file 316
date May, 1959

ENGINEERING & MAINTENANCE BULLETIN

FIELD MAINTENANCE RELEASE DIGEST FOR TEKTRONIX 316

All 316 Field Maintenance Releases to December 31, 1958 are included in this digest. All Field Maintenance Releases from January 1, 1959 to date are current and available as separate copies. During 1960, this year's Field Maintenance Releases will be reviewed and included in a new digest.

FMR-71A: Subject: Excessive Filament Voltage to V154, 6CB6 January 3, 1958

On type 316 Oscilloscope below serial number 295, the dc filament voltage to V154 is about 6.7 to 6.8 volts resulting in early failure of the tube. An easy corrective measure is to install a 2.2 ohm resistor in series between the electrolytic filter capacitor C150, located near the power transformer and pin 3 of V154. Please follow these directions for proper installation.

( ) 1. Remove both blue leads going to the center of the electrolytic capacitor, C150.

( ) 2. Place the 2.2 ohm resistor between ceramic-strip terminal 13, located near the electrolytic-capacitor, and the center of the capacitor.

( ) 3. With an ohmmeter determine which blue lead goes to pin 3 of V154.

( ) 4. Place the above lead in terminal 13 and solder.

( ) 5. Solder the other lead and the resistor to center terminal of the capacitor.

The 2.2 ohm, $\frac{1}{2}$ W, 10% resistor, Tek No. 308-116, can be obtained from the factory or your Field Engineering Office.

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ENGINEERING & MAINTENANCE BULLETIN

FIELD MAINTENANCE RELEASE DIGEST FOR TEKTRONIX TYPE 524

All 524 Field Maintenance Releases to December 31, 1958 are included in this digest. All Field Maintenance Releases from January 1, 1959 to date are current and available as separate copies. During 1960, this year's Field Maintenance Releases will be reviewed and included in a new digest.

FMR-13B: Subject: Type 524D--Ripple in -150 Volt Supply — Jan. 5, 1954
Supersedes FMR-13A

The AC ripple in the -150 volt power supply can be reduced to 30 millivolts or less by replacing R404, 39 k, 1/2 w resistor with a 22 k, 1/2 w composition, 10% resistor.

All instruments in the field should be modified if the ripple of the -150 volt power supply is in excess of 30 millivolts. This is MOD #524-705 starting with serial number 790.

FMR-15C: Subject: Selenium Rectifier Modification for Type 524 before S/N 1069. — Dec. 4, 1956
Supersedes FMR-15B

This modification will minimize selenium rectifier failures and provide thermal protection for high air-temperature conditions.

On all orders for selenium rectifiers for Type 524 before S/N 1069, a kit K524-748, will be supplied, or you may order proper kit.

Tek Number		Description	Price
040-055	K524-748-1	for S/N below 903	$17.00
040-056	K524-748-2	for S/N between 903 and 1069	17.00

FMR-19A: Subject: Type 524D Vertical Amplifier Response — Oct. 20, 1954

On all Type 524D's, below Serial Number 1400, a modification can be made that will improve the flat response to 5 megacycles within ±1%. You can easily modify the vertical amplifier (essentially by changing the access panel) so that by turning the switch you have a choice of:

1. FLAT response to 5 megacycles ±1%
2. NORMAL response (wide-band)
3. IRE response
4. EXTernal

(continued on the next page)

FMR-19A (continued)
K524-805, Serial Nos. 101-1399, containing a new access panel with switch, plus instructions and components, is available from the factory for $6.50 Tek No. 040-057.

FMR-26A: Type 524D Oscilloscope, below S/N 1758, Hum Pickup March 25, 1955

The hum pickup from the tube heaters in the output amplifier can be decreased by the addition of one resistor.

R96, an 82 k, 1/2 w, 10% composition resistor is added from the heater, pin 2, of V31, V33, and V35 to the ungrounded (cathode) end of R87, 200 ohm, 10 w, wire-wound resistor.

This modification is recommended for only those scopes having objectionable output-amplifier hum.

