Instruction Manual

P6053 PROBE

Tektronix, Inc.
S.W. Millikan Way ● P. O. Box 500 ● Beaverton, Oregon 97005 ● Phone 644-0161 ● Cables: Tektronix

070-1001-00

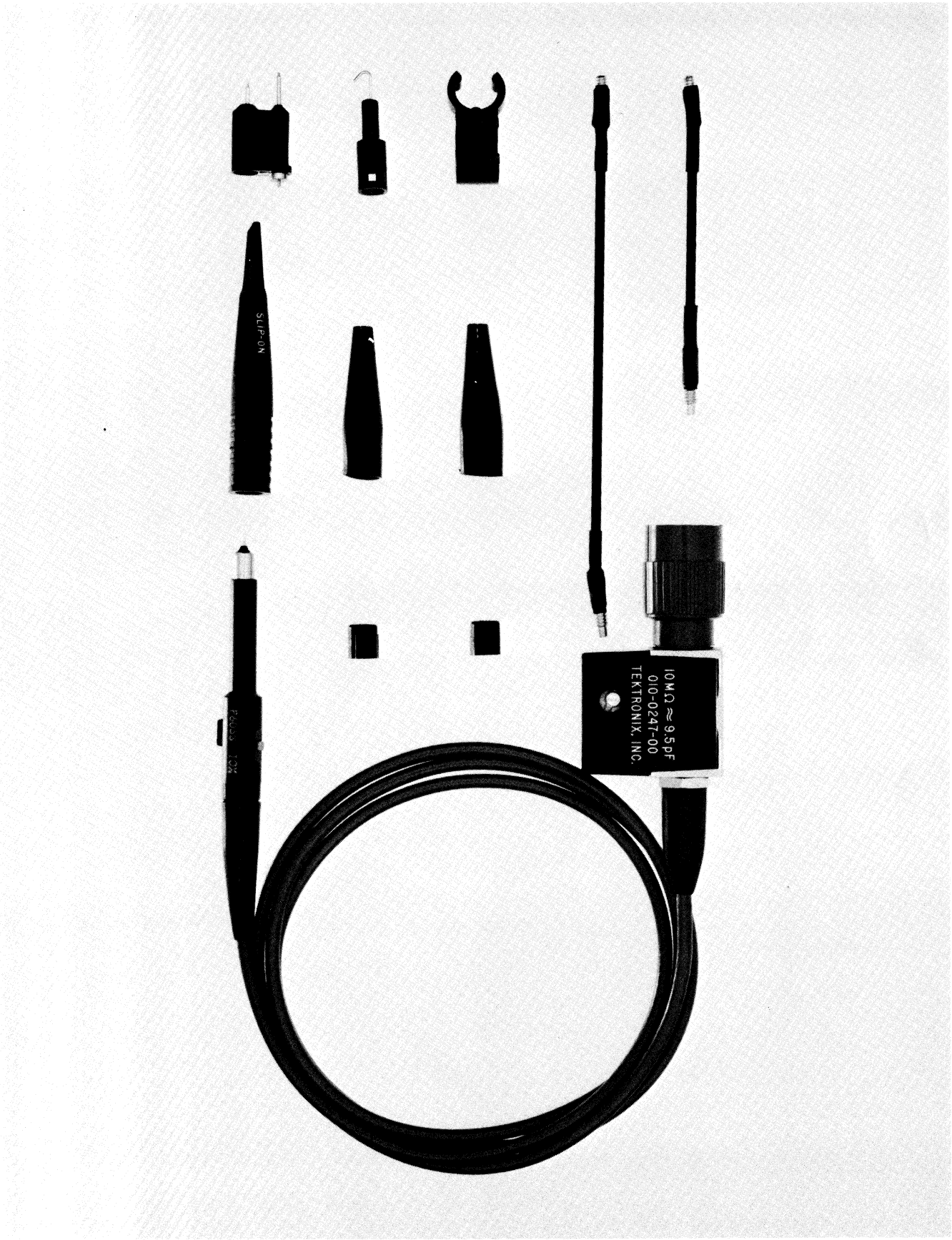


Fig. 1-1. P6053 Probe and accessories.

SECTION 1
SPECIFICATIONS

Description

The P6053 Probe is a miniature, fast-rise, 10X attenuation probe which is intended to be used with Tektronix 7A-series vertical amplifier plug-in units. The probe may be compensated for use with all oscilloscopes or vertical units having an input capacitance of 15 to 24 pF and a BNC connector with a minimum depth of 0.506-inch.

A trace identification pushbutton on the body of the probe permits the operator to ascertain which trace of a multi-trace display is from the P6053 Probe.

A coding ring on the BNC output connector actuates the Volts/Div readout of the oscilloscope to indicate the correct deflection factor.

ELECTRICAL CHARACTERISTICS

The following characteristics apply when the probe is calibrated at an ambient temperature between +20°C and +30°C and operated within the limitations of this Specification section. All equipment used in checking these characteristics must be given sufficient warmup time. Warmup time for each item is given in its own instruction manual.

P6053 Probe (6.0—ft cable) electrical characteristics which differ from characteristics of the P6053 (3.5—ft cable) are printed in italics.

TABLE 1-1

ELECTRICAL CHARACTERISTICS

Characteristic	Performance Requirement
Attenuation	10X ±3%
Input Resistance	10 MΩ ±1.5%
Input Capacitance	9.5 pF ±0.5 pF *12 pF ±0.5 pF*
Compensation Range	⩽15 pF to ⩾24 pF
Step Response Rise-time (Probe Alone)	⩽0.7 ns (measured with 25 Ω source impedance)
Maximum Input Voltage	500 V (DC + peak AC) derated with frequency; see Figs. 1-3 and 1-4

TABLE 1-2

ENVIRONMENTAL CHARACTERISTICS

Characteristic	Performance Requirement
Temperature	
Non-operating Range	−55°C to +75°C
Operating Range	
Probe and Cable	−15°C to +75°C
Compensation Box	0°C to +55°C
Altitude	
Non-operating	To 50,000 feet
Operating	To 15,000 feet
Humidity	
Non-operating	To 95% relative humidity
Shock	
Non-operating	To 400 g's, 1/2 sine, 1/2 ms, 1 ms and 2 ms duration
Transportation	Qualifies under National Safe Transit Committee Test Procedure 1A, Category IV (48 inch drop)

TABLE 1-3

PHYSICAL CHARACTERISTICS

Characteristic	Description
Dimensions	
Probe Body	Length: ≈3.7 inches Maximum Outside Diameter: ≈0.45 inch
Cable	Length: ≈3.5 feet or ≈6.0 feet between strain relief bases
Compensation Box	Length: ≈3.3 inches Width: ≈0.74 inch overall Height: ≈1.25 inches
Weight	
Probe with 3.5 foot cable and Compensation Box	Net: ≈2 ounces Shipping: ≈12 ounces
Probe with 6.0 foot cable and Compensation Box	Net: ≈2.5 ounces Shipping: ≈12.5 ounces

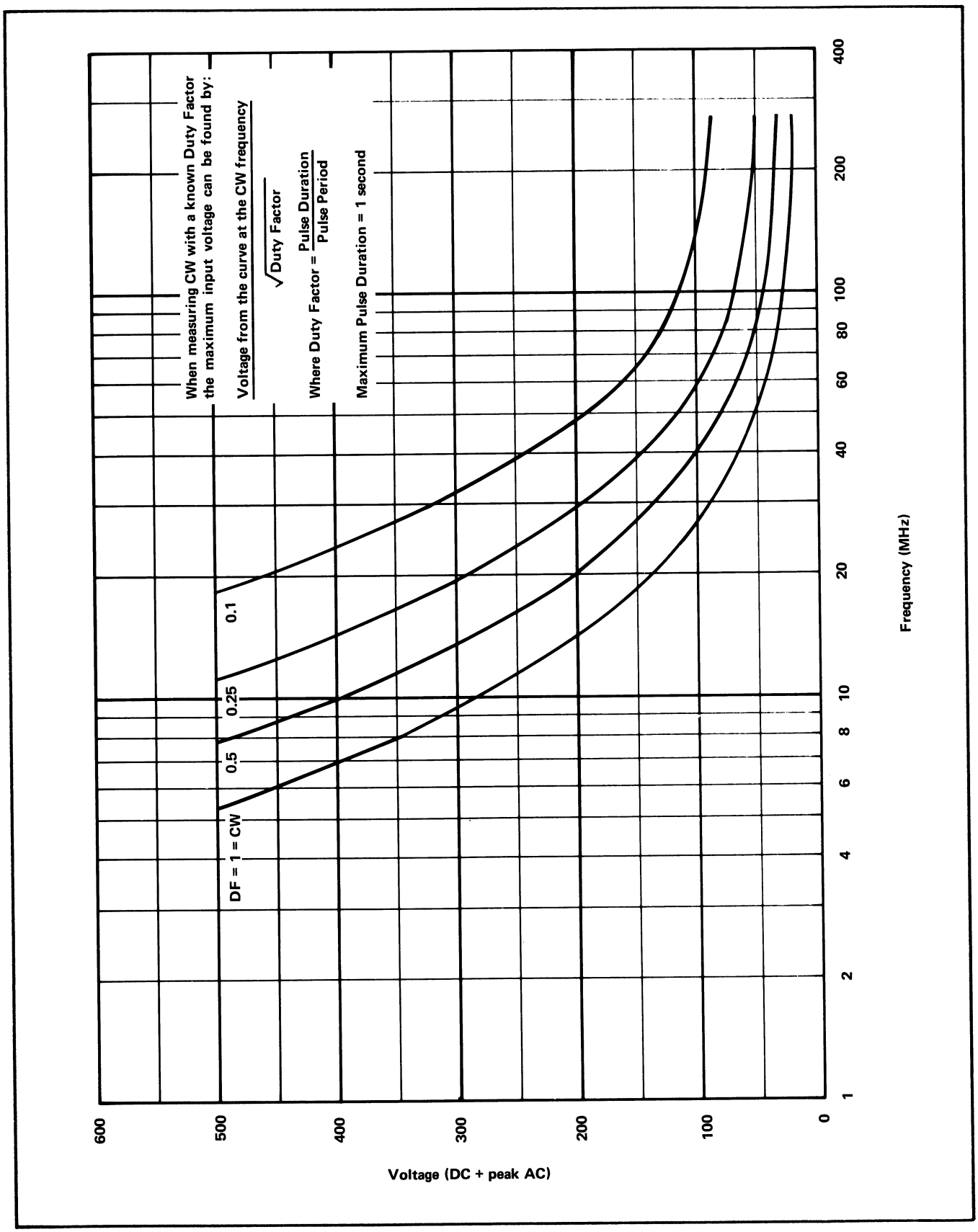


Fig. 1-2. P6053 Probe (3.5 foot cable) voltage derating with frequency curves at 25°C ambient temperature.

