



Type 6R1	<b>PRODUCT MODIFICATION INDEX</b>
----------	-----------------------------------


 8 PLUG-IN CIRCUIT BOARD CONNECTORS

circuit  
 section — **XXX.XX**  
 page

EFF. SN. S.M.*	DESCRIPTION	MOD. NO.	PAGE	LABOR TIME	KIT NO.
400	The main frame logic wiring is changed to permit starting the volt-meter ramp with the positive edge of the 0% ZONE, instead of the positive edge of the +gate to eliminate erratic readings at low rep rates on external programming.	6094	108.01	-----	-----
450	Horizontal jitter on the A or B 100% ZONE trace when either is within the start-to-stop intensified zone and the intensified zone is in the OFF position, is eliminated by adding .01 $\mu$ F capacitors from the center arm of the A & B 100% ZONE SET potentiometers and ground.	6748	108.02 108.03	----- 2.5h	INCLUDED IN 040-0342-00

Type 6R1	<b>PRODUCT    MODIFICATION    INDEX</b>
----------	---


 9    EXTERNAL READOUT & PROGRAMMING CONNECTORS

circuit —  
 section — **XXX.XX**  
 page —

EFF. SN. S.M.*	DESCRIPTION	MOD. NO.	PAGE	LABOR TIME	KIT NO.
590	Compatability between the Type 6R1 and the External Programming usage of the Type 262 is improved by adding two wires between the External Readout jack J33 and the External Programming jack J34, to make the "Print Command" and "Display Time" pulses available at J34. Part number of the 55 pin cable changes from 179-0621-00 to 179-0827-00.	7083	---- 108.03	----- 2.5h	----- Included in 040-0342-00

11-6-72

\* series model



Page 9

Type 6R1

## PRODUCT MODIFICATION INDEX



25

MODIFICATION KITS AND PARTS REPLACEMENT KITS

circuit  
section—XXX.XX  
page

EFF. SN. S.M.*	DESCRIPTION	MOD. NO.	PAGE	LABOR TIME	KIT NO.
126-694	MASTER GATE CARD AND 262 COMPATIBILITY	7083	108.03	2.5h	040-0342-00
126-994	PEAK-TO-PEAK MEMORIES AND IMPROVED COMPARATOR CARDS	5624	103.01	4.0h	040-0369-01
101-994	ADJUSTABLE ZERO PERCENT ZONE	-----	125.01	0.5h	040-0433-00
101-549	TUNNEL DIODE	5997	125.51	0.3h	050-0109-00
NA	SILICON DIODE	-----	125.52	0.3h	050-0232-00
101-994	MEMORY GATING DIODE REPLACEMENT	-----	125.53	0.3h	050-0435-00
101-994	SIGNAL COMPARATOR DIODE REPLACEMENT	-----	125.54	0.3h	050-0436-00

6-26-78

\* series model

## Indicates changes made since last publication.



Page 25

# MODIFICATION KIT

## MASTER GATE CARD AND 262 COMPATIBILITY

For Tektronix Type 6R1 Digital Units  
Serial numbers 126-694, with exceptions

### DESCRIPTION

This modification replaces the Series C Master Gate card (670-0009-00) with the new series M Master Gate card (670-0054-00), and enables the Type 6R1 to be used with the 262 Programmer Unit.

Replacing the card solves several voltage measurement problems:

- a) Some instruments give an erratic count when externally programming voltage.
- b) Voltage measurements cannot be programmed externally when the 3B2 is used in the six highest sweep speeds.
- c) If the instrument is later modified to use series P Memory cards (Kit 040-0369-00), voltage cannot be measured internally in the Peak-to-Peak position.

To use the 6R1 with the 262 Programmer, it is also necessary to :

- a) Add 'Print Command' and 'Display Hold' signals to the External Programming connector (J34).
- b) Change the supply voltage for the decimal neons and special purpose Nixie from +300 to +200 V. This is necessary in order to turn the Decimals and Nixie off with the 262 logic circuit.

