaner brush, the entire bottom surface of power transistors 2N4399 and 5302 and both sides of insulating washers to be covered with 1/32 inch of thermal compound. No bare metal should show ". PROBLEM 3: High voltage is too high.
CORRECTION 3: Change input leads of high voltage supply from 110 volt tap on power supply transformer to the 100 volt tap.

NOTE: This FCO creates 7007084-0-1 (Power Supply Circuit Schematic) CS revision "D ".
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all VR14's
(Time To Install And Test 2.0 Hours) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

VR14-00016 CODE: P ML: M
APR-72 - PROBLEM: Assembly #7007165 does not have latest drawing of power regulator board.
CORRECTION: Change the drawing of the power regulator assembly, D-AD-7007165-0-0, to reflect new board, revision "B ".
In-plant effectivity -06 documentation change only

VR14-00017 CODE: M
JUL-72 - PROBLEM: 14 pin Amphenol connector has to be added to top mounting plate.
CORRECTION: Add new cutout to top mounting plate.
In-plant effectivity -02 phase-in as of 8/15/72

VR14-00018 CODE: M
JUL-72 - CORRECTION: Change hole location and silk screen for control panel.
In-plant effectivity -02 phase-in

VR14-00019 CODE: D ML: N
JUL-72 - CORRECTION: Modify VR14 to make it compatible for use on the GT40.
In-plant effectivity -02 phase-in

VR14-00020 CODE: P
OCTOBER-72 – PROBLEM: Wrong Silk Screen called out on light pen front panel drawing.
CORRECTION: Delete Item #4, Silk Screen B-SS-7408425-0-1, Add new Item #4, Silk Screen B-SS-7409068-0-1.
In-plant effectivity – 03 retrofit immediately

VR14-00021 CODE: D ML: P
OCTOBER-72 – CORRECTION: Make changes to VR14 which are required as a result of GT40 Light Pen changes.
In-plant effectivity – 03 retrofit immediately.

VR14-C0022 CODE: F
DECEMBER-72 – PROBLEM 1: The line fuse is too small when the VR14 system is used as a GT40.
CORRECTION 1: Increase fuse to 7 AMP slow blow.
PROBLEM 2: Inadequate cooling of heat sink with present fans.
CORRECTION 2: Change fans to seven blade Boxer fans
In-plant effectivity - 03 retrofit
Field effectivity – change fans in all VR14's in high temperature environments. Change fuse in all VR14's on GT40 systems.
(Time To Install And Test 4.0 Hours.) (Documentation $5.00, Parts $45.75)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.
(Kit Contents – FCO/Prints and Parts)

VR14-00023 CODE: M ML: S
JANUARY-73 – PROBLEM: Cover is too hard to slide onto base for mounting.
CORRECTION: Add clips that are crimped onto extrusion.
In-plant effectivity – 02 phase-in

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VR14-00024 CODE: D ML: T
MARCH-73 – PROBLEM: Assembly problems on the wired assembly and top mounting assembly.
CORRECTION: Delete main harness #70-08457. Add two new harnesses, one to wired assembly and one to top mounting assembly.

NOTE: See continuation supplement ECO's VR14-0024A and VR14-0024B.
In-plant effectivity – 02 phase-in; use up all present stock. New and old assemblies can be mixed.

VR14-0024A CODE: D
MARCH-73 – CORRECTION: Provides additional changes required to drawings, and additional parts, for ECO VR14-00024.
In-plant effectivity – unchanged

VR14-0024B CODE: D
JUNE-73 – PROBLEM: New harness, #70-09357, requires additional pins to wired assembly.
CORRECTION: Add three pins to #70-07078 Wired Assembly Parts List.
In-plant effectivity – unchanged

VR14-B0025 CODE: F ML: U
APRIL-73 – PROBLEM 1: Improper grounding of P13, light pen jack.
CORRECTION 1: Delete wire from P13-1 to P13-2; add wire from P13-1 to P13-4; add wire from P13-2 to top screw of control panel.
PROBLEM 2: A225-YB heat sinks short against G840 module.
CORRECTION 2: Add module holder clip to prevent shorting.
CORRECTION 3: Correct Parts List error.
In-plant effectivity – 03 retrofit immediately
Field effectivity – retrofit all VR14's
(Time To Install And Test 2.0 Hours) (Kit Contents – FCO/Prints and Parts)

VR14-C0026 CODE: F ML: V
MAY-73 – PROBLEM: Signal lead to the brightness potentiometers couples with the "X" and "Y" output and oscillates at approximately 20 MHz, producing swimming characters and erroneous light pen hits.
CORRECTION: Add 180 Pfd capacitor #70-07078 on backplane from A04C to A04E; use coax cable for cathode wire. Isolate light pen jack from ground.

NOTE: See continuation supplement FCO VR14-C026A.
In-plant effectivity – 03* retrofit only systems in house with light pen and/or character problems.
Field effecitivity – retrofit all VR14's, primarily GT40's – VR14-LC's and VR14-LD's.
(Time To Install And Test 3.0 Hours.) (Kit Contents – FCO/Prints and Parts)

VR14-C026A CODE: F
JULY-73 – PROBLEM: Additional changes required to wired assembly drawings.
CORRECTION: Make additional documentation changes to drawings D-AD-7007078-0-0 and A-PL-7007078-0-0.
In-plant effectivity – unchanged
Field effectivity – unchanged

VR14-00027 CODE: P ML: W
JUNE-73 – PROBLEM: Power supply prints are in error and do not agree with model of #70-07084-1 harness
CORRECTION: Correct print errors
In-plant effectivity – 02 – Phase-in to production

VR14-00028 CODE: D ML: Y
AUGUST-73 – PROBLEM: Plates will not pass UL inspection, using screens.
CORRECTION: Cluster punching plates to eliminate screens.
In-plant effectivity – Phase-in 8/9/73

VR14-00029 CODE: D ML: Z
OCTOBER-73 – PROBLEM 1: Tedious disassembly of AC connections to front panel and non UL approved receptacle on rear panel.
CORRECTION 1: Change Power Supply #70-07084 to accommodate corrections.
PROBLEM 2: BNC connectors used on rear panels, and also the plug have high manufacturing costs.
CORRECTION 2: Change top mounting assembly, #70-07077 to accommodate corrections.
PROBLEM 3: Noise coupled on power sense wires degrade character quality.
CORRECTION 3: Change wired assembly #70-07078 to accommodate corrections.
PROBLEM 4: Illustrated Parts Breakdown affected by this ECO.
CORRECTION 4: Make changes to Illustrated Parts Breakdown as required.
In-plant effectivity – phase-in to production when all new assemblies are available. Update all models affected by this ECO.
CAUTION: New and old revision assemblies cannot be mixed.

VR14-00030 CODE: P DD: AA
JANUARY-74 – CORRECTION 1: Documentation errors in VR14 prints.
PROBLEM 2: VR14 print set does not comply with recognized standards.
CORRECTION 2: Replace Master Drawing List and Drawing Index with a Drawing Directory; redraw Block Schematic.
In-plant effectivity – documentation change only.

VR14-00031 CODE: M DD: AB
JANUARY-74 – PROBLEM: Nylon screws are shearing.
CORRECTION: Add shoulder washers and metal screws.
In-plant effectivity – phase-in by 1/25/74

VR14-00032 CODE: M DD: AC
JANUARY-74 – PROBLEM: Card holder unnecessarily expensive
CORRECTION: Extruded plastic will be used instead.
In-plant effectivity – use present stock until new guide #74-11673 is available.

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EC DEC-O-LOG Engineering Change Order Log

VR20

Two Color 7 X 9 Display

PROCESSOR TYPE All

VR20-00001 CODE: P
JUL-71 - PROBLEM: Change length of control box "DANGER " label.
CORRECTION: More registration marks to agree with box size.
In-plant effectivity -06 documentation change only

VR20-B0002 CODE: F ML: A
OCT-71 - PROBLEM 1: Channel 1 and channel 2 wired wrong on wired assembly.
CORRECTION 1: Change channel 1 from A40M to A04N; change channel 2 from A40N to A04M.
CORRECTION 2: Correct print set errors.

NOTE: Reference FCO EM12-B0054. This FCO must be installed in conjunction with FCO's VR14-B0014 and VR12-C0034.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all VR20's except, for PDP-12 use, see FCO EM12-B0054.
(Time To Install And Test 2.0 Hours.) (Documentation $ 5.00 , Parts None , DEC Labor $ 54.00) (Kit Contents -FCO/Prints)

VR20-00003 CODE: P ML: B
DEC-71 - PROBLEM 1: Cable clamp used to secure high voltage wires is too small.
CORRECTION 1: Change cable clamp from 5/16 inch to 3/8 inch.
PROBLEM 2: Wrong description on view "DD " on Assembly drawing.
CORRECTION 2: Change view "DD " to read "key to face bottom of unit "
In-plant effectivity -06 documentation change

VR20-00004 CODE: M
JUL-72 - PROBLEM: Due to modifications to the VR20, the control panel for the VR20 has to be modified.
CORRECTION: Change location of holes and change the silk screen.
In-plant effectivity -02 phase-in as of august 25, 1972

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EC DEC-O-LOG Engineering Change Order Log

VT01

SCOPE ASSEMBLY

PROCESSOR TYPE PDP-8 FAMILY

VT01-00001 **CODE: D** **ML: A**
NOVEMBER-69 – PROBLEM: The VT01 cannot be used with the multiterminal system. The cursor rings when the scope is selected and deselected; 5 msec are required before it is fully settled.
CORRECTION: Add a #54-08567 cursor damping board that disconnects the X and Y signals from the cursor when the terminal is selected.
In-plant effectivity – all future VT01's

VT01-00002 **CODE: P** **ML: B**
JANUARY-70 – PROBLEM: Wrong wires called out.
CORRECTION: Correct drawing A-SP-VT01-K-1 to indicate correct type of wire.
In-plant effectivity – documentation change

VT01-00003 **CODE: P**
APRIL-70 – PROBLEM: Documentation change: Part description is not adequate
CORRECTION: Change: 54-08567 description from Scope Board to Cursor Damping Circuit; 54-08274 description from Scope Board to Scope Input Module.
In-plant effectivity – documentation change only

VT01-B0004 **CODE: F**
OCTOBER-70 – PROBLEM 1: Tektronix modified all scopes above serial number B142240 to accept a hard copy unit, #4601. In doing this, there are some wiring conflicts with the DEC modification.
CORRECTION 1: Remove wires that are in conflict.
PROBLEM 2: Write line above serial number B142240 is not compatible with logic levels.
CORRECTION 2: Add circuit to write line for logic compatibility.
PROBLEM 3: Scopes above serial number B142240 have cursor damping circuit built in.
CORRECTION 3: Remove DEC cursor damping board.

NOTE: For break-in effectivity, all VT01 storage scopes serial #B142240 and above use latest revision prints; for VT01 storage scopes below #B142240 use revision "A" prints.
In-plant effectivity – retrofit immediately
Field effectivity – retrofit as required
(Time To Install And Test 1.5 Hours) (Kit Contents – FCO/Prints and Parts)

VT01-B0005 **CODE: F**
SEPTEMBER-70 – PROBLEM: Tektronix modified all scopes, #B142240 and above, to accept a hard copy unit, #4601. Doing this resulted in some wiring conflicts with the cable.
CORRECTION: Change the #70-06289 cable on scopes, serial #B142240 and future. Below #B142240 the cable stays as it was.

NOTE: On scopes, serial #B142240 and above, use latest revision print. For those below serial #142240, use revisision "A" print.
In-plant effectivity – retrofit immediately
Field effectivity – retrofit all VT01's as required
(Time To Install And Test .5 Hour) (Kit Contents – FCO/Prints and Parts)

VT01-B0006 **CODE: F** **ML: C**
SEPTEMBER-70 – PROBLEM 1: Tektronix modified all scopes, serial number B142240 and future, to accept a hard copy unit, #4601. Doing this resulted in some wiring conflicts with our modification.
CORRECTION 1: Rewrite modification procedure to eliminate wiring conflicts.
PROBLEM 2: Write line, serial number B142240A and above, is not compatible with logic levels.
CORRECTION 2: Add to modification procedure to eliminate wiring conflicts.
PROBLEM 3: Scopes serial number B142240 and above have cursor damping circuit built in.
CORRECTION 3: Remove cursor damping board from modification procedure.

NOTE: All VT01 storage scopes, serial #B142240 and above, use latest revision prints. To modify VT01 storage scope below serial #B142240, use revision "A" prints.
In-plant effectivity – retrofit immediately
Field Effectivity – retrofit VT01's as required
(Time To Install And Test 1.5 Hours.) (Kit Contents – FCO/Prints and Parts)

VT01-00007 **CODE: P**
MAY-71 – CORRECTION 1: Change part number of Item 1 from 54-09152 to 54-09154.
PROBLEM 2: Tektronix changed pin assignments of a ground signal from pin "L" to pin "P".
CORRECTION 2: Change Wire Table to reflect proper pin assignment.
In-plant effectivity – documentation change only

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ECO DEC-O-LOG Engineering Change Order Log

VT05

Alphanumeric Display Terminal

PROCESSOR TYPE ALL

VT05-00001 CODE: M
JAN-71 - PROBLEM: Logic etch board hits cover.
CORRECTION: Change .25 Dimension to .270; This will lower etch board so it will no longer hit cover.
In-plant effectivity -01 phase-in

VT05-00002 CODE: M
JAN-71 - PROBLEM: Potentiometer bracket may rock on base casting due to casting irregularities.
CORRECTION: Relieve lower section of potentiometer bracket.
In-plant effectivity -02 phase in

VT05-00003 CODE: M
JAN-71 - PROBLEM: Scope opening too large; allows lower portion of scope to be seen.
CORRECTION: Decrease opening by 1/8 inch.
In-plant effectivity -02 phase in

VT05-00004 CODE: M
FEB-71 - PROBLEM: Incorrect color called out on back plate silk screen. Wording above BNC connectors too close to the connectors.
CORRECTION: Call for 1-23 white lettering, move wording up 1/32 inch.
In-plant effectivity -01 phase-in

VT05-00005 CODE: M
FEB-71 - PROBLEM 1: "brightness " is abbreviated while other words are spelled out
CORRECTION 1: Spell out word "brightness ".
PROBLEM 2: Knob holes have been enlarged.
CORRECTION2: Dimension between center line of holes and top of lettering changes.
PROBLEM 3: Potentiometer bracket does not agree with lettering.
CORRECTION 3: Reverse "horizontal " and "vertical ".
In-plant effectivity -01 phase-in

VT05-00006 CODE: P
FEB-71 - PROBLEM: The use of part numbers 7408862 and 7408863 causes difficulty in inventory, parts ordering and accounting methods.
CORRECTION: Change B-MD-7408863-0-0 to B-SC-1210349-0-0 and change B-MD-7408862-0-0 to B-SC-1210348 .
In-plant effectivity -06 documentation change only

VT05-00007 CODE: P
FEB-71 - CORRECTION: Add finish specification note to the base casting drawing.
In-plant effectivity -06 documentation change only

VT05-00008 CODE: P
MAR-71 - CORRECTION 1: Correct dimensions on cover print.
CORRECTION 2: Add sanding note to cover rework drawing to ensure sanding before painting.
In-plant effectivity -06 documentation change only

VT05-00009 CODE: P
MAR-71 - CORRECTION: Corrects dimensions on overall width of base casting.
In-plant effectivity -06 documentation change only

VT05-00010 CODE: M
APR-71 - CORRECTION: Corrects dimensions and hole call-out on the base casting drawing.
In-plant effectivity -01 phase-in

VT05-00011 CODE: P
APR-71 - PROBLEM: Confusion in installation of PEM standoff can result from drawing as currently shown.
CORRECTION: Add more reference information to drawing.
In-plant effectivity -06 documentation change only

VT05-00012 CODE: M
APR-71 - PROBLEM: Interlock switch mounting bracket shorts to transistor case on new modification of scope.
CORRECTION: Redesign bracket.
In-plant effectivity -04 rework phase-in

VT05-00013 CODE: P
APR-71 - PROBLEM: Five wires have to be put in at unit assembly time.
CORRECTION: Changes IA drawing to put wires in cable harness.
In-plant effectivity -06 documentation change only

VT05-00014 CODE: P
APR-71 - CORRECTION: Changes AD drawing to indicate proper wiring of contrast potentiometer.
In-plant effectivity -06 documentation change only

VT05-00015 CODE: P
MAY-71 - PROBLEM 1: Mask required between display and cover.
CORRECTION 1: Add scope mask to prevent seeing metal edges of display.
PROBLEM 2: Viewing area too small.
CORRECTION 2: Enlarge viewing area in cover and scope shield.
In-plant effectivity -06 documentation change only

VT05-00016 CODE: P
MAY-71 - CORRECTION: Changes drawing to indicate holes in casting in correct locations.
In-plant effectivity -06 documentation change only

VT05-00017 CODE: P
MAY-71 - CORRECTION: Indicate on the IA drawing a change in the type of connector used on the harness.
In-plant effectivity -06 documentation change only

VT05-00018 CODE: P
MAY-71 - CORRECTION: Change the parts list to indicate that a #1210490 rotary switch is to be used on the back plate assembly.
In-plant effectivity -06 documentation change only

VT05-00019 CODE: M
MAY-71 - PROBLEM: Insert 9007605 not holding and falling out.
CORRECTION: Use insert 9008868, PEM SS-032-2, and change hole size "B " to .250.
In-plant effectivity -01 phase-in

VT05-00020 CODE: M
MAY-71 - PROBLEM: Weld stud #9008233-1 too short and diameter too large.
CORRECTION: Use weld stud #9008529-0.
In-plant effectivity -01 phase-in

VT05-00021 CODE: M
MAY-71 - PROBLEM 1: Item 1, insert #9007607, not holding.
CORRECTION 1: For item 1, use PEM S-832-2 #9008869 and change hole diameter to .213.
PROBLEM 2: Item 2, 3, and 4, radius too small for material
CORRECTION 2: For items 2, 3, and 4, change radius to .06R.
In-plant effectivity -01 phase-in

VT05-00022 CODE: M
JUN-71 - PROBLEM: Dimension missing.
CORRECTION: Adds a 3.51 dimension to the protective screen
In-plant effectivity -01 phase-in

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EC DEC-O-LOG Engineering Change Order Log

VT05

Alphanumeric Display Terminal

PROCESSOR TYPE All

VT05-00023 CODE: P
JUN-71 - CORRECTION: Specifies amount of gloss required in 68 gray paint.
In-plant effectivity -06 documentation change only

VT05-00024 CODE: M
JUN-71 - PROBLEM 1: Tolerance build up affects ease of assembly.
CORRECTION 1: Reduce tolerances.
PROBLEM 2: Present dimensions cause interference at assembly.
CORRECTION 2: Change dimensions.
In-plant effectivity -01 phase-in

VT05-00025 CODE: P
JUL-71 - PROBLEM: The power cord has a wrong DEC number.
CORRECTION: Chage the power cord from 1700006-9 to 1700006-15.
In-plant effectivity -06 documentation change only.

VT05-00026 CODE: P
JUL-71 - PROBLEM: Sharp edge allows paint to ball.
CORRECTION: Add 5/32 inch radius to cover drawing.
In-plant effectivity -06 documentation change only

VT05-00027 CODE: M
JUL-71 - CORRECTION 1: Change SVA dimension on the small keyboard drawing.
CORRECTION 2: Change dimension .48 To .38 (located in area C-5 .
In-plant effectivity -02 phase in

VT05-00028 CODE: P ML: A
JUL-71 - PROBLEM 1: Parts list incomplete.
CORRECTION 1: Add missing part numbers to parts list.
PROBLEM 2: Wrong numbers on parts list.
CORRECTION 2: Correct wrong part numbers on parts list.
PROBLEM 3: Wrong numbers and incorrect length on power cord drawings.
CORRECTION 3: Correct numbers on power cord drawings.
In-plant effectivity -06 documentation change only

VT05-00029 CODE: M
JUL-71 - PROBLEM 1: Dimensioning on drawing inconsistent with view.
CORRECTION 1: Redimension to correct drawing.
PROBLEM 2: Insufficient clearance for keyboard which mounts on these mounting brackets.
CORRECTION 2: Shift hole locations.
In-plant effectivity -04 rework phase-in

VT05-00030 CODE: M
AUG-71 - CORRECTION: Specifies a redesign of the connector block retainer to permit its fabrication in plastic.
In-plant effectivity -01 phase-in

VT05-00031 CODE: P ML: B
AUG-71 - PROBLEM: VT05 needs a cable to connect to a computer.
CORRECTION: Add an interface cable to the parts list, #7008519.
In-plant effectivity -06 documentation change only

VT05-00032 CODE: M
AUG-71 - PROBLEM: Slot not standard size, requires special tool.
CORRECTION: Change dimension .
In-plant effectivity -01 phase-in

VT05-00033 CODE: P
AUG-71 - CORRECTION: Adds a wire strip specification to the IA drawing.
In-plant effectivity -06 documentation change only

VT05-00034 CODE: D ML: C
AUG-71 - PROBLEM: Turned-off state teletype compatibility.
CORRECTION: Rewire so that incompatibility does not exist.
In-plant effectivity -04 rework phase-in

VT05-00035 CODE: P
AUG-71 - CORRECTION: Adds proper size connector crimp on parts list
In-plant effectivity -06 documentation change only

VT05-00036 CODE: D ML: D
SEP-71 - PROBLEM: Sync circuits trigger incorrectly, causing improper adjustments of raster display, which increases raster distortions.
CORRECTION: Remove 180 pf disc capacitor, C408 from DEC #30-10326-0-0 circuit schematic.
In-plant effectivity -03 rework immediately

VT05-00037 CODE: M
SEP-71 - PROBLEM: Gloss restriction too tight for production.
CORRECTION: Change the amount of gloss from "80% +4% " to "80% +5%, minus 10% gloss using a 60 degree gloss meter ".
In-plant effectivity -Future VT05

VT05-00038 CODE: D ML: E
SEP-71 - PROBLEM 1: Transistor on CRT chassis shorts to interlock switch.
CORRECTION 1: Add insulator #7409285 to outside of interlock switch.
PROBLEM 2: No interconnecting cable for control devices keyboards.
CORRECTION 2: Add cable assembly 70-08612.
CORRECTION 3: Add accessory list A-AL-VT05-0-30 to print set.
In-plant effectivity -03 rework immediately

VT05-00039 CODE: P
OCT-71 - PROBLEM 1: On print J-IA-7008369-0-0 , the wire table is incorrect and P2 is drawn incorrectly.
CORRECTION 1: Change wire table and redraw P2.
PROBLEM 2: On print D-IA-7007231-0-0 there are too many wires on one connector.
CORRECTION 2: Specifies an alternate connection.
In-plant effectivity -06 documentation change only

VT05-00040 CODE: D
OCT-71 - CORRECTION: Corrects the wiring of P8 on print #J-IA-7008369-0-0.

NOTE: Only vendor made harnesses are incorrect. DEC harnesses were made to model, not print. Check before rework.
In-plant effectivity -03 rework immediately

VT05-00041 CODE: P ML: F
NOV-71 - PROBLEM: 50 HZ/60 Hz conversion kit parts list and instructions incomplete.
CORRECTION: Add missing item to 50/60 Hz conversion kit parts list.
In-plant effectivity -06 documentation change only

VT05-00042 CODE: M
NOV-71 - PROBLEM: Assembly adjustment.
CORRECTION: Increases hole size to improve assembly of the baseboard.
In-plant effectivity -02 phase-in

VT05-00043 CODE: M
NOV-71 - CORRECTION: Add extension to protective screen to facilitate alignment of keyboard assembly to base.
In-plant effectivity -02 phase-in

VT05-00044 CODE: M
NOV-71 - PROBLEM: Interlock switch not located in proper position.
CORRECTION: Rebuild bracket.
In-plant effectivity -02 phase-in

VT05-00045 CODE: M
NOV-71 - PROBLEM: Assembly needs adjustment.
CORRECTION: Provide slots for positioning.
In-plant effectivity -03 rework immediatly

VT05-00046 CODE: P ML: H
DEC-71 - PROBLEM: Errors in prints and keyboard vendor change.
CORRECTION: Correct prints and replace keyboad drawings D-CS-3010166-0-0 and C-CS-3010166-1-0 with D-CS-5409917-0-1.
In-plant effectivity -06 documentation change only

VT05-00047 CODE: M
FEB-72 - PROBLEM: Production problems with 80% gloss paint.
CORRECTION: Change to 9200150-68.
In-plant effectivity -03 rework immediately

VT05-00048 CODE: M ML: J
FEB-72 - PROBLEM: Present fan in VT05, #1205033-02, is too noisy.
CORRECTION: Exchange with quieter fan #1209942-01.
In-plant effectivity -03 rework immediatly

VT05-00049 CODE: M
MAR-72 - PROBLEM: Production problem at assembly of Southco insert, item #6, into item #2 after spot welding.
CORRECTION: Assemble insert before spot welding.
In-plant effectivity -02 phase in

VT05-00050 CODE: P ML: K
APR-72 - PROBLEM 1: Part number 54-09917-0-1 is being replaced with #54-09945-0-1 which has higher yields. Part number 30-10166-0-1 is a vendor bought keyboard which lacks improvements that have been made on #54-09945-1.
CORRECTION 1: Let the VT05 documentation show the use of the LK01-0 as the keyboard. LK01-0 offers 54-09945 or 30-10166 at scheduler's option.
PROBLEM 2: VT05 documentation does not include the M7004.
CORRECTION 2: Add the M7004 module prints to VT05 doucmentation.
In-plant effectivity -Documentation change only

VT05-00051 CODE: P
MAY-72 - PROBLEM: Incoming inspection procedures are not referenced on part drawings.
CORRECTION: Reference incoming inspection procedures on part drawings. Add note to each part drawing as follows: "for incoming inspection procedure refer to (blank . (add appropriate procedure) ".
In-plant effectivity -06 documentation correction

VT05-00052 CODE: D
MAY-72 - PROBLEM: Baud rate switch on VT05 back panel wired for split speed operation in such a way that speeds on switch are in a different order than indicated selection.
CORRECTION: Modify wiring on baud rate select switch.
In-plant effectivity -03 rework immediately

VT05-00053 CODE: M
MAY-72 - CORRECTION: Reduce the width of the rocker switch bracket to eliminate interference between the small keyboard and the bracket.
In-plant effectivity -03 rework immediately

VT05-C0054 CODE: F
JUN-72 - PROBLEM: VT05-A's shipped previous to july 1972 will not operate above 300 baud.
CORRECTION: Convert VT05-A to VT05-B capable of operation through 2400 baud.

NOTE 1: Field implementation details from ECO VT05-00052 are included in this FCO. NOTE 2: See correction supplement FCO VT05-C054A.
In-plant effectivity -None
Field effectivity -All VT05-A to be converted to VT05-B
t ime To Install And Test 2.6 Hours.) (Documentation $ 10.00 , Parts 200.00 , DEC Labor $ 60.00) (Kit Contents -FCO/Prints And Parts) FCO M7001-D0005 and supplement VT05-C054A will also be included in the kit..

VT05-0054A CODE: F
AUG-72 - PROBLEM: FCO VT05-C0054 for VT05-A to VT05-B conversion not properly documented.
CORRECTION: Add necessary documentation and parts. Correct errors in figure 1 of the ECO.
In-plant effectivity -Unchanged
Field effectivity -Unchanged
(This FCO Is No Charge To Customer)

VT05-00055 CODE: M
JUL-72 - PROBLEM: Present part does not meet UL approval because 5/32 inch diameter holes are too large.
CORRECTION : Change raw material, perforated metal, from 5/32 inch diameter holes on 3/16 inch centers, to 5/64 inch diameter holes on 1/8 inch centers, staggered.
In-plant effectivity -02 phase-in

VT05-00056 CODE: P ML: L
JUL-72 - CORRECTION 1: Make changes and additions to engineering specifications.
CORRECTION 2: Update other documentation.
In-plant effectivity -Documentation changes only

VT05-00057 CODE: P ML: M
JUL-72 - CORRECTION: Correct revisions of ML drawing and prints.
In-plant effectivity -Documentation change only

VT05-00058 CODE: M
JUL-72 - PROBLEM: Tolerance buildup, large keyboard bracket is incorrect.
CORRECTION: Tightening tolerance between holes.
In-plant effectivity -02 phase-in

VT05-00059 CODE: P
JUL-72 - CORRECTION 1: Add key cap types for the cursor board.
PROBLEM 2: Incorrect part number.
CORRECTION 2: Item #43 is 23-00043-01 should be 21-11047.
PROBLEM 3: Tolerance change required by vendor.
CORRECTION 3: Tolerance change.
In-plant effectivity -Documentation change only

VT05-00060 CODE: M ML: N
SEPTEMBER-72 – PROBLEM 1: Aluminum base, #74-03566, is more costly than plastic base, #12-10913.
CORRECTION 1: Change documents to reflect plastic base instead of aluminum. Aluminum base cheaper with decal also.
PROBLEM 2: Plastic base easier to buy without screened printing indicating TV control functions.
CORRECTION 2: Remove screened printing detail from plastic base drawing and add decal, #36-11183, that replaces screened printing.
In-plant effectivity – 02 phase-in

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VT05-00061 CODE: P ML: P
NOVEMBER-72 – PROBLEM 1: Parts List for keyboard #54-09945 is not included in the print set.
CORRECTION 1: Add drawings A-PL-5409945-0-0 and D-AD-5410224-0-0.
PROBLEM 2: New vendor schematic for display module #30-10326 is not included in the print set.
CORRECTION 2: Add drawing D-CS-3010326-0-3.
PROBLEM 3: Phasing of the VT05 line cord is not specified for 240 V, 50 Hz.
CORRECTION 3: Add note to drawing C-IA-7008432-0-0.
In-plant effectivity – 06 documentation change only

VT05-00062 CODE: M
NOVEMBER-72 – PROBLEM: Scope shield does not set squarely against cover face.
CORRECTION: Reduce size of scope shield by providing assembly clearance.
In-plant effectivity – 03 – Retrofit when production covers are available.

VT05-00063 CODE: M ML: R
DECEMBER-72 – PROBLEM: Keyboard not raised high enough when new style cover is installed.
CORRECTION: For larger keyboard, install shim plate between protective screen #74-08891 and brackets #74-08638-1 and #74-08638-2. For small keyboard, install shim plate between protective screen #74-08891 and bracket #74-08852.
In-plant effectivity – 03 – Shim to be used only when new style cover is used.

VT05-00064 CODE: P ML: S
JANUARY-73 – PROBLEM: Acceptance Procedure too long and not explicit enough.
CORRECTION: Shorten and rewrite sections of the document.
In-plant effectivity – 06 documentation change

VT05-00065 CODE: M
JANUARY-73 – CORRECTION: Elongate #74-08607 shipping bracket slot to permit alignment.
In-plant effectivity – 02 phase-in

VT05-00066 CODE: P ML: T
JANUARY-73 – CORRECTION: Add drawing D-CS-H733-1-1 to the print set. Add UL decal A-DC-7410785-0-0 to the Unit Assembly drawing.
In-plant effectivity – 06 documentation change

VT05-00067 CODE: P
MARCH-73 – CORRECTION: Change documentation to reflect revised production items on VT05 base, cover and interlock bracket
In-plant effectivity – 06 – Documentation change only

VT05-00068 CODE: D
MARCH-73 – CORRECTION: Remove connector P5 which is longer needed.
In-plant effectivity – phase-in

VT05-B0069 CODE: F
MAY-73 – PROBLEM: Random character errors caused by improper memory timing on the M7001 and M7002 modules.
CORRECTION: Install FCO's M7001-B0006 and M7002-B0003.

NOTE 1: No technical information is provided by this FCO; its only purpose is to provide a cross reference to the M7001 and M7002 FCO's.

NOTE 2: It is imperative that both the M7001 and M7002 modules be reworked simultaneously; otherwise, errors will develop with the first character of each line.
In-plant effectivity – rework all VT05's that have not yet gone through VT05 final acceptance. Caution: See Note #2. Rework all VT05's in the field per FCO VT05-B0069.
Field effectivity – install FCO's M7001-B0006 and M7002–B0003 the next time any service work is being done on a VT05.
(Time To Install And Test N/A)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.
(Kit Contents – NF918 – FCO Only)

VT05-00070 CODE: P ML: U
JUNE-73 – PROBLEM: The VT05 Checkout Procedure is outdated.
CORRECTION: Update Checkout Procedure to include adjustment for Motorola Monitor.
In-plant effectivity – documentation change only

VT05-00071 CODE: P ML: V
SEPTEMBER-73 – CORRECTION: Update the VT05 print set.
In-plant effectivity – 06 documentation change only

VT05-00072 CODE: P ML: W
OCTOBER-73 – PROBLEM: Module hold-down foam is not listed on Parts List and Materials Control cannot keep track of usage.
CORRECTION: Generate a print for the foam and add it to the VT05 Parts List.
In-plant effectivity – documentation change only

VT05-E0073 CODE: F ML: Y
JANUARY-74 – PROBLEM: Earlier versions of the LK01 keyboard may be unreliable; current version is costly to build and to repair.
CORRECTION: Replace #54-09945 LK01 keyboard with #54-10541 LK01-R keyboard and #54-10224 cursor board with new #54-10613 cursor board. All boards, revision "E" and earlier, are directly replaceable by revision "F" and "G" boards without use of the new bracket and washers. If the LK01-R is to be used, the FCO parts kit must be installed. The LK01-R and the new cursor boards must be installed coincidentally.

NOTE: See continuation supplement VT05-E073A
In-plant effectivity – commencing November 1, 1973, with complete changeover by March 31, 1974
Field effectivity – retrofit VT05's as required
(Time To Install And Test 1.8 hours.) (Documentation $5.00, Parts $423.00)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.
(Kit Contents – PF1182 – FCO/Prints and Parts)

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VT05-E073A **CODE: F**
FEBRUARY-74 – CORRECTION: Additional parts are needed to convert from early model keyboards to the new model boards.
In-plant effectivity – unchanged

VT05-00074 **CODE: P** **ML: Z**
JANUARY-74 – CORRECTION: Add Packaging instruction A-PI-3700043-0-0 to Parts List.
In-plant effectivity – documentation change only

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Engineering Change Order Log
DEC-O-LOG

VT8-E

Video Display

PROCESSOR TYPE PDP-8/E

VT8E-00001 CODE: P DD: A
FEB-73 - PROBLEM 1: Printer IOT's 4 and 6 do not clear the AC as stated in the VT8-E specifications, A-SP-VT8-E-3.
CORRECTION 1: Delete the phrase CLEAR AC from printer IOT's 4 and 6, PNLP and PNPC , sheet #26.
PROBLEM 2: Control bits of aplha-numeric data word are defined incorrectly by the Engineering Specification.
CORRECTION 2: Interchange the definitions of CB1, CB2, CB3 and CB4.
In-plant effectivity -06 documentation change only

VT8E-00002 CODE: D DD: B
MAR-73 - PROBLEM: There is no product identity for the VT8-E.
CORRECTION: Create new logo, A-SS-7408585-0-4, for the Scope Shield.
In-plant effectivity -03 • -Use new logo on 7009044-0-0, VT8-E Video Terminal, on all systems shipped during the month of June and after.

VT8E-C0003 CODE: DF
APR-73 - PROBLEM: The two separate cables in this assembly are to be replaced by a single woven cable. MATE-N-LOCK connector J1 is not compatible with etch revision "C " M8336's.
CORRECTION: Replace coax cable #91-07530 and cable #91-07687 with woven cable #91-07759. Replace MATE-N-LOCK connector #12-10822-10 with 40 pin housing #12-10918-15.
In-plant effectivity -Use new cable on all VT8-E's built after May 1, 1973.
Field effectivity -Retrofit all VT8-E's shipped under waiver
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

VT8E-00004 CODE: D DD: C
JUN-73 - PROBLEM 1: An extra H851 Edge Connector should be supplied with VT8-E's so that, when more than one VT8-E is placed on a system, they can be interconnected.
CORRECTION 1: Add one H851 Edge Connector to the Accessory List.
PROBLEM 2: Customer print set is not called out on the Accessory List.
CORRECTION 2: Add one customer print set to the Accessory List.
PROBLEM 3: Software kit should be called out by kit number.
CORRECTION 3: On the Accessory List, call software kit by the number LIBKIT-08-VT8-EA-A-K.
PROBLEM 4: When FCO's VT8E-C0003 and M8336-B0002 were implemented, the Unit Assembly drawing was affected but not updated.
CORRECTION 4: Update drawing D-UA-VT8-E as required.
PROBLEM 5: Thermal test portion of VT8-E Checkout Procedure has been found to be unnecessary.
CORRECTION 5: Shorten heat test to twelve hours and eliminate cold test.
PROBLEM 6: Vibration test portion of VT8-E Checkout Procedure has been found to be unnecessary.
CORRECTION 6: Eliminate vibration test.
PROBLEM 7: Module Test Procedures for VT8-E control modules are not listed on the Drawing Directory.
CORRECTION 7: List Module Test Procedures on Drawing Directory.
PROBLEM 8: Module cable C-IA-7009054 is no longer part of the M8336.
CORRECTION 8: Remove module cable C-IA-7009054 from the Drawing Directory.
In-plant effectivity -06 -Documentation/design change

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EC DEC-O-LOG Engineering Change Order Log

VT20-B

DUAL DISPLAY

PROCESSOR TYPE 8 FAMILY, DECsystem-10, PDP-11/05

VT20B-00001 CODE: P
MAY-73 – PROBLEM: Print variation numbers are identical.
CORRECTION: Change print number from K-WL-VT20-0-1 to K-WL-VT20-B-1.

NOTE: This ECO creates VT20 WL Revision "A".
In-plant effectivity – 06 Documentation change only

VT20B-00002 CODE: P WL: A
MAY-73 – PROBLEM: Print variation numbers are identical.
CORRECTION: Change print number from K-WL-VT20-0-2 to K-WL-VT20-B-2.
In-plant effectivity – 06 Documentation change only

VT20B-00003 CODE: P
MAY-73 – PROBLEM: Modules to be listed on Module Utilization Parts List instead of VT20 Box Assembly.
CORRECTION: Delete Items #21, #30, #34, #38, #39, #40, and #41. Correct Wire Table: Delete area B, C-3, C-4, and B-6. Only page 1 of 2 is affected, update revision level on page 2 of drawing D-AD-7009095-0-0 to "A".
In-plant effectivity – 06 Documentation change only

VT20B-B0004 CODE: DF DD: A
JUN-73 - PROBLEM: Signal BUS SACK , on the #70-09220 VT20 Box Assembly, remains low too long on the UNIBUS and causes interaction with DL11-C transmissions.
CORRECTION: Remove SACK ENABLE from the VT20 to the M7821 and ground SACK ENABLE on the M7821. The ADD/DELETE's are as follows: DELETE F07R1 to F07T1, F08R1 to F08T1, F04P1 to F07J2, and F06P1 to F08J2. ADD F07R1 to F07T1, F08R1 to F08T1, F08J2 to F07J2, F07T1 to F08R1, and F08T1 to F08J2.
In-plant effectivity -03 * rework all #70-09220's in-plant as of 6-18-73.
Field effectivity -Retrofit all VT20-B's
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents --FCO/Prints)

VT20B-B005 CODE: DF DD: B
JUL-73 - PROBLEM 1: The VT20 does two NPR's if nonexistent memory is adressed.
CORRECTION 1: Clear NPR with TIME OUT . The ADD/DELETE's are as follows: DELETE F07T1 to F08R1, F08T1 to F08J2, F07R1 to F07T1, and F08R1 to F08T1; ADD F07T1 to F08T1, F08T1 to F08J2, F07R1 to F01L1, and F08R1 to F02L1.
CORRECTION 2: Correct Appendix 1, Appendix II , and several paragraphs of the Checkout Procedure which are in error.

NOTE: This ECO must be installed in conjunction with FCO M7009-B0001.
In-plant effectivity -Retrofit all #70-09220's in-plant as of 7/25/73.
Field effectivity -Retrofit all VT20-B's
(Time To Install And Test 2.0 Hours.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -NF947 - FCO/Prints)

VT20B-00006 CODE: D DD: C
NOV-73 - PROBLEM 1: Logic frame changed to make it more universal.
CORRECTION 1: Delete logic frame #12-11103; replace with logic frame #12-11439.
PROBLEM 2: 360 pin blocks could not be produced fast enough, so a 72 pin block has been produced.
CORRECTION 2: Delete 360 pin connector #12-10834; replace with 72 pin connector #12-11425-0 and add three 288 pin connector #12-10258.
PROBLEM 3: New logic frame requires new retainer connector blocks.
CORRECTION 3: Replace blocks #74-10777 and #74-10778 with #74-11167 and #74-11168.
CORRECTION 4: Replace card guides #74-09580 and #74-09581 with #12-11099 and #12-11100.
In-plant effectivity -Phase-in

VT20B-D0007 CODE: F DD: D
DEC-73 – PROBLEM: LK01 keyboard is unreliable, and is costly to build and repair.
CORRECTION: Replace LK01 keyboard #54-09945 with LK01-R keyboard #54-10541.
In-plant effectivity – Commencing November 1, 1973 with complete changeover by March 31, 1974.
Field effectivity – Install new keyboard if present keyboard fails. (Time To Install And Test 1.0 Hour.) (Documentation $5.00, Parts $346.95)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents – PF1144 – FCO/Prints and Parts)

VT20B-A0008 CODE: F DD: E WL: B
FEB-74 - PROBLEM 1: When inputting characters at a fast rate on the ASCII keyboard, characters are intermittently lost.
CORRECTION 1: Add an M243 module in slot A03 of the VT20-B monitor for use as a keyboard storage buffer.
PROBLEM 2: DF11-K's require special slots in the DD11-B.
CORRECTION 2: Delete DF11-K's and DD11-B and replace with H319's.
PROBLEM 3: There presently are no inter connection specifications or special character specifications.
CORRECTION 3: Add the VT20-B Interconnection Specifications to the VT20-B print set, and special character specification to Engineering Specifications A-SP-VT20-B-7.
PROBLEM 4: Need Hardware Bootstrap Loader added to specification.
CORRECTION 4: Add BM792-YK to Engineering Specification A-SP-VT20-B-7; this is a documentation change only.
In-plant effectivity -Retrofit all 7009197 in-house as of 4/1/74.
Field effectivity -Retrofit Corrections 1 and 3 to all VT20-B'S; Correction 2 only if cable length is over 400 feet and unit is operating at 4800 baud.
(Time To Install And Test 4.0 Hours.) (Kit Contents -PF1211 - FCO/Prints And Parts)

VT20B-00009 CODE: P DD: F
AUG-74 - CORRECTION 1: New monitor added to VT20 print set.
CORRECTION 2: Delete items from customers' print set index.
In-plant effectivity -Documentation change only

VT20B-00010 CODE: P DD: H
SEP-74 - CORRECTION: Calibration procedures re-written, deleting scope calibration mask, and reducing raster size to 5 1/4 to 5 1/2 inches.
In-plant effectivity -Documentation/design change

VT20B-D0011 CODE: F DD: J
JAN-75 - PROBLEM: No installation procedure available for monitor.
CORRECTION: Installation procedures added which defines calibration and adjustments of monitor, section 9 of CP-VT20-B-6.
In-plant effectivity -Immediately
Field effectivity -Update customer print set at next PM or service call.
(Time To Install And Test N/A) (Kit Contents -NF1419 Wnn - FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

VW01

Writing Tablet

PROCESSOR TYPE PDP-8, PDP-12, PDP-15

VW01-00001 CODE: P
APR-71 - CORRECTION: Changed VW01 multiplex option designation numbers to eliminate confusion.

NOTE: This ECO creates VW01-MA ML revision "A" .
In-plant effectivity -06 documentation change only

VW01-00002 CODE: P ML: A
APR-71 - CORRECTION: Add component box module prints to VW01 print set.
In-plant effectivity -06 documentation change only

VW01-00003 CODE: D ML: B
APR-71 - PROBLEM 1: Insufficient power to logic rack.
CORRECTION 1: Add H716 Power Supply to VW01 logic rack.
PROBLEM 2: Lack of universal retainer block.
CORRECTION 2: Add universal retainer block to logic rack.
PROBLEM 3: Hold down bar too long.
CORRECTION 3: Incorporated smaller hold down bar.
In-plant effectivity -Rework immediately

VW01-00004 CODE: D ML: C
APR-71 - PROBLEM 1: Impossible to get to left/right switch on component box when mounted on VT04 cabinet.
CORRECTION 1: Moved component box from side to front of VT04 cabinet.
PROBLEM 2: PDP-9/15 I/O cables shown wrong.
CORRECTION 2: Reverse I/O cables.
In-plant effectivity -06 documentation/design change

VW01-00005 CODE: P ML: D
APR-71 - PROBLEM: VW01-A Block Schematics do not match the Wire List.
CORRECTION: Clean up VW01-A Block Schematics and Module Utilization drawing.

NOTE: This ECO affects VW01-AN and VW01-AP documentation.
In-plant effectivity -06 documentation change only

VW01-00006 CODE: P ML: D
APR-71 - PROBLEM: VW01-B Block Schematics do not match the Wire List.
CORRECTION: Clean up VW01-B Block Schematics and Module Utilization drawing.