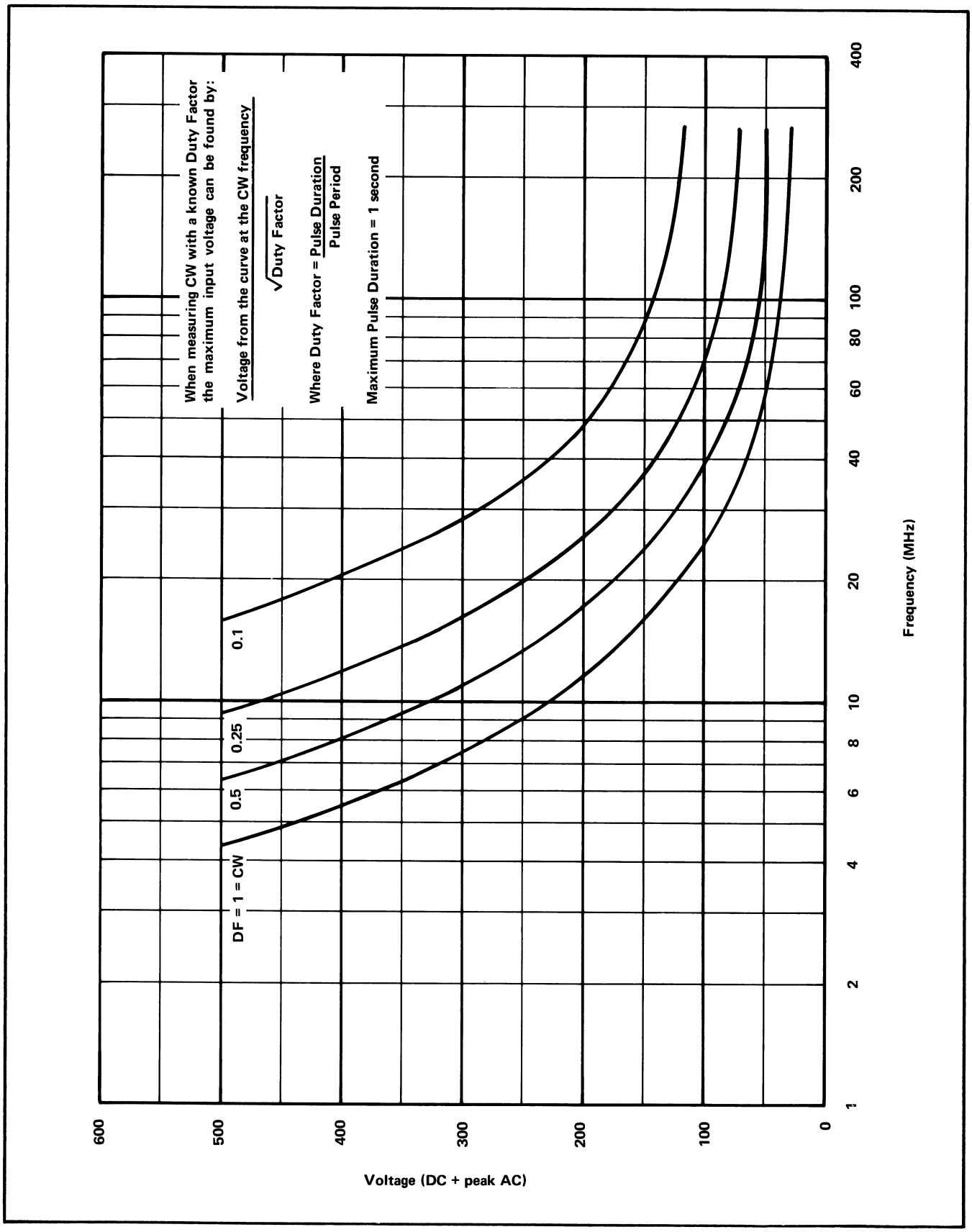


Fig. 1-3. P6053 Probe (6.0 foot cable) voltage derating with frequency curves at 25°C ambient temperature.

SECTION 2
OPERATING INSTRUCTIONS

Introduction

The P6053 Probe is a passive probe, designed primarily for Tektronix 7-series vertical plug-in units having input capacitance within the range of 15 pF to 24 pF. This probe is designed to monitor the signal source with minimum circuit loading while maintaining waveform fidelity.

Probe Compensation

Due to slight variations in the input capacitance between vertical amplifiers (even of the same type), it is usually necessary to compensate the probe whenever it is transferred from one instrument to another or from one channel to another of dual multi-trace units. Improper compensation will produce waveshape distortion and amplitude measurement error of the display. See Fig. 2-1.

Compensation is simply a matter of adjusting the value of a capacitor so that the attenuation ratio remains the same for all frequencies within the range of the probe-amplifier combination. This is accomplished by touching the probe tip to a square wave source (typically 1 kHz) and adjusting the resultant waveform display to have a flat top and square corners. Fig. 2-2 shows this adjustment. A very high frequency adjustment which must be set using a specific procedure is described in the Calibration Procedure in Section 4. This adjustment is not dependent on variations in input capacitance of the vertical plug-in unit.

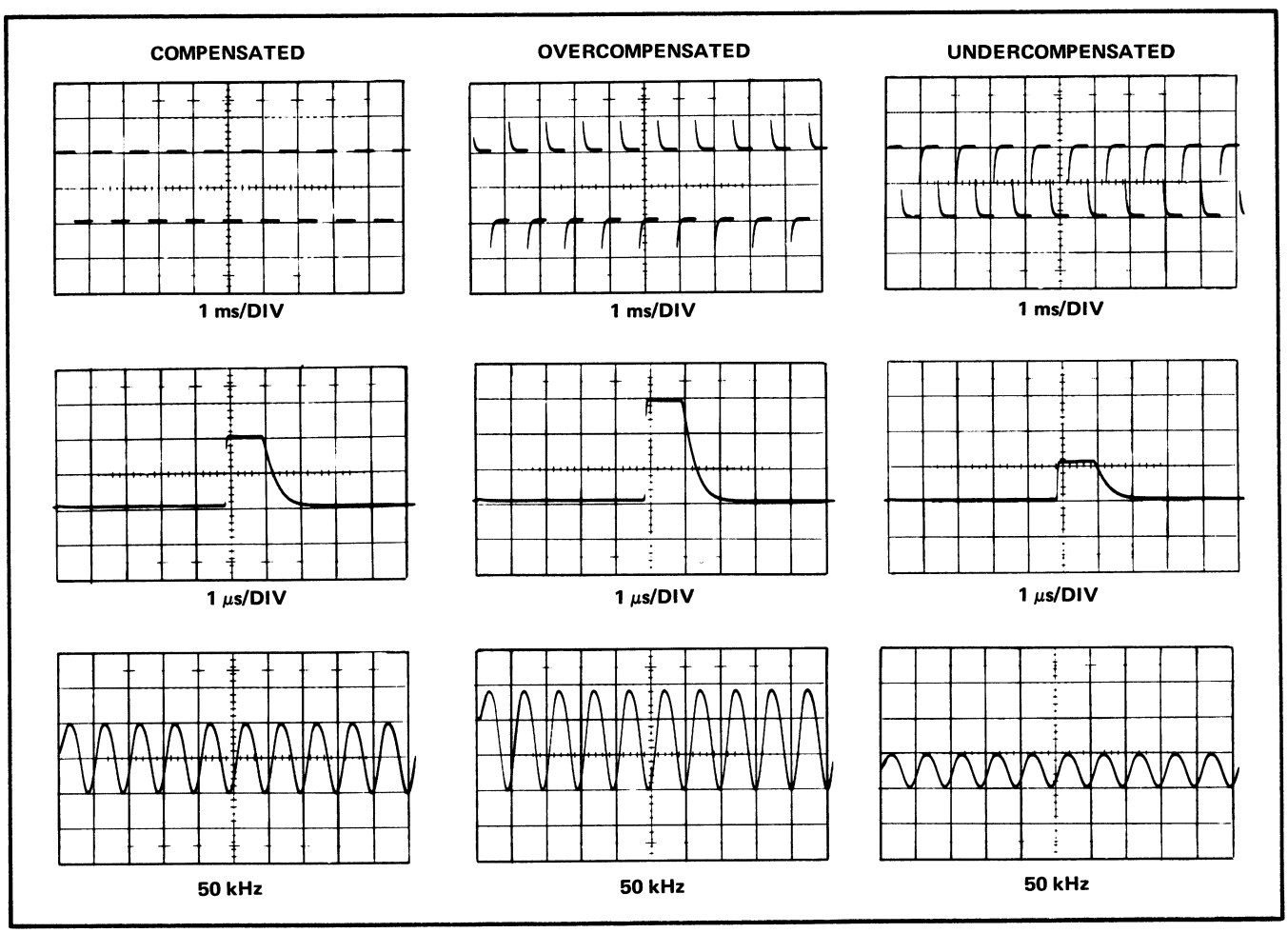


Fig. 2-1. Effects of probe compensation on signal waveform.

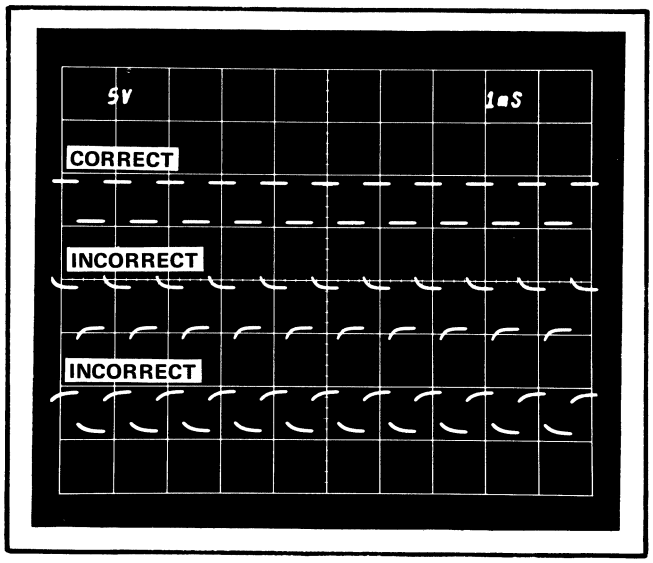


Fig. 2-2. Probe compensation.

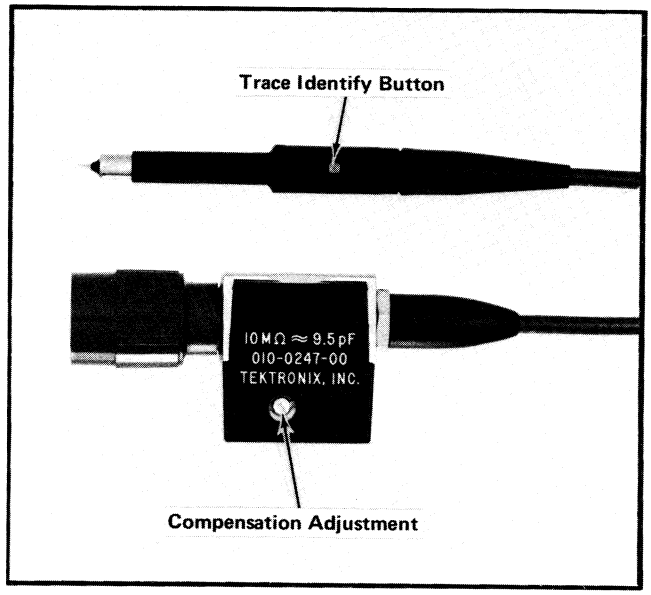


Fig. 2-3. Probe trace identify button and compensation adjustment locations.

Compensation Procedure

Connect the probe to the Input of the vertical amplifier unit it is to be used with. Turn the oscilloscope power on and allow ample time for the oscilloscope and amplifier to warm up and stabilize.

1. Set the oscilloscope Calibrator for 0.4 V signal amplitude and 1 kHz rate.

2. Set the vertical plug-in unit Volts/Div selector to 10 mV.

3. Set the Horizontal plug-in unit Time/Div selector to 1 ms.

4. Connect the probe tip to the Calibrator Output signal. Adjust the triggering control for a triggered display. (A probe tip to BNC adapter may be used to connect the probe to the Calibrator Output connector.)

