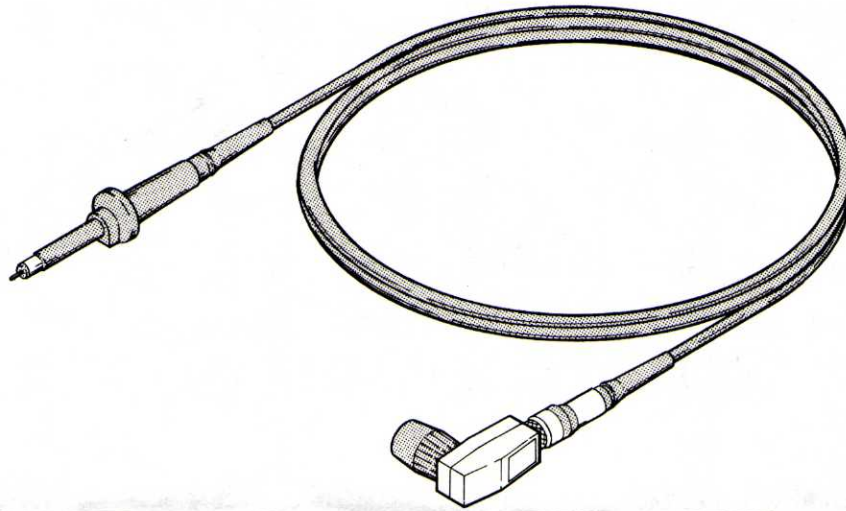


P6149 VOLTAGE PROBE



The P6149 Probe is a miniature, 10X, passive probe for use with dc to 50 MHz oscilloscopes with an input capacitance range of 20-62 pF and an input resistance of 1 M Ω .

A ground reference push button on the probe body permits the user to obtain a ground reference or to determine a trace in a multitrace display. The compensation box has a right-angle mounted BNC connector designed for use with Sony/Tektronix portable oscilloscopes. The connector is compatible with all BNC input connectors. The standard accessories include 2 each silver gray and gray marker bands to match the Ch. 1 and Ch. 2 knob colors on Sony/Tek scopes.

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 50 MHz oscilloscopes. The probe can be low-frequency compensated by adjusting the variable capacitor through the hole in the compensating box housing. Modular construction of the probe simplifies repairs, as both probe body and compensating box can be unplugged from the cable assembly. The P6149 Probe is available in the 2 meter length only.

NO. 062-2766-00

DATE OCT. 1980 (R)

COPYRIGHT © 1976
TEKTRONIX, INC.
ALL RIGHTS RESERVED

SPECIFICATIONS

Electrical

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

Input Resistance: 10 M Ω within 1.5% (oscilloscope input, 1 M Ω within 2%).

Approximate Input Capacitance: 15.5 pF

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

Compensation Range: 20 pF to 62 pF.

Bandwidth (-3 dB): at least 50 MHz.

Maximum Input Voltage: 500 Volts (dc + peak ac), derated with frequency. See Fig. 2, Voltage vs Frequency Derating.

Environmental

Probe operated within specifications over the following ranges:

Temperature: -15°C ($+5^{\circ}\text{F}$) to $+75^{\circ}\text{C}$ ($+167^{\circ}\text{F}$).

Altitude: to 15,000 feet.

Physical

Net Weight (including accessories):

2 Meter (6.6 ft) Probe: 130 grams (4.6 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.

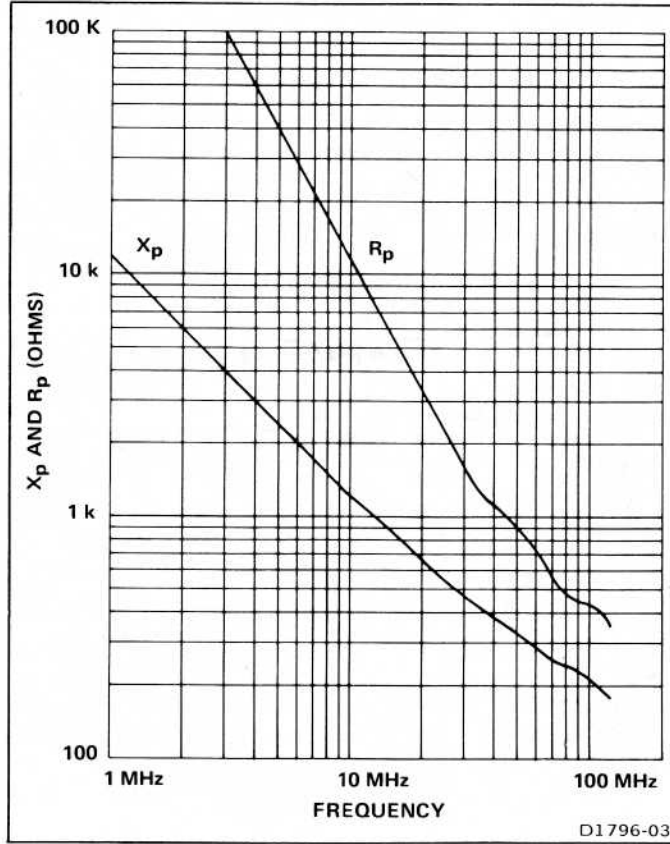


Fig. 1. Typical parallel reactance (X_p) and resistance (R_p) vs. frequency.