NOTE: This ECO affects VW01-BN and VW01-BP documentation.
In-plant effectivity -06 documentation change only

VW01-00007 CODE: D ML: E WL: A
APR-71 - CORRECTION: Updated prints and the Wire List.
In-plant effectivity -03 documentation/design change

VW01-00008 CODE: P ML: F
APR-71 - CORRECTION: Updated vendor prints.
In-plant effectivity -06 documentation change only

VW01-00009 CODE: P ML: H
MAY-71 - CORRECTION: Incorporate Engineering Specification A-SP-VW01-0-4 in print set.
In-plant effectivity -06 documentation change only

VW01-00010 CODE: P ML: J
MAY-71 - CORRECTION 1: Incorporated VW01 Acceptance Procedure in VW01 print set.
CORRECTION 2: Updated VW01 Engineering Specification.
CORRECTION 3: Added calibration template to Unit Assembly drawing and Drawing Index.
In-plant effectivity -06 documentation change only

VW01-00011 CODE: D ML: K
JUN-71 - PROBLEM: Marx Bank Module, component box, had many failures.
CORRECTION: Incorporate redesigned Marx Bank Module in all component boxes.
In-plant effectivity -03 retrofit immediately

VW01-00012 CODE: P ML: L
SEP-71 - PROBLEM 1: Extra resistor in External Component Table on drawing D-AD-7007105-0-0.
CORRECTION 1: Deleted resistor from interface cable External Component Table.
CORRECTION 2: Documented change from 115V 60 Hz to 220V 50 Hz.
In-plant effectivity -06 documentation change only

VW01-00013 CODE: M ML: M
OCT-71 - CORRECTION 1: Incorporate new hold-down bar of 8.25 inches length, #74-08339-11, print C-IA-7408339-0-0.
CORRECTION 2: Correctly document hold-down bar variations for VW01 logic assemblies.
In-plant effectivity -Retrofit immediately

VW01-C0014 CODE: DF ML: N WL: B
NOV-71 - PROBLEM 1: The PDP-9/15 I/O cables going into and out of the VW01 do not conform to current conventions.
CORRECTION 1: Reversed PDP-9/15 I/O cables to conform.
PROBLEM 2: Wires missing from VW01 logic panels.
CORRECTION 2: Update Wire List to include missing wires.
PROBLEM 3: Logic gates C11P2, C11S2, C11V2 should be changed to logic gates C12P2, C12S2, C12V2.
CORRECTION 3: Incorporated this change in Wire List and print set.

NOTE: Correction #1 is the only one that should be retrofitted in the field. Corrections #2 and #3 will be incorporated into logic panels in production.
In-plant effectivity -03 retrofit immediately
Field effectivity -Retrofit all VW01's to correction #1 only
(Time To Install And Test .5 Hour.) (Kit Contents -FCO Only)

VW01-00015 CODE: P ML: P
FEB-73 - CORRECTION: Incorporate Interconnection Table on print for M401 clock frequencies between 1 and 200 Hz.
In-plant effectivity -06 documentation change only

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EC DEC-O-LOG Engineering Change Order Log

A225

VR14/GT40 Deflection Amplifier

PROCESSOR TYPE All

A225-00001 CODE: D CS: B
JAN-71 - PROBLEM: Crossover resistor R23 is too large.
CORRECTION: Change R23 from 47 ohms, 1/2W, 5%, to 33 ohms, 1/2W, 5%.
In-plant effectivity -04 rework until new stock available

A225-C0002 CODE: F CS: C ETCH: C
APR-71 - PROBLEM 1: Heat sinks for Q2 and Q4 inadequate.
CORRECTION 1: Increase size of heat sinks for Q2 and Q4 and remove resistors R29 and R30.
PROBLEM 2: Gain potentiometer too sensitive for normal application.
CORRECTION 2: Change resistors R1 and R2 from 3.3 K to 12K 1/4W 5%.
PROBLEM 3: Module does not meet production layout standards.
CORRECTION 3: Make changes in current layout so it will meet production standards.
CORRECTION 4: Stamp reworked module handle revision "C ".

NOTE 1: As of 9-23-71, production is not using boards reworked to circuit schematic revision "C " because this ECO cannot be implemented as was expected. The board layout must be changed to provide adequate space for the mounting of the larger heat sink. Field service is to implement this ECO only to the extent of correction #2. Resistors R1 and R2 are to be changed from 3.3K to 12K.

NOTE 2: See correction supplement FCO's A225-E0003 and G225-B0004.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A225's in VR14's.
(Time To Install And Test .3 Hour.) (Kit Contents -FCO/Prints And Parts)

A225-E0003 CODE: DF
JUL-71 - PROBLEM: Jumper not removed from print B-CS-A225-0-1.
CORRECTION: Remove jumper from print B-CS-A225-0-1. Replace with etch revision "C ".

NOTE: This FCO is supplemental to FCO A225-C0002.
In-plant effectivity -06 documentation change only
Field effectivity -None; the FCO was distributed to regional field offices for information purposes only.
(Kit Contents -FCO Only)

A225-B0004 CODE: DF
SEP-71 - PROBLEM 1: Input resistors R1 and R2 are 12K, should be 10K.
CORRECTION 1. Change R1 and R2 to 10K, 1/4W, 5%.
PROBLEM 2: A225 does not have provisions for small signal input
CORRECTION 2: Make correction to drawings to include resistor values for small signal input.

NOTE: This FCO is supplemental to ECO A225-C0002.
In-plant effectivity -06 documentation change only
Field effectivity -All A225's with FCO A225-C0002 only.
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints And Parts)

A225-B0005 CODE: F CS: D
JAN-72 - PROBLEM: Compensation network not sufficient for proper operation using new ferrite yoke. Operational symptoms include dot skew in diplayed characters.
CORRECTION: Change capacitor C12 from 68 pfd to 100 pfd. This change has negligible effect on the old style yokes.

NOTE: Two parts kits are required for each VR14.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A225's as required
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO And Parts)

A225-A0006 CODE: F CS: E
MAR-72 - PROBLEM: Latch-up of A225 occurs when VR14 is turned off and then turned on immediately, causing the output to go to 8 AMPS, thus blowing the negative fuse.
CORRECTION: Change 270 ohm 1W resistor in operational amplifier voltage supply to 200 ohms 1W.

NOTE: Two parts kits are required for each VR14/VR20.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A225's in VR14's and VR20's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

A225-C0007 CODE: F CS: F ETCH: D
DEC-72 - PROBLEM 1: A225 deflection amplifier has cross over distortion.
CORRECTION 1: Increase resistor R23 from 33 ohms to 47 ohms, 1/2 watt, 5%.
PROBLEM 2: Input resistors are too large.
CORRECTION 2: Change input resistors R1 and R2 from 10K ohms to 8.2K 1/4 watt 5%.
PROBLEM 3: Characters are distorted.
CORRECTION 3: Add 180 pfd capacitor C17 across feedback resistor R31 in the "YB " variation. Reference FCO A225-C0008.
CORRECTION 4: Create the variation, A225-YB.

NOTE 1: This FCO creates a "YB " variation of the A225. A225-YB amplifiers must not be used on systems other than GT40. Do not install this FCO on VR14's on PDP-12, LAB-8/E, LAB-11, or PDP-15's.

NOTE 2: Two parts kits are required for each VR14.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all A225's in GT40's.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

A225-C0008 CODE: F CS: H
MAR-73 - CORRECTION 1: Make capacitor C17 selectable from 180 pfd to 100 pfd. Varying C17 can reduce distortion of characters on the GT40. C17 on each A225-YB of the VR14-LC, -LD , must be the same value.
CORRECTION 2: Metal screws are replaced by nylon screws to eliminate the possibility of shorting against the adjacent W684 module.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A225's and A225-YB's as required
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

A225-00009 CODE: D CS: J
JUN-73 - PROBLEM 1: Selective range of capacitor C17 is too small.
CORRECTION 1: Make C17 selectable from zero to 180 pfd.
PROBLEM 2: Circuit Schematic is too crowded.
CORRECTION 2: Redraw Circuit Schematic to have Parts List and Overlay on sheet 1, and Circuit Schematic on sheet 2.
In-plant effectivity -06 * -Documentation/design change

A225-C0010 CODE: F CS: K ETCH: E
SEP-73 - PROBLEM: Potential ringing in settling time of transient.
CORRECTION: Connect analog and signal grounds together as follows: Add a wire from the negative end of capacitor C9, which is connected to analog ground, to the end of resistor R13 which is connected to signal ground.
In-plant effectivity -03 * retrofit immediately. It is not necessary to retrofit metal screws and nuts.
Field effectivity -Rework all A225's when symptoms are present.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts None)
* the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. NOTE: For GT40 only, all DEC installation labor and material are to be reported under a "W " charge code. (Kit Contents -F1027 -FCO/Prints)

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E C DEC-O-LOG Engineering Change Order Log

A230

Dual Differential Operational Amplifier Module

PROCESSOR TYPE All

A230-D0001 CODE: DF CS: C

OCT-72 - PROBLEM: Module oscillates under certain types of loads.
CORRECTION: Change etch to add a 100 ohm resistor in series with the amplifier output but within the feedback loop.

NOTE: The oscillations will be noticed on the output with the module in circuit. It will be a high frequency oscillation at approximately 5 MH z with an amplitude between ,5 volt to 5 volts. These figures may vary depending upon the application. The oscillation is due to capacitive loading at the output.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A230 modules with oscillations at the output.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

A230-YA

Ch 1, Follower
Ch 2 Differ Adder

PROCESSOR TYPE All

A230YA-D0001 CODE: DF CS: B

OCT-72 - PROBLEM: Module oscillates under certain types of loads.
CORRECTION: Change etch to add a 100 ohm resistor in series with the amplifier output, but within the feedback loop.

NOTE: The oscillations will be noticed on the output with the module in circuit. It will be a high frequency oscillation at approximately 5 MH z with an amplitude somewhere between .5 Volt to 5 volts. These figures may vary depending upon the application. The oscillation is due to capacitive loading at the output.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A230 modules with oscillation at the output.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
EC DEC-O-LOG

A230-YC

Two Diff Two Input Adders

PROCESSOR TYPE All

A230YC-D0001 CODE: DF CS: B
OCT-72 - PROBLEM: Module oscillates under certain type of loads.
CORRECTION: Add a 100 ohm resistor in series with the amplifier output, but within the feedback loop.

NOTE: The oscillations will be noticed on the output with the module in circuit. It will be a high frequency oscillation at approximately 5 MH z with an amplitude between .5 Volts to 5 volts. These figures may vary depending upon the application loading at the output.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A230 modules with oscillation at the output.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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ECO DEC-O-LOG Engineering Change Order Log

A230-YD

Ch 1 Inverter .0625 Gain Ch 2 Inverter -4 Gain

PROCESSOR TYPE All

A230YD-D0001 CODE: DF CS: B

OCT-72 - PROBLEM: Module oscillates under certain types of loads.
CORRECTION: Add two 100 ohm resistors in series with the amplifier output, but within the feedback loop.

NOTE: The oscillations will be noticed on the output with the module in circuit. It will be a high frequency oscillation at approximately 5 MH z with an amplitude between .5 Volts to 5 volts. These figures may vary depending upon the application. The oscillation is due to capacitive loading at the output.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A230 modules with oscillation at the output.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) .

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EC DEC-O-LOG Engineering Change Order Log

A230-YE

CH 1 Inverter .1 Gain and Ch 2 Inverter -1 Gain

PROCESSOR TYPE All

A230YE-D0001 CODE: DF CS: B
OCT-72 - PROBLEM: Module oscillates under certain types of loads.
CORRECTION: Add a 100 ohm resistor in series with the amplifier output, but within the feedback loop.

NOTE: The oscillations will be noticed on the output with the module in circuit. It will be a high frequency oscillation at approximately 5 MH z with an amplitude between .5 Volts to 5 volts. These figures may vary depending upon the application. The oscillation is due to capacitive loading at the output.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A230 modules with oscillation at the output.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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ECO SYNOPSES FOR LOGIC OR OPTION

AD8-E CONTROL MODULE **A231**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	APRIL 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
A231 00001	>A231	D	ECO RELEASE DATE - JULY 1971 PROBLEM: LIMITED RELEASE A231 ETCH REVISION "D" MODULES REQUIRE JUMPERS AND PART CHANGES BEFORE THEY ARE USABLE. CORRECTION: REWORK ALL ETCH REVISION "D" BOARDS TO CIRCUIT SCHEMATIC REVISION "D". NO RELAYOUT OF THE ETCHED BOARD IS REQUIRED. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED
A231 B0002	ALL A231 IN AD8-E	F	FCO RELEASE DATE - NOVEMBER 1971 PROBLEM 1: POSSIBILITY OF SIGNAL "RESET H" HOLDING "BUSY LOW" ON POWER UP, THUS HANGING UP THE A/D CONVERTER. CORRECTION 1: CLEAR "RESET H" SHIFT REGISTER WITH "CLEAR L". PROBLEM 2: SOME ETCHED BOARD REVISION "C" MODULES DELIVERED IN JUNE ARE MISSING PART OF ECO A231-00001. CORRECTION 2: INSPECT MODULES IN THE FIELD TO SEE IF ECO A231-00001 HAS BEEN INSTALLED. PROBLEM 3: TYPOGRAPHICAL ERROR ON ECO A231-00001; REWORK INSTRUCTION 5 READ 'ADD JUMPER FROM E10 PIN 7 TO E4 PIN 1'. CORRECTION 3: INSTRUCTION SHOULD HAVE READ 'ADD JUMPER FROM E10 PIN 7 TO E10 PIN 2'. PROBLEM 4: MODULE CANNOT BE CMT (COMPLEX MODULE TESTER) TESTED DUE TO FREE-RUNNING CLOCK CIRCUIT. CORRECTION 4: ADD SPLIT LUGS TO DISABLE CLOCK DURING CMT TEST. CORRECTION 5: CORRECTS CIRCUIT SCHEMATIC ERRORS. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - RETROFIT ALL A231 IN AD8-E "F" CODED CS REVISION "B" AND ETCHED BOARD REVISION "E" ARE CREATED TIME TO INSTALL AND TEST - .5 HOUR THIS FCO IS NO CHARGE TO CUSTOMER. ORDERED KITS WILL INCLUDE FCO AND PARTS.
			TABLE OF CIRCUIT SCHEMATIC AND ETCHED BOARD REVISIONS -ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT ETCH REVISION BOARD, DEPENDENT UPON THE ECO LEVEL OF THE BOARD. -SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISIONS D	ETCHED BOARD REVISIONS E	REVISIONS CREATED CS	REVISIONS CREATED ETCH
E	00001	D		D	D
C	00002	E	E	E	E
O					

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

A231

AD8-E Control Module

PROCESSOR TYPE PDP-8/E

A231-B0003 CODE: F CS: F
JUL-72 - PROBLEM: **TIMING ERROR FLAG** erroneously sets when AD8/E is started from DK8EP/DK8ES Real Time Clock.
CORRECTION: Invert input to **BUSY** flag to avoid this problem.
In-plant effectivity -03 rework immediately
Field effectivity -All A231 in AD8/EA and DK8/ES.
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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E C DEC-O-LOG Engineering Change Order Log

A232

Analog Multiplex Expander

PROCESSOR TYPE PDP-8/E

A232-C0001 CODE: F CS: C
NOV-71 - PROBLEM: A232 at CS revision "B " will only decode channels 0 thru 7.
CORRECTION: Rework modules in the field and Production when channels 10 thru 17 are required. The rework procedure is as follows: Cut etch at E2 pin 12, add wire from E2 pin 13 to FV2 etch.

NOTE: Module is at Limited Release status.
In-plant effectivity -Rework immediately
Field effectivity -Rework A232's as required.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO Only)

A232-00002 CODE: D CS: D ETCH: D
DEC-71 - PROBLEM 1: 1709 operational amplifier bias circuitry complex and difficult to troubleshoot.
CORRECTION 1: Change operational amplifier to LM301 and eliminate unneeded components.
PROBLEM 2: A232 uses jumper wire to select channels 0-7 and 10-17.
CORRECTION 2: Add split lugs to select 0-7 for 10-17.
PROBLEM 3: Customer alteration of input voltage desirable.
CORRECTION 3: Add provision for two new resistors per channel which change bias current and provide offset change. These new conponents will be positioned horizontally on the board.
PROBLEM 4: Cutting "F " slot notch causes etch to be cut.
CORRECTION 4: Move components near upper right handle area to new location.

NOTE: Module at Limited Release status.
In-plant effectivity -02 phase-in

A232-C0003 CODE: DF CS: E
DEC-72 - PROBLEM: Distance between shield ground and HQ GND on etch causes shield wires to induce ground noise into analog system when a CS revision "D " module is used with the AM8-EC front panel.
CORRECTION: Reroute shield runs as indicated by this FCO.
In-plant effectivity -03 rework
Field effectivity -Rework all A232's, CS revision "D ", with AM8-EC front panels.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

A633

UDC Dac Module

PROCESSOR TYPE Family of 8, PDP-11, PDP-15

A633-00001 CODE: P CS: D
SEP-71 - CORRECTION: Make miscellaneous parts list and assembly hole print corrections to agree with the model.
In-plant effectivity -Documentation change only

A633-B0002 CODE: F CS: E
JUL-72 - PROBLEM: Power low circuit on A633 disables UDC bus LOAD H signal in case of malfunction or power low.
CORRECTION: Change circuit to disable B LOAD H instead of LOAD H .
In-plant effectivity -03 rework immediately
Field effectivity -All A633 modules in UDC8, UDC11 and UDC15 systems
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

DUAL VOLTAGE REGULATOR MODULE **A708**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-11 PDP-15	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
A708 00001	ALL A708	D	ECO RELEASE DATE - APRIL 1970 PROBLEM: +5 VOLT ADJUSTMENT POT BEHIND HANDLE AND DIFFICULT TO ADJUST. CORRECTION: CHANGE ETCH TO MOVE POT TO A MORE ACCESSIBLE POSITION. .. IN-HOUSE EFFECTIVITY - ALL AS OF MAY 1, 1970
A708 C0002	ALL A708	F	FCO RELEASE DATE - AUGUST 1971 PROBLEM: THE DELTRON 12-03185-3 POWER SUPPLY LATCHES IN OVERLOAD STATE FOR MAXIMUM CONFIGURATION OF THE AD01-A. CORRECTION: SLOW THE TURN ON TIME OF THE +5V REGULATOR OF THE A708 TO REDUCE INITIAL CURRENT SURGE. RETROFIT A708 PER MARKED PRINT FOR AD01-A ONLY UNTIL PERMANENT DESIGN CHANGE IS MADE. .. NOTE: THE ECO WAS NOT "F" CODED AS A RESULT NO FIELD DISTRIBUTION WAS MADE; AN FCO WAS RELEASED TO DEFINE FIELD IMPLEMENTATION. .. IN-HOUSE EFFECTIVITY - 03 REWORK TIME TO INSTALL AND TEST - .5 HOURS THIS FCO IS NO CHARGE TO THE CUSTOMER FIELD RETROFIT ANTICIPATED - 70% FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE - FCO'S AND PARTS
A708 00003	ALL A708	D	FCO RELEASE DATE - JULY 1971 PROBLEM: THE DELTRON 12-03185-3 POWER SUPPLY LATCHES IN THE OVERLOAD STATE FOR MAXIMUM CONFIGURATION OF AD01-A. CORRECTION: RETROFIT ECO A708-00002 TO CORRECT PROBLEM (SHOWS NO DETRIMENTAL EFFECT UPON SYSTEM PERFORMANCE); MAKE PERMANENT ETCH CHANGE.

TABLE OF CIRCUIT SCHEMATIC REVISIONS

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISION A	B	C	REVISIONS CREATED CS	ETCH
		0				
E	00001	-	A		A	B
C	00002	B	B		B	-
O	00003	-	-	C	C	C

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Spsco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
EC DEC-O-LOG

A708

Dual Voltage Regulator Module

PROCESSOR TYPE Family of 8, PDP-11, PDP-15

A708-C0004 CODE: F CS: D
APR-72 - PROBLEM: A708 module +5V regulator clamps at +4V when used in AD01-A with a Deltron supply no. 6575 fully loaded.
CORRECTION: Add a 56 ohm, 1/2W, 10%, CC resistor between R3 and the base of Q1.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A708 in AD01-A with Deltron power supply fully loaded (Time To Install And Test .8 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

A708-B0005 CODE: F CS: E
MAY-72 - PROBLEM: D-AH-A708-0-5 marked up drawing for A708-C0004 is incorrect. Etch cut and resistor are in wrong place.
CORRECTION: Update D-AH-A708-0-5 drawings. Install 56 ohm resistor, 1/2W, 5%.

NOTE: If units have been changed, rework to original state (remove FCO A708-C0004) and modify per this FCO.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A708's
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

A708-D0006 CODE: F CS: F
JUN-72 - PROBLEM: FCO A708-B0005 retrofit is not complete.
CORRECTION: There must be an etch cut between C4 and the collector of Q2. Put #22 wire jumper from C4 to R3.
In-plant effectivity -03 rework immediately
Field effectivity -All M708's with FCO A708-B0005 installed
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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ECO DEC-O-LOG Engineering Change Order Log

A841

10-Bit A/D with Sample and Hold

PROCESSOR TYPE PDP-8/E

A841-00001 CODE: D CS: D
AUG-71 - PROBLEM: Comparator response is too slow.
CORRECTION: Limited Release A841 etch revision "C " modules require jumpers and part changes before they are usable. Rework all etch revision "C " boards to CS revision "D ".
In-plant effectivity -03 rework immediately

A841-C0002 CODE: F CS: E
NOV-71 - PROBLEM 1: Component tolerance build-up causes low module yield. Symptoms are noisy and erratic outputs from many units.
CORRECTION 1: Improve reference circuit biasing, reduce perturbations on reference, eliminate current loops between HQ and logic grounds.
PROBLEM 2: Negative input buffer may oscillate when unused in system.
CORRECTION 2: When option is used single-ended, A232 front end, install an I/O connector on the A841 to ground this input; increase the value of capacitor C7 from 1200 mmfd to 2200 mmfd.
In-plant effectivity -03 rework immediately
Field effectivity -Exchange A841's as required
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

A841-D0003 CODE: F CS: F
NOV-72 - PROBLEM: Recent yields of DEC 3009B transistors exhibit lower beta than in the past. Base current supplied to transistor Q24 is marginal, causing module test problems. Characteristic problem is Q24 not saturating.
CORRECTION: Increase base drive to Q24 by changing resistor R86 from 22K to 4.7K ohms.

NOTE 1: See continuation supplement FCO A841-D003A.

NOTE 2: Module status, Limited Release.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all A841's when replacement of Q24 is required.
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) Supplement FCO A841-D003A will also be included in the kit.

A841-D003A CODE: F
NOV-72 - PROBLEM: Excessive fall time of bit 3 causing module failures in production.
CORRECTION: Add transistor Q17 and change resistor R45 from 2.2K to 4.7K ohms to improve falltime; lands are provided on module.
In-plant effectivity -Unchanged
Field effectivity -Rework A841's when full recalibration of the A/D is required.

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ECO SYNOPSES FOR LOGIC OR OPTION

BUS DRIVER MODULE **B683**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-9 PDP-10 PDP-11 PDP-15	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
B683 00001	N.A.	D	ECO RELEASE DATE - APRIL 1969 PROBLEM: MODULE CAUSES EXCESSIVE -15 VOLT AND GROUND NOISE. CORRECTION: CHANGE .01 MFD CAPACITOR, FROM -15V TO GROUND, TO 6.8 MFD. IN-PLANT EFFECTIVITY - 5/30/69
B683 00002	ALL B683 IN RP10, RC10, TM10, MX10, AND RA10	F	ECO RELEASE DATE - NOVEMBER 1971 PROBLEM: WHEN DRIVING A 100' BUS THE B683 OUTPUTS DON'T GO FAR ENOUGH NEGATIVE TO SWITCH THE GATES AT THE OTHER END OF THE BUS. CORRECTION: CHANGE D1, A 4.7V ZENER DIODE, TO A 5.6V ZENER DIODE. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - .3 HOURS THIS ECO IS NO CHARGE TO THE CUSTOMER. FIELD RETROFIT ANITICPATED - 100% FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE ECO'S AND PARTS.

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISION		REVISIONS CREATED	
		C		CS	ETCH
		A			C
E	00001	B		B	
C	00002	C		C	
O					

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

READ AMP & SLICE MODULE **G085**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-9 PDP-11 PDP-12 PDP-15	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
G085 00001	ALL G085	D	ECO RELEASE DATE - MAY 1969 PROBLEM 1: PRINT ERRORS - TWO R58'S CORRECTION 1: CHANGE 10 OHM R58 TO R60 PROBLEM 2: WRONG VALUES FOR R58,R59,R3 CORRECTION 2: CHANGE VALUES OF R58 AND R59 TO 1K AND R3 TO 4.7K PROBLEM 3: C3 NOT USEFUL CORRECTION 3: REMOVE C3 NOTE: THERE IS NO CHANGE TO TEST PROCEDURE IN-PLANT EFFECTIVITY - MODIFY ALL MODULES IN STOCK AS OF 5/19/69
G085 00002	ALL G085	D	ECO RELEASE DATE - JULY 1969 PROBLEM 1: INSUFFICIENT LOW FREQUENCY RESPONSE WHICH CAUSES PICK-UP ERRORS DUE TO DROOP AND UNDERSHOOT. CORRECTION 1: DC-COUPLING 3RD STAGE AND INCREASING THE COUPLING TIME CONSTANT BETWEEN PRE AMP AND SLICER. PROBLEM 2: LESS CMR THAN POSSIBLE WITH EXISTING CONFIGURATION, CMR (COMMON MODE REJECTION) SCHEMATIC DIFFICULT TO UNDERSTAND. CORRECTION 2: ZENER DIODE D40 INCREASES CMR OF SECOND STAGE. IN-PLANT EFFECTIVITY - 7/10/69
G085 00003	ALL G085	D	ECO RELEASE DATE - AUGUST 1969 PROBLEM 1: LONG RECOVERY TIME FROM, AND DANGER OF POLARIZATION BREAKDOWN IN C4 DURING, "WRITE" SWITCHING. CORRECTION 1: D38 AND D39 WILL PREVENT C4 FROM CHARGING MORE THAN 0.6V DURING "WRITE". PROBLEM 2: SCHEMATIC DIFFICULT TO UNDERSTAND. CORRECTION 2: REDRAW SCHEMATIC. IN-PLANT EFFECTIVITY - 9/10/69
G085 00004	ALL G085	D	ECO RELEASE DATE - AUGUST 1970 PROBLEM: TANTALUM CAPACITORS (#10-02180) CURRENTLY USED FOR C4 & C5 HAVE A POOR DISSIPATION FACTOR CAUSING AMPLIFIER GAIN REDUCTION OF AS MUCH AS 50% IN SOME CASES. CORRECTION: CHANGE C4 & C5 TO POLYCARBONATE TYPE CAPACITORS, DEC PART #10-00031-0. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
G085 C0005	ALL G085	F	FCO RELEASE DATE - MAY 1971 PROBLEM 1: INSUFFICIENT GAIN AND SLICE ADJUSTMENT. CORRECTION 1: CHANGE THE VALUES OF R21, R30, AND R32. PROBLEM 2: DIODE D17 MISSING FROM PRINTED CIRCUIT REV "B" BOARDS. CORRECTION 2: ADD D17 TO PRINTED CIRCUIT REV "B" BOARDS. PROBELM 3: DIODE D17 AND CAPACITOR C14 MISSING FROM PRINTED CIRCUIT REV "D" BOARDS. CORRECTION 3: ADD D17 AND C14 TO PRINTED CIRCUIT REV "D" BOARDS. NOTE: ON ALL RETROFITTED BOARDS, REPLACE Q14 (#1S-05321) BECAUSE OF POSSIBLE DETERIORATION CAUSED BY MISSING D17. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - 5.0 HOURS THIS FCO IS NO CHARGE TO CUSTOMER FIELD RETROFIT ANTICIPATED - 50% FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE FCO'S, PRINTS AND PARTS
G085 A0006	ALL G085 IN DF32-D & DS32-D	F	FCO RELEASE DATE - MAY 1971 PROBLEM: THE FIRST G0850 MODULES ARE REVISED G085 MODULES. THERE IS NO DOCUMENTATION ON THESE G0850 MODULES WITH G085 ETCH. CORRECTION: G0850 MODULES WITH G085 ETCH "D" SHOULD BE REFERENCED TO THE G085 PRINT SET AND THE REWORK INSTRUCTIONS ENCLOSED IN THE FCO FOR THE G085. PRODUCTION RELEASE FOR G0850 HAS BEEN ORIGINATED (FORM #8629); DO NOT UPDATE G085 DOCUMENTATION. NOTE: REWORKED G085'S WILL BE INCLUDED IN THE FCO KITS FOR DF32D-A0017 AND DS32D-A00205. IN-PLANT EFFECTIVITY - REWORK AS REQUIRED FOR DF32-D & DS32-D TIME TO INSTALL AND TEST - 2.0 HOURS THIS FCO IS NO CHARGE TO CUSTOMER FIELD RETROFIT ANTICIPATED - 100% FSIC WILL NOT INITIATE DISTRIBUTION ORDERED KITS WILL INCLUDE FCO'S AND PARTS
G085 00007	ALL G085	D	ECO RELEASE DATE - JUNE 1971 PROBLEM: FCO G085-C0005 ADDED DIODE D17 AND FCO G085-A0006 ADDS THE SAME DIODE. CORRECTION: DELETE THE REDUNDANT ADDITION OF D17. NOTE: G085 DOCUMENTATION IS NOT UPDATED BY THIS ECO; FCO G085-A0006 IS MODIFIED TO DELETE THE DIODE. IN-PLANT EFFECTIVITY - REWORK G085 IN DF32-D & DS32-D

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

READ AMP & SLICE MODULE **G085**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-9 PDP-11 PDP-12 PDP-15	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS

TABLE OF CIRCUIT SCHEMATIC REVISIONS

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISION A	B	C	D	E		REVISIONS CREATED CS	ETCH
		*						*	A
E	00001	A						A	-
C	00002	-	D					D	C
O	00003	-	-	-				-	C
	00004	E	E	E	E			E	D
	00005	F	F	F	F	F		F	E
	00006	-	-	-	-	-		-	-
	00007	-	-	-	-	-		-	-

LEGEND

FIELD CODE
F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL
> = ECO applicable to future production

ECO CHARGES
Charges are coded within the synopses. (*$X,**$Y,***$Z)
$X = Charge for Speco and updated prints only
$Y = Charge for necessary parts only
$Z = Charge for on site labor only, installation by DEC
NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

SENSE / INHIBIT MODULE **G104**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8E	JULY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
G104 00001	ALL FUTURE G104	D	DEC 70 - REPLACES THE LIMITED RELEASE REVISION "B" ETCHED BOARDS WITH THE REVISION "C" BOARD WHICH WILL MEET STANDARDS FOR RELEASE TO PRODUCTION. CHANGES THE CIRCUIT SCHEMATIC TO INCLUDE RESISTOR R82.
G104 00002	ALL G104	F	JAN 71 - CHANGES THE CIRCUITRY TO OPTIMIZE SENSE TERMINATION. CHANGES THE ETCHED BOARD AT IC E29, PINS 11 AND 12. ALL REVISION "C" BOARDS HAVE BEEN REWORKED IN-PLANT TO EFFECT THESE CHANGES. ADDS + SIGNS TO ALL POLARIZED CAPACITORS SHOWN ON THE CIRCUIT SCHEMATIC.
G104 00003	ALL FUTURE G104	M	FEB 71 - ADDS CATERPILLAR GROMMETS ACROSS THE TRANSFORMER TOPS TO PREVENT FLEXING.

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

- ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
- SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
- IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

		ETCHED BOARD REVISION B	C	D		REVISIONS CREATED CS ETCH	
E	00001	A,B	A,B	-	CS REV A=B EXCEPT FOR RESISTOR R82.	B	C
C	00002	"	C,D	C,D		C	D
0	00003					D	-

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

G111

12 Bit Sense and Inhibit

PROCESSOR TYPE PDP-8/E

G111-00001 CODE: M CS: C
JUN-72 - PROBLEM 1: 6 watt resistors and 1540's to be mounted 1/16 inch off board.
CORRECTION: Add note to Assembly Hole drawing. 1: Mount R1 thru R12, 6W resistors, at least 1/16 inch off board 2: Allow 1/8 inch clearance between board surface and bottom of 1540's.
In-plant effectivity -02 phase-in

G111-A0002 CODE: DF CS: D
JUL-72 - PROBLEM: SCHMOO ' S cave in when subjected to heat (the SCHMOO curve is distorted); fails at high threshold, late strobe margin results.
CORRECTION: Change common mode rejection capacitor to 82 pfd.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G111's
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

G111-00003 CODE: D CS: E
OCT-72 - PROBLEM: Nominal current setting requires adjustment.
CORRECTION: Change the value of resistor R65 to 2.37K ohms, setting Vxy within the proper range.

NOTE: See correction supplement FCO G111-D0004.
In-plant effectivity -03 rework all G111's in MM8-EJ beginning 10-18-72.

G111-D0004 CODE: F CS: F
OCT-72 - PROBLEM: The tolerances of Vxy are too great to permit total module interchangeability.
CORRECTION: Adjust the Vxy on the G111 when the uncertainty is greatest.

NOTE: Install a resistor for R65 of a value that will produce a voltage at pin HA1 between -3.65 and -3.70 with respect to +5 volts.
In-plant effectivity -03 rework beginning 10-20-72.
Field effectivity -Rework G111's when MM8-EJ modules are replaced individually rather than as a three module set.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints)

G111-D0005 CODE: F CS: H
OCT-73 - PROBLEM 1: There is noise on the **INHIBIT** etch run that can turn on the inhibit driver load gates during read time. This will cause the memory to randomly pick up and drop bits. This problem is less likely to occur in the field than at the in-plant memory tester.
CORRECTION 1: Make ten etch cuts and install four #30 AWG twisted pair jumpers.
PROBLEM 2: Shortage of DEC 384 IC's.
CORRECTION 2: Allow DEC 7384's and DEC 5384 IC's to be substituted for DEC 384 IC's.
In-plant effectivity -As of 10/8/73, in Module Production, incorporate this ECO only in blank modules. Do not lift or unsolder any components to install this ECO in Module Production. Memory Test areas: Retrofit as required.
Field effectivity -Rework all G111's if symptoms are present
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts $ 1.60)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -F1060 - FCO/Prints And Parts)

G111-00006 CODE: D CS: J
NOVEMBER-73 – PROBLEM 1: FCO G111-D0005 stated that 7384's could be substituted for all 384's receivers. This is an error.
CORRECTION 1: Change Parts List so that 7384's cannot be substituted for 384's E14, E21, and E28.
PROBLEM 2: D49, 6.8V Zener diode, stability can be improved.
CORRECTION 2: Make resistor R91 a lower value to improve the stability of D49; change to #13-02956, 196 ohms.
CORRECTION 3: Add note to the Circuit Schematic indicating new system configuration.
In-plant effectivity - rework all units as of March 1, 1974

G111-00007 CODE: D CS: K ETCH: D
NOVEMBER-73 - CORRECTION: Make etch changes, to new revision "D", to expedite installation of twisted pair wiring added by ECO G111-00005.
In-plant effectivity - all new modules built as of March 1, 1974.

G111-C0008 CODE: DF CS: L
FEBRUARY-74 - PROBLEM 1: Non-hermetically sealed capacitors, solid tantalum electrolytics, are affected by our board cleaning process and can become shorted.
CORRECTION 1: Use only hermetically sealed caps, solid tantalum electrolytics, on this module. Non-hermetically sealed caps are identified by a red positive end.
PROBLEM 2: Product reliability can be improved by specifying a better device for E9.
CORRECTION 2: Specify a DEC 74H00-1 for E9
In-plant effectivity – immediate for 47 MFD capacitors, part #10-00079. All modules returned for repair must be retrofitted with proper 47 MFD caps. Phase-in for 6.8 MFD capacitiors, part #10-00067 in all new builds as of 2/18/74. Phase-in DEC 74H00-1 in all new builds as of 4/30/74.
Field effectivity - rework G111's in depots only as modules are returned for repair. High current use of 47 MFD capacitors on this module necessitates retrofit in depots; the other capacitors need not be changed. The IC change is for future reliability only.
(Time To Install And Test .5 Hour) (Kit Contents -- PF1198 - FCO/Prints and Parts)

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Engineering Change Order Log
DEC-O-LOG

G180

RK05 Read/Write Module

PROCESSOR TYPE PDP-8 Family, PDP-11 Family

G180-00001 CODE: D CS: D ETCH: E
JAN-72 - PROBLEM 1: Etch missing between anode of diode D17 and resistor R42.
CORRECTION 1: Add missing etch.
PROBLEM 2: Additional filtering is necessary on +12 VDC.
CORRECTION 2: Replace diode D21 with a resistor.
PROBLEM 3: Additional hysteresis is necessary in the read signal shaping-making circuit.
CORRECTION 3: Decrease the value of resistor R51 to 100K ohms.
In-plant effectivity -03 rework immediately

G180-00002 CODE: D CS: E ETCH: F
JAN-72 - PROBLEM: There is no convenient way to introduce a fault condition into the circuitry to test the SET UNSAFE L detect circuit.
CORRECTION: Add a jumper from the collector of Q3 to spare pin BA1 to allow a forced unsafe condition under test.
In-plant effectivity -03 rework immediately

G180-00003 CODE: D CS: F ETCH: H
FEB-72 - PROBLEM: Data window loop loses control during interrecord gaps since window amplifier E5 output can saturate.
CORRECTION: Add a Zener diode to clamp the output of amplifier E5 to prevent saturation.
In-plant effectivity -03 rework immediately

G180-00004 CODE: D CS: H ETCH: J
APR-72 - PROBLEM: During high temperature testing, the triggering pulse for one-shot E10 has expired before the other enabling input has reached the logic one level.
CORRECTION: Increase the triggering pulse width to overlap the other enabling function.
In-plant effectivity -03 rework all those units being built and tested but not those units that have already been accepted and have shown a high tolerance to thermal cycling

G180-00005 CODE: D CS: J ETCH: K
OCT-72 - PROBLEM 1: Unequal propagation delays of MC1414 cause random data errors.
CORRECTION 1: Redesign circuits to use double comparator and one-shot pulse generators.
PROBLEM 2: Too much range in write current adjustment.
CORRECTION 2: Change resistor R14 to 470 ohms.
PROBLEM 3: Schematic error in connection to resistor R57.
CORRECTION 3: Show resistor R57 connected to E10 pin 6.
In-plant effectivity -02 * phase-in immediately

G180-C0006 CODE: F CS: K
MAY-73 - PROBLEM 1: Voltage differences between "A " and "B " grounds cause false seek and data errors.
CORRECTION 1: Connect a wire between "A " and "B " grounds, AT1 to BT1.
PROBLEM 2: Unequal values for capacitors C20 and C21 cause poor common mode noise rejection.
CORRECTION 2: Replace capacitors C20 and C21 with a single, equivalent value, C41 27 pfd, across L6.
PROBLEM 3: Low loop gain causes slow locking of data separator.
CORRECTION 3: Increase gain by reducing the value of resistor R58 to 3.3K ohms.

NOTE: The rework insturctions are as follows: 1: Change resistor R58 value to 3.3K. 2: Add a wire from E7-4 feed-thru, adjacent to R4, to anode connections of D15 and D16, adjacent to capacitors C6 and C7 plus signs. 3: Remove capacitors C20 and C21. 4: Add capacitor C41 to the two holes vacated by C20 and C21 that are closest to TP3. The remaining two ground holes, left by C20 and C21, will remain vacant. Form C41 leads into a zig-zag to fit the limited lead spacing. When finished, C41 body height must not exceed 3/8 inch above the etch.
In-plant effectivity -03 * -Rework immediately all CS revision "J ", etch revision "K " G180's.
Field effectivity -Rework all CS revision "J ", etch revision "K " G180's which exhibit symptoms.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

G233

XY Selection,
Current Source Module

PROCESSOR TYPE All

G233-00001 CODE: D CS: C
MAY-72 - PROBLEM 1: Spacing, clearance, and alignment problems for manufacturing the G233-C board.
CORRECTION 1: Correct etched board layout.
CORRECTION 2: Change circuit schematic E-CS-G233-0-1 to allow FIELD L to run correctly.
CORRECTION 3: Changes the circuit schematic to make the board a 4K version.

NOTE: See supplement ECO G233-0001A.
In-plant effectivity -02 phase-in

G233-0001A CODE: D
MAY-72 - CORRECTION: Corrects errors in circuit schematic E-CS-G233-0-1 revision B .
In-plant effectivity -Unchanged

G233-A0002 CODE: DF CS: D
JUL-72 - PROBLEM 1: Current source and write switches turning off too early, and write drivers turning off too late.
CORRECTION 1: Swap SOURCE and RETURN timing signals.
PROBLEM 2: 4008 turn off time excessive.
CORRECTION 2: Use faster 4008's (marked with a Y on 4008 package .
In-plant effectivity -03 rework immediately
Field effectivity -Rework immediately all G233's, CS revision C
[Time To Install And Test 2.0 Hours.] [This FCO Is No Charge To Customer] [Kit Contents -FCO/Prints And Parts] Acceptance Procedure SP-MM8-EJ-1 will also be included in this kit.

G233-A0003 CODE: DF CS: E
JUL-72 - PROBLEM: Current ring on drive lines.
CORRECTION: Clamp overshoot with D672 diode.

In-plant effectivity -03 rework immediately
Field effectivity -Rework all G233's, immediately
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) Acceptance Procedure SP-MM8-EJ-1 will also be included in this kit.

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Engineering Change Order Log
DEC-O-LOG

G227

X-Y Driver, MM8-E

PROCESSOR TYPE PDP-8/E

G227-B0001 CODE: F CS: C
DEC-70 - PROBLEM: Optimize switch circuitry.
CORRECTION: Change all 330 pf capacitors to 680 pf , 100V , 5 % (64 total Change R139 from 330 , 1/4W to 470 , 1/2W , 5 %. Delete C56 and C66 .01 Mf.

NOTE: This FCO is for retrofit only and the etched board will not be canged at this time.
In-plant effectivity -03 rework immediately
Field effectivity -All G227
(Time To Install And Test 1.0 Hour.
(Kit Contents -FCO/Prints And Parts

G227-00002 CODE: D
FEB-71 - PROBLEM 1: Discrepancy in available space for specified 680 pf capacitor
CORRECTION 1: Change the type of capacitor used for existing boards in production when capacitors are available. Change etch according to sample provided.
PROBLEM 2: Cooling of current source transistor not optimum.
CORRECTION 2: Move location of 4 transistors to provide the space for the heat sinks.

NOTE: This is a supplementary ECO to G227-B0001.
In-plant effectivity -01 phase-in

G227-00003 CODE: P CS: D
FEB-71 - PROBLEM: Circuit schematic revision does not match revision stamped on the handle.
CORRECTION: Update the circuit schematic revision to D .
In-plant effectivity -Documentation change only

G227-00004 CODE: D CS: E
MAY-71 - PROBLEM 1: Current imbalance between read and write currents.
CORRECTION 1: Change R1 , R3 , R5 , R7 , R9 , R12 , R14 , R15 , R66 , R58 , R52 , R60 , R56 , R61 , R54 , R64 from 330 ohms to 180 ohms , 1/4W , 5 %.
PROBLEM 2: capacitor , 680 pf 1000V ceramic # 10-10312 , does not meet specifications.
CORRECTION 2: Change capacitor to 680 pf , 100V , 5 % mica (affects documentation only at this time Implement ECO on all boards which have not been wavesoldered.
In-plant effectivity -03 rework immediately

G227-00005 CODE: D CS: F
AUG-71 - PROBLEM 1: Shorts on pins not used by MM8-E are not detected in memory test.
CORRECTION 1: Remove all unused pins on fingers a , B , C , & D.
PROBLEM 2: R36 & R31 are underrated.
CORRECTION 2: Use 1 watt resistors for R36 & R31.
PROBLEM 3: Solder shorts on G227 are too common.
CORRECTION 3: Re-route etch around emitter of Q9 and capacitor/resistor networks to decrease the possibility of solder shorts.
PROBLEM 4: R26 , R27 , R40 , & R41 can be more common
CORRECTION 4: Use 4.7K for R26 , R27 , R40 , R41.
PROBLEM 5: Drawings are incorrect.
CORRECTION 5: Make misc print corrections.
PROBLEM 6: Q11 runs hot
CORRECTION 6: Return collector of Q11 to ground instead of 5V
in-plant effectivity -01 phase-in

G227-B0006 CODE: F CS: H
JUN-72 PROBLEM: Systems made marginal by noise on FIELD LOW line
CORRECTION: Reroute FIELD LOW line and connect termination resistors at the end of the line.

NOTE: See supplement G227-0006A
In-plant effectivity -03 rework immediately
Field effectivity -Install on all etch rev D boards
(Time To Install And Test 1.0 Hour
tomer (Kit Contents -FCO/Prints Supplement G227-0006A Will Also Be Included In The Kit

G227-0006A CODE: F
JUN-72 - PROBLEM: FCO G227-B0006 gave no instructions to retrofit etch revision D boards.
CORRECTION: Modify etch revision D boards making three etch cuts and adding two wires , as specified in the rework instructions in FCO G227-B0006.
In-plant effectivity -Unchanged
Field effectivity -Unchanged
This FCO creates CS rev E1 to etch rev D boards

G227-C0007 CODE: DF
FEBRUARY-74 – PROBLEM: Non-hermetically sealed capacitors, solid tantalum electrolytics, are affected by our board cleaning process and can become shorted.
CORRECTION: Use only hermetically sealed caps, solid tantalum electrolytics, on this module. Non-hermetically sealed caps can be identified by a red positive end.
In-plant effectivity – all new builds as of 2/18/74
Field effectivity – replace capacitors only in Module Repair Depots when boards are returned for repair. This FCO is to be implemented in Depots only.
(Time To Install And Test .2 Hour) (Kit Contents – PF1205 – FCO/Prints and Parts)

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ECO DEC-O-LOG Engineering Change Order Log

G233

XY Selection, Current Source Module

PROCESSOR TYPE All

G233-00001 CODE: D CS: C
MAY-72 - PROBLEM 1: Spacing, clearance, and alignment problems for manufacturing the G233-C board.
CORRECTION 1: Correct etched board layout.
CORRECTION 2: Change circuit schematic E-CS-G233-0-1 to allow FIELD L to run correctly.
CORRECTION 3: Changes the circuit schematic to make the board a 4K version.