5. Adjust C8 (Fig. 2-3), through the access hole in the compensation box cover, for optimum pulse flat top. Fig. 2-2 illustrates correct and incorrect square wave response.

The probe is now ready to use with the amplifier it has been compensated for. When the probe is changed to another amplifer, it must again be checked for proper compensation.

Voltage Rating and Derating Curves

The maximum allowable input voltage of the P6053 Probe is 500 V (DC + peak AC) at the low frequency end of its range. As the frequency increases to a point where the input capacitive reactance decreases significantly, the maximum allowable input voltage decreases. Figs. 1-2 and 1-3 show the voltage derating curves for the P6053 Probe. In no case can the peak pulse voltage exceed the DC voltage limit.

Circuit Loading

Although the input resistance of the P6053 Probe is 10 MΩ, it can load any high impedance circuit it is connected into, and distort the actual waveform present. To minimize this loading effect, select the lowest impedance points to check waveforms. At higher frequencies the equivalent probe input impedance decreases because of the input capacitance of the probe; therefore, the probe loading increases with frequency. Fig. 2-4 and Fig. 2-5 show R_p and X_p curves as a function of frequency. These curves should be referred to when making measurements at higher frequencies.

Ground Lead Length and Considerations

A passive probe such as the P6053 is a capacitance divider for high frequency information. An inductance formed by a long ground lead will form a series resonant circuit which will "ring" if driven by a signal containing significant frequency components at or above circuit resonance. (See Fig. 2-6.) These oscillations can appear on the oscilloscope display and distort the observed waveform.

To check ground lead inductance problems, change the ground return path and note signal shape changes. If the ground return lead must be long, loop the lead through a

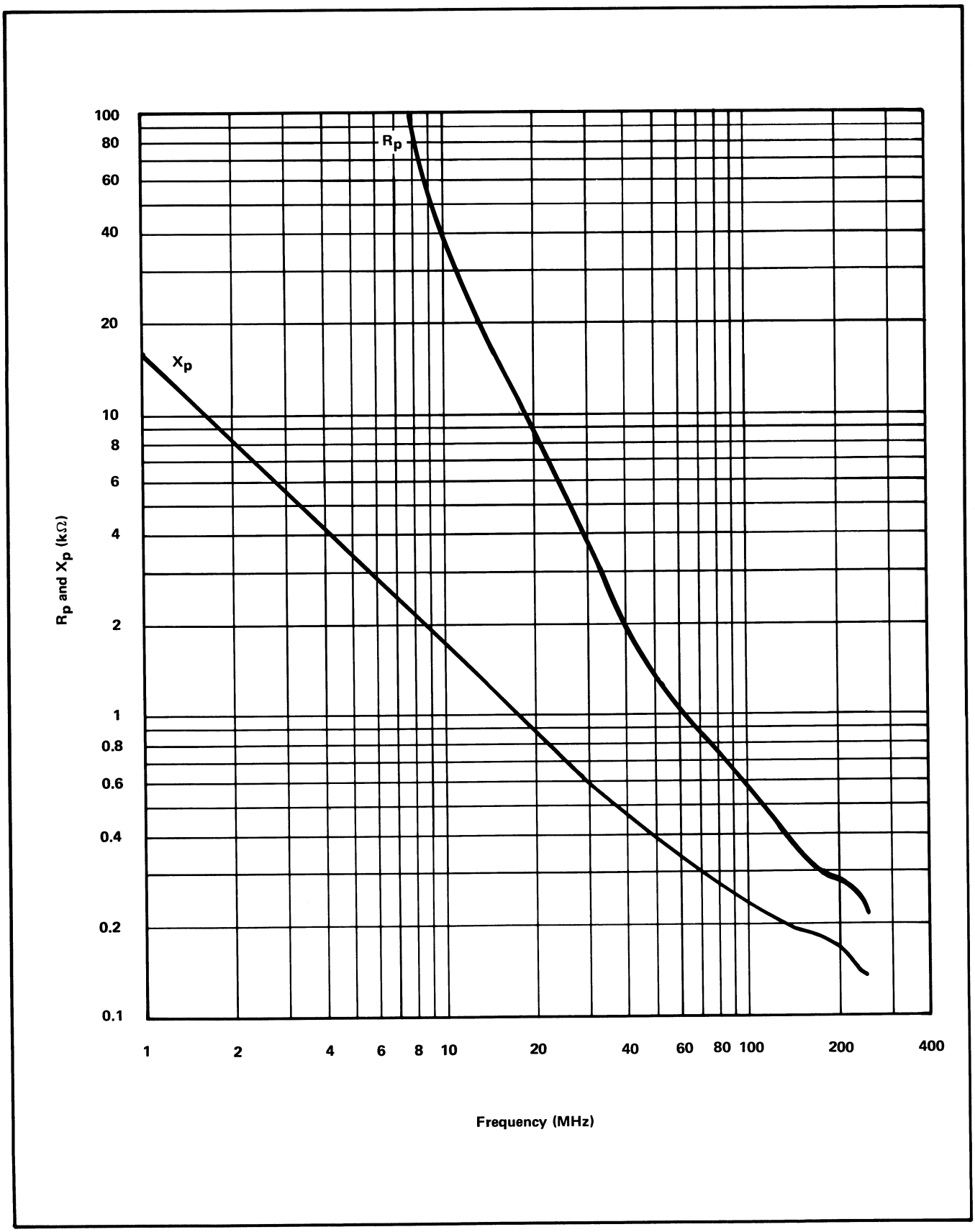


Fig. 2-4. Typical P6053 (3.5 foot cable) parallel resistance and capacitive reactance versus frequency curves at 25°C ambient temperature.

Ⓐ

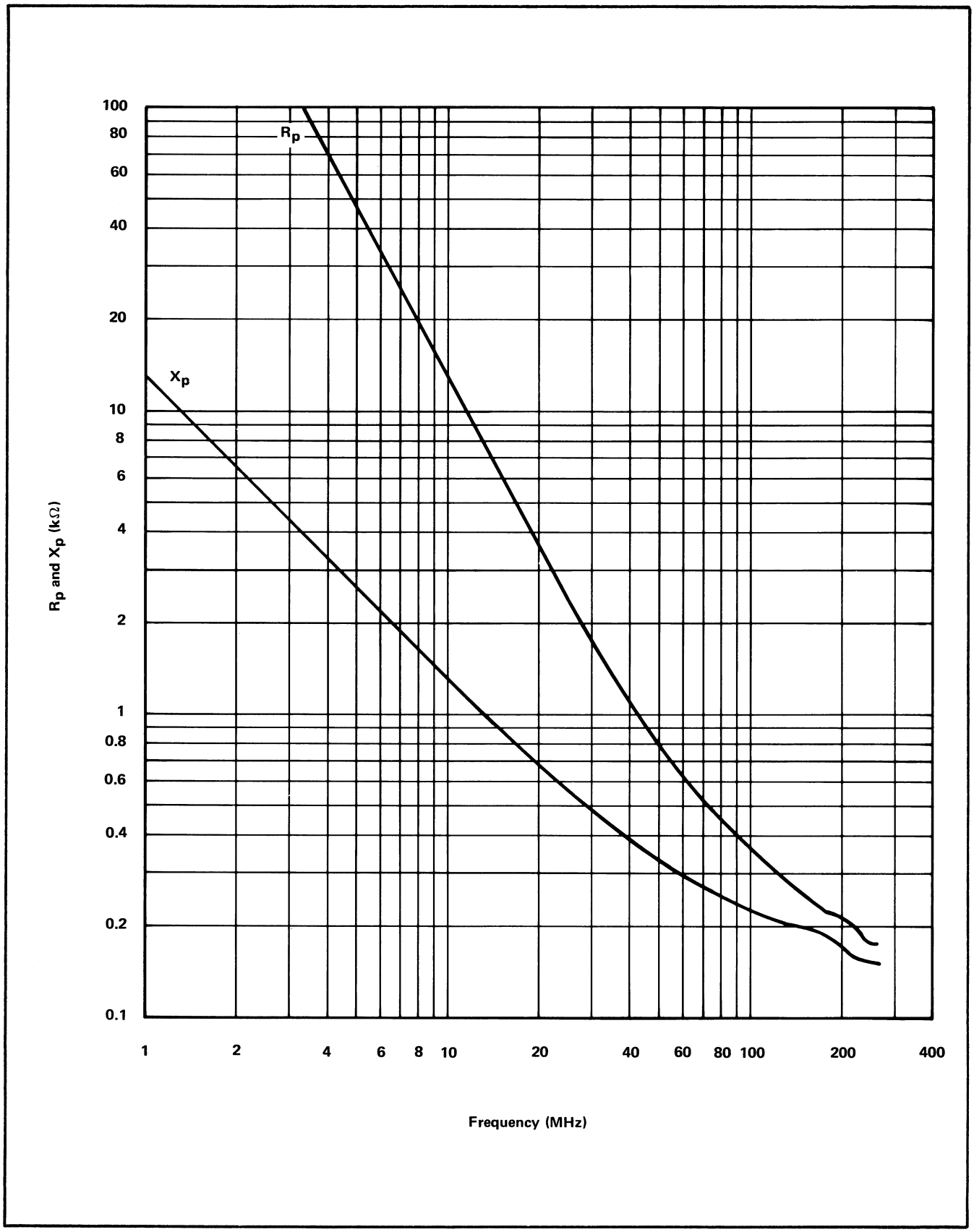


Fig. 2-5. Typical P6053 (6.0 foot cable) parallel resistance and capacitive reactance versus frequency curves at 25°C ambient temperature.

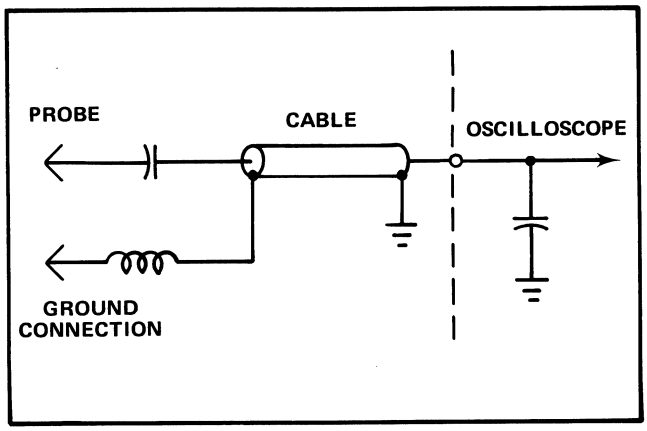


Fig. 2-6. Series-resonant circuit formed by excessive lead length in probe ground return.

small ferrite core to introduce losses in the resonant circuit. The spring-loaded bayonet ground or chassis mounted connector and probe-to-connector adapter are the recommended methods to obtain a minimum-inductance ground path.

The inductance that appears on the ground side may also apply to the probe tip if short lengths of wire are ahead of the probe; therefore, try to touch the probe tip directly to the signal source for all waveform measurements.[1]

Compensation Box Cover Removal

To remove the cover from the compensation box, squeeze the ends of the cover together slightly, then carefully remove it.

