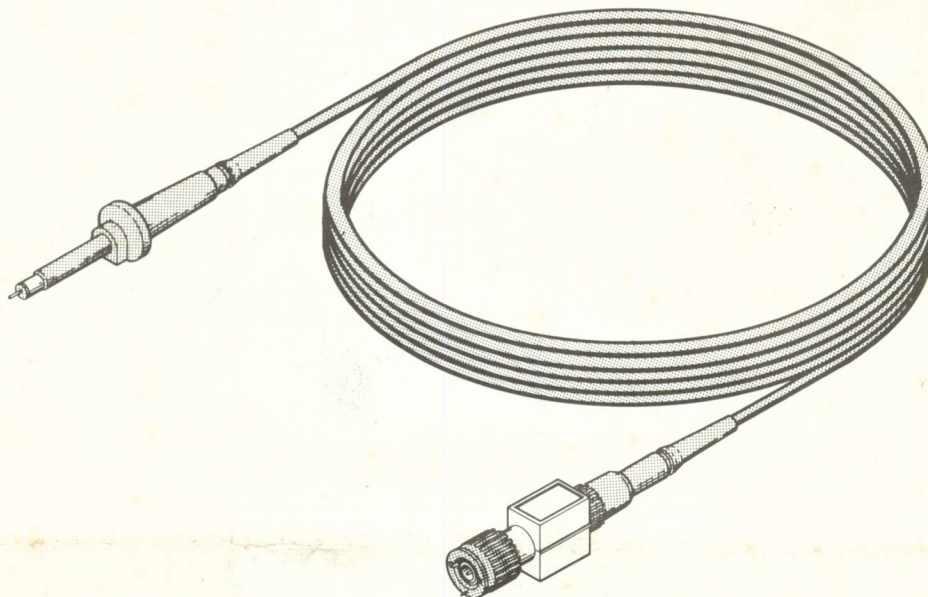


## P6105 PASSIVE PROBE



The P6105 Probe is a miniature, 10X, passive probe for use with dc to 100 MHz oscilloscopes with an input capacitance range of 15-47 pF and an input resistance of 1 M $\Omega$ .

A ground reference push button on the probe head permits the user to obtain a ground reference or to determine a trace in a multitrace display. A coding pin on the BNC output connector actuates the Volts/Div readout encoding of the oscilloscope to include the 10X attenuation of the probe.

**WARNING**

To avoid shock, do not disassemble when connected to voltage source. Disassembly is a service operation only. Refer servicing to qualified service personnel.

The compensating box houses a network that provides optimum transient response when used with 100 MHz oscilloscopes. Modular construction of the probe simplifies repairs, as both probe head and compensating box can be unplugged from the cable assembly. The P6105 Probe is available in three lengths and is identified by the colored strain relief at each end of the cable: blue = 1 meter (3.3 ft), yellow = 2 meter (6.6 ft), red = 3 meter (9.9 ft).

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DATE	Feb. 1977 (R)
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105 PROBE

**WARRANTY**

All TEKTRONIX instruments are warranted against defective materials and workmanship for one year. Any questions with respect to the warranty should be taken up with your TEKTRONIX Field Engineer or representative.

All requests for repairs and replacement parts should be directed to the TEKTRONIX Field Office or representative in your area. This will assure you the fastest possible service. Please include the instrument Type Number or Part Number and Serial Number with all requests for parts or service.

Specifications and price change privileges reserved.

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SPECIFICATIONS

Electrical:

Attenuation: 10X within 3% (oscilloscope input, 1 MΩ within 2%).

Input Resistance: 10 MΩ within 0.5% (oscilloscope input, 1 MΩ within 2%).

Approximate Input Capacitance:

1 Meter (3.3 ft) Blue	2 Meter (6.6 ft) Yellow	3 Meter (9.9 ft) Red
≈ 10.5 pF	≈ 13.0 pF	≈ 15.5 pF

See Fig. 1 and 2. Typical parallel reactance ( $X_p$ ) and resistance ( $R_p$ ) vs. frequency.

Compensation Range: 15 pF to 47 pF.

Bandwidth (-3 dB): At least 100 MHz for the 1 and 2 meter, and at least 95 MHz for the 3 meter.