NOTE: See supplement ECO G233-0001A.
In-plant effectivity -02 phase-in

G233-0001A CODE: D
MAY-72 - CORRECTION: Corrects errors in circuit schematic E-CS-G233-0-1 revision B.
In-plant effectivity -Unchanged

G233-A0002 CODE: DF CS: D ETCH: E
JUL-72 - PROBLEM 1: Current source and write switches turning off too early, and write drivers turning off too late.
CORRECTION 1: Swap SOURCE and RETURN timing signals.
PROBLEM 2: 4008 turn off time excessive.
CORRECTION 2: Use faster 4008's (marked with a Y on 4008 package .
In-plant effectivity -03 rework immediately
Field effecuvity -Rework immediately all G233's, CS revision C
[Time To Install And Test 2.0 Hours.] [This FCO Is No Charge To Customer] [Kit Contents -FCO/Prints And Parts] Acceptance Procedure SP-MM8-EJ-1 will also be included in this kit.

G233-A0003 CODE: DF CS: E
JUL-72 - PROBLEM: Current ring on drive lines.
CORRECTION: Clamp overshoot with D672 diode.

In-plant effectivity -03 rework immediately
Field effectivity -Rework all G233's, immediately
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) Acceptance Procedure SP-MM8-EJ-1 will also be included in this kit.

G233-00004 CODE: D CS: F
OCTOBER-72 – PROBLEM 1: High delta noise.
CORRECTION 1: Offset current rise times.
PROBLEM 2: Switch circuit, slow turn-off.
CORRECTION 2: Worst-case switch circuit. Change transformers and R/C networks.
PROBLEM 3: Oscillation of reference voltage for current source.
CORRECTION 3: Change values of capacitors across current reference signal and +5V.
PROBLEM 4: Current source may go into saturation.
CORRECTION 4: Change pull-down resistor from 10 ohms to 5.1 ohms to lower voltage at the stack.
In-plant effectivity – retrofit all boards in-plant as of 10/5/72. G646 revision "C" should be installed with this ECO.

G233-00005 CODE: D
FEBRUARY-73 – PROBLEM 1: Module will not work as an X-Y driver board for an MM8-EH system.
CORRECTION 1: Add machine inserted jumper and pull-up resistor.
PROBLEM 2: Revision "E" etch was never produced as indicated on ECO's G233-A0002, G233-A0003, and G233-00004.
CORRECTION 2: Update board to new etch revision "F".
PROBLEM 3: Hole spacing for 3762's and 1008's in incorrect.
CORRECTION 3: Correct 3762's and 1008's hole spacing.
CORRECTION 4: Add table showing jumper requirements.

NOTE: This ECO was cancelled by supplement G233-0005A.
In-plant effectivity – as of July 1, 1973, use this module for MM8-EH and MM8-EJ systems.

G233-0005A CODE: D
APRIL-73 – PROBLEM: ECO G233-00005 causes an identification problem in determining which revision boards can be used in the MM8-EJ and future memory options.
CORRECTION: Cancel ECO G233-00005.
In-plant effectivity – cancelled

G233-00006 CODE: D CS: H
APRIL-73 – PROBLEM: To enable the use of National Semiconductor 4011's on G233 modules in addition to the 4008 "X", "Y", and "T" devices now allowable.
CORRECTION: Add note to G233 Circuit Schematic authorizing use of National Semiconductor 4011, marked 4011 and National Semiconductor 4011, remarked 4008X.
In-plant effectivity – 06 documentation/design change

G233-00007 CODE: D CS: J
MAY-73 – PROBLEM: To enable the use of 4011's on G233 modules in addition to 4008 "X", "Y", and "T" devices.
CORRECTION: Change Note #2 on G233 Circuit Schematic to authorize using 4011's interchangeably with 4008 "X", "Y", and "T" devices.
In-plant effectivity – documentation/design change

G233-00008 CODE: DF CS: K
FEBRUARY-74 – PROBLEM 1: Parts list specifies wrong part number for Items #34 and #40.
CORRECTION 1: Item #34 should be a DEC 4011, #15-11102, item #40 should be #22 wire, #91-07350.
CORRECTION 2: Make correction and clarification changes to prints.
PROBLEM 3: Non-hermetically sealed capacitors, solid tantalum electrolytics, are affected by our board cleaning process and can become shorted.
CORRECTION 3: Use only hermetically sealed capacitors, solid tantalum electrolytics, on this module. Non-hermetically sealed capacitors are identified by a red positive end.
In-plant effectivity – immediate for 4011 change; phase-in wire change. Phase-in print change; new capacitors on all new builds as of 2/18/74.
Field effectivity – replace capacitors on G233's when they are returned to the Depots for repair. Capacitor replacement will be performed at the Depot level only.
(Time To Install And Test .5 Hour.) (Kit Contents – NF1200 – FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

G836

VR14 Regulator

PROCESSOR TYPE All

G836-00001 CODE: D CS: B ETCH: C
DEC-70 - PROBLEM 1: Overload protection is necessary.
CORRECTION 1: Add IN4001 diodes (D13, D14, D15, and D16) to limit base current in output stages.
PROBLEM 2: Unit does not regulate properly.
CORRECTION 2: Change values of resistors R2, R3, R17, and R19 to allow Zener diodes to regulate properly.
PROBLEM 3: Unit oscillates.
CORRECTION 3: Change values of capacitors C2 and C8.
In-plant effectivity -03 rework immediately

G836-A0002 CODE: F CS: C ETCH: D
MAR-71 - PROBLEM 1: Power resistors R12, R13, R26, and R28 can burn etch board.
CORRECTION 1: For revision "B " and "C " boards, place resistors R12 and R26 1/4 inch above etch board; do not change R13 and R28. For revision "D " boards change wattage of R12, R13, R26, and R28; add turret solder terminals on each lead of R12 and R26.
PROBLEM 2: Heat sinks for transistors Q2 and Q4 are too small.
CORRECTION 2: Change from DEC 70-07488 to DEC 74-08587.
PROBLEM 3: Base resistors R11 and R27 are too small for proper operation.
CORRECTION 3: Change R11 and R31 from 33 ohms, 1/2W, 10% (DEC 13-00196) to 68 ohms 1/2W, 10% (DEC 13-00220 .
PROBLEM 4: When a fuse blows, unit does not shut down properly.
CORRECTION 4: Add resistors, 2.2K 1/4W, 5%, from the base of transistor Q1 to ground and from the base of transistor Q3 to ground.
PROBLEM 5: New transistor in VR14 power supply pass element will cause module to oscillate.
CORRECTION 5: Change capacitors C2 and C8 from 100 pfd 100 VDM to 330 pfd 100 VDM .
PROBLEM 6: 400V line on etch board is exposed.
CORRECTION 6: For revision "B " and "C " boards , add 3/4 inch by 1 inch piece G10 material over exposed area. For revision "D " boards, change layout to cover 400V lines.
PROBLEM 7: Diodes added in previous ECO not added to etch.
CORRECTION 7: For revision "B " and "C " boards, diodes have been added. For revision "D " boards, change layout to add diodes.
PROBLEM 8: Layout does not meet production standards.
CORRECTION 8: Layout board to production standards; do not change location of large eyelets; place diodes near eyelets as on revision "B " and "C " boards

NOTE 1: The module is to be replaced in the field; no field reworking is to be done.

NOTE 2: This FCO must be installed in conjunction with FCO's G838-B0801 and VR14-A0005.

NOTE 3: See FCO's G836-C0003 and G836-A0004 which are supplemental to this FCO.
In-plant effectivity -03 rework immediately
Field effectivity -Exchange all G836's in VR14's
(Time To Install And Test .3 Hour.) (Kit Contents -FCO/Prints And Parts) FCO's G836-C0003 and G836-A0004 will also be included in the kit.

G836-C0003 CODE: DF
JUL-71 - PROBLEM: Transistors Q2 and Q4 can thermally run away.
CORRECTION: Change Q2 from 2N4920 to MJE 2955 and Q4 from 2N4923 to MJE 3055 Change values of resistors R10 and R27 from 150 ohms to 10 ohms and R9 and R24 from 1K to 220 ohms.

NOTE: This FCO is a supplement to FCO G836-A0002 and the changes will have been made to the exchange module included in the kit for FCO G836-A0002.
In-plant effectivity -02 phase-in
Field effectivity -Exchange all G836's as defined by FCO G836-A0002.
(Kit Contents -FCO Only) NOTE: This FCO is included in the FCO G836-A0002 kit

G836-A0004 CODE: DF
SEP-71 - PROBLEM 1: Wrong part number called out on Parts List for heat sink.
CORRECTION 1: Change part number to 55-09718.
PROBLEM 2: Wrong part number called out on Parts List for 80 ohm 10W 1% resistor.
CORRECTION 2: Change part number to 13-10701.

NOTE: This FCO is a supplement to FCO G836-A0002.
In-plant effectivity -06 documentation change only
Field effectivity -Correction to G836-A0002 documentation.
(Kit Contents -FCO Only) NOTE: This FCO is also included in FCO G836-A0002 kit.

G836-A0005 CODE: F CS: D
MAR-72 - PROBLEM: Plus and minus regulated supply voltages are too high.
CORRECTION: Change resistors R2 and R17 from 1.62 K to 1.78 K ohms, thus reducing the supply voltages to plus or minus 21.5 volts.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G836's in VR14's and VR20's
(Time To Install And Test 1.0 Hour) (Kit Contents -FCO/Prints And Parts)

G836-A0006 CODE: F CS: E
DEC-72 - PROBLEM: Characters are distorted when a VR14 is used in a GT40.
CORRECTION: Delete C2, a 330 pfd capacitor, across resistor R3. Replace C8, a 330 pfd capacitor, across resistor R19 with a 180 pfd capacitor.

NOTE: This FCO is not required for VR14's used in POINT PLOT MODE only, PDP-12, LAB-8/E, LAB-11, and PDP-15.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G836's in VR14's on GT40 systems.
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints And Parts)

G836-C0007 CODE: F CS: F ETCH: E
FEB-73 - PROBLEM: Power supply oscillates at cold temperature.
CORRECTION: Add a 330 pfd capacitor across resistor R3. Change the value of capacitor C8 from 180 pfd to 330 pfd. Change capacitors C11 and C6 to two 22 ufd 50 V S Tant, two for C11 and two for C6.

NOTE: See continuation supplement FCO G836-C007A.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G836's in VR14-LC and VR14-LD.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

G836-C007A CODE: F
MAR-73 - PROBLEM: Change to G836 requires new drawing.
CORRECTION: Create sheet 1-2 of the G836 Circuit Schematic to include Parts List and overlay.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

G836-A0008 CODE: F CS: H
OCT-73 - PROBLEM: CRT arcing damages G836 and W684 modules, which causes phosphor burning in the CRT .
CORRECTION: Add R43, a 1K ohm resistor, to limit current throuth the voltage transient suppressor. This FCO should be implemented in conjunction with FCO's W684-A0004 and 7009357-A0001 for complete arc suppression. The rework procedure is as follows: Drill a #54 hole thru etch from G2 eyelet as close as possible to C15. Cut etch between drilled hole and G2. Connect one end of R43 to G2 eyelet. Connect the other end of R43 to etch leaving drilled hole.
In-plant effectivity -Rework G836's immediately
Field effectivity -Rework G836's in all GT40's, VR14L's, and in all VR14's where necessary. VR14L's require also FCO's W684-A0004 and 7009357-A0001, all other VR14's require FCO 7009357-A0001.
(Time To Install And Test 1.0 Hour.) (Kit Contents -PF1079 - FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

G848

TU56 Motor Driver

PROCESSOR TYPE All

G848-00001 **CODE: D** **CS: A** **ETCH: B**
APR-70 - PROBLEM: Logic modifications require deletion of parts on the board to prevent possible circuit damage.
CORRECTION: Remove transistor Q1 and diode D19.
In-plant effectivity -Rework all G848's immediately

G848-00002 **CODE: D** **CS: B** **ETCH: H**
APR-70 - PROBLEM: Logic modification requires deletion of parts on the board. Removal of parts allows for optimized layout of boards.
CORRECTION: Remove resistors R19 through R21, R29 through R33, diodes D19 and D20, and transistors Q12 and Q13. Relayout board to new etch revision "C ".
In-plant effectivity -02 phase-in

G848-00003 **CODE: D** **CS: C**
SEP-70 - PROBLEM: The T05 cans on the G848 can be shorted out against the module in an adjacent slot.
CORRECTION: Install a plastic cap over the T05 can to prevent shorting.
In-plant effectivity -02 phase-in

G848-A0004 **CODE: F** **CS: D** **ETCH: J**
SEP-70 - PROBLEM: G848 can be damaged if +5V supply voltage falls below +4 volts for longer than one minute.
CORRECTION: Reduce OSC1 and OSC2 input resistance with a D672 diode in place of the 6.8K resistor. Add a 680 ohm pull-up resistor to OFF circuit, between +5V and pin BR2 .

NOTE 1: FCO G848-A0005 must be installed in conjunction with this FCO. All four G848's in a TU56 must be modified: Reworked and non-reworked modules may not be mixed within a TU56.

NOTE 2: Symptoms are loss of motor torque, blown fuse on G847 or in main power supply, and two transistors, a 2N3715 and a 2N37391, destroyed, usually shorted, by overheating.

NOTE 3: See continuation supplement FCO G848-A0005
In-plant effectivity -Rework all G848's
Field effectivity -Rework all G848's as required
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $ 3.45) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents - FCO/Prints And Parts)

G848-A0005 **CODE: F** **CS: E** **ETCH: K**
OCT-70 - PROBLEM: The 2N4920 transistors Q4 and Q9 do not produce enough cut-off bias to keep Q6 and Q7, 2N3715's, turned off. As temperature rises over an extended period, inductive kickback fed thru diodes D13 and D15, 1N4001's, overcomes cut-off bias on transistors Q4 and Q9, 2N4920's.
CORRECTION: Relocate resistors R4 and R13 so that resistor R4 runs between transistors Q4B and Q4E, and resistor R13 runs between transistor Q9B and Q9E. Change value of resistors R4 and R13 to 1K ohms.

NOTE: FCO G848-A0004 must be installed on all G848 modules before this FCO.
In-plant effectivity -Rework all G848's
Field effectivity -Rework all G848's as required
(Time To Install And Test .2 Hour.) (Kit Contents -FCO/Prints And Parts)

G848-B0006 **CODE: F** **CS: F** **ETCH: L**
NOV-70 - PROBLEM: The 2N4920 transistors, Q4 and Q9, exhibit high leakage, which causes the power transistors Q5 thru Q8 to be destroyed.
CORRECTION 1: Clamping diodes are added to protect agianst destruction even if Q4 or Q9 is leaky. The diodes are D672's.
CORRECTION 2: Resistors R3, R15, R23 and R24 are changed to 2K ohms.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G848's, etch revision "K " or earlier
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

G848-C0007 **CODE: F** **CS: H**
AUG-71 - PROBLEM: With the left transport operating under program control and the right transport moving tape in LOCAL control, and excess of data errors were committed; in a few units with both left and right transports under program control, the data errors exceeded specifications.
CORRECTION: A ground loop between motor supply ground and the logic supply ground was found to be the factor which caused the error condition. To correct this condition, the logic ground must be disconnected on all G848 boards in the TU56 (remove connection to pins AC2-BC2) and a jumper must be added in the 725 Motor Power Supply between the motor supply common and the logic power supply ground.

NOTE: See reference ECO 725-00008.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G848's as required
(Time To Install And Test .3 Hour.) (Documentation $ 5.00 , Parts None , DEC Labor -See Note) Note: The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -FCO Only)

G848-B0008 **CODE: F** **CS: J** **ETCH: M**
AUG-71 - PROBLEM: Heat dissipation of resistors, R6, R7, R11, and R12 is detrimental to active components. Leakage current in transistors Q9 and Q10 affects turn off of transistors Q5 and Q6.
CORRECTION: Relocate these resistors to a separate section of the board.

NOTE: See correction supplement FCO G848-B008A and continuation supplement FCO G848-B008B.
In-plant effectivity -01 -Phase-in
Field effectivity -Rework all G848's, etch revision "L " or earlier
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

G848-B008A **CODE: F**
OCT-72 - PROBLEM: G848's, etch revision "M ", are not compatible with previous revision boards following the addition of 680 ohm resistors at Q1 and Q3.
CORRECTION: Rework all G848 modules, etch revision "L " and earlier, with two 680 ohm base resistors. This change is required to provide compatibility and to ensure equal sharing of current among the four G848 modules in a TU56.
In-plant effectivity -Changed to 03, Rework immediately
Field effectivity -Initiated

G848-B008B **CODE: F** **CS: H1**
JUL-73 - PROBLEM: Field Service requires further documentation showing effect of FCO G848-B008A.
CORRECTION: Create new revision "H1 " Circuit Schematic.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

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E C DEC-O-LOG Engineering Change Order Log

G859

Clock and Regulator Module for TU56

PROCESSOR TYPE All

G859-00001 CODE: D CS: A
APR-70 - PROBLEM: Metal cased trimpot can short out pins on adjacent board.
CORRECTION: Replace metal pot #13-05451 with plastic cased pot #13-09143-09.
In-plant effectivity -Phase-in

G859-B0002 CODE: F CS: B
SEP-70 - PROBLEM: Heat dissipation of pass transistor can lead to reduced life of that component.
CORRECTION: Add heat sink under transistor 2N4923.
In-plant effectivity -Rework all G859's
Field effectivity -Rework all G859's
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

G859-00003 CODE: P CS: C
MAR-71 - PROBLEM: Nomenclature should not be shown on standard modules, and that nomenclature is incorrect.
CORRECTION: Delete nomenclature from inputs to E1.
In-plant effectivity -06 documentation change only

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Engineering Change Order Log
DEC-O-LOG

G861

Solid State
Transmitter Module

PROCESSOR TYPE PDP-8 AND 11 FAMILIES

G861-00001 CODE: D CS: A
MAR-70 - PROBLEM: Etch on one side runs too close to metal component.
CORRECTION: Change etch.
In-plant effectivity -Phase-in

G861-00002 CODE: D CS: B
MAY-71 - PROBLEM: Inadequate lightning protection for module.
CORRECTION: Relayout board to include two (2) gas filled surge voltage protectors.

NOTE: For existing systems, (DC08-CS), modules are to be replaced only at customer request.
In-plant effectivity -01 phase-in

G861-B0003 CODE: F CS: C
MAR-72 - PROBLEM: G861 modules, etch revision "C ", have wrong number of cores in each transformer.
CORRECTION: Add one (1) core in four (4) places on each G861.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G861's, etch revision "C "
(Time To Install And Test 2.0 Hours)
(Kit Contents -FCO/Prints And Parts)

G861-D0004 CODE: F CS: D
MAY-74 - PROBLEM: It is possible for the cores of T1 or T4 to move, thus shorting two adjacent etch pads. Damage to the board and/or other circuits is possible.
CORRECTION: Install nylon flat washer #90-06707 between bottom core and etch board in four places.
In-plant effectivity -Rework all in-plant by June 21, 1974
Field effectivity -Rework etch revision "A " "B ", and "C " G861's when symptoms are present. There is no CS documentation for reworked etch revision "A " or "B " boards.
(Time To Install And Test .5 Hour.) (Kit Contents -PF1259 -FCO/Prints And Parts)

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G900

Photocell Amplifier Module

PROCESSOR TYPE Family of 8

G900-B0001 CODE: F CS: F
NOV-71 - PROBLEM: Bias resistor R23 (10K) will not allow sufficient gain on G900.
CORRECTION: Change R23 to 15K.
In-plant effectivity -03 rework immediately
Field effectivity -All G900
(Time To Install And Test .3 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

G900-00002 CODE: P CS: H
DEC-71 - PROBLEM: Circuit schematic calls for R3 to be 15K ohms, physical calls for R3 to be 10K.
CORRECTION: Change the Assembly Hole drawing to make R3 equal 15K.
In-plant effectivity -Documentation change only

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ECO SYNOPSES FOR LOGIC OR OPTION

PHOTO AMPLIFIER MODULE **G918**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	MAY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
G918 00001	N.A.	D	SEP 69 - CHANGES THE VALUE OF A RESISTOR TO REDUCE THE SENSITIVITY OF THE "OUT OF TAPE" CIRCUIT. NINE 1K OHM RESISTORS ARE CHANGED TO 47 OHMS. THIS ECO WAS NOT IMPLEMENTED IN PRODUCTION.
G918 00002	ALL G918 ALL PR68-D	D	DEC 69 - CHANGES RESISTOR VALUES AND ADDS A CAPACITOR TO MATCH THE AMPLIFIER CIRCUITS TO THE PHOTOCELL OUTPUTS.
G918 00003	>G918 PR68-D, PC04 AND PC05	D	NOV 70 - CHANGES RESISTOR VALUES TO COMPENSATE FOR PHOTO CELL NONLINEARITY AND PERMIT READING OF OILED TAPE. ADDS AN EMITTER FOLLOWER CIRCUIT AND CHANGES RESISTOR VALUES TO ENSURE STABILITY OF THE THRESHOLD CIRCUIT SETTING AND TO FACILITATE ADJUSTMENT. THE REVISION "C" ETCHED BOARDS CANNOT BE REWORKED. NO EARLIER REVISION LEVEL IS SUITABLE FOR USE IN THE PC04, PC05, OR PR68-D FOLLOWING MODIFICATION FOR FEED HOLE STROBE.

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

- ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
- SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
- IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

	ETCHED BOARD REVISION C	ETCHED BOARD REVISION D	REVISIONS CREATED CS	REVISIONS CREATED ETCH
E 00001	-	-	-	-
C 00002	(A)	-	A	-
D 00003		(B)	B	D

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

G933

Reel Motor AMP Module for TU10

PROCESSOR TYPE All

G933-00001 CODE: D CS: C
DEC-70 - PROBLEM 1: Inconsistent feeding of tape during loading, resulted in occasional failure.
CORRECTION 1: Inconsistency corrected by changing the timing components that control the tape feeding: (A) replace DEC #10-02433 (22 ufd capacitor) with DEC #10-05306 (6.8 ufd capacitor . (B) replace DEC #13-00479 (10K ohm resistor) with DEC #13-00417 (2.2K ohm resistor .
PROBLEM 2: Circuit board layout tape inacceptable for production standards.
CORRECTION 2: Correct etch spacing to meet production standards.
In-plant effectivity -03 rework immediately

G933-00002 CODE: D CS: D
FEB-71 - PROBLEM: TU10 does not load properly with G933.
CORRECTION: Increase LOAD pulse; rework "C " boards.
In-plant effectivity -03 rework immediately

G933-00003 CODE: D CS: E
APR-71 - PROBLEM: Increased delivery of tape during loading made necessary by sturdier vacuum switches.
CORRECTION: Change value of those components which control amount of tape delivered, resistors R16 and R17, and diode D8.
In-plant effectivity -03 rework immediately

G933-00004 CODE: D CS: F
MAY-71 - PROBLEM: Power transistors are overrated for power dissipation.
CORRECTION: Change four transistors and four resistors.
In-plant effectivity -03 rework immediately

G933-00005 CODE: D CS: H
MAY-71 - PROBLEM: Power transistors have a tendency to break down.
CORRECTION: Change resistor values. Add diodes from emitter to base of power transistors.
In-plant effectivity -03 rework immediately

G933-B0006 CODE: DF
JUN-71 - PROBLEM: Power transistors fail.
CORRECTION: Replace catching diodes. Change pull-down resistor values. Change driver transistors. Change base drive resistors to output stage. Add diodes in emitters of driver transistors. Add, delete and change components to transistor Q7, Q8, and IC E1.

NOTE: This FCO must be installed in conjunction with FCO's TU10-B0042 and G9340-B0002.
In-plant effectivity -03 rework immediately
Field effectivity -Replace all G933 with boards reworked in-plant to CS revision "J ".
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

G936

LA30 Clock with Accelerator

PROCESSOR TYPE ALL

G936-00001 CODE: D CS: D
APR-71 - PROBLEM: The value of resistor R14 is too high, causing discharge time of capacitor C2 to be too long.
CORRECTION: Change R14 from 390 ohms to 1.2K ohms.
In-plant effectivity -03 rework immediately

G936-C0002 CODE: F CS: D1
APR-73 - PROBLEM: The G936 does not meet the 300 msec carriage return required by LA30 specifications.
CORRECTION: Add three potentiometers to adjust high speed ramp, low speed ramp, and high speed running rate of the stepper motor.
In-plant effectivity -03 * -Rework G936's that are in stock room #46, on the production floor, and in test or rework. Do not disturb those that are in printers already crated as of May 1, 1973.
Field effectivity -Rework all G936's when symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

G936-00003 CODE: D CS: E ETCH: E
APR-73 - PROBLEM: Unsatisfactory interim design for accomodating three potentiometers in a retrofit mode.
CORRECTION: Relayout board and etch.
In-plant effectivity -02 phase-in as of June 1, 1973

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E C DEC-O-LOG Engineering Change Order Log

G938

RK05 Head Position Servo Preamplifier

PROCESSOR TYPE PDP-8 and PDP-11 Families

G938-00001 CODE: D CS: E ETCH: F
JAN-72 - PROBLEM 1: Final design of the RK05 positioner requires a change in position servo loop gain to reduce head position settling time and provide optimum system operation.
CORRECTION 1: Increase the position servo loop gain by changing the values of resistors R20 and R23.
PROBLEM 2: Position transducer output offset voltages require circuit compensation.
CORRECTION 2: Derive count pulses from a portion of the circuit unaffected by offset and add level shift diodes to the limit signals.

NOTE: See correction supplement ECO G938-0001A.
In-plant effectivity -03 rework immediately

G938-0001A CODE: D
JAN-72 - PROBLEM: ECO G938-00001 failed to note the addition of resistor R23, 75K, 1/4 watt, 5%.
CORRECTION: Add resistor R23.
In-plant effectivity -03 rework immediately

G938-00002 CODE: D CS: F ETCH: H
JAN-72 - PROBLEM 1: Documentation error connected the **SERVO POSITION** input to **COUNT PULSE FWD** .
CORRECTION 1: Connect resistor R23 to E6 pin 6 not E5 pin 8.
PROBLEM 2: Two different ground symbols are shown.
CORRECTION 2: Correct documentation.
PROBLEM 3: Four resistors were found to be unnecessary.
CORRECTION 3: Delete resistors R12, R34, R68 and R82.
PROBLEM 4: The wrong color handle was called-out in the Parts List.
CORRECTION 4: Use green handle.
PROBLEM 5: Capacitors C2 thru C5 are too close together.
CORRECTION 5: Increase lead spacing to accomodate capacitors 0.23 diameter by 0.50 long.
In-plant effectivity -02 phase-in

G938-00003 CODE: D CS: H ETCH: J
APR-72 - PROBLEM: Some units exhibit marginal tolerance to high temperature testing as shown by failure to position properly. This is caused mainly by a reduction in positioner damping which is caused by a reduction in sine and cosine transducer signals.
CORRECTION: Add a thermistor to the tachometer output to compensate for high temperature by automatically increasing the positioner damping.
In-plant effectivity -03 rework immediately

G938-00004 CODE: D CS: J
OCT-72 - PROBLEM: The velocity adjustment potentiometer, VA , is near the end of its travel on some modules. This prevents the servo adjustment of 3.2 msec from being obtained in some RK05 systems.
CORRECTION: Increase the value of the fixed resistor, R75, which is in series with the VA potentiometer. R76, from 18.2K to 19.6K ohms.
In-plant effectivity -03 rework immediately

G938-C0005 CODE: F CS: K ETCH: K
DEC-72 - PROBLEM: Some modules produce an excessive amount of overshoot, 1 volt or greater on pin A05-AML, on position settling. This causes a **SEEK INCOMPLETE** on maximum seeks when the system starts from a cold start on some systems. There are rework instructions in this FCO which include a test to determine if a system needs this FCO.
CORRECTION: Make the tachometer gain fixed so that constant damping is evident from unit to unit and remove the temperature compensating thermistor that is over compensating. Replace the diode limiters, which are temperature sensitive, with Zener clippers.

NOTE: See correction supplement FCO G938-C005A.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all G938's in RK05's with 1 volt or greater of overshoot.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

G938-C005A CODE: F
JAN-73 - PROBLEM: The BREAK-IN/EFFECTIVITY date for FCO G938-C0005 cannot be met by production.
CORRECTION: Change the BREAK-IN/EFFECTIVITY date from February 1, 1973 to March 1, 1973.
In-plant effectivity -Changed as noted above.
Field effectivity -Unchanged

G938-B0006 CODE: F CS: L
JUL-73 - PROBLEM 1: Temperature extremes can cause servo signals to vary greater than 10% since the photocell input resistor value is too great.
CORRECTION 1: Decrease input resistor values; resistors R28 and R63 are changed from 3.83K to 1.96K ohms. Resistor R77 is changed from 6.81K to 1.96K ohms.
PROBLEM 2: The servo signals are sensitive to small changes of the potentiometer adjustment wiper.
CORRECTION 2: Increase feedback resistor values to make the gain more dependent on the feedback resistor value and less dependent on potentiometer value. Resistors R30, R65 and R79 are changed from 8.2K to 75K ohms.

NOTE: The servo signals must be recalibrated after this FCO has been installed; see manual for correct values.
In-plant effectivity -03 * -Rework at systems level as needed. Machine build and module build areas must install after September 3, 1973.
Field effectivity -Rework all G938's when symptoms are present or at next scheduled PM .
(Time To Install And Test .8 Hour.) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

G9340
TU10 Break Actuator Logic Module

PROCESSOR TYPE All

G9340-00001 CODE: D CS: A
APR-71 - PROBLEM: High brake rewind time incorrect, causing brake wear.
CORRECTION: Change one component value, resistor R17 from 12K to 5.6K ohms.
In-plant effectivity -03 rework immediately

G9340-B0002 CODE: DF CS: B ETCH: B
JUN-71 - PROBLEM 1: Two signals not brought to pins are required elsewhere in system.
CORRECTION 1: Bring two points to pins, signal **UPR MTR UPR SW** to pin H1 and signal **LWR MTR UPR SW** to pin N1.
PROBLEM 2: Changes elsewhere deprived two inputs of pull-ups.
CORRECTION 2: Add two 1K pull-ups, one to signal **UPR MTR UVS** and the other to signal **LWR MTR UVS** .

NOTE: This FCO must be installed in conjunction with FCO's TU10-B0042 and G933-B0006.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all G9340's as required.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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G0870

MASTER SLICE CONTROL

PROCESSOR TYPE ALL EXCEPT PDP-14

G0870-00001 **CODE: D** **CS: B** **ETCH: C**
JULY-73 – PROBLEM: Component hole spacing for diodes D1, D2, D3, and D4 is incorrect.
CORRECTION: Relayout etch to new revision "C" to correct hole spacing.
In-plant effectivity – phase-in of new etch about October 15th.

G0870-C0002 **CODE: F** **CS: C** **ETCH: D**
MARCH-74 – PROBLEM: Missing etch between diode D1 and resistor R6 on etch revision "C" boards causes unreliable operation under margins.
CORRECTIONS: Add missing etch to artwork. Rework existing boards by adding a jumper wire between D1 and R6.
In-plant effectivity – rework all etch revision "C" boards.
Field effectivity – rework all etch revision "C" G0870's. In TU20's with FCO TU20-B0022 or in TU30's with FCO TU30-B0024.
(Time to Install and Test .5 hour.) (Kit Contents – NF1235 – FCO/prints)

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H604

DECpack Head Position Servo Power Amplifier

PROCESSOR TYPE PDP-8 Family and PDP-11 Family

H604-00001 CODE: D CS: F ETCH: H
FEB-72 - PROBLEM: All size variations of capacitor C5 do not fit the lead spacing provided.
CORRECTION: Increase the distance between the holes provided for capacitor C5 so a part with a body size of 0.9 inch long can fit.
In-plant effectivity -02 phase-in

H604-00002 CODE: D CS: H ETCH: J
APR-72 - PROBLEM: Some units exhibit a marginal tolerance to high temperature testing as shown by a reduction in positioner current. This is caused by a reduction in input signal which the power amplifier faithfully follows. The reduction in input signal is the result of diode voltage reduction with increasing temperature.
CORRECTION: Add a thermistor to the input circuit so that the derived input signal stays constant with temperature.
In-plant effectivity -03 rework immediately

H604-C0003 CODE: F CS: J
DEC-72 - PROBLEM: The RK05 servo system can become too sensitive to temperature because of the overcompensation of some thermistors. See problem description of FCO G938-C0005 for test to determine if a system needs this FCO.
CORRECTION: Replace the thermistor, R16, with a jumper, and change resistor R1 to 1K ohms.

NOTE 1: This FCO can only be installed concurrently with FCO G938-C0005. Do not install it separately.

NOTE 2: See correction supplement FCO H604-C003A.
In-plant effectivity -03 retrofit; all RK05 systems made after February 1, 1973 must have this FCO. Retrofit only those systems having the problem described in FCO G938-C0005 until that time.
Field effectivity -Retrofit all H604's in RK05's with one volt or greater of overshoot.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

H604-C003A CODE: F
JAN-73 - PROBLEM: The BREAK-IN/EFFECTIVITY date specified by FCO H604-C0003 cannot be met by Production.
CORRECTION: Change the BREAK-IN/EFFECTIVITY date from February 1, 1973 to March 1, 1973.
In-plant effectivity -One month implementation extension
Field effectivity -Unchanged

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Engineering Change Order Log
DEC-O-LOG

H605

LA30 Motor Drive Amplifier

PROCESSOR TYPE All

H605-00001 CODE: D CS: C ETCH: D
APR-71 - CORRECTION: Relocate diode D1 and resistor R3 to provide clearance for resistor R1.
In-plant effectivity -03 rework immediately

H605-00002 CODE: P CS: D
NOV-71 - CORRECTION: Change part number on drawings and Parts List from 12-09340 to 12-09340-00 to ensure proper MATE-N-LOCK connector is used.
In-plant effectivity -06 documentation change

H605-D0003 CODE: F CS: E
FEB-73 - PROBLEM: Hot diodes result in discoloration of printed circuit board.
CORRECTION: Raise diodes so that they do not touch the board.
In-plant effectivity -03 rework immediately
Field effectivity -Exchange H605's in LA30's as required; replace a CS revision "C " board with CS revision "D ".
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints And Parts)

H605-00004 CODE: D CS: F ETCH: E
MAR-73 - PROBLEM: Hot diodes result in discoloration of the printed circuit board and failure of the diodes.
CORRECTION: Redesign board to give large heatsink area under diodes; add transistor.
In-plant effectivity -02 phase-in by May 1, 1973

H605-C0005 CODE: F CS: H
APR-73 - PROBLEM: Diodes on board are running **HOT** resulting in discoloration of the board.
CORRECTION: Raise diode D8 ; add heat sinks to D8 and D9.

NOTE: See continuation supplement FCO H605-C005A.
In-plant effectivity -03 * retrofit all units that have not been shipped.
Field effectivity -Rework all H605's if symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

H605-C005A CODE: F CS: E1
SEP-73 - CORRECTION: The CS revision level of all etch revision "A " thru "D " boards, retrofitted with heat sinks, will be "E1 ". Either heat sink clip #12-11361 or #90-07203 can be used, depending on availability. No boards after etch revision "E " will be retrofitted with heat sinks.
In-plant effectivity -Retrofit immediately, as of October 1, 1973.
Field effectivity -Retrofit immediately

H605-00006 CODE: D
JUL-73 - PROBLEM: Unavailability of copper heat sink and excessive cost of same, #12-11361.
CORRECTION: Allow parts substitution with beryllium copper clip, #90-07203; either heat sink may be used.

NOTE 1: Heat sink clips are to be used on etch revision "D " boards only.

NOTE 2: This ECO is cancelled by supplement ECO H605-0006A.

NOTE 3: CS revision "E1 ", ordered by this ECO, was cancelled by ECO H605-0006A.
In-plant effectivity -02 phase-in as of 5-31

H605-0006A CODE: D
SEP-73 - PROBLEM: Redundancy has occurred in ECO changes; revision levels are incorrectly specified.
CORRECTION: Cancel ECO H605-00006.
In-plant effectivity -Cancelled

H605-00007 CODE: D CS: J
SEP-73 - PROBLEM 1: Irregular performance of carriage due to G936 and carriage tolerance.
CORRECTION 1: Replace 39 ohm resistor with a 43 ohm resistor.
PROBLEM 2: Documentation is incorrect with regard to revision level.
CORRECTION 2: Revision letter is updated to reflect correct level.

NOTE: See correction supplement H605-0007A.
In-plant effectivity -Retrofit all H605's from Puerto Rico by June 22; all H605's at Westfield and Westminster if problem is present.

H605-0007A CODE: D
JUL-73 - CORRECTION: There were typographical errors on sheet 1 of ECO H605-00007; that sheet is superseded by sheet 1 of supplement ECO H605-0007A.
In-plant effectivity -Unchanged

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ECO SYNOPSES FOR LOGIC OR OPTION

ONE SHOT DELAY MODULE **M304**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
FAMILY OF 8 PDP-11 PDP-12	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M304 00001	ALL M304	D	ECO RELEASE DATE - DECEMBER 1969 PROBLEM: WIDE VARIATION IN ONE SHOT DELAYS, HIGH FAILURE RATE IN MODULE TEST. CORRECTION: INCREASE PULSE WIDTH, STANDARDIZE TRIGGERING VOLTAGE RELATED TO OUTPUT PULSE. PTH IS TO BE MAINTAINED ON THE BOARD. DO NOT LAYOUT FOR EYELETS. IN-PLANT EFFECTIVITY - PHASE-IN JAN 1,1972
M304 A0002	ALL M304'S IN TC12 & KW12 SHIPPED NOV&DEC	F	ECO RELEASE DATE - JANUARY 1971 PROBLEM: "B" REVISION BOARD GENERATES MARGINAL PULSE WIDTHS WHEN RUN IN "100 NSEC" MODE. CORRECTION: CHANGE FOUR RESISTORS PER BOARD TO LENGTHEN PULSES. REWORK ALL M304 REVISION "B" MODULES IN PROCESS NOT ISSUED, IN TEST, AND IN FINISHED GOODS STOCKROOM. REWORK ALL M304 REVISION "B" MODULES IN PDP-12 PRODUCTION THIS MONTH AND IN FUTURE. STAMP REWORKED MODULE HANDLES "REV. C". IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - 1.5 HOURS THIS ECO IS NO CHARGE TO CUSTOMER. FIELD RETROFIT ANTICIPATED - 20% FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE ECO AND PART

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

CRYSTAL CLOCK MODULE **M405**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
ALL	DECEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M405 A0001	ALL M405'S IN DC04-A IN PDP-12 75, 88, 89, 178, 184, 210, 211, 212 & 257 AND ALL M405 FOR 5-10 KHZ	F	FCO RELEASE DATE - FEBRUARY 1971 PROBLEM: WHEN OPERATING IN THE 5 TO 10 KHZ FREQUENCY RANGE THE OUTPUT CONSISTS OF MORE THAN ONE PULSE DEPENDING ON THE DISTRIBUTED CAPACITANCE. THE CRYSTAL OSCILLATOR FREQUENCY IS NOT AFFECTED. CORRECTION: ISOLATE THE ANALOG CIRCUITRY GROUND PATH TO THE TANK CIRCUIT TO REDUCE INDUCTANCE. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY TIME TO INSTALL AND TEST - .3 HOUR DOCUMENTATION $5.00 PARTS NONE DEC LABOR $8.00 FIELD RETROFIT ANTICIPATED - 75% FSIC INITIATED DISTRIBUTION - FIO'S ONLY ORDERED KITS WILL INCLUDE FCO'S ONLY
M405 00002	SAME AS FCO M405-A0001	F	FCO RELEASE DATE - MARCH 1971 PROBLEM: CORRECTS AN ERROR IN THE FIELD REWORK INSTRUCTIONS ON FCO M405-A0001. CORRECTION: CHANGE FIELD REWORK INSTRUCTIONS TO READ "R5", NOT "R4". IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY

TABLE OF CIRCUIT SCHEMATIC REVISIONS

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISION A	B		REVISIONS CREATED CS	ETCH
		*				
E	00001	B	B		B	B
C	00002	B	B		-	-
O						

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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M517

6 Circuit Bus Converter

PROCESSOR TYPE 8 Family

M517-B0001 CODE: F CS: A

MAY-71 - PROBLEM 1: Ground noise at pin "V " enabling level causes loss of data when a DW08-A is used with a DM04.
CORRECTION 1: Remove capacitors C2 thru C7.
PROBLEM 2: Typographical error on the Circuit Schematic: Pin letter "V " is shown twice; the "C, T, U, V GND " terminal is incorrectly labeled.
CORRECTION 2: Remove "V " from terminal "C, T, U, V GND " ; "C, T, U GND " is correct.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M517's in DW08-A's used on PDP-8/E or if symptoms are present.
(Time To Install And Test .8 Hour.) (Documentation $ 5.00 , Parts None , DEC Labor $ 25.00) (Kit Contents -FCO/Prints)

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M633

Negative Bus Module

PROCESSOR TYPE Family of 8

M633-00001 CODE: D CS: C
JAN-71 - PROBLEM: Documentation does not allow for manufacturing this etch board with griplets.
CORRECTION: Change associated documentation to allow for griplets.
In-plant effectivity -01 phase-in

M633-C0002 CODE: F CS: D
JUN-72 - PROBLEM: DEC 3639B is being overworked when driving a DM01 because the VECO of 6 volts is exceeded by driving 1.5K to -15V.
CORRECTION: Change Q1 thru Q12 to DEC 8534B; they have a VECO of 40.
In-plant effectivity -All M633 beginning august 1, 1972
Field effectivity -Rework all M633 used to drive a DM01
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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M681

UDC8, UDC11
SOLID STATE
OUTPUTS

PROCESSOR TYPE 8-11 FAMILIES

M681-C0001 CODE: F CS: C
AUG-74 - PROBLEM: 50 msec glitch appears on output during certain modes of one-shot operation.
CORRECTION: Change transistor Q34 from an NPN , 3009B, to a PNP device, a 2N4250, #15-09142; this allows the one-shot to be at ground during a disabled state.
In-plant and Field effectivities were cancelled by ECO M681-C0002.

M681-C0002 CODE: F CS: D
OCT-74 - PROBLEM: Solution of "glitch " problem as ordered by ECO M681-00001 is unsatisfactory.
CORRECTION: Cancel the effectivity of ECO M681-00001. Transistor Q34 must be a 3009B, #15-03100. Add inverter in logic controlling signal one-shot.
In-plant effectivity -Rework all units in-plant
Field effectivity -Rework etch revision "C " M681's from CS revision "B " or "C " to "D " when a 50 msec "glitch " appears on the output during certain modes of one-shot operation.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 1.00)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -PF1321 5$* FCO/Prints And Parts)

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ECO DEC-O-LOG Engineering Change Order Log

M763

9 Track Write Buffer Module for TU10

PROCESSOR TYPE All

M763-00001 CODE: D CS: C ETCH: C
DEC-70 - PROBLEM: Extra 0.400 pad between E9 and C9. Etch on side 1 is too close to hole, causes short. Pin 1 on switch "P " is not identified.
CORRECTION: Change printed circuit layout as required.

NOTE: See correction supplement ECO M763-0001A
In-plant effectivity -03 rework immediately

M763-0001A CODE: D
JUL-72 - PROBLEM: ECO M763-00001 called-out an incorrect disposition code.
CORRECTION: Change disposition code of ECO M763-00001 from 03 rework to 02 phase-in.
In-plant effectivity -02 phase-in

M763-B0002 CODE: F CS: D ETCH: D
NOV-72 - PROBLEM: Specification change to IC DEC 380 resulted in faster chip rise times. As a result, crosstalk between DATA LINES and DATA STROBE causes extra bits to be strobed onto tape. Problem not known to be present in TU10's with serial numbers below 5600.
CORRECTION: Add 3.3 volt clamp to C STROBE and change DEC 380's to DEC 6380's.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M763's in TU10's
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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M769

TU10 Function Control Module

PROCESSOR TYPE All

M769-00001 CODE: D CS: F
FEB-71 - CORRECTION 1: Bring module up to production standards.
CORRECTION 2: Correct signal names and drawing errors.
In-plant effectivity -01 phase-in

M769-00002 CODE: D CS: H
NOV-71 - PROBLEM: Anode of D2 does not go to ground.
CORRECTION 1: Relayout board.
CORRECTION 2: Rework all M769, etch revision H to this ECO.
In-plant effectivity -03 rework immediately

M769-B0003 CODE: F CS: J
JUL-72 - PROBLEM: If a tape without a write enable ring is rewound, the TU10 transport is set to LOCAL mode. This is not compatable with the TU20.
CORRECTION: Delete etch between pins 10 and 11 of E2. Add etch from pin 12 to pin 11 of E2.
In-plant effectivity -02 phase-in
Field effectivity -All TU10's
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts None , DEC Labor $ 14.00) (Kit Contents -FCO/Prints)

M769-0003A CODE: F
AUG-72 - PROBLEM: ECO M769-B0003 is not needed due to an earlier ECO.
CORRECTION: Cancel ECO M769-B0003. All drawings will be returned to file at ola revision letters.
In-plant effectivity -Cancelled
Field effectivity -Cancelled
(This FCO Is No Charge To Customer) (Kit Contents -FCO)

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Engineering Change Order Log
DEC-O-LOG

M802

12 Bit Latching Relays Module for DD01

PROCESSOR TYPE PDP-8 and PDP-11

M802-00001 CODE: D CS: A ETCH: D
DEC-70 - PROBLEM: **START** signal, input "DD2 ", loading; four unit load becomes excessive for source when more than two modules are inserted into logic.
CORRECTION: Reduce loading to one unit load by using series pair of inverters in input line.
In-plant effectivity -03 rework immediately

M802-A0002 CODE: DF CS: B ETCH: E
JUL-71 - PROBLEM: Noise from switching high voltage with relays causes interaction of data.
CORRECTION: Move etch lines CD2 (ADRX), CE2 (ADRY), CF2 (ADR WD), CH2 (LOAD), and filter one reset line.
In-plant effectivity -04 rework
Field effectivity -Rework all M802's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M802-00003 CODE: D CS: C ETCH: E
NOV-71 - PROBLEM: Interaction caused by high voltage switching. Single-shot circuit producing **DATA STROBE** signal should be retriggerable to prevent timing problems when loading data in a sequential mode.
CORRECTION: Replace present one-shot circuit with a TI # SN 74123 retriggerable IC.

