CALIBRATOR CATHODE FOLLOWER RESISTOR ADDED TO ASSURE +100V CF OUTPUT LEVEL

See SQB

M1001

Effective Prod s/n 398

Usable in field instruments s/n 101-397

DESCRIPTION:

To enable the setting of the cathode voltage of the Calibrator Cathode Follower at the required 100v level, a resistor was added from +225v to the grid of the Cathode Follower.

Parts Removed:

Parts Added:

R681	1M 1/2w 10%	302-155

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install R681, a 1Meg 1/2w resistor, between pin 1 of V246A and pin 6 of V670, located on the Power chassis.

SWEEP REWIRING REQUIRES VALUE CHANGE OF ADJUSTMENT CAPACITOR, C254

INFORMATION ONLY

M1009

Effective Prod s/n 410

DESCRIPTION:

The addition of temflex tubing on 3 wires running from the Main Sweep Time/CM switch to the Sweep chassis necessitated changing the value of C254 from a 1.5-7pf ceramic capacitor to an 0.5-5pf variable tubular capacitor.

This mod is superseded by M1019.

Parts Removed:

C254	1.5-7pf var NPO	281-005

Parts Added:

C254	0.5-5pf tubular	281-002
Tubing, temflex no.7 (3-1/2")		

VERT AMP POWER SUPPLY DECOUPLING RESISTORS WATTAGE RATING INCREASED

See SQB

M1002

Effective Prod s/n 415

Usable in field instruments s/n 101-414

DESCRIPTION:

To increase the dissipation of the Plug-in and Vertical Amplifier decoupling resistors in the -150v, +100v and +350v supplies the wattage rating of R515, R516 and R518 was increased from 1/2watt to 1watt.

Parts Removed:

R515, R516, R518 100Ω 1/2w 10% 302-001

Parts Added:

R515, R516, R518 100Ω 1w 10% 304-001

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace R515, R516 and R518 (100Ω 1/2w resistors) with 100Ω 1w resistors. The resistors are located on the Vertical Amplifier chassis on ceramic strips directly above C650.

SWEEP STABILITY DIVIDER RESISTOR TOLERANCE TIGHTENED TO IMPROVE STABILITY

INFORMATION ONLY

M1004

Effective Prod s/n 416

DESCRIPTION:

The Sweep Stability divider resistor tolerance was changed to 5% to gighten the divider network specifications.

Parts Removed:

R47 470k 1/2W 10% 302-474

Parts Added:

R47 470k 1/2W 5% 301-474

SWEEP GENERATOR CAPACITOR ADDED TO IMPROVE SAWTOOTH LINEARITY AT HIGH SWEEP SPEEDS

See SQB

M1014

Effective Prod s/n 456

Usable in field instruments s/n 101-455

DESCRIPTION:

To improve linearity of the sawtooth waveform at high Sweep speeds, a capacitor was added between Miller Generator plates and the cathode of the Cathode Follower to maintain a near-constant current through the loads at all Sweep speeds.

Parts Removed:

Parts Added:

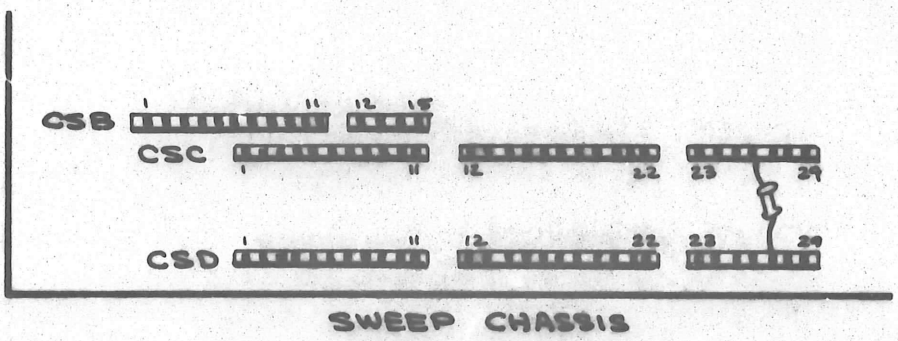
C96	82 pf 500 v	281-528

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install C96, an 82 pf 500 v capacitor, between CSC-26 and CSD-27 on the Sweep chassis.



VERTICAL AMPLIFIER DRIVER CIRCUITRY REDESIGNED TO ELIMINATE PARASITIC OSCILLATION FOR EASIER TIMING AND TO INCREASE BANDWIDTH

INFORMATION ONLY

M1029

Effective Prod s/n 582

DESCRIPTION:

To eliminate parasitic oscillations, driver components were changed and layout revised. This resulted in easier tuning and increased bandwidth.

A portion of this mod is superseded by M1085.

Parts Removed:

C520	0.01 µf 400 v	285-510
C901	1.5 pf 500 v	281-526
R528, R532	1 k 1/2 w 10%	302-102

Parts Added:

C520	0.01 µf 500 v	283-002
R528, R532	47 Ω 1/2 w 10%	302-470

DELAY LINE DRIVER COMMON CATHODE RESISTOR REPLACED TO ELIMINATE OVER-COMPENSATION

INFORMATION ONLY

M1031

Effective Prod s/n 582

DESCRIPTION:

To remove the cause of over-compensation in the Delay Line driver, the common cathode resistor was reduced in value and tolerance. A 3.9Ω 1W 10% resistor was substituted for the 3.9Ω 1W 5% value at s/n 582. The 5% value became effective at approximately s/n 890.

Parts Removed:			Parts Added:		
R503	5.6Ω 1W 10%	307-002	R503	3.9Ω 1W 5%	307-004

VERTICAL AMPLIFIER OUTPUT PEAKING COILS DECREASED TO MATCH NEW CONICAL CRT

INFORMATION ONLY

M1022

Effective Prod s/n 585

DESCRIPTION:

Values of the Vertical Amplifier output coils were reduced to compensate for the inherent interelectrode capacitance of the early CRT's.

Parts Removed:			Parts Added:		
L634, L635	9.3 μH fixed	108-069	L634, L635	8.8 μH fixed	108-057

SWEEP CAL AND MAG GAIN RANGE INCREASED

INFORMATION ONLY

M1019-1

Effective Prod s/n 613

DESCRIPTION:

The range of the adjustments for the Swp Cal and Mag Gain controls was increased by replacing them with components of twice their values.

Parts Removed:			Parts Added:		
R266	5k	311-011	R266	10k	311-016
R270	1k	311-006	R270	2k	311-008

SWEEP MAGNIFIER TIMING AND LINEARIZATION IMPROVED WITH ADDED VARIABLE CAPACITORS

See SQB

M1019-2

Effective Prod s/n 613

Usable in field instruments s/n 101-612

DESCRIPTION:

To linearize and improve the Sweep timing in the 0.1 sec/cm and 0.2 μsec/cm Magnifier positions, the mica plate resistors R278 and R286 were changed to tapped resistors, and two variable capacitors were added between the taps and cathodes of the Sweep Cathode Follower CRT drivers.

Parts Removed:

R278	25 k 8 w 1%	310-503
R286	30 k 5 w 1%	310-504

Parts Added:

R278	6-25 k 7 w 1%	310-506
R286	6-30 k 7 w 1%	310-507
C278, C286	3-12 pf variable	281-009

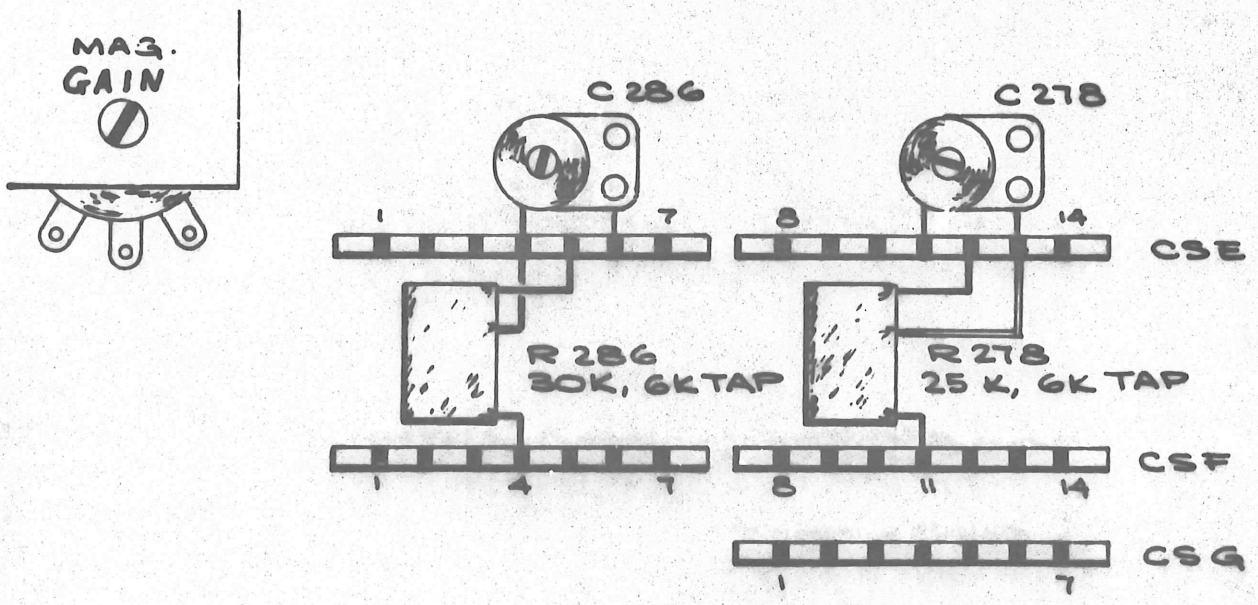
INSTALLATION INSTRUCTIONS:

a) Remove R278 (25 k 8 w mica plate resistor) and R286 (30 k 8 w mica plate resistor), located on the ceramic strips above V265 and V272, respectively, on the Sweep chassis.

b) Install R278, a 6-25 k tapped 7 w 1% resistor, between CSE and CSF as shown in drawing.

c) Install R286, a 6-30 k tapped 7 w 1% resistor, between CSE and CSF as shown in drawing.

d) Install C278 and C286, 3-12 pf variable capacitors, on CSE as shown in drawing.



SWEEP HF TIMING CAPACITOR REPLACED AND FEEDBACK CAPACITOR ADDED TO INCREASE ADJUSTMENT RANGE

INFORMATION ONLY

M1019-3

Effective Prod s/n 613

DESCRIPTION:

To give adequate range of adjustment for C254, it was changed to a 3-12pf value and a compensating feedback capacitor was added to the divider circuit across R259.

Parts Removed:

C254	0.5-5pf variable	281-002

Parts Added:

C254	3-12pf variable	281-007
C258	1.5pf 500v	281-526

SWEEP HF COMPENSATION CAPACITOR REPLACED TO EXTEND RANGE

INFORMATION ONLY

M1035

Effective Prod s/n 613

DESCRIPTION:

To provide adequate range of adjustment for C267, capacitors C266 and C267 were replaced by a single 9-180pf variable capacitor at C267. This change should be made at the time M1019 is performed.

Parts Removed:

C266	47pf 500v	281-518
C267	8-50pf var	281-022

Parts Added:

C267	9-180pf var	281-023

PATCH CORD ADDED TO ACCESSORIES PACKAGE ALLOWS 'PATCH' OF CAL VOLTAGE TO INPUT

INFORMATION ONLY

M1038

Effective date 11-27-54

DESCRIPTION:

To allow the Cal voltage to be 'patched' to the input, a cord with banana connectors was added to the accessory package.

Parts Removed:

Parts Added:

W530, Cord, consisting of:

Plug, banana, female	134-013
Cable, test lead no.18 bk (16")	175-010

POWER SUPPLY 'CURRENT-MEASURING' PROTECTIVE RESISTOR REPLACED TO PROVIDE PROPER DISSIPATION

See SQB

M1041

Effective Prod s/n 696

Usable in field instruments s/n 101-695

DESCRIPTION:

To assure the proper dissipation rating of the 'Current-Measuring' protective resistor in the -150v and +100v supply section of the power supply, the 150v resistor R732 was replaced with two 10Ω 1w resistors (R732 and R733) in parallel, and the +100v resistor R740 was increased to 1w.

Parts Removed:

R732	10Ω 2w 10%	306-100
R740	10Ω 1/2w 10%	302-100

Parts Added:

R732, R733, R740	10Ω 1 w 10%	304-100

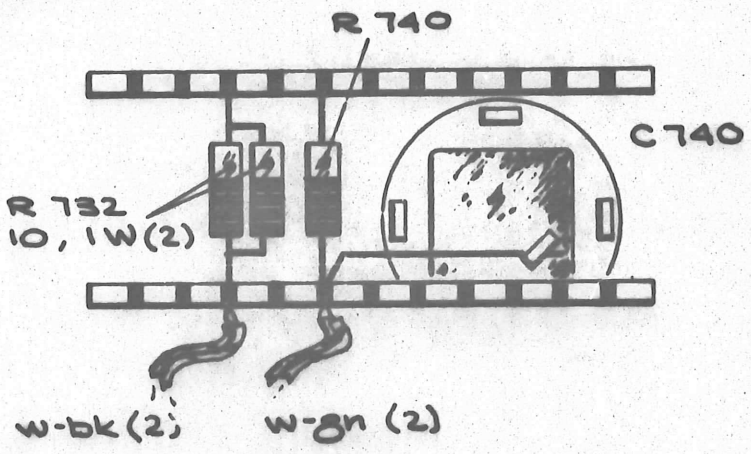
Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Replace R732, 10Ω 2w 10% resistor located on the ceramic strips above C740 on the power supply chassis, with two 10Ω 1w 10% resistors in parallel.

b) Replace R740, 10Ω 1/2w 10% resistor located on the ceramic strips next to R732, with a 10Ω 1w 10% resistor.



VERTICAL AMPLIFIER OUTPUT PEAKING COILS REPLACED TO IMPROVE TRANSIENT RESPONSE

INFORMATION ONLY

M1043

Effective Prod s/n 696

DESCRIPTION:

To supersede M1022 and improve transient response, peaking coils L634 and L635 were returned to their original values. A decrease in the interelectrode capacitances of the later conical CRT's made the change possible.

Parts Removed:			Parts Added:		
L634, L635	9.3 μh fixed	108-069	L634, L635	8.8 μh fixed	108-057

INTERNAL TRIGGER STABILITY IMPROVED WITH ADDED PARASITIC SUPPRESSOR

See SQB

M1049

Effective Prod s/n 833

Usable in field instruments s/n 101-832

DESCRIPTION:

To improve the internal trigger circuit stability, a parasitic suppressor R534 was added between the plate of the Internal Trigger Amplifier and the grid of the Internal Trigger Cathode Follower.

Refer to M1084 which should be installed with M1049.

