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# Instruction Manual



**P6006  
PROBE**

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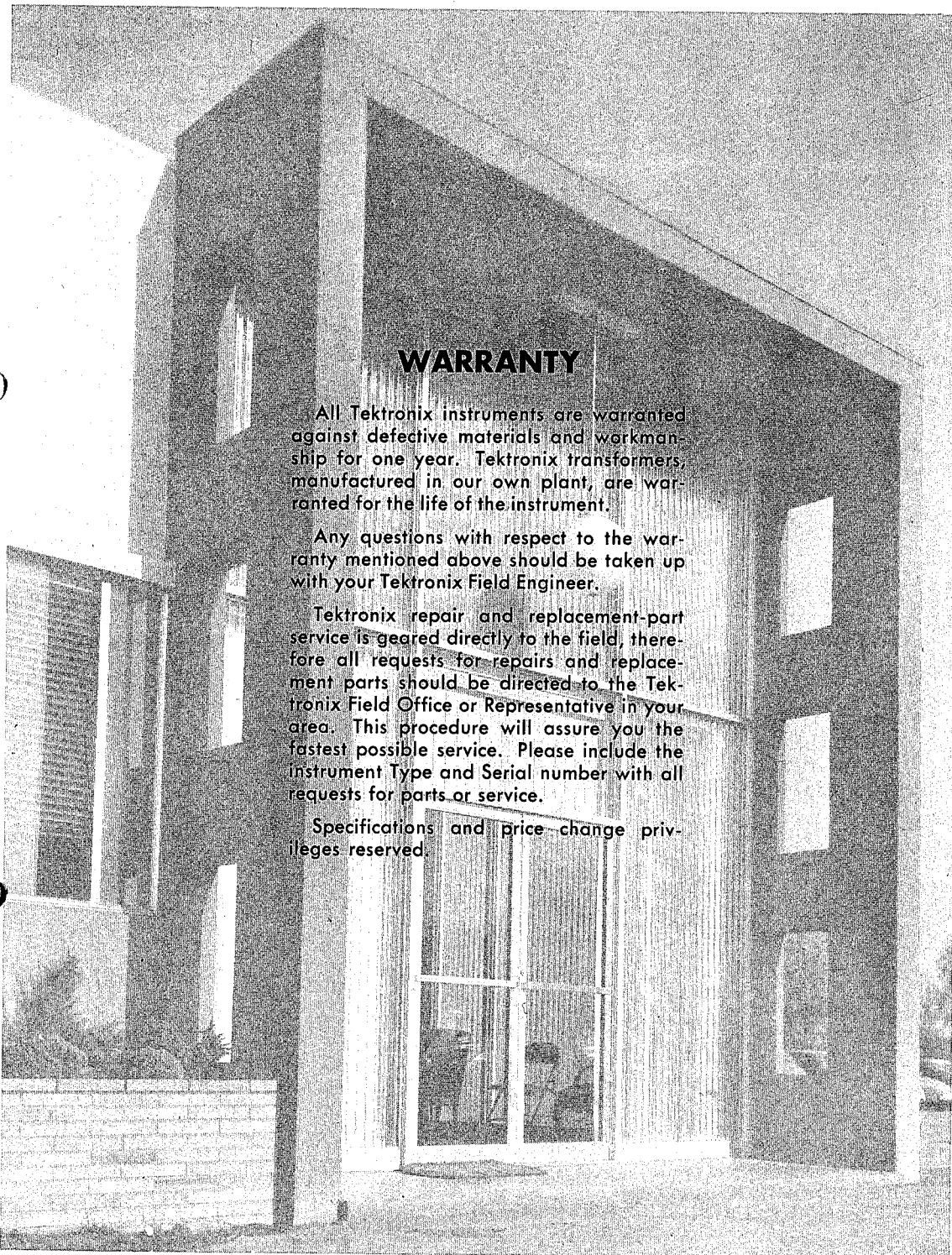
***Tektronix, Inc.***

