Instruction Manual

P6052 PROBE

010-0241-00

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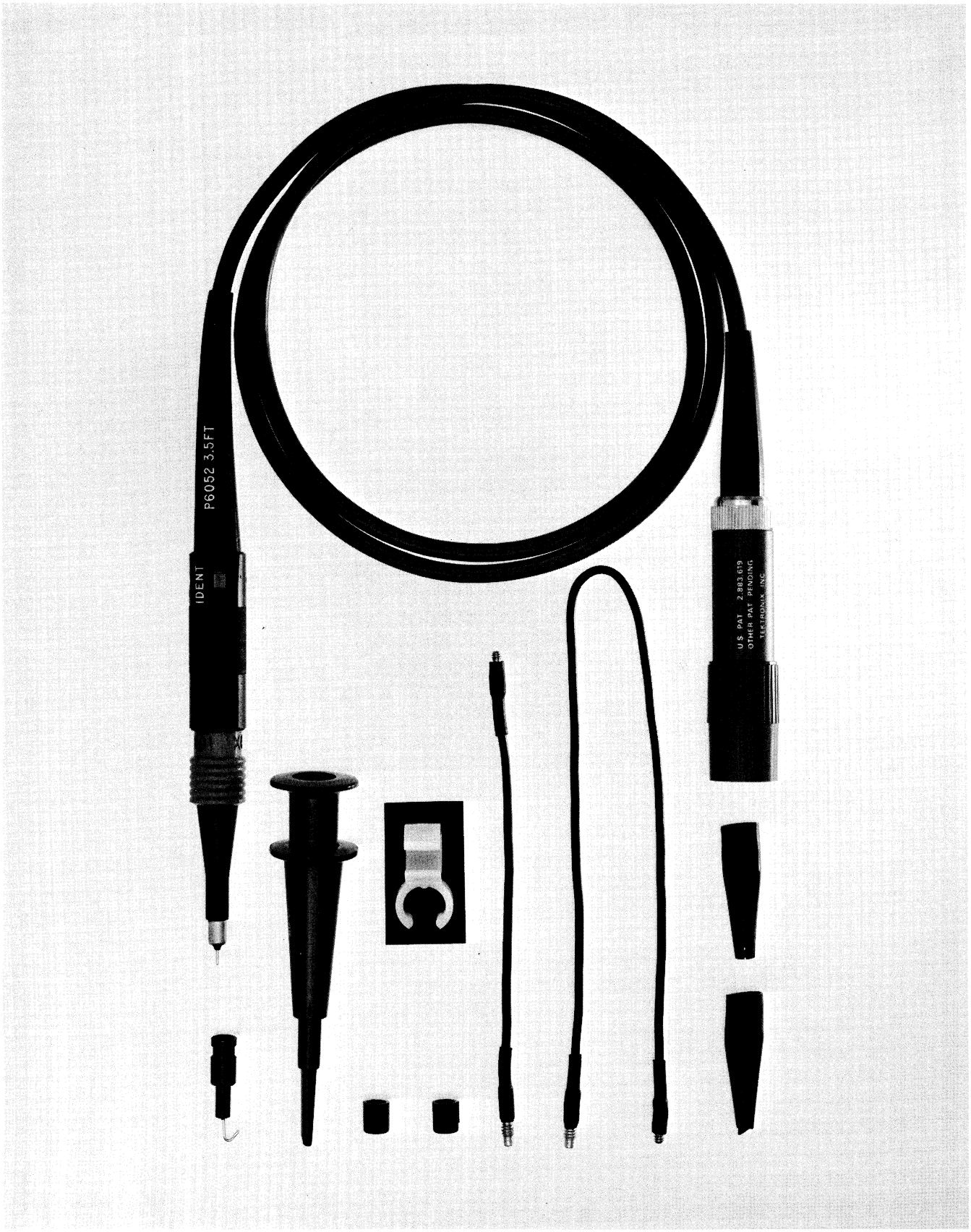

Fig. 1-1. P6052 Probe and accessories.

SECTION 1
SPECIFICATION

Description

This manual contains information covering four different versions of the P6052 probe. Each version may be identified by its individual Tektronix part number stamped on the the strain relief boot next to the probe body. All versions are passive dual attenuation types, designed to be used with Tektronix DC to 30 MHz oscilloscopes. Each can be compensated for use with instruments having an input capacitance of 15 to 55 pF and an input resistance of 1 MΩ.

Selection of the 1X or the 10X attenuation is obtained by sliding the collar on the probe barrel forward to the 10X position or back to the 1X position.

Individual Features and Part Numbers

1. Part number 010-0241-01 probe package (010-0240-01 probe only) has a 3.5 foot cable with standard BNC connector, and is usable with any Tektronix oscilloscope with standard BNC connectors, and input capacitance, input resistance, and frequency response within the ranges described above.

2. Part number 010-0243-01 probe package (010-0242-01 probe only) is the same as item 1 except the cable length is six feet, and the compensating component values are slightly different.

3. Part number 010-0241-00 probe package (010-0240-00 probe only) has a 3.5 foot cable and a special connector to provide digital readout information to Tektronix oscilloscopes or plug-ins containing Auto Scale Factor Readout provisions. The attenuator selector switch changes the Volts/Div readout of the oscilloscope to indicate the correct deflection factor. This version also provides trace identification by means of a pushbutton on the probe body, which permits the operator to ascertain which trace of a multitrace display is from a particular probe. Pushing the button shifts the trace vertically a small amount on the CRT display.

4. The 010-0243-00 probe package (010-0242-00 probe only) is the same as item 3, except the cable length is six feet, and compensation components are different in value.

NOTE

Items 1 and 2 do not contain the digital readout or trace identify provisions.

Characteristics

The characteristics in this section are categorized as electrical, environmental and physical. The electrical and environmental characteristics are valid only if the probe is operating within the limitations described, such as ambient temperature range, and if the instrument is calibrated and operating in a calibrated system.

The electrical characteristics are applicable when used with an instrument that is calibrated within an ambient temperature between +20°C and +30°C. Unless otherwise stated, electrical characteristics apply over an operating temperature range from −15°C to +55°C and to an altitude of 15,000 feet.

TABLE 1-1

ELECTRICAL CHARACTERISTICS

NOTE

The performance requirements are for the probe attached to the input of the oscilloscope and the probe compensated in the 10X attenuation position. Performance requirement for the probe with the 6.0 foot cable is given in parenthesis if it is different from that of the probe with the 3.5 foot cable.

Characteristic	Performance Requirement
Compensation Range	⩽14 pF to ⩾60 pF
10X Attenuation Tolerance (at DC)	⩽3% including oscilloscope input resistance.
Step Response Rise-time	
1X Attenuation	⩽ 60 ns, (⩽75 ns)
10X Attenuation	⩽9 ns, (⩽11 ns)
Input Impedance	
Resistance	
1X Attenuation	1 MΩ ±2%
10X Attenuation	10 MΩ ±1.5%
Capacitance	
1X Attenuation	113 ± 5 pF, (134 ± 6 pF)
10X Attenuation	14 ± 1 pF, (15.5 ± 1 pF)
Maximum Input Voltage	500 V (DC + peak AC) derated with frequency; see Figs. 1-2 through 1-5.

TABLE 1-2

ENVIRONMENTAL CHARACTERISTICS

Characteristic	Performance Requirement
Temperature Range	
Operating	−15°C to +55°C
Non-operating	−55°C to +75°C
Altitude	
Operating	To 15,000 feet
Non-operating	To 50,000 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: ≈4.225 inches Maximum Outside Diameter: ≈0.580 inch
Cables	Length: ≈3.50 feet or 6.00 feet between strain bases
Compensation Box	Length: ≈2.912 inches Outside Diameter: ≈0.740 inch
Net Weight	
Probe with 3.5 foot cable	≈4 ounces
Probe with 6.0 foot cable	≈5 ounces
Shipping Weight	
Probe with 3.5 foot cable	≈14 ounces
Probe with 6.0 foot cable	≈15 ounces

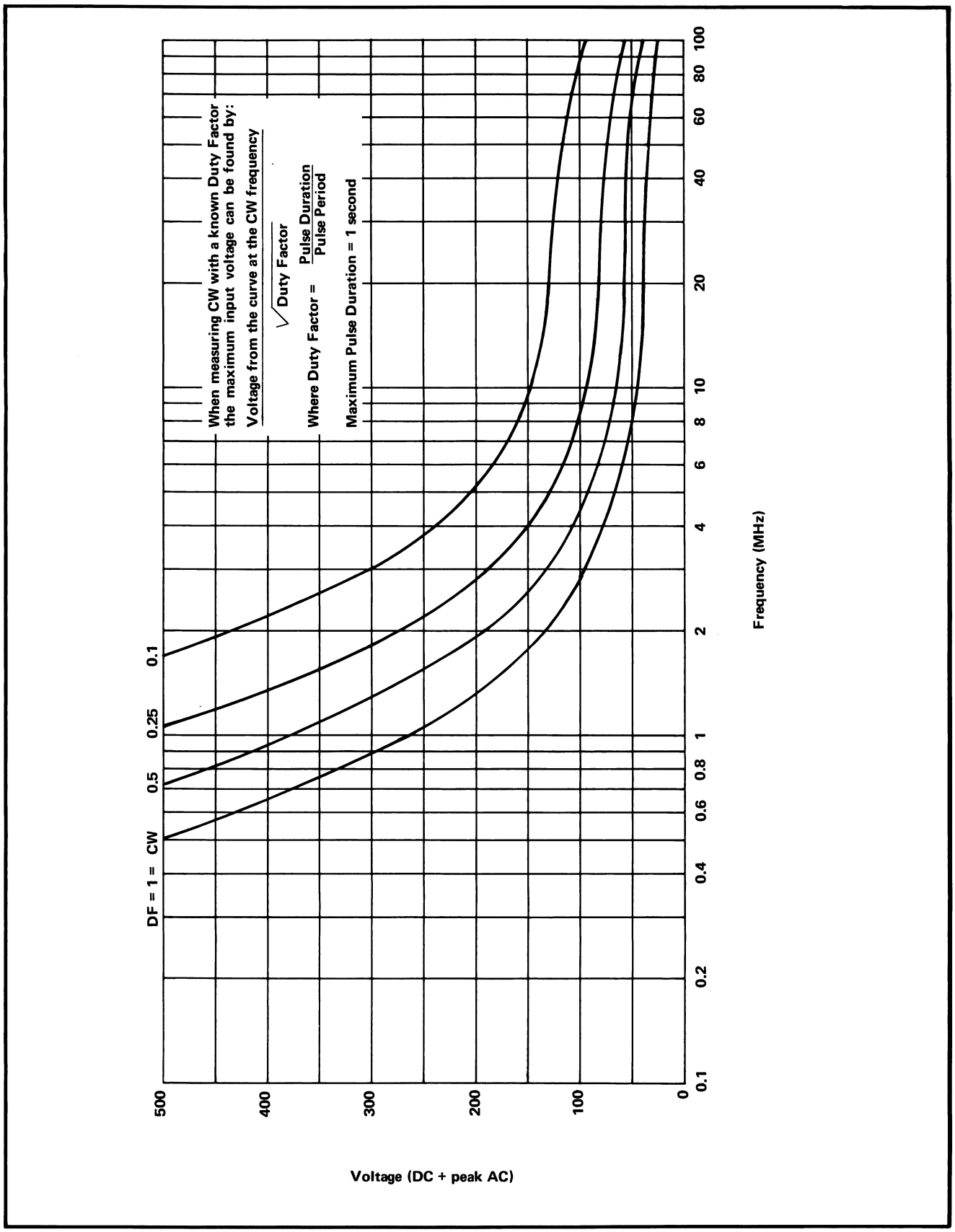

Fig. 1-2. P6052 Probe (3.5 foot cable, 1X attenuation) voltage derating with frequency curves at 25°C ambient temperature.