FMR-73A: Horizontal Cathode Follower Voltage Limiting Modification in Type 524, below S/N 5342. January 13, 1958

This FMR gives detailed instructions to correct excessive voltage between the grid and cathode of the two horizontal-output cathode-followers (V222A and V222B) when the instrument is first turned on. Obtain a copy of this FMR, which will be kept in print, from your field office.

file . 575

date . May, 1959

ENGINEERING & MAINTENANCE BULLETIN

FIELD MAINTENANCE RELEASE DIGEST FOR TEKTRONIX 575

All 575 Field Maintenance Releases to December 31, 1958 are included in this digest. All Field Maintenance Releases from January 1, 1959 to date are current and available as separate copies. During 1960, this year's Field Maintenance Releases will be reviewed and included in a new digest.

FMR-77A Subject: Type 575 Grounded Chassis (Serial Number 101 through 358) March 21, 1958

The voltage-elevated collector sweep chassis may be shorted to some screw heads if the left cabinet side is pressed inward. A recessed nylon insulating washer is available to fit under the screw heads. The washer replaces the steel washers under each of the 4 corner screws that hold the outside plate of the collector sweep chassis to the end plates.

You will need 4 washers per instrument. Order Tek No. 210-869, Nylon Protective Washer from the factory or your Field Engineering Office; no charge.

file • Plug-Ins
date • May, 1959

ENGINEERING & MAINTENANCE BULLETIN

FIELD MAINTENANCE RELEASE DIGEST FOR TEKTRONIX PLUG-INS

All Plug-In Field Maintenance Releases to December 31, 1958 are included in this digest. All Field Maintenance Releases from January 1, 1959 to date are current and available as separate copies. During 1960, this year's Field Maintenance Releases will be reviewed and included in a new digest.

FMR-21A: Subject: Type 53B Plug-In Unit: Improved Dependability Serials 101-281, EXCEPT SERIALS 137, 172, 191, 221, 230, 231, 233, 237, 243--247, 250, 251, 253--278, which have already been modified. October 27, 1954

A kit, K53B - 1015, containing the selenium rectifier plate and two 275 µfd, 6 V, EMT, Capacitors, protects C3342 from excessive inverse voltage. This modification should be made on all Type 53B Plug-In Units below serial 281, except those serials specified.

Tek No. 040-001 K53B - 1015 No charge

FMR-27A: Subject: Reducing Switching Overshoot in Type 53C Plug-In Unit, Below Serial 836. March 25, 1955

A kit, K53C - 1072, reduces switching transient overshoot.

Tek No. 040-098 K53C - 1072 No charge

FMR-49A: Subject: Type 53/54C Plug-In Unit Button-Capacitor Replacement July 27, 1956

This FMR gives detailed instructions on the replacement of button capacitors in the input attenuators. Obtain a copy of this FMR, which will be kept in print, from your field office.

FMR-55A: Subject: Type 53/54D Plug-In Unit -- Balance Trouble November 9, 1956

Reports have been received regarding trouble in properly balancing the Type 53/54D Plug-In Unit after field use. A properly balanced unit will permit the reference line to remain stationary while the MV/CM MULTIPLIER is rotated to different sensitivities. Any unbalance is usually caused by drift in tube characteristics, and sometimes the PREAMP BALANCE control will not restore proper balance. In these cases, you should readjust the DIFFERENTIAL BALANCE (DIFF. BAL.) control as described in the maintenance section of the instruction manual that accompanied your instrument. Unless there are other troubles, the plug-in unit should now be properly balanced.

FMR-58A: Subject: Type 53/54C Plug-In Unit: Panels January 8, 1957

About 106 units, in the serial number range of 7000 to 7180, were shipped with both panel and subpanel holes being the same size. On these instruments, it may be difficult to get a good tight center-pin and/or ground contact between receptacle and plug since the plug may not be pulled up snugly enough against the receptacle.