Parts Removed:

Parts Added:

R534	47Ω 1/2w 10%	302-470

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install R534, a 47Ω 1/2w 10% resistor, between pin 6 of V527 and pin 2 of V535 on the Driver chassis.

INTERNAL TRIGGER BYPASS CAPACITOR ADDED TO IMPROVE STABILITY

See SQB

M1065

Effective Prod s/n 858

Usable in field instruments s/n 101-857

DESCRIPTION:

To improve the stability of the Internal Trigger Amplifier, the plate of V527R was bypassed to ground with an 0.005 µf capacitor.

Parts Removed:

Parts Added:

C532	0.005 µf	283-001

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install C532, an 0.005 µf capacitor located on the Driver chassis, between pin 1 of V527 and a ground lug on the socket.

MAIN SWEEP MULTI BAL CONTROL ADDED TO PREVENT ERRONEOUS RESETTING OF MAIN SWEEP

INFORMATION ONLY

M1061

Effective Prod s/n 895

DESCRIPTION:

Erroneous resettings of the main sweep was reduced by adding a balance control in the grid circuit of the Main Sweep Multivibrator. Additional circuit changes were required to allow the addition of the Multi Bal Control.

Parts Removed:

R32	1.5 k 1/2 W 10%	302-152

Parts Added:

R32	820 Ω 1/2 W 10%	302-821
R64	2.5 k 1/10 W	311-010

VERTICAL OUTPUT AMPLIFIER RESISTOR TOLERANCE TIGHTENED TO IMPROVE FREQUENCY RESPONSE AND UNIFORMITY

INFORMATION ONLY

M1071

Effective Prod s/n 970

DESCRIPTION:

To obtain uniformity of frequency and transient response in the Output Vertical Amplifier, the damping resistors were changed from 10% to 5% tolerance.

Parts Removed:			Parts Added:		
R634, R635	820Ω 1/2w 10%	302-821	R634, R635	820Ω 1/2w 5%	301-821

DELAY LINE INDUCTORS REPLACED WITH VARIABLES FOR EASIER HIGH FREQUENCY ADJUSTMENT

INFORMATION ONLY

M1051

Effective Prod s/n 997

DESCRIPTION:

To improve adjustment of the HF response of the delay line drivers the two fixed coils were replaced with variables and set in test. Adjustment access holes were made in the lower horizontal member of the Delay Line chassis.

Parts Removed:			Parts Added:		
Coil, fixed, CF562 (2)	No number		L900A, L901A	2.8-5.0μh	114-012

SWEEP OUTPUT AMPLIFIER AND CF TUBES REPLACED WITH AGED 6BQ7A's TO IMPROVE STABILITY

INFORMATION ONLY

M1084

Effective Prod s/n 1030

DESCRIPTION:

To improve the stability of the Sweep Amp and CF, the raw tubes used were replaced with aged 6BQ7A's.

Parts Removed:			Parts Added:		
V265, V272	6BQ7A, raw	154-028	V265, V272	6BQ7A, aged	157-022

VERTICAL AMP DRIVER TUBES CHANGED TO 6CL6's AND DC FILAMENT SUPPLY ADDED TO REDUCE DC DRIFT AND FILAMENT HUM

See SQB

M1056

Effective Prod s/n 1059

Usable in field instruments s/n 101-1058

DESCRIPTION:

To eliminate residual Miller type feedback present in 6BQ7's, and reduce DC drift and filament hum, these changes were made to the Vertical Amplifier:

1) Driver tubes V508 and V509 were replaced with 6CL6's along with other components.
2) The 6CL6's were aged, DC balanced, and selected on the basis of their Gm which can range from 1.5 - 3. V508 and V509 should have equal gain.
3) The Driver Amp and Rectifier cables also underwent revision. A DC filament supply for V508 and V509 was added with its filter capacitor and resistor.

It was felt that R503, C503, R502 and R504 be changed in all instruments where their values are 3.9Ω, 0.047μf, 10Ω and 10Ω respectively.

If the value of R503, connected between pins 8 of V508 and V509, was a 3.9Ω or 5.6Ω resistor it was removed along with C503, the 0.047μf capacitor connected in parallel with it. It was replaced by a series combination consisting of a 1.2k 1/2w 10% resistor (302-122) and a 100pf 500v capacitor (281-530) in parallel with another 100pf capacitor (281-580). The two 10Ω resistors, connected between pins 3 of V508 and V509 to the ceramic strip, were replaced by two 39Ω 1/2w resistors (302-390).

Parts Removed:

C500, C501	2.2pf 500v	281-500
R507, R508, R509, R510	10Ω 1/2w 10%	302-100
R501	20k 8w 5% WW	308-011
V508, V509	6BQ7A	154-028
Socket, tube, STM9 (3)		136-014
Strip, ceramic, 11-notch		124-016

Parts Added:

C513	0.001μf 500v	283-000
C605	2x1000μf 15v	290-022
R501	15k 10w 5%	308-024
R511	10k 1w 10%	304-103
R512	39k 1/2w 10%	302-393
R513	1M 1/2w 10%	302-105
R650	220Ω 2w 10%	306-221
SR650	Selenium	106-016
V508, V509	6CL6, selected	157-021
Socket, tube, STM9G (3)		136-015
Strip, ceramic, 4-notch (2)		124-012
Strip, ceramic, 7-notch		124-014

Parts Required for Field Installation:

Field Modification Kit	040-097

INSTALLATION INSTRUCTIONS:

Refer to kit instructions.

INTERNAL TRIGGER AMPLIFIER PARASITIC SUPPRESSOR RESISTOR VALUES INCREASED TO ELIMINATE OSCILLATION

See SQB — M1086

Effective Prod s/n 1065 — Usable in field instruments s/n 101-1064

DESCRIPTION:

To eliminate possible oscillation in the Internal Trigger Amp, the values of the parasitic suppressors are increased from 47Ω to 150Ω.

Parts Removed:

R528,R532 47Ω 1/2w 10% 302-470

Parts Added:

R528,R532 150Ω 1/2w 10% 302-151

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace R528 and R532, 47Ω 1/2w 10% resistors located between contacts on C900 on the delay line and pins 2 and 9 of V527 on the Driver chassis, with 150Ω 1/2w 10% resistor.

'HF SYNC' TRIGGERING POSITION ADDED TO TRIGGERING MODE SWITCH

See SQB — M1077-1

Effective Prod s/n 1075 — Usable in field instruments s/n 101-1074

DESCRIPTION:

An additional wafer was added to the SW5 switch section to provide for HF SYNC triggering. In this position the signal bypasses the trigger amplifier and shaper stages and is applied to the grid of the +Multivibrator.

Also see M1088 and M1321.

Parts Removed:

SW1,SW5 TRIG SLOPE and MODE 260-008

Parts Added:

SW1,SW5 TRIG SLOPE and MODE 260-099

Parts Required for Field Installation:

See 'Parts Added' and kit listed below.

Field Modification Kit 040-149

INSTALLATION INSTRUCTIONS:

Refer to kit instructions.

VERT SIG OUT POST ADDED TO FRONT PANEL AS AN ADDITIONAL FEATURE

INFORMATION ONLY — M1077-2

Effective Prod s/n 1075

DESCRIPTION:

Provides a Vert Sig Out binding post on the front panel. Components were added to the Vertical Amplifier, and the front panel was changed.

Parts Removed:

Panel, front	333-100

Parts Added:

Panel, front		333-138
Post, binding, 5-way		129-001
R535	47Ω 1/2W 10%	302-470
R539	15k 2W 10%	306-153
R540	1M 1/2W 10%	302-105
C540	0.022μF 400V	285-515

SWEEP AMP TUBE REPLACED TO IMPROVE PERFORMANCE AND RELIABILITY

INFORMATION ONLY — M1058

Effective Prod s/n 1126

DESCRIPTION:

For a more rugged, trouble-free performance, a 6CL6 replaces the 12BY7 at V282. The change required rewiring of the tube socket.

Parts Removed:

C284	8pf 500v	281-503
V282	12BY7	154-047

Parts Added:

C284	4.7pf 500v	281-501
V282	6CL6	154-031

SWEEP RELIABILITY AND DC DRIFT IMPROVED BY REPLACING V70 WITH A RUGGEDIZED TYPE 6CL6

INFORMATION ONLY — M1060

Effective Prod s/n 1126

DESCRIPTION:

DC drift and reliability is improved by replacing the 12BY7, at V70, with a ruggedized type 6CL6. The change necessitated the rewiring of the tube socket.

It was later discovered that the 12BY7's would sync better at 30MHz than the 6CL6's, and the instrument was restored to its original condition per M1092.

Parts Removed:

V70	12BY7	154-047
R69	1k 1/2W 10%	302-102
R70	47k 1/2W 10%	302-473

Parts Added:

V70	6CL6	154-031
R69	1.5k 1/2W 10%	302-152
R70	33k 1W 10%	304-333

TRIGGER PEAKING COIL ADDED TO INSURE HF SYNC AT 30 MHz

See SQB

M1088

Effective Prod s/n 1208

Usable in field instruments s/n 101-1207

DESCRIPTION:

To insure HF synchronization at 30 MHz, a 1.1 μH peaking coil was added in line between the cathode of the Internal Trigger Cathode Follower to the Trigger Slope switch.

This mod is included in Modification Kit 040-149. Also see M1321.

Parts Removed:

Rod, PB1B2	385-074

Parts Added:

L536	1.1 μH	108-078

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Locate the bare wire connected between the bakelite post and the ceramic strip on the bottom of the Vertical Amplifier chassis. This is part of the trigger pickoff lead, from V535 to the TRIGGER SLOPE switch.

b) Unsolder the bare wire from the pin on the bakelite post.

c) Solder one end of the 1.1 μh coil to this pin.

d) Solder the other end of the coil to the bare wire unsoldered in step b and trim the wire as necessary.

SWEEP SYNC IMPROVED BY RESTORING V70 TO A 12BY7

See SQB

M1092

Effective Prod s/n 1220

Usable in field instruments s/n 1126-1219

DESCRIPTION:

M1060 replaced the 12BY7 at V70 with a 6CL6 and rewired the socket accordingly. It was later discovered that the 12BY7's would sync better at 30 MHz than the 6CL6's, so the wiring and silkscreening at V70 were changed back to pre-M1060 condition.

Parts Removed:

V70	6CL6	154-031
R69	1.5 k 1/2 W 10%	302-152
R70	33 k 1 W 10%	304-333

Parts Added:

V70	12BY7	154-047
R69	1 k 1/2 W 10%	302-102
R70	47 k 1/2 W 10%	302-473

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Replace 6CL6 (V70) with a 12BY7.
b) Replace the 1.5 k 1/2 W resistor (R69), connected electrically to pin 7 of V70, with a 1 k.
c) Replace the 33 k 1 W resistor (R70), connected electrically to pin 7 of V70, with a 47 k 1/2 W.

TIME DELAY RELAY REWIRED TO IMPROVE RELIABILITY

Effective Prod s/n 1283

DESCRIPTION:

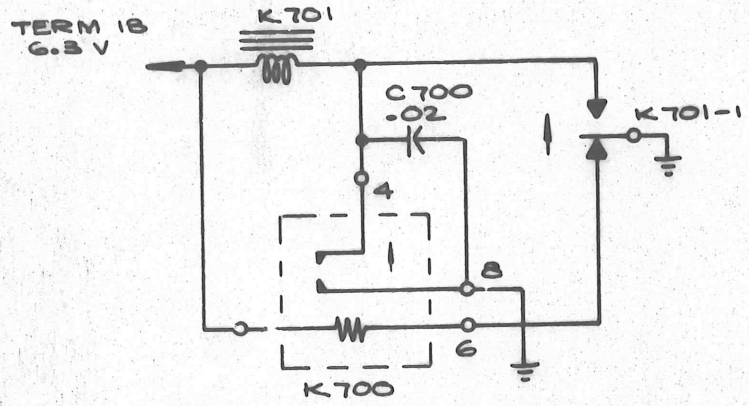
R708, a 12Ω 1w 10% resistor, is added to relay K700. This allows a voltage in excess of 6volts to be applied to K700 relay, insuring a more positive operation at low AC line voltage. Also overcomes peculiar mechanical characteristics of the relay.

This mod is incorporated in Modification Kit 040-085. Also see M1104.

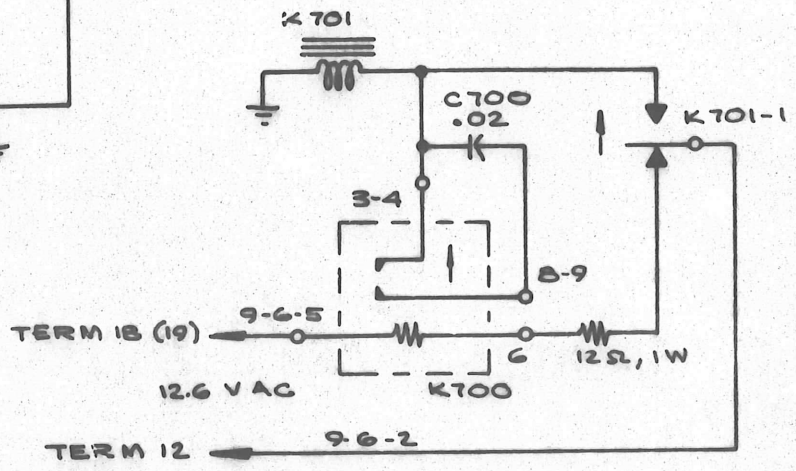
Parts Removed:

Parts Added:

R708	12Ω 1w 10%	304-120



BEFORE M 1099



AFTER M 1099

SWEEP MULTI AND UNBLANKING CF DECOUPLING ADDED TO ELIMINATE VERTICAL RINGING

See SQB

M1110

Effective Prod s/n 1439

Usable in field instruments s/n 101-1438

DESCRIPTION:

Removed vertical ringing, which occurs within 100μsec after the start of the sweep, by adding RC decoupling networks to the plates of the Unblanking CF V55A and the Sweep Multi CF V58B.

Also see M1378.

Parts Removed:

Part Added:

C76, C841	0.005 μf 500 v	283-001
R76, R841	47Ω 1/2w 10%	302-470

Parts Required for Field Installation:

See 'Parts Added'.

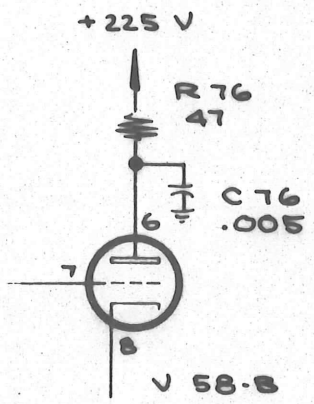
INSTALLATION INSTRUCTIONS:

a) Install C76, 0.005 μf 500 v discap, from pin 6 of V58B to the ground lug on V58B socket.