NOTE: See correction supplement ECO M802-0003A
In-plant effectivity -02 phase-in

M802-00003A CODE: D
JUN-72 - PROBLEM: ECO M802-00003 should incorporate a 3.0 volt source for the SN74123 one-shot.
CORRECTION: Add to ECO M802-00003 a 1.2K ohms 1/4 watt 5% cc resistor and a 2.2K ohms 1/4 watt, 5% cc resistor to the 5 volt line.
In-plant effectivity -Unchanged

M802-0003B CODE: D
SEP-72 - PROBLEM: ECO M802-00003 has incorrect number of parts added and deleted.
CORRECTION: Delete two DEC 1001610, .01UF 100V 20% disc capacitor and two DEC 1100114, diode D664. Add one DEC 1001776, diode D662.
In-plant effectivity -06 documentation change only

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M804

12 Bit Flip-Flop Relay Module for DD01

PROCESSOR TYPE 8 Family and PDP-11

M804-00001 CODE: D CS: A

DEC-70 - PROBLEM: **START** signal, input DD2, loading; four unit loads become excessive for source when more than two modules are inserted into logic.
CORRECTION: Reduce loading to one unit load by using a pair of inverters in series in the input line.
In-plant effectivity -03 rework immediately

M804-C0002 CODE: F CS: B

DEC-71 - PROBLEM: Reset line has switching noise. Symptom appears as output bits changing state when they should not.
CORRECTION: Add one .01 Ufd capacitor to each reset line. (output chip E7 pins 8 and 10 to ground and E7 pins 4 and 6 to ground) relayout etch board at this time to new revision "D ".
In-plant effectivity -03 rework immediately.
Field effectivity -Rework all M804's as required.
(Time To Install And Test .3 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

E C DEC-O-LOG Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

BUSS LOAD MODULE **M832**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	SEPTEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M832 00001	>M832	D	NOV 70 - ORDERS UPDATING OF THE ETCHED BOARD LAYOUT AND CIRCUIT DESIGN TO INCORPORATE TERMINATION AND COMPONENT SPECIFICATION CHANGES. THE RELEASE OF THIS ECO FOLLOWED THE RELEASE OF ECO M832-00002.
M832 00002	N.A.	P	NOV 70 - VOIDS THE "A" REVISION OF THE CIRCUIT SCHEMATIC; NO BOARDS WERE RELEASED AT THAT REVISION LEVEL. THIS ECO WAS RELEASED BEFORE ECO M832-00001.
M832 00003	ALL M832	F	FEB 71 - CHANGES THE PULL UP RESISTOR VALUE FOR THE SIGNAL "CPMA DISABLE" FROM 470 TO 1500 OHMS. (*$.00, **$.00, ***$.00)

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
-IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

	ETCHED BOARD REVISION B	ETCHED BOARD REVISION C		REVISIONS CREATED CS	REVISIONS CREATED ETCH
E 00001		C,D		C	C
C 00002	B		CS REV C=D EXCEPT FOR R14.	B	-
0 00003	C,D	C,D		D	-

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Specs and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

8/E PROCESSOR MODULE

M830/8300

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8E	JULY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M830 00001	ALL M830	D	JAN 71 - CHANGES ALL DOCUMENTATION TO INDICATE THAT THE M830 MODULE IS OBSOLETE AND WILL BE REPLACED BY THE M8300.
M8300 00001	>M8300	D	JAN 71 - REPLACES THE LIMITED RELEASE ETCHED BOARD REVISION "A" WITH A REDESIGNED REVISION "B" ETCH WHICH WILL MEET PRODUCTION STANDARDS.
M8300 00002	N.A.	P	JAN 71 - CHANGES THE PRINTS TO CORRECTLY IDENTIFY THE IC'S; CHANGES E17 TO E5, E7 TO E15, E12 TO E10, E1 TO E9, AND E2 TO E14.

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

M8300

- ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
- SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
- IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

	ETCHED BOARD REVISION A	ETCHED BOARD REVISION B		REVISIONS CREATED CS	REVISIONS CREATED ETCH
E 00001	* ▲	A,B ▲	CS REV A=B EXCEPT FOR CHANGES MADE BY ECO M8300-00002.	A	B
C 00002	"	"		B	-
D					

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

KK8-E TIMING GENERATOR **M833**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP-8E	JULY 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M833 00001	>M833	D	NOV 70 - ORDERS A RELAYOUT OF THE "B" ETCHED BOARD TO RESOLVE TIMING PROBLEMS IN THE INTERRUPT LOGIC.
M833 00002	>M833	D	DEC 70 - CHANGES LOGIC AND THE ETCHED BOARD TO RESOLVE MEMORY TIMING AND EAE SIGNAL PROBLEMS.
M833 B0003	ALL KK8E	F	MAR 71 - ORDERS THE JUMPERING (J1) OF "SLOW CYCLE" TO CHANGE ALL 8E'S TO SLOW SPEED MEMORY CYCLE. THIS IS A TEMPORARY MEASURE TO PERMIT OPERATIONAL USE UNTIL THE PROBLEMS WITH HIGH SPEED LOGIC ARE RESOLVED.
M833 00004	>M833	D	MAR 71 - CHANGES COMPONENTS AND THE ETCHED BOARD TO RESOLVE SEVERAL DESIGN PROBLEMS: THE GENERATION OF EXTRA TIMING PULSES WHEN SWITCHING FROM FAST TO SLOW CYCLE, EXESSIVE PULSE REFLECTIONS ON "BUS STROBE" AND "LINK LOAD", AND THE SPECIFICATION OF REQUIRED IC'S. THE FIELD BREAK-IN INFORMATION FOR THIS ECO WAS OMITTED FROM THE SPECO AND NO FIELD DISTRIBUTION WAS MADE. THE MODULE IS NOT TO BE REWORKED IN THE FIELD; IT IS TO BE EXCHANGED FOR A NEW M833, ETCHED BOARD REVISION "E", CIRCUIT SCHEMATIC REVISION "E". THIS ECO IS CORRECTED BY ECO M833-00005.
M833 00005	N.A.	P	APR 71 - CANCELS THE RELAYOUT OF THE ETCH BOARD ORDERED BY ECO M833-00004, REVERTING TO CIRCUIT SCHEMATIC REVISION "E" AND ETCHED BOARD REVISION "D".
M833 A0006	REWORK M833 CS REV "E"	F	MAY 71 - CHANGES THE TIMING OF THE SIGNAL "MD DIR" TO ELIMINATE A NOISE GLITCH ON THE STOBE SIGNAL.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

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- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

- ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
- SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
- IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

		ETCHED BOARD REVISION B	C	D		REVISIONS CREATED CS	ETCH
E	00001	A	B	-		B	C
C	00002	"	"	C,D		C	D
D	00003	"	"	"△		D	-
	00004	"	"	"△		E	E
	00005	"	"	E△		E	D
	00006	"	"	F△		F	D

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

> = ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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ECO SYNOPSES FOR LOGIC OR OPTION

POSITIVE I/O BUS INTERFACE **M835**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	JANUARY 1972	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M835 A0001	ALL M835	F	MAR 71 - DELETES MULTIPLE SKIP BY CUTTING THE ETCH AT E28 PIN 4. RELAYOUT OF THE ETCH BOARD IS NOT NECESSARY. (*$.00, **NONE, ***$.00)
M835 B0002	ALL M835 CS REV C AND EARLIER	F	JUL 71 - DOUBLES THE AVAILABLE DRIVE FOR BUS STROBE BY ADDING A SECOND 881 IC IN PARALLEL WITH E25. (*$.00, **NONE, ***$.00)
M835 B0003	ALL M835	F	OCT 71 - CORRECTS A RACE CONDITION WHICH CAUSES THE PC TO BE LOADED INTO THE AC.
M835 A0004	ALL M835	F	OCT 71 - CORRECTS DOCUMENTATION ERRORS IN ECO M835-B0003.

TABLE OF CIRCUIT SCHEMATIC AND ETCHED BOARD REVISION

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

	ETCHED BOARD REVISION C		REVISIONS CREATED CS	ETCH
	B		-	C
E 00001	C		C	-
C 00002	D		D	-
D 00003	E		E	-
00004	-		-	-

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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DEC-O-LOG Engineering Change Order Log

M837

Memory Line Share Extension Module

PROCESSOR TYPE PDP-8/E [KM8-E]

M837-C0003 CODE: F

OCT-71 - PROBLEM: Unable to field retrofit logic modifications of M837 (etch revision "B ", CS revision "B ") implemented in-plant by ECO M837-00001. ECO M837-00001 is not available for field distribution; all details required for field implementation are included in this FCO.
CORRECTION: Provide field retrofit instructions.
In-plant effectivity -N/A
Field effectivity -Rework M837's, CS revision "B " and earlier when used with time shared PDP-8/E.
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

M837-C0004 CODE: F CS: E

FEBRUARY-74 – PROBLEM: When accessing memory in a Data Field other than the program Instruction Field at the time POWER OK goes false, sometimes the Data Field location is transferred to the same location in the Instruction Field.
CORRECTION: Change the DF ENABLE flip-flop direct clear from INITIALIZE to POWER NOT OK – RUN NOT – TS1. The rework procedure is as follows: For etch "D", CS "D" and earlier, cut etch at E17 Pin 13. Add wire from E17 Pin 13 to E13 Pin 1. FCO M837-B0002 must be installed on etch "C", CS "C".
In-plant effectivity – rework all modules in-plant by May 1, 1974.
Field effectivity – rework all M837's when symptoms are present.
(Time To Install And Test .5 Hour.) (Kit Contents – NF1208 – FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

M837

Memory Line Share Extension Module

PROCESSOR TYPE PDP-8/E [KM8-E]

M837-C0003 **CODE: F**

OCT-71 - PROBLEM: Unable to field retrofit logic modifications of M837 (etch revision "B ", CS revision "B ") implemented in-plant by ECO M837-00001. ECO M837-00001 is not available for field distribution; all details required for field implementation are included in this FCO.
CORRECTION: Provide field retrofit instructions.
In-plant effectivity -N/A
Field effectivity -Rework M837's, CS revision "B " and earlier when used with time shared PDP-8/E.
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

DEC-O-LOG

Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

MEMORY LINE SHARE EXTENSION **M837**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E (KM8-E)	SEPTEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M837 00001	>M837 ALL TS8-E	M	MAR 71 - CORRECTS CIRCUIT SCHEMATIC ERRORS. REPLACES THE LIMITED RELEASE REVISION "B" ETCHED BOARD WITH THE REVISION "C" BOARD WHICH WILL MEET PRODUCTION STANDARDS. TIME SHARING 8-E'S REQUIRE THE REVISION "C" BOARD.
M837 B0002	ALL M837	F	JUN 71 - CHANGES GATING OF "POWER OK", "TS1", AND "RUN L" TO ELIMINATE A PROBLEM WHICH IS DESCRIBED AS FOLLOWS: IF "POWER OK" GOES LOW WHILE EXECUTING A PROGRAM IN AN EXTENDED FIELD, THE CONTENTS OF THE ADDRESS THAT IS CURRENTLY BEING USED MAY BE LOST. THIS IS DUE TO THE M837 BOARD CLEARING THE EMA BITS TO ZERO WHEN "POWER OK" GOES LOW. IF THIS HAPPENS BEFORE THE MEMORY CYCLE IS COMPLETE, DATA IS LOST. ALL REVISION "C" ETCHED BOARDS WILL BE REWORKED IN-PLANT BEFORE SHIPMENT. (*$.00, **NONE, ***$.00)

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
-IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

		ETCHED BOARD REVISION B	C	D		REVISIONS CREATED CS	ETCH
E		B					
C	00001		C		△=▲ EXCEPT FOR TS8E	C	C
O	00002	D	D	D		D	D

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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EC DEC-O-LOG Engineering Change Order Log

M839

Synchronous Modem Interface

PROCESSOR TYPE PDP-8/E, PDP-8/F, and PDP-8/M

M839-A0001 CODE: DF CS: H ETCH: J
NOV-71 - PROBLEM 1: Intermittent race condition when using modem timing, causing intermittent hang condition in one access address.
CORRECTION 1: Correct race by using **RESET ACESS ADD INCR** signal to clock **ACC ADD CONTROL** flip-flop, E57, E57 pin 11 to E31 pin 11. Add **INITIALIZE** to E52 pin 13.
PROBLEM 2: Signal names not on prints.
CORRECTION 2: Add signal names as indicated.
PROBLEM 3: Board not to production standards.
CORRECTION 3: Relayout etch to new revision "J ." to bring up to production standards for Production Release.

NOTE 1: This FCO must be installed in conjunction with FCO M866-A0003.

NOTE 2: See continuation supplement FCO M839-A001A.
In-plant effectivity -03 rework immediately.
Field effectivity -Rework all M839's in DP8-EA.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO Only) Supplement FCO M839-A001A will also be included in the kit.

M839-A001A CODE: DF
JAN-72 - PROBLEM 1: Data Break logic can malfunction, terminating a transmit cycle too soon.
CORRECTION 1: Change READ/WRITE flip-flop from RS to CD .
PROBLEM 2: IDLE MODE logic does not work properly.
CORRECTION 2: Logically AND the **COUNT RESET** signal with **TOGO TRUE** signal to clock the TGO flip-flop.
PROBLEM 3: Print has signal name errors.
CORRECTION 3: Add signal name.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

M839-B0002 CODE: DF CS: J ETCH: K
MAR-72 - PROBLEM 1: Bus errors caused **CLEAR TO SEND** to occur asynchronously to **TX CLOCK** .
CORRECTION 1: Gate **CLEAR TO SEND** and **REQUEST TO SEND OR IDLE** to occur on the trailing edge of the transmit clock pulse.
CORRECTION 2: Upgrades the readability of the Assembly Hole drawing.

NOTE: See continuation supplement FCO M839-B002A.
In-plant effectivity -03 rework immediately
Field effectivity -Rework M839's in DP8-E
(Time To Install And Test 2.0 Hours) (Kit Contents -F185 FCO/Prints) Correction supplement FCO M839-B002A and MAINDEC 08-DHDPA-A will also be included in the kit.

M839-B002A CODE: DF
APR-72 - PROBLEM : M839 Circuit Schematic is wrong. Problem is on Note 2 of E-CS-M839-0-1, page 1: 6 bit character jumper notation is incorrect.
CORRECTION: Delete "C8 " from 6 bit character note and add "B9 ".
In-plant effectivity -Unchanged
Field effectivity -Unchanged

M839-00003 CODE: P CS: K
JUL-72 - CORRECTION: Correct Item 33 on Parts List.
In-plant effectivity -06 documentation change only

M839-C0004 CODE: DF CS: L ETCH: L
OCT-72 - PROBLEM 1: **INITIALIZE** at power-up causes a space to the line which is unacceptable by EIA.
CORRECTION 1: Change **INITIALIZE** pulse to SEND DATA flip-flop so that an **INITIALIZE** pulse will set rather than clear the SEND DATA flip-flop.
PROBLEM 2: Improve product by adding the capability to select the number of character recognition locations (0, 2, and 4) and to have the 65XX IOT sets.
CORRECTION 2: Add split lugs and resistors to allow selection of number of character recognition locations.
In-plant effectivity -Rework all M839's beginning 10-9-72.
Field effectivity -Rework all M839's, Correction #1 as required
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints) MAINDEC 08-DHDPA-B will also be included in the kit.

M839-C0005 CODE: F CS: M
APR-73 - PROBLEM: A race condition exists when running full duplex. Indications of the race condition reported so far are: 1: Received data disappearing, being AND ed with **TX DATA** and stored with **TX DATA** during memory write cycle. 2: User program may indicate bad line, excessive **NACKS** , when running full duplex.
CORRECTION: Synchronize the receiver DMA control to inhibit receiver break requests while a TRANSMIT DATA BREAK/DMA cycle is in progress. This correction is necessary to meet specifications.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all M839's on all units running full duplex.
(Time To Install And Test 1.5 Hours.) (Kit Contents -F745 FCO/Prints And Parts)

M839-00006 CODE: P CS: N
AUG-73 - PROBLEM: When etch layout was changed, capacitor C27 was removed; it is still shown on the Circuit Schematic and in the Parts List.
CORRECTION: Remove C27 from Parts List and Circuit Schematic.
In-plant effectivity -06 -Documentation change only

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EC DEC-O-LOG Engineering Change Order Log

M840

Reader/Punch Control

PROCESSOR TYPE PDP-8/E

M840-00001 CODE: D CS: F
FEB-71 - PROBLEM 1: Adjusting final speed potentiometer adversely affects acceleration timing.
CORRECTION 1: Rearrange circuit so potentiometer setting does not change acceleration timing.
PROBLEM 2: Critical thresholds on **PUNCH SYNC** schmitt trigger.
CORRECTION 2: Change two resistor values.
CORRECTION 3: Relayout board including all changes and eliminating jumpers.

NOTE: Supplement ECO M840-00002 cancels the layout of new etch revision "H " which is ordered by this ECO.
In-plant effectivity -03 rework immediately

M840-00002 CODE: D
FEB-71 - CORRECTION: Modifies ECO M840-00001 ; cancels the creation of etch revision "H ". Orders circuit changes to eliminate noise sensitivity of **PUNCH SYNC** and intermittent reader feed.
In-plant effectivity -Rework immediately

M840-00003 CODE: D
MAY-71 - CORRECTION: Orders creation of the etch board revision "H " to bring the M840 up to production standards.

NOTE: This ECO was cancelled by ECO M840-00004.
In-plant effectivity -Phase-in

M840-C0004 CODE: F CS: H
JUN-71 - PROBLEM 1: ECO M840-00003 was written causing Circuit Schematic revision conflicts.
CORRECTION 1: Cancel ECO M840-00003.
PROBLEM 2: Reader stalls erratically.
CORRECTION 2: Limit current into capacitor C59 with a 75 ohm resistor in series.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M840's if symptoms are present
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO And Parts)

M840-00005 CODE: D CS: J ETCH: H
JUN-71 - PROBLEM: Jumpers and retrofit components on board; design errors around **INITIALIZE** logic.
CORRECTION: Relayout board, including retrofitted components, to new etch revision "H "; do not rework existing boards.
In-plant effectivity -01 phase-in

M840-00006 CODE: D CS: K
JUL-71 - PROBLEM: MC4015 IC undesirable because of purchasing problems.
CORRECTION: Replace MC4015 with 8271 IC in four places.

NOTE: Reference ECO's M840-00007 and M840-00008 which are supplemental to this ECO.
In-plant effectivity -02 phase-in

M840-00007 CODE: D ETCH: J
AUG-71 - PROBLEM 1: ECO M840-00006 should have ordered relayout of etch.
CORRECTION 1: Relayout etch because IC 4015 is no longer available; an IC 8271 will fit.
PROBLEM 2: Break-in code incorrect.
CORRECTION 2: Change break-in code for ECO M840-00006 from 02 to 01.

NOTE 1: This ECO is supplemental to ECO M840-00006.

NOTE 2: See continuation supplement ECO M840-00008.
In-plant effectivity -01 phase-in

M840-00008 CODE: D
SEP-71 - PROBLEM: When the computer is first turned on, it is possible to read one character, thus setting the **READER FLAG** , even though there is no tape in the reader.
CORRECTION: Change gating to reset **READER FLAG** flip-flop with **POWER NOT OK LOW** .

NOTE: This ECO is supplemental to ECO's M840-00006 and M840-00007.
In-plant effectivity -01 phase-in

M840-C0009 CODE: F CS: L ETCH: K
JUN-72 - PROBLEM: On M840 etch revision "J ", Circuit Schematic revision "K ", the punch feed switch will not work.
CORRECTION: Remove etch from E13 pin 3 to R46 which is a 10K, 1/4 watt resistor
In-plant effectivity -03 rework immediately
Field effectivity -Rework M840's etch revision "J ", CS revision "K " only
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints)

M840-C0010 CODE: F CS: M
SEP-72 - PROBLEM: **PUNCH BUSY** delay is wrong, causing bit/s to be dropped while punching.
CORRECTION: Increase delay time to 12 msec by removing resistor R39, 12K 1/4 watt 5%.
In-plant effectivity -Rework M840's etch revision "K ", CS revision "K " or "L ".
Field effectivity -Rework M840's, etch revision "K " at CS revision "K " or "L ".
(Time To Install And Test .7 Hour.) (Kit Contents -FCO/Prints)

M840-C0011 CODE: F CS: N
OCT-72 - PROBLEM: Reader randomly stops due to loss of **READER FLAG** . Problem is aggravated by using Field Service loop tape with "built-in " skew.
CORRECTION: Change R/C network on **READER DATA STROBE** signal to cure race condition.

NOTE: Under normal circumstances, symptoms become very random. The problem will occur more frequently when using tapes that have some skew between the Feed Hole and Data Holes; when the Feed Holes have become elongated, for example.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M840's shipped before 10/30/72
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M840-00012 CODE: D CS: H1
JAN-73 - PROBLEM: A large number of M840's at CS revision "H " have shown up in Production and these boards will not work properly. Etch revision "F ", CS revision "H " cannot be shipped.
CORRECTION: Create CS revision "H1 " to document these boards which may be used following modification as defined in this ECO. Resistor R29 is changed to 100 ohms and capacitor C55 is changed to 2200 pfd.
In-plant effectivity -03 rework all M840's, etch revision "F ", CS revision "H ", on or before February 5, 1973.

M840-B0013 CODE: F CS: P
FEB-73 - PROBLEM: When using Bootstrap Loader, MI8-E, with reader, program dumped into core will not run; program hangs on reader flag.
CORRECTION: Remove **POWER OK** from the R/S flip-flop. The rework procedure is as follows: Cut etch on side 2 at pin BV2. Jumper E35 pin 4 to pin 5. Use feed-thrus for those two pins near E29.

NOTE: All M840's reworked in the field must have FCO M840-C0009, M840-C0010, and M840-C0011 installed before this FCO is installed. An M8330 is to be used when this FCO is implemented. The M833, if present, should be replaced.
In-plant effectivity -03 * -Rework all CS revision "N " boards for February shipments to customers.
Field effectivity -Rework all M840's, CS revisions "K ", "L ", "M ", or "N ", in systems with an MI8-E option.
(Time To Install And Test .5 Hour.) (Kit Contents -F771 -FCO/Prints)

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M840-00014 CODE: F CS: R

APRIL-74 – PROBLEM: Resistor R28 is connected to a +3 volt run, but should be connected to +5 volts; +3V noise immunity is poor.

CORRECTION: Connect R28 to +5 volts. The rework procedure is as follows: Looking at Side 1 of the board, follow etch from E12 pin 1 to the point where R28 and R40 are joined. At this point make an etch cut between the two resistors to separate R28 from R40. Run a #30 wire from the end of R28, in step 1, left to the +5 volt lead of C17.

In-plant effectivity – This ECO is required only on CS revision "J" or later, etch "H" or later. All modules in-plant as of June 1, 1974 must have this rework.

Field effectivity – rework M840's when poor noise immunity is the suspected cause of Reader/Punch failure.

(Time to Install and Test .5 hour.) (Kit Contents – NF1249 – FCO/prints.)

M840-C0015 CODE: F CS: S

AUGUST-74 – PROBLEM: Due to large variations of photo cell output, both when the photo cell array is new and as individual cells age, feed-hole strobe timing is incorrect.

CORRECTION: Remove 0.33 mfd capacitors C48 and C49 and replace with one 2.2 mfd capacitor. This change moves feed-hole strobe to the center of the data window.

In-plant effectivity – Rework all M840's in-plant as of September 30, 1974.

Field effectivity – Rework etch revision "J" and "K" M840's from CS revision "R" to "S" when symptoms are present.

(Time to Install and Test .5 hour.) (Kit Contents – PF1323 5WW – FCO/prints and parts.)

M840-C015A CODE: F

SEPT-74 – CORRECTION: Modifies FCO M840-C0015 to specify that only "J" and "K" etch boards are to be reworked. "F" and "H" are excluded.

In-plant effectivity – Unchanged except as noted above.

Field effectivity – Unchanged except as noted above.

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DEC-O-LOG Engineering Change Order Log

M841

Line Printer Control

PROCESSOR TYPE PDP-8/E

M841-00001 **CODE: D** **CS: D** **ETCH: E**
JAN-71 - PROBLEM: If printer power is "off " while computer is "on ", the signal **READY** floats, causing interrupts.
CORRECTION: Clear INTERRUPT ENABLE with INITIALIZE .
In-plant effectivity -Create new etch board

M841-00002 **CODE: P** **CS: E**
MAR-71 - PROBLEM: Three pins on Winchester connector are called out incorrectly on drawing E-CS-M841-0-1.
CORRECTION: Correct pins as follows: Change C to E, and E to C.
In-plant effectivity -Documentation change only

M841-00003 **CODE: D** **CS: F** **ETCH: F**
MAY-71 - PROBLEM 1: When printer power is "off ", the signals **DEMAND** and **READY** float, causing false skips.
CORRECTION 1: Relayout etch board to include clamps on **DEMAND** and **READY** .
PROBLEM 2: Omnibus conformity not maintained.
CORRECTION 2: Relayout to achieve conformity.
In-plant effectivity -Create new etch board

M841-00004 **CODE: D** **CS: H** **ETCH: H**
JUL-71 - PROBLEM 1: The STROBE flip-flop is set at the wrong time and causes the line printer to error.
CORRECTION 1: Relayout the etch board to set STROBE at the trailing edge of IOT 4 or 6.
CORRECTION 2: Renumber IC's so that the first IC is E1.
In-plant effectivity -Create new revision etch board

M841-00005 **CODE: P** **CS: J**
OCT-71 - CORRECTION: Corrects numbering of parts on the cover sheet of the Circuit Schematic.
In-plant effectivity -Print correction only

M841-D0006 **CODE: F** **CS: K**
AUG-73 - PROBLEM: The open collector gates, 7401's, that drive the eight data lines to the printer, are sinking 50 ma. The 7401 IC is specified to sink only 16 ma per gate. Symptoms could be garbled characters and/or marginal operation.
CORRECTION: Replace two 7401 IC's with two 8881 ic's; for etch revision "F " and earlier, replace E3 and E12 with 8881'S; for etch revision "H " and later, replace E5 and E14 with 8881's.
In-plant effectivity -03 * rework all boards in house. Install ECO at Depot Repair. Field retrofit if symptoms exist or are suspected.
Field effectivity -Rework all M841's when symptoms are present
(Time To Install And Test .5 Hour.) (Kit Contents -F1023 -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

M842

XY8-E Plotter Control

PROCESSOR TYPE PDP-8/E, 8/F, 8/M

M842-00001 CODE: P CS: B
NOV-70 - PROBLEM: Incorrect parts ordered on Parts List.
CORRECTION: Change from #90-06732, GS4-7 eyelet, to #90-06750, GS4-11 eyelet.
In-plant effectivity -06 documentation change only

M842-00002 CODE: P CS: C
MAR-71 - PROBLEM: Print calls out IC 380 and IC 314 pin 7 equals +5V.
CORRECTION: Print should read IC 380 and IC 314 pin 8 equals +5V.
In-plant effectivity -06 documentation change only

M842-00003 CODE: D CS: D
MAR-71 - PROBLEM 1: The 5 msec delay can vary up to 30% which could cause timing problems.
CORRECTION 1: Change the value of resistor R45 from 8.2K to 10K ohms to increase the delay to 7.5 msec.
PROBLEM 2: Print errors.
CORRECTION 2: 70 msec and 4 msec delays should be called out as 72.7 and 3.3 msec respectively.
In-plant effectivity -03 rework immediately

M842-A0004 CODE: DF CS: E
APR-71 - PROBLEM: The 72 msec delay is being false triggered by a race condition.
CORRECTION: Rework boards as follows: Etch cuts: E1 pin 2, side 2; E1 pin 4, side 1; E3 pin 1, side 2; E3 pin 2, side 1; E3 pin 4, side 2; E3 pin 5, side 2; E4 pin 1, side 2; E4 pin 3, side 1; E10 pin 1, side 2; E10 pin 2, side 2; E10 pin 4, side 2; and E10 pin 5, side 2. Add jumpers E1 pin 2 to E4 pin 6, E1 pin 3 to R44, E3 pin 1 to E6 pin 2, E3 pin 2 to E12 pin 12; E3 pin 11 to E4 pin 4, E4 pin 1 to E6 pin 8, E6 pin 1 to pad in etch line to E10 pin 6, E6 pin 3 to pad in etch line to E5 pin 14, E6 pin 4 to E10 pin 4, E6 pin 10 to E10 pin 5, E6 pin 11 to E17 pin 3, E10 pin 1 to pad in etch line to E5 pin 13, and E10 pin 2 to E16 pin 2.

NOTE: This FCO creates XY8-E, -EA and -EB ML revisions "A ".
In-plant effectivity -04 rework immediately
Field effectivity -Rework all M842's, CS revision "D " and earlier, etch revision "B ".
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints)

M842-00005 CODE: D CS: F ETCH: C
MAY-71 - PROBLEM: Design errors on board. 70 msec single-shot erroneously triggers instead of 5 msec single-shot. This makes certain execution times longer than necessary.
CORRECTION: Relayout board to new etch revision "C ".

NOTE 1: This ECO is cancelled by ECO M842-00007.

NOTE 2: This ECO creates XY8-E, -EA , and -EB ML revision "B ".
In-plant effectivity -03 rework immediately

M842-00006 CODE: D CS: F ETCH: D
JUN-71 - PROBLEM 1: 1 ufd 20V capacitor, #10-04811, is no longer purchased.
CORRECTION 1: Replace it with #10-01776, 1 ufd 35V.
PROBLEM 2: Design error on IOT decoder.
CORRECTION 2: Gate SELECT level with TP3 for relayout only, do not retrofit.
In-plant effectivity -01 phase-in

M842-00007 CODE: D
FEB-72 - PROBLEM: ECO M842-00005 is incorrect and should not be retrofitted on boards.
CORRECTION: Do not retrofit any boards per ECO M842-00005.

NOTE: ECO M842-00006 calls for relayout that brings the CS revision to "H " and the etch revision to "D ". That corrects the problem indicated on ECO M842-00005 and will replace the CS revision "E " board. There will be no CS revision "F " boards.
In-plant effectivity -03 remove from all CS revision "F " boards.

M842-D0008 CODE: F CS: J ETCH: E
APR-72 - PROBLEM: M842 does not allow for plotters having different step rates.
CORRECTION: Remove fixed resistor R45, 10K, 1/4 watt, 5%, and replace with a 20K ohm potentiometer.
In-plant effectivity -Exchange M842 in plotters that step faster than 200 steps per second.
Field effectivity -Rework M842's at customer request
(Time To Install And Test 1.0 Hour) (Kit Contents -FCO/Prints And Parts)

M842-B0009 CODE: F CS: K
APR-73 - CORRECTION 1: Update drawing E-CS-M842-0-1 to correct documentation error.
PROBLEM 2: Race condition exists between **PEN UP** and **PEN DOWN** flags.
CORRECTION 2: Rework M842's as follows: Cut etch between E6 pin 8 and E4 pin 1, between E3 pin 3 and E4 pin 2, between E4 pin 6 and E1 pin 2, and between E7 pins 3 and 4 and R44. Maintain etch connection between E7 pins 3 and 4. Add wires from E18 pin 4 to E18 pin 5, from E18 pin 5 to E6 pin 8, from E18 pin 3 to E3 pin 3, from E18 pin 6 to E18 pin 13, from E18 pin 13 to E6 pin 1, from E6 pin 2 to E1 pin 2, from E1 pin 8 to E18 pin 1, from E18 pin 1 to E18 pin 2, from E18 pin 2 to E7 pins 3 and 4, from E4 pin 1 to E4 pin 2, and from E4 pin 2 to E18 pin 12.
In-plant effectivity -03 * -Rework immediately
Field effectivity -Rework all M842's
(Time To Install And Test 1.5 Hours.) (Documentation $ 5.00 , Parts None) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents - FCO/Prints)

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ECO DEC-O-LOG Engineering Change Order Log

M843

GDI Card Reader Control

PROCESSOR TYPE PDP-8/E

M843-B0001 CODE: F CS: D

OCT-71 - PROBLEM: If the program is started before the card reader is started, the card reader will not advance a card, even though it is giving a READY signal.

CORRECTION: The cause has been found to be the TRANSITION flip-flop, which in the set condition, disables the READ flip-flop. It is necessary that the READ flip-flop be disabled when the READY/ON LINE lead goes down, but use of the TRANSITION flip-flop disables the READ flip-flop both when READY/ON-LINE goes up and when it goes down. The actual state of READY/ON-LINE should be used instead. Delete etch at E35 pin 9. Add a jumper from E35 pin 9 to E40 pins 11 and 14.

In-plant effectivity -03 rework immediately

Field effectivity -Rework all M843's in PDP-8/E

(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

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DEC-O-LOG Engineering Change Order Log

M848

Power Fail And Auto Restart

PROCESSOR TYPE PDP-8/E

M848-B0001 CODE: F CS: C
MAR-71 - PROBLEM: DEC 9601 IC's false trigger in heat testing as a result of a lowered noise margin which is, in turn, a result of series diodes on pin 13.
CORRECTION: Remove diodes D1 and D3; install jumpers in their places.
In-plant effectivity -Rework immediately
Field effectivity -Rework all CS revision "B " and earlier M848's.
(Time To Install And Test .3 Hour.) (Kit Contents --FCO/Prints)

M848-B0002 CODE: F CS: D ETCH: D
MAR-71 - PROBLEM 1: In any PDP-8/E system, where control logics such as TC08 or DF32-D are not located directly in the OMNIBUS , it is possible for these devices to miss a POWER CLEAR , thus causing problems, especially when the Power Fail option is present. There is no operator intervention to cause a KEY CLEAR .
CORRECTION 1: Hold INITIALIZE true for 300 msec while the system is coming up. Create a new etch layout, revision "D ".
CORRECTION 2: Correct Circuit Schematic errors.
In-plant effectivity -Phase-in
Field effectivity -All CS revision "C " M848's and earlier, in KP8-E, must be replaced with CS revision "D " M848's.
(Time To Install And Test .5 Hour.) (Kit Contents -PF162 -FCO/Prints And Parts)

M848-00003 CODE: P CS: E
JUN-71 - CORRECTION: Add instructions for installing board in the field.
In-plant effectivity -06 -Documentation change only

M848-C0004 CODE: F CS: F
OCT-71 - PROBLEM: Power Fail will not work with the new timing board, M8330, because of the long INITIALIZE signal from the M8330.
CORRECTION: Lengthen the 300 msec delay out to 1000 msec by changing capacitor C32 from 3.9 ufd to 68 ufd.
In-plant effectivity -Rework beginning October 1
Field effectivity -Rework all M848's
(Time To Install And Test -1.0 Hour) (Kit Contents -FCO And Parts)

M848-C0005 CODE: F CS: H
DEC-72 - PROBLEM: Random failures occur when running Test 4 of the Power Fail diagnostic. The failures appear most often as the error halt in location 434. Customer software may exhibit interrupt service problems.
CORRECTION: Hold **POWER LOW FLAG** set instead of clocking the flip-flop high. Retrofit instructions: 1: Two etch cuts at E10 pin 10, one on side #1 and one on side #2; 2: One etch cut at E10 pin 11, side #2; 3: Jumper E10 pin 11 to E10 pin 7; 4: Jumper E10 pin 10 to E1 pin 4; and 5: Jumper E9 pin 13 to E10 pin 1.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all M840's, CS revision "F " and earlier
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

M848-00006 CODE: D CS: J
JAN-72 - PROBLEM: M848 module will not work with the PDP-8/M.
CORRECTION: Add a 3.83K 1/8W 1% resistor in series with R16 which is a 3.48K 1/8W 1% resistor. Add two split lugs with a jumper wire between the lugs in parallel with the 3.83K resistor. Delete four 20 ufd capacitors and one 10K resistor.

NOTE 1: For PDP-8/M, CS revision "J " is required; retrofit immediately. For PDP-8/E, CS revision "J " is not required, phase-in.

NOTE 2: See correction supplement ECO's M848-00007 and M848-C0008.
In-plant effectivity -See note 1

M848-00007 CODE: D CS: K
JAN-72 - PROBLEM: When the 20 ufd capacitors are removed when installing ECO M848-00006, the power fail thresholds become too low in the PDP-8/E or PDP-8/M.
CORRECTION: Change R16 from a 3.48K 1/8W 1% resistor to 3.65K 1/8W 1%.

NOTE: Reference ECO M848-00008
In-plant effectivity -03 rework immediately

M848-C0008 CODE: DF
FEB-72 - PROBLEM: ECO's M848-00006 and M848-00007 do not cover field effectivity.
CORRECTION: In the field, the M848 at CS revision "H " or earlier must be exchanged for an M848 CS revision "J " or later. ECO's M848-00006 and M848-00007 must be done together, in-plant.
In-plant effectivity -Unchanged
Field effectivity -Exchange all M848's, CS revision "H " or earlier
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

M848-C0009 CODE: F CS: L
MAR-72 - PROBLEM: If the restart subroutine is too long, it is possible not to recognize a new power failure because **INTERRUPT ENABLE** is off.
CORRECTION: Retrofit the module to add a gate.

NOTE: Reference ECO M848-00011.
In-plant effectivity -02 -Phase-in
Field effectivity -Rework all M848's in PDP-8/E and PDP-8/M as required
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)
MAINDEC 8E-D0KC-1 will also be included in the kit.

M848-D0010 CODE: F CS: M
MAR-72 - PROBLEM: The two comparators and voltage reference may become marginal under worst-case component tolerances.
CORRECTION: Change resistor values as indicated.
In-plant effectivity -Rework immediately
Field effectivity -Rework all M848's if higher thresholds are needed
(Time To Install And Test -1.0 Hour) (Kit Contents -FCO/Prints And Parts)

M848-00011 CODE: D
MAY-72 - PROBLEM: Break-in instructions on ECO M848-C0009 create confusion about module revision letters.
CORRECTION: Changes in-plant break-in from "code 02 phase-in, field change only " to "03 rework all boards ".
In-plant effectivity -Rework all M848's after May 15, 1972

M848-C0012 CODE: F CS: N
JUN-72 - CORRECTION 1: Corrects documentation errors.
PROBLEM 2: Fast power on/off causes the **RUN** flip-flop to be set while **INITIALIZE** is still timing out.
CORRECTION 2: Set up KC flip-flop with output from E1 pin 6.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all M848's if symptoms are present
(Time To Install And Test .8 Hour.) (Kit Contents -FCO/Prints)
MAINDEC 08-DHKPA-A will also be included in the kit.

M848-C0013 CODE: F CS: P
AUG-72 - PROBLEM: It is possible for the Power Fail option to issue a **RESTART** as the line voltage varies between the line thresholds of 105 VAC and 95 VAC.
CORRECTION: Install a DIR flip-flop and remove retrofit jumpers E13 pin 2 to pin 3, E13 pin 2 to E7 pin 6 and E13 pin 1 to E13 pin 12.

NOTE: The jumpers removed by this FCO were installed by FCO M848-C00009. This FCO is to be implemented in all KP8/E's that are producing an unwanted restart.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all M848's in KP8/E as required.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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M848-C0014 CODE: F CS: R

NOV-72 - PROBLEM: When Power Fail option is used in processors without the Programmer's Console, Power Fail may not restart at the right memory location.
CORRECTION: Add three jumpers to assert IND I L on the omnibus at LOAD ADDRESS enable time; these jumpers are E13 pin 1 to CU2, E13 pin 2 to E13 pin 12 and E13 pin 3 to E13 pin 11.

NOTE: No reworking of the module is to be done in the field; this FCO is to be implemented by exchanging the existing M848 module for a new CS revision "R " M848, or one which has been reworked in-plant to that level.
In-plant effectivity -03 -Rework beginning 11/26/73
Field effectivity -Exchange all M848's used in PDP-8/E, PDP-8/M, or PDP-8/F.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

M848-D0015 CODE: F CS: R1

AUG-73 - PROBLEM: Power Fail thresholds cannot be held to close enough tolerances due to component tolerances and HFE of the 3009B transistors.
CORRECTION: Rework the module with two 100 ohm potentiometers and DEC 6531B transistors. The reworking is to be done in the DEC Depots only; field implementation of this FCO will require module exchange. The parts kit for this FCO will consist of one M848 module, DEC Depot reworked to CS revision "R1 " or a new board, etch revision "E ", CS revision "S ".

NOTE: See continuation supplement FCO M848-C015A.
In-plant effectivity -Rework in Field Service Depots only. Do not retrofit in Production. Shippable CS revision is "R " until further notice.
Field effectivity -Exchange M848's at sites with a history of Power Fail problems; use DEC Depot reworked board at CS revision "R1 " or new board at CS revision "S ", etch "E ".
(Time To Install And Test .5 Hour.) (Kit Contents -F1031 -FCO/Prints And Parts)

M848-D015A CODE: F

SEP-73 - CORRECTION: Adds rework procedure for M848-D0015.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

M848-00016 CODE: D CS: S ETCH: E

SEP-73 - PROBLEM: Present board requires too much rework as a result of ECO's.
CORRECTION: Phase-in new etch revision "E ".
In-plant effectivity -Board Shop: Do not etch any more revision "D " M848's. Puerto Rico: New boards must be in all November machines. Westminster: New boards must be in all December machines and after.

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E C DEC-O-LOG Engineering Change Order Log

M851

Bus Receiver and 8 Bit Address Decoder Module

PROCESSOR TYPE 8 Family and PDP-11

M851-00001 CODE: D CS: D

JUL-71 - PROBLEM 1: START signal, pin BF1, is not TTL compatible because diode D1 is in series.
CORRECTION 1: Remove diode D1 and associated circuitry originally designed to producce START pulse.
PROBLEM 2: Noise coupling onto START signal.
CORRECTION 2: Noise on ground is excessive, thus a new ground is run to E7.

NOTE: See correction supplement FCO M851-B001A.
In-plant effectivity -03 rework immediately

M851-B001A CODE: F

FEB-72 - PROBLEM: ECO M851-00001 did not order field implementation.
CORRECTION: Reissue ECO M851-00001 to order rework of all M851's in the field.
In-plant effectivity -Unchanged
Field effectivity -Rework all M851's CS revision "C " and earlier used in UDC8, UDC11, and UDC15.
(Time To Install And Test .3 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

M860

Real Time Clock Module

PROCESSOR TYPE PDP-8/E

M860-00001 CODE: D CS: E
JUL-71 - PROBLEM: Error in layout of etched board and it is not to production standards.
CORRECTION: Rework: Cut etch on side 2, add two jumpers on side 1. Relayout to correct etch problem and bring it up to production standard.

NOTE: Module is at **LIMITED RELEASE** status.
In-plant effectivity -03 rework immediately

M860-B0002 CODE: F CS: F
JAN-72 - PROBLEM 1: Possibility of erroneous Clock Counter reading exists when running mode 03 at high rates with Schmitt Triggers.
CORRECTION 1: Enable Schmitt Trigger data transfers with **CNT BUSY** II instead of inhibiting with **B COUNT H** .
PROBLEM 2: Clock Counter counts on negative edge; **B COUNT H** delays this edge for 300 nsec.
CORRECTION 2: Connect Counter to **B COUNT L** '; **THIS DOES NOT ALTER CIRCUIT OPERATION.**

NOTE: THIS FCO MUST BE INSTALLED IN CONJUNCTION WITH FCO M518-B0002.
IN-PLANT EFFECTIVITY -03 REWORK IMMEDIATELY
FIELD EFFECTIVITY -REWORK ALL M860'S USED IN DK8-ES IN THE FIELD OR IN DK8-EP'S THAT USE THE SCHMITT TRIGGER CIRCUITRY OF THE M518.
[TIME TO INSTALL AND TEST 1.0 HOUR.] [THIS FCO IS NO CHARGE TO CUSTOMER] [KIT CONTENTS -FCO/PRINTS AND PARTS]

M860-D0003 CODE: DF CS: H
MAR-72 - PROBLEM 1: System fails on very long busses.
CORRECTION 1: Change capacitor C61 from 47 pfd to 470 pfd.
PROBLEM 2: **BUS STROBE** timing is marginal (9601 tolerances .
CORRECTION 2: Change capacitor C60 from 56 pfd to 82 pfd.