If it is known that programmed operation will not be immediately required, only installation of Section A of the instructions is necessary to make the new Master Gate card operate properly.

If ONLY section A of the modification is performed, the instructions and remaining parts should be kept for reference and possible future installation. The Manual Insert pages included assume the entire modification has been performed.



040-0342-00

Publication:  
Instructions for 040-0342-00  
October 1966

Supersedes:  
November 1965

© 1964, Tektronix, Inc.  
All Rights Reserved.

040-0342-00

# PARTS LIST

Quantity	Description				Part Number
1 ea.	Diode, Zener, 1N982				152-0091-00
1 ea.	Lug, solder, SE6				210-0202-00
2 ea.	Capacitor, cer.	0.01 $\mu$ f	150 v	discap	283-0003-00
1 ea.	Capacitor, EMT,	22 $\mu$ f	35 v		290-0162-00
1 ea.	Resistor, comp,	2.7k	1/2w	5%	301-0272-00
1 ea.	Resistor, comp,	270k	1/2w	5%	301-0274-00
2 ea.	Resistor, comp,	30k	1/2w	5%	301-0303-00
5 ea.	Resistor, comp,	390k	1/2w	5%	301-0394-00
6 ea.	Resistor, comp,	56k	1/2w	5%	301-0563-00
1 ea.	Resistor, comp,	30k	1 w	5%	303-0303-00
1 ea.	Resistor, comp,	3.3 $\Omega$	1 w	5%	307-0015-00
3 ea.	Resistor, comp,	1 meg	1/4 w	5%	315-0105-00
1 ea.	Card, Master Gate, Series M				670-0054-00
3 ea.	Tag, MODIFIED INSTRUMENT, gummed back				1-9101
5 in.	Wire, no.18 solid,	white-red			(175-0504-00)
6 in.	Wire, no.22 solid,	white-brown-red-brown			(175-0522-00)
2 in.	Wire, no.22 solid,	white-black-red			(175-0522-00)
7 in.	Wire, no.26 solid,	white-gray			(175-0573-00)
6 in.	Wire, no.26 solid,	white-orange			(175-0573-00)
14 in.	Wire, no.26 solid,	white-orange			(175-0573-00)
3 in.	Wire, no.26 solid,	white-green			(175-0573-00)
16 in.	Wire, no.26 solid,	white-green			(175-0573-00)
3 in.	Wire, no.26 solid,	black-brown-red			(175-0574-00)
4 in.	Wire, no.22 solid,	bare			(176-0005-00)
24 in.	Wire, solder, silver-bearing,				

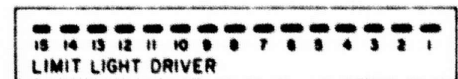
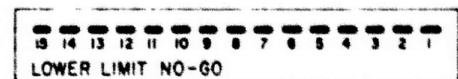
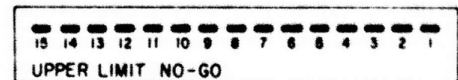
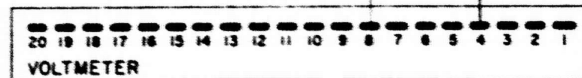
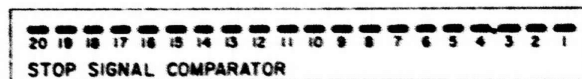
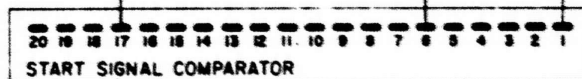
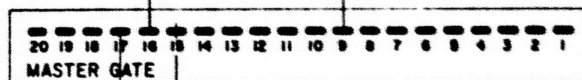
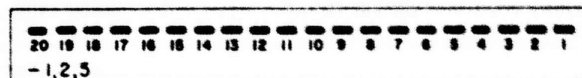
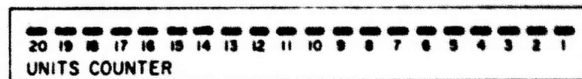
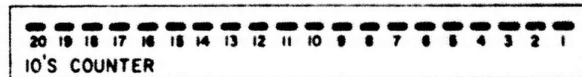
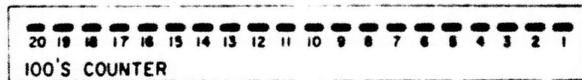
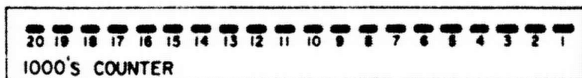
## INSTRUCTIONS

IMPORTANT: When soldering to the ceramic strips, use the silver-bearing solder supplied with this kit.