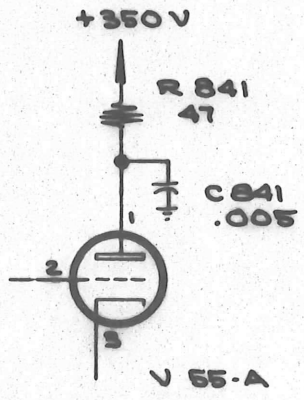
b) Replace a bare strap connecting pin 6 of V58B to the +225 v supply with a 47Ω 1/2w 10% resistor.

c) Install C841, 0.005 μf 500 v discap, from pin 1 of V55A to the ground lug of V55A socket.

d) Remove the ground strap from pin 9 of V55. Install a bare strap from pin 9 to the +350 v supply. Install R841, 47Ω 1/2w 10% resistor, between pin 9 and pin 1 of V55.



MULTIVIBRATOR C.F.



UNBLANKING C.F.

SWEEP AMP DRIVER CF COMPENSATING RESISTOR ADDED TO IMPROVE STARTING CHARACTERISTICS

See SQB

M1112

Effective Prod s/n 1439

Usable in field instruments s/n 101-1438

DESCRIPTION:

To decrease the starting time of the sweep in the fastest ranges, a resistor was added to the grid circuit of the Driver Cathode Follower V240B in series with C241.

Parts Removed:

Parts Added:

R244	2.2k 1/2w 10%	302-222

Parts Required for Field Installation:

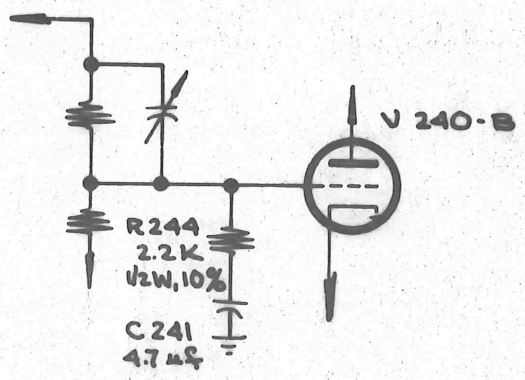
See 'Parts Added'.

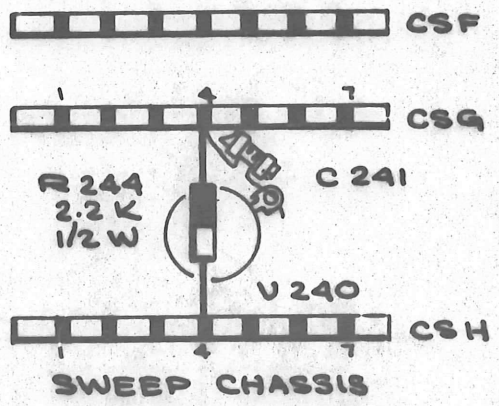
INSTALLATION INSTRUCTIONS:

a) Remove the bare wire strap between CSG-4 and a ground lug on V240.

b) Relocate one end of C241, a 4.7pf 500v capacitor, from CSH-4 to ground lug on V240.

d) Install R244, a 2.2k 1/2w 10% resistor, between CSG-4 and CSH-4.





SWEEP CABLE STANDARDIZED — INFORMATION ONLY — M1125

Effective Prod s/n 1514

DESCRIPTION:

To provide a common cable for the 531, 535, 541 and 545 Sweep chassis, the Sweep cable used in the 531 and 535 was made identical to that used in the 541 and 545 by effecting a change in the color-coding of a wire length terminating at the Vertical Position indicator neons and +225 v.

R627 was added between the common connections at NE628 and NE629 neons and +225 v. This resistor was introduced as a means of altering the voltage distribution so as to allow the change in the color-coding of the cable wire.

Parts Removed:

Parts Added:

R627	1k 1/2w 10%	302-102

DELAYING SWEEP HOLD-OFF CAPACITOR REMOVED TO IMPROVE TRIGGERING — INFORMATION ONLY — M1123

Effective Prod s/n 1546

DESCRIPTION:

Removing C148D from the Delaying Sweep Timing switch allowed triggering sweep rates to improve from 30kc to 50kc. A later mod adds C148D back on the switch at the same location, but with a different value. See M1386.

Parts Removed:

C148D	47pF	500V	281-518

Parts Added:

6.3 V OUTPUT FUSE ADDED TO PROTECT POWER SUPPLY CABLE

INFORMATION ONLY

M1132

Effective Prod s/n 1621

DESCRIPTION:

A length of #24 wire, wound in a coil, replaces the solid wire between the ungrounded terminal of the Power pilot light and the 6.3 V Output terminal on the front panel. The wire fuse (F730) serves as a fuse in the event the 6.3 V binding post is shorted to ground.

M1210 supersedes M1132 by changing the wire size to #33 magnet wire. Both M1132 and M1210 were superseded by M1741.

Parts Removed:

Parts Added:

F730	a length of #24 tinned wire, having 4 to 6 turns and approximately 1/8 in. in dia and 1-3/8 in. in length

'B+ DELAY RELAY' REPLACED WITH MORE RELIABLE TYPE

See SQB

M1107

Effective Prod s/n 1704

Usable in field instruments s/n 101-1703

DESCRIPTION:

The 'Leach' type relay used at K701 was replaced by a more reliable 'Clare' type relay. Extensive changes were made to component layout and bracket changes were made also. Minor changes were made to the Power Supply cable.

Parts Removed:

K701	4PDT, Leach	148-003
Bracket, relay and fan mtg		406-111

Parts Added:

K701	4PDT, Clare	148-004
Bracket, relay and fan mtg		406-164

Parts Required for Field Installation:

See 'Parts Added' and Modification Kit below.

Field Modification Kit 040-085

INSTALLATION INSTRUCTIONS:

Refer to kit instructions.

MAIN SWEEP VERNIER CONTROL ADDED TO IMPROVE ADJUSTMENT OF MAIN AND DELAY SWEEP

INFORMATION ONLY — M1153

Effective Prod s/n 1743

DESCRIPTION:

A miniature 500Ω potentiometer replaced the selected value resistor at R99M. This was to facilitate adjustment of the Main Sweep to the same time as the Delaying Sweep, and also eliminated selecting a value for each instrument. The pot was mounted on the switch support plate, that is mounted between the TIME/CM and MULTIPLIER switches.

Parts Removed:

R99M	1/2W selected	Test installed

Parts Added:

R99M	500Ω miniature		311-056
Screw, 4-40 x 1/4BHB		(4)	211-008
Lockwasher, int #4		(4)	210-004
Nut, hex, 4-40 x 3/16		(4)	210-406
Nut, hex, 1-72 x 5/32		(2)	210-438

POWER SUPPLY CHASSIS STANDARDIZED TO REDUCE ASSEMBLY TIME AND COST

INFORMATION ONLY — M1189

Effective Prod s/n 1777 (approx)

DESCRIPTION:

Power supply chassis silkscreening and assembly procedure was changed to allow a common chassis for the 535, 531, 541 and 545. A common silkscreening was used in the operation. Changes in 535 and 545 chassis resistor numbers were effected to make the change possible. R796 and R786 became R795 and R785 respectively; R761 and R725 became R762 and R724 respectively.

SWEEP CHASSIS CHANGED TO STANDARDIZE

INFORMATION ONLY — M1193

Effective Prod s/n 1777 (approx)

DESCRIPTION:

The Sweep chassis was standardized with the 541 chassis through a common silkscreen. The two only differ in that the 541 chassis has R1053 mounted where a bakelite post is on the 531 front section of the chassis.

POWER SUPPLY PARASITIC OSCILLATIONS REDUCED WITH ADDED SUPPRESSOR RESISTOR

See SQB

M1201

Effective Prod s/n 2035

Usable in field instruments s/n 101-2034

DESCRIPTION:

Stability of the +225 v and -150 v supplies was improved by adding suppressor resistors to the grid circuits of V785B and V712B to reduce parasitic oscillation in these stages.

Parts Removed:

Parts Added:

R767, R713 1k 1/2w 10% 302-102

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Replace the wire between pin-7 of V765B and the junction of C770 and R770 with R767, 1k 1/2W 10%.

b) Replace the wire between pin-7 of V712B and the junction of C717 and R717 with R713, 1k 1/2W 10%.

6.3 V OUTPUT FUSE F730 WIRE SIZE REDUCED TO IMPROVE PROTECTION

INFORMATION ONLY

M1210

Effective Prod s/n 2077

DESCRIPTION:

The wire used for F730 was changed from #24 tinned copper to #33 heavy EZ-SOL Magnet wire to improve the power supply cable protection. This mod supersedes M1132 and is superseded by M1741.

Parts Removed:

F730 Wire, #24 tinned copper, coiled 1/8 in. diam, 4-6 turns 176-055

Parts Added:

F730 Wire, #33 heavy EZ-SOL Magnet, coiled 1/8 in. dia 176-016

VERTICAL OUTPUT AMPLIFIER DC SHIFT DIVIDER RESISTORS CHANGED TO INCREASE RANGE

INFORMATION ONLY

M1227

Effective Prod s/n 2298

DESCRIPTION:

Range of the Output Amp DC shift control was increased by lowering the value of Divider resistors R595 and R597. The increased range allowed use of larger tolerance resistors.

Parts Removed:

R595, R597 39k 1/2w 5% 301-393

Parts Added:

R595, R597 27k 1/2w 10% 302-273

SINGLE SWEEP RESET CIRCUITRY IMPROVED BY INCREASING SIZE OF C235

See SQB

M1243

Effective Prod s/n 2420

Usable in field instruments s/n 101-2419

DESCRIPTION:

Single Sweep Reset operation was improved by increasing the pulse amplitude to the Main Sweep Delayed Trigger Amp. This was done by almost doubling the size of C234 in the Delay Pick-off Reset circuitry.

Parts Removed:			Parts Added:		
C235	12 pF 500 V	281-506	C235	22 pF 500 V	281-510

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace C235 (12 pF 500 V capacitor) with a 22 pF 500 V capacitor. C235 is located on the 'B' Sweep chassis just to the left of R114, the EXT SWP AMP DC BAL control.

AIR DEFLECTION PLATE CHANGED TO IMPROVE AIR CIRCULATION

INFORMATION ONLY

M1308

Effective Prod s/n 2705 w/exceptions 2691, 2702

DESCRIPTION:

The air deflection plate was replaced by one that was 1/2 in. longer. This improved the air circulation for the smaller design (shorter Vertical height) power transformers. It is recommended that the plate be added with the replacement transformer (120-037) below s/n 2705.

Parts Removed:		Parts Added:	
Plate, air deflection	386-360	Plate, air deflection	386-496

DELAY LINE DRIVER SCREEN BYPASS CAPACITOR ADDED TO INCREASE RANGE

See SQB

M1272

Effective Prod s/n 2770

Usable in field instruments s/n 101-2769

DESCRIPTION:

A screen bypass capacitor C510 was added to the screens of V508 and V509 to equalize the overall response of the instrument, irrespective of the plug-in used. In addition, it permits plug-in interchange without extensive retuning of the main unit.

Parts Removed:

Parts Added:

C510	0.01 μf 500 v	283-002

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install C510, a 0.01 μf 500 v capacitor located on the Driver chassis, between pin 8 of V508 and ground lug on its socket.

DELAY LINE ABERRATIONS REDUCED BY LOWERING VALUE OF TERMINATING CAPACITORS

INFORMATION ONLY

M1284

Effective Prod s/n 3199

DESCRIPTION:

To reduce the aberrations present in the delay line network, C938 and C940 were lowered from 1.5 pf to 1.0 pf capacitors. The capacitors, to correct the phase angle of the terminating impedance, were frequently out of tolerance on the high side.

Since the change from Campbell to Welwyn resistors, for use in the R938 and R940 circuit positions, there has been an increase in the inherent distributed capacity of the resistors. This, in part, contributed to the problem.

Parts Removed:

C938, C940	1.5 pf 500 v	281-526

Parts Added:

C938, C940	1 pf 500 v ±0.2 pf	281-538

'VERT SIG OUT' COUPLING CAPACITOR REPLACED TO REDUCE SHOCK HAZARD

See SQB

M1286

Effective Prod s/n 3210

Usable in field instruments s/n 101-3209

DESCRIPTION:

Coupling capacitor C540 is changed from a 400v to a 600v PTM to prevent premature failure. A possible short would place approximately +350v DC at the front panel 'Vert Sig Out' post.

Parts Removed:

C540	0.022µf 400v	285-515

Parts Added:

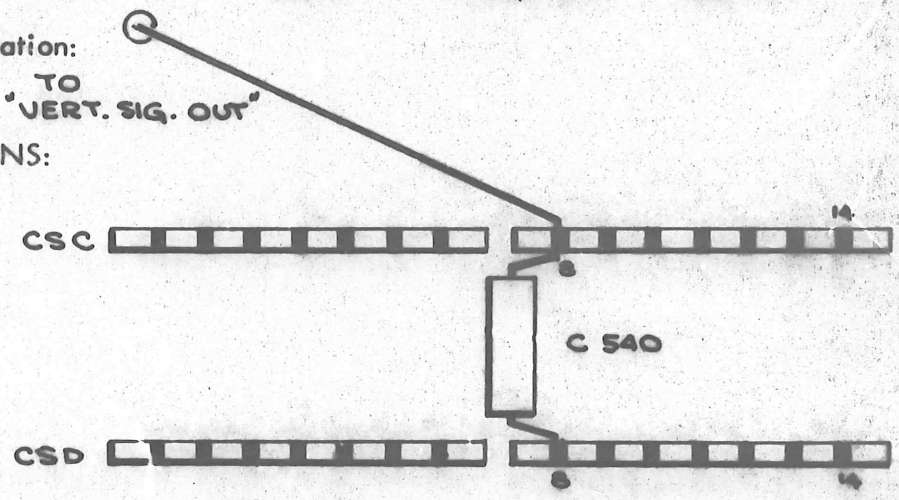
C540	0.022µf 600v	285-517

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace C540, a 0.022µf 400v capacitor on the Driver chassis, with a 0.022µf 600v capacitors.



SWEEP GENERATOR REDUNDANT RESISTOR REMOVED WITHOUT LOSS OF PERFORMANCE

INFORMATION ONLY

M1313

Effective Prod s/n 3510

DESCRIPTION:

To eliminate a redundant part, R97, a 100Ω parasitic suppressor was removed from the grid of V90. An insulated wire replaced the resistor with no noticeable effect in operation.

Parts Removed:

R97	100Ω 1/2W 10%	302-101

Parts Added:

SWEEP DRIVER DIVIDER RESISTORS RELOCATED TO ELIMINATE POSSIBLE SHORTS

INFORMATION ONLY

M1317

Effective Prod s/n 3547

DESCRIPTION:

Divider resistors R259 and R260 are relocated to eliminate the possibility of shorting together due to their close proximity on the ceramic strip.