[1]**Measurement Concept Booklet; Probe Measurements, Tektronix Part No. 062-1120-00, is a recommended treatise on probe use and measurement evaluation.**

SECTION 3
MAINTENANCE

General

The P6053 Probe is an extremely rugged device, but is susceptible to damage if treated carelessly. Avoid kinking or straining the cable or subjecting the probe to excessive environmental conditions. When not in use, probes should be stored in drawers or supported by the plastic probe hangers supplied with the probe.

If the probe is damaged, replacement parts are available through your local Tektronix Field Office or representative. The mechanical and electrical parts lists at the back of this manual provide the Tektronix part numbers for the components, and instructions on how to order replacement parts.

Substitution of *non-standard* parts is *not* advisable if the original performance is to be restored. Even shortening the cable by more than a few percent will have a noticeable effect on the probe's transient response. The resistive center conductor has been specifically selected to damp and eliminate the reflections that would exist in an undetermined system. If this resistive element is reduced, the reflections will not be properly damped and may cause noticeable signal distortions.

Refer to Figs. 3-1 and 3-2 for the component locations on the circuit board.

Connector Replacement

1. Remove the snap-fit cover on the compensation box.

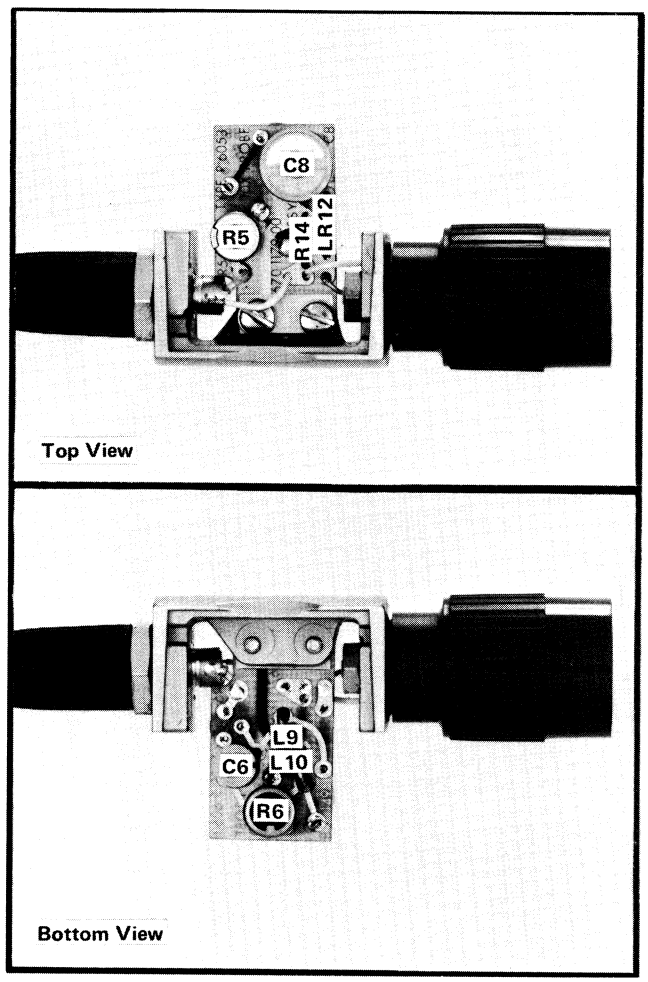


Fig. 3-1. 3.5 foot probe circuit board parts location.

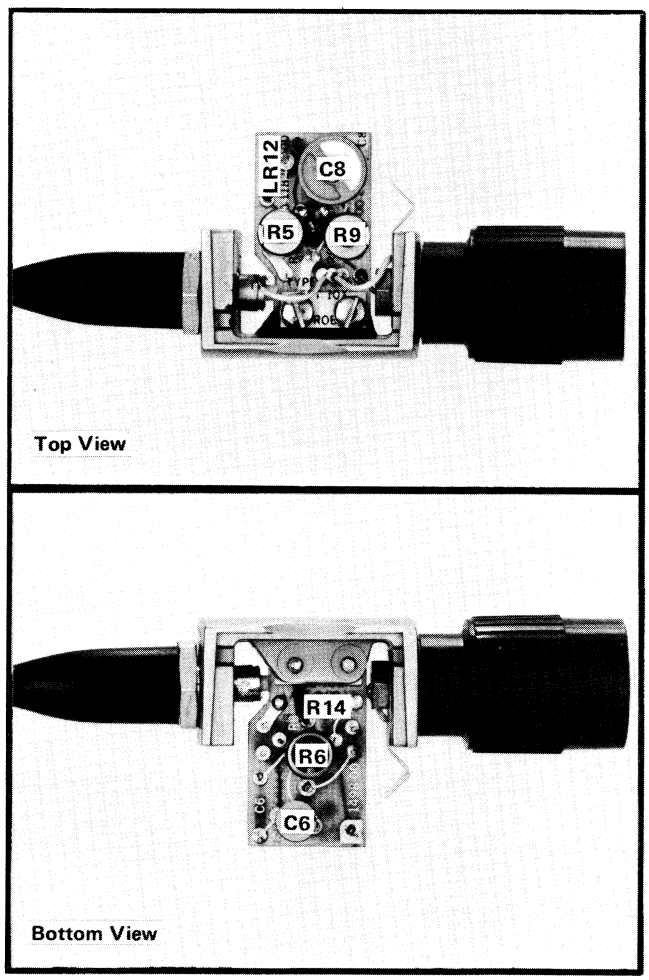


Fig. 3-2. 6.0 foot probe circuit board parts location.

2. Unsolder the center conductor and the white wire from the connector to the circuit board.

3. Loosen the 1/4-inch nut with a wrench and remove the nut.

4. Pull off the connector and install the new connector. Then perform steps 1 through 3 above in reverse order. Be careful not to damage the white wire when tightening the nut.

Cable Replacement

1. Remove the snap-fit cover of the compensation box.

2. Unsolder the cable center conductor from the circuit board.

3. Unsolder the white wire from the electrical contact around the center conductor.

4. Remove the 7/16-inch cable bushing from the compensation box.

5. Unscrew the probe body from the cable.

6. Unsolder the center conductor wire from the resistor.

7. Pull the resistor-capacitor assembly from the holder.

8. Insert the resistor-capacitor assembly into the holder of the new probe cable and re-assemble the probe, reversing the procedure given in steps one through seven above.

SECTION 4
PERFORMANCE CHECK/CALIBRATION

Introduction

The following procedure may be used to check the probe's performance as tabulated in Section 1, or it will serve as a calibration procedure. By performing the complete procedure, the probe is checked and restored to its original performance standards. The recommended equipment listed is required for both the Performance Check and Calibration procedure. Equipment setup pictures, control settings and most waveform photographs apply to both procedures.

Limits, tolerances and waveforms provided in the calibration steps are furnished as guides to calibrating the probe. They are not intended as instrument specifications. Actual values may generally exceed the listed tolerances with no loss in performance.

Equipment and Test Fixtures Required and Recommended

The following list of equipment or its equivalent is required to perform a complete performance check or calibration. Specifications are minimum requirements for accurate calibration. Some of the recommended equipment specifications may exceed requirements; however, substitute equipment must meet or exceed these minimum specifications.

Special Tektronix calibration fixtures are used to facilitate the procedure. These fixtures are available from Tektronix, Inc. and may be ordered through your local Tektronix Field Office or representative.

1. Test oscilloscope system with 150 MHz or greater bandwidth: A 7700-series oscilloscope with a 7A-series vertical amplifier plug-in unit that together provide a system bandwidth of 150 MHz. The 7704 with a 7A16 and a 7B70 time-base unit are used in this procedure.

2. A 7A-series vertical amplifier having an input capacitance of 24 pF; 7A12 Amplifier.

3. Capacitance meter, capable of measuring 13 pF or less with an accuracy of 3%; Tektronix Type 130 L-C Meter.

4. Constant Amplitude Signal Generator with an output signal of 0.5 V P-P into 50 Ω at 3 MHz and 144 MHz; Tektronix Calibration Fixture 067-0532-00.

5. Pulse or Square Wave Generator; pulse risetime ⩽ 5 ns, amplitude 0.5 V; Tektronix Type 106 Square Wave Generator.

6. Resistance bridge capable of measuring 10 MΩ ±0.1%; Electro Scientific Industries Model 250 DA.

7. Adapter, Probe tip to BNC male; Tektronix Part No. 013-0084-00.

8. Adapter; UHF male to BNC female; Tektronix Part No. 103-0015-00.

9. Adapter, GR to BNC female; Tektronix Part No. 017-0063-00.

10. Attenuator, 10X, 50 Ω with GR connectors; Tektronix Part No. 017-0078-00.

11. Termination, 50-Ω thru-line, GR to BNC male; Tektronix Part No. 017-0083-00.

12. Termination, 50-Ω feedthrough with BNC connectors; Tektronix Part No. 011-0049-01.

13. Cable, 5 ns, 50-Ω coaxial Type RG58C/U with GR connectors; Tektronix Part No. 017-0512-00.

PERFORMANCE CHECK AND CALIBRATION RECORD

The following abridged procedure may be used as a performance check or calibration procedure guide by the experienced calibrator, or it may be used as a record. (Tektronix, Inc. authorizes reproduction of the abridged procedure by any user of the equipment.) The step numbers and titles are identical to those used in the complete procedure. When the instrument meets the requirements in the Performance Check steps, the P6053 Probe will meet all Characteristics listed in Section 1.

1. Check Trace Identify Push Button Operation

Push the button to cause a slight vertical shift of the trace. IDENTIFY should appear at the top of the graticule readout.

2. Check/Adjust Probe Low Frequency Compensation

Probe compensation range is ⩽ 15 pF to ⩾ 24 pF.

3. Check Attenuation

Attenuation is 10X ±3%.

4. Check Input Resistance

Input resistance is 10 MΩ ±1.5% for the system.

5. Check Input Capacitance

3.5 foot cable probe capacitance is 9.5 ±0.5 pF.
6.0 foot cable probe capacitance is 12.0 ±0.5 pF.

6. Check/Adjust High Frequency Compensation

Waveform distortion is ⩽ 3% P-P.

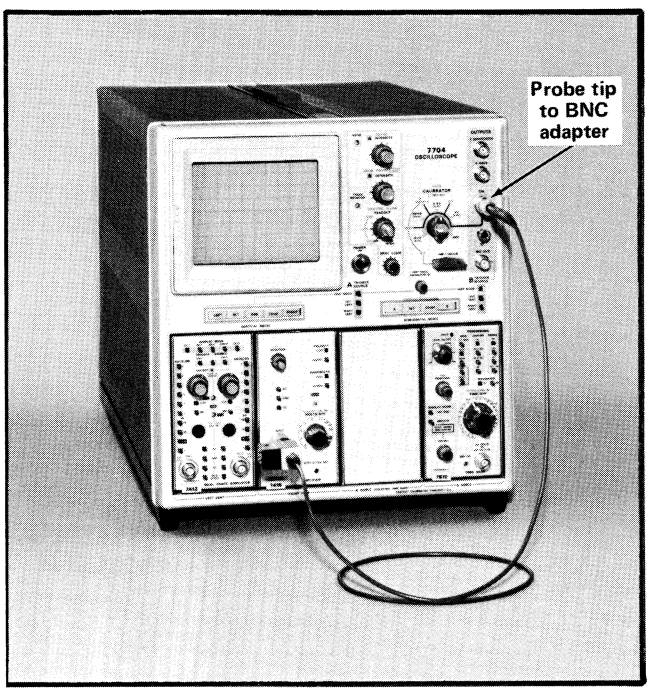


Fig. 4-1. Equipment setup for steps 1, 2 and 3.