Maximum Input Voltage: 500 Volts (dc + peak ac), derated with frequency.

See Fig 3, Voltage vs Frequency Derating.

Environmental:

Probe operates within specifications over the following ranges:

Temperature: -15 C (+5 F) to +75 C (+167 F).

Altitude: To 15,000 feet.

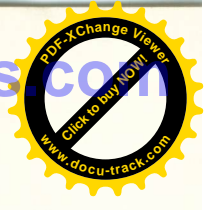
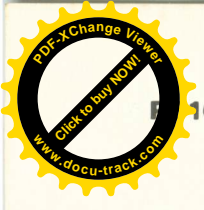
Physical:

Net Weight (including accessories):

1 Meter (3.3 ft) Probe: 105.8 grams (3.7 oz.)

2 Meter (6.6 ft) Probe: 130.4 grams (4.6 oz.)

3 Meter (9.9 ft) Probe: 153.0 grams (5.4 oz.)



OPERATING CONSIDERATIONS

Probe Grounding

A passive probe is a capacitive divider for high-frequency components. Inductance introduced by a long signal or ground lead will form a series resonant circuit that will "ring" if driven by a signal containing significant frequency components at or above circuit resonance. These oscillations can appear on the oscilloscope display and distort the true waveform. Ground leads and probe tip connections should be kept as short as possible to maintain the best fidelity.

**WARNING**

To avoid shock, do not disassemble the probe when connected to a signal or voltage source.

PROBE COMPENSATION

Due to slight variations in the input capacitance, it is usually necessary to compensate the probe whenever it is transferred from one instrument to another, or from one channel to another for dual (multitrace) units.

Procedure

1. Touch probe tip to oscilloscope calibrator output connector and display several cycles of calibrator square wave at approximately 4 divisions in amplitude.
2. Adjust probe compensation through hole in compensation box for best flat top on display.

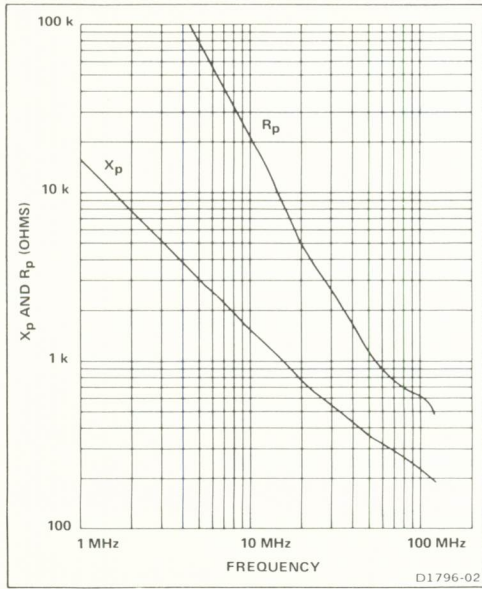


Fig. 1. Typical parallel reactance ( $X_p$ ) and resistance ( $R_p$ ) vs. frequency for 1 meter (3.3 ft) probe.

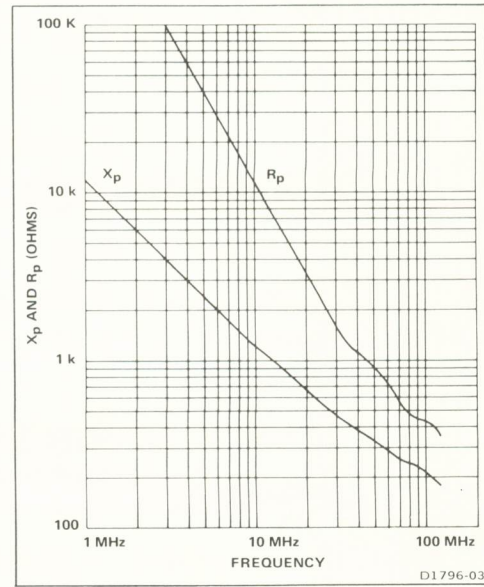


Fig. 2. Typical parallel reactance ( $X_p$ ) and resistance ( $R_p$ ) vs. frequency for 2 meter (6.6 ft) and 3 meter (9.9 ft) probes.