SWEEP GENERATOR FILAMENT GROUND RELOCATED TO IMPROVE 30MHz TRIGGERING

See SQB

M1321

Effective Prod s/n 3547

Usable in field instruments s/n 101-3546

DESCRIPTION:

Relocating the ground of the Miller tube V90 to the tube socket of V73 eliminated jitter occurring in some instruments when a 30MHz sine wave is applied.

INSTALLATION INSTRUCTIONS:

Remove bare wire between pin 4 and ground lug of V90 on the Sweep chassis.

Install a bare wire between pins 4 and 7 of V90, and ground lug of V73 nearest pin 4.

POWER SUPPLY PRECISION
RESISTOR WATTAGE RATING
INCREASED TO IMPROVE STABILITY

See SQB

M1297

Effective Prod s/n 3698

Usable in field instruments s/n 101-3697

DESCRIPTION:

Applying a DC voltage to a 1% tolerance precision resistor produces a 'stress effect' that is caused by migration of the carbon particle film. Amplitude of voltage, temperature, and time duration of applied voltage influence the 'stress effect'. The carbon film is deteriorated, causing resistor instability -- either as an increase in resistor value or, in some cases, an open resistor.

Increasing the wattage ratings of the resistors from 1/2w to 1w reduces the high failure rate due to deterioration, and improves their stability.

The replacement of R715 and R718 took place at s/n 3325.

Parts Removed:

R715	50k 1/2w 1%	309-090
R718	68k 1/2w 1%	309-042
R750,R772	333k 1/2w 1%	309-053
R751	490k 1/2w 1%	309-002
R771,R797	220k 1/2w 1%	309-052
R787	1.84M 1/2w 1%	309-021
R788	780k 1/2w 1%	309-011
R798	720k 1/2w 1%	309-009

Parts Added:

R715	50k 1w 1%	310-086
R718	68k 1w 1%	310-054
R750,R772	333k 1w 1%	310-056
R751	490k 1w 1%	310-057
R771,R797	220k 1w 1%	310-055
R787	236k 1w 1%	308-083
R788	100k 1/2w 1%	308-084
R798	720k 1w 1%	310-059

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Replace R715, a 50k 1/2w precision resistor located on the ceramic strips above V757 on the Power chassis, with a 50k 1w precision resistor.

b) Replace R718, a 68k 1/2w precision resistor located on the ceramic strips above V757, with a 68k 1w 1% precision resistor.

c) Replace R750 and R772, 333k 1/2w precision resistors on the ceramic strips above V765, with 33k 1w precision resistors.

d) Replace R751, a 490k 1/2w precision resistor, on the ceramic strips above V742, with a 490k 1w precision resistor.

e) Replace R771 and R797, 220k 1/2w precision resistors located on the ceramic strips above V742 and V794, with 220k 1w precision resistors.

f) Replace R787, a 1.84Meg 1/2w precision resistor located on the ceramic strips above V784, with a 236k 1w wirewound resistor.

g) Replace R788, a 780k 1/2w precision resistor located on the ceramic strips above V784 and adjacent to R787, with a 100k 1/2w wirewound resistor.

h) Replace R798, a 720k 1/2w precision resistor located on the ceramic strips above V794, with a 720k 1w precision resistor.

SWEEP MULTIPLIER VARIABLE CONTROL AND DIVIDER CHANGED TO ENABLE USE OF STANDARDIZED MULTIPLIER SWITCH

INFORMATION ONLY

M1354

Effective Prod s/n 3936

DESCRIPTION:

A modification required in the 535 and 545 delaying sweep circuitry is also incorporated in the 531 and 541 because the change effects Multiplier switch SW90, which is common to all four instruments.

R99k and R99L were reduced by approximately 1/3 of their former value.

Parts Removed:

R99K	10k 1/2w 10%	302-103
R99L	20k 2w	311-018

Parts Added:

R99K	6.8k 1w 10%	304-682
R99L	15k 2w	311-045

'CAL TEST PT' JACK ADDED TO POWER CHASSIS TO EASE CALIBRATOR VOLTAGE CHECK

INFORMATION ONLY

M1359

Effective Prod s/n 3957

DESCRIPTION:

To bring the calibrator voltage to a more accessible point for checking, a black pin jack labeled "Cal Test Pt" was added in the right outside edge of the Power chassis, 2-1/2 in. in from the rear of the subpanel. The jack is connected to the cathode (pin 3) of V246A, the Calibrator Cathode Follower.

Parts Removed:

Parts Added:

Jack, tip, black	136-037
Washer, brass	210-840
Nut, hex, brass	210-413
Wire, no. 22 sol, w-y (4-1/2")	175-522

CABINET REDESIGNED TO USE NEW 3-SECTION TYPE TO IMPROVE ACCESS

INFORMATION ONLY

M1326

Effective Prod s/n 5001

DESCRIPTION:

The cabinet style was changed to the new 3-section, round corner cabinet used on the 530 and 540 series instruments to improve appearance and access to fuses and CRT controls.

Parts Removed:

Cabinet	437-018
Panel, front	333-137
Plate, rectifier mtg	386-311
Bracket, relay and fan mtg	406-164
Chassis, F and I	441-065
Clamp, CRT socket	343-027
Housing, air filter	380-006
Plate, subpanel	386-348
Bracket, CRT shield support	406-112
Plate, frame, bottom	387-527
Plate, frame, top	387-528
Frame, left	426-023
Frame, right	426-024
Ring, fan	354-034
Bracket, Time/CM switch	406-160
Shield, F and I - HV	337-104
Plate, switch support	386-408
Bracket, fan ring	406-119
Tube, transformer support	166-061
Tube, insulating (2)	166-057
Tube, spacer (2)	166-030
Rod, spacing, fan mt (2)	385-081
Rod, CRT support post	385-080
Rod, nylon, 5/16 x 1-1/8	385-075
Connector, coax, modified	131-038
Filer, air, 10x10x1	378-005

Parts Added:

Plate, cabinet, left side	386-564
Plate, cabinet, right side	386-565
Plate, cabinet, bottom	386-563
Panel, front	333-237
Plate, rectifier mtg	386-546
Bracket, relay mtg	406-144
Mount, fan motor	426-047
Chassis, F and I	441-142
Clamp, CRT	343-008
Housing, air filter	380-008
Plate, subpanel front	386-556
Plate, subpanel rear	386-557
Plate, rear overlay	386-558
Angle, frame bottom (2)	122-021
Angle, frame top	122-019
Bar, ext ch top supt, w/handles	381-067
Ring, fan w/mtg ears	354-053
Bracket, Time/CM switch	406-240
Shield, F and I	337-148
Shield, HV	337-150
Plate, switch support	386-525
Tube, spacing, trans support	166-105
Tube, spacing, 3/8 OD x 1/4	166-110
Tube, spacing, SPA 8-20	166-037
Tube, spacing, SPA 8-14	166-034
Rod, CRT support post	385-088
Rod, HVO support post	384-135
Rod, nylon, 5/16 x 1-1/8	385-087
Connector, coax, modified	131-064
Tube, spacing, 1/4 OD x 7/32 (2)	166-107
Filter, air, modified, 10x10x1	378-011
Plate, access panel, plexi	386-560
Clamp, access panel	343-033
Lockwasher, int no. 8 (2)	210-008
Lug, solder, no. 10 non-lkg (2)	210-224
Nut, hex, 8-32 x 5/16 (2)	210-409
Nut, cap, hex, 8-32x5/16 (2)	210-402
Screw, 8-32 x 1-1/4 RHS (2)	212-031
Bracket, CRT support	406-238

CALIBRATOR 'CAL OUT' CONNECTOR
ELEVATED 1/4Ω ABOVE GROUND
TO REDUCE 60Hz MODULATION

INFORMATION ONLY

M1412

Effective Prod s/n 5001

60Hz hum was eliminated in high gain plug-in (i.e., B and D), by elevating the Calibrator 1/4Ω above ground. The hum was attributable to ground current effects between the plug-in and Calibrator while the Calibrator was operated in the multivolt range. This was reduced to a point where a clean 'Cal' output was obtained in the 0.2millivolt range.

The mechanical changes necessary to the cabinet were included in the cabinet change, M1324, and involved the following:

The D 'Cal Out' coax clearance hole in the subpanel was enlarged to 11/16in. dia.

The D 'Cal Out' coax connect access hole in the front panel was enlarged to 3/4in. dia.

The coax connector mounting holes were enlarged to 7/16in. dia to accept the 4 fiber washers, and/or nylon molded insulator, and two fiber washers to insulate the connector.

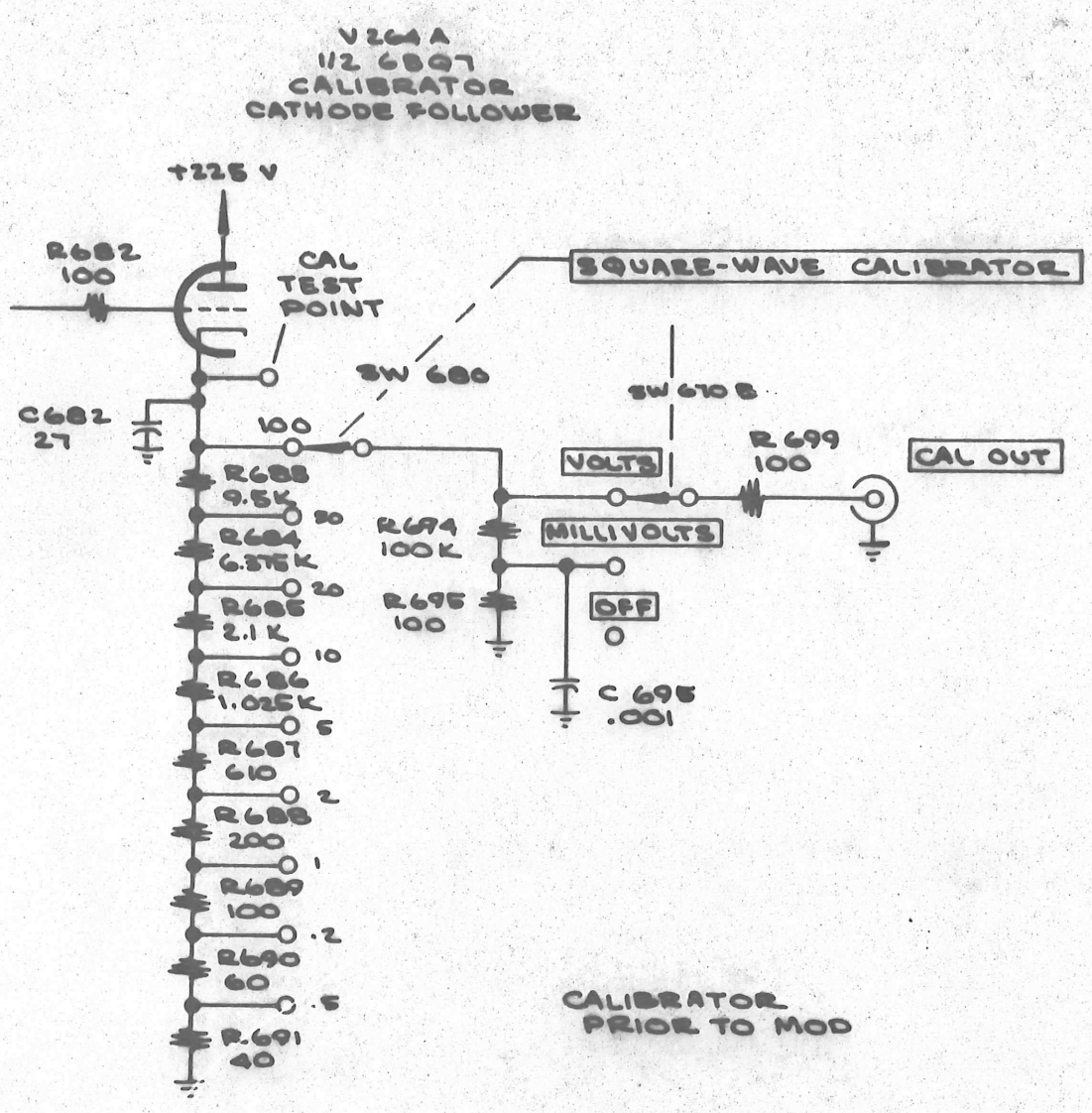
Circuit changes involved adding R698, a 1/4Ω 1/2w resistor, between the connector and ground, and relocating the RC combination of R695 and C695 to the connector ground lug.

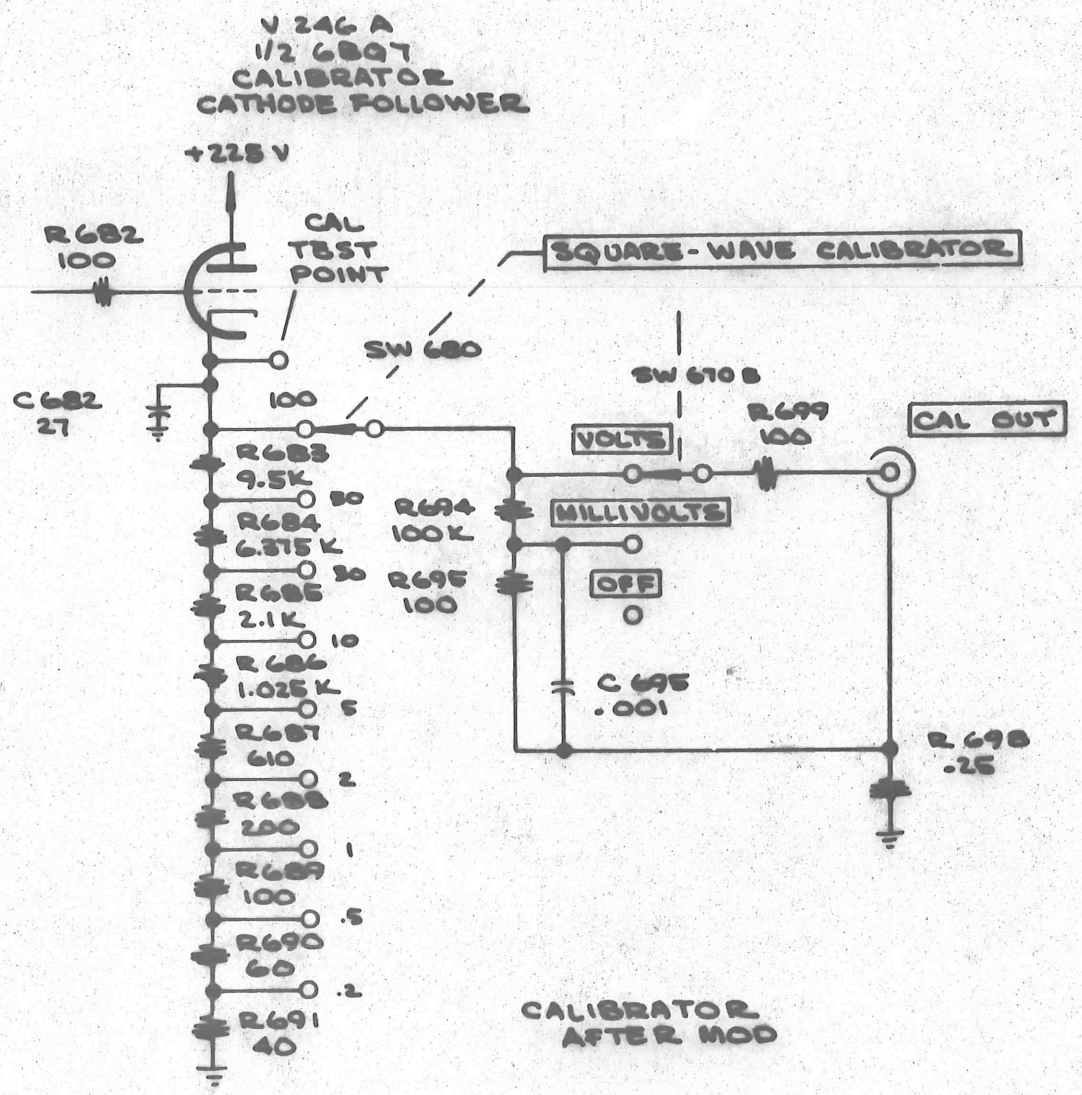
Parts Removed:

Parts Added:

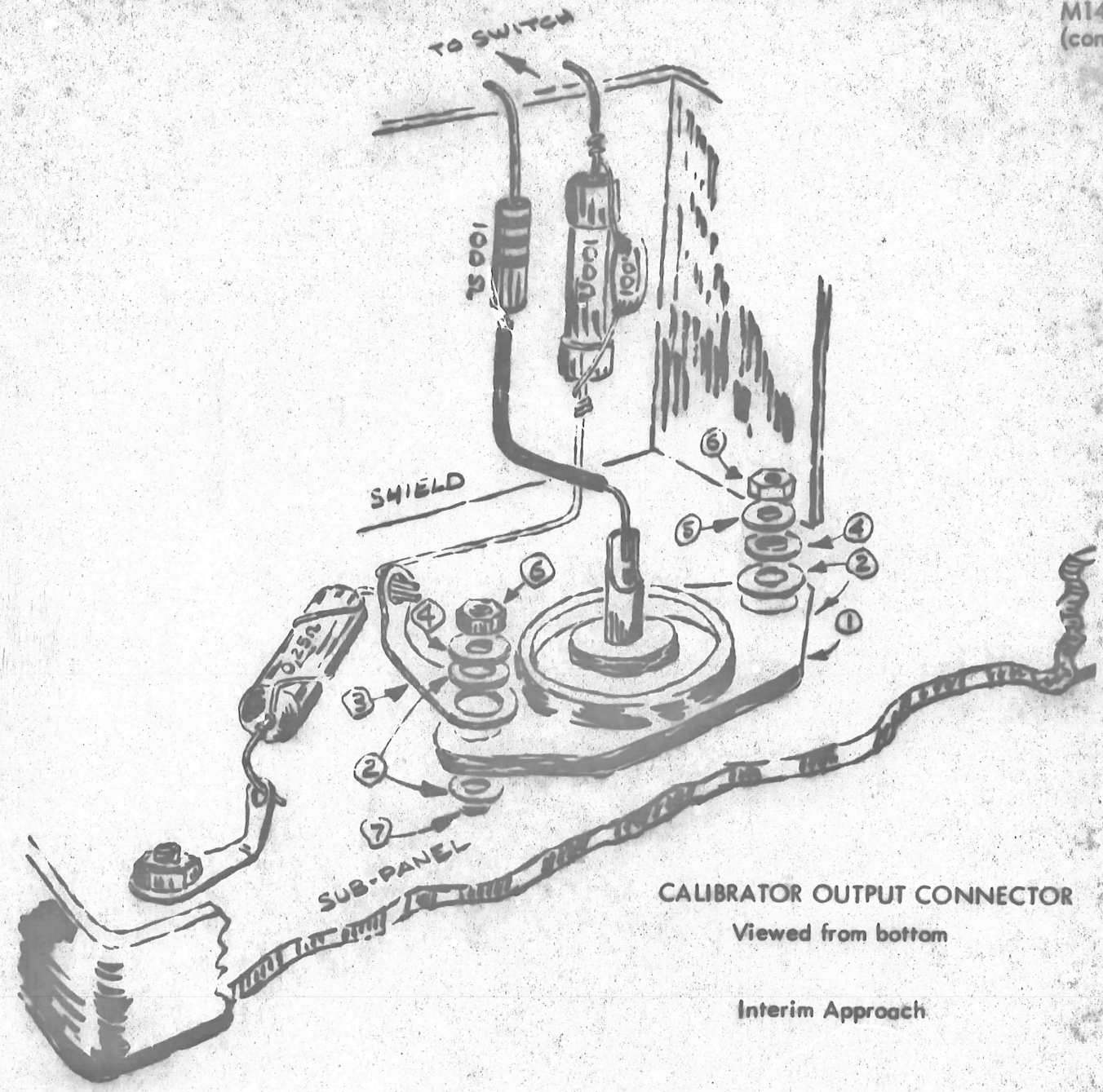
R698 1/4Ω 1/2w WW	308-090
Connector, modified	131-064
Lockwasher, int no.4	210-004
Lug, solder, no.10	210-224
Nut, hex, 4 x 3/16	210-406
Washer, plain, 5S	210-801
Washer, fiber, extruded no.4	210-849
Screw, 4-40 x 3/8FHS	211-025
Insulator, nylon	406-244

See schematics and drawings on following pages.


V264A
1/2 6BQ7
CALIBRATOR
CATHODE FOLLOWER
+225 V
R682
100
CAL
TEST
POINT
SQUARE-WAVE CALIBRATOR
SW 680
SW 670 B
C682
27
100
R688
9.5K
50
R684
6.375K
20
R685
2.1K
10
R686
1.025K
5
R687
610
2
R688
200
1
R689
100
.2
R690
60
.5
R691
40
R694
100K
R695
100
VOLTS
MILLIVOLTS
OFF
R699
100
CAL OUT
C 695
.001
CALIBRATOR
PRIOR TO MOD



CALIBRATOR
AFTER MOD



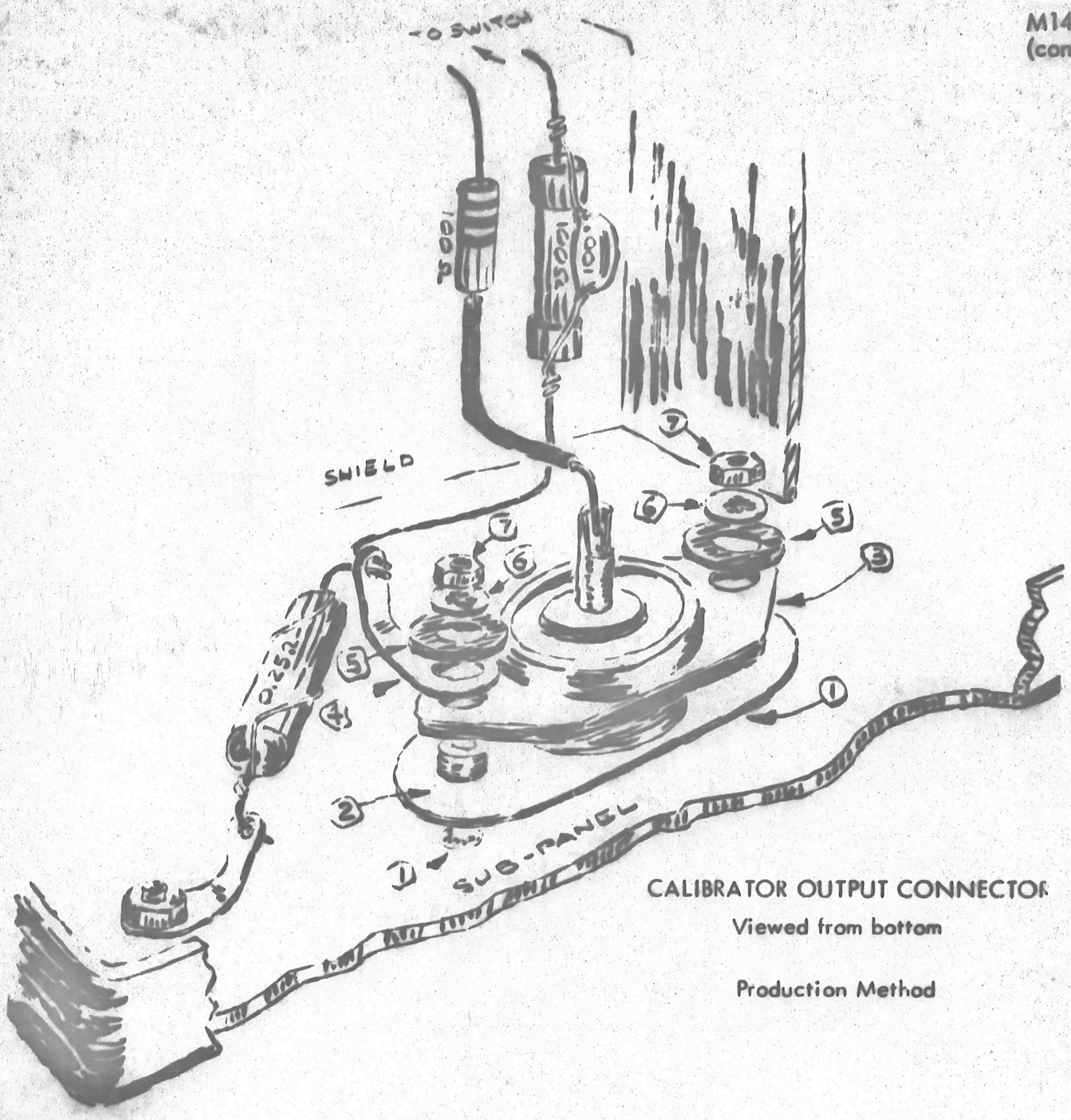
CALIBRATOR OUTPUT CONNECTOR

Viewed from bottom

Interim Approach

Hardware List

1)	Connector, modified 83-IRTY	131-064
2)	Washer, fiber, extruded no. 4	210-849
3)	Lug, solder, no. 10	210-224
4)	Washer, plain, 5S	210-801
5)	Lockwasher, int, no. 4	210-004
6)	Nut, hex, 4 x 3/16	210-406
7)	Screw, 4-40 x 3/8 FHS	211-025



CALIBRATOR OUTPUT CONNECTOR

Viewed from bottom

Production Method

Hardware List

1)	Screw, 4-40 x 3/8 FHS	211-025
2)	Insulator, nylon	406-244
3)	Connector, modified 83-IRTY	131-064
4)	Lug, solder, no.10	210-224
5)	Washer, fiber, no.10	210-812
6)	Lockwasher, int, no.4	210-004
7)	Nut, hex, 4 x 3/16	210-406

DELAYED TRIGGER RINGING ELIMINATED BY ADDING +100 V DECOUPLING NETWORK

See SQB

M1381

Effective Prod s/n 5084

Usable in field instruments s/n 101-5083

DESCRIPTION:

Decoupling was added to the +100 V supply, at the plate of V228B (Delayed Trigger Cathode Follower), to eliminate ringing in the Vertical Amplifier.

Parts Removed:

Parts Added:

R232	47Ω 1/2W 10%	302-470
C232	0.005 μF discap	283-001

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

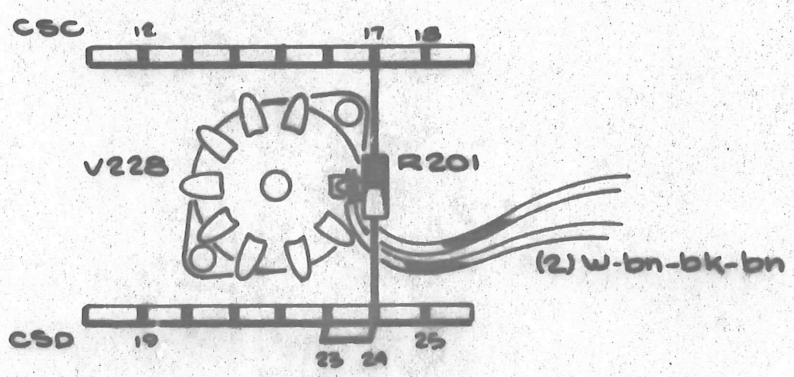
a) Relocate one end of R201, above V228 on the Delay chassis, from CSD-24 to CSD-23. Remove bare wire strap between CSD-23 and CSD-24.

b) Relocate the two white-brown-black-brown wires from pin 1 of V228 to CSD-24.

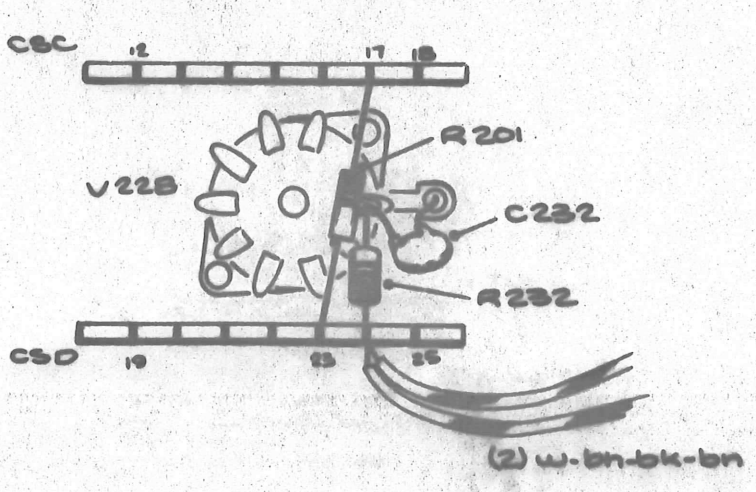
c) Install C232, a 0.005 μF discap, between pin 1 of V228 and its socket ground lug.

d) Install R232, a 47Ω 1/2W resistor, between pin 1 of V228 and CSD-24.

BEFORE



AFTER



DELAY PICKOFF JITTER ELIMINATED BY ADDING CAPACITOR TO DELAY TIME SWITCH

See SQB

M1386

Effective Prod s/n 5105

Usable in field instruments s/n 101-5104

DESCRIPTION:

C148D, a 22pF 500V capacitor, was added to the DELAYING SWEEP TIMING switch to eliminate jitter to the Delay Pickoff. This had the effect of increasing the holdoff time to the 2, 5 and 10μs position of SW190A. In instruments prior to s/n 1546, a 47pF 500V capacitor was designated C148D and occupied this same circuit position. See M1123.