Generally speaking, there won't be many problems. But if there are, here are two possible solutions: (1) remove the panel and enlarge the diameter of the hole by 1/8 inch, or (2) the factory will send a new panel at no charge if the serial number is furnished to us.

FMR-60A: Subject: Type 53/54D Plug-In Unit - Replacement of the 5814 tube with a German Telefunken Type 12AU7 February 5, 1957

Starting with serial No. 3461, a matched pair of Tekefunken 12AU7 tubes replaced the 5814's currently used in V3404, V3454 positions in the Type 53/54D Plug-In Unit. DC drift is reduced by a factor of about 5, and the cost of the matched pair is greatly reduced.

Upon your need for replacing the 5814 tubes, you are urged to use Telefunken 12AU7's. The only electrical difference is in the filament current. The 5814's draw 175 ma, while the 12AU7's draw 150 ma. To make the replacement, disconnect R4014, a 3.3 K, 2W resistor physically located between R3504, a wire-wound resistor, and a nearby ceramic strip at the rear of the Plug-In Unit. This resistor normally supplies the extra 25 ma necessary for the 5814 tubes.

The new type tubes are now available from the factory by Tek Number 157-049. The price for a matched pair is $3.00.

FMR-65A: Subject: Type 53/54E Plug-In Unit--Replacement of the 5751 and 5814 tubes with Telefunken 12AX7 and 12AU7. June 10, 1957

Telefunken 12AX7 (Tek No. 154-043) and 12AU7 (Tek No. 154-041) are now used in V3015 and V3805 positions in the Type 53/54E Unit. The new tubes will improve performance, reduce tube replacement, and decrease the cost of tubes.

When you need to replace the 5751 and 5814 tubes in Type 53/54E Units, you are urged to use Telefunken 12AX7 and 12AU7. The only electrical difference is in the filament current. The 5751 and 5814 tubes draw 175 ma, while the 12AX7 and 12AU7 draw 150 ma. To make the replacement, disconnect R4025, a 3K, 5W, wire-wound resistor located between two 7-terminal ceramic strips at the rear of the unit. This circuit normally supplies the extra 25 ma necessary for the 5751 and 5814.

FMR-68A: Subject: Type 53/54L Plug-In Preamplifier: Damage to C5972 S/N 101 through 248 November 1, 1957

Extended periods of operation may damage C5972 by lowering its capacitance. An indication of damage to C5972 is inability to properly adjust the low-frequency compensation. To replace C5972, order Tek No. 290-030, N/C warranty replacement and add a 1-meg., ½ w, 10% resistor, R5912 from grid (pin 1) of V5942 to ground. This resistor was added at S/N 249 to prevent damage to C5972.

FMR-83A: Type 53/54C Switching Blanking Modification (Modification of the Modification) June 12, 1958

Beginning with Serial Number 14,078, Type 53/54C Units have a 12 μμf capacitor connected across each diode of V3803 to provide blanking of switching transients.

Sometimes one of these Type 53/54C Plug-ins will not function properly in the ALTERNATE MODE. If this situation exists when a new Type 53/54C Dual-Trace Plug-in (above SN 14,178) is used in an older Type 531, 535, 541, 545, RM31, RM35, RM41, RM45 oscilloscope change R78, located in the oscilloscope V78 Multi-Trace Sync Amplif Amplifier circuit, from 47K, 1/2 W, 10%, to 36K, 1/2 W, 5% fixed composition resistor.

FMR-86A: Oscillations in Type 545, 543, 545 Oscilloscopes with Type 53/54C. December 30, 1958

Several cases of oscillations in the above oscilloscopes using a particular Type 53/54C unit have been reported recently.

These oscillations can be cured by performing a minor modification as follows:

In the "C"unit--

1. Connect one lead of a 5-k discap (or equivalent) dirctly to terminal 14 of the 16-terminal plug.

2. Ground the other lead of the capacitor to the ground lug adjacent to terminal 16.

In the Oscilloscope--

1. Locate the white lead running from the nylon post in the center of the instrument to terminal 16 of the 16-terminal receptacle. Dress this lead as near as possible to the chassis and underneath the cable that leads to the receptacle.