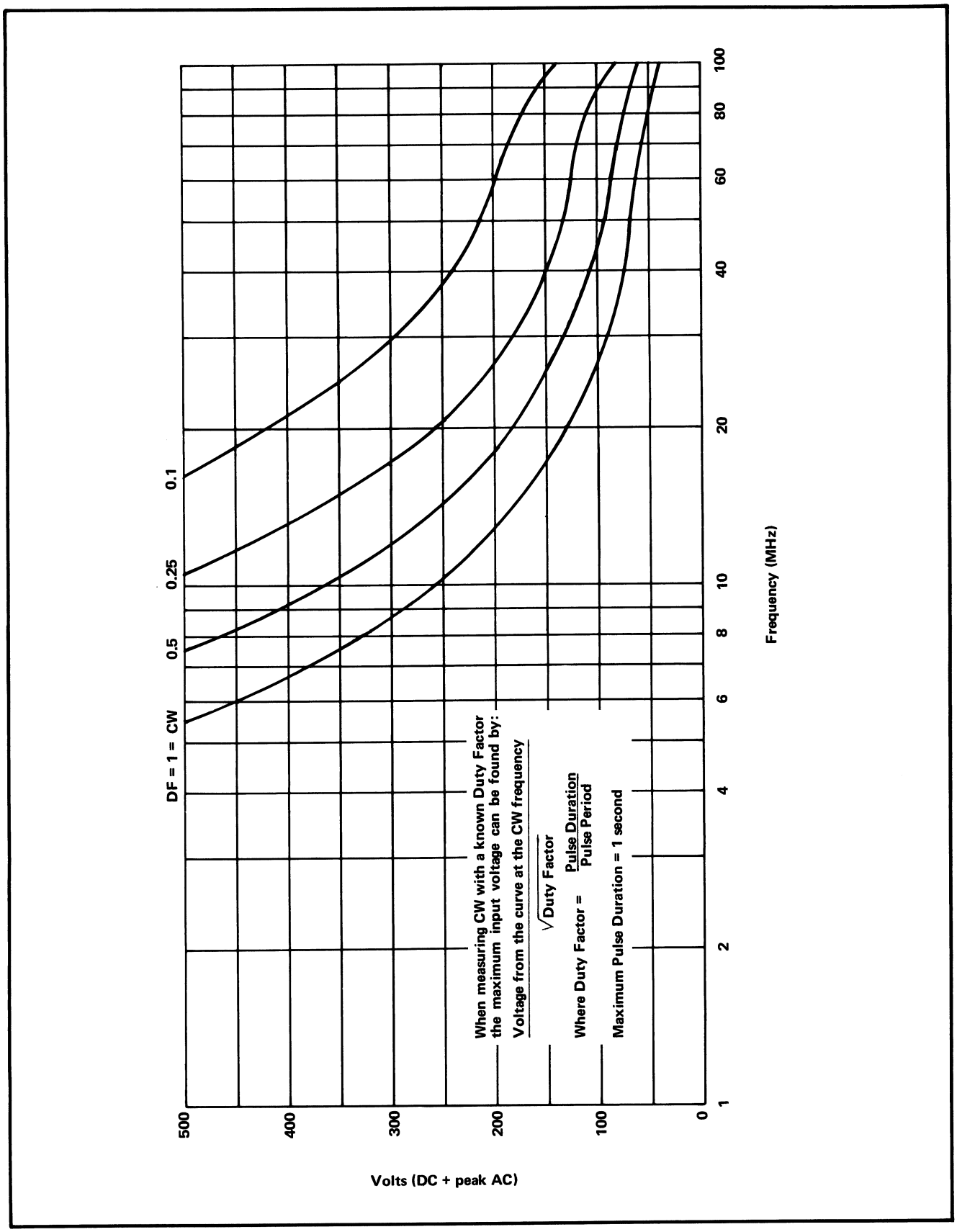

Fig. 1-3. P6052 Probe (3.5 foot cable, 10X attenuation) voltage derating with frequency curves at 25°C ambient temperature.

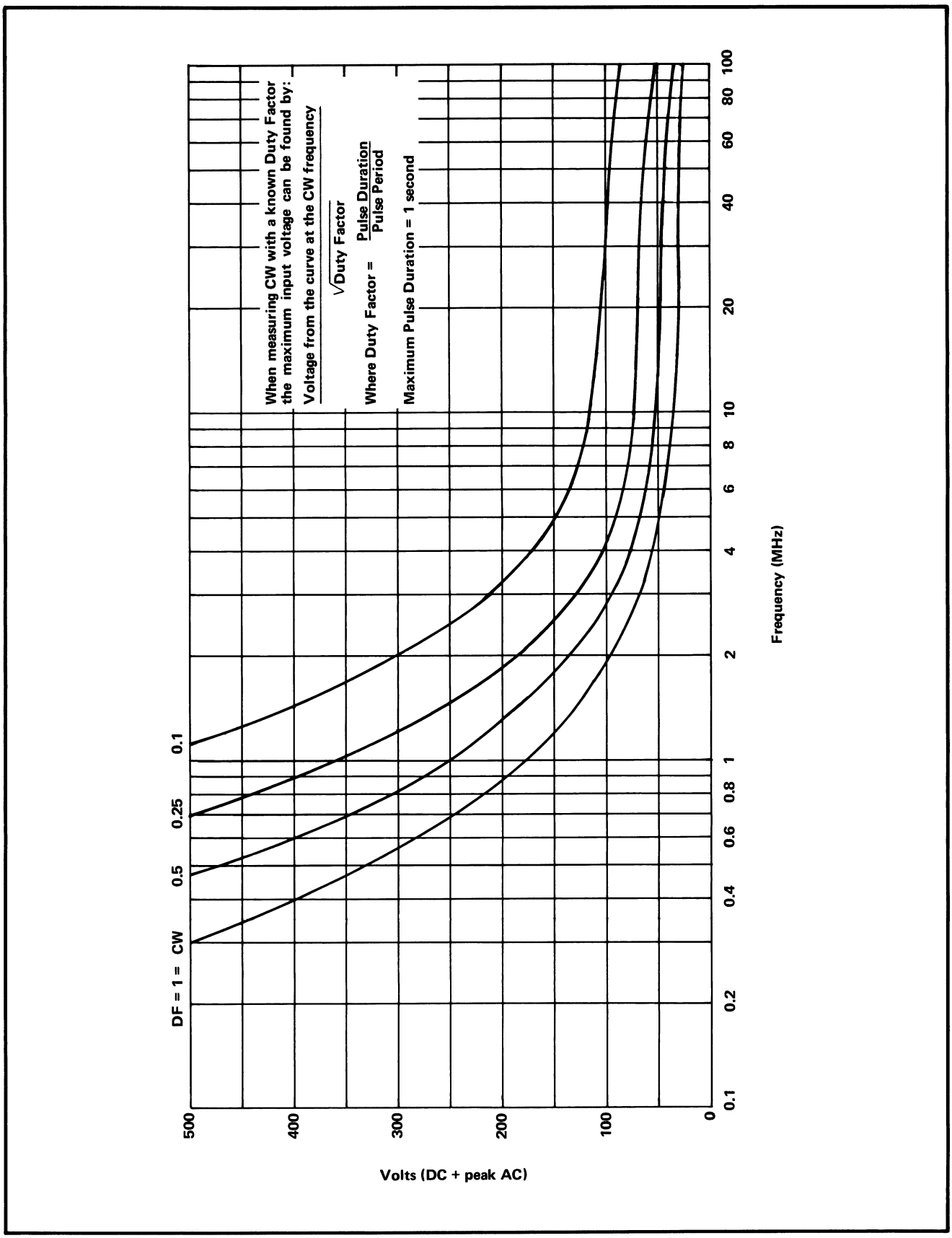

Fig. 1-4. P6052 Probe (6.0 foot cable, 1X attenuation) voltage derating with frequency curves at 25°C ambient temperature.

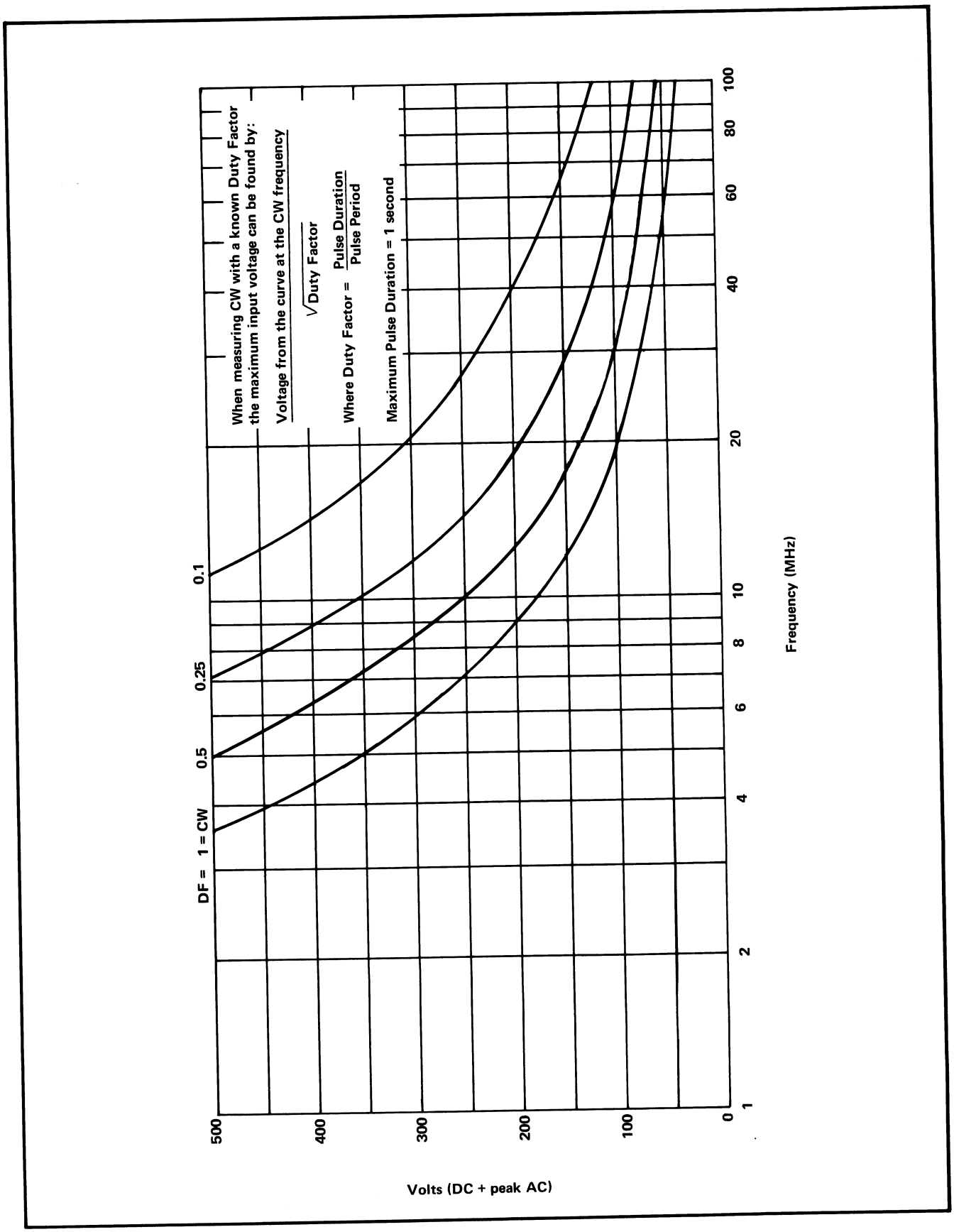

Fig. 1-5. P6052 Probe (6.0 foot cable, 10X attenuation) voltage derating with frequency curves at 25°C ambient temperature.

