MODIFICATION KIT

POWER SUPPLY IMPROVEMENTS

040-347

For the following Tektronix Oscilloscopes:

Type 561 Serial Numbers 101-5000
Type 561A Serial Numbers 5001-6634

DESCRIPTION

This modification provides a means to accurately adjust power supply voltages, by adding potentiometers to the divider networks in the comparator circuits of the -12.2 v, +125 v and +300 v supplies.

The modification involves: (a) Drilling two holes and mounting the potentiometer assembly on the rear horizontal plug-in housing. (b) Changing several components and wires in the -12.2 v, +125 v and +300 v supplies.

~~Also, a 10 Ω fuse resistor is added to limit surge currents and thereby protect the +300 v supply.~~

Publication:
Instructions for 040-347
April 1964

PARTS LIST

Quantity	Description					Part Number
1 ea.	Assembly, Potentiometer, consisting of:					
1 ea.	Resistor, comp,	82k	1/2w	10%		302-823
3 ea.	Potentiometer, comp,	500k	0.2w	20%	w/hardware	311-068
1 ea.	Bracket, alum, potentiometer					406-893
4 in.	Tubing, plastic, #20 black					(162-504)
9 in.	Wire, #22 stranded,	black-brown-black-brown				(175-523)
10 in.	Wire, #22 stranded,	white-brown-red-brown				(175-527)
9 in.	Wire, #22 stranded,	white-orange				(175-527)
11 in.	Wire, #22 stranded,	white-red				(175-527)
14 in.	Wire, #22 stranded,	white-yellow				(175-527)
7 ea.	Tie, nylon cable					006-531
2 ea.	Screw, 6-32 x 1/4 BHS					211-504
1 ea.	Spool, solder w/3ft. silver-bearing solder					214-210
1 ea.	Capacitor, ceramic	0.01 μf	500 v	discap		283-002
1 ea.	Capacitor, EMT	100 μf	30 v			290-137
1 ea.	Resistor, comp,	390k	1/2w	5%		301-394
1 ea.	Resistor, comp,	2.7k	1/2w	10%		302-272
1 ea.	Resistor, comp,	6.8meg	1/2w	10%		302-685
1 ea.	Resistor, comp,	8.2meg	1/2w	10%		302-825
1 ea.	Resistor, comp,	10Ω	1w	10%		304-100
1 ea.	Resistor, prec,	333k	1/2w	1%		309-053
1 ea.	Resistor, prec,	1.024meg	1/2w	1%		309-156
1 ea.	Tag, MODIFIED INSTRUMENT, gummed back					(001-910)
6 in.	Wire, #22 solid, bare					(176-005)
1 ea.	Wire, #22 solid, pre-bent for 4 large ceramic strip notches					(176-126)
1 ea.	Wire, #22 solid, pre-bent for 6 large ceramic strip notches					(176-128)