7. Check Step Response Risetime

Risetime is ⩽0.7 ns.

Preliminary Procedure

a. Install the 7A12 and 7A16 amplifiers into the LEFT VERT and RIGHT VERT compartments respectively, and the time base unit into the A HORIZ or B HORIZ compartment of the indicator oscilloscope as illustrated in Fig. 4-1.

b. Install the P6053 Probe on the 7A16 Amplifier Input connector.

c. Preset the front panel controls as follows:

Amplifier Unit

Coupling	DC
Polarity	+Up
Bandwidth	Full
Volts/Div	10 mV
Position	Mid

Time-Base Unit

Triggering	
Level/Slope	Free run
Mode	Auto
Coupling	AC
Source	Int
Magnifier	X1
Display Mode	Time Base
Time/Div	1 ms

d. Push the Right Vertical Mode button, the B Horizontal Mode button, and the B Trigger Source Vertical Mode button.

e. Turn the test oscilloscope and associated test equipment power on and allow enough warmup time for the equipment to stabilize.

1. Check Trace Identify Push Button Operation

Requirement—Pushbutton to actuate trace shift.

a. Equipment setup is shown in Fig. 4-1.

b. CHECK—Push the trace identify button on the probe body (see Fig. 2-3) and note a slight vertical shift in the trace. IDENTIFY should appear at the top of the graticule readout if the readout is incorporated in the oscilloscope.

2. Check/Adjust Probe Low Frequency Compensation

Requirement—Probe compensation range: ⩽ 15 pF to ⩾ 24 pF.

a. Equipment setup is shown in Fig. 4-1.

b. Set the oscilloscope Calibrator output at 0.4 V, and the Rate at 1 kHz.

c. Connect the P6053 Probe tip to the Calibrator output connector with a probe tip to BNC male adapter. Adjust the Triggering controls for a triggered display.

d. CHECK—Compensation range adjustment (C8, see Fig. 2-3) must properly compensate the probe to the 7A16 input capacitance (15 pF), as indicated by a properly compensated waveform. See Fig. 2-2.

e. Install the P6053 Probe on the 7A12 Ch 1 Input connector. Push the Left Vertical Mode button.

f. Set the 7A12 front panel controls as follows:

Display Mode	Ch 1
Trigger Source	Ch 1
Volts/Div	10 mV
Polarity	+Up
Coupling	DC

g. CHECK—Compensation range adjustment (C8) must properly compensate the probe to the 7A12 input capacitance (24 pF).

h. Reconnect the P6053 Probe to the 7A16 Input connector. Push the Right Vertical Mode button and recompensate the P6053 Probe.

3. Check 10X Attenuation

Requirement—10X ±3% attenuation.

a. Equipment setup is shown in Fig. 4-1.

b. Set the Oscilloscope Calibrator to 0.4 V and the 7A16 Volts/Div selector to 10 mV.

c. Connect the probe tip to the Oscilloscope Calibrator Output connector through the probe tip to BNC adapter and adjust the triggering controls if necessary for a triggered display.

d. CHECK—Display amplitude must equal 4 ±0.12 major divisions.

4. Check Input Resistance

Requirement—10 MΩ ±1.5%.

a. Switch the Oscilloscope Power OFF.

b. Attach a ground lead to the P6053 Probe body.

c. Connect the P6053 Probe tip and the ground lead across the proper terminals of the resistance bridge. Measure the input resistance of the system using the proper measurement procedure for the resistance bridge.

d. CHECK—The input resistance of the probe amplifier system must equal 10 MΩ ±150 kΩ.

5. Check Input Capacitance

Requirement—9.5 ±0.5 pF (3.5 foot cable)
12.0 ±0.5 pF (6.0 foot cable)

a. Equipment setup is shown in Fig. 4-2.

b. Switch the Oscilloscope Power ON.

c. Connect the probe tip to BNC male adapter to the Type 130 L-C Meter using a UHF male to BNC female adapter.

d. Set the Type 130 Range Selector to 3 μμF and adjust the indicator for zero reading.

e. Switch the Range Selector to 30 μμF.

f. Insert the P6053 Probe tip into the probe tip to BNC male adapter.

g. CHECK—Probe input capacitance must equal 9.5 pF ±0.5 pF for the 3.5 foot probe or 12.0 pF ±0.5 pF for the 6 foot probe.

Reminder: the P6053 Probe must be low-frequency compensated (see step 2).

h. Remove the P6053 Probe tip from the connector.

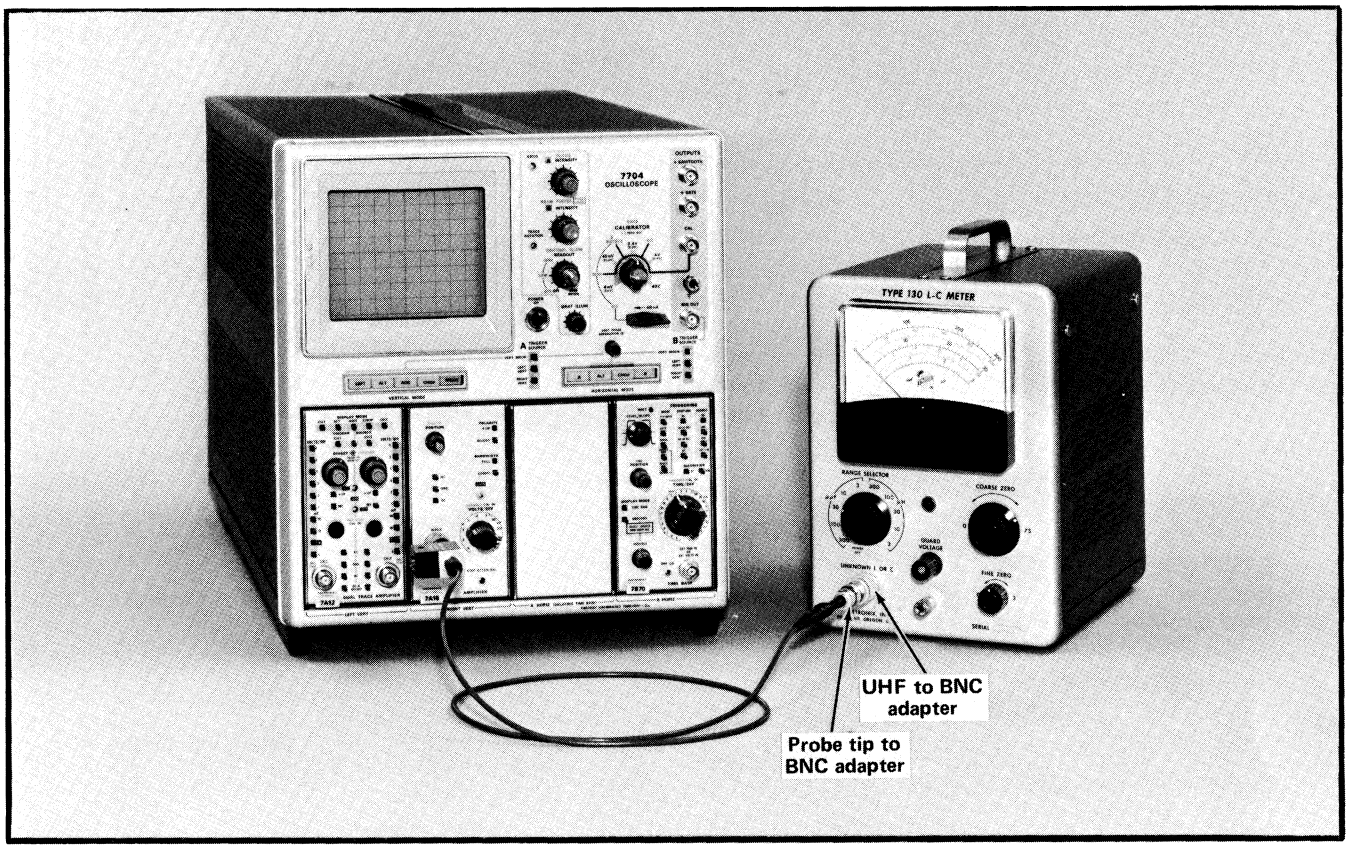


Fig. 4-2. Equipment setup for step 5.

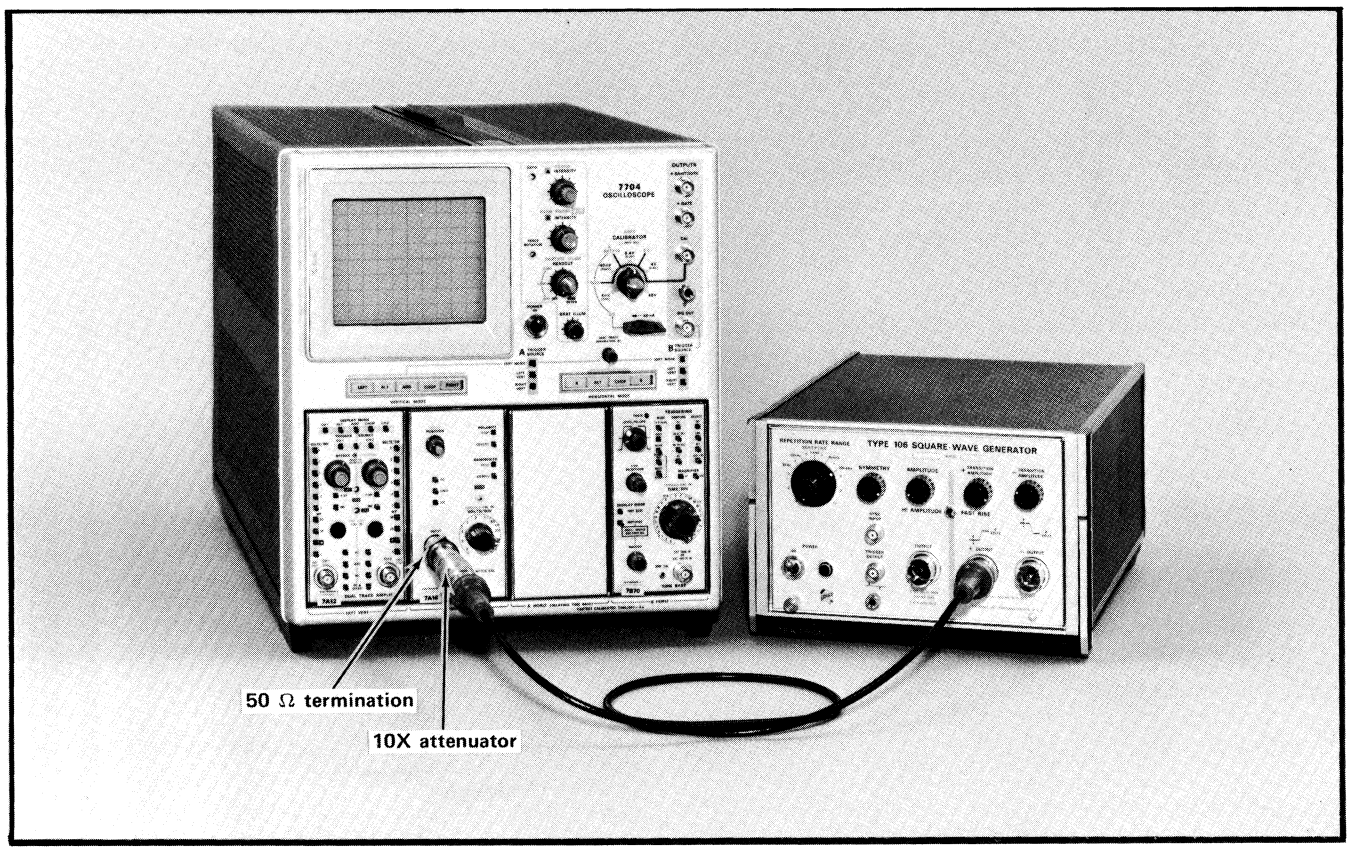


Fig. 4-3. Equipment setup for step 6 (reference waveform).