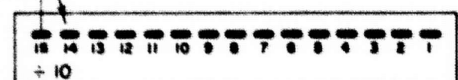
### A. TO MODIFY THE LOGIC CIRCUITS:

REFER TO FIG.1 WHILE PERFORMING STEPS A-1 THROUGH A-9.

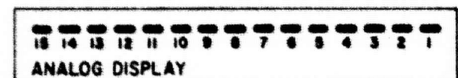
- |   |  |
|---|--|
| <p>( ) 1. Unsolder the bare wire from the Master Gate connector, pin 1 (leave the remaining wires in place).</p> <p>( ) Cut the wire off near the Start Signal Comparator connector, pin 1.</p> <p>( ) 2. Unsolder and remove the wire between pin 1 and pin 20 of the Master Gate connector.</p> <p>( ) 3. Unsolder the two coax leads from the Divide by 10 connector, pin 15.</p> <p>( ) 4. With the MODE switch in the TIME position, determine with an ohmmeter which coax is connected to the 0% Zone connector, pin 14.</p> <p>( ) Solder this lead to the Divide by 10 connector, pin 14.</p> <p>( ) Resolder the remaining lead to pin 15.</p> | <p>( ) 5. Solder the 6 in. white-orange wire (from kit) between the Divide by 10 connector, pin 15, and the Master Gate connector, pin 16.</p> <p>( ) 6. Solder the black-brown-red wire (from kit) between the Master Gate connector, pin 15, and the Start Signal Comparator connector, pin 6.</p> <p>( ) 7. Solder the white-gray wire (from kit) between the Start Signal Comparator connector, pin 17, and the Voltmeter connector, pin 4.</p> <p>( ) Solder the 2.7 k resistor (from kit) between the Master Gate connector, pin 17, and the Start Signal Comparator connector, pin 17.</p> <p>( ) 8. Solder the 3 in. white-green wire (from kit) between the Master Gate connector, pin 9 and the Start Signal Comparator connector, pin 1.</p> <p>( ) 9. FOR INSTRUMENTS ABOVE SERIAL NUMBER 399 ONLY: Unsolder the white-black-orange wire from the A Memory connector, pin 1.</p> |
|---|--|



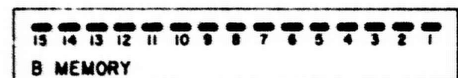
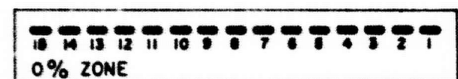
COAX TO  
MODE SW.  
SW 320-4R



