

***Cromemco***  
**SYSTEM**  
**TWO**

**Instruction**  
**Manual**



**Cromemco**  
i n c o r p o r a t e d  
**Tomorrow's Computers Today**  
280 BERNARDO AVE. MOUNTAIN VIEW, CA 94043  
(415) 964-7400 • TWX 910-379-6988

Congratulations,

You have just purchased the finest micro-computer system available today.

If you will take just a few minutes to read through this brochure you will be certain of getting off to a good start with your new Cromemco System Two Computer.

The System Two Computer is fully supported by the wide range of Cromemco's software which includes high level languages such as 32K STRUCTURED BASIC, MULTI-USER BASIC, RATFOR with FORTRAN IV, and COBOL, a Data Base Management System, a powerful Screen Editor and a text Formatter, as well as a Macro Assembler. Please be sure to fill out and mail your registration form as soon as possible so that we may keep you informed of new products and product enhancements as they are released.

If you require assistance in operating your System Two, or if you are interested in expanding your System Two, please contact your local Cromemco dealer.

Again, thank you for choosing Cromemco. We are sure you will be glad you did.

Sincerely,

CROMEMCO

CROMEMCO SYSTEM TWO  
Operating Instructions

**PLEASE READ THIS**

Before Applying Power to the  
System Two Computer

**1. The Line Cord**

During shipment the line cord for your computer is stored in a plastic bag attached to the top of the computer.

**2. Connecting the Terminal**

Connector number 1 on the rear panel (just below the legend I/O CONNECTIONS) is for the CRT terminal. The proper interface cable is shipped with your Cromemco terminal. The cable should run from the connector on the rear of the terminal (labeled MAIN on the Cromemco 3102) to the connector number 1 on the rear of the Cromemco System Two. See the 16FDC Floppy Disk Controller manual for instructions on interfacing other terminals with your System Two.

**3. Connecting the Printer**

Connector number 10 on the rear panel is for the line printer. The proper interface cable is shipped with your Cromemco printer. Please refer to the PRI manual for instructions on interfacing other manufacturer's printers with your System Two. Note that **the System Two is shipped for use with a dot matrix printer.** If you have a 3355A printer, the cable (inside the computer) going to the PRI board must be moved to the other connector on the PRI board. Refer to the PRI manual.

CROMEMCO SYSTEM TWO  
Operating Instructions

4. **Turning the Computer On**

After connecting the line cord to the rear of the computer and plugging it into a power source, turn the switch at the rear of the computer to the **ON** position.

5. **Loading RDOS-II**

If you are using a 16FDC Floppy Disk Controller board and a Cromemco 3102 terminal, RDOS-II (and optionally the disk operating system) will be loaded automatically when the system is turned on or when it is reset. If your system does not incorporate this combination of Cromemco products, it will be necessary to momentarily press the **RESET** switch. Then, depress the Carriage **RETURN** key on your CRT terminal (up to four times) until the RDOS prompt (;) appears.

6. **Loading the CDOS or Cromix Operating System**

To use your computer with Cromemco disk software, load the Cromemco diskette into drive A (disks should be positioned so that the elongated hole in the disk cover is horizontal and enters drive first while the label faces left). Close the drive door. Type **B** (for boot) followed by a carriage **RETURN** in response to the RDOS prompt. At this point refer to the documentation provided with your particular Cromemco disk software package.

7. **Caution**

Never remove or insert cards from the System Three card cage while power is applied to the system.

Never attempt to adjust the trim capacitor on the 16FDC Floppy Disk Controller Board. This adjustment must be performed by your Cromemco dealer.

CROMEMCO SYSTEM TWO  
Operating Instructions

**8. Documentation**

When you receive your new Cromemco System Two please check the documentation to make sure that you have received all of the proper manuals for your machine. Below is a listing of the manuals included with each System Two configuration.