SECTION 2
OPERATING INSTRUCTIONS

General Information

The P6052 Probe permits the oscilloscope to be connected to a low impedance circuit without impedance-matching and presents minimum loading to the circuit. The combined resistance of the probe and the oscilloscope input is 1 MΩ and 10 MΩ respectively for the 1X and 10X attenuations. The probe can be compensated for use with oscilloscopes having an input capacitance of 15 pF to 55 pF and an input resistance of 1 MΩ.

Probes identified as probe package number 010-0241-01 (probe only 010-0240-01) for the 3.5 foot cable length, and probe package number 010-0243-01 (probe only 010-0242-01) for the six foot cable length, are provided with a standard BNC connector, and may be used with nearly all Tektronix oscilloscopes that have the foregoing characteristics.

Readout and "trace identify" versions which contain a special connector for mating with Tektronix oscilloscopes equipped with Auto Scale Factor Readout provisions, may be identified as follows:

Probe package number 010-0241-00 (probe only 010-0240-00) has a 3.5 foot cable length.

Probe package number 010-0243-00 (probe only 010-0242-00) has a six foot cable length.

In these versions, the probe attenuator selector switch also changes the Volts/Div readout to correspond to the 1X or 10X attenuation position of the switch for oscilloscopes having the readout feature. Trace identification is accomplished by pushing a button located near the back of the probe body. The pushbutton, when depressed, shifts the trace vertically a small amount. See Fig. 2-1 for the pushbutton location.

Probe Compensation

Due to variations in input capacitance between instruments, it is necessary to compensate the probe when changing instruments. Re-check compensation before making critical measurements. Lack of compensation can cause measurement error since both wave shape and amplitude of the display are affected. See Fig. 2-2. The probe is provided with an adjustment to match the probe time-constant to the time-constant of the instrument.

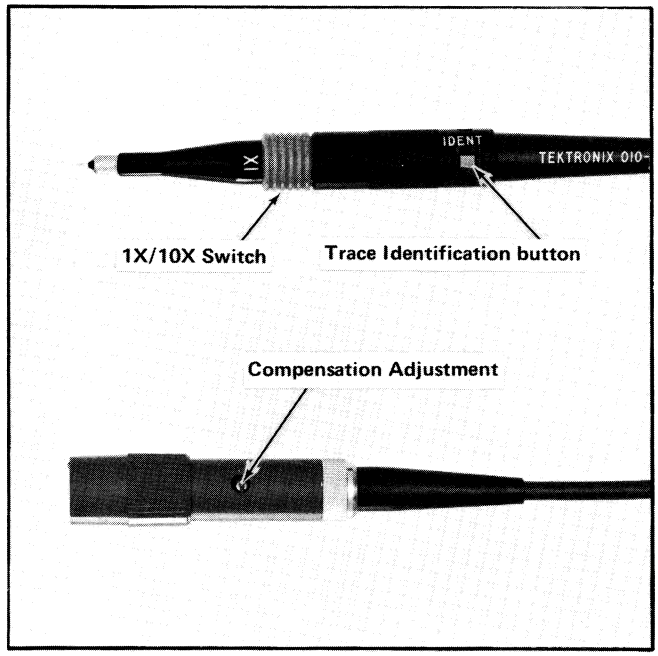

Fig. 2-1. Probe trace identify button, 1X/10X switch and compensation adjustment locations.

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. See Fig. 2-1 for the compensation adjustment location.

Probe Compensation Procedure

Connect the probe to the Input of the vertical amplifier 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.

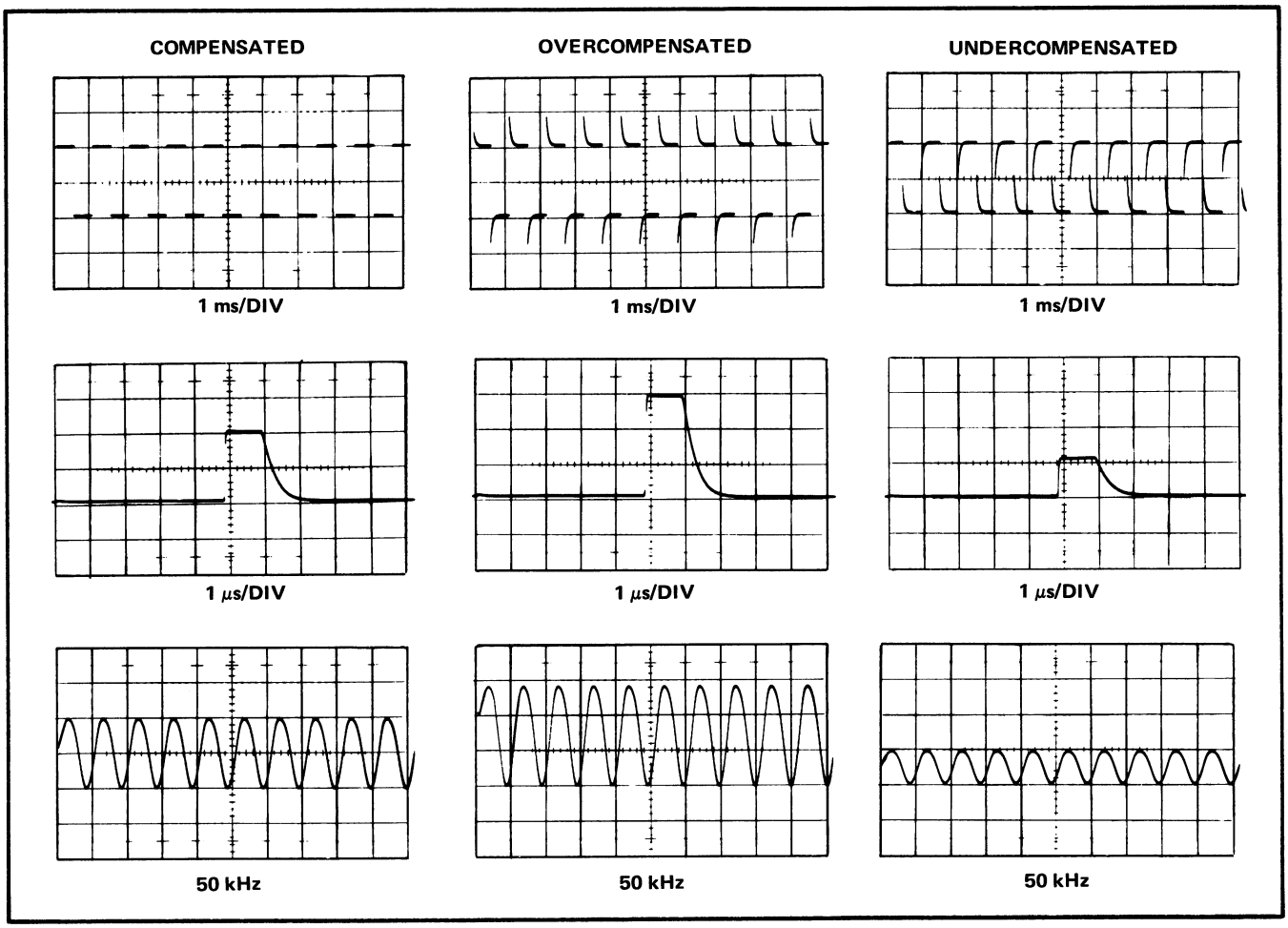

Fig. 2-2. Effects of probe compensation on signal waveforms.

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

5. Switch the probe attenuation to 10X position, then adjust C8 (Fig. 2-1) through the access hole in the compensation box cover, for optimum pulse flat top. Fig. 2-3 illustrates the correct and incorrect square wave response.

The probe is now ready to use with the amplifier it has been compensated for. Remember when the probe is changed to another amplifier to recheck the probe for proper compensation.

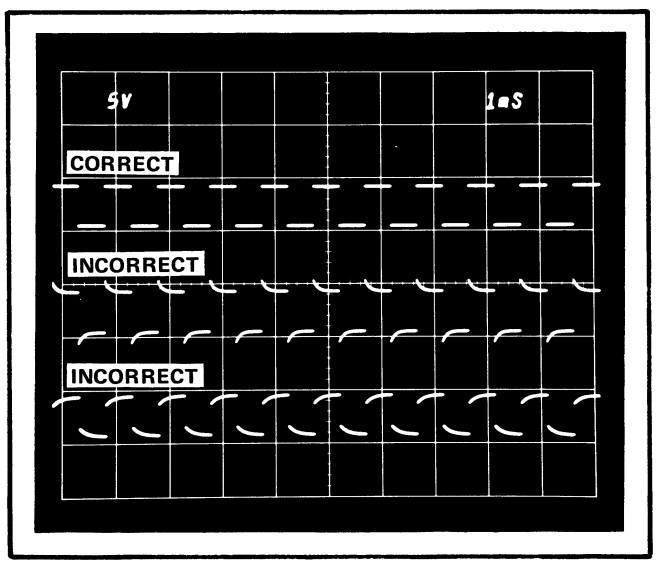

Fig. 2-3. Probe compensation.

Probe Voltage Derating

To prevent damage to the probe by high frequency current, the maximum voltage that may be applied to the probe must be limited. Figs. 1-2 and 1-3 show the maxi-

mum voltage for various duty factors that may be applied to the probe. The duty factor (d.f.) is defined as the pulse duration divided by the pulse period. The sine-wave duty factor is one. In no case should the peak pulse voltage exceed the 500 V DC voltage limit.

Circuit Loading [1]

The probe impedance at high frequency presents a load to the circuit under test which is different from the probe low frequency impedance. The probe impedance may affect the circuit operation; therefore, probe loading of the circuit should be considered. To minimize this loading effect, select the lowest impedance points to check waveforms.