W-0



W-0H



W-BK-0

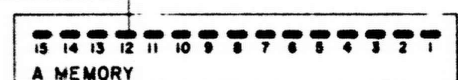


Fig. 1

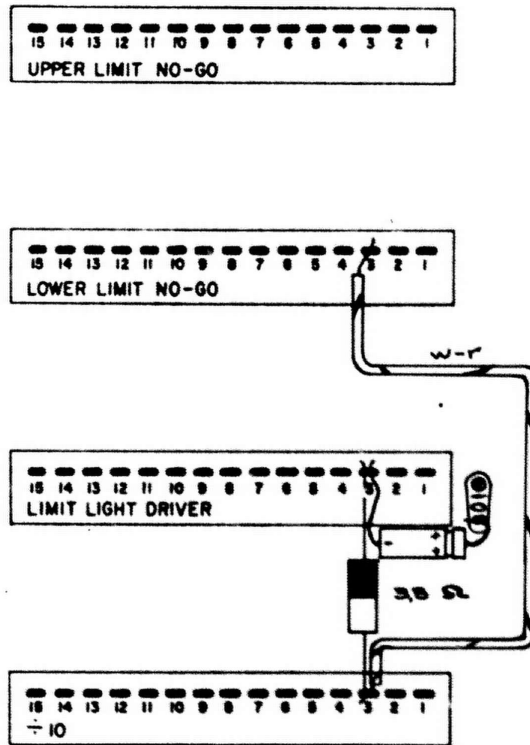


Fig. 2

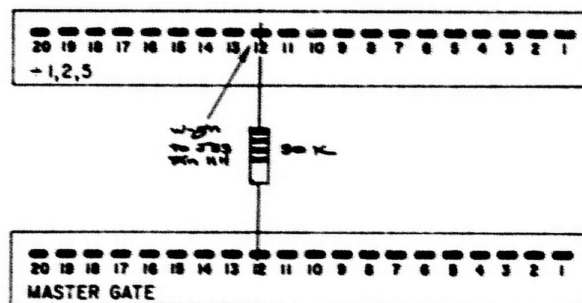


Fig. 3

## INSTRUCTIONS (Section A Con'd)

### Step 9 (con'd)

- ( ) Pull the wire from the cable, trim off the excess, and resolder it to the pin 12 of the A Memory connector.
- ( ) 10. Replace the series C Master Gate card with the series M Master Gate card from the kit.
- ( ) 11. Remove the "C" designation from the 6R1 chassis with lacquer thinner or similar mineral solvent.
- ( ) In its place, print the letter "M", preferably with India Ink.

### B. TO ADD -12.2V DECOUPLING:

- ( ) 1. Cut the bare wire on the lower side of pin 3 of the Lower Limit No-Go connector.
- ( ) Cut the bare wire on the upper side of pin 3 of the Divide by 10 connector.
- ( ) Unsolder and remove the section of bare wire cut above, from pin 3 to the Limit Light Driver connector.
- ( ) 2. Remove the Limit Light Driver connector mounting screw nearest pin 1.
- ( ) Place a no.6 solder lug (from kit) under the screw and retighten it.
- 3. Connect the following wires and components (from kit) as indicated in Fig. 2:
  - ( ) white-red no.18 wire between Lower Limit No-Go connector, pin 3, and Divide by 10 connector, pin 3.
  - ( ) 22 $\mu$ f capacitor between Limit Light Driver connector, pin 3 (negative lead), and solder lug (positive lead).
  - ( ) 3.3 $\Omega$  resistor between Limit Light Driver connector, pin 3, and Divide by 10 connector, pin 3.

### C. TO MODIFY DISPLAY TIME CIRCUIT:

- ( ) 1. Unsolder from the Master Gate connector pin 12, the white-green wire which goes to the External Readout connector, pin HH (this wire enters the cable going toward the rear of the instrument).
- ( ) Solder this wire to the Divide by 1, 2, 5 connector, pin 12 (see Fig. 3).
- ( ) 2. Solder a 30k, 1/2w resistor (from kit) between the Divide by 1, 2, 5 connector, pin 12, and Master Gate connector, pin 12 (see Fig. 3).
- 3. Unsolder and remove the following components and wires (see Fig. 4 for ceramic strip locations):
  - ( ) 18k (R571) between CSA-3 and CSB-3.
  - ( ) 3.9k (R570) between CSA-4 and CSB-4.
  - ( ) bare wire between CSA-3 and ground lug.
  - ( ) bare wire between CSB-3 and CSB-4.
- ( ) 4. Solder a 30k, 1/2w resistor (from kit) between CSA-4 and CSB-4.

### D. TO REWIRE EXTERNAL PROGRAMMING CONNECTOR:

- ( ) 1. Remove the Voltmeter and Stop Signal Comparator cards to gain access to the External Programming connector (J34).
- ( ) 2. Solder the 14in. white-orange wire (from kit) between the Master Gate connector, pin 13, and J34, pin n.
- ( ) 3. Solder the 16in. white-green wire (from kit) between the Divide by 1,2,5 connector, pin 12, and J34, pin r.
- ( ) 4. Replace the cards removed in step D-1.