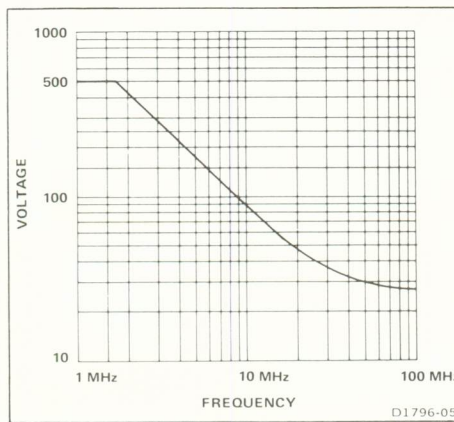


Fig. 3. Voltage vs. frequency derating.



MAINTENANCE

**WARNING**

To avoid shock, do not disassemble probe when connected to voltage source. Only qualified service personnel should use the following service instructions. Unless you are qualified to do so, perform no servicing except that contained in the preceding operating instructions.

The P6105 Probe is designed to withstand normal operation and handling. However, if the probe fails or breaks, replacement parts are available. See Replaceable Parts List for part numbers.

Replacing a Probe Assembly:

If the coaxial cable, probe head, or compensation box should fail, the assemblies are available. When replacing probe assemblies, make sure to use the proper probe head and/or compensation box for the length of cable being used (check that colors on the probe head ground collar, and compensation box retainer nut match with the cable strain reliefs).

Removing Probe Tip:

See Fig 4 for probe tip removal and replacement.

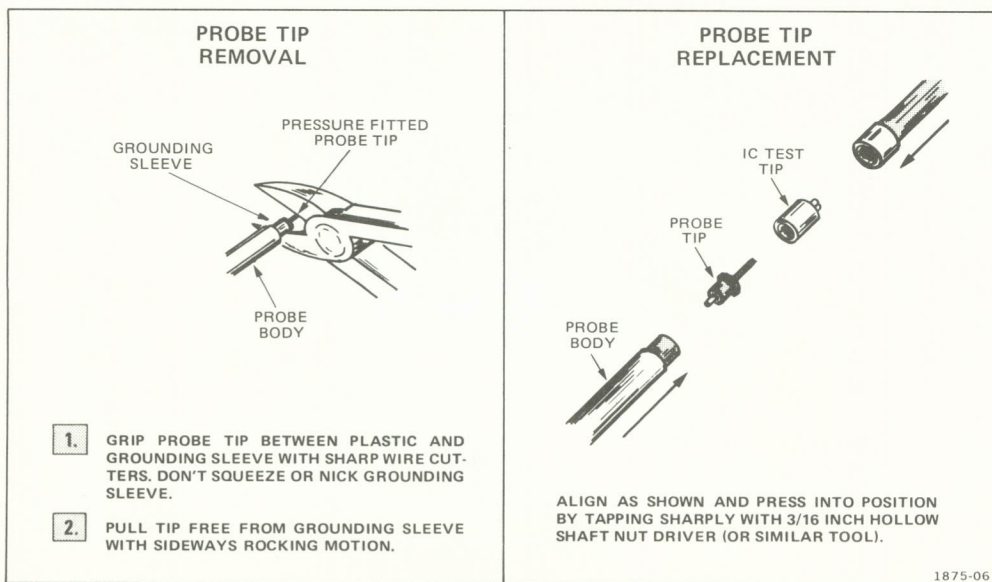
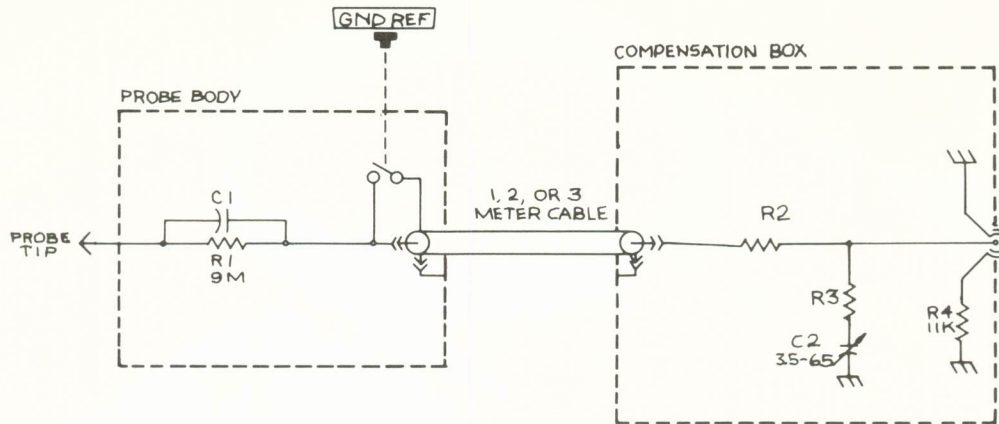
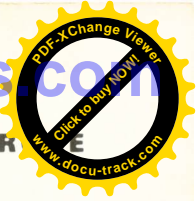
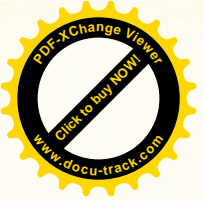