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

The 10X attenuation of the probe is based on the assumption that the source impedance of the circuit to which it is connected is ideally zero ohms. When the circuit resistance is large (e.g., 10 MΩ), the measured voltage is half the voltage present at the measuring point if the 10X probe is removed. This is due to the voltage divider action resulting from the probe resistance and the source impedance. If the probe attenuation is switched to 1X, only one-eleventh of the circuit no-load voltage is measured, and the 1X to 10X attenuation ratio is not valid.

The variations of the equivalent probe shunt resistance (R_p) and shunt capacitance reactance (X_p) as a function of frequency is shown in Figs. 2-4 and 2-5.

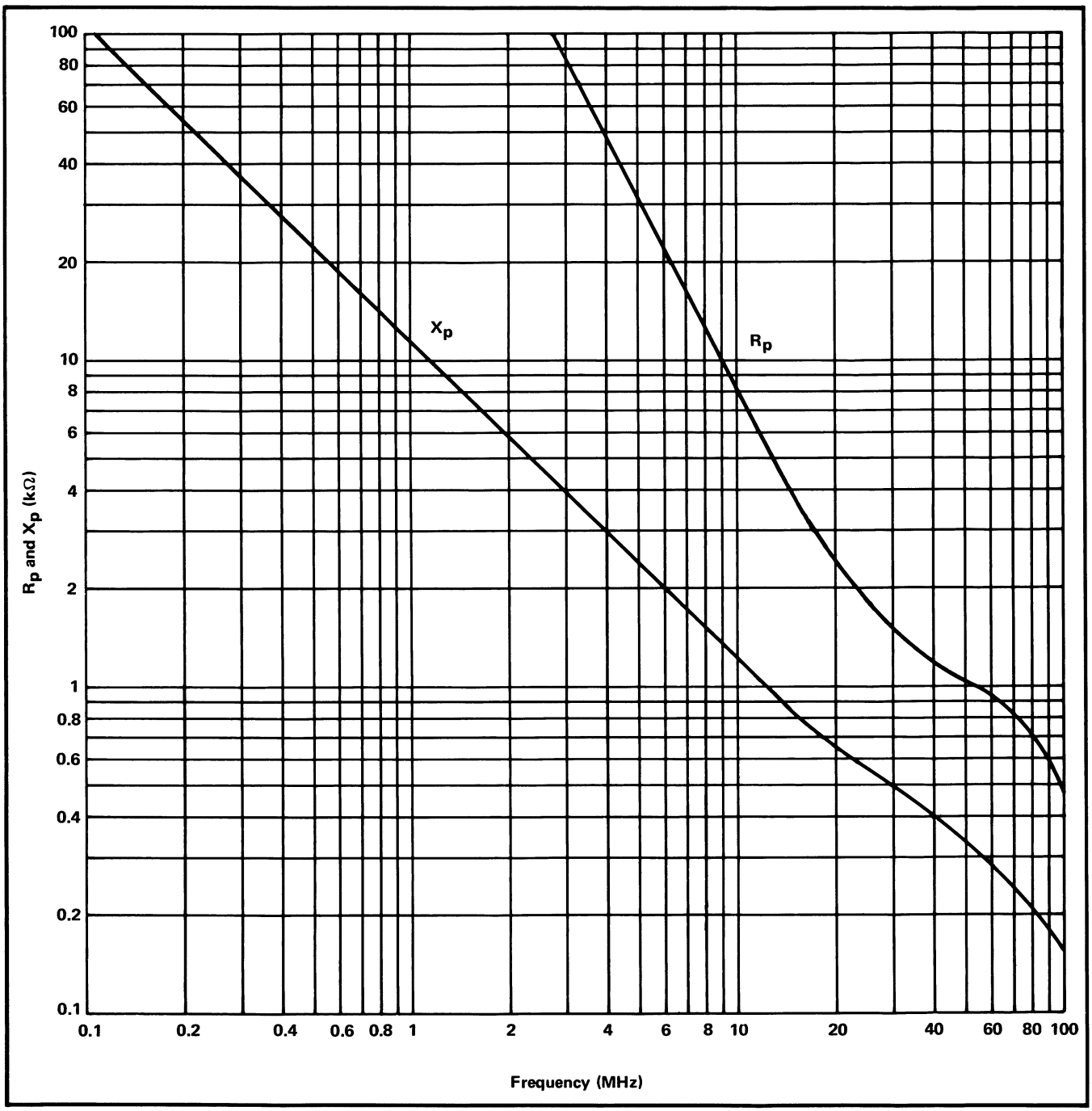

Fig. 2-4. Typical P6052 (3.5 foot cable, 10X attenuation) parallel resistance and capacitive reactance versus frequency curves at 25°C ambient temperature.

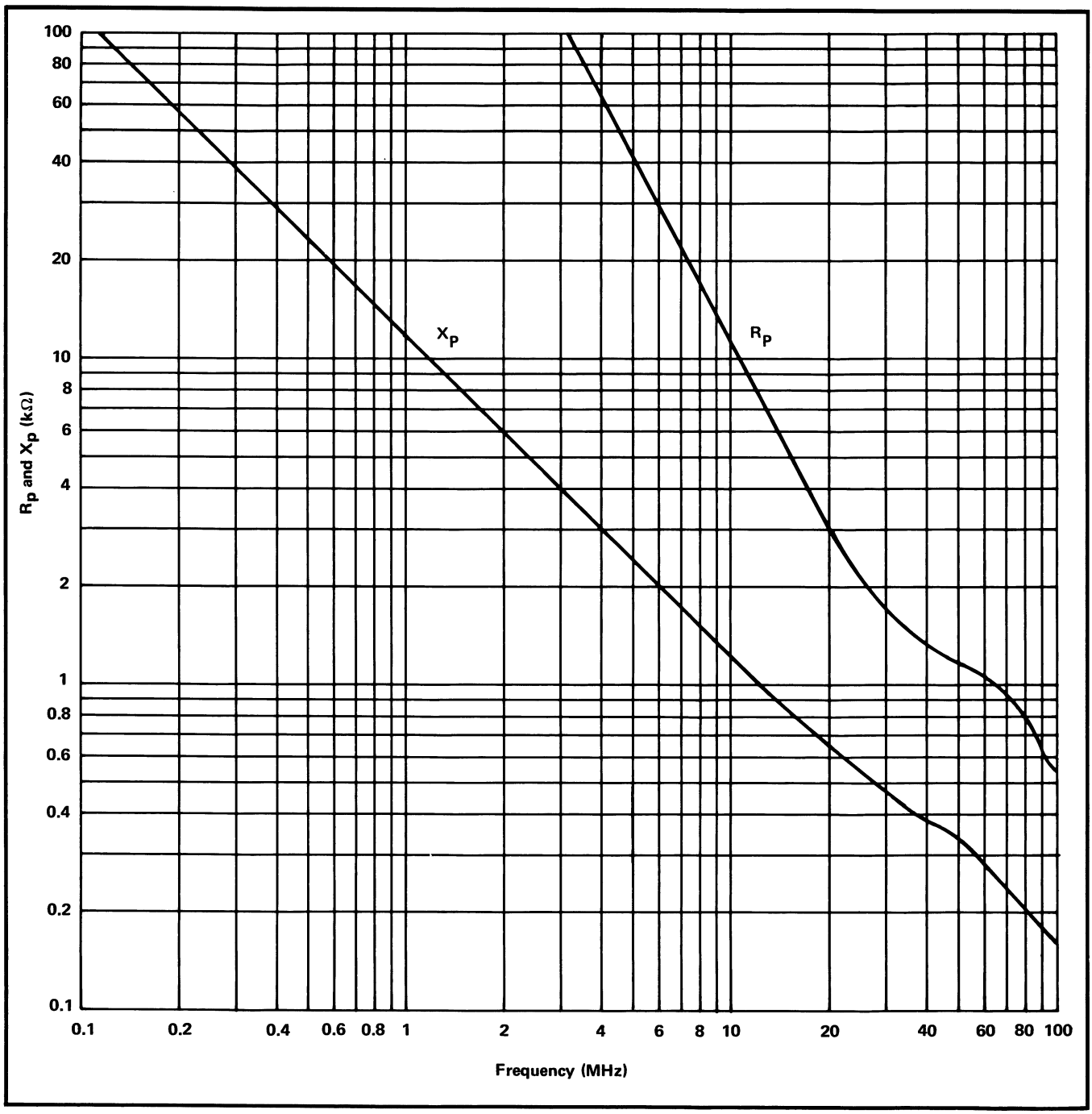

Fig. 2-5. Typical P6052 (6.0 foot cable, 10X attenuation) parallel resistance and capacitive reactance versus frequency curves at 25°C ambient temperature.

SECTION 3
CIRCUIT DESCRIPTION

Introduction

The P6052 is a 1X/10X attenuation probe which is designed to be used with a 1 MΩ input impedance oscilloscope. The probe is composed of the probe body, the probe cable and the probe compensation box.

The probe body contains the 10X attenuation components and the attenuation selector switch. In the readout and trace identify versions, the probe body also contains the trace IDENT switch.

The probe compensation box contains the probe compensation components, and, in the readout and trace identify versions, also contains the probe sense to readout resistor R7. Refer to the circuit schematics in this manual.

1X Attenuation Probe

For operating with 1X attenuation, the 1X/10X attenuation selector switch (sliding collar on the probe body) is moved backward to close S1. S1, when closed, bypasses R1-C1 to connect the input signal through R8 to the probe output connector.

10X Attenuation Probe

The 1X/10X attenuation selector switch in the forward position opens S1 to place C1-R1 in the signal path. The 1 MΩ input of the oscilloscope in series with the 9 MΩ resistance of R1 form a 10 to 1 voltage divider. C1 and C8 compensate the probe to prevent distortion of the signal by the capacitance in the probe cable. R8 critically damps the probe response.

1X/10X Attenuation Selector Switch

The 1X/10X attenuation selector switch is a permanent magnet, which is part of the movable collar, that actuates reed switch S1 which opens for 10X attenuation. Readout and trace identify versions include S2 which is closed for 10X attenuation, and allows a current, limited by R7, to go to the probe sense readout to increase the Volts/Division readout by a factor of 10.

Trace IDENT Pushbutton (readout and trace identify versions only)

The trace IDENT pushbutton shifts the trace vertically a small amount when it is depressed. The pushbutton directly grounds the probe sense readout control wire, to actuate the trace shift in the oscilloscope.

SECTION 4
MAINTENANCE

Maintenance

The Type P6052 Probe is designed to withstand normal operation and handling and should give many hours of continuous use without failure. However, if the probe fails or breaks, replacement parts are available. See the mechanical and electrical parts lists at the rear of this manual.

Probe Cable Assembly Replacement (Steps 2, 3a, and 6 pertain to readout and trace identify versions only)

1. Remove the set screw and the ground lead from the probe body.

2. Fully depress the IDENT pushbutton and carefully pull off the probe body.

3. Unsolder the following items from their connections in the probe body:

   a. The white and yellow wires.

   b. Center conductor of the probe cable.

4. Remove the switch holder which has a snap fit onto the probe cable bushing.

5. Remove the plain knurled nut from the compensation box and slide the cover towards the probe.

6. Unsolder the white and yellow wires.

7. Remove the two screws on the circuit board.

8. Remove the solder from the center hole at each end of the circuit board to free the probe cable center conductor on the back side of the circuit board and lift off the circuit board. The connections may be seen from the back side of the compensator body. The use of a solder-removing tool is suggested.