Parts Removed:

Parts Added:

C148D	22pF 500V	281-510

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Install C148D, 22pF 500V capacitor, between the rear potentiometer mounting plate and W3-2R on the DELAY TIME/CM switch.

b) Below s/n 1546 only --
Replace C148D, 47pf capacitor, on the DELAY TIME/CM switch with a 22pF 500V capacitor.

NOTE: The following method is used to identify the DELAY TIME/CM switch terminals:

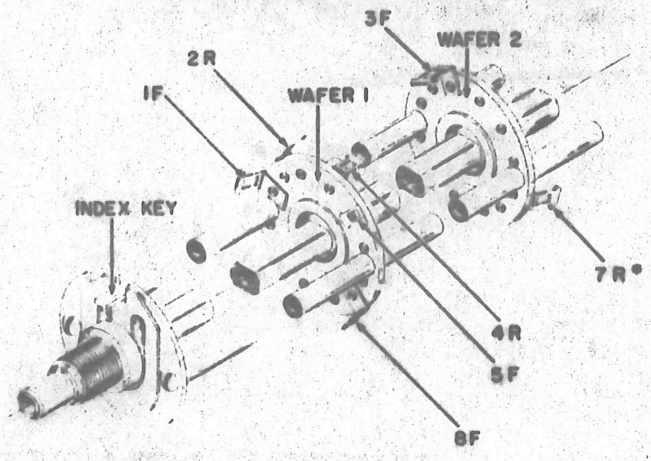
The wafers are numbered from the front to rear.

The contact mounting holes are numbered 1 through 12 relative to the index key as shown in the drawing.

The contacts have an 'F' or 'R' suffix which denotes that they are on the front or rear of the wafer.

Example: W2-7R (denoted by * on drawing) is contact #7 on the rear of wafer 2.

(TYPICAL SWITCH CONFIGURATION)



SWEEP GENERATOR +225 V DECOUPLING ADDED TO +GATE OUT CF TO REDUCE 'SWEEP WRINKLE'

See SQB — M1378

Effective Prod s/n 5118 — Usable in field instruments s/n 101-5117

DESCRIPTION:

Adding resistor R72 and capacitor C72 to the plate circuit of V73B reduced the 'Sweep wrinkle' which entered the Vertical Amplifier through the +225 v regulated supply.

The additional decoupling afforded by this mod is especially useful when using a 53/54B plug-in in the 0.05 volts/cm position.

Parts Removed:

Parts Added:

R72	47Ω 1/2w 10%	302-470
C72	0.005 µf discap	283-001

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Move the ground end of R77, a 4.7k 1w resistor, to the nearest ground lug on V73.

b) Unsolder the +225 v lead from pin 6 of V73B and connect at the slot vacated in step a.

NOTE: On some instruments it may be necessary to install a ceramic post as there isn't a vacant slot.

c) Install R72, a 47Ω resistor, between pin 6 of V73B and the slot mentioned in step b.

d) Install C72, a 0.005 µf capacitor between pin 6 of V73B and ground.

PLUG-IN SIDE PANELS REPLACED BY ONE INTERCHANGEABLE PANEL FOR IMPROVED ACCESS

INFORMATION ONLY — M1394

Effective Prod s/n 5393

DESCRIPTION:

Plug-in housing side panels were replaced with ones having larger access holes to allow internal adjustments with a plug-in in the instrument. Mechanical changes were made to allow using the panel for either the left or right side.

Parts Removed:

Plate, plug-in housing, right	386-357
Plate, plug-in housing, left	386-356
Shield, plug-in housing, Vert	337-067

Parts Added:

Plate, plug-in housing, side (2)	386-566
Shield, plug-in housing, Vert	337-091

DELAYED TRIGGERING AMPLIFIER
SUPPLY DECOUPLING CHANGED TO
ELIMINATE FAST PULSE RINGING

See SQB

M1419

Usable in field instruments s/n 101-5402

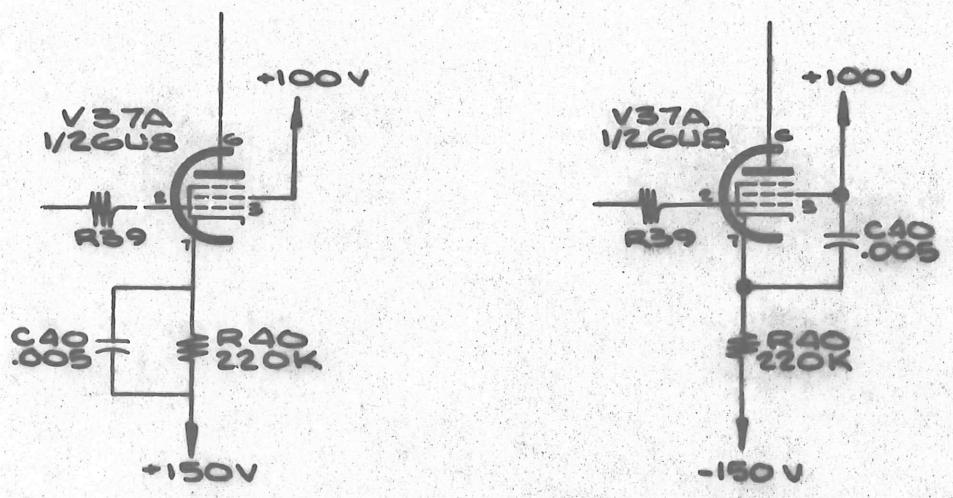
Effective Prod s/n 5403 -- s/n 3995 for 535 Rackmounts **

** Note: A new style cabinet appears on all standard instruments above s/n 5000 -- see M1326. The serial numbers between the last old style standard instrument and the first new style instruments were reserved for the 535 Rackmounts. These have an old style cabinet with an enlarged front panel for rackmounting, and should not be confused with RM35 instruments.

DESCRIPTION:

Capacitor C40 was relocated to the +100 V screen supply of the Delayed Trigger Amplifier to improve its high frequency decoupling. A wrinkle in the trace was attributed to ringing in the -150 V and the +100 V supplies, when a fast pulse was placed on the grid of V37A, the Delayed Trigger Amplifier.

Adjustment of the Delayed Time Multiplier control would position the wrinkle on the horizontal axis at the point of delay pickoff. The Main Sweep Generator schematic will show C40 connected between pin 7 (cathode) and pin 3 (screen) of V37A. Pins 1 and 3 of V37A are jumpered to +100 V.



(PARTIAL)
MAIN SWEEP GENERATOR

INSTALLATION INSTRUCTIONS:

a) Left R40 (220k) and C40 (0.005 μF) from the second notch in the ceramic strip, directly behind the TRIGGER MODE/TRIGGER SLOPE switch.

b) Dress the lead of C40 down to pin 3 of V37A and solder.

c) Resolder R40 (220k 1/2 W) to the second ceramic strip notch, from which it was removed in step a.

-150 V SUPPLY RINGING AND RIPPLE REDUCED BY ADDED DECOUPLING

See SQB

M1422

Effective Prod s/n 5403
s/n 3995 on 535 Rackmounts (see M1419 Note)

Usable in field instruments s/n 101-5402

DESCRIPTION:

To reduce ringing and ripple in the -150 V supply, a decoupling network was added between the -150 V buss and ground. Although physically located on the Sweep chassis, the C720-R720 combination will be shown in shunt with C715 on the LV Power Supply schematic.

Parts Removed:

Parts Added:

C720	0.01 µf 500 v	283-002
R720	10Ω 1/2 w 10%	302-100

Parts Required for Field Installation:

See 'Parts Added'.

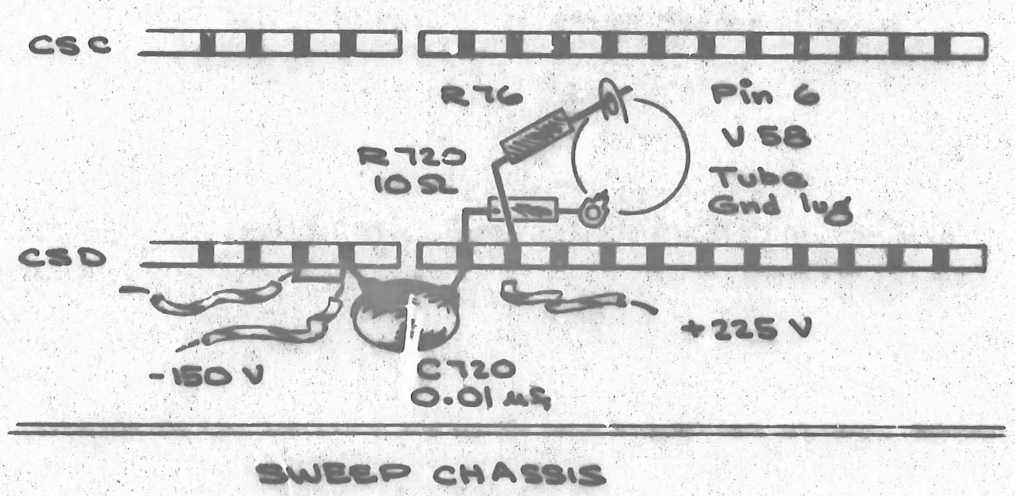
INSTALLATION INSTRUCTIONS:

a) Relocate one end of R76, a 47Ω 1/2 w resistor, and the +225 v lead from CSD-12 to CSD-13.

b) Unsolder and discard the wire strap between CSD-12 and CSD-13.

c) Install R720, a 10Ω 1/2 w resistor, between CSD-12 and the ground lug directly below it on the tube socket of V58.

d) Install C720, a 0.01 µf discap capacitor, between CSD-11 (-150 v) and CSD-12.



DELAYED SWEEP HUM REDUCED WITH ADDED TUBE SHIELD

INFORMATION ONLY

M1384

Effective Prod s/n 5430 -- 535-S2 only w/exceptions 5087-8, 5119, 5121-2, 5124-6, 5129, 5271
s/n 3996 for 535 Rackmounts (see M1419 Note)

DESCRIPTION:

The following changes reduced the incidence of hum interference in the 'Main Sweep Delayed' Mode at 1000:1 or greater ratios in sweep speed settings:

1) A socket type shield (337-004) was added to the V180 tube socket, and a tube shield (337-006) was placed over the 12AL5 used in that position. Two #4 ext lockwashers (210-003) were placed by two #4 int lockwashers (210-004) in the mounting of the socket shield.

2) The filament wire connecting pin 4 of V180 with pin 3 of V190 was dressed away from the shielded cable wire that is tied to the grid, pin 1, of the Miller Delaying Sweep Generator, V190.

3) In S2 instruments, the wires from the delaying sweep Mylar timing capacitors, C190A, B,C,E (291-011) were dressed close the DELAYING SWEEP TIMING switch, SW190.

Parts Removed:		Parts Added:	
Lockwasher, ext #4	210-003	Lockwasher, int #4	210-004
		Shield, socket	337-004
		Shield, tube	337-006

THERMAL CUTOUT 'OFF' TIME REDUCED BY HIGHER DEGREE 'ON' SWITCH

INFORMATION ONLY

M1331

Effective Prod s/n 5450

DESCRIPTION:

A new 'Therm-O-Disc' having a smaller differential between the 'OFF' and 'ON' temperature will replace the present one. This will shorten the 'OFF' time after the switch is actuated.

Parts Removed:			Parts Added:		
TK701	Thermal Cutout 128°±5°F - 'Off' 98°±5°F - 'On'	260-070	TK701	Thermal Cutout 128°±5°F - 'Off' 113°±5°F - 'On'	260-070

+500 V DECOUPLING CAPACITOR ADDED TO REDUCE RINGING

See SQB

M1457

Effective Prod s/n 5513 w/exceptions 5226 5434 5466-7 5488 5496 5504-11 5263 5446 5478-9 5490-1 5498 5397-8 5454-5 5481-3 5494 5501-2

Usable in field instruments s/n 101-5512

Effective Prod s/n 3596 on 535 Rackmounts (see M1419 Note)

Usable in field instruments s/n 3596-5000

DESCRIPTION:

A decoupling discap capacitor C538 was added to reduce ringing resulting occasionally with a 53/54B plug-in. Fast risetime pulses would feedback into the filament circuit of the plug-in Input CF through the +500 v wiring, causing input wrinkle approaching 4-5% at times. C538 was added between the plate (pin 6) of V535 and its ground lug.

Parts Removed:

Parts Added:

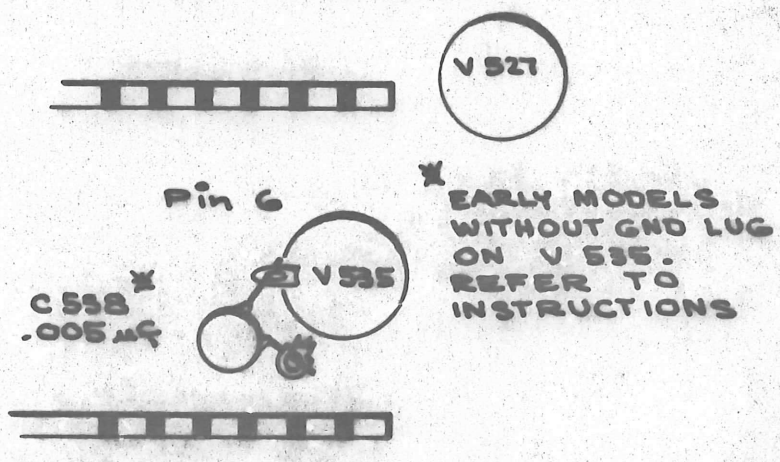
C538	0.005 µf 500 v	283-001

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install C538, a 0.005 µf discap capacitor, between pin 6 and the tube socket ground lug of V535 on the Driver Chassis. Some earlier instruments did not have a ground lug type socket for V535, and C538 was installed between pin 1 of V535 and the ground lug of V527.



TRIGGER OR EXT SWEEP INPUT SUPPRESSOR RESISTOR ADDED TO ELIMINATE OSCILLATION IN EXT SWEEP AMP — See SQB — M1460

Effective Prod s/n 5564 w/exceptions 5483,5490 Usable in field instruments s/n 101-5563
s/n 3996 for 535 Rackmount (see M1419 Note)

DESCRIPTION:

To eliminate parasitic oscillation in the Ext Sweep Amplifier, a resistor was added between the TRIGGER or EXT SWEEP IN coax connector and the X1, X10 ATTEN toggle switch.

Parts Removed:

Parts Added:

R109	47Ω 1/2W 10%	302-470

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace the wire located between the TRIGGER or EXT SWEEP IN coax and the X1, X10 ATTEN switch with R108, a 47Ω 1/2W resistor.

SCALE ILLUM CIRCUITRY REWIRED TO PERMIT COMPLETE EXTINCTION FOR PHOTOGRAPHS — See SQB — M1444

Effective Prod s/n 5600 Usable in field instruments s/n 101-5599

DESCRIPTION:

Provides complete graticule lamp extinction by grounding the open end of the scale illumination potentiometer R600, thereby permitting complete control of the lamps. This was accomplished by adding a grounding pot solder lug and lockwasher under the scale illum pot, R600.