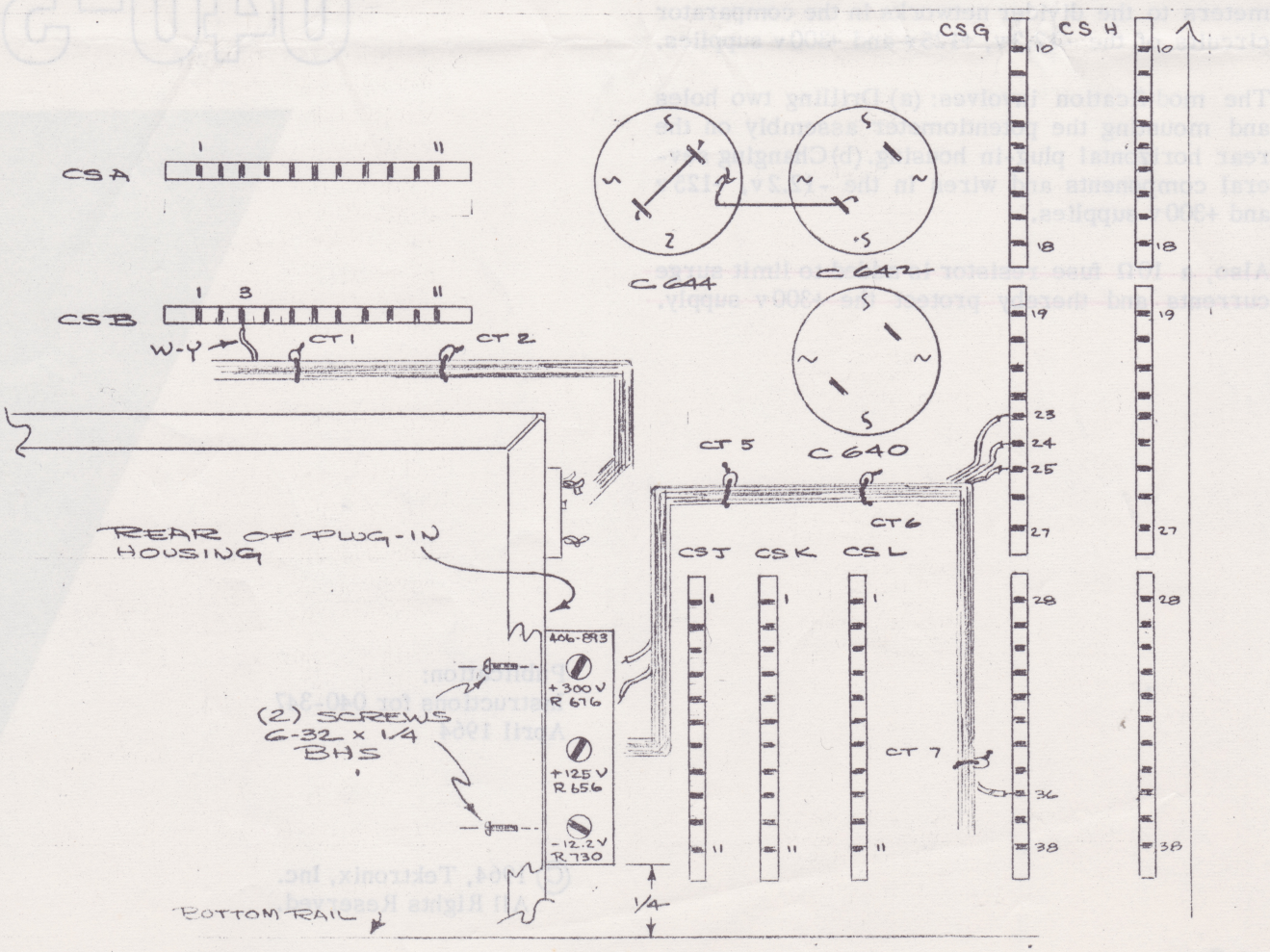


FIG. 1

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

A. TO INSTALL POTENTIOMETER ASSEMBLY:

REFER TO FIGURES 1 and 2

( )
( ) 1. Drill two 5/32 in. holes in the rear of the horizontal plug-in housing.

( ) 2. Mount the potentiometer assembly (from kit) with the two 6-32 x 1/4 BHS screws from the kit.

NOTE: The cable ties (step A-3) are designated as CT-1 through CT-7.