Manuals for all System Two Computers:

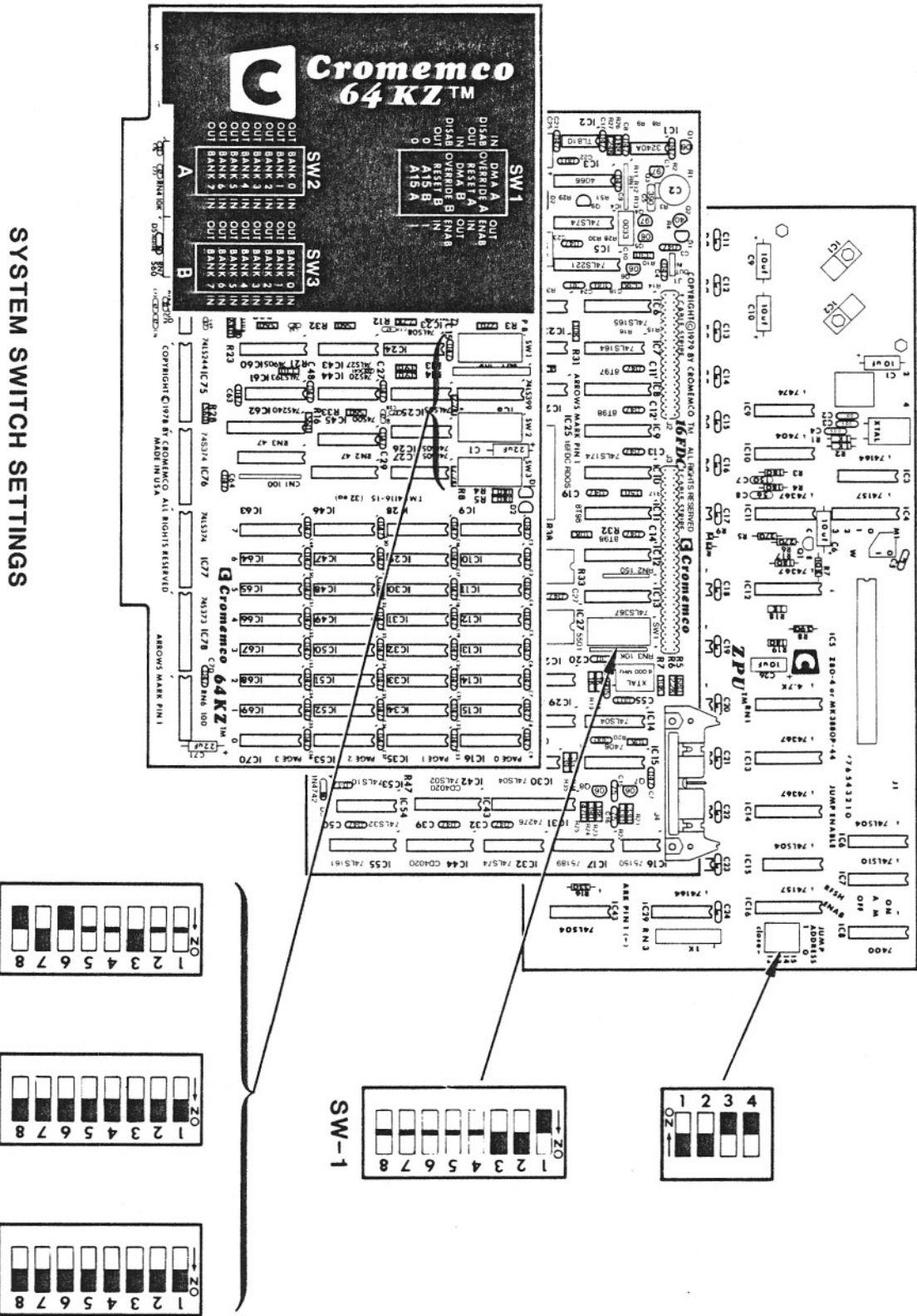
1. ZPU Manual (023-0012)
2. 16FDC Manual (023-2004)
3. 64KZ Memory Board Manual (023-0008)
4. PRI Board Manual (023-0055)
5. TM-100 Disk Drive Operating Manual (023-6017)

Manuals included when options are ordered:

1. Multi-User Basic
  - a. TU-ART Manual (023-0011)
  - b. Multi-User Basic software
  - c. Multi-User Basic manual (023-0061)
2. Cromix Operating System
  - a. TU-ART Manual (023-0011)
  - b. Cromix Operating System Manual (023-4022)

Special orders for additional cards will include the proper manual for each card.