NOTE 1: This is a worst-case condition problem and systems in the field that are working should not be changed unless a **BUS STROBE** pulse is missed. NOTE 2: Symptom: When executng instruction 6133 or 6137, the processor hangs up in TS3.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M860's as required.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

4/17/74 Changes C54 to 1000 pfd
To pause HANG up As in Note 2
B13

DEC-O-LOG

Engineering Change Order Log

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ECO SYNOPSES FOR LOGIC OR OPTION

CONSOLE TELETYPE CONTROL **M865**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	SEPTEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M865 00001	ALL M865	D	NOV 70 - ADDS FOUR JUMPERS AND AN ETCH CUT TO ALLOW THE ASSEMBLY OF INCOMING DATA DESPITE A "CLEAR ALL FLAGS" INSTRUCTION. ENSURES THAT THE INITIAL CONDITION IS PROPER AT POWER-UP BY USING "POWER OK" TO HOLD THE "ACTIVE" FLIP-FLOP IN THE CLEAR STATE.
M865 B0002	ALL M865 OS REV A&B	F	MAR 71 - ADDS A 180 OHM RESISTOR TO DECOUPLE THE TELETYPE GROUND AND THEREBY ELIMINATE FAILURES IN THE MEMORY EXTENSION CONTROL WHEN TELETYPE POWER IS TURNED ON AND OFF. REPLACES 1K OHM RESISTOR R10 WITH A 560 OHM RESISTOR TO INCREASE CURRENT FLOW ACROSS THE TELETYPE CONTACTS AND ENSURE THAT THEY REMAIN CLEAN. (*$.00, **$.00, ***$.00)
M865 B0003	ALL M865 OS REV A,B,&C	F	APR 71 - ADDS A 10 PFD CAPACITOR ACROSS THE CLOCK CRYSTAL TO PROVIDE CORRECT CIRCUIT IMPEDENCE AND ENSURE STARTING. CHANGES THE READER RUN LOGIC SO THAT "READER RUN" WILL BE CLEARED ONLY BY ASSEMBLY OF A CHARACTER, NOT BY A LINE TRANSITION. (*$.00, **$.00, ***$.00)
M865 C0004	ALL M865 FIELD RETROFIT AS REQUIRED	F	JUN 71 - ADDS A D664 DIODE AND A 1K OHM RESISTOR IN THE COLLECTOR CIRCUIT OF G3 TO REDUCE TRANSMITTER NOISE SENSITIVITY. THIS ECO SHOULD BE INSTALLED ONLY WHEN CABLE TYPE AND/OR NOISE CONDITIONS DICTATE; FLEXING OF THE TELETYPE CABLE MAY PRODUCE A SPURIOUS OUTPUT, INDICATING A REQUIREMENT FOR THIS ECO. (*$.00, **$.00, ***$.00)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Spsco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
-IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

		ETCHED BOARD REVISION B	ETCHED BOARD REVISION C		REVISIONS CREATED CS	REVISIONS CREATED ETCH
		A▲			A	b
E	00001	B▲	B▲		B	C
C	00002	C▲	C▲		C	–
D	00003	D▲	D▲		D	–
	00004	E▲	E▲		E	–

LEGEND

FIELD CODE
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- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES
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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

DEC-O-LOG — Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

SYNCHRONOUS MODEM INTERFACE MODULE **M866**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	FEBRUARY 1972	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M866 00001	>M866	D	ECO RELEASE DATE - JULY 1971 PROBLEM 1: INITIALIZATION OF DP8-E OR PDP8-E CAUSES AN INTERRUPT REQUEST TO BE GENERATED BY THE "RING" FLIP-FLOP. CORRECTION 1: CHANGE THE ETCH TO TAKE THE INTERRUPT REQUEST OFF OF THE OTHER SIDE OF THE FLIP-FLOP FOR LIMITED RELEASE MODEL AND BOARDS SO THAT THE M866 CAN BE PRODUCTION RELEASED. PROBLEM 2: INPUT DELAY ON CARRIER AND RING DETECTION CIRCUITS TOO LONG. CORRECTION 2: CHANGE CAPACITOR VALUES TO SHORTEN DETECTION DELAYS- FROM 2.2 MF TO 100 PF. PROBLEM 3: PRINT DOES NOT SHOW PIN FV1. CORRECTION 3: ADD LINE ON PIRNTS INDICATING SIGNAL "SRS1" BETWEEN E26 PIN THREE AND E10 PIN 9 IS ALSO ON PIN FV1. PROBLEM 4: RC CIRCUIT ON RING FLAG DOES NOT WORK; SIGNAL NAMES MISSING FROM PRINTS. CORRECTION 4: CHANGE R89 TO OTHER SIDE OF C30 AND ADD D664. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY "D" CODED CS REVISION "F" AND ETCHED BOARD REVISION "H" ARE CREATED
M866 A0002	ALL M866 IN DP8-EA 101-102	DF	FCO RELEASE DATE - SEPTEMBER 1971 PROBLEM 1: MAINTENANCE CLOCK SIGNAL CAN NOT BE GUARANTEED TO FUNCTION. CORRECTION 1: CHANGE MAINTENANCE CLOCK FUNCTION TO A LONGER PULSE BY MAKING TP4 INTO TP4 (DOUBLE INVERSION) AND CHANGE R19 FROM 1.5K TO 2.7K. PROBLEM 2: NOISE REJECTION ON RECEIVE AND TRANSMIT CLOCK LINES IS POOR. CORRECTION 2: CHANGE C33 AND C34 FROM 100 PF TO 180 PF. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - ALL M866 IN DP8-EA #101-102 "DF" CODED CS REVISION "H" AND ETCHED BOARD REVISION "J" ARE CREATED TIME TO INSTALL AND TEST - 1.0 HOUR THIS FCO IS NO CHARGE TO CUSTOMER. ORDERED KITS WILL INCLUDE FCO'S, PRINTS AND PARTS.
M866 A0003	ALL M866 IN DP8-E	DF	FCO RELEASE DATE - NOVEMBER 1971 PROBLEM: INTERMITTENT RACE CONDITION WHEN USING MODEM TIMING. CORRECTION: UTILIZE POWER GATING FOR MACHINE/MODEM TIMING INTERFACE. ADD SIGNAL NAMES AS INDICATED. NOTE: THIS FCO IS TO BE INSTALLED IN CONJUNCTION WITH FCO M839-A0001. IN-PLANT EFFECTIVITY - REWORK IMMEDIATELY FIELD EFFECTIVITY - DP8-E #101 TO DATE "DF" CODED

(CONTINUED)

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
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- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
			(CONTINUED) CS REVISION "K" AND ETCHED BOARD REVISION "K" ARE CREATED TIME TO INSTALL AND TEST - 2.0 HOURS THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO'S ONLY NO PARTS ARE REQUIRED
M866 D0004	ALL M866 CS PRINTS	DF	FCO RELEASE DATE - NOVEMBER 1971 PROBLEM: FCO M866-A0002 COMPONENT ADDITIONS AND DELETIONS ARE INCOMPLETE. RESISTORS R20, R31, R80, AND R81 DO NOT EXIST ON M866. CORRECTION: CORRECT FCO M866-A0002 BY INCLUDING THE DELETION OF R20, R31, R80, AND R81. IN-PLANT EFFECTIVITY - DOCUMENTATION CHANGE ONLY FIELD EFFECTIVITY - ALL M866 CS PRINTS IN DP8-EA &-EB PRINT SETS "DF" CODED CS REVISION "J" AND ETCHED BOARD REVISION "J" ARE CREATED TIME TO INSTALL AND TEST - .3 HOUR THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL CONSIST OF FCO'S ONLY NO PARTS ARE REQUIRED

TABLE OF CIRCUIT SCHEMATIC AND ETCHED BOARD REVISIONS

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISION				REVISIONS CREATED	
		E	H	J		CS	ETCH
		E					
E	00001	F	F			F	H
C	00002	H	H	H		H	J
O	00003	K	K	K		K	K
	00004	J	J	J		J	-

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log — DEC-O-LOG

M866

Synchronous Modem Interface

PROCESSOR TYPE PDP-8/E

M866-00005 CODE: P CS: L
APR-72 - CORRECTION: Corrects the M866 Parts List.
In-plant effectivity -06 documentation change only

M866-D0006 CODE: DF CS: M ETCH: L
JUN-72 - PROBLEM: Maintenance clock slew rate too low for proper operation with BC05C cable. Symptom: No clocks present when running diagnostic.
CORRECTION: Widen pulse width of maintenance clock by changing from TP4 to TP1 to clear the RS flip-flop used to generate maintenance clock pulses.
In-plant effectivity -03 rework immediately
Field effectivity -Install if maintenance clock fails
(Time To Install And Test 1.0 Hour.) (Kit Contents –FCO/Prints)

M866-C0007 CODE: DF CS: N ETCH: M
OCT-72 - PROBLEM 1: M866, used with BC05C cable, connected to a Bell 201 modem with a contact closure option, can malfunction.
CORRECTION 1: Remove ground etch from all Berg pins except A , B, UU and VV .
PROBLEM 2: Improve product by adding an R/C clock for use as an Interprocessor Buffer.
CORRECTION 2: Add gates, capacitor, resistor and split lugs to allow clock to run slower or faster.

NOTE: Field implementation of this FCO will involve replacement of the existing M866 with a new one, M866 etch revision "M ", CS revision "N ".
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M866's in DP8-E with Bell 201 modems which use the contact closure option.
(Time To Install And Test 1.0 Hour.) (Kit Contents –FCO/Prints And Parts) MAINDEC 08-DHDPA-B will also be included in the kit.

M866-D0008 CODE: DF CS: P
OCT-72 - PROBLEM: RECEIVE DATA circuit can malfunction when DP8-E is interfaced directly to a DF11 Wide Band Driver. The leakage current through transistor Q18 is too high to allow it to turn off.
CORRECTION: Change resistor R30 from 220 ohms to 2.7K ohms, 1/4 watt, 5% ; remove resistor R82.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M866's when DP8-E is used as an interprocessor buffer between a PDP-8/E and a PDP-11.
(Time To Install And Test 1.0 Hour.) (Kit Contents –FCO/Prints And Parts)

M866-D0009 CODE: F CS: R
JUL-73 - PROBLEM: Race condition in clearing **BRK RQST** causes unwanted break cycle to occur; causes **TRANSMIT** to occur without **TGO** being set.
CORRECTION: Change signal that clears **BRK RQST** . The rework procedure is as follows: Cut etch between E13 pin 1 and pin 2. Add wire from E13 pin 2 to E16 pin 2 at feed-thru.
In-plant effectivity -03 * -Rework all units shipped after July 23, 1973
Field effectivity -Rework all M866's in systems where **REQUEST TO SEND** is tied "ON " at the modem; also, in all full duplex DP8-E's.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints)

M866-D009A CODE: F ETCH: M1
JULY-74 – CORRECTION: Creates a special revision of the etched board, "M1", to incorporate ECO etch cuts, but without relayout of the etch board.
In-plant effectivity – Unchanged.
Field effectivity – Unchanged.

M866-D0010 CODE: F CS: S
AUG-74 – PROBLEM: When multiple DP8-E units are operated at the same time, the CNTL, REMA and TEMA registers may be loaded with incorrect data. These registers are latched 50 nsec into TS4. DP8-E break priorities are seen on the data bus before this time.
CORRECTION: Gate TP3 with TS3 such that the CNTL, REMA and TEMA load pulses occur from the beginning of TS3 to the beginning of TP3. This causes the registers in question to latch 50 nsec before TS4. The rework procedure is provided by supplement FCO M866-D010A. The 380/384 IC which is being changed is also involved in the Maintenance Clock, and in the Free running Clock; be aware of that component change if problems occur in that logic.
In-plant effectivity – Rework all M866's in-plant immediately.
Field effectivity – Rework etch revision "F", "H", "J", "K", "L", "M", and "M1" M866's from CS revision "R" to "S". This FCO is required when a system has multiple DP8-E's.
(Time to Install and Test 2.0 hours.) (Kit Contents – PF1309 SWW – FCO/Prints and Parts.)

M866-D010A CODE: F
SEPT-74 – PROBLEM: Rework instructions on the original ECO do not specify how connection to pin CM2 should be made. There is a QC problem.
CORRECTION: New rework instructions, showing a hole drilled at CM2, are included in the FCO. The rework procedure is as follows: Change E22 from DEC380 to DEC384. Cut etch at E22 pin 3 and E22 pin 10; both cuts are on side 2. Cut etch and drill hole near CM2, add three jumpers as follows: E22 pin 2 to E23 pin 3; E22 pin 10 to CM2; feed-thru at CN1 to feed-thru at CF1.
In-plant effectivity – Unchanged.
Field effectivity – Unchanged.

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E C DEC-O-LOG Engineering Change Order Log

M868

DECtape Control Module

PROCESSOR TYPE PDP-8/E

M868-00001 CODE: D CS: D
SEP-71 - PROBLEM: Power-down was causing glitches on T/M , WD EN , and S/G , thus destroying the time and mark tracks and moving tape.
CORRECTION: Add T/M ENAB , WD ENAB , and S/G with PWR OK to keep those signals disabled during power-down.
In-plant effectivity -03 rework immediately

M868-00002 CODE: D CS: E
SEP-71 - PROBLEM: When power is turned off in the PDP-8/E, it takes a while for the power to go off in the TU56 (the H716 is turned off by the 854 power control . As the input voltage to the 7417 starts to decay, the 7417 still has enough VCC to allow it to switch low. This low output is the enable level for T/M ENAB , WD ENAB , and GO . Thus the tape on the selected drive starts to move and the time, mark, and data tracks are destroyed.
CORRECTION: Relayout to change the 7417, E46, for the above lines (' con all halt IS CHANGED SO THE 7417, E25, CAN BE DELETED] TO A 7401, WHICH, WHEN ADDED WITH pwr ok , holds the signals high until all power has decayed in both the TU56 and the PDP-8/E.
In-plant effectivity -Phase-in

M868-D0003 CODE: F CS: F
MAR-72 - PROBLEM: It is possible for the MD lines to glitch when changing. This glitch may produce a SDLD command and clear the TIME ERROR conditions at an unwanted time.
CORRECTION: Add TP3 to SDLC to clear TIME ERROR .

NOTE 1: Supplement FCO M868-0003A makes this ECO field effect and provides the required graphics.
NOTE 2: See continuation FCO M868-D0004.
In-plant effectivity -Documentation change only
Field effectivity -All M868's as required
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints) supplement FCO M868-0003A will also be included in the kit.

M868-D003A CODE: F
MAR-72 - PROBLEM: FCO M868-D0003 did not note that field service is affected. It should have done so.
CORRECTION: This FCO is a supplement to FCO M868-D0003 to make available the print changes required in the field.
In-plant effectivity -Unchanged
Field effectivity -All M868 as required

M868-D0004 CODE: DF CS: H
MAR-72 - PROBLEM: This is a continuation of FCO M868-D0003 which added TP3 to SDLC to clear TIME ERROR . In doing so it is not possible to clear TIME ERROR and set WRITE on the same SDLC instruction.
CORRECTION: Disable the CLEAR R/W line during an SDLC so R/W can be set while TIME ERROR is being cleared.

NOTE: This FCO must be installed in conjunction with FCO M868-D0003 and M868-D003A.
In-plant effectivity -Rework immediately
Field effectivity -All M868's as required
(Time To Install And Test 1.5 Hours) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

M868-C0005 CODE: F CS: J
SEP-72 - PROBLEM 1: UP TO SPEED delay is too long; it misses the 3 block turn around specification.
CORRECTION 1: Cjamge the UP TO SPEED dealy to nominal 120 msec. (110 to 140) by changing the values of resistor R17 and capacitor C36.
PROBLEM 2: Two IC's are labeled or draw incorrectly.
CORRECTION 2: Correct IC E28 (pins 9, 10 and 14) from 5380 to 5384. Remove low signal circle from E20 pin 2.
In-plant effectivity -03 rework as of 9-29-72
Field effectivity -Rework all M868's in TD8/E as required
(Time To Install And Test 1.2 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts) MAINDEC 8E-D3AB (with mcn 8E-D3AB and below) will also be included in the kit.

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EC DEC-O-LOG Engineering Change Order Log

M880

256 Word ROM

PROCESSOR TYPE PDP-8/E

M880-00001 CODE: P CS: B
NOV-71 - CORRECTION: Corrects the Parts List.
In-plant effectivity -06 documentation change only

M880-A0002 CODE: F CS: C
FEB-72 - PROBLEM: Skew between high and low going EMA lines causes ROM to be falsely selected.
CORRECTION: Enable ROM ADDRESS L with return rather than TP4.

In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all M880's
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

M880-00003 CODE: P CS: D
APR-72 - CORRECTION: Update drawing E-CS-M880-0-1 to include transistor Q16 which is not labeled.
In-plant effectivity -06 documentation change only

M880-00004 CODE: D CS: E
MAY-72 - PROBLEM: Screw for stud ball is too long.
CORRECTION: Change screws to 6-32 x 3/16 binding head and add #6 internal tooth lockwashers.
In-plant effectivity -03 rework immediately

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MAYNARD, MASSACHUSETTS

ECO SYNOPSES FOR LOGIC OR OPTION

DK8-EA REAL TIME CLOCK MODULE **M882**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E (DK8-EA)	SEPTEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M882 00001	ALL M882	D	JAN 71 - MODIFIES SKIP LOGIC TO ENSURE PROPER SKIP FUNCTION, IOT 6133, INDEPENDENTLY OF THE CLEARING OF THE FLAG. ADDS A DECOUPLING CAPACITOR ACROSS THE +3 VOLT DIVIDER.

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
-IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

		ETCHED BOARD REVISION C	ETCHED BOARD REVISION D		REVISIONS CREATED CS	REVISIONS CREATED ETCH
E		B				
C	00001	C	C		C	D
D						

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
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MASTER DRAWING LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS			
REV	ECO NUMBER	REV	ECO NUMBER

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Engineering Change Order Log
DEC-O-LOG

M882

DK8-EA Real Time Clock Module

PROCESSOR TYPE PDP-8/E [DK8-EA]

M882-C0002 CODE: F CS: D ETCH: E
JAN-72 - PROBLEM: Option winding on PDP-8/M is 56 VCT instead of 28 VCT as is the PDP-8/E.
CORRECTION: Change resistors R12, R13 and R14 to 2K 1/2 watt 5%.

NOTE: Supplement M882-C002A orders field retrofit effectivity of this FCO.
In-plant effectivity -03 rework immediately
Field effectivity -Rework M882 etch revision "D " and earlier
(Time To Install And Test 1.0 Hour) (Kit Contents -FCO/Prints And Parts) supplement M882-C002A will also be included in the kit.

M882-C002A CODE: F
FEB-72 - PROBLEM: The **BREAK-IN-EFFECTIVITY** block on FCO M882-C0002 did not include the field action required.
CORRECTION: Orders field retrofit effectivity.
In-plant effectivity -Unchanged
Field effectivity -See above

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ECO SYNOPSES FOR LOGIC OR OPTION

DK8-EC
REAL TIME CRYSTAL CLOCK
MODULE

M883

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E (DK8-EC)	SEPTEMBER 1971	0

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M883 00001	ALL M883	D	JAN 71 - MODIFIES SKIP LOGIC TO ENSURE PROPER SKIP FUNCTION, IOT 6133, INDEPENDENTLY OF THE CLEARING OF THE FLAG. ADDS A MACHINE INSERTABLE JUMPER FOR IN-PLANT CHEAKOUT PURPOSES. ADDS A DECOUPLING CAPACITOR ACROSS THE +3 VOLT DIVIDER.

TABLE OF CIRCUIT SCHEMATIC REVISIONS AND MODULE INTERCHANGEABILITY

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO
-IDENTICAL SYMBOLS INDICATE ETCH BOARD REVISION INTERCHANGEABILITY

		ETCHED BOARD REVISION C	ETCHED BOARD REVISION D		REVISIONS CREATED CS	REVISIONS CREATED ETCH
E		B				
C	00001	C	C		C	D
0						

LEGEND

FIELD CODE

F = Field action may be required
D = Design ECO
P = Print or Wire List change
M = Mechanical ECO

SYMBOL

>= ECO applicable to future production

ECO CHARGES

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MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

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EC DEC-O-LOG Engineering Change Order Log

M884

Synchronous Line Unit Parity Module

PROCESSOR TYPE PDP-8/E

M884-00001 CODE: D CS: E

OCT-71 - PROBLEM 1: DP8-EP (redundancy check) generates and checks only odd parity.
CORRECTION 1: Add split lugs on M884 allowing selection of E1 pin 10 to E32 pin 2 and 1 or E20 pin 8 to E32 pin 1 and 2 (odd parity using E1, even parity not using E1 .
PROBLEM 2: DP8-EP option designation is cause of confusion. Print does not identify BOX functions.
CORRECTION 2: Change option designation to KG8-EA (VRC, LRC, CRC, GENER and CHECK). Even parity will not be supported by diagnostics. Add BOX functions as designated.

In-plant effectivity -01 phase-in

M884-D0002 CODE: DF CS: F

JUN-72 - PROBLEM 1: Only one M884 module may be installed per PDP8/E system with KG8-E option.
CORRECTION 1: Install split lugs to allow IOT code selection.
PROBLEM 2: M884 circuit schematic, page 1, incomplete.
CORRECTION 2: Make M884 circuit schematic reflect layout of IC's.
In-plant effectivity -02 phase-in
Field effectivity -Retrofit only at customer request
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints) maindec 08-DHKGA will also be included in the kit.

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Engineering Change Order Log
DEC-O-LOG

M885

Point Plotting Scope Control

PROCESSOR TYPE PDP-8/E

M885-00001 CODE: D CS: C
JUL-71 - PROBLEM: High quality -15 volts connected to logic -15 volts.
CORRECTION: Cut pin B2 on A , B, c; route -15V around pad on D as indicated on physical. Do not relayout the board.
In-plant effectivity -03 rework immediatey

M885-00002 CODE: D CS: D
NOV-71 - CORRECTION 1: Corrects minor errors on the circuit schematic.
PROBLEM 2: Limited release modules have jumpers and etch cuts due to ECO M885-00001.
CORRECTION 2: Relayout, eliminating etch cuts and jumpers.
In-plant effectivity -Rework immediately

M885-00003 CODE: P CS: E
MAY-72 - PROBLEM 1: Parts list was mistakenly altered on ECO M885-00002. ECO did not specify any parts changes.
CORRECTION 1: Change parts list to reflect R65 changed back to 47 ohms from 470 ohms. Note: This affects model only -No revision D circuit schematic modules produced as yet.
PROBLEM 2: New part number for R29 and R116, 500 ohm 62PR potentiometer.
CORRECTION 2: Change item #71 from 13-09411 to 13-09150-08.
In-plant effectivity -06 documentation change only

M885-D0004 CODE: F CS: F
JUN-72 - PROBLEM 1: No connections on berg connector J1 for **COL RED L , ERASE L , WRITE THROUGH L , NON-STORE L** , and **ERASE INTERNAL L** .
CORRECTION 1: Add wiring to Berg connector.
PROBLEM 2: X and Y analog output can go to either plus or minus 14V when either the plus or minus HQ supply fails; this can cause a fuse to be blown in the VR14 or VR20.
CORRECTION 2: Add back-to-back zener diodes.

NOTE: This FCO applies to all VC-8/E options with VR20 two color display, 611 storage display, 613 scope, and all VC-8/E options with blown fuse problems in VR14. This FCO prevents the VC-8/E from blowing a fuse in the VR14 when either the plus or minus HQ power supply fails. In addition this FCO, when used with M869 etch revision D, adds the capability of using a VR20 two color display, 611 storage scope, or 613 scope.
In-plant effectivity -02 phase-in as of september 1, 1972
Field effectivity -See note above
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

M892

Gap Timing and Read Parity Module [TU10]

PROCESSOR TYPE All

M892-00001 CODE: P CS: C
MAY-71 - PROBLEM 1: Input signal on BH2 is incorrect.
CORRECTION 1: Change signal from TU13 ERWS H to TU13 RWCLR H .
PROBLEM 2: Drawing D-CS-M892-0-1 title is incorrect and there are two errors.
CORRECTION 2: Change title and correct the drawing.
In-plant effectivity -06 documentation change only

M892-C0002 CODE: DF CS: D
SEP-71 - PROBLEM: Certain timing causes TU10 master to set an improper acceleration delay. Specific problem; in DRIVE FUNCTION timer with multi-drive systems, one drive may run away or hang-up. It is possible that similar symptoms occur in other software.
CORRECTION: Modify M892 to enable EMD one-shot only when MOVE is asserted.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M892's as required
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO Only)

M892-00003 CODE: D CS: E
NOV-71 - PROBLEM: Circuit could give incorrect WRITE START count. Signal label is incorrect.
CORRECTION: Change logic as follows: Add etch E15 pin 12 to E12 pin 2 and BF1; remove etch from E15 pin 12 to E12 pin 5 and BH1.
In-plant effectivity -01 phase-in

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E C DEC-O-LOG Engineering Change Order Log

M895

Read & Write Timing for TU10

PROCESSOR TYPE All

M895-C0001 CODE: F CS: C ETCH: D
DEC-71 - PROBLEM: Possibility of backspacing incorrect number of records. Typical symptom is record length incorrect without parity errors. Problem shows up on Test 4, 40200, of PDP-11 Data Reliability Test.
CORRECTION: Relayout etched board to new revision level "D ". Check TM11 for the following wire changes: DELETE B04A1 to A06H2 and A06H2 to A25U2; ADD A06HZ to B04A1 and A25T2 to A25U2. Retrofitted TM11 will work with all revisions of M895.

NOTE: See reference FCO TM11-B0011.
In-plant effectivity -02 phase-in
Field effectivity -Exchange M895's in TU10-EA, -EB, -EC, -FA, -FB, -FC , and -FD prior to TM11 #250, as required
(Time To Install And Test, Overnight Run) (Kit Contents -FCO/Prints And Parts)

M895-B0002 CODE: F CS: D ETCH: E
FEB-72 - PROBLEM: Race condition, where CRC and LRC are both written as octal 23. During backspace operation, if after reading CRC , the FILE MARK COUNTER completes four counts before data is reached, then the CRC and LRC will be interpreted as a file mark.
CORRECTION: Increase the FILE MARK COUNTER by three counts to ensure data region is entered before the counter has timed out.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M895's
(Time To Install And Test 3.0 Hours) (Kit Contents -FCO/Prints)

M895-00003 CODE: D CS: E ETCH: F
SEP-72 - PROBLEM: The TU10 master does not generate a Read Strobe pulse for an LRCC character of all zeros with the CS revision "D " M895.
CORRECTION: Alter the M895 so that shut down procedure does not begin until a Read Strobe has been read from tape or generated from the logic.
In-plant effectivity -Rework required on all M895's to be used in TM-8/E systems.

M895-00004 CODE: D CS: F ETCH: H
DEC-72 - PROBLEM: The TU10 master does not generate a properly timed READ STROBE pulse for a CRC character of all zero's with present revisions of the M895.
CORRECTION: Alter the M895 so that a READ STROBE pulse is generated in the logic to strobe in a zero CRC character. As a result of this ECO, etch revision "F " of the M895, which was ordered created by ECO M895-00003, will not be released for production.
In-plant effectivity -Etch revision "H " M895's must be incorporated in all TU10 masters shipped after March 9, 1972. TU10 masters used on TM8-E must have M895's at CS revision level "F ".

M895-00005 CODE: D CS: H
FEB-73 - PROBLEM: M895 has race condition is logic during RD CLR L .
CORRECTION: Disable READ STROBE generation during RD CLR L . Rework requires an etch cut, E3 pin 2 to E3 pin 3, and the addition of a jumper, E3 pin 2 to E15 pin 4 and applies to etch revision "H " boards only.
In-plant effectivity -03 * retrofit only

M895-C0006 CODE: F CS: J
MAR-73 - PROBLEM: If, for any reason, three consecutive read strobes are missed by the read timing logic during a write operation, the TU10 will run away.
CORRECTION: Inhibit shutdown during write operations. Alter M895 Read Timing module as defined by this FCO. Add wire from B12A1 to B13V1, CWDR H , on TU10 logic wiring; the wire change is covered by FCO TU10-B0072.

NOTE 1: This FCO must be installed in conjunction with FCO TU10-B0072.

NOTE 2: This FCO creates M895 special CS revision "D1 ".
In-plant effectivity -03 * same as for FCO TU10-B0072.
Field effectivity -Rework M895's immediately if symptoms are present, otherwise at next pm.
(Time To Install And Test 3.0 Hours.) (Kit Contents -FCO/Prints)

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M993

RK8-E Control Cable Module

PROCESSOR TYPE PDP-8/E

M993-00001 CODE: P CS: A
NOV-72 - PROBLEM: Error in Circuit Schematic title block; the RK8-E designation reads only "RK8 ".
CORRECTION: Change the "RK8 " to "RK8-E " in the title block.
In-plant effectivity -06 documentation change only

M993-00002 CODE: D CS: B
MAR-73 - PROBLEM: An ECO to the RK05 logic has made the RK8-E cable end incompatible.
CORRECTION: Cut etch on finger AU1 of the M993 to separate it from ground.
In-plant effectivity -02 phase-in

M993-C0003 CODE: F CS: C ETCH: B
MAR-73 - PROBLEM: DC POWER LOW to RK05 Disk Drive, from RK8-E, does not keep the RK05 heads in the retracted position.
CORRECTION: Add a circuit to the M993 to ensure that the DC POWER LOW signal to the RK05 goes below +0.9 VDC.

NOTE: This FCO must be installed in conjunction with FCO M7106-C0004.
In-plant effectivity -03 * retrofit all in-plant as of 3-26-73.
Field effectivity -Exchange #70-09026 Cable when symptoms are present.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

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M4201

Phase Lock Clock Module for RS64

PROCESSOR TYPE PDP-11, PDP-8/E

M4201-00001 CODE: D CS: A
FEB-71 - CORRECTION: Relayout etched board to new etch revision "B " to meet standards for release.
In-plant effectivity -01 phase-in

M4201-B0002 CODE: F CS: B
JUN-71 - PROBLEM: H737 power supply has high frequency ripple which must be filtered to allow proper operation of the M4201.
CORRECTION 1: Add C27, a 6.8 ufd capacitor, between BA2 and ground. Add R28, a 15 ohm resistor, in series with the +5 volt line after C27.
CORRECTION 2: Add R29, a 270 ohm resistor, in series with the -15 volt line at AH2. Add D14, a IN758A diode, from the -15 volt line to ground after R29.
CORRECTION 3: Replace R9, a 3.3K ohm resistor, with a 2K ohm resistor.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M4201's
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M7001

VT05 Character Generator and Timing

PROCESSOR TYPE All

M7001-00001 CODE: D CS: E
JUL-71 - PROBLEM: Oscillator not stable under worst-case line voltage and temperature specification.
CORRECTION: Change resistor R5 from 560 ohms, 1/4 watt, 5% to 100 ohms, 1/4 watt, 5%.

NOTE: See correction supplement ECO M7001-00002.
In-plant effectivity -Documentation phase-in

M7001-00002 CODE: D
SEP-71 - PROBLEM: ECO M7001-00001 was released with an incorrect disposition code.
CORRECTION: Change disposition code from 06, Documentation change to 03, Rework.
In-plant effectivity -03 -Rework

M7001-00003 CODE: D CS: F
NOV-71 - PROBLEM: The crystal on the M7001 module is too close to the maximum height and shorts out etch on adjacent modules.
CORRECTION: Install DEC #91-0725-09 shrinkable, non-conducting, tubing over the crystal.
In-plant effectivity -01 -Phase-in

M7001-C0004 CODE: DF CS: H
JAN-72 - PROBLEM: 50 Hz, 300 baud VT05 misses CAD instructions randomly.
CORRECTION: Clear C32 with negated T00 . Do not relayout board; another ECO is forthcoming.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all 50 Hz M7001's
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints)

M7001-D0005 CODE: F CS: J
FEB-72 - PROBLEM: The M7001 is not compatible with the high-speed option M7004.
CORRECTION: Relayout the M7001 and implement FCO M7001-C0004. Add a jumper so gates E12 pin 2 and E18 pin 13 can select the signal from either AV1 or AV2 (use AV2 for VT05-A and AV1 for VT05-B) .

NOTE 1: Reference FCO VT05-C0054 for conversion of a VT05-A to VT05-B.

NOTE 2: See continuation supplement FCO M7001-D005A.
In-plant effectivity -02 -Phase-in
Field effectivity -All M7001's when converting a VT05-A to a VT05-B.
(Time To Install And Test 1.0 Hour) (Documentation $ 5.00 , Parts None) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents - FCO/Prints)

M7001-D005A CODE: F ETCH: F
FEB-72 - PROBLEM: FCO M7001-D0005 failed to order relayout of etch
CORRECTION: Relayout etch per FCO M7001-D0005 to new revision "F ".
In-plant effectivity -Unchanged
Field effectivity -Unchanged

M7001-B0006 CODE: F CS: K
MAY-73 - PROBLEM: The clock pulse width to the 1507 MOS Shift Registers is below the manufacturer's minimum guaranteed specification of 130 nsec. This may cause a failure which exhibits itself as a wrong character on one or more character lines in the same character location.
CORRECTION: Remove capacitor C60 ; this increases the MOS clock pulse width to 190 nsec as determined logically by gate E28 pins 8 and 12.

NOTE 1: It is imperative that both this M7001 FCO and FCO M7002-B0003 are installed simultaneously. Otherwise there may be problems with the first character of each line.

NOTE 2: See continuation supplement FCO M7001-B006A.
In-plant effectivity -03 * -Rework all modules which have not yet gone through VT05 acceptance. Rework all VT05's to FCO VT05-B0069.
Field effectivity -Rework all M7001's when service is next performed on any VT05.
(Time To Install And Test .3 Hour.) (Documentation $ 5.00 , Parts None) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents - FCO/Prints)

M7001-B006A CODE: F
JUN-73 - PROBLEM: FCO M7001-B0006 did not show that Field Service was affected.
CORRECTION: Change Field Service Affected to YES .
In-plant effectivity -Unchanged

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E C DEC-O-LOG Engineering Change Order Log

M7002

VT05 Memory

PROCESSOR TYPE All

M7002-00001 CODE: D CS: C ETCH: D
AUG-72 - PROBLEM: In some M7002's, the SCROLL flip-flop receives an erroneous clock pulse, which cuts off a portion of the scroll time, thus producing less shift pulses than required for proper operation of the scroll circuitry.
CORRECTION: Add a 220 pfd DM capacitor from EJ0 pin 8 to ground.
In-plant effectivity -03 rework all modules in manufacturing, except those in systems test and in VT05 production areas.

M7002-00002 CODE: D CS: D
APR-73 - PROBLEM: The data at the inputs to the 1402 MOS memory devices, #19-10206, is not gated off during clock hold time in present design. This results in a dropping of bits in character location 72 of the memory display.
CORRECTION: Gating of +5V to pull-up resistors R1 thru R6 during TOO SCH0 0 , forcing the inputs of the 1402's to ground when not being clocked.
In-plant effectivity -03 , only rework M7002's which have not gone through VT05 final acceptance.

M7002-B0003 CODE: F CS: E
MAY-73 - PROBLEM: The first clock pulse from E24, for the MOS 1402 Shift Registers, is too wide. This could cause the data hold time for the first character transferred from the line to the frame memory to be less than the manufacturer's minimum guaranteed specification of 20 nsec, thus changing the first displayed character on a line.
CORRECTION: Because capacitors C44 and C45 determine the pulse width, the present value of these capacitors must be changed from 1500 pfd to a new value of 1000 pfd.

NOTE 1: It is imperative that both this M7002 FCO and FCO M7001-B0006 are installed simultaneously. Otherwise, there may be problems with the first character of each line.

NOTE 2: See continuation supplement FCO M7002-B003A.
In-plant effectivity -03 * -Rework all modules which have not yet gone through VT05 acceptance.
Field effectivity -Install next time any service work is done on VT05.
(Time To Install And Test .3 Hour.) (Documentation $ 5.00 , Parts $ 1.20) The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents - FCO/Prints And Parts)

M7002-B003A CODE: F
JUN-73 - PROBLEM: FCO M7002-B0003 did not show that Field Service was affected.
CORRECTION: Change Field Service Affected to YES .
In-plant effectivity -Unchanged
Field effectivity -Initiated

M7002-00004 CODE: D CS: F
JUN-73 - PROBLEM: Flip-flop E5, which determines the phasing of the clock pulses for the Frame Refresh Memory, is not initialized. This causes an indeterminate phase relationship of the Frame Refresh Memory clock pulses.
CORRECTION: Determine the initial condition of E5 by clearing the flip-flop with each COUNT 13 pulse.
In-plant effectivity -03 * -Rework all modules which have not yet gone through VT05 acceptance.

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DEC-O-LOG

M7003

VT05 Interface Module

PROCESSOR TYPE All

M7003-00001 CODE: D CS: C
OCT-71 - PROBLEM: Jitter on data sent to VT05's asynchronous receiver causes start bit verification problems at a rate of one in thirty thousand characters.
CORRECTION: Remove C35, a .01 MFD disc capacitor, from the M7003 module. Do not relayout board.
In-plant effectivity -03 rework immediately

M7003-C0002 CODE: DF CS: D
NOV-71 - PROBLEM 1: There is a possibility of the UART becoming hung-up, which disables the keyboard.
CORRECTION 1: Insert an R/C time constant, wired to the external reset of the UART.
PROBLEM 2: The crystal on the M7003 is too close to the maximum height and shorts out etch on adjacent module.
CORRECTION 2: Install shrink tubing over the crystal on the M7003.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7003's
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

M7003-D0003 CODE: F CS: E
DEC-71 - PROBLEM: The UART on the M7003 is no longer available in the old TMS 1808JC or SSDS 2501 versions, which required the use of pull-up and pull-down resistors. The IC's which are currently available are: Western Digital, TR 1402A , DEC #19-10459; Texas Instrument, TMS 601NC , DEC #19-10459; General Instrument, DEC 1 UART, DEC #19-10459.
CORRECTION: Change the Circuit Schematic, Parts List and Assembly Hole drawing for the M7003 module to reflect the TMS 6010NC and the DEC 1 UART.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7003's in VT05's when replacing a defective TMS 1808 JC with either a TMS 6010 NC or DEC 1 UART.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts $ 67.50 , DEC Labor $ 27.00) (Kit Contents -FCO/Prints And Parts)

M7003-00004 CODE: D CS: F
DEC-71 - PROBLEM: In order to comply with FCO's M7003-C0002 and M7003-D0003, the M7003 etch board must be reworked for every module produced.
CORRECTION: Relayout the M7003 module to etch revision "D ".
In-plant effectivity -01 phase-in

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Engineering Change Order Log
DEC-O-LOG

M7004

VT05 I/O Interface Module

PROCESSOR TYPE All

M7004-00001 CODE: D CS: C
APR-72 - CORRECTION 1: Change resistor R2 from 22K to 2.2K.
CORRECTION 2: Cut etch on side 2, as defined by this ECO, to correct a layout error.
Correction 3; add a 1000 pf disk capacitor across R32 and D19.

NOTE: See supplement ECO M7004-01A.
In-plant effectivity -03 rework immediately.

M7004-0001A CODE: D
MAY-72 - PROBLEM: ECO M7004-00001 components listed in correction #3 as R32 and D19 are wrong and should be listed as R1 and D1. The error is only on the eco; the prints are correct.
CORRECTION: Change component numbers in ECO M7004-00001.
In-plant effectivity -03 rework immediately

M7004-00002 CODE: D CS: D
MAY-72 - PROBLEM: The M7004 etched board is not up to production standards and needs rework.
CORRECTION: Relayout the M7004 such that it meets production standards and incorporates ECO M7004-00001.
In-plant effectivity -02 phase-in

M7004-B0003 CODE: DF CS: E
JUN-72 - PROBLEM: When operating a VT05-B at 2400 baud with one stop bit, the VT05 interface, the M7004 module, will drop a random character at about a one one in three thousand ratio. This problem does not occur when operating a VT05-B at 2400 baud with two stop bits. Correct operation at 2400 baud is with one stop bit only.
CORRECTION: Add a 1000 pf capacitor from BF2 to ground. Note that the capacitor is inserted in existing holes. One side connects to the ground side of C44, a 6.8 uf tant capacitor, and the other connects to a feedthrough on BF2.

NOTE: See FCO M7004-B0004.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all M7004 modules
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts $. 60 , DEC Labor $ 14.00) (Kit Contents -FCO/Prints And Parts)

M7004-B0004 CODE: F CS: F
JUL-72 - PROBLEM: VT05-B, 50 Hz models only, drop characters regardless of baud rate. This FCO replaces the logical effect of a splinter pulse which was removed by FCO M7004-B0003.
CORRECTION: Clear **SILO BUFFER** at T11 of **Y-CURSOR SPECIAL** at count 13 (octal) instead of count 157 (octal .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7004 in 50 Hz VT05-B's
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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M7014

GT40 UNIBUS Control and Bootstrap

PROCESSOR TYPE All

M7014-B0001 CODE: DF CS: A ETCH: B

NOV-72 - PROBLEM: Module etch errors and miscellaneous engineering changes made it necessary to cut etch and add wires.
CORRECTION: Retrofit Limited Release model immediately to changes incorporated by this FCO.

NOTE: No field reworking of M7014's is to be done; they are to be exchanged for the new etch revision "B " boards.
In-plant effectivity -03 rework immediately
Field effectivity -Exchange M7014's in GT40 #102 and #103.
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

M7016

LPS Real Time Clock

PROCESSOR TYPE All

M7016-00001 **CODE: D** **CS: B** **ETCH: C**
OCT-72 - PROBLEM 1: Signals from the Schmitt Triggers are picking up noise from the crystal clock.
CORRECTION 1: Change chip positions of E45 and E46.
PROBLEM 2: E35 pin 13 is floating; the clamp is etched to E35 pin 14.
CORRECTION 2: Delete clamp from #2 side of E35 pin 14 and add to E35 pin 13.
PROBLEM 3: +3V clamp missing on E44 pin 1 and pin 10; the etch run is not complete.
CORRECTION 3: Add etch from resistor R20 to drilled hole above it.
PROBLEM 4: Unused run from pin DL1 to the clock circuit; this line is inducing noise into the Schmitt Trigger.
CORRECTION 4: Completely delete the etch from DL1 to the drilled hole above crystal.
PROBLEM 5: Etch from DM1 to E44 pin 3 is inducing noise from the clock to the Schmitt Triggers.
CORRECTION 5: Reroute etch from pin DM1 to E44 pin 3 away from the crystal circuit.
PROBLEM 6: Missing drill hole below E39 pin 7.
CORRECTION 6: Add to digital drill tape.
PROBLEM 7: Power voltage drop observed on the -15V etch. The etch between resistor R47 and drilled hole below transistors Q7 and Q5 is narrow.
CORRECTION 7: Increase etch width between R47 to the drilled hole below Q7.
PROBLEM 8: Outputs from the Schmitt Triggers are too slow for TTL logic; E46 outputs, 7416, were re-triggering.
CORRECTION 8: The Schmitt Trigger outputs are to be driven from the operational amplifier E48 and E49 pin 6. This output has faster rise/fall time than the DEC 6B transistor.
PROBLEM 9: Incompatability between the PDP-11/20 and PDP-11/05.
CORRECTION 9: Redesign Schmitt Trigger flip inputs to be compatible with the PDP-11/20 and PDP-11/05. (refer print D3-1 .
PROBLEM 10: Resistor R43 is off by one grid.
CORRECTION 10: Correct layout of R43.
PROBLEM 11: Divider network must go through a clock state for initialization.
CORRECTION 11: Clear the clock divider network with **B INIT** .
In-plant effectivity -03 rework immediately

M7016-00002 **CODE: D** **CS: C** **ETCH: D**
NOV-72 - CORRECTION 1: Add +3V clamp to the load input of the least significant clock divider.
CORRECTION 2: Correct print errors.
In-plant effectivity -03 rework immediately

M7016-A0003 **CODE: DF** **CS: D**
FEB-73 - PROBLEM 1: The Schmitt Trigger outputs are causing internal pulses both on the positive and negative transitions, resulting in two pulses for one transition.
CORRECTION 1: Delete two DEC6B transistors, Q8 and Q13, and two 6.8K ohm resistors, R81 and R80, and tie the 68K ohm resistors, R37 and R63, to pin 6 of the 1709's, E48 and E49.
CORRECTION 2: Correct print errors.

NOTE: See correction supplement FCO M7016-A003A.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit LPS11-S #104
(Time To Install And Test 3.0 Hours.) (Kit Contents -FCO/Prints) Supplement FCO M7016-A003A will also be included in the kit

M7016-A003A **CODE: DF** **ETCH: E**
MAR-73 - CORRECTION: Relayout etch to clean up all jumpers on board.

NOTE: No etch revision "D " boards were ever built; disregard the rework instructions for etch revision "D " included in FCO M7016-A0003.
In-plant effectivity -Rework earlier M7016's ; phase-in new etch revision "E ".
Field effectivity -Unchanged

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Engineering Change Order Log
DEC-O-LOG

M7050

FEED-HOLE STROBE READER CONTROL

PROCESSOR TYPE ALL

M7050-00001 CODE: D CS: C ETCH: D
SEPT-74 – PROBLEM: DEC 4015P IC no longer available.
CORRECTION: Change DEC 4015P to SN475, #19-09050; change etch to correspond, new etch revision "D".
In-plant effectivity – Phase-in.

M7050-00002 CODE: D CS: D ETCH: E
JUNE-74 – PROBLEM: Unable to test this module on the CMT-XOR; cannot initialize E18 "A" and "B" on the CMT-XOR.
CORRECTION: Add an additional 1K ohm resistor to enable disconnecting either the DC SET or DC RESET from the +3 V level.
In-plant effectivity – New etch revision "E" should be available by September 16, 1974.

M7050-C0003 CODE: F
JUNE-74 – PROBLEM 1: A high rejection rate of the PC05 photosensors.
CORRECTION 1: Delay the data strobe for 1.0 msec to the peak of its sensor input.
PROBLEM 2: Data strobe delay time too short.
CORRECTION 2: Change capacitor C16 from 0.47 mfd, 35 VDC, 10% to a 2.2 mfd, 35 VDC, 10% capacitor, #10-02431.

NOTE: Field failure symptoms include difficulty in keeping the PC05 in adjustment and/or a high failure rate of phototransistors for a particular unit.
In-plant effectivity – Rework immediately beginning July 8, 1974 in Westfield, Westminster, Puerto Rico, and Springfield.
Field effectivity – Rework etch revision "C" M7050's from CS "B" to "B1"; etch "C" from CS "C" to "C1"; and etch "E" from CS "D" to "E" when symptoms are present.
(Time to Install and Test 1.0 hour.) (Documentation $5.00, parts S.30)
The DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate.
(Kit Contents – PF1389 5$* – FCO/prints and parts.)