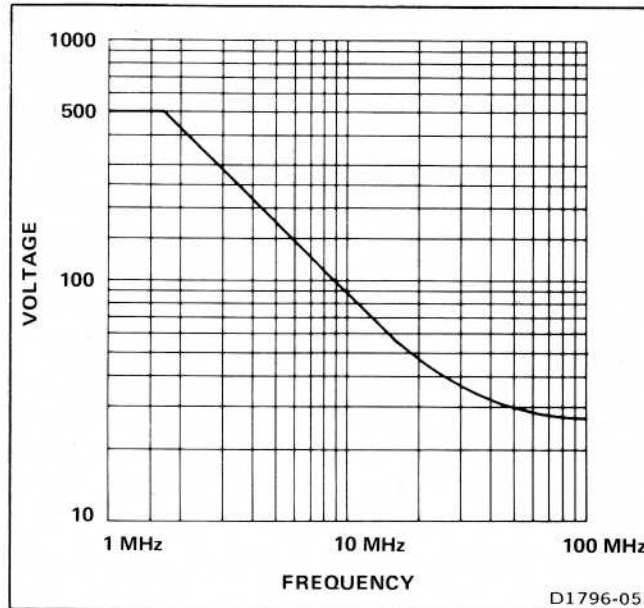


Fig. 2. Voltage vs. frequency derating.

MAINTENANCE

WARNING

To avoid shock, do not disassemble probe when connected to voltage source. Only qualified servicemen 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 P6149 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. 3 for probe tip removal and replacement.