2. Locate the white lead running parallel to the first white lead from pin 2 of V1223 (Trigger CF). Dress this second white lead as far as possible away from the first white lead.

file • General

date • May, 1959

ENGINEERING & MAINTENANCE BULLETIN

FIELD MAINTENANCE RELEASE DIGEST GENERAL

All General Field Maintenance Releases to December 31, 1958 are included in this digest. All Field Maintenance Releases from January 1, 1959 to date are current and available as separate copies. During 1960, this year's Field Maintenance Releases will be reviewed and included in a new digest.

FMR-3B: Subject: Ceramic Strips, Care in Soldering — May 31, 1955, Supersedes FMR-3A

The soldering iron used should not be too hot, nor should it be applied too long, since the silver (bonded to the ceramic part) tends to amalgamate with the solder, and will be drawn out of the slot. To avoid this effect, only silver-bearing solder should be used on these ceramic units.

A suitable quantity of this solder will be attached to each instrument having ceramic strips.

This solder is not available in small quantities through regular channels but we have one-pound spools available for maintenance purposes.

Tek No. 251-514	Solder, Silver Bearing, 1# Spool (3% silver)	$3.00

FMR-14C: Subject: Sources of Adhesive Filter Coat for Air Filters — July 29, 1955, Supersedes FMR-14A, FMR-14B

Instructions for cleaning air filters (Washable Type). Obtain a copy of this FMR from your field office.

Filter Coat should be easy to get locally; look in the Classified Section of your phone book for RP Air Filters, or EZ Kleen Air Filters. If you have any trouble, we can supply you from Portland at $1.00 per pint.

FMR-23A: Subject: Fan Motors, MTR-34 — December 23, 1954

These fan motors should be oiled periodically. A couple of drops on the end of a toothpick should be enough to hold it for several months. A good suggestion would be to oil the motor every time the air filter is cleaned. If the air filter is never cleaned, you can oil the new motor you install. About two drops on the end of a toothpick should be enough oil.

These motors are used in Types: 112, 124, 180, 315, 316, 513, 514, 515, 517(Power Supply), 524, 531, 532, 535, 541, 545, 570.

FMR-25E: Subject: Change in Fuse Types — February 28, 1958
Supersedes all previous issues of FMR-25

This FMR lists all fuses used in Tek Instruments.

Obtain a copy from your field office.

FMR-34A: Subject: P510A Probes — November 4, 1955

Describes installation of the 4-40 nylon screw to hold the nose onto Type P510A Probe. Obtain a copy from your field office.

FMR-46A: Subject: Replacement of Selected Tubes — July 20, 1956

In the future a label bearing a Tek part number, starting with 157-xxx, will be placed on each selected tube in accordance with the specific check requirements.

Essentially, there are three selected-tube categories:

In the first one, the tube has undergone some type of test, but the tube can be replaced on an individual basis. This tube category would bear a label with the Tek number only.

The second category is one in which the tube has had a more extensive check, and will have a sub-group number. When one tube in a symmetrical circuit fails, both tubes in the circuit should be replaced at the same time. This tube category would bear a label with a Tek number and sub-group number.

The third category is one in which tubes are matched in pairs. The tube label will bear a Tek number and a serial number. For replacement purposes, both tubes should be replaced at the same time.

FMR-48A: Subject: High and Low Line Voltage — July 27, 1956

Describes use of a low-voltage transformer connected series-aiding or opposing to account for low or high line voltage conditions. Obtain a copy from your field office.

FMR-57A: Subject: Graticule Illumination — December 7, 1956

Our present method of wiring the graticule lights does not permit complete extinction of the light. The SCALE ILLUM. control is in series with the graticule lights.

Sometimes the photographing of a waveform is handicapped by this problem, and in the future all instruments using graticule lights will be wired in a different manner. That is, the SCALE ILLUM. potentiometer will be connected from the 6.3 v. AC source to ground with the graticule lights connected from the center terminal to ground.