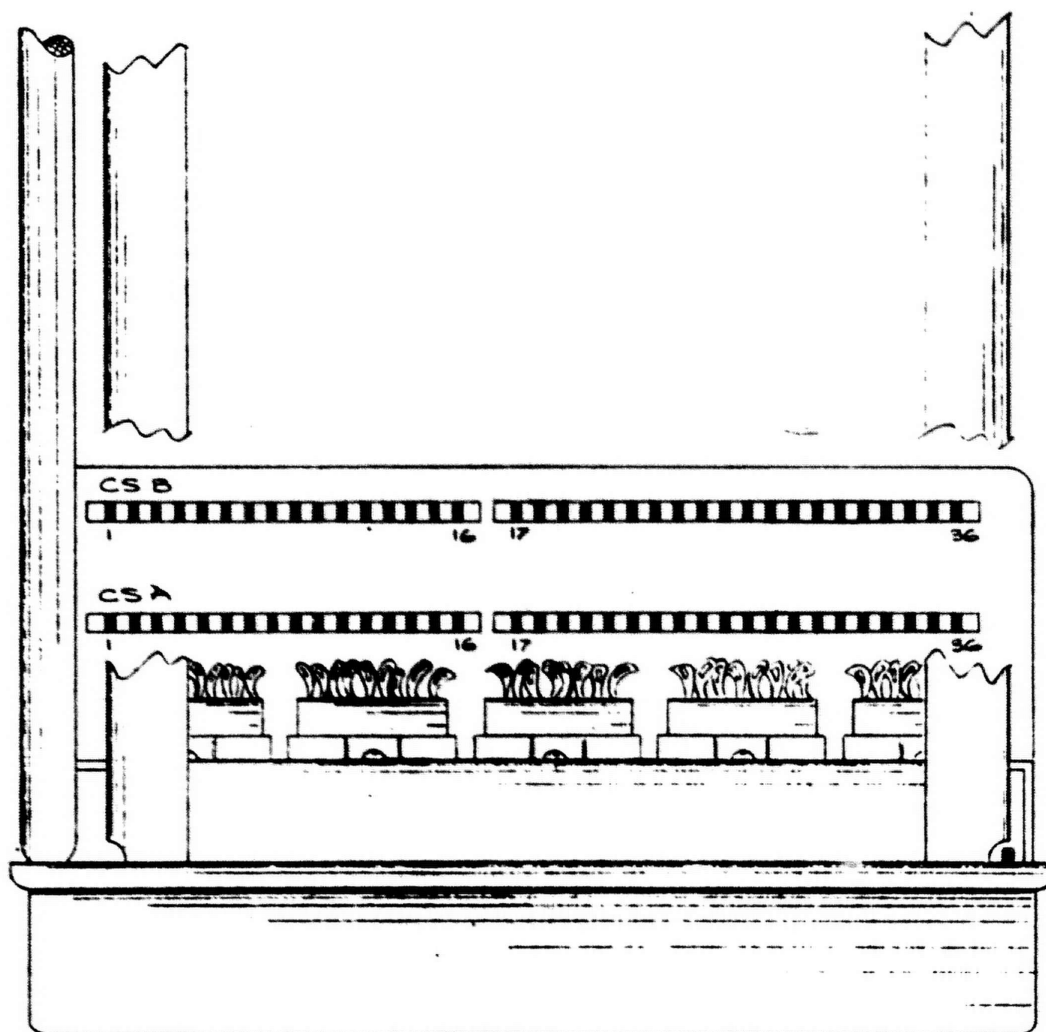


Fig. 4

## INSTRUCTIONS (Con'd)

### E. TO MODIFY THE NIXIE CIRCUITS:

NOTE: See Fig.4 for ceramic strip locations.