CROMEMCO SYSTEM TWO  
Switch Settings



0087-2

SYSTEM SWITCH SETTINGS

CROMEMCO SYSTEM TWO  
Loading CDOS

**LOADING THE CROMEMCO DISK OPERATING SYSTEM**

**A Technical Description**

The CDOS program is transferred ("booted") from magnetic diskette to read/write memory (RAM) by RDOS-II, a program spanning addresses C000H - CFFFH and resident in ROM memory on the Cromemco 16FDC Floppy Disk Controller board.

**Cromemco strongly recommends that none of the switches on the boards be changed from their factory-set positions.**

The sequence of events for a CDOS boot are:

1. RDOS-II reads a loader program from the first diskette sector into read/write memory area 0080H - 0100H.
2. A jump to 0080H is then executed.
3. The loader program at 0080H - 0100H first enables memory BANK 0 only, then completes the transfer of CDOS from diskette to roughly the uppermost 12 - 15 Kbytes of read/write memory.

Switch settings on the 16FDC board allow the user options of completely disabling or enabling RDOS; of removing or retaining RDOS in the memory map after a CDOS boot; and of "coming up" in RDOS and booting CDOS only when the direct command B (boot) is issued, or automatically executing the RDOS boot routine.

Assuming the 16FDC and 64KZ switch settings shown in the preceding figure, CDOS automatically boots up after each system RESET or P.O.C. when a Cromemco 3102 terminal is used. The rationale behind the switch settings follows. First, BLOCK B, which is assigned to the upper 32K of memory, must disable after a RESET or P.O.C. to avoid conflict with the shadowed RDOS-II ROM program located at C000H - CFFFH. This is accomplished by setting 64KZ switch RESET B = OUT. 16FDC switch number 2 must be positioned ON so as to disable RDOS-II after boot (RDOS-II is disabled at the same time memory BANK 0 is enabled). 16FDC switch number 3 is positioned ON to automatically start the RDOS boot routine, and finally 64KZ switch BLOCK B, BANK 0 = IN so as to activate the upper 32 Kbytes of read/write memory as RDOS is disabled.

CROMEMCO SYSTEM TWO  
Power Supply Modifications

**POWER SUPPLY MODIFICATION**

The power supply in your system was wired to maintain the 8 volt output as close to 8 volts as is possible with an AC input line voltage of 115 volts (or 220 volts for 220 volt systems). If your AC line voltage differs from these values or if you change the configuration of your system, we suggest that you have your Cromemco Dealer measure the voltage present on the 8 volt line.

A minimum of 7.7 volts must be present on the 8 volt supply. This voltage is derived from the minimum input voltage specification for the +5 volt regulators on the circuit boards used in the system.

The total heat dissipation of the regulators is influenced by the ambient temperature at the installation site as well as the +8 volt line input voltage. In order to accommodate variations in ambient temperature it is desirable to minimize the heat generated by the system.

Therefore, we recommend the use of the primary tap on the main power supply transformer which maintains the 8 volt input as close to the 8 volt level as is possible.

Please refer to the power supply schematic included with the system for transformer tap selection. All voltage measurements must be performed with all boards inserted in the system. In no case may the 8 volt line be allowed to fall below the 7.7 volt level.



**CROMEMCO SYSTEM TWO  
Limited Warranty**

**LIMITED WARRANTY**

Cromemco, Inc. ("Cromemco") warrants this product against defects in material and workmanship to the original purchaser or the Original Equipment Manufacturer ("OEM") for ninety (90) days from the date of purchase, subject to the following terms and conditions.