Fig. 4. Probe tip removal and replacement.



## REPLACEABLE ELECTRICAL PARTS

Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
C1 <sup>1</sup>	-----	-----		CAP.,FXD,CER DI:		
C2 <sup>2</sup>	-----	-----		CAP.,VAR,PLSTC:3.5-65PF,100V		
R1 <sup>1</sup>	-----	-----		RES.,FXD,FILM:		
R2 <sup>3</sup>	-----	-----		RES.,FXD,FILM:162 OHM,1%,0.25W	91637	MFF1421G162ROF
R2 <sup>4</sup>	-----	-----		RES.,FXD,FILM:133 OHM,1%,0.125W	75042	CEATO-1330F
R2 <sup>5</sup>	-----	-----		RES.,FXD,FILM:75 OHM,1%,0.25W	75042	CEATO-75ROOF
R3 <sup>3</sup>	-----	-----		RES.,FXD,FILM:75 OHM,1%,0.125W	75042	CEBTO-75ROOF
R3 <sup>4</sup>	-----	-----		RES.,FXD,FILM:130 OHM,1%,0.125W	75042	CEBTO-130OF
R3 <sup>5</sup>	-----	-----		RES.,FXD,FILM:187 OHM,1%,0.125W	75042	CEATO-1870F
R4 <sup>2</sup>	-----	-----		RES.,FXD,CMPSN:11K OHM,5%,0.125W	01121	BB1135

<sup>1</sup>Replaceable under 206-0216-00, 1 Meter, 206-0217-00, 2 Meter, 206-0218-00, 3 Meter Assemblies

<sup>2</sup>Replaceable under 206-0219-00, 1 Meter, 206-0220-00, 2 Meter, 206-0221-00, 3 Meter Assemblies