M7050-C003A CODE: F CS: E
JULY-74 – PROBLEM: Sheet 1 of ECO M7050-C0003 called out wrong old and new revisions for drawings.
CORRECTION: – All revisions listed on ECO M7050-C0003 are to be increased by one letter. CS, AH and PL should be old revision "D", new revision "E". MH should be old revision "B"; new revision "C".
In-plant effectivity – Unchanged.
Field effectivity – Unchanged.

M7050-C003B CODE: F CS: B1 & C1
NOV-74 – CORRECTION: Create new Circuit Schematic drawings "B1" and "C1", CS "B1" for reworked "C" revision etch boards and CS "C1" for reworked "D" revision etch boards.
In-plant effectivity – Unchanged.
Field effectivity – Unchanged.

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Engineering Change Order Log
DEC-O-LOG

M7104

RK8-E Control

PROCESSOR TYPE PDP-8/E

M7104-00001 CODE: D CS: B
OCT-72 - PROBLEM 1: Time delay required on 6 RK2 L .
CORRECTION 1: Add delay line and terminators in handle area and delete resistor R15 and capacitor C57.
PROBLEM 2: Model does not have jumpers to decode device IOT.
CORRECTION 2: Add wires to device code selector for 674.
In-plant effectivity -03 rework immediately

M7104-C0002 CODE: F CS: C
FEB-73 - PROBLEM 1: A marginal timing condition exists between the MODE CONTROL and the CLK for DATA BUFFER 4 .
CORRECTION 1: Add slow-down network to the MODE CONTROL, DB CONT 4 . The R/C network already exists on the boards; four etch cuts and the addition of four wires are required.
CORRECTION 2: Make corrections in prints.

NOTE: Symptoms of failure which indicate a need for this FCO are the RK8-E generating intermittent data errors without CRC errors.
In-plant effectivity -03 * retrofit all modules in-house.
Field effectivity -Rework all M7104's when symptoms are present.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints)

M7104-D0003 CODE: F CS: D
JUN-73 - PROBLEM: Marginal timing problem may cause extra increment to the CURRENT ADDRESS register.
CORRECTION: Add wire to JU1 of the M7104 to SHORT TP3 H ; this pulse will be used on the M7105. Capacitor C50 is changed from 120 pfd to 180 pfd.

NOTE: This FCO must be installed in conjunction with FCO M7105-D0002.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7104's in RK8-E systems if the configuration includes an IOT of 67XX other than the RK8-E.
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints And Parts)

M7104-C0004 CODE: F CS: E
DEC-73 - PROBLEM: Propagation delay variations of I/O PAUSE induce short pulses on device RK8-E from pin 3 of E1, Sheet D02B, and false outputs from the IOT decoder, E37. This problem shows up when running diagnostics as a data error without a check character error. These data errors vary from one bad data word every twenty minutes to one every nine hours. The problem shows up when running RK8-E drive control, RK8-E Data Reliability and DECX-8 . The problem has also shown up as an incorrect load to the disk address register; a sector appears to be completely wrong or is written on the wrong sector.
CORRECTION: Add 100 ohm resistor and 470 pfd capacitor at the output of E1, pin 3.
Quick Check -A 100 ohm resistor and a 470 pfd capacitor added, on side one, to the right of E3.
In-plant effectivity -Install in all unaccepted units in-house, as of November 30, 1973. Install in field if problem occurs.
Field effectivity -Exchange M7104's in RK8-E's when symptoms are present; replace with an M7104 reworked in-plant to CS revision "E ".
(Time To Install And Test 1.3 Hours.) (Kit Contents -PF1145 FCO/Prints And Parts)

M7104-C004A CODE: F ETCH: B1
JUNE-74 – PROBLEM: Etch cuts add cost to manufacture of completed module because ECO M7104-00004 did not call for an etch relayout.
CORRECTION: Have etch cuts incorporated into master artwork/data base as an interim revision "B1" until the etch is updated to a new layout on a future ECO.
In-plant effectivity – Unchanged.
Field effectivity – Unchanged.

M7104-C0005 CODE: F CS: F ETCH: B2
OCT-74 – PROBLEM: An etch revision "E" M8330, the RK8-E, and the M7104 at CS revision "E" will not run together. A timing problem exists between the DATA and CLK pulse to the CA register. This problem is observed as a data break error while running diskless control test; the CA gets loaded incorrectly.
CORRECTION: Fix the relationship of TS3, TP3, and the internal RK8-E IOT, so as to clock the data to the CA register on the leading edge of TP3. The rework procedure is as follows: Delete R18, C57, and all wires directly connected to this R/C network, on side 2, cut the etch to E1 pin 11, close to E1 pin 11. Run a wire from the feed-thru above E49 pin 14, to E1 pin 3. Remove E35, DEC 380, separate pin 9 from the ground etch by cutting the etch in in two places. Drill a #56 hole immediately above finger CM2. Replace the 380 in E35. Add a wire from E35 pin 11 to the ground etch of capacitor C56. Add a wire from E35 pin 9 through the #56 hole, drilled above, to finger CM2. Add a wire to E34 pin 3 from the feed-thru below E37 pin 5. Add a wire from E34 pin 2 to E34 pin 7. Add a wire from E34 pin 1 to E1 pin 11. Remove the wire that goes from JU1 to the feed-thru above E41 pin 11. Add a wire from JU1 to E21 pin 4.
In-plant effectivity – Retrofit all units in-plant as of October 1, 1974.
Field effectivity – Exchange M7104's at CS revision "E" or earlier with M7104's at CS revision "F" or later in all PDP-8/E family CPU's with an etch revision "E" M8330. The M7105 should be at CS revision "C" or later.
(Time to Install and Test .5 hour.) (Kit Contents – PF1359 5WW – FCO/prints and parts.)

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DEC-O-LOG Engineering Change Order Log

M7105

K8-E-F Major Registers

PROCESSOR TYPE PDP-8/E

M7105-00001 CODE: D CS: B
OCT-72 - PROBLEM 1: Capacitor not required.
CORRECTION 1: Delete capacitor C38 and change the value of resistor R31 from 100 to 10 ohms.
PROBLEM 2: Priority jumpers not on model.
CORRECTION 2: Add wires to priority circuit.
In-plant effectivity -03 * -Rework all etch revision "A " and "B " M7105's

M7105-D0002 CODE: F CS: C
JUN-73 - PROBLEM: Marginal timing problem may cause extra increment to the CURRENT ADDRESS register.
CORRECTION: Cut one etch and pick up "short TP3 " from JU1 of the M7104; cut etch between E41 pin 10 and E42 pin 10, add a wire from E41 pin 10 to JU1.

NOTE 1: This FCO must be installed in conjunction with FCO M7104-D0003.

NOTE 2: The problem may be evident when running MAINDEC X8 and doing a two block transfer with the RK8-E. The Current Address Register may be incorrect, starting with the first words of the second block of words.
In-plant effectivity -03 * -Rework immediately
Field effectivity -Rework all M7105's in RK8-E systems if the configuration includes an IOT of 67XX other than the RK8-E.
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

M7106

RK8-E Control

PROCESSOR TYPE PDP-8/E

M7106-00001 CODE: D CS: B
OCT-72 - PROBLEM: M7106 grounds pins used in RK05 bus system.
CORRECTION: Cut etch on M7106.
In-plant effectivity -03 rework immediately

M7106-00002 CODE: D CS: C ETCH: C
NOV-72 - PROBLEM: Eliminate wire on M7106, etch revision "B ", and plot on glass.
CORRECTION: Relayout M7106, eliminate wires and rework components. Plot on glass as M7106 (etch revision "C ") .

NOTE: See continuation supplement M7106-0002A and correction supplement ECO M7106-0002B.
In-plant effectivity -02 phase-in

M7106-0002A CODE: D
DEC-72 - PROBLEM: DC OK signal not connected to RK05 bus, causing possible data loss on power fail when computer is turned off and drives are not turned off. The system can only be in this state if the computer and drive are not interconnected with a power control.
CORRECTION: Add a diode between pin BV2 and J1-TT on the M7106, etch revision "C ".
In-plant effectivity -02 phase-in

M7106-0002B CODE: D
JAN-73 - PROBLEM: ECO M7106-00002 did not provide a rework procedure for existing boards.
CORRECTION: This supplement ECO provides a procedure.
In-plant effectivity -Rework all etch revision "B " M7106's in-plant until new M7106 at etch revision "C " is available.

M7106-C0003 CODE: DF CS: D
NOV-72 - PROBLEM: Some Texas Instrument #74161 counters do not respond to within specification narrow pulse with negative +5 volt margins. Signetics #74161's are OK as are Texas Instrument #74161's from previous batches.
CORRECTION: Widen RD CLK and RD CLK 2 by changing the values of capacitor C34 from 560 to 820 pfd and C35 from 330 to 470 pfd.

NOTE: See correction supplement FCO M7106-C003A.
In-plant effectivity -03 rework immediately
Field effectivity -Rework M7106's, CS revision "C " or earlier.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M7106-C003A CODE: DF
JAN-73 - PROBLEM: Documentation errors on M7106 prints.
CORRECTION: Update prints with corrections.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

M7106-C0004 CODE: F CS: E
MAR-73 - PROBLEM: DC POWER LOW from the RK8-E to the RK05 Disk Drive does not keep the RK05 heads in the retracted position.
CORRECTION: Remove the diode from JITT and replace it with a jumper.

NOTE: This FCO must be installed in conjunction with FCO M993-C0003.
In-plant effectivity -03 * -Rework all in-house as of 3-26-73
Field effectivity -Rework all M7106's when symptoms are present.
(Time To Install And Test .8 Hour.) (Kit Contents -FCO/Prints)

M7106-D0005 CODE: F CS: F
MAY-73 - PROBLEM: READ DLY 1 and SYNC DLY 1 can not be adjusted to specification when 74123 chips other than Texas Instruments are used.
CORRECTION: Change value of resistor R5 from 10K to 6.8K ohms and resistor R13 from 20K to 15K ohms.
In-plant effectivity -03 rework all modules which have not been accepted at Westfield. Rework all accepted modules only if problem exists.
Field effectivity -Rework all M7106's in RK8-E's when symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

M7390

RT01 Asynchronous Transceiver Module

PROCESSOR TYPE All

M7390-C0001 CODE: DF CS: C

OCT-71 - PROBLEM: When turning the RT01 on, the UART, MOS LSI chip, is not reset. This may cause the M7390 not to function.
CORRECTION: Add a reset circuit to clear all flip-flops in the UART. This circuit provides a 60 msec reset pulse on pin Z1 of the UART chip. Do not relayout the board. A later ECO will have the full corrections.

NOTE: This FCO must be installed in conjunction with FCO RT01-C0005.
In-plant effectivity -03 rework immediately
Field effectivity -Rework M7390's in RT01 #101
(Time To Install And Test .5 Hours)
(Kit Contents -FCO And Parts)

M7390-E0002 CODE: DF CS: D ETCH: D

DEC-71 - PROBLEM 1: The UART, E13, presently used, has been modified so that the external pull-up and pull-down resistors and Zener diode, IN751A, are not required.
CORRECTION 1: All pull-up and pull-down resistors on E13 are removed. The Zener diode is removed and pin 3 of E13 is grounded.
PROBLEM 2: A flip-flop, E14, is needed to give a frequency of 2.4 KHz for use in a 150 baud unit.
CORRECTION 2: Add a flip-flop, E14, to give a frequency of 2.4 KHz.
PROBLEM 3: A new reset circuit is needed for increased drive capability.
CORRECTION 3: A new reset circuit is being added for more unit loads. The reset circuit consists of Q1, R5, R6, R7, D9, C20, and pin BP2 is called **RESET** . **XR DLY** , which was on pin BP2, consisting of R67 and C19, was deleted.
PROBLEM 4: R1 and R2 are pull-up resistors for use in a wired **OR** system.
CORRECTION 4: R1 and R2 are added to E10 pin 12 and E10 pin 2.
PROBLEM 5: The EOC signal from the UART, E13, is delayed by as much as one transmitter clock period after **DATA STROBE** , DS . This can cause multiple interrupts in a computer which is monitoring the **EOC** flag.
CORRECTION 5: Add a TTL flip-flop which is set by **DATA STROBE** and reset by **EOC** , from the UART, E13.
PROBLEM 6: C18 and R62 decrease response time so that operation at rates greater than 300 baud is not possible.
CORRECTION 6: Change C18 to a 0.005 ufd capacitor and R62 to a 10K ohm resistor to allow higher baud rates.
CORRECTION 7: Other changes consist of R66 changed to R3, R62 changed to R4, **XR DLY** changed to **RESET** pin BP2, and C13 changed to C21.

NOTE 1: This module revision requires a corresponding wire wrap change when the module is used in the RT01 data terminal. The necessary wire wrap changes are described in FCO RT01-E0007. RT01's currently in the field with M7390 CS revision "B " modules should be updated with the M7390 CS revision "D " when the RT01 is returned for routine service at a depot.

NOTE 2: This FCO is to be installed in conjunction with FCO's RT01-C0005 and RT01-E0007.

NOTE 3: See continuation supplement FCO M7390-E002A.
In-plant effectivity -02 phase-in
Field effectivity -In depot only, only at customer request
(Time To Install And Test .3 Hour)
(Kit Contents -FCO/Prints And Parts)

M7390-E002A CODE: DF

APR-72 - PROBLEM: The part OCI-91, Item #46, has a metal case. This case is now unsuitable because of the revision "D " etch change. The case is likely to short against the etch.
CORRECTION: Replace OCI-91 with TIL-111 which eliminates possible shorts to the etch.
In-plant effectivity -02 phase-in
Field effectivity -Unchanged

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EC DEC-O-LOG Engineering Change Order Log

M7700

Index, Photoamp and Sector Counter for RK05

PROCESSOR TYPE PDP-8 Family, PDP-11 Family, PDP-15

M7700-00001 CODE: D CS: E ETCH: E
NOV-71 - PROBLEM: Power supply ripple noise in the sector sensor amplifier circuit results in false triggering of the subsequent sector pulse generating circuits.
CORRECTION: Addition of a capacitor, C30, to make the sector sensor amplifier less responsive to noise, and also rerouting of the amplified signal to the Schmitt Trigger input of the following one-shot, pin "E ".
In-plant effectivity -04 phase-in

M7700-00002 CODE: P CS: F
JAN-72 - PROBLEM: The circuit schematic representation of the interface drivers is incorrect and reference information is missing from some circuit elements, thus making circuit functions hard to understand.
CORRECTION: Add the proper reference information to the Circuit Schematic drawing.
In-plant effectivity -06 documentation change only

M7700-00003 CODE: D CS: H ETCH: F
JAN-72 - PROBLEM 1: **SEEK DONE** and **WRITE** indicators light before drive is in **READY** status.
CORRECTION 1: Use **READY H** signal to gate **SEEK DONE** and **WRITE** indicators.
PROBLEM 2: Component tolerances cause possible marginal operation of index separator.
CORRECTION 2: Increase the value of resistor R8.
In-plant effectivity -03 rework immediately

M7700-00004 CODE: D CS: J ETCH: H
MAR-72 - PROBLEM: False triggering of one-shots occurs due to noise sensitivity of one-shot charging circuit caused by high impedance of capacitor protecting diodes.
CORRECTION: Remove diodes D1 and D2 which are not necessary because high voltage charging capacitors are able to withstand the reverse voltage without failure.
In-plant effectivity -03 rework immediately

M7700-00005 CODE: D CS: K
JUN-72 - PROBLEM 1: The **INDEX/SELECTOR** generated within the M7700 module in the RK05, must be advanced by 40 usec to ensure cartridge interchangeability between RK05 and RK03. There may be insufficient range in potentiometer R6 to allow this adjustment.
CORRECTION 1: Change resistor R5 from 10K to 1K. This will ensure that the marker on track #100 of the CE pack can be set 70 usec from index rather than 30 usec.
CORRECTION 2: Change the Circuit Schematic to show the proper connection of the **READ/WRITE/SEEK READY H** signal line.
In-plant effectivity -02 phase-in

M7700-C0006 CODE: F CS: L ETCH: J
JUN-72 - PROBLEM: The RK05 is not compatible with the RK11-D. The RK11-D employs three line BCD drive selection while the M7700 module in the RK05 only accepts a four line linear signal.
CORRECTION: Change the M7700 to allow drive selection by either a four line linear signal or a three line BCD signal.

NOTE 1: Replace an etch revision "H " M7700 with an etch revision "J ", CS revision "L ", M7700 in an RK05 if the RK05 is to be used on a system with an RK11-D.

NOTE 2: If this replacement is made, it is mandatory that FCO RK05-C0014 also be implemented.
In-plant effectivity -02 phase-in
Field effectivity -Rework M7700's in any RK05 being used in conjunction with an RK11-D controller.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M7700-00007 CODE: P CS: M
MAY-73 - CORRECTION: Add missing signal source designation and reference information to the Circuit Schematic.
In-plant effectivity -06 documentation change only

M7700-C0008 CODE: F CS: N
JUL-73 - PROBLEM: After power-up, a power supply race condition may exist where the RK05 wins and the slower controller will not support its disk bus end. This causes the RK05 to recognize a false write protect signal and manifests itself as a write protected condition after power-up. This problem will most likely occur with an RK11-D controller and has not been known to occur with RK11-C or RK8-E controllers. This problem does not occur in some cases when there exists light controller power supply loading.
CORRECTION: On etch revision "J " and later only, gate the **BUS WRITE PROTECT** set signal with **SELECT** and **READY** rather than only with **SELECT** . The eight second spindle cycle time will allow adequate time for the controller power supply to power-up. The rework procedure is as follows: Cut the etch between E15 pin 5 and E14 pin 1, component side. Cut the etch entering E15 pin 5 on the etch side. The etch, cut in the previous step, comes from a feed-thru between E20 and E21 and is adjacent to R18, a 10K resistor next to the module edge. Connect a wire from that feed-thru to E14 pin 1. Find the feed-thru between E14 and E19 that connects to E14 pin 9. Connect a wire from that feed-thru to E15 pin 5. When these changes have been made, an ohmmeter should show continuity between the wiper of rotary switch S1 and E14 pin 1, and continuity between pin BH1 and E15 pin 5. There should be discontinuity between BH1 and S1 wiper.

NOTE: FCO M7700-C0006 is prerequisite to this FCO.
In-plant effectivity -03 * -Rework at systems level only as needed. Machine build and module build areas must install after September 3, 1973. Note: This FCO is only for M7700's at etch revision "J " and later.
Field effectivity -Rework all M7700's, etch revision "J " or later, when symptoms are present.
(Time To Install And Test .8 Hour.) (Kit Contents -FCO/Prints)

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DEC-O-LOG Engineering Change Order Log

M7701

RK05 Control and Safety Interlocks

PROCESSOR TYPE **PDP-8, PDP-11, and PDP-15**

M7701-00001 CODE: D CS: D ETCH: D
JAN-72 - PROBLEM: System noise incorrectly sets the **FAULT LATCH** during MACHINE START cycle.
CORRECTION: Use **LOAD HEADS H [0]** instead of **RUN STROBE** to clear **FAULT LATCH** .

NOTE: See continuation supplement ECO M7701-0001A
In-plant effectivity -03 rework immediately

M7701-0001A CODE: D
JAN-72 - PROBLEM: Additional etch changes required on **AC LOW L** and **DC LOW L** to provide more terminating pins.
CORRECTION: Add a connection from AR2 to AE2, **AC LOW L** and add a connection from AD1 to AF1, **DC LOW L** .
In-plant effectivity -Unchanged

M7701-00002 CODE: D CS: E ETCH: E
FEB-72 - PROBLEM 1: Insufficient adjustment range of LOW SPEED TEST TIME OUT .
CORRECTION 1: Change the values of resistor R8 and capacitor C22 to position the R9 potentiometer adjustment in range center.
PROBLEM 2: Trailing edge triggering of the LOW SPEED one-shot causes circuit instability.
CORRECTION 2: Trigger one-shot E13 on the leading edge.
In-plant effectivity -03 rework immediately

M7701-00003 CODE: D CS: F ETCH: F
MAR-72 - PROBLEM: False triggering of one-shots may occur due to noise sensitivity of one-shot charging circuit caused by high impedance of capacitor protecting diodes.
CORRECTION: Remove diodes D2 and D3.

NOTE: See correction supplement ECO M7701-00006.
In-plant effectivity -03 rework immediately.

M7701-00004 CODE: D CS: H
APR-72 - PROBLEM: Slow slew rate of some operational amplifiers causes false triggering of following logic elements.
CORRECTION: Replace operational amplifiers E1, a 741, with a faster slew rate device, the 301.
In-plant effectivity -03 rework immediately

M7701-C0005 CODE: F CS: J ETCH: H
AUG-72 - PROBLEM: Power Fail sequencing of an RK05 may yield eight seconds of hard error before running properly. The state of the **READY** flip-flop on the M7701 module is not guaranteed at the time of power turn-on. It is possible the drive will come up with a **READY H** eight seconds before loading heads.
CORRECTION: Use the **LOAD HEADS H** signal to clear the **READY** flip-flop (E15) in the M7701 module.
In-plant effectivity -03 rework immediately.
Field effectivity -Rework all M7701's in RK05's as required.
(Time To Install And Test .8 Hour.) (Kit Contents -FCO/Prints)

M7701-00006 CODE: D CS: K
AUG-72 - PROBLEM: Removal of diode D3, by ECO M7701-00003, from the SPINDLE TIME OUT one-shot caused a change in adjustment range of the time setting potentiometer that prevents proper adjustment.
CORRECTION: Lower the value of fixed resistor R8, which is in series with the potentiometer, so that the .45 Msec, plus or minus 1, specification may be met.
In-plant effectivity -03 rework if symptoms are present.

M7701-B0007 CODE: F CS: L ETCH: J
OCT-72 - PROBLEM 1: On multi-drive systems, AC power loss on one drive loads the bus.
CORRECTION 1: Interconnect the **DC LOW** bus line with the **READY** line on all machines.
PROBLEM 2: The **AC LOW** voltage detect does not appear before the **DC LOW** signal during a power loss.
CORRECTION 2: Reduce the one-shot time from 90 msec to 45 msec and increase the trip point from 60 volts to 80 volts.
PROBLEM 3: Manual selection of the WRITE PROTECT switch couples a noise signal into the interlock line, consequently down-moding the machine.
CORRECTION 3: Increase the noise filter capacitor from 0.01 ufd to 0.047 ufd.

NOTE 1: Problem 1 causes loss of data on the powered drives. NOTE 2: FCO M7701-C0005 is a prerequisite for this FCO.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7701's in RK05 DEC packs.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M7701-00008 CODE: D CS: M ETCH: K
JAN-73 - CORRECTION: A test point is added to make it possible to test the module on an automated tester.
In-plant effectivity -02 phase-in

M7701-B0009 CODE: F CS: N
FEB-73 - PROBLEM: If a terminated RK05 loses AC power, permanent data loss may result during the failure. The RK05 is not fully protected against writing during +5V collapse. Simultaneous loss of drive and controller power accentuates this problem.
CORRECTION: Ensure no writing by interconnecting **UNSAFE L** with +15V LOW . This will deselect heads during **DC LOW** . Also, interconnect **BUS WRITE CHECK** with **UNSAFE L** to alert the controller status of trouble.

NOTE 1: See correction supplement FCO M7701-B009A.

NOTE 2: This FCO orders the relayout to a new etch revision level "L ", which is cancelled by correction supplement M7701-B009A.

NOTE 3: The rework instructions are as follows: 1: Change resistor R21 to 4.7K ohms. 2: Cut etch between resistors R21 and R28 and add connection between resistor R21 and diode D6 cathode. 3: Cut etch to E18 pin 7 and add connection from E18 pin 7 to E12 pin 13. 4: Cut etch from feed-thru to E10 pin 9 and add connection from E18 pin 5 to AV2 feed-thru.
In-plant effectivity -03: 1: Immediately if used with RK11-D or RK11-E, RK8-E and RK11-C systems that normally have continuous disk power regardless of controller power. Also, all those where power fail problems have occurred. 2: After 4/1/73 all RK05 systems made must have this FCO.
Field effectivity -Rework all M7701's in RK05's
(Time To Install And Test 1.0 Hour.) (Kit Contents -F705 -FCO/Prints And Parts)

M7701-B009A CODE: F
MAR-73 - PROBLEM: FCO M7701-B0009 ordered, in Item #3, a relayout of the etched board. A subsequent ECO will order relayout of the etch.
CORRECTION: Do not relayout etch as indicated; delete Item #3 on FCO M7701-B0009.
In-plant effectivity -Unchanged except new etch cancelled
Field effectivity -Unchanged

M7701-00010 CODE: D CS: P ETCH: L
AUG-73 - PROBLEM: The present design does not have a bus receiver gate on the DC LOW line which can lead to noise sensitivity and interface line incompatability. Also, the module does not detect a +5 volt low, only +15 and -15 volt lows.
CORRECTION 1: Add a 380 bus receiver to the DC LOW circuit.
CORRECTION 2: Add a +5 volt low detect circuit.
In-plant effectivity -02 -To be phased-in no later than Nov. 1, 1973

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Engineering Change Order Log
DEC-O-LOG

M7711

LA30 Control Logic A Module

PROCESSOR TYPE All

M7711-00001 CODE: D CS: B ETCH: C
APR-71 - PROBLEM: Resistor R2 is not in line with R16 and R19
CORRECTION: Relocate R2 to facilitate assembly.
In-plant effectivity -03 rework immediately

M7711-00002 CODE: D CS: C ETCH: D
SEP-71 - PROBLEM: Flag lost on PDP-11 power down.
CORRECTION. Restored processor INITIALIZE .

NOTE: See continuation ECO M7711-00003.
In-plant effectivity -03 rework immediately

M7711-00003 CODE: D
SEP-71 - PROBLEM: Timing window at beginning of VISIBILITY CYCLE allowed CARRIAGE RETURN character to be lost.
CORRECTION: Make this ECO a supplement to ECO M7711-00002 by providing new etch changes.

NOTE: This ECO must be installed in conjunction with ECO LA30-00018.
In-plant effectivity -03 rework immediately

M7711-00004 CODE: D CS: D ETCH: E
OCT-71 - PROBLEM: The signal AH2 [CRF L] input is presenting a higher load than necessary on source signal.
CORRECTION: Buffer AH2 [CRF L] , reducing loading from five unit loads to one.
In-plant effectivity -01 phase-in

M7711-C0005 CODE: F CS: E ETCH: F
FEB-72 - PROBLEM 1: WAKEUP circuit operates unreliably (occasionally fails to reset printer logic) .
CORRECTION 1: Redesign WAKEUP circuit.
PROBLEM 2: Demand Line Driver generates spurious flags on power-down.
CORRECTION 2: Replace TTL driver with discrete driver.
PROBLEM 3: Recovery time too great on demand one-shot.
CORRECTION 3: Add pull-up and change resistor value in one-shot.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit at customer request with in-plant reworked module.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

M7711-00006 CODE: P CS: C1
JUN-72 - PROBLEM: Documentation is required for reworking an excess of M7711 revision "C " boards to have revision "E ", but not revision "D " modifications.
CORRECTION: Create special documentation, CS revision "C1 ".
In-plant effectivity -06 documentation change only

M7711-C0007 CODE: F CS: F
JUN-72 - PROBLEM: Double pull-up on PINIL . One acts as a terminator when LA30 is powered-down, faulting power fail feature.
CORRECTION: Replace pull-up with higher value. (no etch change required) .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7711's if symptoms are present.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

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DEC-O-LOG Engineering Change Order Log

M7712

LA30 Control Logic "B"

PROCESSOR TYPE All

M7712-00001 CODE: D CS: D ETCH: E
SEP-71 - PROBLEM: Action of RIGHT HAND MARGIN switch was confused by interaction with CHARACTER VISIBILITY cycle.
CORRECTION: Add gating to qualify RIGHT HAND MARGIN switch only outside of CHARACTER VISIBILITY cycle.

NOTE: See continuation supplement ECO M7712-00002.
In-plant effectivity -02 phase-in

M7712-00002 CODE: D
SEP-71 - PROBLEM: ECO M7712-00001 is incomplete.
CORRECTION: This is a supplement to ECO M7712-00001; adds capacitor C15 and deletes resistor R12.
In-plant effectivity -02 phase-in

M7712-00003 CODE: D CS: E ETCH: F
OCT-71 - PROBLEM: Two DONE signals being generated for a single operation.
CORRECTION: Add gating to inhibit second DONE signal.
In-plant effectivity -01 phase-in

M7712-B0004 CODE: F CS: F
FEB-73 - PROBLEM: Race condition resulting in a fill character being printed following a carriage return on the serial printer only.
CORRECTION: Insert delay to eliminate race by adding a 470 pfd capacitor, to left of E13, between E13 pin 1 and ground.
In-plant effectivity -03 rework immediately in all serial LA30's.
Field effectivity -Exchange M7712's in serial LA30's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M7713

LA30 Ribbon Control and Last Character Visibility

PROCESSOR TYPE All

M7713-00001 CODE: D CS: C ETCH: D
DEC-71 - PROBLEM: Internal clock pulse is too short.
CORRECTION: Change resistor R6 to 750K ohms, plus or minus 1%, and capacitor C19 to 0.047 ufd plus or minus 2%, to make clock pulse greater than 34 msec but less than 40 msec.
In-plant effectivity -03 rework immediately

M7713-00002 CODE: P CS: D
JAN-72 - CORRECTION: Corrects miscellaneous errors in module documentation.
In-plant effectivity -Documentation change only

M7713-C0003 CODE: F CS: E
JUN-72 - PROBLEM: Unijunction oscillator slow fall time causes spurious pulses on 36 MS CLOCK output.
CORRECTION: Replace discharge resistor for faster fall time.

NOTE: Symptom: Horizontal registration lost in **STEP OVER** , last character visibility, mode.
In-plant effectivity -03 rework immediately
Field effectivity -Install FCO on customer request or when symptoms are present.
(Time To Install And Test .9 Hour.) (Kit Contents -FCO/Prints And Parts)

M7713-C0004 CODE: F CS: F ETCH: E
FEB-73 - PROBLEM 1: R/C timing specification on Test Procedure incorrect.
CORRECTION 1: On separate ECO, change Test Procedure specification to increase timing band from 34-40 msec to 34-46 msec.
PROBLEM 2: Race condition exists on counter decode.
CORRECTION 2: Add delay to least significant clock stage such that it will not change state at the same time as the following stages.

NOTE: Symptoms which will indicate a need for this FCO are a loss of registration during the LCV cycle, and characters may be printed backwards.
In-plant effectivity -03 rework modules in process only. No rework needed on any module which passed through module test.
Field effectivity -Rework all M7713's when LA30 symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

M7715

LA30 Linefeed Control

PROCESSOR TYPE All

M7715-00001 CODE: D CS: C
APRIL-71 – PROBLEM: Capacitor C8 discharge slope not fast enough.
CORRECTION: Change the value of resistor R7 from 47 ohms to 27 ohms.

NOTE: See continuation supplement ECO M7715-00002.
In-plant effectivity – rework immediately

M7715-00002 CODE: D
JUNE-71 – PROBLEM: LINE FEED FUNCTION pulse too long.
CORRECTION: Change resistor R5 to 422K ohms plus or minus 1% to make pulse equal to or less than 33 msec. This ECO is supplemental to ECO M7715-00001.
In-plant effectivity – rework immediately.

M7715-00003 CODE: D CS: D
DECEMBER-73 – PROBLEM: Unijunction relaxation oscillator output frequency is too low, the time between pulses is too long.
CORRECTION: Change the value of resistor R5 from 422K to 330K ohms.
In-plant effectivity – rework only those modules which do not pass the timing specification; use for all new production in Puerto Rico.

M7715-0003A CODE: D CS: D1
FEBRUARY-74 – PROBLEM: Unijunction relaxation oscillator output frequency is too low; time between pulses is erratic. ECO M7715-00003 will not work because the unijunction is still too low on output frequency.
CORRECTION: Change R5 from a 330K ohm resistor to a 62PR100K potentiometer. Change capacitor C8 from 0.033 UFD to 0.33 UFD.
In-plant effectivity – parts available January 28; start reworking in Westfield immediately.

M7715-C0004 CODE: F CS: E
JANUARY-74 – PROBLEM: Unijunction relaxation oscillator output frequency is too low; the time between pulses is erratic. Failure symptoms include missed line feeds and hanging up during line feed operations.
CORRECTION: Change resistor R5 from 330K 1/4W, 5% to a 62PR100K #13-09150-14 potentiometer; change capacitor C8 from 0.033 UFD to 0.33 UFD, #10-05328. Change IC E5 from #19-05575 to #19-11637.
In-plant effectivity – parts available January 28, start reworking in Westfield immediately.
Field effectivity – rework M7715's in LA30's when symptoms are present.
(Time To Install And Test 1.5 Hours.) (Kit Contents – PF1139 – FCO/Prints and Parts)

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EC DEC-O-LOG Engineering Change Order Log

M7722

LA36
MICROPROCESSOR

PROCESSOR TYPE ALL

M7722-00001 CODE: D CS: B
SEP-74 - PROBLEM: The Q2121 optical coupler has been shown to be unreliable.
CORRECTION: Replace the Q2121, #19-10845, with Motorola 4N26, #19-11998.
In-plant effectivity -No LA36 is shippable without this ECO ; break-in at LA36 serial number 5020.

M7722-00002 CODE: D CS: C ETCH: C
SEP-74 - PROBLEM: Module has wires and etch cuts, hand drilled holes, added resistors, components on wrong centers, poorly spaced components, and multiple orientations of electrolytic capacitors.
CORRECTION: Relayout board to new etch revision "C " to eliminate the problem. Change R16, 59K ohms, from #13-03175 to #13-00525.
In-plant effectivity -Break-in at LA36 serial number 5800

M7722-0002A CODE: D
JUL-74 - PROBLEM: ECO M7722-00002 did not call out the "50 " class number for the etch change. It did not indicate deletion of the MATE-N-LOCK pins on the face sheet.
CORRECTION: Update module history and delete MATE-N-LOCK pins on face sheet.
In-plant effectivity -Unchanged

M7722-00003 CODE: D CS: D
OCT-74 - PROBLEM: Erroneous noise pulses causing loss of position.
CORRECTION: Add two #10-01610-01 0.01 mfd capacitors to E6.
In-plant effectivity -Break-in at LA36 serial number 5020.

M7722-C0004 CODE: F CS: E
JAN-75 - PROBLEM 1: The KBH flip-flop is being set, apparently by noise. This causes the bell to ring on column 64 even though a keyboard character has not been transmitted. The UART is not sensitive to this noise.
CORRECTION 1: This ECO causes the KBH flip-flop to be clocked by the UART transmitter activity indication instead of the keyboard strobe. This fix is implemented with the three wires and two etch cuts described in the attached rework instructions.
PROBLEM 2: The current loop receiver threshold varies widely due to wide phototransistor gain variations. Thresholds higher than 15 ma are possible. Failure symptoms include failure to receive, and/or incorrect or garbled characters received.
CORRECTION 2: This ECO changes the phototransistor base resistor, R51, from 120K to 1M. The new resistor value reduces the dependence on phototransistor gain while retaining the distortion prevention function.
PROBLEM 3: The DEC 380 gate has been made obsolete by PDP-11 System Engineering. It was replaced by the DEC 8640. The DEC 8640 does not work in the M7722; it oscillates at its own frequency instead of the crystal frequency.
CORRECTION 3: If the three resistor values in the circuit are changed, then the 8640 will work properly. This ECO allows the following two M7722 configurations: PREFERRED , E17 is a DEC 8640, R54 is 5.6K R55 is 1K, R56 is 5.6K. SUBSTITUTE , E17 is a DEC 380, R54 is 10K, R55 is 470, R56 is 10K. Note that the substitute configuration is identical to the original configuration, thus all existing M7722's are supported by this revision.
PROBLEM 4: The documentation does not allow the use of the low cost CROM , 23082A6, in place of the high cost PROM 0, 23-082A4 and PROM 1, 23-83A4.
CORRECTION: This ECO allows the following two M7722 configurations: PREFERRED E56 is a 23082A6, E61 is empty, E65 is empty. SUBSTITUTE : E58 is empty, E61 is a 23083A4, E65 is a 23082A4. Note that the substitute configuration is identical to the original configuration, thus all existing M7722's are supported by this revision.
PROBLEM 5: Special CS revision "B1 " is confusing.
CORRECTION 5: Annotate new CS revision "E " so as to support the etch revision "B " boards.

NOTE: The rework procedure is as follows: Both etch cuts are on runs which originate from E51 pin 11. Cut at the zig-zag above R80 and the line which runs between pins 3 and 4 of E51. Add wires as follows: From E55 pin 23 to E67 pin 4, use plated thru hole upper right 3/8 inch from E67, same run as etch cut. E62 pin 6 to E51 pin 11, use nearby plated thru hole. E55 pin 24 to E62 pin 5. Change R51 from 120K to 1M. R51 is to the right of E43 on the board and below E43 on sheet 5 of the Circuit Schematic.

In-plant effectivity -Break-in at LA36 serial number 6715.
Field effectivity -Retrofit LA36's #5000 to #6715 to Corrections 1 and 2, done together, for bell ringing and/or photo optic coupler problems, at next PM or service call.
(Time To Install And Test .5 Hour.) (Kit Contents -PF1416 5WW - FCO/Prints And Parts)

M7722-C004A CODE: F
JAN-75 - CORRECTION: Corrects errors on original issue: Sheet 1 of 4, Correction 3; reference to R57 should be changed to R54. Sheet 2 of 4, Item 13; quantity of 5.6K resistors shown as one added, should be two added.
In-plant effectivity -Unchanged
Field effectivity -Unchanged

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ECO DEC-O-LOG Engineering Change Order Log

M7760

TU60 Logic

PROCESSOR TYPE All

M7760-00001 CODE: D CS: C ETCH: D
NOV-72 - PROBLEM: Possible race condition with non-standard read.
CORRECTION: Change logic term on E61 pin 10 from **INIT L** to **DRIVE H** .

NOTE: See continuation supplement ECO M7760-0001A.
In-plant effectivity -03 rework immediately

M7760-0001A CODE: D
DEC-72 - PROBLEM: Scope probes fall off split lug test points.
CORRECTION: Change split lugs to swage lugs.
In-plant effectivity -02 phase-in

M7760-00002 CODE: D CS: D
DEC-72 - PROBLEM: Gap noise develops when **LAST BLOCK** is replaced a large number of times.
CORRECTION: Force gap polarity to known value.
In-plant effectivity -03 retrofit immediately

M7760-00003 CODE: D CS: E ETCH: E
DEC-72 - PROBLEM 1: Possible race of **LEADER FLAG** at EOT .
CORRECTION 1: Add R/C circuit.
PROBLEM 2: Improve **TU60** by moving at high speed on leader.
CORRECTION 2: Add **LDR L** to OR gate generating **H S** .

NOTE: See continuation supplement ECO's M7760-0003A, M7760-0003B, and M7760-0003C.
In-plant effectivity -02 phase-in

M7760-0003A CODE: D
JAN-73 - PROBLEM: WRITE FILE GAP MONO fails to clear.
CORRECTION: Add diode to timing circuit.
In-plant effectivity -02 phase-in

M7760-0003B CODE: D
FEB-73 - PROBLEM: GAP TIME MONO sometimes cannot be adjusted to 40/30 msec.
CORRECTION: Change values of timing resistors R22 to 47K ohms and R28 to 14.7 K ohms.
In-plant effectivity -02 phase-in

M7760-0003C CODE: D
FEB-73 - PROBLEM: Adjustment range of **GAP TIME MONO** not enough to cover variations in integrated circuits being purchased.
CORRECTION: Change the values of resistors R25 to 680 ohms, R26 to 620 ohms, and R29 to 470 ohms.
In-plant effectivity -02 phase-in

M7760-C0004 CODE: F CS: F
MAR-73 - PROBLEM: One-shots, 74123, may change state unexpectedly when retriggered at pins 6 or 14, forced setting.
CORRECTION: Insert resistor in series with pull-down line to slow the fall time and thereby prevent oscillations within the chip. The IC is E55, **TAPE BLANK MONO** .
In-plant effectivity -03 immediate to all etch revision "E " boards and as needed in etch revision "C ".
Field effectivity -Exchange all M7760's in TU60's that detect an unexpected file gap.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M7761

TU60 Read/Write and Servo

PROCESSOR TYPE All

M7761-00001 CODE: D CS: C ETCH: D
OCT-72 - CORRECTION: Relayout new etch revision "D " to meet production standards.
In-plant effectivity -02 phase-in

M7761-00002 CODE: P CS: B1
NOV-72 - PROBLEM: Circuit Schematic does not match M7761 etch board revision "C " .
CORRECTION. Issue new Circuit Schematic at revision "B1 ".
In-plant effectivity -06 documentation change only

M7761-00003 CODE: D CS: D
JAN-73 - PROBLEM 1: Poor operating margin on Raytheon version of 2N2219 and lack of proper documentation control of purchased part.
CORRECTION 1: Replace 2N2219 with DEC 2007.
CORRECTION 2: Correct print: R50 improperly marked as R5 on Circuit Schematic.
CORRECTION 3: Correct print: Swage lug part number must be changed.
In-plant effectivity -02 phase-in

M7761-00004 CODE: D CS: E ETCH: E
JAN-73 - PROBLEM: Read circuits do not clear completely with some specific programming timing and sequences.
CORRECTION: Use **ENERGY CLEAR MONO** to generate direct clear for **ENERGY MONO** .

NOTE: This ECO creates M7761 special CS revision "B2 ".
In-plant effectivity -03 rework immediately

M7761-00005 CODE: D CS: F
FEB-73 - PROBLEM: Capacitors in leader sensing circuit slows down EOT sensors now being purchased.
CORRECTION: Remove capacitors C119 and C120 on CS revision "B2 " and C84 and C85 on CS revision "E ".

NOTE: This ECO creates M7761 CS revision "B3 ".
In-plant effectivity -02 phase-in

M7761-C0006 CODE: F CS: H
APR-73 - PROBLEM 1: Logic POWER LOW circuit threshold too low to protect tape from erasure. Problem occurs when power is shut off on unrewound tapes.
CORRECTION 1: Change resistor R129 from 1K to 220 ohms
PROBLEM 2: Unloading/rewinding tape on Drive "A " generates a noise pulse which may cause read/write errors on Drive "B ".
CORRECTION 2: Move diode D17 to better ground.

NOTE: This FCO creates M7761 special CS revision "B4 ".
In-plant effectivity -03 rework immediately
Field effectivity -Rework all etch revision "D " M7761's when symptoms are present. Rework all etch revision "C " M7761's to correction #1 only, when symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M7761-00007 CODE: D CS: J
MAY-73 - PROBLEM: The 74123 IC's in position E21 and E4 do not always clear.
CORRECTION: In positions E21 and E4, insert IC sockets #12-10025 to speed changing of problem IC's on etch revision "D " and "E " boards. This is a temporary fix. An ECO will follow to relayout the board.

NOTE: This ECO is cancelled by supplement ECO M7761-0008A.
In-plant effectivity -02, all boards wave-soldered after May 15 must have this eco; do not retrofit.

M7761-D0008 CODE: F CS: K
JUN-73 - PROBLEM: Some 74123 one-shots do not clear properly, causing the cassette to rewind to the end. The problem may be noticed when a drive is rewinding under either program or manual control. If the tape does not stop near the beginning of clear leader, but continues to the end of the tape, this FCO may be required.
CORRECTION: Add circuit to prevent retrigger on trailing edge of clear pulse. Two D664 diodes and two 300 ohm resistors are added.

NOTE: See correction supplement FCO's M7761-B008A and M7761-B008B.
Quick Check -300 ohm resistor on E31 pin 8 and E35 pin 3.
In-plant effectivity -03 * -Rework immediately all in-plant units prior to Module Test in Puerto Rico. Other units are to be reworked only if problem exists or if E4 or E21 must be replaced.
Field effectivity -Rework all M7761's when symptoms are present or when 74123 IC, E4 or E21, is replaced.
(Time To Install And Test 1.3 Hours.) (Kit Contents -FCO/Prints And Parts)

M7761-D008A CODE: F
JUL-73 - CORRECTION: Item #8 in FCO M7761-B0008 eliminates the need for ECO M7761-00007. Do not implement ECO M7761-00007; bypass its drawing revision letters to those shown on FCO M7761-B0008.
In-plant effectivity -M7761-00007 effectivity cancelled
Field effectivity -Unchanged

M7761-D008B CODE: F
AUG-73 - CORRECTION 1: IC 7404 which was called out in FCO M7761-D0008 is not needed; delete it from the FCO.
CORRECTION 2: Relayout of the etch board to be postponed.
In-plant effectivity -Unchanged except new etch revision "F " cancelled
Field effectivity -Unchanged

M7761-B0009 CODE: F CS: L
AUG-73 - PROBLEM: Splices in cassettes breaking because of fatigue caused by bending of joint during rewind.
CORRECTION: Add 1 ufd capacitors across resistors R51 and R76 to the leader sensing circuits to allow the splice to wrap around the reel before stopping.
In-plant effectivity -03 * -Rework all M7761's etch revision "D " and later.
Field effectivity -Retrofit all TU60's
(Time To Install And Test 1.0 Hour) (Kit Contents -FCO/Prints And Parts)

M7761-00010 CODE: D CS: M ETCH: F
AUG-73 - PROBLEM 1: Balance adjustments need more range for some operational amplifiers.
CORRECTION 1: Redesign balance circuit to increase range.
PROBLEM 2: 0.1 ufd capacitors are physically too large.
CORRECTION 2: Use 0.22 ufd capacitors.
PROBLEM 3: Signal **MONO TIMING** needs more range for some monos.
CORRECTION 3: Redesign timing adjustment to increase range.
PROBLEM 4: Some Zener diodes, D24, IN752, cause threshold to be slow.
CORRECTION 4: Replace with two D664's.
PROBLEM 5: Write gate connector is not fail-safe.
CORRECTION 5: Add pull-up to **WRITE L** .