By rewiring, it will then be possible to completely extinguish the lights. You can easily modify your instruments that are used for photographic purposes. Investigate closely to see if the present wiring is series connected. If it is, then re-wire so the SCALE ILLUM. potentiometer is connected from the 6.3 v. AC source to ground and the lights are from the center terminal to ground. You can use a potentiometer grounding lug if it isn't convenient to ground the potentiometer elsewhere. Be sure to make the connections so the bulbs will be brightest when the potentiometer knob is full right.

FMR-61A: Subject: Oscilloscope "Clean-Filter Remainder" Label March 1, 1957

Tek No.	Description	Price
000-687	Clean-Filter Reminder Label	N/C (No P.O. required)

FMR-62A: Subject: Oscilloscope Triggering Labels March 1, 1957

Announces oscilloscope triggering labels.

Tek No.	Description	Price
000-684	Triggering label for Types 531, 532, 535, 541, and 545	N/C (No. P.O. required)
000-688	Triggering label for Type 310	N/C (No. P.O. required)

FMR-66A: Subject: Graticule Studs August 1, 1957

Occasionally the graticule studs on Tektronix 5-inch oscilloscopes work loose. You can make an easy replacement by using a tapped stud, held in place with a 10-32 x 3/8" screw.

Tek No.	Description	Price
355-043	Replacement Graticule Stud	N/C
212-507	Screw, 10-32 x 3/8" BHS	N/C
210-010	Lockwasher, Steel, Int. #10	N/C

FMR-70A: Subject: P400-Series Probes-----Breakage of Inner Conductor December 20, 1957

Described a mechanical problem with P400-Series Probes that were shipped during August, September, and October, 1957. The mechanical construction of the cable is now controlled to keep the dielectric flexible enough to prevent breakage of the inner conductor.

From past experience, P400-Series Probes with the proper cable stand up very well. If the inner conductor breaks through normal usage, we suggest that you contact your Tektronix Field Engineering Office for warranty replacement.

FMR-84A: Subject: When Should an Electron Tube be Replaced August 15, 1958

Obtain a copy of this FMR, which will be kept in print, from your field office.

file • 530-540
date • May, 1959

ENGINEERING & MAINTENANCE BULLETIN

FIELD MAINTENANCE RELEASE DIGEST
TYPE 530-540 SERIES OSCILLOSCOPES

All Type 530-540 Seiries Field Maintenance Releases to December 31, 1958 are included in this digest. All Field Maintenance Releases from January 1, 1959 to date are current and available as separate copies. During 1960, this years Field Maintenance Releases will be reviewed and included in a new digest.

FMR-22A: Type 531/535 Sweep Linearity — October 27, 1954
531, SN's below 223, 535, SN's below 456.

The sweep linearity at high speeds can be improved by the addition of one capacitor. Connect C96, an 82 μμf, 500 v, 10% ceramic capacitor, from the junction of R92 and R93 to the catodes of V85. This may be done on the ceramic terminal strip. The time base should be checked for accuracy and linearity.

FMR-29A: Time-Delay Relays: Types 531 and 535 — April 27, 1955

Announces new relay mod, to improve relay reliability; now available as a kit. See Mod Kit List for Tek No. 040-061 N/C and 040-085, price, $8.50. For 531, SN's 101 thru 765, and 535, SN's 101 thru 1282.

FMR-31A: Tektronix T51PA Cathode-Ray Tube as replacement in Type 531, SN's 300 thru 364. — June 9, 1955

Installing a T51PA in the above instruments usually requires a change in value of L634 & L635. Old coil was 9.3 μh (Tek No. 108-069) and the new coil is 8.8 μh (Tek No. 108-057) available from Portland at N/C. After installation of circuit and coils, check Delay Line Adjustment; refer to the Instruction Manual.