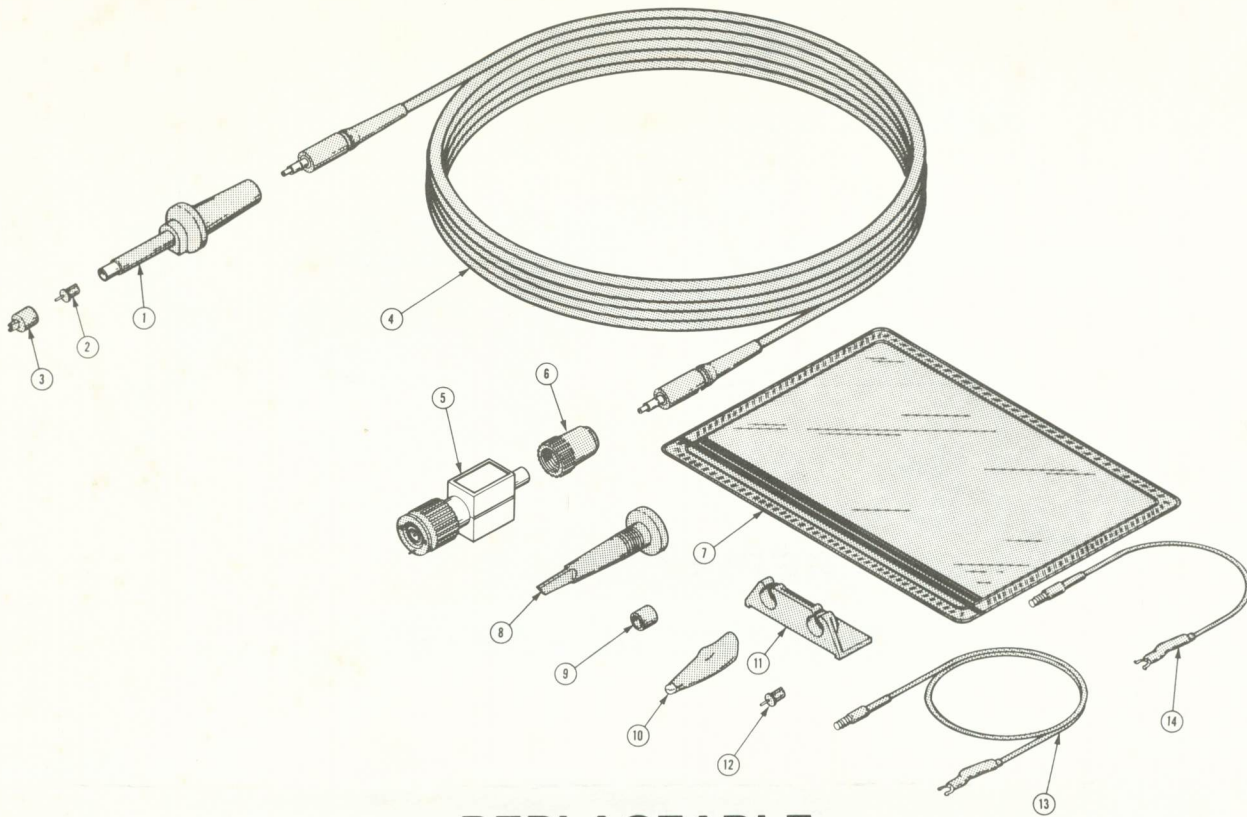
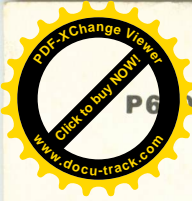
<sup>3</sup>Replaceable under 206-0219-00, 1 Meter Assembly only.

<sup>4</sup>Replaceable under 206-0220-00, 2 Meter Assembly only.

<sup>5</sup>Replaceable under 206-0221-00, 3 Meter Assembly only.

### CROSS INDEX MFR. CODE NUMBER TO MANUFACTURER

MFR.CODE	MANUFACTURER	ADDRESS	CITY,STATE,ZIP
01121	ALLEN-BRADLEY CO.	1201 2ND ST. SOUTH	MILWAUKEE, WI 53204
05006	TWENTIETH CENTURY PLASTICS INC.	415 E. WASHINGTON BLVD.	LOS ANGELES, CA 90015
75042	TRW ELECTRONIC COMPONENTS, IRC FIXED RESISTORS, PHILADELPHIA DIVISION	401 N. BROAD ST.	PHILADELPHIA, PA 19108
80009	TEKTRONIX, INC.	P. O. BOX 500	BEAVERTON, OR 97005
80031	ELECTRA-MIDLAND CORP., MEPCO DIV., A NORTH AMERICAN PHILIPS CO.	22 COLUMBIA RD.	MORRISTOWN, NJ 07960
91637	DALE ELECTRONICS, INC.	P. O. BOX 609	COLUMBUS, NB 68601