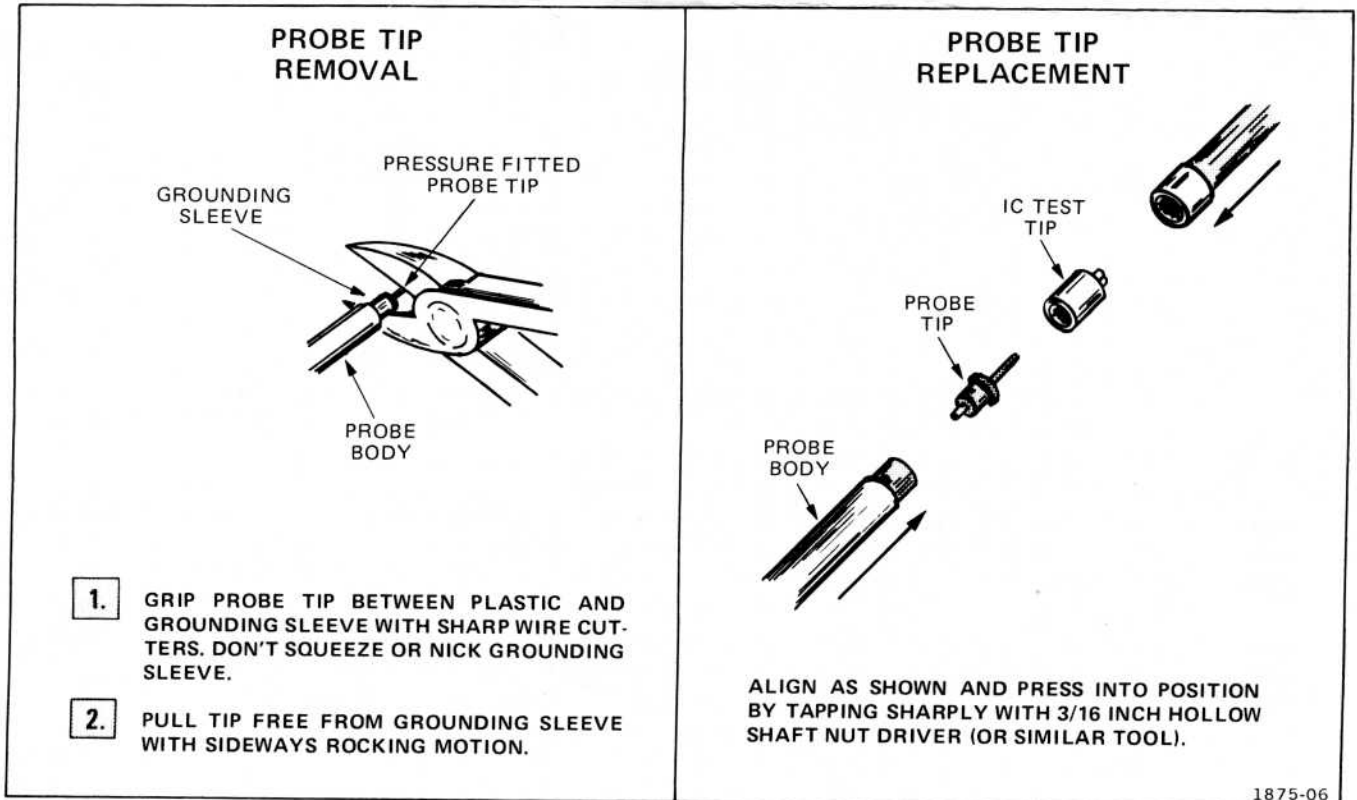
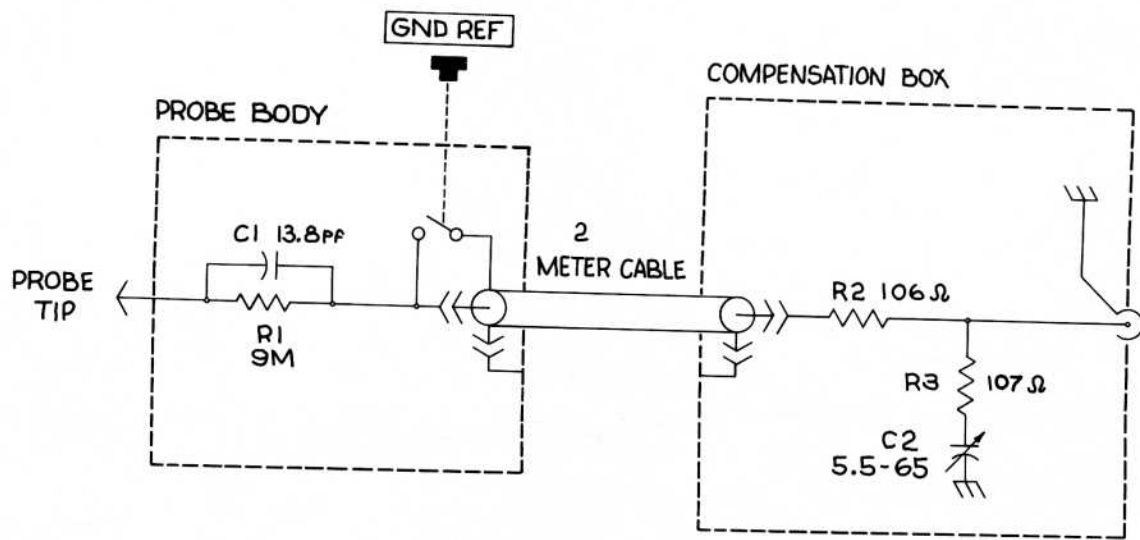


Fig. 3. Probe tip removal and replacement.