NOTE: See continuation supplement M7761-0010A.
In-plant effectivity -Create new etch revision "F " M7761. Use present stock until new stock available, phase-in.

M7761-0010A CODE: D
AUG-73 - PROBLEM 1: Rewind one-shots retriggering on trailing edge of **CLEAR** pulse because of too high junction capacitance in some diodes.
CORRECTION 1: Change diode type to FD777.
PROBLEM 2: **ENERGY CLEAR MONO** too short.
CORRECTION 2: Lengthen by changing timing capacitor, C43, to 0.47 ufd.
In-plant effectivity -Unchanged

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EC DEC-O-LOG Engineering Change Order Log

M7761

TU60 Read/Write and Servo

PROCESSOR TYPE All

M7761-D0011 CODE: F CS: L1

AUG-73 - PROBLEM: Rewind one-shots retriggering on trailing edge of CLEAR pulse because of too high junction capacitance in some diodes.
CORRECTION: Change diode type to FD777.

NOTE: The problem may be noticed when a drive is rewinding under either program or manual control. If the tape does not stop near the beginning of clear leader, but continues to the end of the tape, this FCO may be required.
In-plant effectivity -Rework immediately, in Puerto Rico, prior to module test, in Westfield, prior to final acceptance.
Field effectivity -Rework all M7761's which have FCO M7761-D0008 installed, CS revision "K ".
(Time To Install And Test .5 Hour.) (Kit Contents -F1033 -FCO/Prints And Parts)

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E C DEC-O-LOG Engineering Change Order Log

M7910

LA30, LC11 Interface

PROCESSOR TYPE All

M7910-00001 CODE: D CS: B ETCH: C
MAR-72 - CORRECTION: Adds missing etch between J1 and J2.
In-plant effectivity -03 rework immediately

M7910-B0002 CODE: F CS: C ETCH: D
JUN-72 - PROBLEM: Module is noise sensitive.
CORRECTION: Add ground runs.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M7910's used with LC11 option
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

M7910-B0003 CODE: DF CS: D ETCH: E
AUG-72 - PROBLEM 1: Punch intermittently loses characters.
CORRECTION 1: Change terminating resistors.
PROBLEM 2: Trailing edge of **KEY STROBE** is very noisy.
CORRECTION 2: Use leading edge.
In-plant effectivity -03 rework immediately.
Field effectivity -Rework all M7910's as required.
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M7910-00004 CODE: D CS: E
JUN-73 - PROBLEM: Possible part availability problems with the DEC 380 bus receiver chips.
CORRECTION: Make the 11380 IC #19-11113 an allowable substitute for the DEC 380 #19-09485 bus receivers. The combination of DEC 380's and 11380's as bus receivers is not allowable in the same option.
In-plant effectivity -06 * documentation/design change; Immediately add Allowable Substitution List to the documentation.

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E C DEC-O-LOG Engineering Change Order Log

M8300

KK8-E Major Registers

PROCESSOR TYPE PDP-8/E Family

M8300-00001 **CODE: D** **CS: A** **ETCH: B**
JAN-71 - CORRECTION: Relayout board to new etch revision "B " to meet production standards; update prints.
In-plant effectivity -Phase-in

M8300-00002 **CODE: D** **CS: B**
JAN-71 - PROBLEM: IC's labeled wrong on drawing E-CS-M8300-0-1.
CORRECTION: Make corrections as follows: Change E17 to E5, change E7 to E15, change E12 to E10, change E1 to E9, and change E2 to E14.
In-plant effectivity -Documentation change only

M8300-00003 **CODE: P** **CS: C**
APR-73 - PROBLEM: There is a documentation error on the M8300 Circuit Schematic the representation of the logic on the input to MQ does not agree with the IC manufacturer's given pin numbers for the 8271 chip.
CORRECTION: Remove those inverter sections of E17, E39, and E54 which have pin 13 for input, and all output connections to that inverter.
In-plant effectivity -Documentation change only

M8300-D0004 **CODE: F** **CS: D**
OCT-73 - PROBLEM: Under certain conditions, MB bits 8 through 11 can be picked up, either one bit at a time or in any combination. The known conditions at this time are: The M8300 mounted up on extenders; The +5 volt supply adjusted above approximately 4.95V ; Excessive noise on the bus introduced by customer or DEC interfaces; A noise sensitive 8271 IC at location E50 on the M8300. It must be noted that not all computers will show this problem. The minimum conditions required are the noise sensitive 8271 IC and one or more of the other listed conditions.
CORRECTION: Add two jumpers to ground: From the feed-thru at DT2 to E59 pin 8, and from the feed-thru at DF1 to the feed-thru below and to the left of E50 pin 8, which runs to E50 pin 8.
In-plant effectivity -Rework all M8300's in-plant as of 11/15/73.
Field effectivity -Rework all M8300's if symptoms are present.
(Time To Install And Test .5 Hour.) (Kit Contents -NF1083 -FCO/Prints)

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ECO SYNOPSES FOR LOGIC OR OPTION

MAJOR REGISTER CONTROL MODULE **M8310**

PRODUCT LINE	PUBLICATION DATE OF THIS SYNOPSIS PAGE	PAGE REVISION
PDP8-E	JANUARY 1972	A

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M831 00001	ALL M831	D	JAN 71 - CHANGES ALL DOCUMENTATION TO INDICATE THAT THE M831 MODULE IS OBSOLETE AND WILL BE REPLACED BY THE M8310.
M8310 00001	>M8310	D	JAN 71 - REPLACES THE LIMITED RELEASE REVISION "A" ETCHED BOARD WITH A REVISION "B" ETCHED BOARD REDESIGNED TO MEET PRODUCTION STANDARDS.
M8310 00002	>M8310	D	JAN 71 - PRESETS THE MAC FLIP-FLOP ON M8310 WITH "PWR OK". CHANGES ALL IN-PLANT ETCHED BOARDS REVISIONS "A" AND "B" TO INDICATE CIRCUIT SCHEMATIC REVISION "B".
M8310 B0003	M8310 REWORK ALL	F	APR 71 - CHANGES THE BREAK-IN POINT FOR ECO M8310-00002 TO ORDER REWORKING OF ALL M8310'S IN THE FIELD. PROVIDES THE REWORK INFORMATION ORIGINALLY INCLUDED IN ECO M8310-00002. (*$.00, **NONE, ***$.00)
M8310 B0004	ALL M8310	F	JUN 71 - CHANGES THE CLEARING OF THE "CPMA DIS" FLIP-FLOP TO ELIMINATE THE LOSS OF THE CONTENTS OF A CORE LOCATION IF POWER IS LOST DURING A BREAK. THIS FCO IS APPLICABLE TO ALL M8310'S FOR USE ON A SYSTEM WITH POWER FAIL AND A BREAK DEVICE. (*$.00, **$.00, ***$.00)
M8310 00005	>M8310	D	JUL 71 - CORRECTS ETCH ERRORS ON FCO M8310-B0004 TO ALLOW LAYING OUT THE NEW ETCH. CORRECTS DOCUMENTATION ERRORS.
M8310 C0006	M8310 CS D & EARLIER IF KE8-E & LONG OMNIBUS	F	FCO RELEASE DATE - OCTOBER 1971 PROBLEM 1: "NO-->BUS" DOES NOT DECODE FAST ENOUGH FOR SYSTEMS WITH LONG OMNIBUS AND KE8-E OPTION. CORRECTION 1: CHANGE E14, 18, 21, 35, 36, 40 AND 45 TO H SERIES GATES. PROBLEM 2: MONEY CAN BE SAVED BY REMOVING UNUSED GOLD PLATED FINGERS. CORRECTION 2: REMOVE ALL UNUSED GOLD PLATED FINGERS. - - IN-PLANT EFFECTIVITY - 01 PHASE-IN FIELD EFFECTIVITIY - M8310 CS "D" & EARLIER IF KE8-E & LONG OMNIBUS "F" CODED CS REVISION "E" AND ETCHED BOARD REVISION "E" ARE CREATED TIME TO INSTALL AND TEST - 2.0 HOURS THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO'S AND PARTS.

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- >= ECO applicable to future production

ECO CHARGES

Charges are coded within the synopses. (*$X,**$Y,***$Z)
- $X = Charge for Speco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO NO.	LOGIC OR OPTION SERIAL NO.'S AFFECTED	FIELD CODE	SYNOPSIS
M8310 B0007	M8310 WITH FULL OMNIBUS AS REQUIRED	F	FCO RELEASE DATE - DECEMBER 1971 PROBLEM: ON THE FULL LENGTH OMNIBUS "INHIBIT" COUPLES CROSSTALK INTO MD03 PINS AP2 AND AP1 RESPECTIVELY. THIS CAN CAUSE THE DECODING OF OPE.TS3 TO SPIKE AND AFFECTS THE MQ, AC SWAP INSTRUCTION 7521. CORRECTION: CHANGE THRESHOLD OF LOGIC LOOKING AT MD03 AND UPDATE ETCH. - - IN-PLANT EFFECTIVITY - 02 PHASE-IN FIELD EFFECTIVITY - M8310 WITH FULL OMNIBUS AND AS REQUIRED "F" CODED CS REVISION "F" AND ETCHED BOARD REVISION "F" ARE CREATED TIME TO INSTALL AND TEST - 1.0 HOUR THIS FCO IS NO CHARGE TO CUSTOMER ORDERED KITS WILL INCLUDE FCO, PRINTS, AND PARTS.

TABLE OF CIRCUIT SCHEMATIC AND ETCHED BOARD REVISIONS

-ANY CS REVISION LISTED IN AN ETCH REVISION COLUMN IS USABLE AS A CIRCUIT SCHEMATIC FOR SERVICING THAT REVISION BOARD, DEPENDENT UPON THE ECO STATUS OF THE BOARD.
-SHADING INDICATES ETCH REVISION BOARDS AFFECTED BY THE ECO

		ETCHED BOARD REVISION A	B	C	D	E	F	REVISIONS CREATED CS	ETCH
									A
E	00001		A					A	B
C	00002	B	B					B	-
O	00003		-					-	-
	00004	C	C	C				C	C
	00005	D	D	D	D			D	D
	00006	-	-	-	-	E		E	E
	00007	-	-	-	-	-	F	F	F

LEGEND

FIELD CODE
- F = Field action may be required
- D = Design ECO
- P = Print or Wire List change
- M = Mechanical ECO

SYMBOL
- > = ECO applicable to future production

ECO CHARGES

Charges are coded within the synopsis. (*$X,**$Y,***$Z)
- $X = Charge for Spsco and updated prints only
- $Y = Charge for necessary parts only
- $Z = Charge for on site labor only, installation by DEC

NOTE: Charges are additive ($X+$Y+$Z = Total on site charge for ECO installation by DEC)

MASTER DRAWING LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

WIRE LIST REVISIONS

REV	ECO NUMBER	REV	ECO NUMBER

ECO DEC-O-LOG

Engineering Change Order Log

ECO SYNOPSIS pages are updated and published continuously in conjunction with the issuance of ENGINEERING CHANGE ORDERS for all DEC products and are available upon subscription from:

DIGITAL EQUIPMENT CORPORATION
FIELD SERVICE INFORMATION CENTER
MAYNARD, MASSACHUSETTS 01754

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MAYNARD, MASSACHUSETTS

ADVANCE DEC-O-LOG

FCO – M8310-BØØØ7

LAST PREVIOUS FIELD EFFECT FCO – CØØØ6

P-M-D CODED ECO'S RELEASED:
ØØØØ5 ØØØØ2 ØØØØ1

THIS IS A PRELIMINARY RELEASE OF INFORMATION WHICH WILL BE INCLUDED IN A FIELD EFFECT ECO BEING PREPARED FOR PUBLICATION. THIS PAGE IS TO BE MERGED INTO THE LOG IN ALPHA-NUMERIC ORDER AND MAY BE DISPOSED OF WHEN THE FCO IS COVERED IN FINAL DEC-O-LOG FORMAT.

FCO M8310-B0007 NOVEMBER 71
- -
ORIGINATOR - LOUIS KLOTZ
FIELD SERVICE REVIEW BY W. J. MORONEY
PRODUCT LINE - PDP-8E
- -
PROBLEM: ON THE FULL LENGTH OMNIBUS "INHIBIT" COUPLES CROSSTALK INTO 17003 PINS AP2 & AP1 RESPECTIVLY. THIS CAN CAUSE THE DECODING OF "OPE.TS3" TO SPIKE AND AFFECTS THE MQ/AC SWAP INSTRUCTION, 7521.
CORRECTION: CHANGE THRESHOLD OF LOGIC LOOKING AT M003, UPDATE ETCH. NOTE THAT MODULE EXCHANGE IS REQUIRED IN THE FIELD, THERE IS TO BE NO FIELD REWORKING.
- -
IN-PLANT EFFECTIVITY - 02 PHASE-IN
FIELD EFFECTIVITY - ALL BE WITH FULL LENGTH OMNIBUS OR AS REQUIRED.
"F" CODED
CS REVISION "F" AND ETCHED BOARD REVISION "F" ARE CREATED
TIME TO INSTALL AND TEST - 1.0 HOURS
FIELD RETROFIT ANTICIPATED - 1%
THIS FCO IS NO CHARGE TO CUSTOMER
FSIC INITIATED DISTRIBUTION - FIO'S ONLY
ORDERED KITS WILL INCLUDE FCO'S,PRINTS AND PARTS
- -
PARTS REQUIRED
NOTE - AVAILABILITY DELAY EXPECTED - SIX MONTHS
01 M8310 MODULE CS REV "F", ETCHED BOARD REV "F"
- -
THERE ARE NO ADD/DELETES

C06	OCT 71	"F"	ADD H SERIES IC'S FOR "MQ⟶ BUS" DECODE
05	JUL 71	"D"	DELETE C28 FROM M8310-00004 TO PERMIT RELAY JT
B04	JUN 71	"F"	"PWR OK NOT" AND OTHER SIGNALS CLEAR CPMA DIS F-F
B03	APR 71	"F"	ORDERS FIELD REWORKING FOR M8310-00002
02	JAN 71	"D"	PRESET "MAC" F-F WITH "PWR OK"
01	JAN 71	"D"	BRING M8310 UP TO PRODUCTION STANDARDS

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Engineering Change Order Log
DEC-O-LOG

M8315

8A CPU

PROCESSOR TYPE **PDP-8A**

M8315-00001 CODE: DF CS: C ETCH: D
OCT-74 PROBLEM: The first pass 8A CPU requires the M8318 diode board for proper operation; this defeats the one board CPU concept.
CORRECTION: Relayout the M8315 to incorporate the necessary diodes.

NOTE: DEPOT EFFECTIVITY: If failed board is encountered, replace with CS "C" or later and scrap etch "C".
In-plant effectivity – January 15, 1975 for all customer ships. All failing double board CPU's, etch revision "C", that are returned to the depot for repair will be replaced with single board CPU's, etch "D".
Field effectivity – Only in the event of failure of an M8315, etch "C", scrap and replace it, and also the M8318, with an M8315, etch "D", at CS revision "C" or later.
(Time to Install and Test 1.0 hour.) (Kit Contents – PI 1371 5WW - FCO/prints and parts.)

M8315-D0002 CODE: DF CS: B1
OCT-74 – PROBLEM 1: MEM START occurs asynchronously to the system clock and may cause two bits to be loaded into the Timing Generator.
CORRECTION 1: Use first bit of second Timing Generator Shift Register to clear out the accidental bit.
PROBLEM 2: Set-up not met on 74123 in Timing Generator.
CORRECTION 2: Change inputs to 74123.
PROBLEM 3: Initialization of MEM TIMING is in error due to asynchronous POWER OK.
CORRECTION 3: Change initialize scheme on memory timing.

NOTE: Cut etch on side 1 and side 2 at E11 pin 1. Add a jumper from feed-thru adjacent to E11 pin 1 to E12 pin 6. Add a jumper from E11 pin 1 to E42 pin 8. Add a jumper from E42 pin 9 to E09 pin 15. Cut etch on side 2 at E12 pin 10. Add jumper from E12 pin 10 to E12 pin 8. Cut etch on side 1 at E07 pin 4. Add jumper from E07 pin 13 to E32 pin 8. Add a jumper from E32 pin 9 to E22 pin 2. Add a jumper from E32 pin 10 to E20 pin 13. Cut etch on side 2 at E07 pin 2. Add a jumper from E07 pin 2 to E36 pin 12. Cut etch on side 2 at E08 pin 4. Add a jumper from E13 pin 12 to E08 pin 4. Add a jumper from E07 pin 1 to E13 pin 13. Add a jumper from E13 pin 1 to E13 pin 2, and from E13 pin 2 to E12 pin 12.
In-plant effectivity – For etch revision C only; rework immediately upon receipt of this ECO.
Field effectivity – In the event of failure, rework etch revision "C" M8315's from CS revision "B" to "B1". After approximately February 1975, scrap failed "C" etch M8315's, replace with etch "D", CS "C" or later. All etch revision "C" M8315's should have been reworked to CS revision "B1" in-plant.
(Time to Install and Test 1.0 hour.) (Kit Contents – PI 1370 5WW - FCO/prints and parts.)

M8315-00003 CODE: D CS: D ETCH: E
NOV-74 – PROBLEM 1: M8315 etch revision "D" requires etch cuts and jumpers for proper operation.
CORRECTION 1: Relayout to new etch revision "E", CS revision "D", to delete jumpers.
PROBLEM 2: Some inconsistencies exist in the print set.
CORRECTION 2: Correct prints accordingly.
In-plant effectivity – Phase-in by April 29, 1975.

M8315-0003A CODE: D
DEC-74 – PROBLEM: The Assembly Hole drawing and Module History revision letters on some copies of ECO M8315-00003 are incorrect.
CORRECTION: The Assembly Hole drawing revision letters should read: Old revision "C", new revision "D". The Module History revision letters should read: Old revision "C", new revision "C".
In-plant effectivity – Documentation change only.

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Engineering Change Order Log
DEC-O-LOG

M8320

Bus Loads for PDP-8/E

PROCESSOR TYPE PDP-8/E

M8320-C0001 CODE: F CS: B ETCH: C
DEC-71 - PROBLEM: ZONKER MD DIR causes spike during F-TP2 ; this can cause the CPMB to go to the MD lines in error.
CORRECTION: Gate TP2 against FETCH to trigger the ZONKER .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8320's CS Revision "A " and earlier; mandatory when M8330 is installed.
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO And Parts)

M8320-00002 CODE: D CS: C ETCH: D
APR-72 - PROBLEM: Diodes in +3 volt strings warm up and may burn board.
CORRECTION: Relayout board to increase distance between diodes for better heat dissipation.
In-plant effectivity -02 phase-in

M8320-D0003 CODE: F CS: D
JUL-73 - PROBLEM: On machines with three or four omnibus and heavy loading of the Data Bus, the Data Bus cannot recover fast enough following TS3 of an I/O cycle to allow Break Priorities to be determined. Also, Operate group instructions are marginal. The problem may be observed where twelve or more devices use the Data Bus.
CORRECTION: Decrease the twelve Data Bus pull-up resistors from 1.5K to 1K.
In-plant effectivity -03 * -All machines with expander box shipped after August 1, 1973.
Field effectivity -Rework all M8320's in PDP-8/E, 8/F, and 8/M with 3 or 4 omnibus and heavy loading of the Data Bus.
(Time To Install And Test 1.5 Hours.) (Kit Contents -F901 FCO/Prints And Parts)

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ECO DEC-O-LOG Engineering Change Order Log

M8321

TM8-E Output Control

PROCESSOR TYPE PDP-8/E

M8321-00001 CODE: D CS: B ETCH: C
OCT-72 - CORRECTION: Relayout etch board to new revision "C " to eliminate wires on existing boards.

NOTE: See correction supplement ECO M8321-0001A.
In-plant effectivity -02, phase-in

M8321-0001A CODE: D
OCT-72 - CORRECTION 1: Correct signal names.
PROBLEM 2: ECO M8321-00001 indicated a field effect.
CORRECTION 2: Delete field involvement.
In-plant effectivity -Unchanged

M8321-00002 CODE: P CS: C
MAR-73 - PROBLEM 1: On print D-AH-M8321-0-5, diodes D1 thru D4 are drawn backwards.
CORRECTION 1: Reverse diodes on drawing.
PROBLEM 2: Note 3 of Circuit Schematic missing on Assembly Hole drawing.
CORRECTION 2: Show Note 3 on Assembly Hole drawing.
In-plant effectivity -06 documentation change only

M8321-00003 CODE: P CS: D
MAR-73 - CORRECTION: Correct print errors on M8321 Circuit Schematic.
In-plant effectivity -06 documentation change only

M8321-B0004 CODE: F CS: E
MAY-73 - PROBLEM: Wrong termination on signal line, CLEAR ALL .
CORRECTION: Change value of resistor R7 from 220 to 1K ohms.
In-plant effectivity -03 * -Rework all M8321's in-plant as of May 29, 1973.
Field effectivity -Rework all M8321's
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

M8321-B0005 CODE: F CS: F
JUN-73 - PROBLEM: Race condition exists between setting and resetting MPXA flip-flop.
CORRECTION: Remove set earlier. The rework instructions are as follows: Cut etch, side 1, between E23 pin 1 and E23 pin 2; Cut etch, side 1, between E23 pin 2 and E22 pin 4, near E23; Add jumper E22 pin 4 to E23 pin 1; Add jumper E23 pin 2 to E20 pin 11.
In-plant effectivity -03 * -Rework all M8321's as of June 27, 1973.
Field effectivity -Rework all M8321's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

M8321-00006 CODE: D CS: H
JUL-73 - PROBLEM 1: M8321 etch revision "C " documentation was inactivated erroneously.
CORRECTION 1: Activate drawings.
PROBLEM 2: M8321 etch board needs two jumpers added and two etch cuts.
CORRECTION 2: Add three jumpers and two etch cuts as defined by FCO's M8321-B0004 and M8321-B0005.
In-plant effectivity -03 * -Rework all etch revision "C " boards as specified in FCO's M8321-B0004 and M8321-B0006.

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EC DEC-O-LOG Engineering Change Order Log

M8322

TM8-E Control And Break

PROCESSOR TYPE PDP-8/E

M8322-00001 CODE: D CS: C ETCH: D
OCT-72 - CORRECTION: Relayout board to new etch revision "D " to eliminate wires on existing boards.

NOTE: See correction supplement ECO M8322-0001A.
In-plant effectivity -02 phase-in

M8322-0001A CODE: D
OCT-72 - CORRECTION 1: Correct signal names.
PROBLEM 2: ECO M8322-00001 indicated a field effect.
CORRECTION 2: Delete field involvement.
In-plant effectivity -06 documentation change

M8322-C0002 CODE: F CS: D
MAR-73 - CORRECTION 1: Correct errors on the M8322 Circuit Schematic.
CORRECTION 2: Eliminate **BAD TAPE** signals.
PROBLEM 3: **EOT** not functioning correctly.
CORRECTION 3: Change gating of **EOT** signals.

NOTE 1: See correction supplement FCO M8322-B0003.

NOTE 2: This FCO must be installed in conjunction with FCO's M8323-C0004 and M8327-C0002.

NOTE 3: The rework procedure for etch revision "B " or "C " is as follows: Cut etch at E7 pin 2, side 2; Cut etch at first feed-thru coming from E7 pin 1, side 2; Cut etch at first feed-thru coming from FJ1 on side 2. Remove jumpers FL1 to E21 pin 12, E21 pin 13 to first feed-thru coming from E19 pin 11, E21 pin 2 to feed-thru below C32, E10 pin 3 to E7 pin 3, and E10 pin 4 to feed-thru coming from E23 pin 12. Add wire jumpers E21 pin 1 to feed-thru coming from E30 pin 9, E21 pin 13 to feed-thru coming from E23 pin 12, E12 pin 12 to E10 pin 4, E36 pin 4 to E10 pin 3, E36 pin 5 to feed-thru coming from FJ1, and E36 pin 6 to E8 pin 6. For etch revision "C " only: Cut etch on both sides of C30 on side 1 of board. This is a feed-thru coming from AA2. Add wire from negative side of C30 to feed-thru coming from AF1.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8322's
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints)

M8322-B0003 CODE: F CS: E
APR-73 - PROBLEM 1: Mistake in FCO M8322-C0002 Retrofit Instructions.
CORRECTION 1: Correct as follows: Delete from FCO M8322-C0002: "Add wire E12 pin 12 to E10 pin 4. Add to FCO M8322-C0002: Add wire E21 pin 12 to E10 pin 4 " .
CORRECTION 2: Add wire which is missing on EOT gating. Retrofit Instructions: Cut etch E10 pin 2 side 2. Add wire E10 pin 2 to first feed-thru coming from E19 pin 2.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8322's when symptoms are present.
(Time To Install And Test 1.0 Hour.) (Kit Contents --FCO/Prints)

M8322-B0004 CODE: F CS: F
MAY-73 - PROBLEM: Wrong termination on **CLEAR ALL** signal line.
CORRECTION: Correct termination as described in the following rework instructions: Cut etch, side 2 between resistors R1 and R11; drill hole above finger DA2; replace R1 with a 1.5K ohm resistor; install jumper from DA2 to the top of R1; install two 664 diodes as shown on drawing included in the FCO.
In-plant effectivity -03 • -Retrofit all units in house and in field as of May 29, 1973.
Field effectivity -Rework all M8322's.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

M8322-00005 CODE: D CS: H ETCH: E
JUL-73 - PROBLEM: M8322 etch revision "D " documentation was inactivated erroneously.
CORRECTION: Reactiviate drawings. Relayout board to new etch revision "E ".
In-plant effectivity -02 phase-in

M8322-B0006 CODE: F CS: J
AUG-73 - PROBLEM: Write strobes in the gap on nine channel drives.
CORRECTION: Clear **CWDR** on trailing edge of **GO** . The rework includes two etch cuts and the addition of two jumpers, one of which goes from E20 pin 5 to the first feed-thru coming from JK2.

NOTE: The problem is apparent when running Control Test, Part II , Test 26.
In-plant effectivity -03 -Rework immediately
Field effectivity -Rework all M8322's
(Time To Install And Test .5 Hour.) (Kit Contents -F937 FCO/Prints)

M8322-B0007 CODE: F CS: K
NOV-73 - PROBLEM: **ILLEGAL FUNCTION** is reported if the following conditions are true: Switching drives, At BOT on one drive, and Doing space reverse on a second drive. The error is identified by EOF NOT EXPECTED or EOF NOT FOUND , using Random Exerciser.
CORRECTION: Allow drives to change at any TP4 if RWS is true; Gate **SP REV AND BOT** with signal active. The rework procedure is as follows: Cut copper, side 2, between feed-thru coming from E27 pin 2 and E8 pin 8. Add jumper from feed-thru coming from E27 pin 2 to feed-thru coming from E25 pin 2. This feed-thru is located to right of E27. Add jumper from feed-thru coming from E8 pin 5 to finger FL1.

NOTE: This ECO must be installed in conjunction with FCO M8323-B0007.
In-plant effectivity -All multiple drive TM8-E's must be retrofitted immediately. All single drive units must have this ECO by 11/15/73.
Field effectivity -Rework all M8322's in all multiple drive systems immediately; in all single drive systems, as soon as possible.
(Time To Install And Test 1.0 Hour.) (Kit Contents -NF1084 - FCO/Prints)

M8322-C0008 CODE: F CS: L
FEBRUARY-74 – PROBLEM: Overloaded signal **CB-3 CLR STATUS L** sometimes does not clear STATUS registers.
CORRECTION: Change value of resistor R2 from 220 to 470 ohms; R2 is located above E15 Pins 8 thru 14.
In-plant effectivity – rework M8322's in-plant immediately
Field effectivity – rework all M8322's when symptoms are present or at next PM
(Time To Install And Test 1.0 Hour) (Kit Contents – PF1203 – FCO/Prints and Parts)

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Engineering Change Order Log
DEC-O-LOG

M8323

TM8-E Transport Status Control

PROCESSOR TYPE PDP-8/E

M8323-00001 CODE: D CS: B ETCH: C
OCT-72 - CORRECTION: Relayout etch board to new revision "C " to eliminate wires on existing boards.

NOTE: See correction supplement ECO M8323-0001A and continuation supplement ECO M8323-0001B.
In-plant effectivity -02 phase-in

M8323-0001A CODE: D
OCT-72 - PROBLEM 1: ECO M8323-00001 indicated field effectivity.
CORRECTION 1: Delete field involvement; ECO M8323-00001 is in for in-plant implementation only.
CORRECTION 2: Correct signal names on drawing D-CS-M8323-0-1.
In-plant effectivity -06 documentation change

M8323-0001B CODE: D
NOV-72 - PROBLEM: CRC ERROR flip-flop being set intermittently by **CRCE** line.
CORRECTION: Change clock from **CRCSL** to **BRDS H** in order to move away from changing **CRCE** line.
In-plant effectivity -02 phase-in

M8323-B0002 CODE: DF CS: C ETCH: D
DEC-72 - PROBLEM 1: Assembly Hole drawing does not conform to note 3 of sheet 2 of drawing D-CS-M8323. Cable not grounded.
CORRECTION 1: Add grounds as per note 3 on sheet 2 and also add grounds on L, N , and NN on connector J1.
PROBLEM 2: Noise on cable.
CORRECTION 2: Change terminators R8 through R19 and R22 through R34 from 150 ohms to 120 ohms. Also change R40 through R64 from 270 ohms to 220 ohms. Delete R20 from Parts List.
PROBLEM 3: **CRC ERROR** being cleared by **RDS** at **LRC** time.
CORRECTION 3: AND **RDS** to **CRCS** .
PROBLEM 4: **SET PULSE** is issued during settle down in CONTINUOUS MODE .
CORRECTION 4: Only leading edge of **SDWN L** to issue **SET PULSE** if in CONTINUOUS MODE .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8323's
(Time To Install And Test 4.0 Hours.) (Kit Contents -FCO/Prints And Parts)

M8323-00003 CODE: P CS: D
MAR-73 - CORRECTION: Correct documentation for ECO M8323-00002 retrofit.
In-plant effectivity -06 documentation change only

M8323-C0004 CODE: F CS: E
MAR-73 - CORRECTION 1: Correct documentation errors on Circuit Schematic.
PROBLEM 2: **SET** pulse is too wide.
CORRECTION 2: Change resistor R38 from 18K to 10K ohms and capacitor C41 from 1000 pfd to 270 pfd.
PROBLEM 3: LRC **ERROR** not being set.
CORRECTION 3: Change LRC **ERROR** flip-flop strobe timing.
PROBLEM 4: **BAD TAPE** signal causes erroneous interrupts.
CORRECTION 4: Eliminate **BAD TAPE** signal.

NOTE: This FCO must be installed in conjunction with FCO's M8322-C0002 and M8327-C0002.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8323's
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints And Parts)

M8323-B0005 CODE: F CS: F
APR-73 - PROBLEM: IC E8 may oscillate.
CORRECTION: Change capacitor C40 from 1000 pfd, #10-00042, to 0.047 ufd, #10-09678, and resistor R37 from 100K, #13-00534, to 20K ohms, #13-02391.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8323's when symptoms are present
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints And Parts)

M8323-00006 CODE: D CS: H ETCH: E
JUL-73 - PROBLEM 1: M8323 etch revision "D " documentation was inactivated erroneously.
CORRECTION 1: Reactivate drawings.
PROBLEM 2: Etched board has excessive wire and one hole not drilled.
CORRECTION 2: Relayout to new etch revision "E ".
In-plant effectivity -02 phase-in

M8323-B0007 CODE: F CS: J
NOV-73 - PROBLEM: **ILLEGAL FUNCTION** is reported if the following conditions are true: Switching drives, At BOT on one drive, and Doing space reverse on a second drive. The error is identified by EOF NOT EXPECTED or EOF NOT FOUND , using Random Exerciser.
CORRECTION: Allow drives to change at any TP4 if RWS is true; Gate **SP REV AND BOT** with signal active. The rework procedure is as follows: For etch revision "B " only, remove jumper E28 pin 3 to feed-thru. For etch revision "B " and "E ", add jumper E28 pin 3 to finger FL1. For etch revision "E " only, cut etch side 1 below finger FL1 and on side 1 at E28 pin 3.

NOTE: See continuation supplement FCO M8323-B007A.
In-plant effectivity -All multiple drive TM8-E's must be retrofitted immediately. All single drive units must have this ECO by November 15, 1973.
Field effectivity -Rework all M8323's in all multiple drive systems immediately; in all single drive systems, as soon as possible.
(Time To Install And Test 1.0 Hour.) (Kit Contents -NF1084 - FCO/Prints)

M8323-B007A CODE: F
FEB-74 - CORRECTION: This is a correction to FCO M8323-B0007; the following etch cut was omitted: On etch revision "E " only, cut etch on side 1 at E28 pin 3.
In-plant effectivity -Additional rework specified for etch revision "E " boards
Field effectivity -Additional rework specified for etch revision "E " boards

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Engineering Change Order Log
DEC-O-LOG

M8323

TM8-E TRANSPORT
STATUS CONTROL

PROCESSOR TYPE PDP-8/E

M8323-C0008 CODE: F CS: K
FEBRUARY-74 – PROBLEM 1: Overloaded signal SC-1 CLR STATUS L sometimes does not clear STATUS registers.
CORRECTION 1: Change value of resistor R6 from 150 to 470 ohms.
PROBLEM 2: Race condition exists on resetting the FM flip-flop.
CORRECTION 2: The rework procedure is as follows: For etch revision "B", remove wire from E35 Pin 4 to feed-thru. Add wire from E35 Pin 4 to feed-thru from finger FC1. Change R6 to 470 ohms. For etch revision "E", cut etch, side 1, at feed-thru coming from E35 Pin 4. Add wire from feed-thru coming from E35 Pin 4 to feed-thru coming from finger FC1. Change R6 to 470 ohms.
In-plant effectivity – rework the in-house units immediately
Field effectivity – rework all M8323's when symptoms are present or at next PM.
(Time To Install And Test 1.0 Hour.) (Kit Contents – PF1204 – FCO/Prints and Parts)

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Engineering Change Order Log
DEC-O-LOG

M8326

Interprocessor Buffer Module

PROCESSOR TYPE PDP-8/E

M8326-00001 **CODE: D** **CS: C**
JUN-71 - PROBLEM 1: Wrong signal sent out on cable.
CORRECTION 1: Send IOT 4, TP3 out on cable.
PROBLEM 2: Poor noise margins on input buffer due to method of termination.
CORRECTION 2: Replace twelve diodes with twelve 6.8K resistors and connect to -15V. Replace 8881 IC's with 97401 IC's.
In-plant effectivity -03 rework immediately

M8326-00002 **CODE: D** **CS: D**
JUL-71 - PROBLEM 1: Wrong signal sent out on cable.
CORRECTION 1: Send out IOP4, TP3 on cable.
PROBLEM 2: Poor noise margins.
CORRECTION 2: Replace diodes D664 with 6.8K resistors and connect to the -15V. Replace 8881 IC's with 97401 IC's
In-plant effectivity -01 phase-in

M8326-00003 **CODE: D** **CS: E**
AUG-71 - PROBLEM: As an interprocessor buffer, the option presents objectionable programming restrictions in some applications.
CORRECTION: Relayout etch to add a DONE flip-flop set by the trailing edge of IOT 65X2 and cleared by IOT 65X7 and TP3.
In-plant effectivity -01 phase-in

M8326-C0004 **CODE: F**
FEB-72 - PROBLEM: As an interprocessor buffer, the option presents objectionable programming restrictions in some applications. ECO M8326-00003 corrected this problem but did not allow for etch rev C or D to be retrofitted.
CORRECTION: Retrofit to add a DONE flip-flop, set by the trailing edge of IOT 65X2 and cleared by IOT 65X7 and TP3. Add split lugs so the option may use the DONE flip-flop, or not.

NOTE: Only in-plant or depot retrofitted boards should be installed at customer site.
In-plant effectivity -Rework immediately all etch rev C & D in stock
Field effectivity -All M8326 CS rev C & D
This FCO creates CS revisions C1 and D1 . (Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents - FCO/Prints And Parts)

M8326-B0005 **CODE: F**
MAY-72 - PROBLEM: FCO M8326-C0004 failed to include the modification to IOT 65X2 so the DONE flip-flop could be set at TP3 and IOT 65X2.
CORRECTION: Add nand gate and split lugs to allow for operation with or without the DONE flip-flop.
In-plant effectivity -Rework immediately
Field effectivity -All M8326 modules, CS rev C1 and D1
This FCO creates CS revisions C2 and D2 . (Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents - FCO/Prints And Parts)

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DEC-O-LOG Engineering Change Order Log

M8327

TM8-E Registers

PROCESSOR TYPE PDP-8/E

M8327-00001 CODE: D CS: B ETCH: C
OCT-72 - CORRECTION: Relayout the etched board to new revision "C " to eliminate wires on existing boards.
In-plant effectivity -02 phase-in

M8327-C0002 CODE: F CS: C
MAR-73 - CORRECTION 1: Correct Circuit Schematic documentation error.
PROBLEM 2: **BAD TAPE** signal causes erroneous interrupts.
CORRECTION 2: Elimination of **BAD TAPE** signal.

NOTE 1: This FCO must be installed in conjunction with FCO's M8322-C0002 and M8323-C0004.

NOTE 2: This FCO corrects an intermittent error caused by the time relation between LRC CHARACTER and the generation of **BAD TAPE** . It will generally be noticed when running in CONTINUOUS MODE .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8327's
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log
DEC-O-LOG

M8328
Buffer Memory Clamp Loads, Switches and Indicator

PROCESSOR TYPE PDP-8/E

M8328-00001 **CODE: P** **CS: B**
JUL-71 - CORRECTION: Quantities of holes, resistors and eyelets corrected on parts list.
In-plant effectivity -06 documentation change only

M8328-A0002 **CODE: F** **CS: C**
NOV-71 - PROBLEM: The 1.5K resistors in the IF and DF switch circuits are only 1/4 watt; they overdissipate if a short occurs in the logic.
CORRECTION: Increase their rating to 1/2 watt.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8328
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO And Parts)

M8328-C0003 **CODE: DF** **CS: D**
JAN-72 - PROBLEM: ROM in BM8-L system causes upper memory fields to fail.
CORRECTION: Connect ROM ADDR L line to +15V pre-change circuit.
In-plant effectivity -02 phase-in
Field effectivity -Rework M8328 when ROM is added to BM8-L (as required)
(Time To Install And Test 2.0 Hours) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M8329

LC8-E Parallel Interface Module

PROCESSOR TYPE PDP-8/E

M8329-B0001 CODE: F CS: B
NOV-71 - PROBLEM 1: When running LA30 printer in single step, only one character can be printed as PDP-8/E stops with **TS1** true. This exceeds maximum allowed print strobe duration.
CORRECTION 1: Remove **TS1** from print strobe gate; add **TS2** .
CORRECTION 2: Corrects print errors.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all M8329's CS revision "A " and earlier
(Time To Install And Test 1.0 Hour) (Kit Contents -FCO Only)

M8329-00002 CODE: D CS: C ETCH: D
FEB-72 - PROBLEM: M8329 is required to control either LA30-P or Centronics 101 Lineprinter.
CORRECTION: Change print strobe logic to allow for slower loading time of the 101.

NOTE: See supplement ECO M8329-0002A which cancels this ECO.
In-plant effectivity -02 phase-in

M8329-0002A CODE: D
MAR-72 - PROBLEM: ECO M8329-00002 is totally wrong.
CORRECTION: Ignore ECO M8329-00002 totally.
In-plant effectivity -Cancelled

M8329-C0003 CODE: F CS: C
APR-72 - PROBLEM: When a **TRANSMIT IOT 6XX1** is issued, a spike on **TRANSMIT IOT 6XX0** causes the transmit flag to be erroneously set.
CORRECTION: Change the enabling signal, **I/O PAUSE** , on md bits 8, 10 and 11 to be IOT device codes, transmit or receive.
In-plant effectivity -03 rework immediately
Field effectivity -Retrofit all M8329's as required
(Time To Install And Test 1.0 Hour) (Kit Contents -FCO/Prints)

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ECO DEC-O-LOG Engineering Change Order Log

M8330

KK8-E Timing Generator

PROCESSOR TYPE PDP-8/E

M8330-C0001 CODE: F CS: B ETCH: C
DEC-71 - PROBLEM 1: Logic change required for KE8-E EAE's using M8340 etch board revision "F " or later.
CORRECTION 1: Add logic to allow KE8/E to restart CP without generating BUS STROBE .
CORRECTION 2: Corrects drawings.

NOTE: See supplement FCO's M8330-C001A and M8330-C001B.
In-plant effectivity -02 phase-in
Field effectivity -See supplement FCO M8330-C001A
(Time To Install And Test 1.0 Hour.)
(Kit Contents -FCO/Prints And Parts) Supplements M8330-C001A and M8330-C001B will also be included in the kit

M8330-C001A CODE: F
MAY-72 - PROBLEM: CS revision "A ", etch revision "B " and earlier are not compatible with new EAE. Disposition code on ECO M8330-C0001 is not complete.
CORRECTION: Update board to obtain compatibility.
In-plant effectivity -Retrofit only revision "B " boards in EAE systems for May 1972 shipment; all etch revision "B " boards June and later.
Field effectivity -Rework all M8330 etch revision "B " and earlier

M8330-C001B CODE: F
JUN-72 - PROBLEM: Break-in point not realistic on ECO M8330-C001A.
CORRECTION: Change break-in point.
In-plant effectivity -Retrofit only etch revision "B " boards in EAE systems for June 1972 shipment; all etch revision "B " boards July and after
Field effectivity -Unchanged

M8330-00002 CODE: P CS: C
OCT-72 - CORRECTION: Corrects errors on Circuit Schematic.
In-plant effectivity -06 documentation change only

M8330-00003 CODE: D CS: D
JAN-73 PROBLEM 1. EAE clock has marginal output.
CORRECTION 1: Drive EAE clock, JU1, with E07 pin 8.
PROBLEM 2: Signals need pull-ups.
CORRECTION 2: Add 1K pull-ups to E17 pins 4 and 6.

NOTE: See correction supplement M8330-0003A.
In-plant effectivity -03 retrofit all systems with EAE options for February 1973 shipments. ECO must be installed in all boards for March 1, 1973 shipments.

M8330-0003A CODE: D
FEB-73 - PROBLEM: ECO M8330-00003 retrofit instructions call out incorrect etch cut.
CORRECTION: Repair incorrect etch cut by adding a jumper from E12 pin 12 to feed-thru between E16 and E17. Cut etch, Side 2, at E17 pin 12 not E12.
In-plant effectivity -03 rework immediately; must be in issues by March 15, 1973.

M8330-00004 CODE: D CS: E ETCH: D
SEPTEMBER-73 – PROBLEM: The slow MOS memories, like the MR8-F PROM systems, require the machine timing to stop, STALL, while their access time is reached.
CORRECTION: Add the STALL signal to the M8330 to stop the timing chain at the end of TS1.

NOTE: This ECO changes all references to the M8347 back to M8330, CS revision "E", etch revision "D". There is a new print set that will replace the M8330 set. No retrofit can be done. The M8347 is now obsolete.
In-plant effectivity – as of April 1, 1974, all M8330's shipped must be CS revision "E".

M8330-00005 CODE: D CS: F ETCH: E
SEPTEMBER-73 – PROBLEM: The 8330 etch revision "D" board has etch too close to the edge of the board and there are three feed-thru holes too close to the top fingers.
CORRECTION: Relayout the etch to new revision "E"; there are no circuit changes.
In-plant effectivity – As of April 1, 1974, all M8330's to be shipped must be CS revision "F", etch revision "E".

M8330-00006 CODE: DF CS: H
FEBRUARY-74 – PROBLEM: The PROM Memory MR8-F requires an M8330 at etch revision "D" or later. Other processors can use either the old or new timing boards.
CORRECTION: Put a sticker on the handle of all etch revision "D" or later M8330's to ensure that any replacement is the correct revision for that processor.
In-plant effectivity – attach stickers immediately
Field effectivity – Attach stickers to all etch revision "D" M8330's. (Time to Install and Test .1 hour.) (Kit Contents – PF1194 – FCO/prints and parts)

M8330-C0007 CODE: DF CS: J
FEBRUARY-74 – PROBLEM: The time allotted to pull MODE CONTROL, pin 9, on two of the 74194's, during a STALL, is too short. If STALL comes too early or late, it will cause the timing chain to get out of sync.
CORRECTION: Instead of just pulling MODE CONTROL on those two 74194's, this FCO stops the clock that goes to all the 74194's.
In-plant effectivity – rework all etch revision "D" and "E" boards immediately
Field effectivity – rework etch revision "D" and "E" M8330's only when MR8-F option is installed.
(Time to Install and Test 1.0 hour.) (Kit Contents – PF1195 – FCO/prints and parts)

M8330-D0008 CODE: F CS: K
MARCH-74 – PROBLEM: The pulse syncs controlling the Mode Control on the 74194 Shift Registers may be slow switching. This may cause the Mode Control to change when the clock line is not high and may inhibit shifting with consequent loss of one or both bits in the timing chain.
CORRECTION: Change the 74H74's to 74S74's in locations E21, E30, and E40.
In-plant effectivity – rework where problem exists. Implement in all modules as soon as parts are available.
Field effectivity – rework M8330's in the field when symptoms are present. Rework in Depots when modules are returned from the field. Only M8330's at etch "E" and later, KM8-F, are affected.
(Time to Install and Test .5 hour.) (Kit Contents – PF1230 – FCO/prints and parts)

M8330-00009 CODE: D
JUNE-74 – CORRECTION: Create an M8330-YA to be used on the 8E-XOR.
In-plant effectivity – To be used only on 8E-XOR.