FMR-32A: Tektronix T51PA Cathode-Ray Tube as replacement in Type 535. SN's 585 thru 695. — June 9, 1955

Same as FMR-31A above

FMR-36A: Subject: Physical dislocation of CRT in Type 530 and 540-Series Oscilloscopes. November 17, 1955

Describes an early trouble in which the CRT and shield were dislocated (usually in the downward direction) and can be corrected by removing CRT and bending tabs holding shield to the sub panel. Dislocation caused by rough handling during shipment is corrected in later production by using six tabs instead of four.

FMR-37A: Subject: Adjustable-reference Graticules December 15, 1956

A large number of Type T54P cathode-ray tubes come through that pass all specs including the full four-centimeter deflection, but the vertical reference or zero-signal position of the beam is off-center vertically by a few millimeters. In some cases, full deflection referred to the graticule, cannot be realized in both directions. In order to prevent the tremendous additional cost(eventually to the customer) of rejecting a large percentage of CRT production, we provided an adjustable-reference graticule. The adjustable-reference graticule can be moved to the correct reference by removing the graticule cover and adjusting the eccentric cam on the left-hand side so the beam cut-off points are outside both the positive and negative limits of excursion.

FMR-38A: Subject: Type 540-Series, Delay Line Adjustment December 23, 1955

Announces over-sized screws available at no charge for Type 540 Series delay line. Trouble indicated by delay line not holding its adjustment.

FMR-41A: Subject: Power Switch Relay-- 530- and 540-Series Oscilloscopes April 4, 1956

Some of the relay troubles which have appeared to be improper contact adjustment have proved to be dirt(particularly iron and steel filings) between the clapper and pole piece. May be cleaned out by inserting a strip of "Scotch" tape between the clapper and pole piece and operating the relay manually.

FMR-43A: Subject: Noisy Switches, Type 530 and 540-Series Oscilloscopes April 26, 1956

Some early instruments had no grounding strap on the Calibrator and Horizontal Display switches, causing erratic operation. Corrected in later production. If trouble is encountered, add strap.

FMR-45A: Subject: Using EP53 Plug-In Extension with Type 532 Oscilloscope. June 15, 1956

Type 532's S/N 101 to S/N 274 had the calibrator resistors grounded to the plug-in socket guide hole. When an EP53 plug-in extension is used, the calibrator ceases to function. Can be cured by tieing pin #2 of the male receptacle to the small guide pin inside the EP53 when used in 532's bearing the above serial numbers.

FMR-47A: Subject: Precision Resistor Stability in Types 531, 535, 541, and 545 Oscilloscope Low-Voltage Power Supply. July 24, 1956

Describes "stress effect" when a dc voltage is applied to a 1% carbon-film resistor. Result is a shift in resistance and instability of the regulated dc supply. Troubles can be reduced significantly by changing the -150 v, +100 v, +225 v, and +500 v supply voltage-divider resistors from $\frac{1}{2}$ w, 1% to 1 w, 1%; also the +350 v supply resistors from $\frac{1}{2}$ w, 1% to 1 w, wire wound. For exact details compare your instruction manual with a later manual or obtain a copy of this FMR from your field office. This FMR will be kept in print.

FMR-50A: Subject: Type 532 Oscilloscope Blanking August 3, 1956

Some of the early Type 532's will have insufficient blanking voltage when a new CRT is installed. A new high-voltage transformer (Tek No. 120-057A) is available at no charge to cure this trouble. Effective S/N's already modified at the factory are 365, 522 through 525, 530, 543, 544, 545, 547, 548 through 552, and 554 and up.

FMR-51A: Subject: Type 532 Oscilloscope: Correcting EXTERNAL TRIGGER SLOPE Selection. August 10, 1956

Type 532's below serial number 283 had reversed external trigger slope; internal and line being normal. The changes are quite involved; contact the factory or field office for copy of this FMR. We will keep FMR-51A in print.