9. Remove the probe cable bushing from the body of the compensator with a 7/16-inch wrench.

10. Reassemble the components with the new probe cable assembly by reversing the procedure.

11. Compensate the probe as described in Section 2.

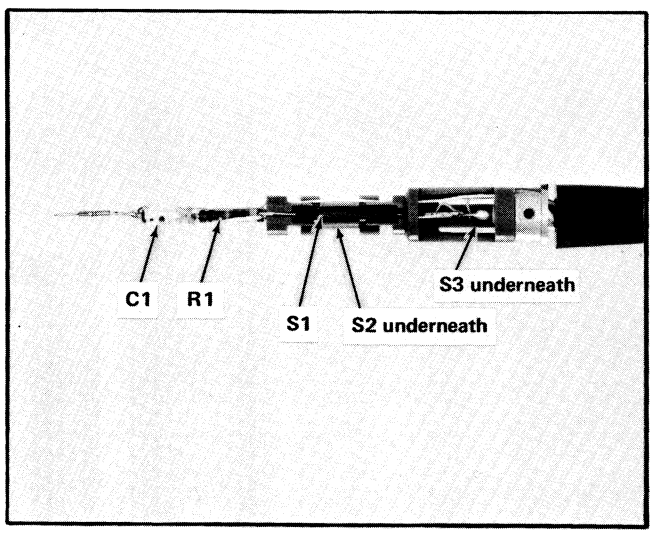

Fig. 4-1. Probe body electrical components location.

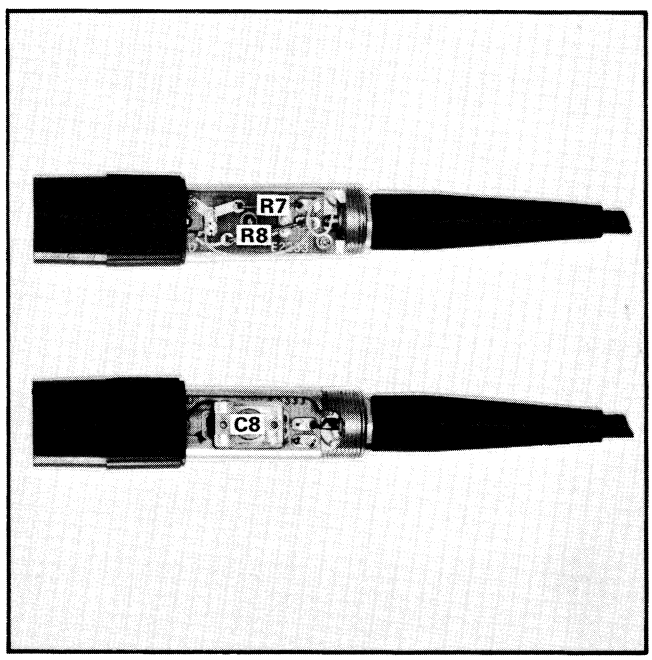

Fig. 4-2. Compensation box electrical components location.

SECTION 5
PERFORMANCE CHECK CALIBRATION

Introduction

The following procedure may be used to check the probe's performance as tabulated in Section 1, or as a calibration procedure. By performing the complete procedure the probe is checked and restored to its original performance standards. The recommended equipment listed applies to 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 or aids to calibrating the probe. They are not intended as instrument specifications. Actual values may exceed the listed tolerances with no loss in the 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 75 MHz bandwidth: A 7504 Oscilloscope, a 7A12 Dual Trace Amplifier (only one channel used) and a 7B50 or 7B51 Time Base are used in this procedure.

2. Capacitance meter, capable of measuring 140 pF and less with an accuracy of 3%: Tektronix Type 130 L-C Meter.

3. Pulse or square wave generator, pulse risetime 1 ns, amplitude 0.5 V: Tektronix Type 106 Square Wave Generator.

4. Resistance bridge, capable of measuring 10 MΩ ± 0.1%: Electro Scientific Industries Model 250 DA.

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

6. Adapter; UHF male to BNC female. (Required to adapt item 5 to Type 130 L-C Meter.) Tektronix Part No. 103-0015-00.

7. Adapter; GR to BNC female. (Required to adapt item 5 to Type 106 Square-Wave Generator.) Tektronix Part No. 017-0063-00.

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

PERFORMANCE CHECK AND CALIBRATION RECORD INDEX

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 P6052 Probe will meet all Electrical Characteristics listed in Section 1.

SHORT FORM PROCEDURE

P6052, Serial No._____

Calibration Date _____

Calibrator _____

1. Check Trace Identify Pushbutton Operation (Readout and trace identify versions only)

Push the button to cause a slight vertical shift of the trace.

IDENTIFY should appear in the graticule readout.

2. Check Compensation Range

The probe compensation range is ⩽ 14 pF to ⩾ 60 pF.

3. Check Attenuation

The attenuation is 10X ±3%.

4. Check Step Response Risetime

The 3.5 foot probe risetime is ⩽ 60 ns (1X attenuation) and ⩽ 9 ns (10X attenuation).

The 6.0 foot probe risetime is ⩽ 75 ns (1X attenuation) and ⩽ 11 ns (10X attenuation).

5. Check Input Resistance

The input resistance is 1 MΩ ±2% (1X attenuation) and 10 MΩ ±1.5% (10X attenuation).

6. Check Input Capacitance

The 3.5 foot probe input capacitance is 113 pF ± 5 pF (1X attenuation) and 14 pF ±1 pF (10X attenuation).

The 6.0 foot probe input capacitance is 134 pF ±6 pF (1X attenuation) and 15.5 pF ±1 pF (10X attenuation).

Preliminary Procedure

a. Install the 7A12 Amplifier in the Right Vert compartment of the 7504 and the 7B50 or 7B51 Time Base in the B Horiz compartment.

b. Connect the P6052 Probe to the 7A12 Input.

c. Preset the front panel controls as follows:

Amplifier Unit

Display Mode	Ch 1
Trigger Source	Ch 1
Volts/Div	10 mV
Position	Midrange
Polarity	+Up
Coupling	AC

Time Base Unit

Triggering	
Mode	P-P Auto
Coupling	AC
Source	Int
Magnifier	X1
Time/Div	0.5 ms
Display Mode	Time Base

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

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

1. Check Trace Identify Pushbutton Operation (Readout and trace identify versions only)

Requirement—Push button to actuate trace shift.

a. Position a free running trace near the center of the graticule. No input signal is necessary.

b. CHECK—Push the trace identify button on the probe body (see Fig. 2-1) and note a slight vertical shift in the trace. IDENTIFY should appear in the graticule readout if this feature is incorporated in the oscilloscope.

2. Check Compensation Range

Requirement—Probe compensation range: ⩽ 14 pF to ⩾ 60 pF.

a. Equipment setup is shown in Fig. 5-1.

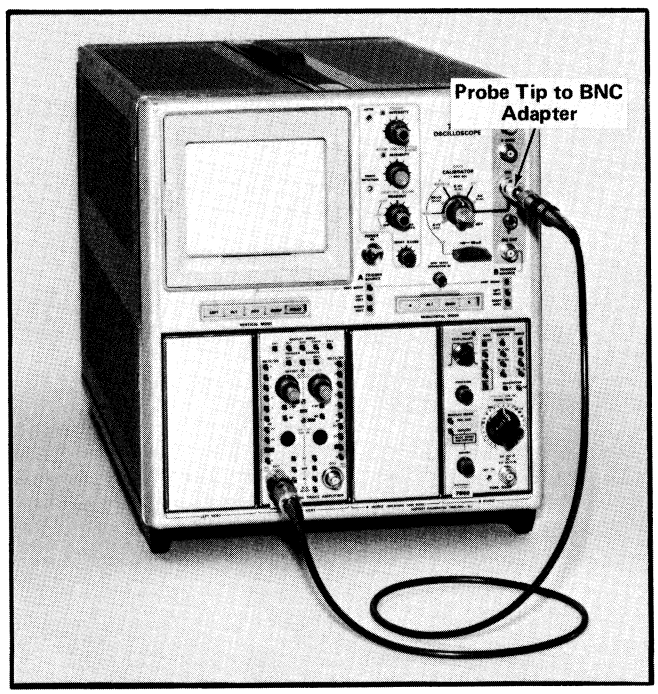

Fig. 5-1. Equipment setup for steps 2 and 3.

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

c. Connect the P6052 Probe tip to the Calibrator output connector with a probe tip to BNC male adapter.

d. Set the probe attenuation switch at 10X. 40 mV (4 div) square wave should be displayed.

e. CHECK—The compensation range (14 pF or less to 60 pF or more) of the P6052 probe as follows:

1. With the probe connected to 7A12 input, which has an input capacitance of 24 pF, adjust the compensation for maximum rolloff or undershoot to the pulse front corner.

2. Check—Rolloff or undershoot must equal or exceed 7.5% of a 4 division square wave or 0.3 divisions. See Fig. 5-2. This verifies that the probe compensation adjustment will compensate to a vertical amplifier input capacitance of 15 pF.

NOTE

An alternate procedure, if a 7A16 is available, would check to verify that the probe will compensate to the 15 pF input capacitance of the 7A16.

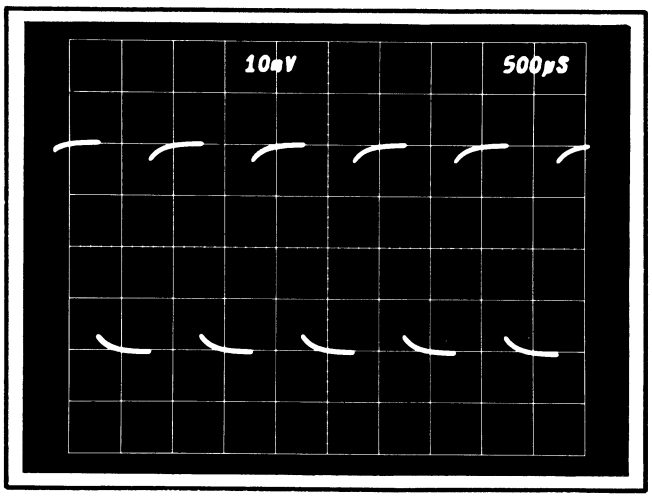

Fig. 5-2. Measurement of the probe undershoot response to a 1 kHz square wave.

3. Adjust the compensation for maximum overshoot of the pulse front corner.

4. Check—Overshoot amplitude must equal or exceed 45% of the pulse amplitude or 1.8 division (see Fig. 5-3). This verifies that the probe will compensate to a vertical amplifier input capacitance of 55 pF.

f. Recompensate the probe to the 7A12 input capacitance.