P6149 PROBE



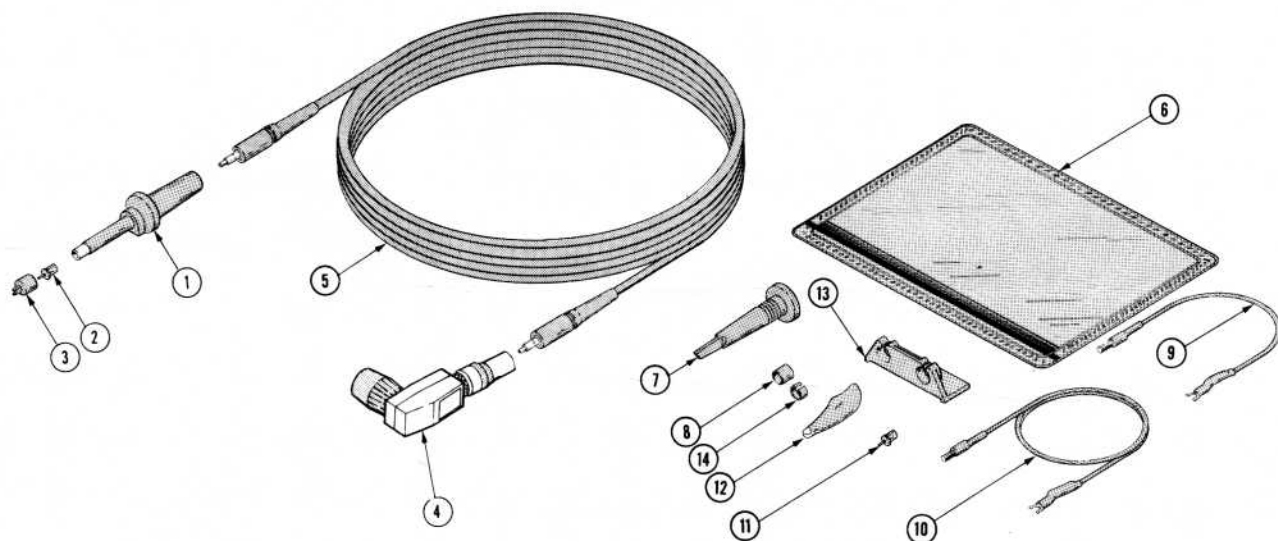
REPLACEABLE PARTS LIST

Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
C1 ¹	-----			CAP.,FXD,CER DI:13.8PF,1%,500V	72982	374-005C0G1389F
C2 ²	-----			CAP.,VAR,PLASTIC:5.5-65PF,100V	80031	C010GA/60E
R1 ¹	-----			RES.,FXD,FILM:9MEG OHM,1%,0.25W	03888	PME505E31600F
R2 ²	-----			RES.,FXD,FILM:106 OHM,1%,0.25W	75042	CEBT0-1060D
R3 ²	-----			RES.,FXD,FILM:107 OHM,1%,0.125W	91637	MFF1816G107R0F

¹Replaceable under 206-0234-00 assembly only.
²Replaceable under 206-0235-00 assembly only.

CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
03888	KDI PYROFILM CORPORATION	60 S JEFFERSON ROAD	WHIPPANY, NJ 07981
05006	TWENTIETH CENTURY PLASTICS, INC.	415 E WASHINGTON BLVD.	LOS ANGELES, CA 90015
72982	ERIE TECHNOLOGICAL PRODUCTS, INC.	644 W. 12TH ST.	ERIE, PA 16512
75042	TRW ELECTRONIC COMPONENTS, IRC FIXED RESISTORS, PHILADELPHIA DIVISION	401 N. BROAD ST.	PHILADELPHIA, PA 19108
80031	ELECTRA-MIDLAND CORP., MEPCO DIV.	22 COLUMBIA ROAD	MORRISTOWN, NJ 07960
80009	TEKTRONIX, INC.	P. O. BOX 500	BEAVERTON, OR 97077
91637	DALE ELECTRONICS, INC.	P. O. BOX 609	COLUMBUS, NE 68601



REPLACEABLE PARTS LIST

Fig. &

Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
	010-6149-03			1						PROBE,VOLTAGE:P6149,2 METER,10X W/ACCESS	80009	010-6149-03
	-----			1						PROBE,VOLTAGE:10X,2 METER		
-1	206-0234-00			1						PROBE HEAD:2 METER,YELLOW	80009	206-0234-00
-2	-----			1						TIP,PROBE:(AVAILABLE ONLY IN PACKS OF 10, TEKTRONIX PART NUMBER 206-0191-03)		
-3	-----			1						TIP,PROBE:IC TEST(AVAILABLE ONLY IN PACK OF 10,TEKTRONIX PART NUMBER 015-0201-04 OR PACKS OF 100 PART NUMBER 015-0201-05)		
-4	206-0255-00			1						COMP BOX:2 METER,YELLOW	80009	206-0255-00
-5	175-1661-01			1						CABLE,SP,ELEC:39 OHM COAX,79.75 LONG	80009	175-1661-01
										STANDARD ACCESSORIES		
-6	016-0521-00			1						POUCH,ACCESSORY:	05006	OBD
-7	013-0107-03			1						TIP,TEST PROD:RET HOOK ASSY	80009	013-0107-03
-8	166-0404-01			1						INS SLV,ELEC:FOR 0.188 DIA PROBE BSHG	80009	166-0404-01
-9	175-0124-01			1						LEAD,ELECTRICAL:PROBE GND,5 INCHES LONG	80009	175-0124-01
-10	175-0125-01			1						LEAD,ELECTRICAL:PROBE GND,12 INCHES LONG	80009	175-0125-01
-11	-----			2						TIP,PROBE:(AVAILABLE ONLY IN PACKS OF 10, TEKTRONIX PART NUMBER 206-0191-01)		
-12	344-0046-00			2						CLIP,ELECTRICAL:ALLIGATOR TYPE,W/COVER	80009	344-0046-00
-13	352-0351-00			1						HOLDER,PROBE:BLACK	80009	352-0351-00
-14	334-2794-02			2						BAND,MARKER:0.371 DIA,SILVER GRAY,PLASTIC	80009	334-2794-02
	334-2794-03			2						BAND,MARKER:0.371 DIA,GRAY,PLASTIC	80009	334-2794-03
	062-2766-00			1						DATA SHEET:P6149	80009	062-2766-00
	062-1803-00			1						PROBE CARD:	80009	062-1803-00