

## 8" ALTAIR FLOPPY DISK CONTROLLER TIMING

CONTROLLER BOARD #1

TP	PULSE WIDTH	NAME	
1	1.0 $\mu$ S	READ CLOCK	WAS 0.9 $\mu$ S
2	2.8 $\mu$ S $\left(\frac{2.5}{3.0}\right)$	READ DATA WINDOW	
3	4 MS $\left(\frac{3.6}{4.4}\right)$	INDEX WINDOW	
4	300 $\mu$ S $\left(\frac{270}{330}\right)$	SECTOR PULSE	
5	NWD* 214 $\mu$ S $\left(\frac{192}{236}\right)$	READ CLEAR	ORIGINAL WIDTH WAS 140 $\mu$ S
6	4 MS $\left(\frac{3.6}{4.4}\right)$	INDEX VERIFY	
7	30 $\mu$ S $\left(\frac{27}{33}\right)$	SECTOR COUNT	
8	NWD* 389 $\mu$ S $\left(\frac{350}{428}\right)$	WRITE CLEAR	ORIGINAL WIDTH WAS 280 $\mu$ S

\* NWD = "NEW WRITE DELAY"

CONTROLLER BOARD #2

TP	PULSE WIDTH	NAME	
1	3 $\mu$ S $\left(\frac{2.7}{3.3}\right)$	DISK ENABLE	
2	3 $\mu$ S $\left(\frac{2.7}{3.3}\right)$	DISK DISABLE	
3	0.1 MS $\left(\frac{.9}{1.1}\right)$	NEXT STEP OK	WAS 0.8 MS
4	10.5 MS $\frac{9.5}{11.5}$	STEP INHIBIT #1	
5	32 MS $\left(\frac{29}{35}\right)$	STEP INHIBIT #2	WAS 22 MS
6	50 MS $\left(\frac{46}{54}\right)$	HEAD LOAD (SETTLE TIME)	* ORIGINAL WIDTH WAS 45 MS
7	200 $\mu$ S $\left(\frac{180}{220}\right)$	TRIM ERASE START DELAY	
8	475 $\mu$ S $\left(\frac{427}{522}\right)$	TRIM ERASE END DELAY	

\* CHANGED TO ELIMINATE "BUZZ"

## PULSE WIDTH FORMULAE FOR ONE-SHOTS

FOR 74123, ~~74123~~ 74L123

$$\text{PULSE WIDTH} = K RC \left(1 + \frac{V_T}{R}\right)$$

WHERE  $K = .28$  FOR 74123

$K = .33$  FOR 74L123

$K = .25$  FOR 74123 WITH DIODE

$K = .29$  FOR 74L123 WITH DIODE

FOR APPROXIMATION, USE  $\text{PULSE WIDTH} = .3RC$

FOR 74221, 74LS221

$$\text{PULSE WIDTH} = (\ln 2) RC \text{ OR } .7RC$$