FMR-52A: Subject: Type 530 and 540-Series Oscilloscopes with DC Fan Motors. October 9, 1956

The 26N045T time-delay relay in some of the above instruments have been failing because of excessive voltage applied to the heater. To check for this, time the delay. Normal time delay is 30 to 40 seconds. An instrument with excessive heater voltage applied to the 26N045T will operate in about 15 seconds. Can be cured by installing a 100 Ω, 1 w, 10% composition resistor in series with the heater element.

1. Remove the ground strap from pin 1 of the time-delay relay socket.
2. Mount the 100 Ω resistor between pin 1 and pin 7.
3. Connect a wire strap between pin 7 and the ground lug adjacent to pin 6.
4. Solder all connections.

FMR-56B: Subject: Disposable Air Filters for Type 530 and 540 Series Oscilloscopes January 31, 1957 Supersedes FMR-56A

If you want to replace the permanent aluminum air filter with a disposable filter, order:

		Prepaid
Tek 378-009	Filter, Air, Spun Glass & two back-up screens.....	$1.75
Tek 378-012	Filter only.....	1.00

FMR-59A: Subject: Width of Scopemobile Tray Holding the Oscilloscope — January 10, 1957

Gray 13" Scopemobile Tray (Tek No. 436-003, $4.50) replaces the 12 3/4" tray on scopemobiles built before January, 1955. The new cabinet design (above S/N 5000) on Type 530-and 540-Series requires a wider scopemobile tray.

FMR-63A: Subject: Type 535 and 545 Oscilloscopes: Electrical Shock Possibility — March 22, 1957

It is possible to receive an electrical shock as the Delaying Sweep chassis on the Type 535 and 545 Oscilloscopes is swung out from the main unit. Sometimes a perfect ground doesn't exist as the chassis is swung out.

The shock hazard can be easily corrected by following these steps:

1. Place a #6 ground lug under the head of the lower screw which mounts the delaying sweep chassis to the swivel support post.
2. Run a 6-inch #20 stranded insulated wire between this ground lug, through the plastic cable clamp and grommet adjacent to V791 located on the power chassis, and one of the ground points at V791 socket.
3. Solder both ends.

All Type 535 Oscilloscopes below S/N 6126 and Type 545's below S/N 6113 should have this wire added whenever convenient.

FMR-64A: Subject: Type 530 and 540-Series Oscilloscopes: Caution on Replacement of C807 — June 3, 1957

When you replace the 2 x 20 μf electrolytic capacitor, C807, on Type 530 and 540-Series Oscilloscopes, be sure to use those with 2½" cans rather than 3".

On all orders for Tek number 290-037, the factory will supply the 2½" size electrolytic.

FMR-69A: Subject: Preset-Stability Mod. Kits, Type 531, 532, 535, 541 and 545 Oscilloscopes — November 6, 1957
FMR-72A: January 6, 1958
FMR-74A: February 5, 1958

INSTRUMENT	KIT NO.	SERIAL NUMBER RANGE	TEK NO.	PRICE
531	K531/K535 Preset Stability	101 thru 607	040-149	$18.50
531	K530/K540-1 Preset Stability	608 thru 5453	040-152	5.00
531	K530/K540-2 Preset Stability	5454 thru 6019*	040-153	4.50
531	K530/K540-3 Preset Stability	6020 thru 6710	040-154	2.50
	*71 lower serial numbers modified out of sequence.			
532	K532 Preset-Stability	101 thru 5665	040-158	12.00
535	K531/K535 Preset Stability	101 thru 1074	040-149	18.50
535	K530/K540-1 Preset Stability	1075 thru 5469	040-152	5.00
535	K530/K540-2 Preset Stability	5470 thru 6044*	040-153	4.50
535	K530/K540-3 Preset Stability	6045 thru 7552	040-154	2.50

(continued on the next page)

*68 lower serial numbers modified out of sequence.

541	K530/K540-1 Preset Stability	101 thru 5253	040-152	5.00
541	K530/K540-2 Preset Stability	5254 thru 5414*	040-143	4.50
541	K530/K540-3 Preset Stability	5415 thru 5942	040-154	2.50

*44 lower serial numbers modified out of sequence.