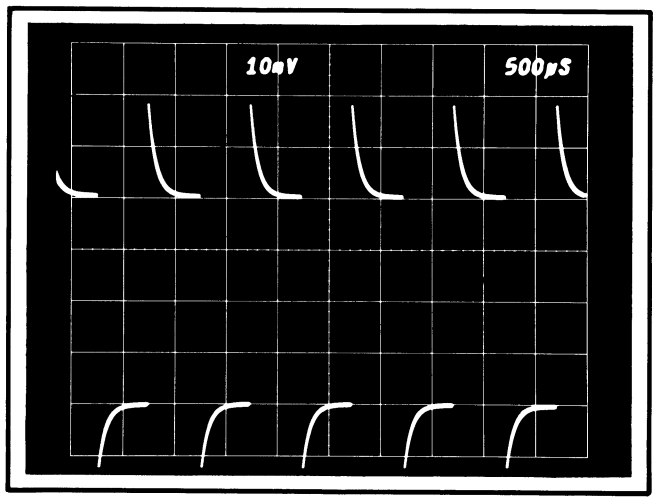

Fig. 5-3. Measurement of the probe overshoot response to a 1 kHz square wave.

3. Check 10X Attenuation

Requirement—10X ±3% attenuation.

a. Equipment setup is shown in Fig. 5-1.

b. Set the oscilloscope Calibrator at 0.4 V, the 7A12 volts/Div to 10 mV, and probe attenuation selector switch at 10X.

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 Step Response Risetime

Requirement—Maximum risetime values

Probe	1X Attenuation		10X Attenuation	
	Probe T_r	Display T_r	Probe T_r	Display T_r
3.5 foot	60 ns	60.2 ns	9 ns	10.2 ns
6.0 foot	75 ns	75.2 ns	11 ns	12 ns

The display risetime (T_r) is computed from the formula: $T_r = \sqrt{(T_{r1})^2 + (T_{r2})^2 + (T_{r3})^2}$ where T_{r1} is the Square Wave Generator (Type 106) risetime (1 ns), T_{r2} is the 7504/7A12 risetime (4.7 ns) and T_{r3} is the risetime of the P6052 Probe.

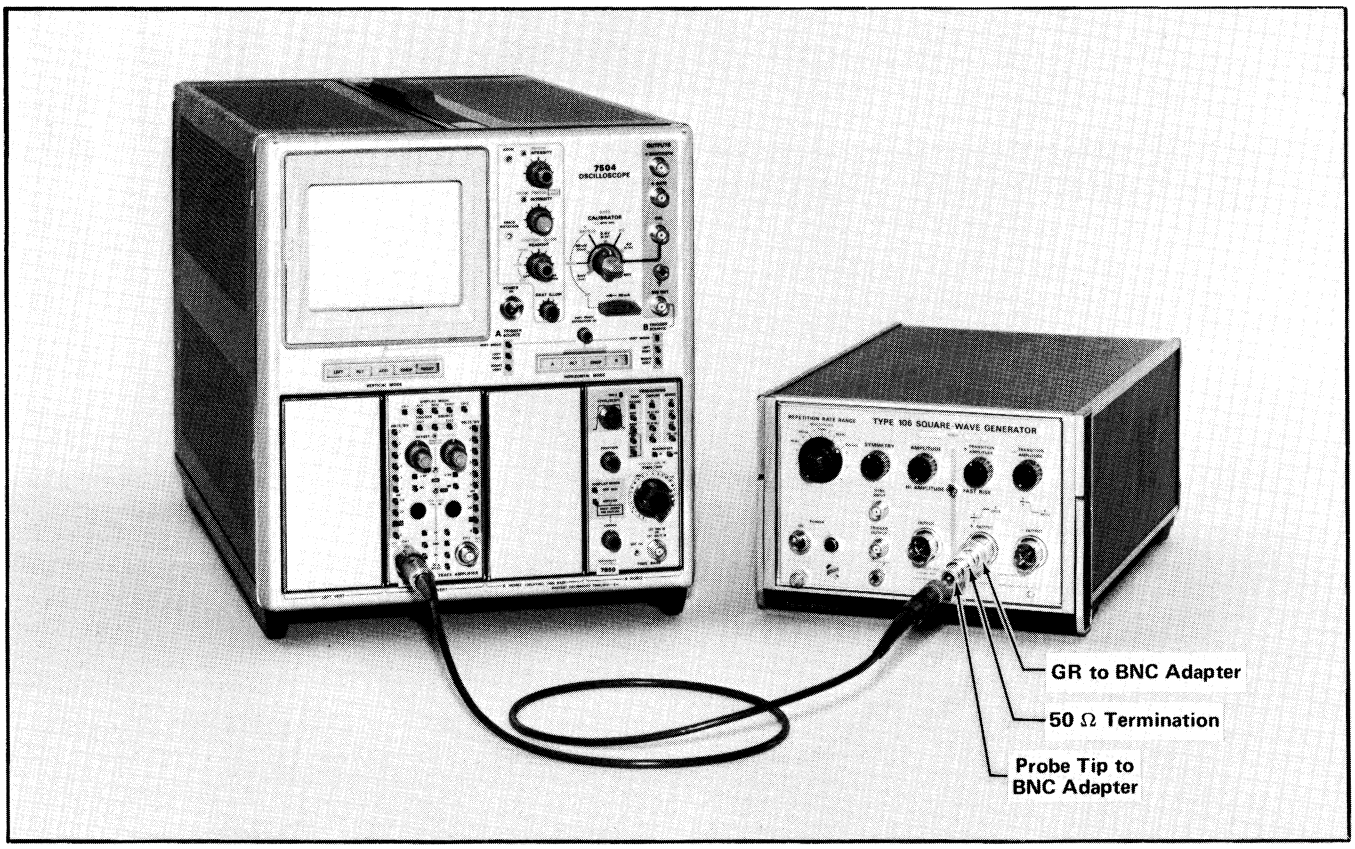

Fig. 5-4. Equipment setup for step 4.

a. The equipment setup is shown in Fig. 5-4.

b. Connect the probe tip to the Square-Wave Generator +Output through a GR to BNC female adapter, a 50-Ω BNC termination, and a probe tip to BNC male adapter.

c. Set the Square-Wave Generator Repetition Rate at 100 kHz and the Hi Amplitude/Fast Rise switch at Fast Rise.

d. Set the Volts/Div to 0.1 V, the Time/Div to 5 µs and the Probe Attenuation at 1X.

e. Adjust the Square Wave Generator +Transition Amplitude for 500 mV signal (5 div display).

f. Change the Time/Div to 0.2 µs and the magnifier to X10.

g. CHECK—The display measured risetime for the 1X attenuation should be less than or equal to 60.2 ns (3.5 foot probe) or 75.2 ns (6.0 foot probe). See Fig. 5-5.

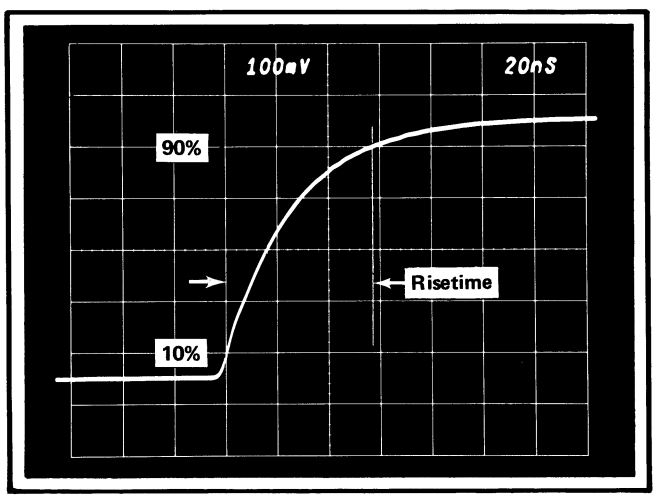

Fig. 5-5. Probe risetime measurement.

h. Set the Probe Attenuation at 10X, the Volts/Div at 10 mV, and the Time/Div to 50 µs.

i. Check that the square wave amplitude is exactly 5 div (500 mV).

j. Change the sweep rate to 5 ns/div by setting the Time/Div to .05 μs.

k. CHECK—The display measured risetime for the 10X attenuation should be less than or equal to 10.2 ns (3.5 foot probe) or 12 ns (6.0 foot probe).

5. Check Input Resistance

Requirement—1 X attenuation; 1 MΩ ±2%
10X attenuation: 10 MΩ ±1.5%

a. Connect the probe tip and ground lead across the input terminals of a resistance or impedance bridge.

b. Adjust the bridge balance to measure the input resistance of the probe and oscilloscope system.

c. CHECK—Probe input resistance for the 1X attenuation must equal 1 MΩ ±2% or 1 MΩ ±20 kΩ.

d. Change the probe attenuation to 10X and measure the input resistance of the system.

e. CHECK—The input resistance of the 10X probe amplifier system must equal 10 MΩ ±2% (10 MΩ ±200 kΩ).

6. Check Input Capacitance

Requirement—

Probe	1X Attenuation	10X Attenuation
3.5 foot	113 pF ± 5 pF	14 pF ± 1 pF
6.0 foot	134 pF ± 6 pF	15.5 pF ± 1 pF

a. Equipment setup is shown in Fig. 5-6.

b. Attach a probe tip adapter to the input connector of the capacitance meter (probe tip to BNC and BNC to UHF can be used for the Type 130 L-C meter).

c. Balance or null the capacitance meter to the added adapters then switch the range to 300 pF.