1. Unsolder and remove the following components:
    - ( ) 1 meg resistor between CSA-36 and CSB-36.
    - ( ) 1 meg resistor between CSA-35 and CSB-35.
    - ( ) 1 meg resistor between CSA-34 and CSB-34.
    - ( ) 1 meg resistor between CSA-33 and CSB-33.
    - ( ) 1 meg resistor between CSA-32 and CSB-32.
    - ( ) 470k resistor between CSA-31 and CSB-31.
    - ( ) 150k resistor between CSA-26 and CSB-26.
    - ( ) 150k resistor between CSA-25 and CSB-25.
    - ( ) 150k resistor between CSA-24 and CSB-24.
    - ( ) 150k resistor between CSA-23 and CSB-23.
    - ( ) 150k resistor between CSA-22 and CSB-22.
    - ( ) 150k resistor between CSA-21 and CSB-21.
  2. Unsolder the ends of the 20k resistors from CSA-27 and -28.
  3. FOR INSTRUMENTS ABOVE S/N 449 ONLY: Unsolder and remove the following components and wires:
    - ( ) 0.01  $\mu$ f capacitor between CSA-29 and CSB-29.
    - ( ) 0.01  $\mu$ f capacitor between CSA-30 and CSB-30.
- Step 3 (con'd)
- ( ) bare wire between CSA-27 and CSA-30.
  - ( ) bare wire between CSA-28 and CSA-29.
  - ( ) bare wire between CSB-29 and CSB-30.
  - ( ) bare wire between CSB-29 and ground lug.
  4. Solder a 0.01  $\mu$ f capacitor (from kit) from CSA-27 to the nearby chassis ground lug.
  - ( ) Solder the other 0.01  $\mu$ f capacitor (from kit) from CSA-28 to the same chassis ground lug.
  5. Resolder the 20k resistors to CSA-27 and CSA-28.
  6. Unsolder the two white-orange-black-brown wires from CSA-20.
  7. With an ohmmeter determine which of the above wires goes to V370, the right hand (Special Purpose) nixie socket, pin 2.
  - ( ) Unsolder the wire from V370, pin 2, and clip both ends as short as possible.
  - ( ) Resolder the remaining wires to CSA-20.
  8. Move the two white-orange-black-brown wires from CSA-31 to CSA-30.
  9. Solder a piece of bare wire (from kit) between CSA-31 and CSB-30.
  - ( ) Solder a piece of bare wire (from kit) between CSB-29 and CSB-30.
  10. Solder the 6 in. piece of no.22 white-brown-red-brown wire (from kit) between CSA-29 and CSA-2.
  11. On the right hand nixie socket (V370), solder the three 1 meg, 1/4 w resistors (from kit), between pins 2 and 3; 2 and 5; 2 and 7.
  12. Solder the 2 in. piece of no.22 white-black-red wire (from kit) between CSA-31 and V370, pin 2.