Parts Removed:

Parts Added:

Lockwasher, pot, int	210-012
Lug, solder, plain	210-207

Parts Required for Field Installation:

See 'Parts Added'.

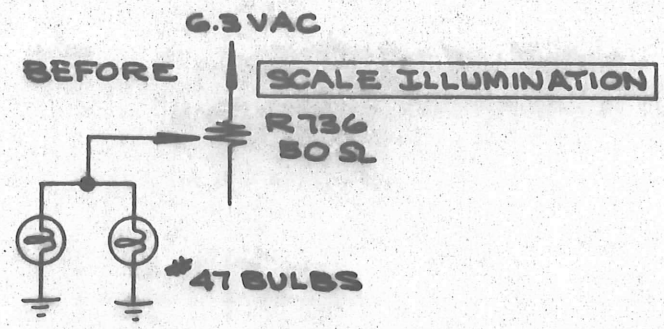
continued

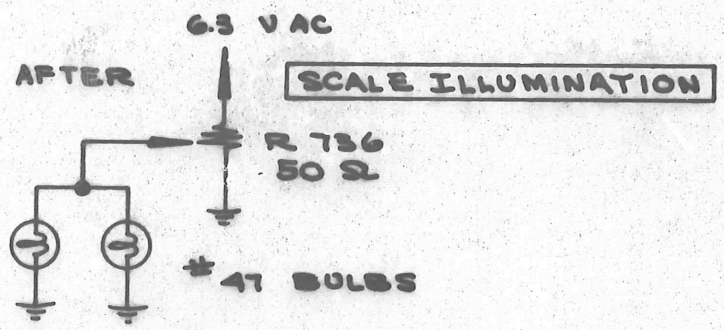
INSTALLATION INSTRUCTIONS:

a) Remove R736 (Scale Illum pot) and install lockwasher and solder lug between pot and subpanel.

b) Solder unused terminal of R736 to the solder lug just installed.

c) Interchange the two existing wires connected to the pot (the white-red-blue wire should now be connected to the outside terminal -- this places the pot between 6.3 v and ground.)





AUXILIARY TRANSFORMER SECONDARY VOLTAGE LOWERED FOR SAFER OPERATION OF TIME DELAY RELAY

INFORMATION ONLY

M1467

Effective date 1-7-57 -- 535-S4 only

DESCRIPTION:

The auxiliary transformer voltage is too high for safe operation of the time delay relay. Reduces the secondary voltage from 27 v AC to 25 v AC and adds a series resistor.

Parts Removed:

T701	DC 1	120-075

Parts Added:

T701	DC 1	120-084
R708	100Ω 1 w 10%	304-101

AUXILIARY TRANSFORMER SECONDARY VOLTAGE LOWERED FOR SAFER OPERATION OF TIME DELAY RELAY

INFORMATION ONLY

M1475

Effective date 1-7-57 -- 535-S3 only

DESCRIPTION:

The auxiliary transformer voltage is too high for safe operation of the time delay relay. Reduces the secondary voltage from 27 v AC to 25 v AC and adds a series resistor.

Parts Removed:

T700	DC 2	120-072

Parts Added:

T700	DC 2	120-085
R708	100Ω 1 w 10%	304-101

DELAY LINE SHIELD ADDED TO ELIMINATE PICKUP OF UNBLANKING PULSE

INFORMATION ONLY

M1418

Effective Prod s/n 5830

DESCRIPTION:

To eliminate a ringing at high sweep speeds resulting from the Unblanking pulse feeding into the Delay Line, an 'L-shaped' shield was added between the HV chassis and Delay Line. The shield extends below the CRT control grid lead to achieve some measure of shielding for the Delay Line. Two 1/8 in. mounting holes were added in the outside lip of the HV chassis.

Earlier instruments will require some revision of the mounting hole location.

Parts Removed:

Parts Added:

Shield, Delay Line	337-156
Screw, 4-40 x 1/4 BHS	211-008
Lockwasher, int no. 4	210-004
Nut, hex, 4-40 x 3/16	210-406

RECTIFIER PLATE AND CRT BRACKET IMPROVED BY REDESIGN

INFORMATION ONLY

M1451

Effective Prod s/n 5985

DESCRIPTION:

To improve the rigidity of the instrument and to simplify the final assembly squaring and aligning operation, a rectifier mounting plate of new design was used. The new plate has no rear flange, and the top and bottom were extended to the rear making the overall width 11-5/8 in. Additional fastening points were provided at the top rear through a newly added hole in the Sweep chassis and at the bottom rear through the existing Clare relay bracket mounting holes in the Power chassis. In addition, two new holes were provided in the Rectifier mounting plate for fastening a new CRT support bracket which was installed as a part of this modification. The former CRT support bracket was fastened to the rear flange of the old rectifier mounting plate.

Parts Removed:		Parts Added:	
Plate, rectifier mounting	386-546	Plate, rectifier mounting	386-574
Bracket, CRT support	406-238	Bracket, CRT support	406-251

DELAYING SWEEP TRIGGER SHAPER SIGNAL INCREASED 20% TO INSURE PROPER TRIGGERING OPERATION

See SQB

M1454

Effective Prod s/n 6031 Usable in field instruments s/n 101-6030
s/n 4010 for 535 Rackmounts (see M1419 Note)

DESCRIPTION:

The Trigger Shaper Pulse Output was increased 20% to insure a level consistant with established spec (5 volts). This allowed proper triggering of the multivibrator.

Prioer to this change, if the trigger signal was marginal, the potential existed for tube aging in service to further deteriorate the amplitude to the point where erratic multi operation would be experienced.

Parts Removed:			Parts Added:		
R224	4.7k 1/2W 10%	302-472	R224	5.6k 1/2W 10%	302-562

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace R224, a 4.7k 1/2W resistor, with a 5.6k 1/2W resistor. R224 is located on the ceramic strips above V216 on the Delay Sweep chassis, connected between pin 1 of V216 and +350 V.

Effective Prod s/n 6045 (see list in Description)

DESCRIPTION:

An 'Automatic' mode of triggering replaces the present 'AC Auto' mode. In the New Mode of operation, the front panel 'Stability' control is replaced by an internal control which is preset for optimum triggering. The new 'Preset Stability' R49, a 100k 2w potentiometer, was mounted at the front outside corner on the Sweep chassis.

Included with the new circuitry requirements was a switch circuit SW5G, added to the front side of section 5 of the Triggering Mode switch. The switch will remain a direct replacement.

The front panel was changed to the extent that the 'AC Auto' position of the Triggering Mode control was redesignated 'Automatic'.

The following changes were effected in the Sweep Cable:

1) The white-violet wire which formerly tied to the 'Stability' pot center contact (variable arm) was rerouted to tie to the lower wiper arm of the newly added 'Triggering Mode' switch section.

2) A white-orange wire was added from the SW5G 'Automatic' contact to the Preset Stability pot center contact (arm).

3) A white-blue wire was added to the upper arm of the newly added 'Triggering Mode' switch section to the center arm of the 'Stability' pot.

4) A black-brown-green-brown wire was added from one end of the 'Preset Stability' pot to -150v available at the outboard ceramic strip adjacent to V40. The other end contact of the 'Preset Stability' pot is grounded by means of a pot ground lug.

	Standard	Rackmount
New switch section added but not wired	s/n 5470	s/n 3996
Pot mounting hole added to sweep chassis	s/n 5553	s/n 3996
Pot added, switch wired, new panel	s/n 6045	Standard Rackmount instruments with 'Automatic' never produced

The following new cabinet design, special instrument front panels are available with the automatic feature:

535-S1	333-298	535-S4	333-251
535-S2	333-299	535-S6	333-253
535-S3	333-250	535-IBM	333-320

Old Style

535-S4 Rackmount 333-314

The following panels will be available for Customer Service usage:

535-S1	333-248	535-S2	333-249

The following instruments were modified out-of-sequence:

5718 --	535-S6	4010 --	535-S4 RM	4020 --	535RM	Special	Painted	Panel
5876 --	535-S2	4016 --	535-S6 RM	4021 --	535RM	"	"	"
5878 --	535-S2	4017 --	535-S6 RM	4022 --	535RM	"	"	"
5881 --	535-S4	4018 --	535-S6 RM	4023 --	535RM	"	"	"
5882 --	535-S4	4019 --	535-S6 RM	4024 --	535RM	"	"	"
5831 --	535			4025 --	535RM	"	"	"
5856 --	535			4031-41 --	535RM	"	"	"

. continued

This mod is incorporated in Modification Kits 040-149 (s/n 101-1074) and 040-152 (1075-6044).

Parts Removed:		Parts Added:		
Panel, front, "AC Auto"	333-238	Panel, front, "Automatic"		333-297
		R49	100k 2W 3/8x3/8	311-026

DELAYING SWEEP SHOCK HAZARD ELIMINATED WITH ADDED GROUND WIRE

See SQB

M1485

Effective Prod s/n 6126 Usable in field instruments s/n 101-6125
s/n 4010 for 535 Rackmounts (see M1419 Note)

DESCRIPTION:

A shock hazard in testing and servicing the delaying sweep chassis exists when the chassis is swung out from the main unit. In this position there is no positive ground return to the scope frame. A #6 ground lug was added to the delaying sweep chassis and a #20 stranded wire added to the power cable between the lug and the ground lug of V791 on the power deck.

Parts Removed:	Parts Added:	
	Lug, solder, SE6	210-202
	Wire, #20 str, white 6 in.	(175-512)

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

a) Install a #6 ground lug under the head of the lower screw which mounts the delaying sweep chassis to the swivel support post.

b) Connect a #20 white stranded wire between the installed ground lug and the ground lug of V791 on the Power chassis. The wire will pass through the plastic cable clamp and the grommet in front of V791.

KNOBS REPLACED FOR BETTER SPACING AND IMPROVED APPEARANCE

INFORMATION ONLY — M1489

Effective Prod s/n 6151
s/n 4010 for 535 Rackmount (see M1419 Note)

DESCRIPTION:

An improved appearance and better spacing is gained with the use of smaller knobs in the limited space below the CRT. The knobs replaced by this change are the Focus, Intensity, Astigmatism and Scale Illumination controls.

Parts Removed:		Parts Added:	
Knob, 0.780D x 0.591 hi (4)	366-044	Knob, 0.007D x 0.525 hi (4)	366-033

VERTICAL AMPLIFIER BYPASS CAPACITOR ADDED TO ELIMINATE OSCILLATION

See SQB — M1494

Effective Prod s/n 6321 — Usable in field instruments s/n 101-6320
s/n 4010 for 535 Rackmounts (see M1419 Note)

DESCRIPTION:

A bypass cpacitor was added to the plate circuit of V558A, preventing parasitic oscillations in the Vertical Amplifier circuits.

Parts Removed:

Parts Added:

C560	0.01 µf 500 v	283-002

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Install C560, a 0.01 µf discap, between pin 1 of V558A and ground.

DEFLECTION PLATE CONNECTOR ACCESS PANEL REMOVED

INFORMATION ONLY — M1546

Effective Prod s/n 6801

DESCRIPTION:

Because of low usage, the access plate has been removed and will be supplied as an accessory (013-008), on special order only.

Parts Removed:		Parts Added:
Clamp, access panel	343-033	
Panel, plexi plate, access	386-560	

DELAY PICKOFF CIRCUITRY IMPROVED BY REPLACING V195, A SINGLE 6U8, WITH TWO 6AU6's

Effective Prod s/n 7010

DESCRIPTION:

This modification was to correct several problems which existed in the delay pickoff circuit of the delaying sweep:

1) The high rejection rate of 6U8's because of unbalance.
2) Heater hum.
3) A general improvement in circuitry with the instroduction of the more stable 6AU6's.

Changes in the chassis were made to accommodate the two 7-pin tube sockets replacing the single 9-pin tube socket used previously. No changes in circuitry were necessary. The accompanying schematics show the change in tube socket wiring. See Before and After schematics on following page.

As additional information, pin 4 of each 6AU6 heater is grounded. Also, V195A,B became V195 and V196 respectively.

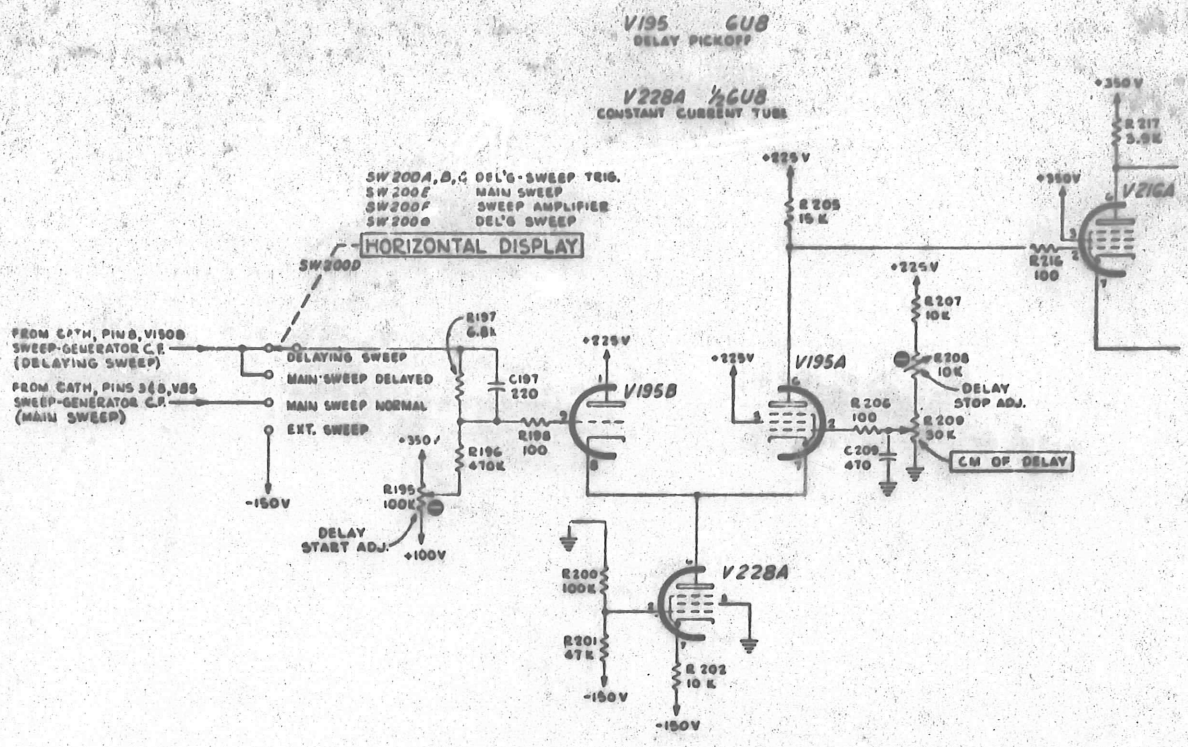
Parts Removed:

V195A,B	6U8	154-033
Chassis		441-064
Socket, tube, 9-pin		136-015

Parts Added:

V195, V196	6AU6	154-022
Chassis		441-095
Socket, tube, 7-pin	(2)	135-008
Screw, 4-40 x 5/16	(2)	211-033
Nut, hex, 4-40 x 3/16	(2)	210-406
Lockwasher, #4 ext	(2)	210-003

continued



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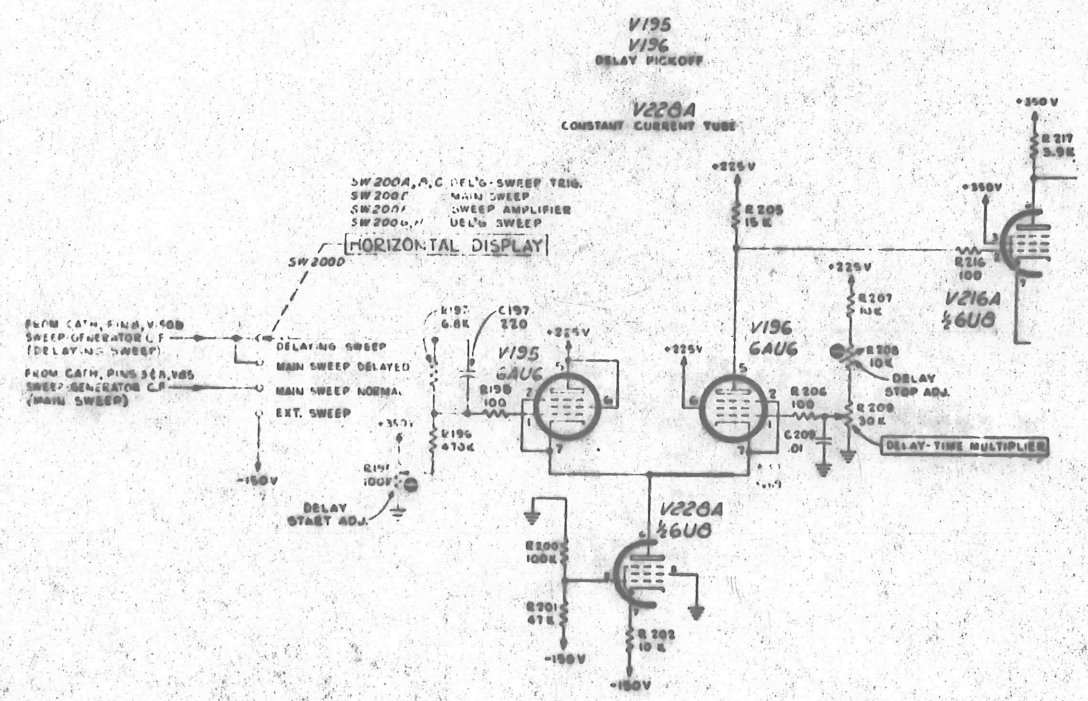


AFTER

POWER SUPPLY TRANSFORMER CHANGED TO EXPORT TYPE FOR ECONOMY

INFORMATION ONLY — M1551

Effective Prod s/n 7060

DESCRIPTION:

A high percentage of instruments require an export transformer (Mod 161A). To save the cost of handling and rework, the export transformer (with multi-tap primary) replaces the domestic type on standard instruments also.

Parts Removed:			Parts Added:		
T700	LV, 117/234 V	120-037	T700	LV, Export	120-086
			Tag, Voltage		334-634

X10 DELAYING SWEEP ATTENUATOR TRIMMER RANGE CHANGED WITH INCREASED CAPACITOR VALUE

INFORMATION ONLY — M1561

Effective Prod s/n 7495

DESCRIPTION:

Proper adjustment of C100, a X10 attenuator network trimmer capacitor, requires the use of a capacitor having a greater range on the high end. To accomplish this end, C100 was changed from a 5-25 pF 500 V ceramic capacitor to a 8-50 pF 500 V ceramic capacitor.

Parts Removed:			Parts Added:		
C100	5-25 pF 500 V	281-011	C100	8-50 pF 500 V	281-013

Parts Required for Field Installation:

See 'Parts Added'.

INSTALLATION INSTRUCTIONS:

Replace C100, a 5-25 pF variable capacitor located between C110 and C101 on the bracket directly behind the X1-X10 attenuator toggle switch, with a 8-50 pF 500 V capacitor.

GRATICULE STUDS CHANGED TO REMOVABLE TYPE

INFORMATION ONLY — M1570

Effective Prod s/n not given

DESCRIPTION:

To facilitate replacement of damaged or corroded graticule studs, without removing the instrument front and subpanel, a new graticule stud has been made available through Customer Service. The internally threaded stud can be fastened in place from the back of the subpanel with a 10-32 x 3/8 BHS screw and a #10 internal lockwasher. Removal of the old stud is possible by drilling through with a 9/32 in. drill, then breaking off with pliers.

Parts Removed:	Parts Added:
	Stud, graticule, 10-32 int thread 355-043

TRIGGERING 'PRESET' POSITION ADDED TO STABILITY CONTROL

See SQB

M1512

Effective Prod s/n 7553

Usable in field instruments s/n 101-7552

DESCRIPTION:

A 'Preset' position was added to the front panel stability control. This was to make use of the internal Preset stability adjustment, added by M1404 for the automatic mode, for all modes of triggering. In preset position, the front panel stability control is replaced by the internal preset stability control and only the triggering level control needs adjustment for proper triggering.

Parts Removed:

R14, R43	2-100k	311-030

Parts Added:

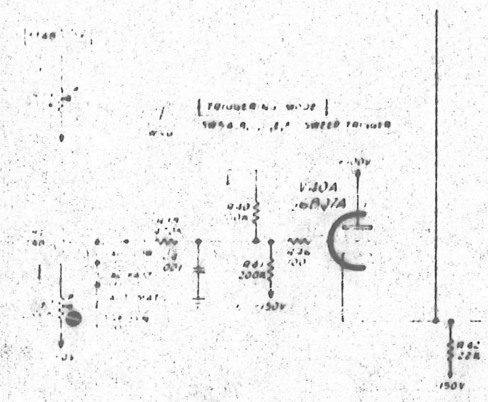
R14, R43	2-100k w/SPDT sw	311-096

Parts Required for Field Installation:

Field Modification Kits	040-149	(s/n 101-1074)
	040-152	(s/n 1075-6044)
	040-154	(s/n 6045-7552)

INSTALLATION INSTRUCTIONS:

Refer to kit instructions.



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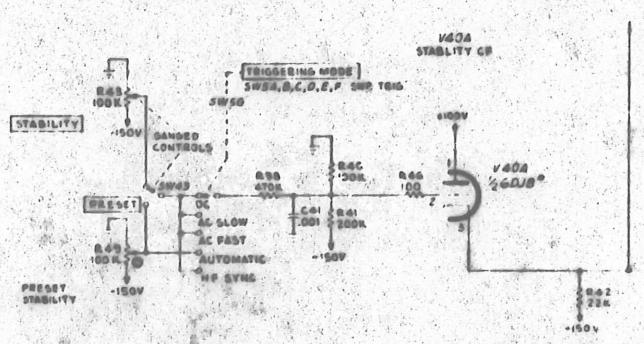


AFTER

DELAYING SWEEP REWIRED TO ELIMINATE NEED FOR CHECKED NEON DIODES

INFORMATION ONLY **M1590**

Effective Prod s/n 7611

DESCRIPTION:

To eliminate the need for checked neon diodes in the Delaying Sweep Generator circuit, neon diode B180 was relocated from the junction of R186, the plate of V190 (pin 5) and the cathode of V150B (pin 8), to the junction of R185 and R187, and the cathode of V150B. With the change in circuitry for B180, it is not necessary that B187 be a checked neon.

Parts Removed:

B180	Neon, checked	150-011
B187	Neon, checked	150-009

Parts Added:

B180,B187	Neon, raw	150-002

SWEEP CHANGED TO ELIMINATE NEED FOR CHECKED NEON DIODES

INFORMATION ONLY **M1594**

Effective Prod s/n 7627

DESCRIPTION:

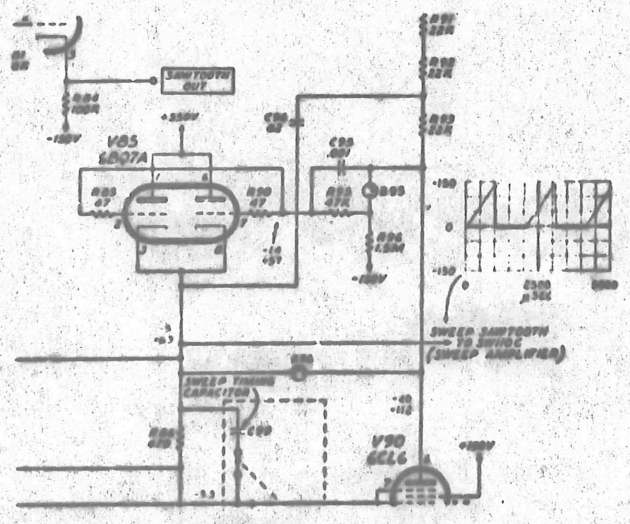
To eliminate the need for checked neon diodes in the Sweep Generator circuit, neon diode B96 was relocated from the junction of R93, C95 and the cathode of V85 to the junction of R95, R90 and the cathode of V85. With the change in circuitry for B96, it is not necessary that B95 be a checked neon. It was established that B287 of the Sweep Amplifier also required only a raw neon.

Parts Removed:

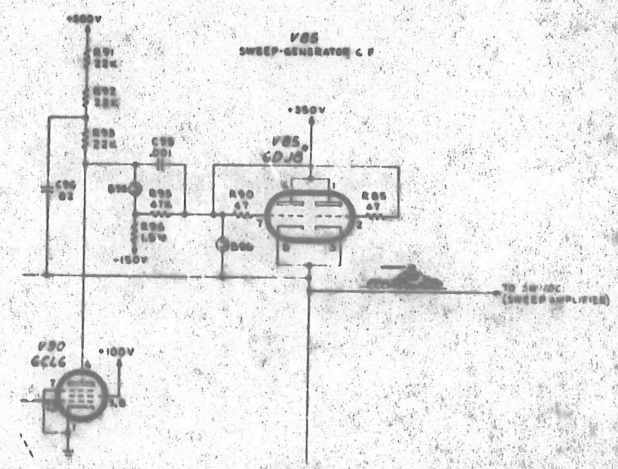
B95,B287	NE-2 55 v ckd	150-009
B287	NE-2 65 v ckd	150-011

Parts Added:

B95,B287, *B96	NE-2, raw	150-002



BEFORE



AFTER

CRT ROTATING RING INSTALLED — INFORMATION ONLY — M1611

Effective Prod s/n 7688
s/n 4072 for 535 Rackmounts (see M1419 Note)
w/exceptions 4057-66

DESCRIPTION:

To provide an easier method of rotating the CRT, a molded nylon rotating ring (with handle) has been fitted to the CRT socket.

Parts Removed:

Parts Added:

Ring, rotating	354-062

DELAYING SWEEP TIMING SWITCH VARIABLE CAPACITORS REPLACED TO ELIMINATE DRIFT — INFORMATION ONLY — M1526

Effective Prod s/n 7861
s/n 4072 for 535 Rackmounts (see M1419 Note)
w/exceptions 4063-6, 4068-71

DESCRIPTION:

Because of a tendency to drift after setting C190D and C190F in the Delaying Sweep Timing switch, an inherent fault of this type fiber mounted trimmer, ceramic trimmers (TS2A NPO Erie) are now being used. The larger dimensions of the all-ceramic trimmer has necessitated a new bracket. The bracket includes an indexing tab to allow clockwise rotation of the Delay Time switch 90° because of space limitations. There was also lead length changes to C190A, C190B and C190C. The replacement for C190D required a value difference from 8-50 pF to 7-45 pF.

Parts Removed:

C190D	8-50 pF fiber	281-013
C190F	3-12 pF fiber	281-009
Screw, thrd-cut, 4-40x1/4 (4)		213-035
Bracket, aluminum		406-115

Parts Added:

C190D	7-45 pF cer	281-012
C190F	3-12 pF cer	281-007
Screw, thrd-cut, 4-40x5/16(4)		213-034
Bracket, aluminum		406-273

CALIBRATOR SWITCH REDESIGNED FOR EASIER INSTALLATION

See SQB

M1498

Effective Prod s/n 7894

Usable in field instruments s/n 101-7893

DESCRIPTION:

The Square-wave Calibrator switch was replaced to use a separate shield for ease of installation and to simplify wiring.

Parts Replacement Kit 050-034 is available to facilitate the replacment of Square-wave Calibrator switch 260-013 in pre-effective serial number instruments.

Parts Removed:			Parts Added:		
SW670	Calibrator	260-013	SW670	Calibrator	260-177
	Shield	337-064		Shield	337-093

EXT SWEEP AMPLIFIER DC BAL DIVIDER RESISTOR CHANGED TO INCREASE CONTROL RANGE

INFORMATION ONLY

M1607

Effective Prod s/n 7913
s/n 4074 on 535 Rackmounts (see M1419 Note)

DESCRIPTION:

The External Sweep DC Bal divider resistor R113 was changed from 47k to 33k to provide an increased adjustment range.

Parts Removed:			Parts Added:		
R113	47k 1W 10%	304-473	R113	33k 1W 10%	304-333

SWEEP CABLES REPLACED WITH ONE MAIN CABLE

INFORMATION ONLY

M1672

Effective Prod s/n 8147 w/exceptions 8144, 8398
s/n 4082 for 535 Rackmounts (see M1419 Note)

DESCRIPTION:

To replace twenty-two separate insulated wires, and two separate cable harnesses with one main cable harness. This simplified production of the chassis and cured some problems existing in the older cables.

Parts Removed:		Parts Added:	
Cable, Main Sweep, no. 1	179-071	Cable, Main Sweep	179-188
Cable, Main Sweep, no. 3	179-072		

+500 V TERMINAL POINT PROVIDED FOR USE WITH NEW RM VERT AMPS

INFORMATION ONLY

M1676

Effective Prod s/n 8147
s/n 4082 for 535 Rackmounts (see M1419 Note)

DESCRIPTION:

The objective of this mod is to make 500 series sweeps, in present production, usable with new vertical amplifiers which will be incorporated in the RM series instruments.

To provide access to a 500V supply which will be the 'striking' voltage for the neon vertical indicators through dividers, a loop breakout was made in the main sweep cable and brought up to CSB-12. R627, a 1k 1/2W 10% resistor, was repositioned to connect from CSA-12 to CSB-12. This change establishes CSB-12 as a 500V terminal point compatible with the needs of the new vertical amplifier circuitry. No additional changes in components or circuitry were made.