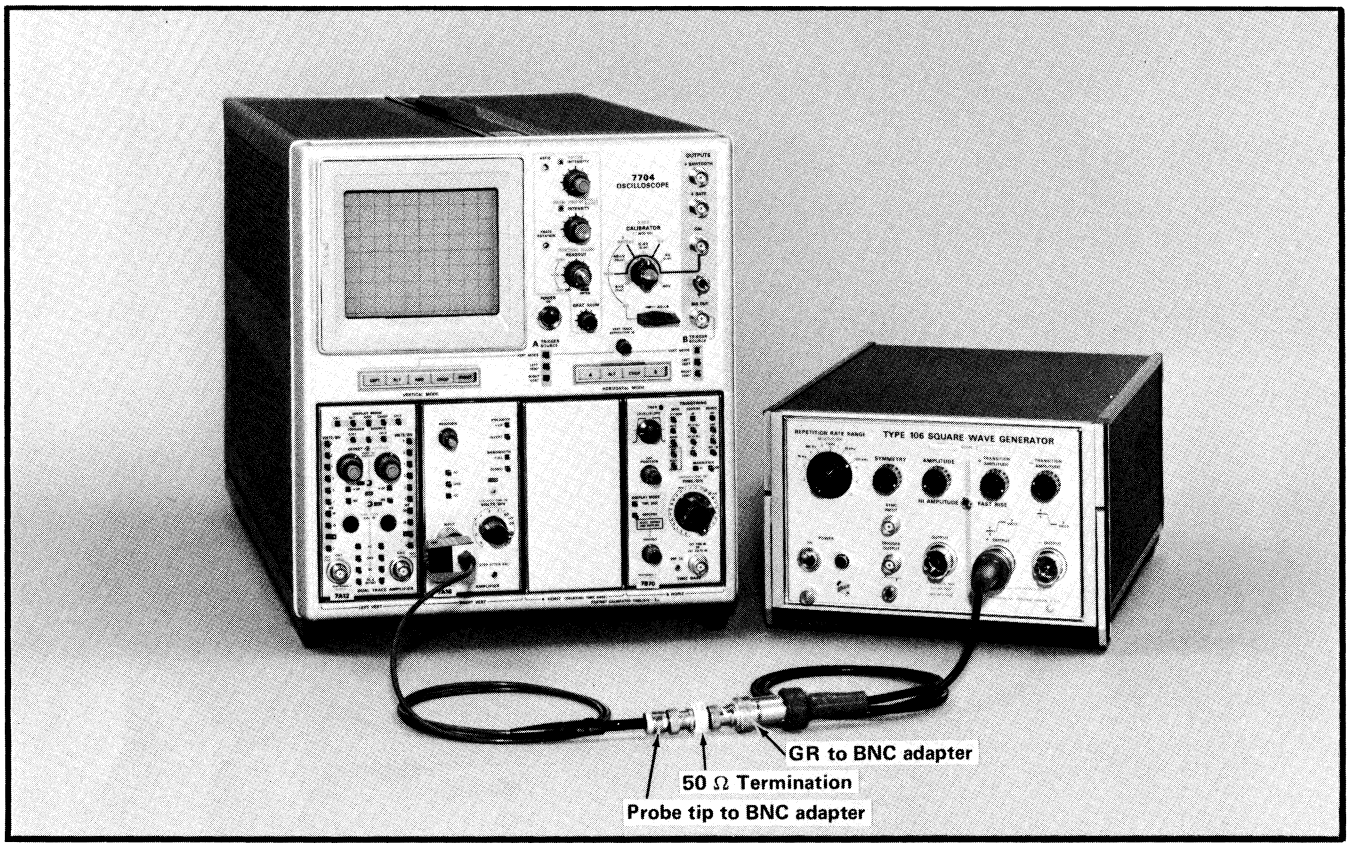


Fig. 4-4. Equipment setup for step 6 (probe response waveform).

6. Check/Adjust High Frequency Compensation

Requirement—Peak to peak waveform distortion not over 3%.

a. Equipment setup is shown in Fig. 4-3.

b. Apply the + Output of the pulse generator through a 5 ns, 50 Ω cable, a GR 10X attenuator and 50 Ω termination with GR to BNC male connectors to the Input of the 7A16.

c. Set the pulse generator repetition rate to approximately 100 kHz.

d. Set the time-base sweep rate to 0.02 μs/div and adjust the triggering controls for a triggered display.

e. Adjust the generator output and/or the 7A16 Volts/Div for a pulse amplitude of 5 divisions.

f. Note the pulse shape and aberrations.

g. Remove the 10X attenuator and the 50 Ω termination from the 7A16 Input. Connect the P6053 probe to the 7A16 Input.

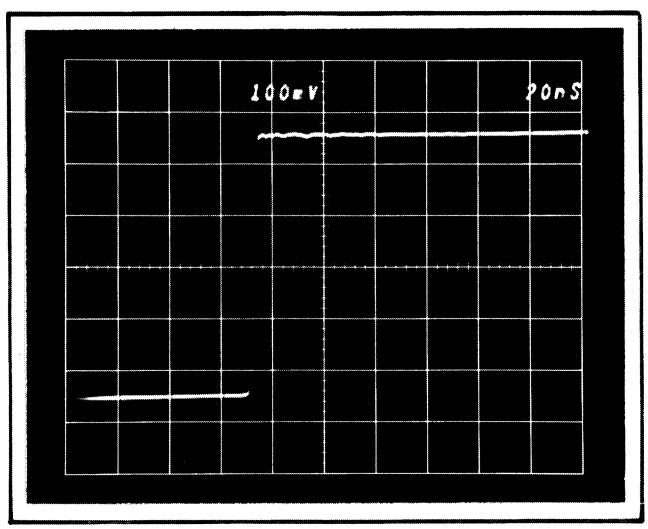


Fig. 4-5. Probe response to a square wave input signal (risetime ≤1 ns). Note that the aberrations are ≤3% (0.15 div).

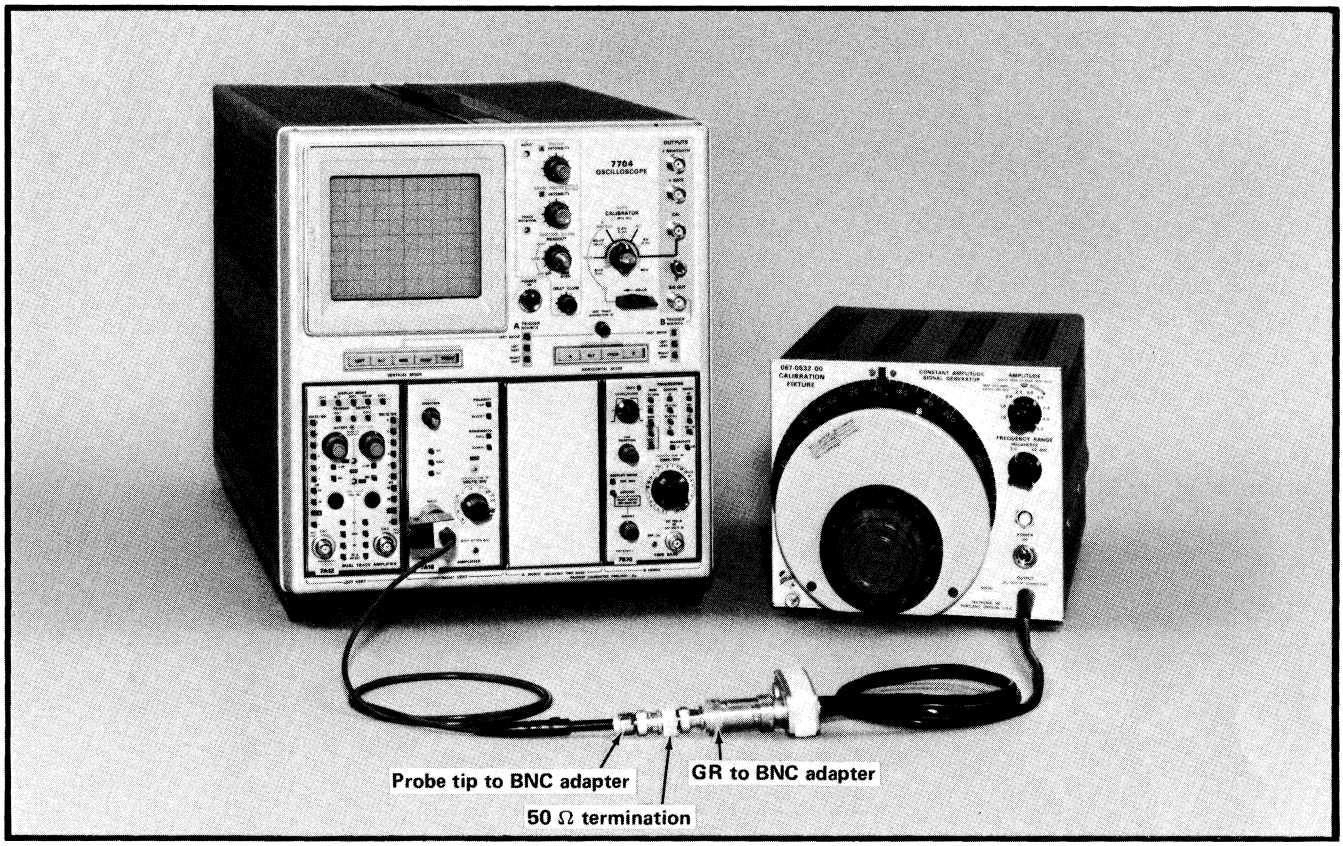


Fig. 4-6. Equipment setup for step 7.

h. Connect a GR to BNC male adapter with a BNC 50-Ω feedthrough termination to the coaxial cable.

i. Connect the probe tip by means of a probe tip to BNC adapter to the 50 Ω termination. See Fig. 4-4 for this setup.

j. CHECK–High frequency response, by comparing the probe amplifier pulse response against the response obtained in steps e and f. Aberrations from the reference response must not exceed 3% of the pulse amplitude or 0.15 div.

k. If aberrations are excessive proceed as follows:

3.5 Foot Cable

1) Remove the compensation box cover. Removal is accomplished by first slightly squeezing the ends of the cover.

2) Set the R6 fully counterclockwise. (Component locations are shown in Fig. 3-1.)

3) Adjust R5 for the best overall flat response.

4) Adjust C6 for the best corner response.

5) Repeat parts 3 and 4 as necessary for correct waveform.

6) Recheck the waveform with the compensation box cover installed and perform adjustments as necessary to obtain the correct waveform after the cover is installed (see Fig. 4-5).

6.0 Foot Cable

1) Remove the compensation box cover by the method described in step 1 above.

2) Set R6 fully clockwise. (Component locations are shown in Fig. 3-2.)

3) Adjust R5 for the best overall flat response.