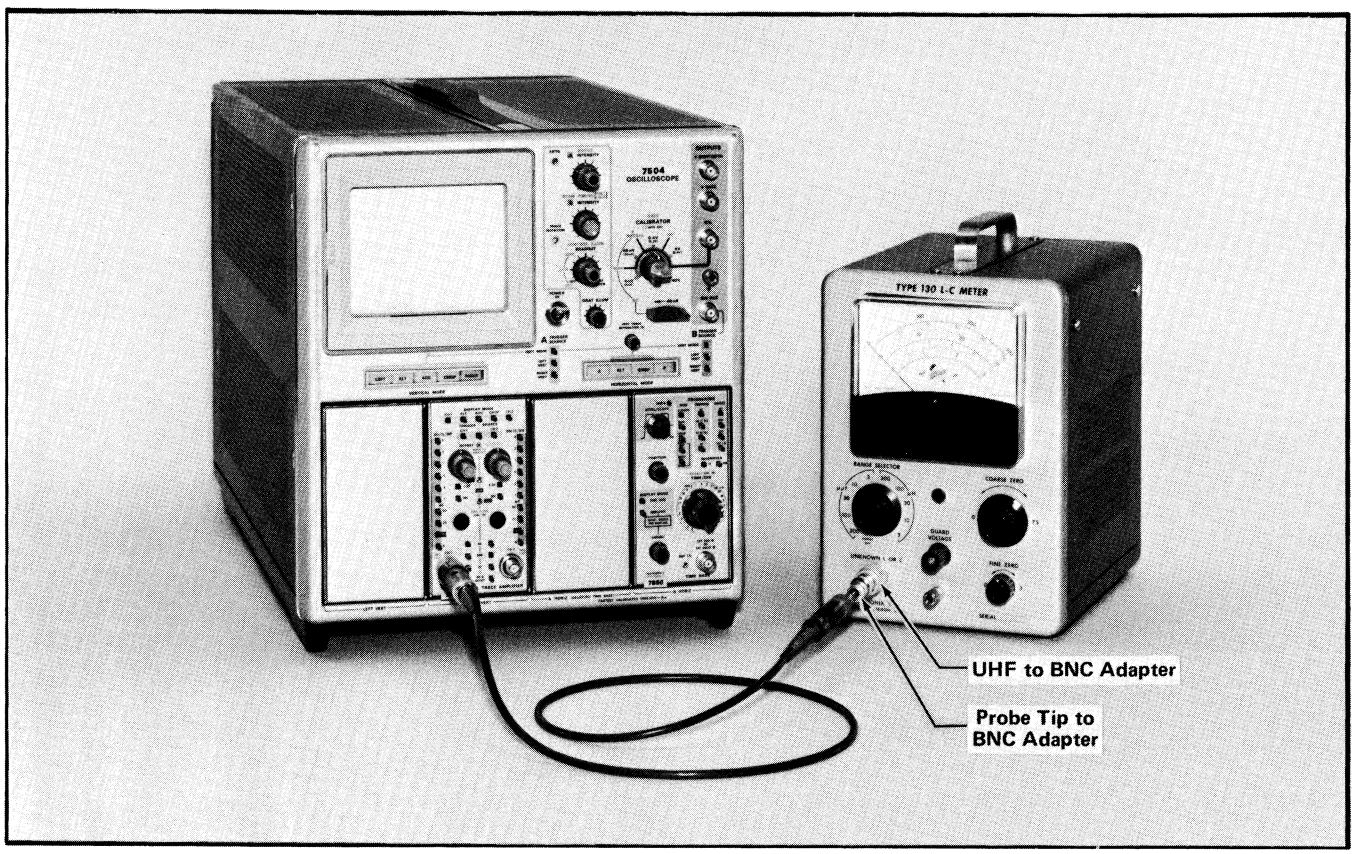

Fig. 5-6. Equipment setup for step 6.

d. Connect the P6052 Probe to the test oscilloscope and compensate the probe.

e. Connect the probe tip to the capacitance meter by inserting the tip into the probe tip to BNC adapter. Switch the probe attenuation to 1X.

f. CHECK—The 1X attenuation input capacitance must equal 113 pF ±5 pF for the 3.5 foot probe or 134 pF ±6 pF for the 6.0 foot probe.

g. Switch the Range Selector to 30 pF and set the probe attenuation at 10X.

h. CHECK—The 10X attenuation input capacitance. Must equal 14 pF ±1 pF for the 3.5 foot probe or 15.5 pF ±1 pF for the 6.0 foot probe.

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 6
ELECTRICAL PARTS LIST

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Description			
				3.5-FOOT CABLE			
				Capacitors			
Tolerance ±20% unless otherwise indicated.							
C1	281-0672-00			11.4 pF	Cer	500 V	1%
C8	281-0162-00			8-60 pF, Var	Mica	500 V	
				Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.							
R1	325-0021-00			9 MΩ	1/4 W	Prec	1%
R7[1]	315-0113-00			11 kΩ	1/4 W		5%
R8	315-0390-00			39 Ω	1/4 W		5%
				Switches			
Wired or Unwired							
S1	260-0722-00			Reed, SPST			
S2[1]	260-1112-00			Reed, mag			
S3[2]							
	*670-0948-00			Complete Circuit Board Assembly			
				6-FOOT CABLE			
				Capacitors			
Tolerance ±20% unless otherwise indicated.							
C1	281-0716-00			13.8 pF	Cer	500 V	1%
C8	281-0162-00			8-60 pF, Var	Mica	500 V	
				Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.							
R1	325-0021-00			9 MΩ	1/4 W	Prec	1%
R7[1]	315-0113-00			11 kΩ	1/4 W		5%
R8	315-0820-00			82 Ω	1/4 W		5%
				Switches			
Wired or Unwired							
S1	260-0722-00			Reed, SPST			
S2[1]	260-1112-00			Reed, mag			
S3[2]							
	*670-0949-00			Complete Circuit Board Assembly			

[1] Included with Readout Probes only.

[2] See Mechanical Parts List.

SECTION 7
MECHANICAL PARTS LIST

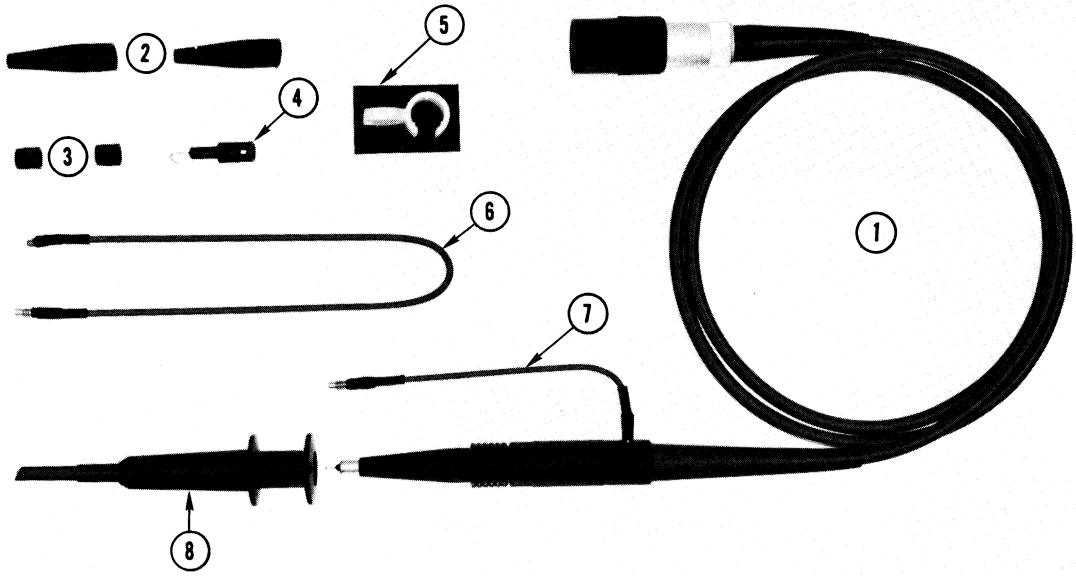

Fig. 6-1. P6052 Probe and Standard Accessories.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Serial/Model No. Disc	Qty 1 2 3 4 5	Description
					PROBE PACKAGE
1	010-0241-00			1	PROBE PACKAGE, P6052 (3.5-foot cable)
	010-0241-01			1	PROBE PACKAGE, P6052 (3.5-foot cable) w/o readout
thru	010-0243-00			1	PROBE PACKAGE, P6052 (6-foot cable)
	010-0243-01			1	PROBE PACKAGE, P6052 (6-foot cable) w/o readout
8	- - - - - - - - - -			-	package includes:
					PROBE ONLY
1-1	010-0240-00			1	PROBE, P6052 (3.5-foot cable)
	010-0240-01			1	PROBE, P6052 (3.5-foot cable) w/o readout
	010-0242-00			1	PROBE, P6052 (6-foot cable)
	010-0242-01			1	PROBE, P6052 (6-foot cable) w/o readout
					STANDARD ACCESSORIES
-2	344-0046-00			2	CLIP, probe
-3	166-0404-01			2	TUBE, insulating, molded
-4	206-0114-00			1	TIP, probe
-5	352-0090-00			1	HOLDER, probe
-6	175-0848-02			1	LEAD, electrical, 12 inch
-7	175-0848-01			1	LEAD, electrical, 5 inch
-8	013-0105-00			1	TIP, probe retractable hook
	070-0973-01			1	MANUAL, instruction (not shown)

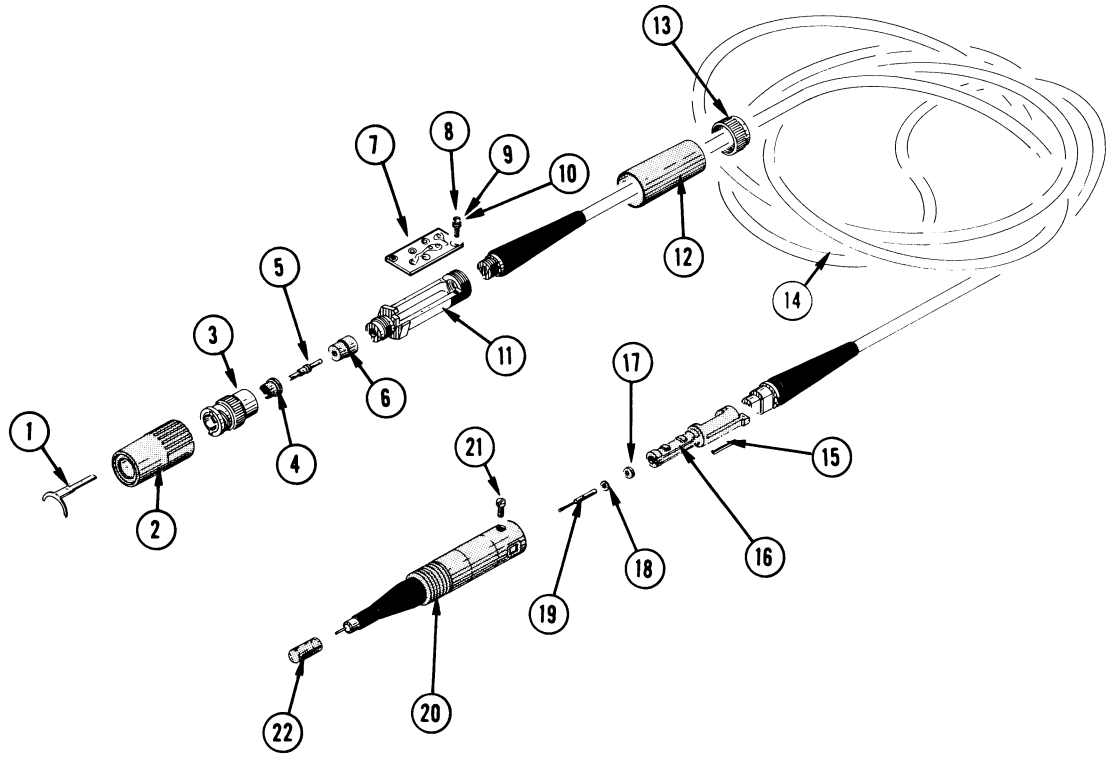

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Fig. 6-2. P6052 (versions with readout and trace identify) replaceable parts.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Qty 1 2 3 4 5	Description
2-	010-0240-00			1	PROBE PACKAGE, P6052 (3.5-foot cable)
	010-0242-00			1	PROBE PACKAGE, P6052 (6-foot cable)
	- - - - - - - - - -			-	probe includes
-1	131-0781-00			1	CONTACT, electrical, BNC
-2	205-0124-00			1	SHELL, electrical connector, plastic
-3	134-0044-01			1	PLUG, BNC, with 3 notches
-4	358-0072-00			1	BUSHING, insulator, plastic
-5	214-0109-00			1	PIN, probe contact, male
-6	166-0217-00			1	TUBE, spacer, insulator, BNC
-7	388-1500-00			1	BOARD, circuit, compensation box
	- - - - - - - - - -			-	mounting hardware: (not included w/board)
-8	211-0160-00			2	SCREW, 0-80 x 0.188 inch, Fil HS
-9	210-0065-00			2	WASHER, lock, split
-10	210-1107-00			2	WASHER, flat, 0.062 ID x 0.130 inch OD
-11	426-0613-00			1	FRAME, compensation box
-12	200-1020-02			1	COVER, compensation box
-13	220-0553-00			1	NUT, plain, knurled
-14	175-1094-00			1	CABLE, special purpose, electrical (3.5 foot)
	175-1095-00			1	CABLE, special purpose, electrical (6 foot)
-15	131-0797-00			1	CONTACT, electrical, ground
-16	352-0190-00			1	HOLDER, switch, plastic
-17	210-1004-00			1	WASHER, guide plastic
-18	210-0997-00			1	WASHER, guide, plastic, white
-19	214-0592-00			1	CONTACT, wire form
-20	204-0419-00			1	BODY, assembly, probe
	- - - - - - - - - -			-	mounting hardware: (not included w/body)
-21	211-0172-00			1	SCREW, 2-56 x 0.125 inch, Fil HS
-22	200-1062-00			1	CAP, end, plastic