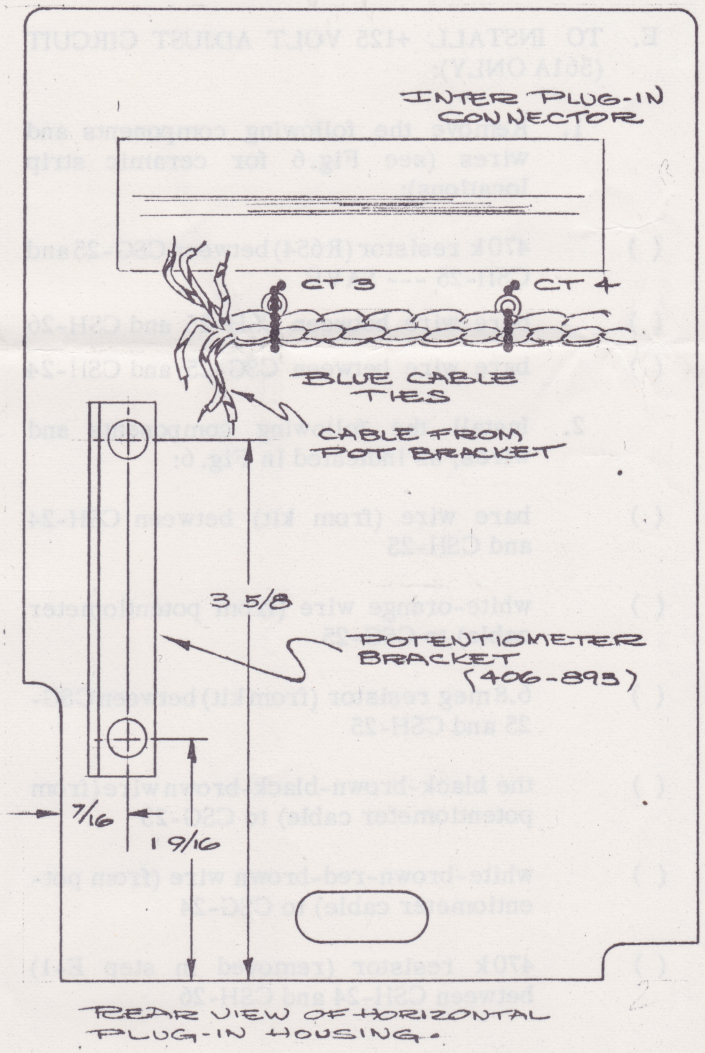


FIG. 2

( )
( ) 3. Secure the cable (from the bracket) to the cable harness in the instrument, with the seven blue cable ties from the kit.

B. TO INSTALL -12.2 VOLT ADJUST CIRCUIT (561 ONLY):

1. Remove the following components and wires (see Fig. 1 for ceramic strip locations):

( ) 2.7 k resistor (R735) between CSA-5 and CSB-5

( ) bare wire between CSB-4 and CSB-5

2. Install the following components and wires, as indicated in Fig. 3:

( ) white-yellow wire (from potentiometer cable) to CSB-5

( ) 2.7 k resistor (from kit) between CSA-5 and CSB-4

( ) 390 k resistor (from kit) between CSB-5 and CSB-8

( ) 100 µf capacitor (from kit) between CSA-7 (-) and CSB-7 (+)

C. TO INSTALL -12.2 VOLT ADJUST CIRCUIT (561A ONLY):

1. Remove the following components and wires (see Fig. 1 for ceramic strip locations):

( ) 330 k resistor (R734) between CSA-3 and CSB-3 --- SAVE

( ) bare wire between CSB-3 and base of Q744

( ) bare wire between CSB-4 and CSB-9

NOTE: Remove the following capacitor above serial number 6359:

( ) 100 µf capacitor (C732) between CSA-7 and CSB-7

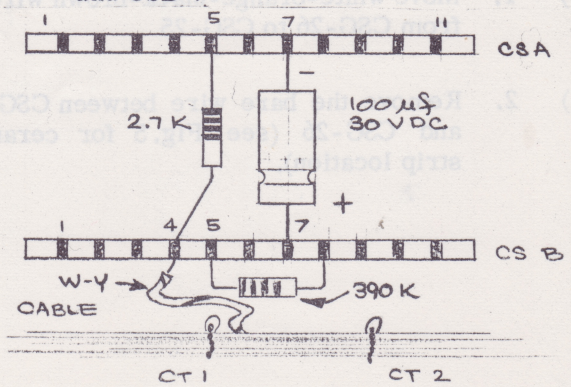


FIG. 3

Section C continued

2. Install the following components and wires, as indicated in Fig. 4:

( ) pre-bent wire (from kit) between CSB-4 and CSB-9. Mount wire on the 'inside' of CSB.

( ) 330k resistor (removed in step C-1) between CSA-3 and CSA-5

( ) white-yellow wire (from potentiometer cable) to CSB-3

( ) 390k resistor (from kit) between CSB-3 and CSB-6

( ) 100 μf capacitor (from kit) between CSA-7 (-) and CSB-7 (+)

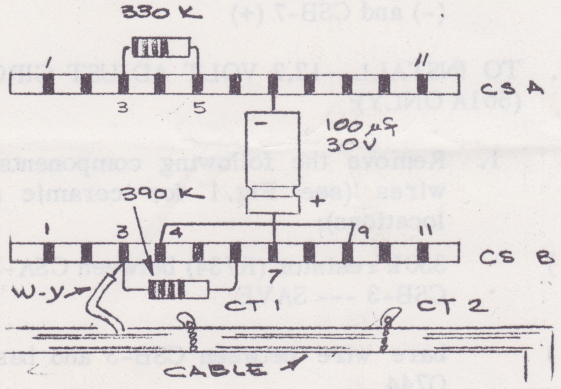


FIG. 4

D. TO INSTALL +125 VOLT ADJUST CIRCUIT (561 ONLY):

( ) 1. Move white-orange-black-brown wire(s) from CSG-26 to CSG-25

( ) 2. Remove the bare wire between CSG-25 and CSG-26 (see Fig. 5 for ceramic strip location).