**What Is Covered By This Warranty**

During the ninety (90) day warranty period Cromemco will, at its option, repair or replace this Cromemco product or repair or replace with new or used parts any parts or components, manufactured by Cromemco, which prove to be defective, provided the product is returned to an Authorized Cromemco Dealer as set forth below.

**How To Obtain Warranty Service**

In order to obtain warranty service, first obtain a return authorization number by contacting the Authorized Cromemco Dealer from whom you purchased the product. Then attach to the product:

1. Your name, address and telephone number,
2. the return authorization number,
3. a description of the problem, and
4. proof of the date of retail purchase.

Ship or otherwise return the product, transportation and insurance costs prepaid, to the Authorized Cromemco Dealer.

**What Is Not Covered By This Warranty**

Cromemco does not warrant any products, components or parts not manufactured by Cromemco.

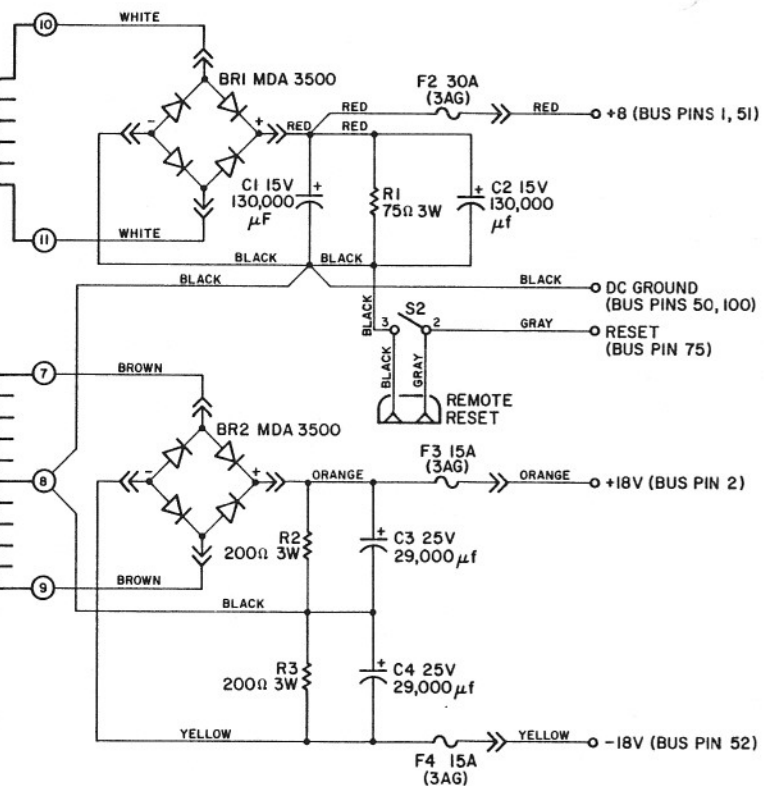
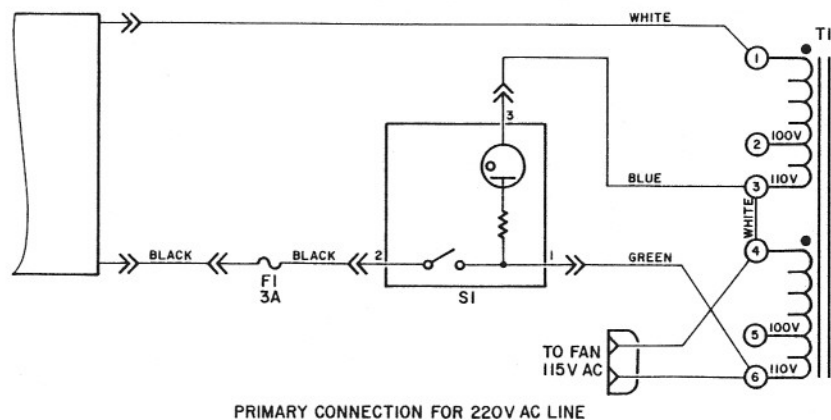
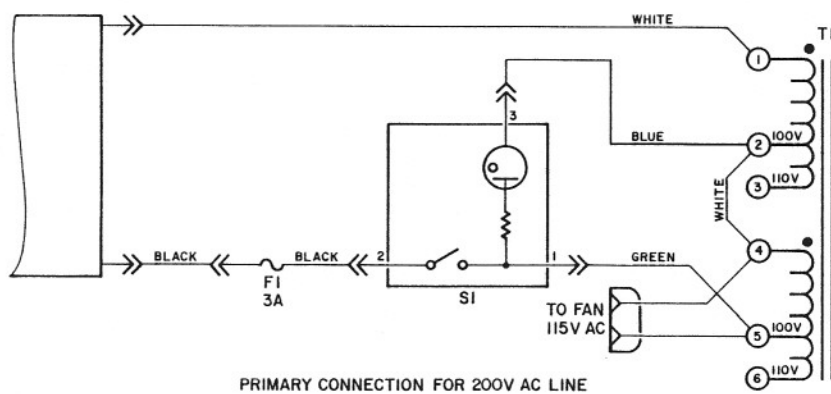
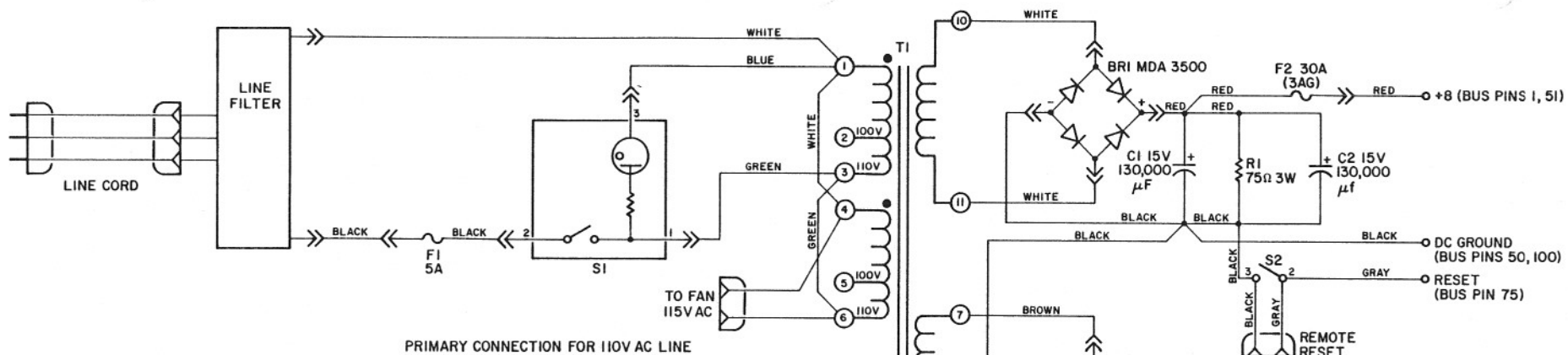
This warranty does not apply if the product has been damaged by accident, abuse, misuse, modification or misapplication; by damage during shipment; or by service by other than an Authorized Cromemco Dealer. Transportation and insurance charges incurred in transporting the product to the Authorized Cromemco Dealer are not covered by this Warranty. This warranty does not apply to customers of an OEM.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. ANY IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO NINETY (90) DAYS FROM THE DATE OF PURCHASE OF THIS PRODUCT. CROMEMCO SHALL NOT BE LIABLE FOR INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES FOR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY, EVEN IF CROMEMCO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. ALL SOFTWARE AND FIRMWARE IS LICENSED "AS IS" AND WITH ALL FAULTS.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

This warranty shall run concurrently with any acceptance period and is not transferable. No suit, litigation, or action shall be brought based on the alleged breach of this warranty more than one year after the expiration of this warranty.

This warranty shall not be applicable to the extent that any provision of this warranty is prohibited by any federal, state or municipal law which cannot be preempted. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



NOTE: AC LINE FUSE F1  
 TYPE 3AG 5A FOR 100 AND 110V AC  
 TYPE 3AG 3A FOR 200 AND 220V AC