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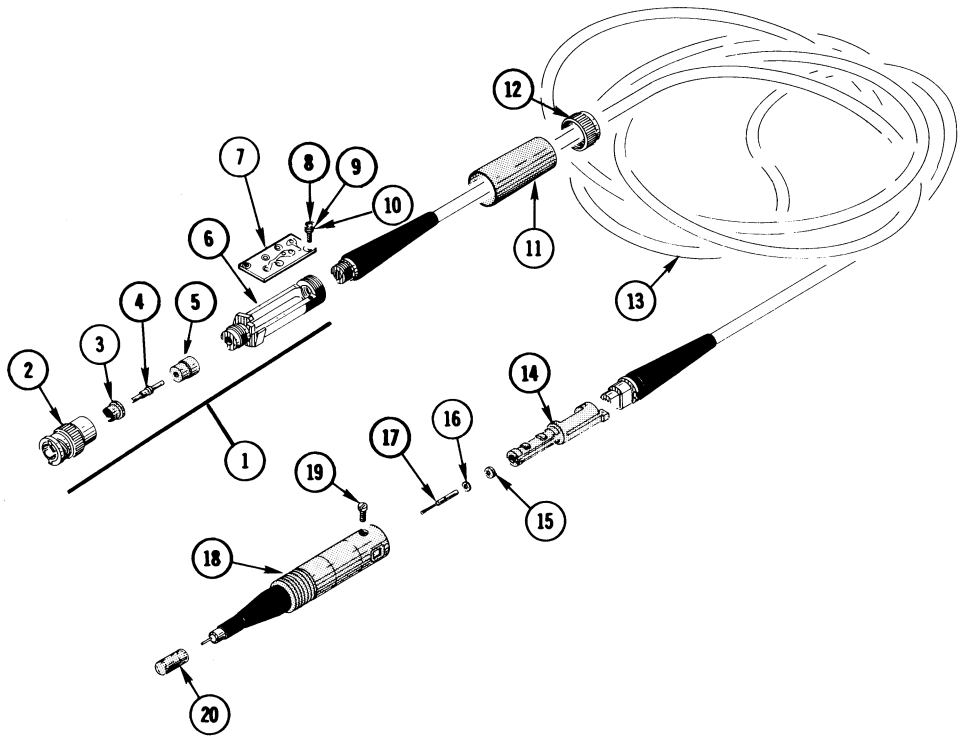

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Fig. 6-3. P6052 (versions without readout and trace identify) replaceable parts.

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Disc	Qty	1 2 3 4 5	Description
3-	010-0240-01			1		PROBE, P6052 (3.5-foot cable) w/o readout
	020-0242-01			1		PROBE, P6052 (6-foot cable) w/o readout
	- - - - - - - - - -			-		probe includes
-1	015-0186-00			1		COMPENSATOR SUBASSEMBLY, probe
	- - - - - - - - - -			-		compensator subassembly includes:
-2	134-0044-00			1		PLUG, BNC
-3	358-0072-00			1		BUSHING, insulator, plastic, 0.323 inch
-4	214-0109-01			1		PIN, probe contact, male
-5	166-0217-00			1		TUBE, insulator, plastic, 0.625 inch
-6	426-0613-03			1		FRAME, compensation box
	200-1197-01			1		COVER, end (not shown)
-7	388-1500-00			1		CIRCUIT BOARD
	- - - - - - - - - -			-		mounting hardware (not included w/circuit board)
-8	211-0160-00			2		SCREW, 0-80 x 0.188 inch, Fil HS
-9	210-0065-00			2		WASHER, lock split
-10	210-1107-00			2		WASHER, flat, 0.062 ID x 0.130 inch OD
-11	200-1020-00			1		COVER, compensation box
-12	220-0553-00			1		NUT, plain, knurled
-13	175-1094-01			1		CABLE, special purpose, electrical (3.5-foot)
	175-1095-01			1		CABLE, special purpose, electrical (6-foot)
-14	352-0190-00			1		HOLDER, switch, plastic
-15	210-1004-00			1		WASHER, guide, plastic
-16	210-0997-00			1		WASHER, guide, plastic, white
-17	214-0592-00			1		CONTACT, wire form
-18	204-0419-01			1		BODY, assembly, probe
	- - - - - - - - - -			-		mounting hardware: (not included w/body)
-19	211-0172-00			1		SCREW, 2-56 x 0.125 inch, Fil HS
-20	200-0372-00			1		CAP, end, plastic

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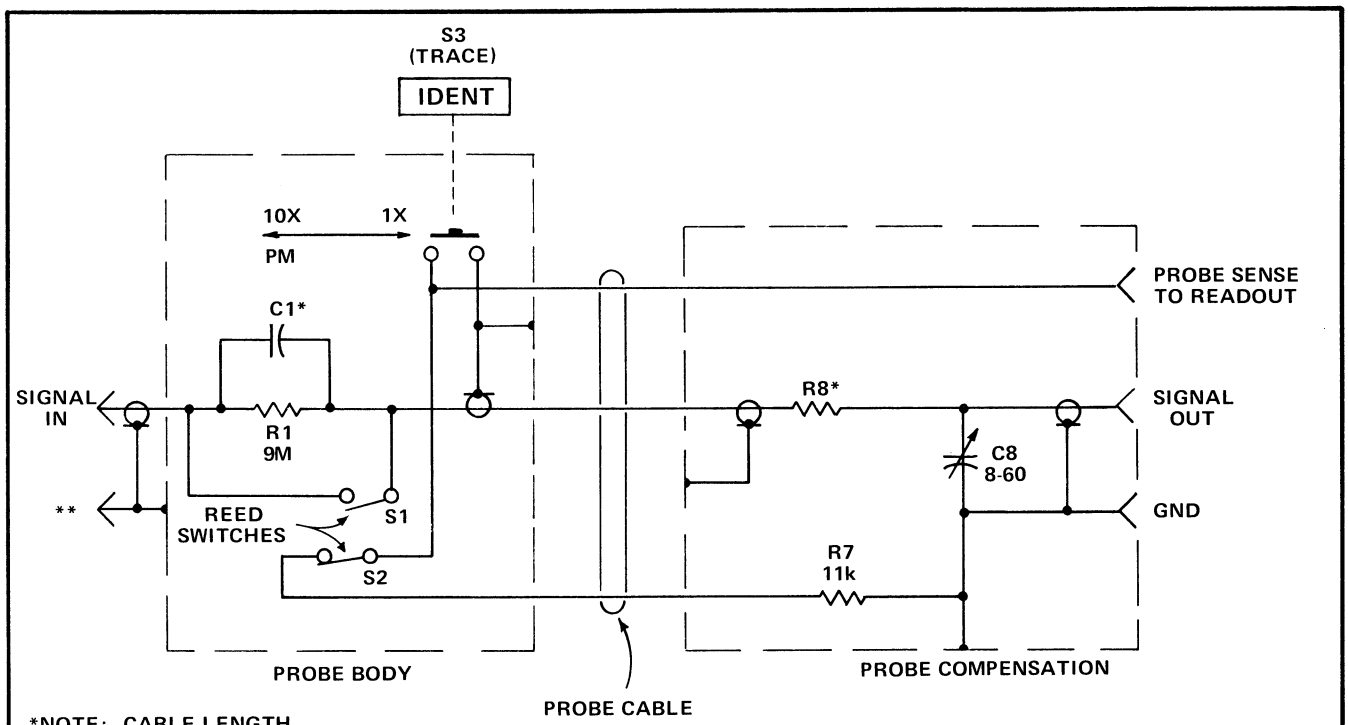


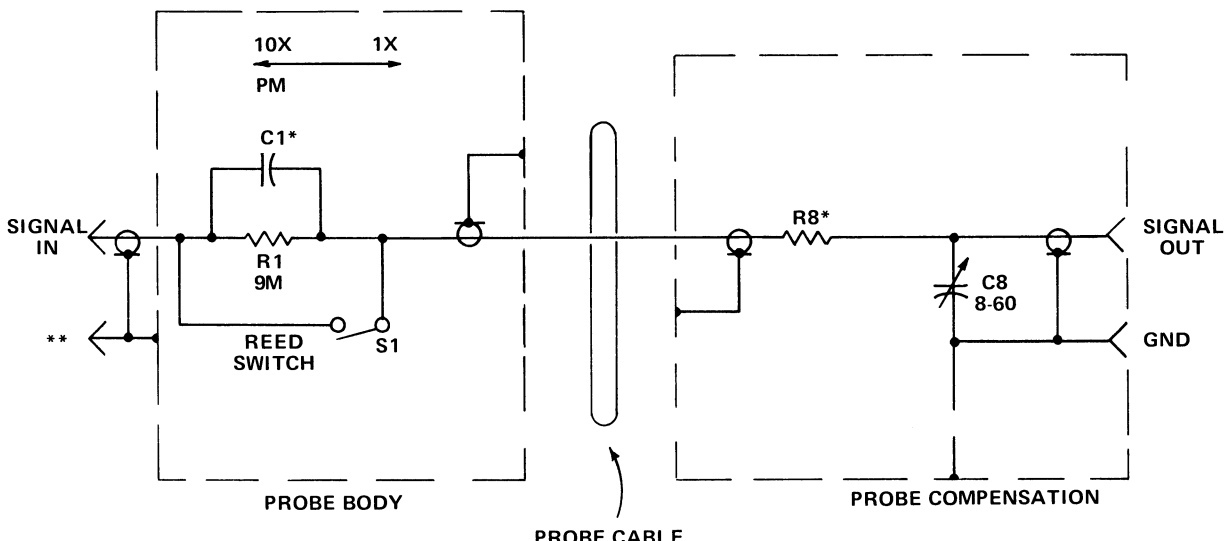
*NOTE: CABLE LENGTH

	3 1/2 Ft.	6 Ft.
C1	11.4 pF	13.8 pF
R8	39	82

**Used only with external accessory attached.

1X/10X PROBE

With readout and trace identify actuation



*NOTE: CABLE LENGTH

	3 1/2 Ft.	6 Ft.
C1	11.4 pF	13.8 pF
R8	39	82

**Used only with external accessory attached.

1X/10X PROBE

Without readout and trace identify actuation