3. Install the following components and wires, as indicated in Fig. 5:

( ) the black-brown-black-brown wire (from potentiometer cable) to CSG-23

( ) white-orange wire (from potentiometer cable) to CSG-26

( ) white-brown-red-brown wire (from potentiometer cable) to CSG-29

( ) 6.8 meg resistor (from kit) between CSG-26 and CSG-28

E. TO INSTALL +125 VOLT ADJUST CIRCUIT (561A ONLY):

1. Remove the following components and wires (see Fig. 6 for ceramic strip locations):

( ) 470k resistor (R654) between CSG-25 and CSH-25 --- SAVE

( ) bare wire between CSH-25 and CSH-26

( ) bare wire between CSG-25 and CSH-24

2. Install the following components and wires, as indicated in Fig. 6:

( ) bare wire (from kit) between CSH-24 and CSH-25

( ) white-orange wire (from potentiometer cable) to CSG-25

( ) 6.8 meg resistor (from kit) between CSG-25 and CSH-25

( ) the black-brown-black-brown wire (from potentiometer cable) to CSG-23

( ) white-brown-red-brown wire (from potentiometer cable) to CSG-24

( ) 470k resistor (removed in step E-1) between CSH-24 and CSH-26

INSTRUCTIONS (con'd)

F. TO INSTALL THE +300 VOLT ADJUST CIRCUIT (561 ONLY):

1. Remove the following components and wires (see Fig. 5 for ceramic strip locations):

( ) 333k resistor (R671) between CSG-36 and CSH-36

( ) 0.01 μf capacitor (C670) between CSG-37 and CSH-37

( ) 1.024meg resistor (R670) between CSG-37 and CSH-37

( ) 33k resistor (R679) between CSG-38 and CSH-38 --- SAVE

( ) bare wire between CSG-38 and gnd lug

( ) bare wire between CSG-35 and CSG-37

( ) 2. Move the two black-brown-black-brown wires from CSG-36 to CSG-37.

( ) 3. Install the following wires and components, as indicated in Fig. 5:

( ) pre-bent wire (from kit) between CSG-35 and CSH-38

( ) white-red wire (from the potentiometer cable) to CSG-36

( ) 33k resistor (removed in step F-1) between CSH-38 and pin 7 of V674

( ) 8.2meg resistor (from kit) between CSG-36 and CSH-36

( ) 333k resistor (from kit) between CSG-37 and CSH-37

( ) 1.024meg resistor (from kit) between CSG-38 and CSH-37

( ) 0.01 μf discap (from kit) between CSG-38 and CSH-37

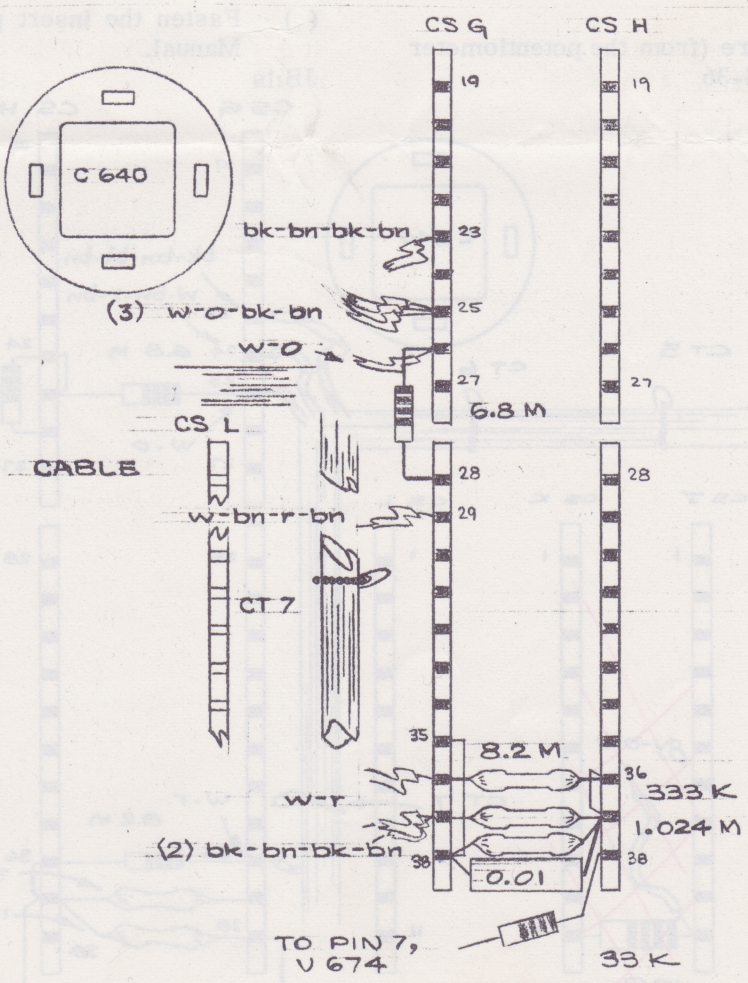


FIG. 5

INSTRUCTIONS (con'd)

G. TO INSTALL +300 VOLT ADJUST CIRCUIT (561A ONLY):

1. Remove the following components and wires (see Fig. 6 for ceramic strip locations).

( ) 333k resistor (R671) between CSG-36 and CSH-36

( ) bare wire between CSG-37 and CSG-38

( ) 0.01 μf capacitor (C670) between CSG-37 and CSH-37 --- SAVE

( ) 1.024meg resistor (R670) between CSG-37 and CSG-38

( ) 2. Move the two black-brown-black-brown wires from CSG-36 to CSG-37.

3. Install the following components and wires, as indicated in Fig. 6:

( ) 1.024meg resistor (from kit) between CSG-38 and CSH-37

( ) 333k resistor (from kit) between CSG-37 and CSH-37

( ) white-red wire (from the potentiometer cable) to CSG-36

( ) 8.2meg resistor (from kit) between CSG-36 and CSH-36

( ) 0.01 μf tubular capacitor (removed in step G-1) between CSG-38 and CSH-37

~~H. TO ADD +300 VOLT FUSE RESISTOR (561A ONLY):~~

~~REFER TO FIGURE 6~~

~~( ) 1. Move the gray-orange-red wire from CSK-11 to CSJ-11.~~

~~( ) 2. Solder the 10 Ω, 1w resistor (from kit) between CSJ-11 and CSK-11.~~

THIS COMPLETES THE INSTALLATION.

( ) Check wiring for accuracy.

( ) Calibrate the power supplies as indicated on the Manual Insert page.

( ) Moisten the back of the MODIFIED INSTRUMENT tag (from kit) and place it on the manual schematic page affected by this modification.

( ) Fasten the insert pages in your Instruction Manual.