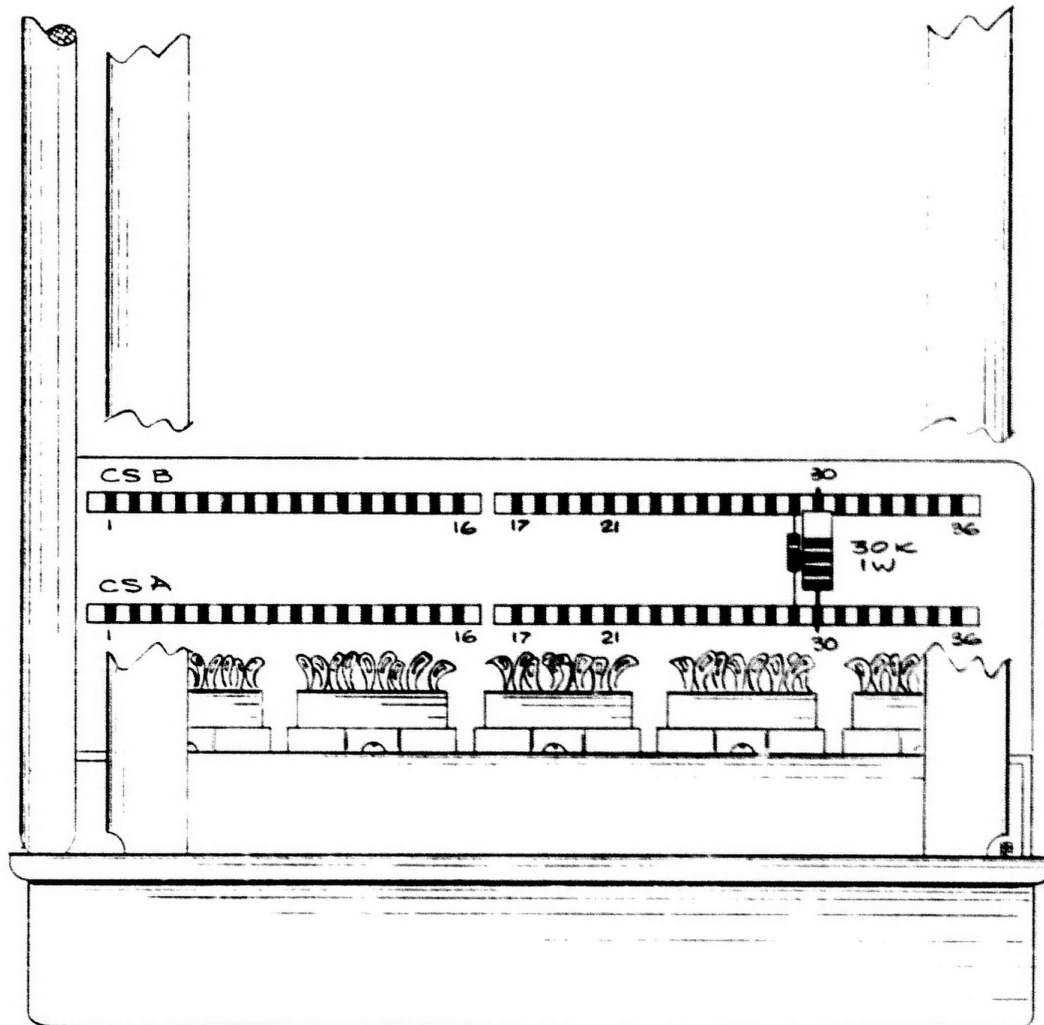


Fig. 5

## INSTRUCTIONS (Section E Con'd)

- ( ) 13. Solder the 30k, 1w resistor (from kit) between CSA-30 and CSB-30 (see Fig. 5).
- ( ) 14. Solder the anode lead of the zener diode (from kit) to CSA-29 (see Fig. 5).
- ( ) Solder the cathode (banded) end to CSB-29.
- ( ) 15. Solder the 270k resistor (from kit) between CSA-31 and CSB-31.
- 16. Solder the six 56k resistors (from kit) in the following locations:
  - ( ) between CSA-21 and CSB-21.
  - ( ) between CSA-22 and CSB-22.
  - ( ) between CSA-23 and CSB-23.
  - ( ) between CSA-24 and CSB-24.
  - ( ) between CSA-25 and CSB-25.
  - ( ) between CSA-26 and CSB-26.
- 17. Solder the five 390k resistors (from kit) in the following locations:
  - ( ) between CSA-32 and CSB-32.
  - ( ) between CSA-33 and CSB-33.

### Step 17 (con'd)

- ( ) between CSA-34 and CSB-34.
- ( ) between CSA-35 and CSB-35.
- ( ) between CSA-36 and CSB-36.

### THIS COMPLETES THE INSTALLATION

- ( ) Check wiring for accuracy.
- ( ) Make the following changes on the External Programming connector schematic in your Manual.
  - change "pin n-spare" to "pin n-Print Command from pin 13, J-M 8".
  - change "pin r-spare" to "pin r-Display Time from pin 12, J-B 8".
- ( ) Replace the Master Gate and the Plug-in Circuit Card Connectors schematic diagrams in the manual with the new diagrams included.
- ( ) Moisten the backs of the MODIFIED INSTRUMENT tags (from kit) and place them on the remaining schematic pages affected by this modification.
- ( ) Install the insert pages in your Instruction Manual.

TL:cet