### REPLACEABLE MECHANICAL PARTS

Index No.	Tektronix Part No.	Serial/Model No. Eff	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number	
				1 METER PROBE								
	010-6105-01		1						PROBE,VOLTAGE:10X,1M,W/ACCESSORIES	80009	010-6105-01	
	010-6105-00		1						. PROBE,VOLTAGE:10X,1 METER	80009	010-6105-00	
-1	206-0216-00		1						. . . PROBE,HEAD:1 METER,BLUE	80009	206-0216-00	
-2	----- <sup>1</sup>		1						. . . TIP,PROBE:			
-3	----- <sup>2</sup>		1						. . . TIP,PROBE:IC TEST			
-4	175-1661-00		1						. . . CA ASSY,SP,ELEC:1 METER,BLUE	80009	175-1661-00	
-5	206-0219-00		1						. . . COMP BOX:1 METER	80009	206-0219-00	
-6	343-0570-00		1						. . . RETAINER,COVER:COMP BOX,1 METER,BLUE	80009	343-0570-00	
				2 METER PROBE								
	010-6105-03		1						PROBE,VOLTAGE:10X,2M,W/ACCESSORIES	80009	010-6105-03	
	010-6105-02		1						. PROBE,VOLTAGE:10X,2 METER	80009	010-6105-02	
-1	206-0217-00		1						. . . PROBE,HEAD:2 METER,YELLOW	80009	206-0217-00	
-2	----- <sup>1</sup>		1						. . . TIP,PROBE:			
-3	----- <sup>2</sup>		1						. . . TIP,PROBE:IC TEST			
-4	175-1661-01		1						. . . CA,ASSY,SP,ELEC:2 METER,YELLOW	80009	175-1661-01	
-5	206-0220-00		1						. . . COMP BOX:2 METER	80009	206-0220-00	
-6	343-0570-01		1						. . . RETAINER,COVER:COMP BOX,2 METER,YELLOW	80009	343-0570-01	

<sup>1</sup>Available only in packs of 10, P.N. 206-0191-01.

<sup>2</sup>Available only in packs of 10, P.N. 015-0201-01, or 100, P.N. 015-0201-02.

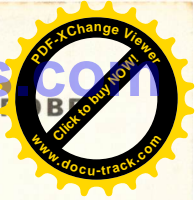


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
	010-6105-05			1						PROBE,VOLTAGE:10X,3M,W/ACCESSORIES	80009	010-6105-05
	010-6105-04			1						. PROBE,VOLTAGE:10X,3 METER	80009	010-6105-04
-1	206-0218-00			1						. . . PROBE,HEAD:3 METER RED	80009	206-0218-00
-2	----- <sup>1</sup>			1						. . . TIP,PROBE:		
-3	----- <sup>2</sup>			1						. . . TIP,PROBE:IC TEST		
-4	175-1661-02			1						. . . CA ASSY,SP,ELEC:3 METER,RED	80009	175-1661-02
-5	206-0221-00			1						. . . COMP,BOX:3 METER	80009	206-0221-00
-6	343-0570-02			1						. . . RETAINER,COVER:COMP BOX,3 METER,RED	80009	343-0570-02
ACCESSORIES												
-7	016-0521-00			1						POUCH,ACCESSORIES:	05006	0BD
-8	013-0107-03			1						TIP,TEST PROD:RET HOOK ASSY	80009	013-0107-03
-9	166-0404-01			1						INS SLV,ELEC:FOR 0.188 DIA PROBE BSHG	80009	166-0404-01
-10	344-0046-00			2						CLIP,ELECTRICAL:ALLIGATOR TYPE,W/COVER	80009	344-0046-00
-11	352-0351-00			1						HLDR,TEST PROD:	80009	352-0351-00
-12	----- <sup>1</sup>			2						TIP,PROBE:		
-13	175-0125-01			1						LEAD,ELECTRICAL:PROBE GND,12 INCHES LONG	80009	175-0125-01
-14	175-0124-01			1						LEAD,ELECTRICAL:PROBE GND,5 INCHES LONG	80009	175-0124-01
	334-2794-00			2						BAND,MARKER:0.371 DIA,BLACK,PLASTIC	80009	334-2794-00
	334-2794-01			2						BAND,MARKER:0.371 DIA,WHITE,PLASTIC	80009	334-2794-01
	334-2794-02			2						BAND,MARKER:0.371 DIA,SILVER,PLASTIC	80009	334-2794-02
	062-1803-00			1						DATA CARD:	80009	062-1803-00
	062-1796-00			1						DATA SHEET:P6105 PASSIVE PROBE	80009	062-1796-00

<sup>1</sup>Available only in packs of 10, Part Number 206-0191-01.

<sup>2</sup>Available only in packs of 10, Part Number 015-0201-01, or 100, Part Number 015-0201-02.