4) Adjust R9 for the best overall flat response.

5) Adjust C6 for the best corner response.

6) Repeat the adjustments as necessary to obtain the correct waveform.

7) Recheck the waveform with the compensation box cover installed and perform adjustments as necessary to obtain the correct waveform after the cover is installed (see Fig. 4-5).

7. Check Step Response Risetime

Requirement—Risetime (T_r): ≤0.7 ns.

NOTE

The risetime of the 7704/7A16 is 2.33 ns. Based on a Gaussian response, the total system T_r equals $\sqrt{(0.7)^2 + (2.33)^2}$, which is 2.43 ns. This corresponds to a −3 dB bandwidth frequency (F) of 144 MHz by the formula $F = 0.35/T_r$. To check this bandwidth, the displayed amplitude of a 144 MHz signal must equal or exceed 70% of the reference amplitude.

a. Equipment setup is shown in Fig. 4-6.

b. Apply a 3.0 MHz signal from the Constant Amplitude Signal Generator through a GR to BNC male adapter, a BNC 50-Ω termination, a probe tip to BNC adapter and the P6053 Probe to the 7A16 Amplifier plug-in unit.

c. Set the Time/Div selector of the Horizontal unit to 0.1 μs and the Volts/Div of the 7A16 to 10 mV.

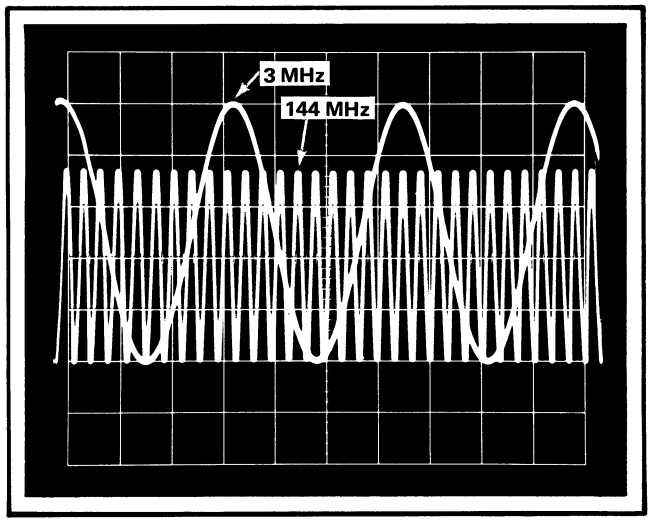


Fig. 4-7. Double exposure showing the 5 division reference signal and the ≥3.5 division 144 MHz signal for step 7.

d. Adjust the output of the Constant Amplitude Signal Generator for a reference display amplitude of 5 divisions.

e. Increase the generator frequency to 144 MHz and set the Time/Div control at 0.02 μs.

f. CHECK—Display amplitude must equal or exceed 3.5 divisions or 70% of 5 divisions. See Fig. 4-7.

This completes the Performance Check. If the probe has met or exceeded all checks, it will meet all specification requirements listed in Section 1.

SECTION 5

ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

P6053 (3.5 foot cable)

Capacitors

Tolerance ±20% unless otherwise indicated.

C1	281-0722-00	7.5 pF	Cer	500 V	±1.1 pF
C6	281-0122-00	2.5-9 pF, Var	Cer	100 V	
C8	281-0160-00	7-25 pF, Var	Cer	350 V	

Inductors

L9	276-0507-00	Core, ferramic suppressor
L10	276-0507-00	Core, ferramic suppressor
LR12	108-0601-00	60 nH (wound on a 27 Ω resistor)

Resistors

Resistors are fixed, composition, ±10% unless otherwise indicated.

R3	325-0021-00	9 MΩ	1/4 W	Prec	1%
R5	311-0978-00	250 Ω, Var			
R6	311-0622-01	100 Ω, Var			
R14	317-0113-00	11 kΩ	1/8 W		5%

P6053 (6 foot cable)

Capacitors

Tolerance ±20% unless otherwise indicated.

C2	281-0672-00	11.4 pF	Cer	500 V	1%
C6	281-0122-00	2.5-9 pF, Var	Cer	100 V	
C8	281-0167-00	15-42 pF, Var	Cer	200 V	

Inductor

LR12	108-0602-00	60 nH (wound on a 75 Ω resistor)

Resistors

Resistors are fixed, composition, ±10% unless otherwise indicated.

R2	325-0021-00	9 MΩ	1/4 W	Prec	1%
R5	311-0605-00	200 Ω, Var			
R6	311-0978-01	250 Ω, Var			
R9	311-0605-00	200 Ω, Var			
P14	317-0113-00	11 kΩ	1/8 W		5%

SECTION 6

MECHANICAL PARTS LIST

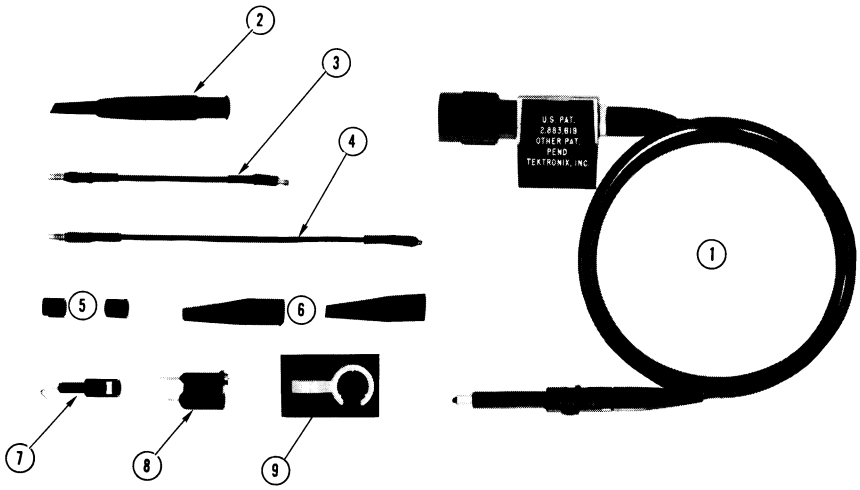


Fig. 6-1. P6053 Probe and Standard Accessories.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Serial/Model No. Disc	Qty 1 2 3 4 5	Description
					PROBE PACKAGE
1-1	010-0248-00			1	PROBE PACKAGE, P6053, 3.5 foot
thru	010-0249-00			1	PROBE PACKAGE, P6053, 6 foot
1-9	----------			-	package includes:
					PROBE ONLY
1-1	010-0247-00			1	PROBE, P6053, 3.5 foot
	010-0250-00			1	PROBE, P6053, 6 foot
					STANDARD ACCESSORIES
-2	013-0107-00			1	TIP, probe, retractable hook
-3	175-0877-00			1	CABLE, probe, ground 3 inches long
-4	175-0877-01			1	CABLE, probe, ground 5 inches long
-5	166-0404-01			2	TUBE, insulating, plastic
-6	344-0046-00			2	CLIP, probe
-7	206-0114-00			1	TIP, probe
-8	013-0085-00			1	ADAPTER, bayonet, ground
-9	352-0234-00			1	HOLDER, probe
	070-1001-00			1	MANUAL, instruction (not shown)

Ⓐ

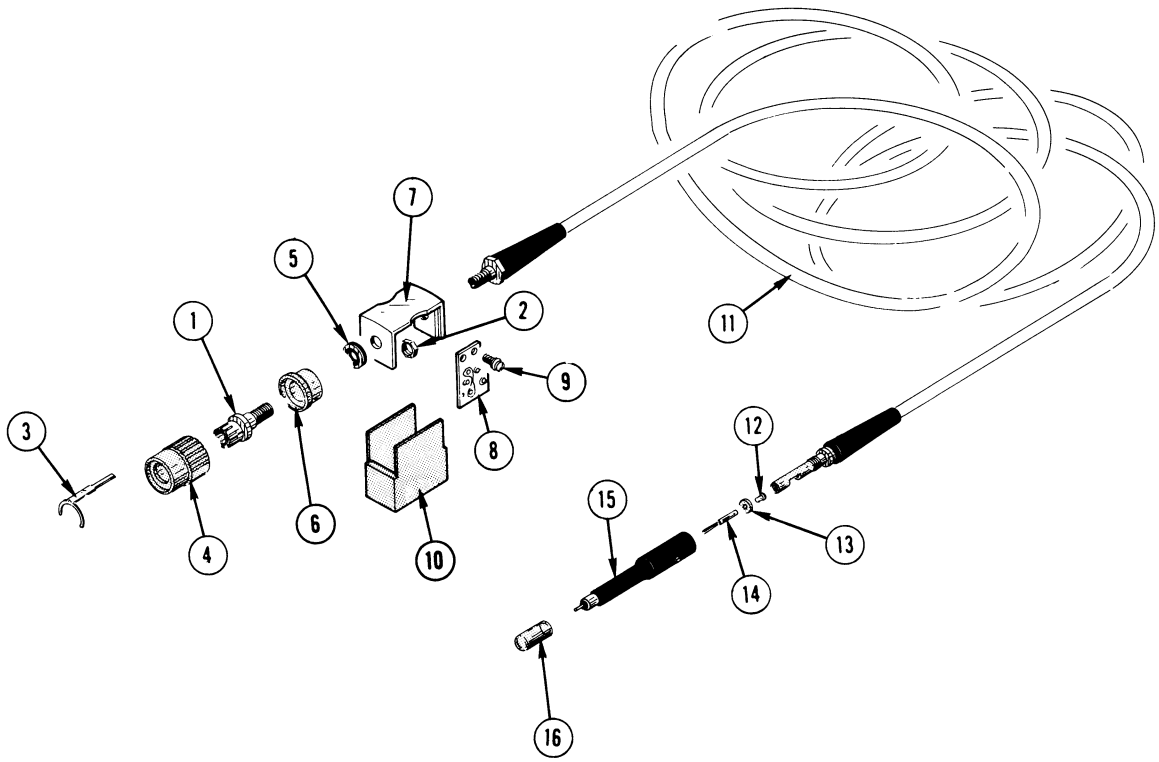


Fig. 6-2. P6053 (3.5 foot cable) replaceable parts.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Serial/Model No. Disc	Qty 1 2 3 4 5	Description
	010-0247-00			1	PROBE, P6053, 3.5 foot
	- - - - - - - - - -			-	probe includes:
	131-0895-00			1	ASSEMBLY connector, BNC
	- - - - - - - - - -			-	assembly includes:
2-1	131-0866-00			1	CONNECTOR, receptical, male
-2	220-0572-00			1	NUT, hex., 10-32
-3	131-0698-00			1	CONTACT, electrical, BNC
-4	205-0129-00			1	SHELL, electrical connector, plastic
-5	131-0874-01			1	CONTACT, electrical, w/lead
-6	342-0022-01			1	INSULATOR, contact, assembly
-7	426-0612-02			1	FRAME, compensation box
-8	670-1179-00			1	ASSEMBLY, circuit board, compensation box
	- - - - - - - - - -			-	assembly includes:
	388-1495-00			1	BOARD, circuit, unwired
	- - - - - - - - - -			-	mounting hardware: (not included w/assembly)
-9	211-0180-00			2	SCREW, sems, 2-56 X 0.250 inch, PHS
-10	200-1083-03			1	COVER, compensation box
-11	175-1101-00			1	CABLE, special purpose
-12	210-0698-00			1	EYELET, 0.047 inch OD, 0.080 inch flange
-13	210-1004-00			1	WASHER, guide, plastic
-14	214-0592-00			1	CONTACT, wire form
-15	204-0429-00			1	BODY, probe assembly
-16	200-0372-00			1	CAP, end, plastic