M8330-00010 CODE: D CS: L
JUNE-74 – PROBLEM: Manufacturing yield is low.
CORRECTION: Delete all discrete components that make up oscillator and insert one 20 MHz DIP OSC, DEC part number 18-11660-00.

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In-plant effectivity – All M8330's built after 10/15/74 will have this FCO installed at the Module Production level. No built boards will be reworked.

M8330-B0011 CODE: F CS: M
NOV-74 – PROBLEMS 1 AND 2: ECO's M8330-00006 and -00009 are too costly to justify installing them in all M8330 modules; those ECO's are only required when an MR8-F is used in the system.
CORRECTION 1: Remove ECO's M8330-00006 and -00009 from documents and raise the CS revision to "M".
CORRECTION 2: Create an M8330-YB variation from the CS "L", etch "E" documents; the M8330-YB is to be used only with the MR8-F PROM option.
In-plant effectivity – Documentation change only.
Field effectivity – Exchange M8330 with M8330-YB when MR8-F is added. Do not rework M8330's to FCO's D0006 and C0007 in the field after M8330-YB boards become available.
(Time to Install and Test .3 hour.) (Kit Contents – PF1395 WWW – FCO/prints and parts.)

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EC DEC-O-LOG Engineering Change Order Log

M8331

TA8 Cassette Interface

PROCESSOR TYPE PDP-8/E, PDP-8/F, PDP-8/M

M8331-00001 CODE: D CS: B
SEP-72 - PROBLEM: Terminating resistors on line drivers cause data errors due to excessive noise.
CORRECTION: Remove terminators from drivers.

NOTE: These terminators will reappear on the M7760, CS revision "C ", at the TU60.
In-plant effectivity -03 * -Retrofit all boards in house as of 9//11/72

M8331-00002 CODE: P CS: C
JAN-73 - PROBLEM: Module cannot be Production Released because the quantity of 180 ohm resistors is incorrect on the Parts List.
CORRECTION: Change quantity from 19 to 18.
In-plant effectivity -06 documentation change only

M8331-B0003 CODE: F CS: D
MAY-73 - PROBLEM 1: If a REWIND command is immediately followed by SKIP ON READY IOT , the skip will occur erroneously due to circuit delays in the TU60. The problem shows up with CAPS 8 Bootstrap Loader.
CORRECTION 1: Remove rewind status level from gating. The rework instructions are as follows: 1: Etch cut, E8 pin 5, side one, two places. 2: Etch cut on run from E18 pin 9, side 2, after feed-thru near E19. 3: Jumper E9 pin 4 to feed-thru, below E8, at etch run to E8, pin 5. 4: Jumper E8 pin 5 to feed-thru above E14, at etch run to E14, pin 8. 5: Jumper from feed-thru, above E18, at E18, pin 9 run , to feed-thru, above E9, at E8 pin 6 run.
CORRECTION 2: Correct miscellaneous print errors.
In-plant effectivity -03 * -Rework as of May 15, 1973.
Field effectivity -Rework all M8331's in all TA8-E's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

M8331-B0004 CODE: F CS: E
JUN-73 - PROBLEM: When the TA8 Cassette and VT8-E Display are run together with DEC X8 program, the program crashes. Crash is usually a 7402 instruction, location zero, field where Cassette program lives. Data being enabled by M8331 up to TP4 when priorities are tested by DMA devices on omnibus.
CORRECTION: Disable data onto DATA LINES of omnibus at end of I/O pause.
In-plant effectivity -03 * -Rework all boards as of June 20, 1973.
Field effectivity -Rework all M8331's in all TA8 systems.
(Time To Install And Test 1.5 Hours.) (Kit Contents -FCO/Prints)

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ECO DEC-O-LOG Engineering Change Order Log

M8336

VT8-E Frequency Divider

PROCESSOR TYPE PDP-8/E Family

M8336-00001 CODE: D CS: C
FEB-73 - PROBLEM 1: When connected for 50 Hz operation, the displayed data is offset upwards by one row in alpha and two lines in graphic mode.
CORRECTION 1: Add three etch cuts and three wires.
PROBLEM 2: E23 pin 6 left floating.
CORRECTION 2: Add wire to +3V.
PROBLEM 3: Printer IOT's 4 and 6 clear the AC.
CORRECTION 3: Add one etch cut between E35 pins 11 and 12; add one wire between E35 pin 12 and E31 pin 2.
In-plant effectivity -03 rework all boards as of March 1, 1973; do not ship any units without this ECO installed.

M8336-B0002 CODE: F CS: D
MAR-73 - PROBLEM 1: DEC IC 74193 unreliable when used as cascaded frequency divider.
CORRECTION 1: Incorporate IC DEC 74161 into new layout.
PROBLEM 2: Excessive wires and etch cuts required on present etch board.
CORRECTION 2: Relayout board to new etch revision "B ".

NOTE 1: See correction supplement M8336-B002A.

NOTE 2: This FCO ordered creation of a new revision "B " etch board; instead, the new etch will be "C " as noted in supplement FCO M8336-B002A.
In-plant effectivity -Use etch revision "B " board on VK8-E's after June 1, 1973. Revision "B " etch must be used on VT8-E after May 1, 1973.
Field effectivity -Exchange all waivered M8336's, etch revision "B ", or earlier.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO/Prints And Parts)

M8336-B002A CODE: F ETCH: C
MAR-73 - PROBLEM: FCO M8336-B0002 states that the new revision for the etch is "B ", but revision "B " layout is not acceptable because of previous release.
CORRECTION: Change 5010071 on FCO M8336-B0002 to new revision "C ".
In-plant effectivity -Unchanged except that etch revision reference becomes "C "
Field effectivity -Unchanged except that etch revision reference becomes "C ".

M8336-D0003 CODE: F CS: E
MAY-73 - PROBLEM 1: Spacing problems exist on etch board.
CORRECTION 1: Revise etch board to 1: Provide correct spacing for capacitor C59, 2: Move etch from under crystal Y1, 3: Remove ground from pin CU2, connect CT2 to ground run, and 4: Replace wire with etch if possible.
CORRECTION 2: Correct documentation errors on M8336 Circuit Schematic.

NOTE 1: Etch revision "D ", ordered by this FCO, is cancelled by supplement FCO M8336-D003A.

NOTE 2: See continuation supplement FCO M8336-D003A.
In-plant effectivity -Use up present stock and then break-in new board.
Field effectivity -Rework all etch revision "C " M8336's in VT8-E.
(Time To Install And Test 1.0 Hour.) (Documentation $ 5.00 , Parts None)
' the DEC on-site labor charge will be the time required to install and test the FCO at the then current hourly rate. (Kit Contents -F1062 - FCO/Prints)

M8336-D003A CODE: F
SEP-73 - PROBLEM 1: Because of problem 2, it is necessary to retrofit etch revision "C " modules. Documentation updates for this rework must be done before the relayout called for in FCO M8336-D0003 is done.
CORRECTION 1: Cancel the etch relayout ordered by FCO M8336-D0003.
PROBLEM 2: A race condition exists between the clock and load signals of E31. Symptoms of the problem are 1: Unstable graphic display or, 2: Last column of graphic display missing or, 3: Unwanted column displayed prior to normal graphic display.
CORRECTION 2: Alleviate the race condition by clocking E31 with the inverse of the present signal and switch E31 output pins 13 and 14. The rework procedure is as follows: Cut etch leaving E31 pins 2, 13, and 14. Add the following connections: E31 pin 13 to E30 pin 8, E31 pin 14 to E21 pin 1, E31 pin 2 to E15 pin 4, and E15 pin 3 to E25 pin 3.
In-plant effectivity -Rework all etch revision "C " modules in-plant after October 3, 1973.
Field effectivity -Initiated

M8336-00004 CODE: D CS: F ETCH: D
NOV-73 - PROBLEM: Spacing problems exist on etch board; wires and etch cuts should be eliminated.
CORRECTION: Relayout etch board to provide correct spacing for capacitor C59 to move etch from under crystal Y1, and to incorporate wires and etch cuts into relayout.
In-plant effectivity -Use up present stock and then break-in new board as of 11/20/73.

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Engineering Change Order Log
E C DEC-O-LOG

M8337

VT8-E Line Buffer

PROCESSOR TYPE PDP-8/E

M8337-C0001 CODE: DF CS: B
MAR-73 - PROBLEM 1: If a cursor appears at the sixty-third or sixty-fourth position of a line, a portion of the cursor may be seen to the left of the first position of the line.
CORRECTION 1: Retrofit board.
PROBLEM 2: Wrong eyelet called out on Parts List.
CORRECTION 2: Correct Parts List.
CORRECTION 3: Correct documentation errors.

NOTE: IC E27, a 7474, must be removed, disposed of, and a new IC installed in the implementation of this FCO.
In-plant effectivity -03 * retrofit all modules in-plant immediately.
Field effectivity -Rework all M8337's in VT8-E if symptoms are present.
(Time To Install And Test .5 Hour.) (Documentation $ 5.00 , Parts None) The DEC on-site labor charge will be the time required to install and test this FCO at the then current hourly rate. (Kit Contents - FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M8340

KE8-E, EAE INSTRUCTION DECODER

PROCESSOR TYPE PDP-8/E

M8340-00001 CODE: D CS: D
JULY-71 – PROBLEM 1: E04 Pins 10 and 11 interchanged.
CORRECTION 1: Delete etch from E04 Pin 11; reconnect etch to E04 Pin 10.
PROBLEM 2: E30 Pins 10 and 13 interchanged.
CORRECTION 2: Delete existing etch connections on E30 Pins 10 and 13 and reconnect etch to E30 Pins 10 and 13 exactly opposite from original.
PROBLEM 3: Data bus inputs, **DATA 08** thru **DATA 11** are 180 degrees misplaced.
CORRECTION 3: DELETE DR1 to E32 Pin 9, DS1 to E32 Pin 11, DU1 to E32 Pin 7, and DV1 to E32 Pin 5. ADD DR1 to E32 Pin 5, DS1 to E32 Pin 7, DU1 to E32 Pin 11, and DV1 to E32 Pin 9.
PROBLEM 4: IC's are not numbered.
CORRECTION 4: Add etched numbers to layout wherever possible.
PROBLEM 5: Handle holes improperly located.
CORRECTION 5: Relocate handle holes to correct positions

NOTE 1: See continuation supplement ECO's M8340-00002 and M8340-00003.

NOTE 2: ECO M8340-00003 cancels the relayout to new etch revision "E" which is ordered by this ECO.
In-plant effectivity – 03 rework immediately.

M8340-00002 CODE: D
JULY-71 – PROBLEM: Timing considerations involving the signal **MD DIRECTION** on single Omnibus systems, inhibit step counter bits 3 and 4 from being loaded with the SCL instruction, STEP COUNTER LOAD FROM MEMORY.
CORRECTION: DELETE etch connection E20 Pin 07; ADD HF2 to E20 Pin 07.

NOTE: This ECO is a supplement to ECO M8340-00001.
In-plant effectivity – 04 rework immediately

M8340-00003 CODE: P
NOVEMBER-71 – PROBLEM: ECO's M8340-00001 and M8340-00002 ordered relayout of etch #50-09603 to revision "E". Since the board is still at a Limited Release level we do not wish to do this.
CORRECTION: Cancel relayout of etch and revise Module History to show that etch is remaining at revision "D"; rework is to continue as ordered by previous ECO's.
In-plant effectivity – 06 documentation change only

M8340-00004 CODE: D CS: E ETCH: E
NOVEMBER-71 – PROBLEM: Module does not meet production specifications, IC DEC380, input buffer to instruction register, may cause an erroneous EAE instruction to be decoded on a four Omnibus system, due to high threshold value on DEC380 input, and slow charge time on the bus.
CORRECTION: Create new etch revision "E" and reconfigure EAE instruction register.
In-plant effectivity – 01 phase-in

M8340-C0005 CODE: F CS: F
MARCH-72 – PROBLEM: IC E4, a 7476 JK flip-flop, is not edge triggered and may cause an illegal mode swap.
CORRECTION: Replace IC E4 with a pin compatible, edge triggered JK flip-flop 74H106, DEC #19-10408.
In-plant effectivity – rework immediately
Field effectivity – rework M8340's in KE8-E's if symptoms are present
(Time To Install And Test 1.0 Hour) (Kit Contents – FCO/Prints and Parts)

M8340-00006 CODE: D
MAY-72 – PROBLEM: M8340 etch revision "D" and earlier are not compatible with the M8341 etch revision "D" now being shipped.
CORRECTION: Stop building and shipment of all M8340 revision "D" and earlier; ship only M8340 etch revision "E", CS revision "D".

NOTE: See continuation supplement M8340-0006A.
In-plant effectivity – implement immediately

M8340-0006A CODE: D
MAY-72 – PROBLEM: ECO M8340-00006 did not include some parts added to and deleted from the Parts List.
CORRECTION: Correct Parts List accordingly.
In-plant effectivity – unchanged

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EC DEC-O-LOG Engineering Change Order Log

M8341

EAE Register Control Module

PROCESSOR TYPE PDP-8/E

M8341-00001 CODE: D CS: B ETCH: C
JUN-71 - PROBLEM 1: M8341 etch revision "B ": E14 pin 1 has been mistakenly connected to its associated ground run. E14 pin 13 was connected to +5 volts in error.
CORRECTION 1: Disconnect ground from E14 pin 1; disconnect +5 volts from E14 pin 13.
PROBLEM 2: M8341 etch revision "B ": E17 pin 9 must be connected to connector HF2 to make use of the ACS instruction.
CORRECTION 2: Connect jumper wire from E17 pin 9 to connector HF2.
In-plant effectivity -04 rework

M8341-A0002 CODE: F CS: C
SEP-71 - PROBLEM: IC E18 pins 1 and 3 are interchanged, which prevents the AC from being cleared during a new NORMALIZE instruction when AC and MQ '@' 40000000.
CORRECTION: Delete connections to E18 pin 3 and E18 pin 1; reconnect exactly opposite from original.
In-plant effectivity -04 rework
Field effectivity -Rework all M8341's CS revision "B " and earlier.
(Time To Install And Test .5 Hour.) (Kit Contents -FCO Only)

M8341-00003 CODE: D CS: D ETCH: D
NOV-71 - PROBLEM 1: Noise and signal cross talk affect AC and MQ LOAD . The problem becomes excessive when AC and MQ LOAD travels across a BC08M-0M cable.
CORRECTION 1: Modify AC and MQ LOAD .
PROBLEM 2: The +3 volt run generated by E3 (DEC380) is not capable of supporting the loads attached to it.
CORRECTION 2: Delete etch connection on E3 (DEC380) pin 13; add E4 (DEC7404) to +3 volt run.
PROBLEM 3: No test points provided.
CORRECTION 3: Add test points on Circuit Schematic where possible.
In-plant effectivity -02 phase-in

M8341-00004 CODE: D
MAY-72 - PROBLEM: The etched board is marginal in production.
CORRECTION: Stop shipment and building of all M8341 etched board revision "C " and earlier. Ship only etched board revision "D ", Circuit Schematic revision "D ".

NOTE: See correction supplement ECO M8341-0004A.
In-plant effectivity -09 phase-in

M8341-0004A CODE: D
MAY-72 - CORRECTION: Corrects ECO M8341-00004 to include some parts added to and deleted from the Parts List.
In-plant effectivity -06 documentation change only

M8341-B0005 CODE: F CS: E
NOV-72 - PROBLEM 1: +3V run is floating.
CORRECTION 1: Add wire to connect +3V run to proper pins, E1 pin 1 to pad leading to E4 pin 4.
PROBLEM 2: Documentation Circuit Schematic is wrong.
CORRECTION 2: Relabel +3V runs on Circuit Schematic.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8341's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)

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Engineering Change Order Log — DEC-O-LOG

M8349

1K Prom

PROCESSOR TYPE PDP-8/E, PDP-8/M

M8349-00001 CODE: D CS: A1
NOV-73 - PROBLEM: There were seventy-two M8349 boards made with slow 1702A PROM chips. Instead of having a 1 usec access time, these IC's are running out to about 1.5 usec.
CORRECTION: To be able to use these seventy-two boards, the STALL and LATCH times must be increased. To do this a potentiometer must be added to each delay to adjust the delay output to: STALL 2.2 usec, LATCH 2.35 usec.
In-plant effectivity -All seventy-two boards have been reworked by Memory Checkout. These modules are identified by a dot of blue paint on the 1702A PROM chips and are the only boards to be reworked per this ECO. If any of these seventy-two boards, with two potentiometers, come back to a Field Service Depot to be repaired, they should be scrapped.

M8349-00002 CODE: D CS: B
NOV-73 - PROBLEM: The STALL and LATCH delays are hard to adjust in checkout to cover the output range from IC to IC and manufacturer to manufacturer of the 74123 delays. It is also taking too much time to put in the address decode diodes during checkout.
CORRECTION: As we now have 1 usec 1702AD PROM chips, we can shorten the access time delays. The STALL and LATCH delays are combined into one STALL , a potentiometer is added to adjust the delay; the delay is shortened to 2.2 usec, plus or minus 50 nsec; five address diodes are added for Field 7, Address.

NOTE: See correction supplement ECO M8349-0002A.
In-plant effectivity -Rework will be done until a new etch board is available on a future ECO.

M8349-0002A CODE: D
JAN-74 - PROBLEM: The STALL delay time is incorrect as defined by ECO M8349-00002.
CORRECTION: Change the STALL delay from 1.4 usec, plus or minus 50 nsec, to 2.2 usec, plus or minus 50 nsec.
In-plant effectivity -All boards will be adjusted in Memory Checkout.

M8349-D0003 CODE: DF CS: C ETCH: C
JAN-74 - PROBLEM: ECO M8349-00002 ordered rework to use up the etch revision "B " boards. There are some feed-thru holes very close to notches in the board.
CORRECTION: Relayout the board per ECO M8349-00002 with the circuit change to use all three leads of the potentiometer and fix any other etch problems.

NOTE: See continuation supplement FCO M8349-D003A.
In-plant effectivity -Do not etch any revision "B " after February 1, 1974. Break-in of new etch in production by May 1974.
Field effectivity -Rework any M8349's on which a 7384 IC failure occurs. Except for the failure of other 7384's, only E4 and E24 are to be replaced per this FCO.
(Time To Install And Test 1.0 Hour) (Kit Contents -PF1163 -FCO/Prints And Parts)

M8349-D003A CODE: DF
JAN-74 - PROBLEM: Some 7384's fail on the EMA and MA00-MA03 bus lines. Also, the 7384's are a single source device with poor deliveries. FCO M8349-D0003 was originated as a Code 02 ECO which did not order reworking of M8349's.
CORRECTION: Change 7384's to 5384's, #19-10394 or #19-09486. Change Disposition Code to 03 to allow reworking. Change also to indicate that Field Service is affected.
In-plant effectivity -As of 1/21/74, put only 5384's or 384's in boards that are being made by production and are not soldered. For boards that are soldered, change only E4 and E24.
Field effectivity -Rework M8349's

M8349-D0004 CODE: F CS: D
FEBRUARY-74 – PROBLEM: The POWER OK line is not being held down long enough to cover the longest cycle time of the processor so that RUN will be cleared. The problem occurs only when you try to restart with SW when RUN is on.
CORRECTION: Change the length of DLY 1 from 1.2 usec to 7 usec by changing the value of capacitor C65 from 150 to 1000 pfd.
In-plant effectivity – rework immediately
Field effectivity – rework M8349's when symptoms are present (Time to Install and Test .5 hour.) (Kit Contents – PF1209 – FCO/prints and parts)

M8349-D0005 CODE: DF CS: E
DEC-74 - PROBLEM: Insufficient information for setting-up module upon installation.
CORRECTION: Add diode/jumper truth tables.
In-plant effectivity -Documentation update
Field effectivity -Add drawing D-CS-M8349-0-1, revision "E " or later, to customer print set at next PM or service call.
(Time To Install And Test N/A) (Kit Contents -NF1403 5NW - FCO/Prints)

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E C DEC-O-LOG Engineering Change Order Log

M8350

KA8-E/DA14-E POSITIVE BUS INTERFACE

PROCESSOR TYPE PDP-8/E, PDP-14

M8350-00001 CODE: D CS: B
SEP-71 - PROBLEM 1: Critical timing in restart circuitry.
CORRECTION 1: Change C28 to 68 pfd.
CORRECTION 2: Add note to print indicating a jumper change to eliminate extended cycles skewing into next machine cycle.
PROBLEM 3: Width delay labeled wrong.
CORRECTION 3: Change to read "3 usec ".
In-plant effectivity -03 rework immediately

M8350-C0002 CODE: F CS: C ETCH: C
DEC-71 - PROBLEM: If separation between IOP's is extended beyond 800 nsec, it is possible that timing out will not have been completed at the following TP2 . This can cause the KA8-E to restart its timing and send the machine off into random locations in memory.
CORRECTION: Retrigger the SEP DELAY with the IOP2 flip-flop clearing instead of STB .

NOTE: This FCO should be implemented in all M8350's, CS revision "B " and earlier, if IOP separation in excess of 800 nsec is required.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8350's, CS revision B and earlier
(Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

M8350-D0003 CODE: DF CS: D
JUN-72 - PROBLEM: Incorrect delay time on RESTART DELAY .
CORRECTION: Change capacitor C27 to 82 pfd.

NOTE: This FCO is applicable to long bus systems where timing may be marginal on RESTART DELAY .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8350's
(Time To Install And Test 1.0 Hour) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

M8350-C0004 CODE: F CS: E
NOV-72 - PROBLEM 1: RESTART delay is too short, causing undefined interrupts.
CORRECTION 1: Change the value of capacitor C27 from 82 pfd to 120 pfd.
CORRECTION 2: Update Circuit Schematic.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8350's
(Time To Install And Test 1.0 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

M8350-B0005 CODE: F CS: F ETCH: D
MAY-74 - PROBLEM: Noise level on cables interferes with the signals AC CLEAR BUS NOT , INT RQST BUS NOT , and SKIP BUS NOT .
CORRECTION: Replace IC E26 with a 7414 and insert a Schmitt Trigger in series with the Skip Bus.
In-plant effectivity -All KA8-E's or DA14-E's shipped with IND , 14/30 or 14/35's must have this ECO installed. Phase-in change in Puerto Rico and Ireland.
Field effectivity -Rework M8350's, etch revisions "B " and "C " to CS revision "F " in IND 14/30 or 14/35's installed with a DA14-E interfaced to a PDP-8/E, 8/F, or 8/M.
(Time To Install And Test 2.0 Hours.) (Kit Contents -PF1261 - FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M8360

Positive Bus Data Break Interface

PROCESSOR TYPE PDP-8/E, PDP-8/F, PDP-8/M

M8360-00001 CODE: P CS: B
APR-71 - CORRECTION: Corrects documentation errors on sheets #2 and #3 of drawing E-CS-M8360-0-1, revision "A ".
In-plant effectivity -06 documentation change only

M8360-00002 CODE: P CS: C
MAY-71 - CORRECTION: Corrects documentation with respect to a missing connection, several missing pin assignments, and cover sheet errors.
In-plant effectivity -06 documentation change only

M8360-D0003 CODE: F CS: D
DEC-72 - PROBLEM 1: Pin numbers missing on Circuit Schematic.
CORRECTION 1: Add pin numbers for diode arrays.
PROBLEM 2: Etch error at E42 leaving DATA 08 without clamps to ground and +3 volts.
CORRECTION 2: Add jumper from E42 pin 12 to E42 pin 13.
In-plant effectivity -03 rework beginning December 1, 1972.
Field effectivity -Rework all M8360's in KD8/E.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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DEC-O-LOG Engineering Change Order Log

M8650

KL8-E, KL8/EA Asynchronous Data Control

PROCESSOR TYPE PDP-8/E and PDP-8/M

M8650-00001 CODE: D CS: B ETCH: C
MAY-71 - PROBLEM: In some installations, noise is picked up by the cable assembly and brought back into the transmitter section where it enables the transmitter driver transistor, causing the transmission of false signals. Resistor R12 is under-rated. Capacitor C63 causes unacceptable output distortion.
CORRECTION: Add a diode in the transmitter circuit to protect the transmitter driver transistor from outside noise. This change introduces the need for an additional resistor to prevent cable charge build-up. Addition of these components is shown on the revised Circuit Schematic and Assembly Hole drawing. Change resistor R12 to 1.5K 1/2 watt and capacitor C63 to 0.001.
In-plant effectivity -03 rework immediately

M8650-00002 CODE: D CS: C ETCH: D
DEC-71 - PROBLEM 1: Diagnostic checkout of certain options using this board requires 2400 baud, full duplex operation. Split lugs to do this are not provided.
CORRECTION 1: Add split lug G9, which connects to G1,G3,G5, or G7, and split lug G10, which connects to E13 pin 14 and E5 pin 11.
PROBLEM 2: E32, an MC1488L EIA converter, is operating at maximum ratings.
CORRECTION 2: Delete connection of +15 volt line to E32 pin 14. Add three D664 diodes between +15V and E32 pin 14. Delete connection of -15 volt line to E32 pin 1. Add three D664 diodes between -15V and E32 pin 1.
CORRECTION 3: Corrects errors in the Circuit Schematic for this module.
In-plant effectivity -02 phase-in

M8650-C0003 CODE: F CS: D
MAR-72 - PROBLEM: When a **TRANSMIT IOT 6XX1** is issued, a spike on **TRANSMIT IOT 6XX0** causes the transmit flag to be set erroneously.
CORRECTION: Replace the enabling line, **I/O PAUSE** , with ground on MD bits 9, 10, and 11.
In-plant effectivity -03 rework immediately.
Field effectivity -Retrofit all M8650's if symptoms are present.
(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

M8650-D0004 CODE: F CS: E
NOV-72 - PROBLEM: When a transmit IOT 6XX1 is issued, a spike on the transmit IOT 6XX0 causes the TRANSMIT FLAG to be set erroneously. This occurs on systems having ten or more KL8-E's.
CORRECTION: Change the enabling signal on MD bits 9, 10, and 11 from ground to **DEVICE SELECTION** .

NOTE: See continuation supplement FCO M8650-D004A.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8650'S; mandatory in systems with ten or more KL8-E's or KL8-EA thru -EG ' S
(Time To Install And Test 2.0 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

M8650-D004A CODE: F
DEC-72 - PROBLEM 1: FCO M8650-D0004 neglected to remove a jumper.
CORRECTION 1: Delete jumper between E46 pin 6 and DT1 feed-thru.
PROBLEM 2: Break-in/effectivity confusing.
CORRECTION 2: Delete the words "Retrofit all in-house and field immediately " .
In-plant effectivity -Unchanged
Field effectivity -Unchanged

M8650-C0005 CODE: F CS: B1
DEC-72 - PROBLEM: ECO M8650-00002 calls for a phase-in on etch revision "B " boards. Because of a later "retrofit all " ECO, the phase-in never was implemented. Part of ECO M8650-00002 cures a race condition resulting in checksum errors on long tapes read in from the Teletype or back-to-back loop failures.
CORRECTION: Retrofit etch revision "B " and "C " boards as defined by the FCO. There are at present some etch revision "B " and "C " boards with FCO M8650-C0003 installed, which are labelled CS revision "D ", when in fact they are not CS revision "D ".

NOTE 1: This FCO must be incorporated when filling CS revision "B1 " waivers on Galway shipments.

NOTE 2: Any M8650, etch revision "B ", or "C ", giving checksum errors when reading in long binary tapes must have this FCO, plus ECO's M8650-00001, and M8650-C0003 installed. The result will be a CS revision "B1 " board.

NOTE 3: Rework Instructions: Delete etch at E11 pin 9. Connect E11 pin 9 to E4 pin 6. Delete etch at E7 pin 10, both sides. Connect E7 pin 10 to E4 pin 8. Maintain connection E3 pin 5 to E12 pin 9; this run was broken when etch was cut, both sides, at E7 pin 10.
Quick Check: Three added wires near E4.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8650's when symptoms are present.
(Time To Install And Test 1.5 Hours.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

M8650

KL8/EA Asynch Data Control Module

PROCESSOR TYPE PDP-8/E and PDP-8/M

M8650-00001 CODE: D CS: B

MAY-71 - PROBLEM: In some installations, noise is picked up by the cable assembly and brought back into the transmitter section where it enables the transmitter driver transistor, causing the transmission of false signals. Resistor R12 is under-rated. Capacitor C63 causes unacceptable output distortion.

CORRECTION: Add a diode in the transmitter circuit to protect the transmitter driver transistor from outside noise. This change introduces the need for an additional resistor to prevent cable charge build-up. Addition of these components is shown on the revised Circuit Schematic and Assembly Hole drawing. Change R12 to 1,5K 1/2 watt and C63 to .001.

In-plant effectivity -03 rework immediately

M8650-00002 CODE: D CS: C

DEC-71 - PROBLEM 1: Diagnostic checkout of certain options using this board requires 2400 baud, full duplex operation. Split-lugs to do this are not provided.

CORRECTION 1: Add split-lug G9 (connects to G1,G3,G5, or G7) and split-lug G10 (connects to E13 pin 14 and E5 pin 11 .

PROBLEM 2: E32, an MC1488L EIA convertor, is operating at maximum ratings.

CORRECTION 2: Delete connection of +15 volt line to E32 pin 14. Add three D664 diodes between +15 and E32 pin 14. Delete connection of -15 volt line to E32 pin 1. Add three D664 diodes between -15 and E32 pin 1.

CORRECTION 3: Corrects errors in the Circuit Schematic for this module.

In-plant effectivity -02 phase-in

M8650-C0003 CODE: F CS: D

MAR-72 - PROBLEM: When a **TRANSMIT IOT 6XX1** is issued, a spike on **TRANSMIT IOT 6XX0** causes the transmit flag to be erroneously set.

CORRECTION: Replace the enabling line, **I/O PAUSE** , with ground on MD bits 9, 10, and 11.

In-plant effectivity -03 rework immediately.

Field effectivity -Retrofit all M8650's if problem occurs.

(Time To Install And Test .5 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints)

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EC DEC-O-LOG Engineering Change Order Log

M8650-YA

Asynchronous Data Control

PROCESSOR TYPE PDP-8/E and DECsystem-10

M8650YA-B0001 CODE: F CS: B
NOV-71 - PROBLEM: If the KL8-EE, -EF , or -EG is used to transmit/receive to or from another KL8-EE, -EF , or -EG or another device controlled by a crystal clock, the receiver loses synchronization with the incoming data stream, causing garbled characters.
CORRECTION: Gradual frequency drift of incoming data stream relative to receiver clock allows logic hazard to occur in receiver shift register if worst-case combination of IC's is present on the board. Ensure that E6/E10 shift register is allowed proper set-up time by reworking module as follows: Cut etch at E11 pin 9. Run jumper E11 pin 9 to E4 pin 6. Cut etch at E7 pin 10. Run jumper E7 pin 10 to E4 pin 8. Add jumper E3 pin 5 to E12 pin 9.
In-plant effectivity -Rework immediately
Field effectivity -Rework all M8650-YA's at customer request
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO Only)

M8650YA-00002 CODE: D CS: C ETCH: D
DEC-71 - PROBLEM 1: Diagnostic checkout of certain options using this board requires 2400 baud full duplex operation. Split lugs to do this are not provided.
CORRECTION 1: Add split lug G9 to connect to G1, G3, G5, and G7 and split lug G10 to connect to E13 pin 14 and E5 pin 11.
PROBLEM 2: E32, an MC 1488L EIA converter, is operating at maximum ratings.
CORRECTION 2: Delete connection of +15 volt line to E32 pin 14. Add three D664 diodes between +15 and E32 pin 14. Delete connection of -15 volt line to E32 pin 1. Add three D664 diodes between -15 and E32 pin 1.
CORRECTION 3: Corrects errors in the Circuit Schematic for this module.

NOTE: FCO M8650YA-B0001 was for retrofit only, but the changes will eventually require relayout of M8650 and M8650-YA.
In-plant effectivity -02 phase-in

M8650YA-00003 CODE: D CS: D
APR-72 - PROBLEM: When a transmit IOT 6XX1 is issued,a spike on the transmit IOT 6XX0 causes the transmit flag to be erroneously set.
CORRECTION: Change the enabling signal, I/O PAUSE , on MD bits 9, 10, and 11 to be ground.
In-plant effectivity -03 rework immediately

M8650YA-D0004 CODE: F CS: E
JUN-73 - PROBLEM: When many boards are used in a system, excessive load is placed on MD bits 9 through 11.
CORRECTION: Change the enabling signal on MD bits 9, 10, and 11 from **GROUND to DEVICE SELECTION** .
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8650-YA'S; mandatory in systems with ten or more KL8-EB through -EG .
(Time To Install And Test 2.0 Hours.) (Kit Contents -FCO/Prints And Parts)

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Engineering Change Order Log
DEC-O-LOG

M8652

Asynchronous Data Control Module

PROCESSOR TYPE PDP-8/E

M8652-00001 CODE: P CS: B
FEB-72 - CORRECTION: Change Assembly Hole drawing to reflect present Circuit Schematic.
In-plant effectivity -06 documentation change only

M8652-0001A CODE: P
APR-72 - PROBLEM: ECO M8652-00001 has wrong disposition code.
CORRECTION: Change to disposition code 03, rework immediately.
In-plant effectivity -Changed to: 03 rework immediately

M8652-00003 CODE: D CS: C
MAY-72 - PROBLEM: The UART chip specification has changed. It is now ttl compatible.
CORRECTION: Remove the pull-up and pull-down resistors and change connection from -5V to ground.
In-plant effectivity -03 rework immediately

M8652-B0004 CODE: DF CS: D
JUN-72 - PROBLEM: Spikes on IOT's causing **TRANSMIT FLAG** to be erroneously set.
CORRECTION: Change the enabling signal, **I/O PAUSE** , on MD bits 8, 9, 10, and 11 to be ground.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all M8652's
(Time To Install And Test 1.0 Hour.) (Kit Contents -FCO/Prints)
MAINDEC 08-DHKLC-B will also be included in the kit.

M8652-00005 CODE: P CS: E
MAR-73 - PROBLEM: There are errors in the Parts List shown on the Circuit Schematic drawing.
CORRECTION: Change Items #24, #26, #27, and #41 as follows: Item #24: Change description from 33K to 3.3K; Item #26: Change description from 3.3K to 33K; Item #27: Change description from 10% tolerance to 5% tolerance; Item #41: Change identification from E22,E26 to E28,E25.
In-plant effectivity -06 documentation change only

M8652-D0006 CODE: F CS: F
APR-73 - CORRECTION: **BREAK IOT** is gated with TP3 to eliminate unwanted interrupts.

NOTE: Retrofit Instructions: Cut etch, E29 pin 10, side 2. Add wire from E28 pin 13 to E24 pin 10
In-plant effectivity -03 * -All machines shipped in April 1973 must have this FCO.
Field effectivity -Rework all M8652's when symptoms are present.
(Time To Install And Test .3 Hour.) (Kit Contents -FCO/Prints)

M8652-D0007 CODE: F CS: H
MAY-73 - PROBLEM: Retrofit instructions are incorrect in FCO M8652-D0006.
CORRECTION: "Add wire from E28 pin 13 to E24 pin 10 " should read "Add wire from E28 pin 13 to E29 pin 10 " .
In-plant effectivity -06 documentation change
Field effectivity -Correct documentation for FCO M8652-D0006.
(Time To Install And Test N/A) (Kit Contents -FCO/Prints)

M8652-00008 CODE: D CS: J
JUL-73 - PROBLEM: Machine timing can hang in TS3. I/O decoder can glitch, causing **NOT LAST TRANSFER** to be enabled, but no **BUS STROBE** is generated to restart machine timing; a false run condition results.
CORRECTION: Gate NOT LAST TRANSFER flip-flop onto bus with IOT's which generate **BUS STROBE** , 6044 or 6046. The rework procedure is as follows: Cut etch between E31 pin 5 and E31 pin 6; Add wire from E31 pin 5 to feed-thru which is connected to E32 pin 1.
In-plant effectivity -03 * -Rework all M8652's shipped after July 23, 1973.

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E C DEC-O-LOG Engineering Change Order Log

W410

UDC/DD01 PADDLE BOARD, AC INPUT CONDITIONING

PROCESSOR TYPE PDP-8 & PDP-11 FAMILIES

W410-B0001 CODE: F CS: B
OCTOBER-74 – PROBLEM: High failure rate of #19-10845 Opto Isolator.
CORRECTION: Replace with new part, #19-11998.
In-plant effectivity – Effective September 14, 1974, rework all in-plant stock.
Field effectivity – In the event of failure, replace any W410 shipped prior to November 1, 1974 with a W410 at CS revision "B" or later. Exchanged modules are to be returned to Maynard for reworking.
(Time to Install and Test .5 hour.) (Kit Contents – PF1350 WWW – FCO/Prints and Parts.)

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Engineering Change Order Log
DEC-O-LOG

W684

VR14 INTENSITY CONTROL

PROCESSOR TYPE PDP-8 & 11 FAMILIES, PDP-12 & 15

W684-00001 **CODE: D** **CS: B** **ETCH: C**
NOVEMBER-72 – PROBLEM: The **INT 1** run is too close to the +80V lead.
CORRECTION: Relayout board; run **INT 1** to pin K, run –80V to Pin S.
In-plant effectivity – use new etch revision "C" boards when available.

W684-00002 **CODE: D** **CS: C** **ETCH: D**
DECEMBER-72 – PROBLEM 1: Pin "V" is too close to the +80V cathode signal.
CORRECTION 1: Move signal on Pin "V" to Pin "L".
PROBLEM 2: Cathode signal does not turn off fast enough.
CORRECTION 2: Change resistor R5, 1K, 1/4W, to two 270 ohm, 1/4W, 5% resistors, and add a D670 diode.
In-plant effectivity – phase-in new etch board as soon as possible.

W684-00003 **CODE: D** **CS: D** **ETCH: E**
JANUARY-73 – PROBLEM: Contrast in intensity levels varies greatly in VR14 scopes.
CORRECTION: Change resistor R19, 7K, 1/8W, 1% to a 20K ohm potentiometer in reworking CS revision "B" and "C" boards only. Relayout new etch revision "E" board at CS revision "D".
In-plant effectivity – rework CS revision "B" and "C" boards only; use new etch "E" boards when available.

W684-A0004 **CODE: F** **CS: E** **ETCH: F**
OCTOBER-73 – PROBLEM: CRT arcing damages G836 and W684 modules which causes phosphor burning in the CRT.
CORRECTION: Add ground clamping diode on grid pin and current limiting resistor on collector of Q3. This FCO will not correct destruction of the W684 without proper arc suppression in the CRT gun area. This FCO should be implemented in conjunction with FCO's G836-A0008 and 7009357-A0001 for complete arc suppression.

NOTE: This FCO is superseded by FCO W684-A0005 which cancels rework and orders module exchange.
In-plant effectivity – update all existing models.
Field effectivity – rework all W684's in all VR14L's, GT40's
(Time To Install And Test 1.5 Hours.) (Kit Contents – PF1081 – FCO/Prints and Parts)

W684-A0005 **CODE: F** **CS: F** **ETCH: H**
DECEMBER-73 – CORRECTION: Provides changes to cathode circuitry to eliminate arcing at cathode. This FCO supersedes FCO W684-A0004.

NOTE 1: This FCO must be installed with FCO's G836-A0008, 7009357-A0001, and 7009357-A0002.

NOTE 2: See continuation supplement FCO's W684-A005A and W684-A005B.

NOTE 3: Field personnel must contact Brian O'Donnell in Maynard, telephone extension 5946, before ordering parts kit for this FCO, so that allocation priorities may be established.
In-plant effectivity – rework all etch revision "B" and "E" boards when parts are available.
Field effectivity – exchange W684 in all VR14-L's with a history of arcing.
(Time To Install And Test .5 Hour.) (Kit Contents – PF1138 – FCO/Prints and Parts)

W684-A005A **CODE: F**
DECEMBER-73 – PROBLEM: Wires added in retrofitting boards cause potential 20 MHz oscillation.
CORRECTION: Add ferrite bead over cathode lead of D4 to prevent oscillating.
In-plant effectivity – unchanged
Field effectivity – unchanged

W684-A005B **CODE: F**
JANUARY-74 – PROBLEM: FCO's W684-A0004, W684-A0005, and W684-A005A did not give Maynard Field Service control of distribution of reworked modules.
CORRECTION: Brian O'Donnell of Maynard Field Service will have control of distribution of reworked W684 modules to be replaced in the field.
In-plant effectivity – unchanged
Field effectivity – unchanged

W684-00006 **CODE: D** **CS: H**
JANUARY-74 – PROBLEM: Ratio of contrast adjustability is not sufficient.
CORRECTION: Change value of contrast potentiometer R29 from 5K to 20K ohms on etch revision "E" and "H" boards only.
In-plant effectivity – rework all etch revision "E" and "H" boards in-plant. ECO must be installed in all units with "E" and "H" boards.

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EC DEC-O-LOG Engineering Change Order Log

W707

8 Bit Teletype Transmitter

PROCESSOR TYPE PDP-8 Family and DECsystem-10

W707-00001 CODE: D CS: D
JUL-68 - PROBLEM: SKIP PULSE propogation to output line too slow for PDP-10.
CORRECTION: Replace resistor R38 with a D668 diode and change transistor Q1 to a DEC 6B.
In-plant effectivity -Phase-in immediately

W707-00002 CODE: P CS: E ETCH: L
APR-70 - PROBLEM: The latest revision of the Circuit Schematic and etched board artwork is not in accord with current production. Reproduction thinks revision "C " is inactive although it is in fact in production. CS revision "D " and etch board revision "K " did not work and were abandoned. Production checkout (PDP-10) and Field Service and customer cannot readily get correct information for this module.
CORRECTION: Redraw the Circuit Schematic, new revision is "E ", to be identical to revision "C ". Redraw the etched board artwork, new revision is "L ", to be identical to revision "H ". X-Y Hole drawing needs to be redrawn also so that latest revision is also correct revision for production.

NOTE: This ECO is cancelled by supplement ECO W707-00003.
In-plant effectivity -Documentation change only

W707-00003 CODE: D CS: F ETCH: M
AUG-70 - PROBLEM: Board does not meet acceptable production standards. This ECO cancels previous ECO W707-00002.
CORRECTION: Layout new plated-thru hole version of the board. Create Parts List (no old one in existence) , new Assembly Hole drawing and Circuit Schematic for this new board. Update revisions to "F " on all new documents and etched board will be revision "M ".

NOTE: See correction supplement ECO W707-00005, which cancels both W707-00003 and W707-00004.
In-plant effectivity -Phase-in

W707-00004 CODE: D CS: H ETCH: N
SEP-70 - PROBLEM: Error in etch board layout; conductor shorting to an IC.
CORRECTION: Correct etch board layout to eliminate short.

NOTE 1: This error was discovered when models were being built for ECO W707-00003.

NOTE 2: This ECO is cancelled by ECO W707-00005.
In-plant effectivity -Phase-in

W707-00005 CODE: P CS: J ETCH: P
MAR-71 - PROBLEM: Submission of ECO's W707-00003 and W707-00004 has caused many problems.
CORRECTION: Cancel and/or obsolete ECO's W707-00003 and -00004. Incorporate ECO W707-00002 only, which states that the Circuit Schematic will be redrawn to be identical to revision "C ". The etched board art work will be identical to revision "H ", and the X-Y drawing will have the latest and correct revision for production. Documentation will not be available pertaining to ECO's W707-00003 and W707-00004.
In-plant effectivity -06 documentation change only

W707-B0006 CODE: F CS: K
NOV-72 - PROBLEM: Transistor DEC-6B has insufficient margins in the W707 when it is used in a DC10.
CORRECTION: Use a DEC 2894-3B transistor which has a higher maximum saturation voltage rating.
In-plant effectivity -03 rework immediately
Field effectivity -Rework all W707's in DC10-B.
(Time To Install And Test .3 Hour.) (This FCO Is No Charge To Customer) (Kit Contents -FCO/Prints And Parts)

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EC DEC-O-LOG Engineering Change Order Log

W740

UNIVERSAL DIGITAL INPUT, CONTACT SENSE

PROCESSOR TYPE PDP-8 FAMILY

W740-B0001 **CODE: F** **CS: A**

AUG-74 – PROBLEM: Opto Isolator has high failure rate. CORRECTION: Replace Opto Isolator #19-10845, E4, E5, E9, E12, E13, E17, E21, E22, E25, E26, E30, and E33 with #19-11998's. Note that the new part has a lower maximum speed. Twelve 270 ohm resistors, R1 thru R12, are replaced by 220 ohm resistors, #13-00271. Twelve 270 ohm resistors, #13-01972, are added to existing pads next to D1 thru D12.

In-plant effectivity – Rework all W740's effective August 31, 1974.

Field Effectivity – In the event of failure, exchange any W740 shipped prior to November 1, 1974 with a W740 at CS revision "A" or later. All exchanged W740's are to be returned to Maynard for reworking.

(Time to Install and Test – will vary.) (Kit Contents – PF1328 WWW – FCO/prints and parts.)

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EC DEC-O-LOG Engineering Change Order Log

W742

12 BIT SOLID STATE CONTACT INTERRUPT

PROCESSOR TYPE PDP-8 FAMILY

W742-B001 **CODE: F** **CS: A**

SEPTEMBER-74 – PROBLEM: Opto Isolator #19-10845 has high failure rate.

CORRECTION: Replace Opto Isolator with #19-11995; note that new part has lower maximum speed.

In-plant effectivity – Effective August 31, 1974 rework all in-plant stock.

Field effectivity – In the event of failure, exchange any W742 shipped prior to November 1, 1974 with a W742 at CS Revision "A" or later. All exchanged W742's are to be returned to Maynard for reworking.

(Time to Install and Test – Will vary.) (Kit Contents – PF1343 WWW – FCO/Prints and Parts.)

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