JB:ls

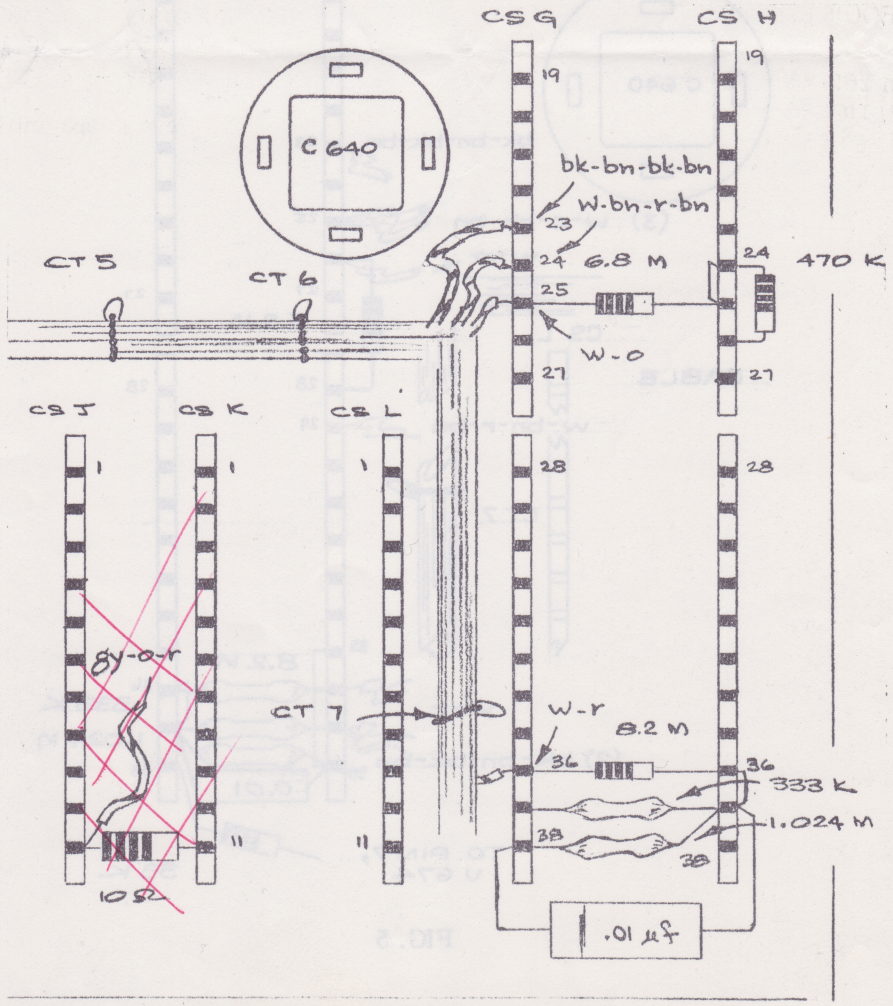


FIG. 6

040-347

POWER SUPPLY IMPROVEMENTS

Type 561 s/n 101-5000; Type 561A s/n 5001-6634

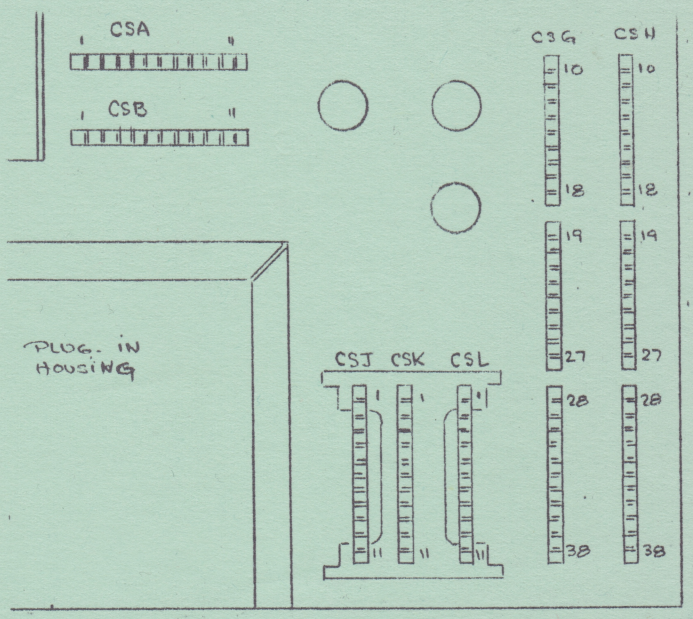
GENERAL INFORMATION

This modification provides a means to accurately adjust power supply voltages, by adding potentiometers to the divider networks in the comparator circuits of the -12.2v, +125v and +300v supplies.

The modification involves: (a) Drilling two holes and mounting the potentiometer assembly on the rear horizontal plug-in housing. (b) Changing several components and wires in the -12.2v, +125v and +300v supplies.

~~Also, a 10Ω fuse resistor is added to limit surge currents and thereby protect the +300v supply.~~

The information on this page supplements or supersedes the information in your Manual.



NOTE: For the following adjustment, refer to drawing for TEST POINT identification.

CONTROL	ADJUST	TEST POINT 561	TEST POINT 561A
R730	-12.2v	CSA- 6	CSA- 8
R616	- 100v	CSG-23	CSG-22 or 23
R656	+ 125v	CSG-29	CSG-24
R676	+ 300v	CSG-25	CSG-33

Repeat the above steps until all adjustable supplies are correct.

CALIBRATION

EQUIPMENT REQUIRED:

1 VOM Simpson 262, or equivalent
1 VERTICAL PLUG-IN
1 HORIZONTAL PLUG-IN

ELECTRICAL PARTS LIST

Values fixed unless marked Variable.