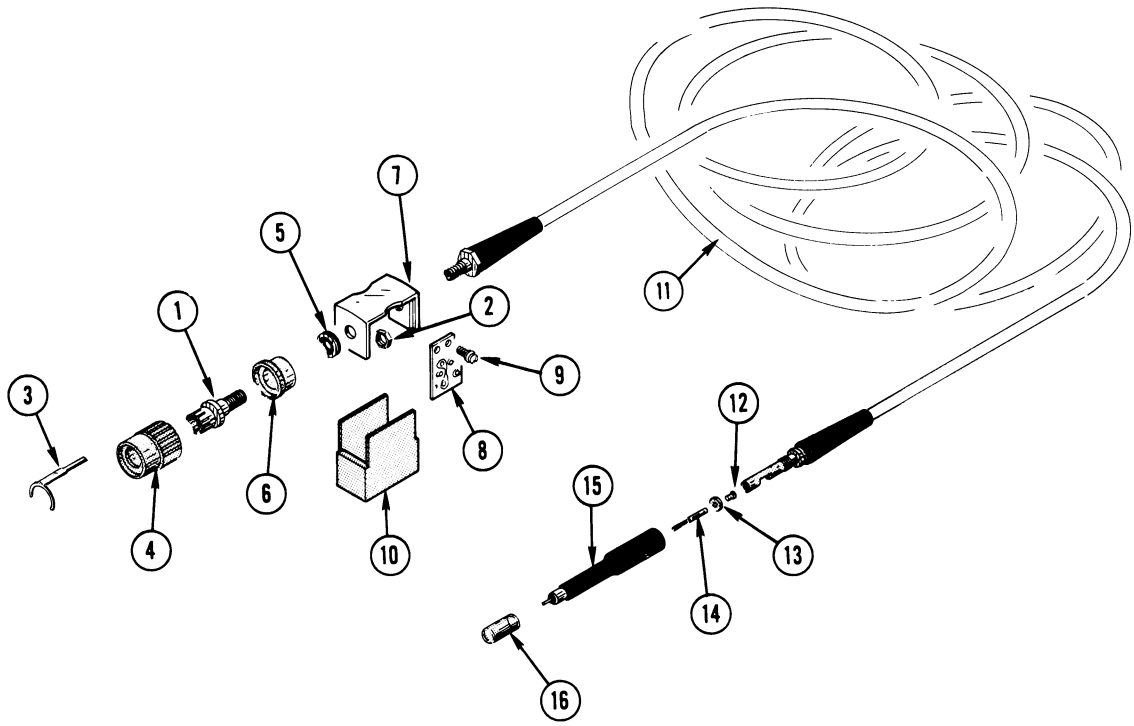
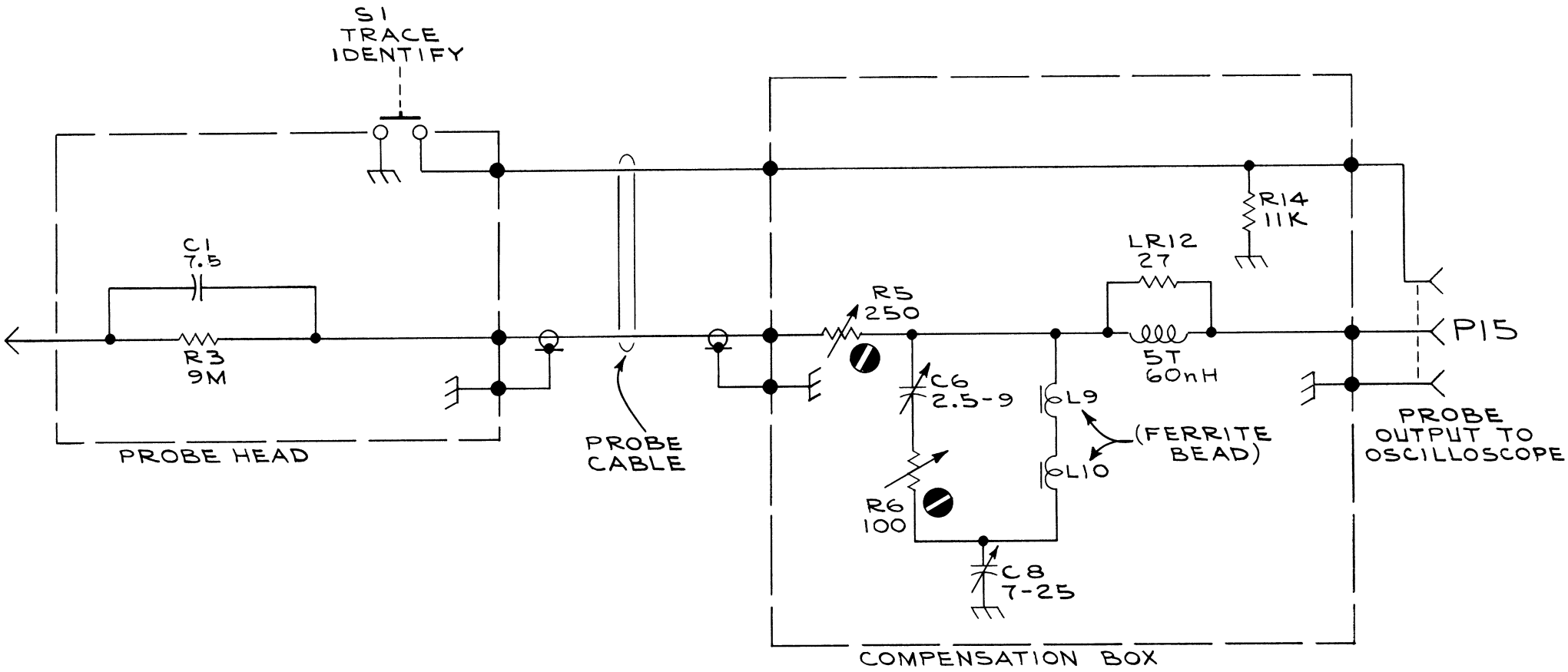


Fig. 6-3. P6053 (6 foot cable) replaceable parts.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Serial/Model No. Disc	Qty 1 2 3 4 5	Description
	010-0249-00			1	PROBE, P6053, 6 foot
	- - - - - - - - - -			-	probe includes:
	131-0895-00			1	ASSEMBLY, connector, BNC
	- - - - - - - - - -			-	assembly includes:
3-1	131-0866-00			1	CONNECTOR, receptical, male
-2	220-0572-00			1	NUT, hex., 10-32
-3	131-0698-00			1	CONTACT, electrical, BNC
-4	205-0129-00			1	SHELL, electrical connector, plastic
-5	131-0874-01			1	CONTACT, electrical, w/lead
-6	342-0022-00			1	INSULATOR, contact, assembly
-7	426-0612-00			1	FRAME, compensation box
-8	670-1182-00			1	ASSEMBLY, circuit board, compensation box
	- - - - - - - - - -			-	assembly includes:
	388-1498-00			1	BOARD, circuit
	- - - - - - - - - -			-	mounting hardware: (not included w/assembly)
-9	211-0180-00			2	SCREW, sems, 2-56 X 0.250 inch, PHS
-10	200-1083-04			1	COVER, compensation box
-11	175-1139-00			1	CABLE, special purpose
-12	210-0698-00			1	EYELET, 0.047 OD X 0.080 inch flange
-13	210-1004-00			1	WASHER, guide, plastic
-14	214-0592-00			1	CONTACT, wire form
-15	204-0429-00			1	BODY, probe assembly
-16	200-0372-00			1	CAP, end, plastic



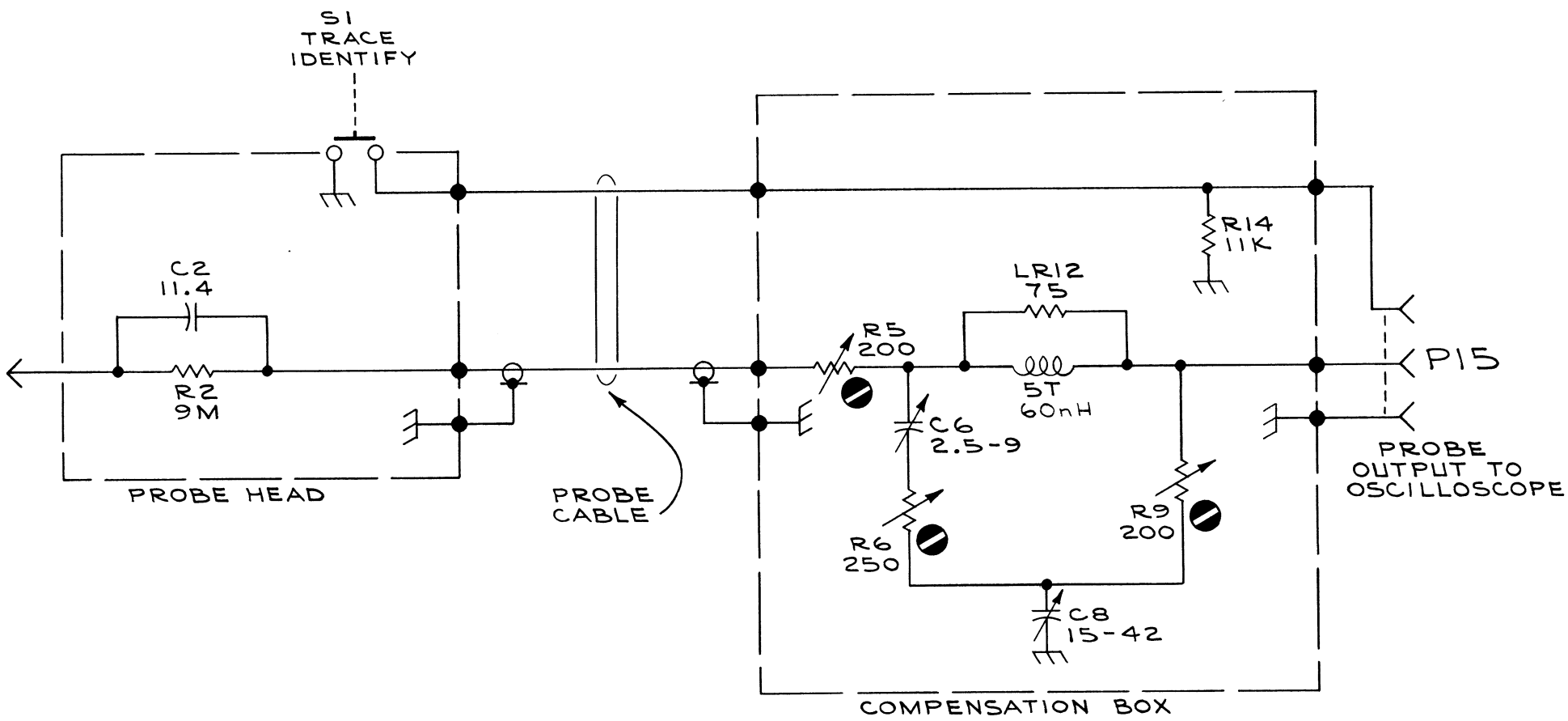
PLM
0170

(3 1/2 FOOT)

10X PROBE

P6053

A1



PLM
0170

(6 FOOT)

10X PROBE

P6053

A1