545	K530/K540-1 Preset Stability	101 thru 5550	040-152	5.00
545	K530/K540-2 Preset Stability	5551 thru 5945	040-153	4.50
545	K530/K540-3 Preset Stability	5946 thru 7400	040-154	2.50

Some of the late serial-numbered oscilloscopes were modified out of serial-number sequence. Just turn the main-sweep STABILITY control full left and if this operates a switch, you already have the Preset-Stability feature in your instrument.

FMR-75A: Maximum Intensity Field Mod. Kit — March 12, 1958
Type 530-540Series Oscilloscopes.

You can decrease the possibility of burning the cathode-ray tube phosphor by installing an auxiliary intensity control to limit the front-panel maximum intensity setting.

A modification kit for this purpose is available, order K530/540 Maximum Intensity, Tek No. 040-159, Price $5.00. The kit includes parts and installation instructions.

FMR-76A: Field Modification for Type 536, SN's 101 thru 273. — March 20, 1958
(except SN's 188 and 272, which were factory modified)

This FMR describes a modification to eleminate a potential shock hazard from early-model Type 536's. Obtain a copy from your field office.

FMR-78A: DC Shift Compensating Capacitors, for Type 536 — April 18, 1958
Serial No's. 101-109, 111-121, 123-141, 143-148, 150, 152, 153, 155-182, 184, 186, 188, 195, and 201.

This FMR describes a modification to remove a reverse-voltage condition on DC Shift Compensating Capacitors in early-model Type 536's. Obtain a copy from your field office.

FMR-80A: Fuse in 6.3 V AC Front-Panel Binding Post Circuit, — May 23, 1958
for Types 535, 545, RM35, RM45 Oscilloscopes.

A modification removed a length of coiled wire which served as a fuse in the filament wiring in the event that the 6.3 V AC front-panel binding post is accidently shorted to ground. The situation has existed where some customers were continually replacing the fuse.

To eleminate further fuse replacements install a 100-ohm, 1/2 w, 10%, composition resistor in place of the coiled wire.

FMR-81A: Blanking of Type 53C, 53/54C Switching Transients for Type 531, SN's 101 thru 593. June 12, 1958

A field modification kit is now available that will blank switching transients that sometimes occur when the Type 53C or Type 53/54C Plug-kn Unit is used in the above oscilloscope. The transients shows on the crt face as an overshoot or spike on the observed waveform when the plug-in unit is operated in the CHOPPED operating mode.

The kit includes all parts and instructions for installation. When ordering please specify Tek No. 040-160, Price $15.00.

FMR-82A: Blanking of Type 53C, 53/54C Switching Transients for Type 535, SN's 101 thru 1059. June 12, 1958

Same as above FMR-81A.

FMR-85A: Field Conversion To Use Type 6DJ8(ECC88) Electron Tubes for Types 531, 535, 541, RM31, RM35, RM 41, and RM45. October 27, 1958

Instructions for replacing 6BQ7A electron tubes in the above instruments with their more reliable counterpart, the type 6DJ8. Obtain a copy of this FMR from your nearest field office.

FMR-86A: Oscillations in the Types 545, 543, and 541 Oscilloscopes with Type 53/54C Unit. December 12, 1958

Several cases of oscillations in the above oscilloscopes using a particular Type 53/54C unit have been reported recently.

These oscillations can be cured by performing a minor modification as follows:

In the "C" unit--

1. Connect one lead of a 5-k discap (or equivalent) directly to terminal 14 of the 16-terminal plug.

2. Ground the other lead of the capacitor to the groung lug adjacent to terminal 16.

In the oscilloscope--

1. Locate the white lead running from the nylon post in the center of the instrument to terminal 16 of the 16-terminal receptacle. Dress this lead as near as possible to the chassis and underneath the cable that leads to the receptacle.

2. Locate the white lead running parallel to the first white lead from pin 2 of V1223 (Trigger CF). Dress this second white lead as far as possible away from the first white lead.