CAPACITORS

Ckt. No.	Part Number		Description			
C732	290-137	100μf	EMT	30v		+75% -15%

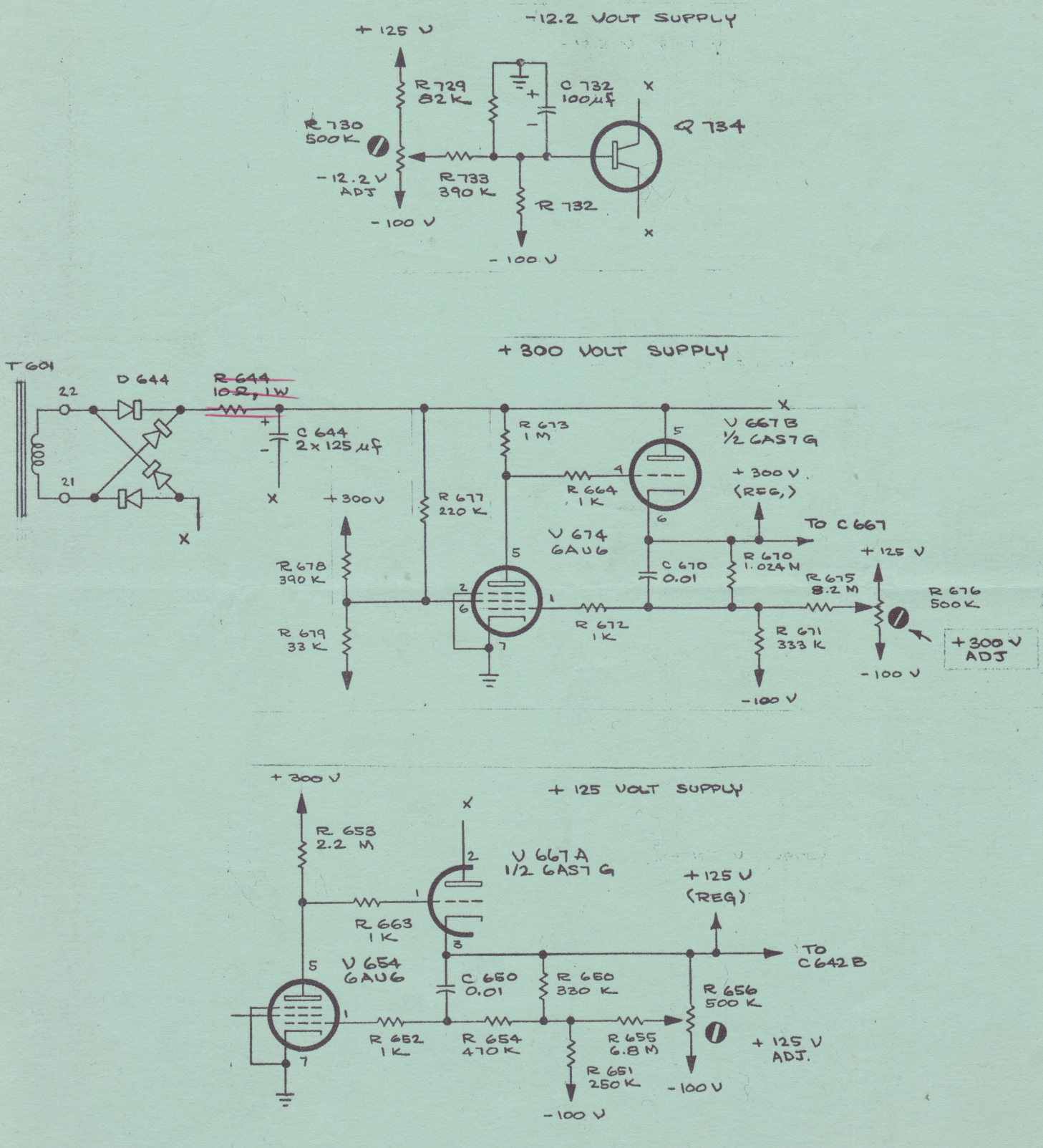
RESISTORS

Resistors are 1/2 watt, 10% composition unless otherwise indicated.

~~R644~~	~~304-100~~	~~10Ω~~	~~1w~~			
R655	302-685	6.8meg				
R656	311-068	500k	0.2w	Var	20%	+125 Volts Adj
R675	302-825	8.2meg				
R676	311-068	500k	0.2w	Var	20%	+300 Volts Adj
R729	302-823	82k				
R730	311-068	500k	0.2w	Var	20%	-12.2 Volts Adj
R733	301-394	390k			5%	

MECHANICAL PARTS LIST

	Part Number
Bracket, alum, potentiometer	406-893
Screw, 6-32 x 1/4 BHS	211-504
Tie, nylon cable	006-531



POWER SUPPLY (PARTIAL DIAGRAM)