P. O. Box 500 • Beaverton, Oregon • Phone: MI 4-0161 • Cable: Tektronix

***Tektronix International A.G.***

P. O. Box 57 • Zug, Switzerland • Cable: Tekintag, Zug, Switzerland • Telex: 53.574

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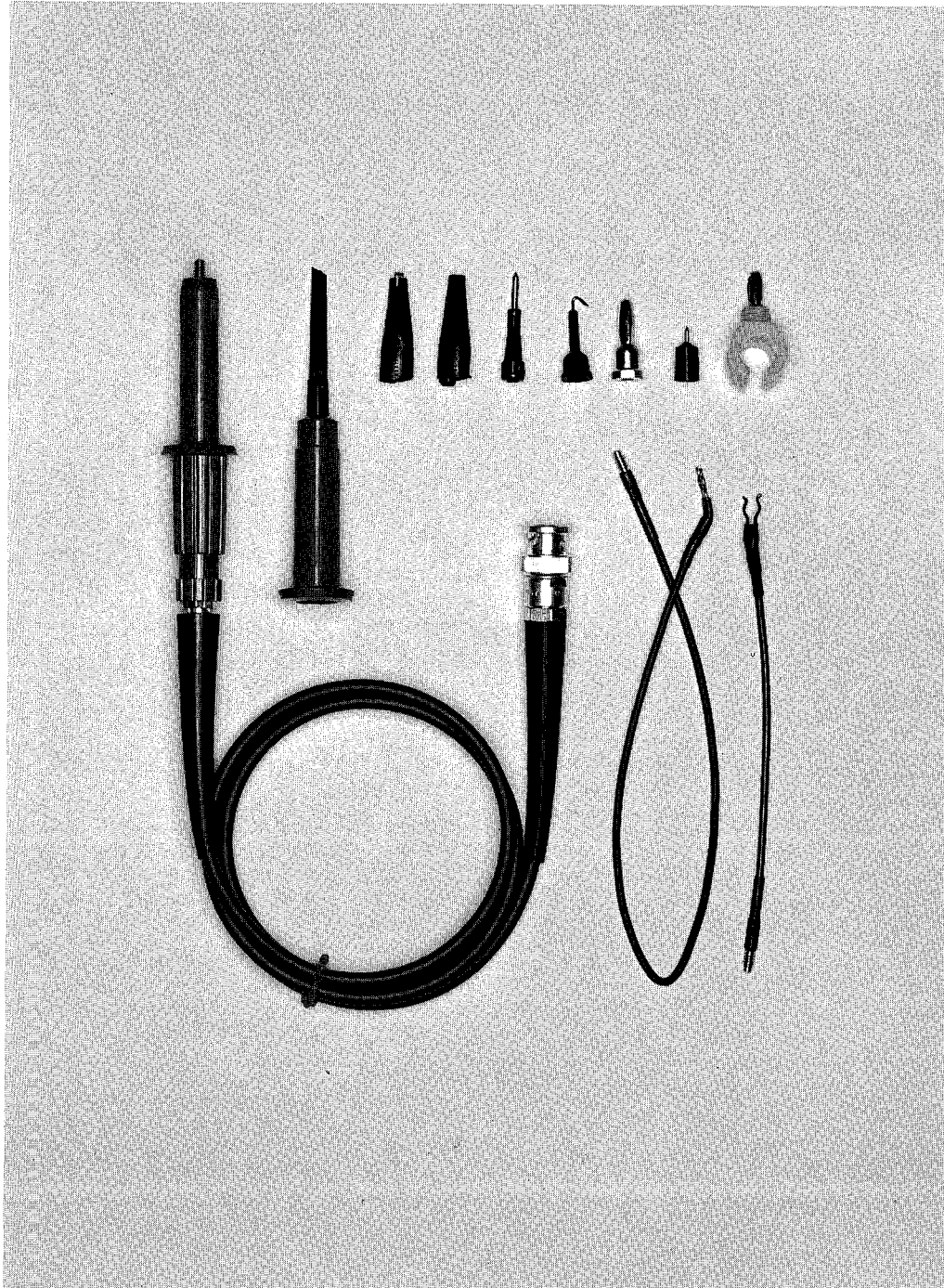
## WARRANTY

All Tektronix instruments are warranted against defective materials and workmanship for one year. Tektronix transformers, manufactured in our own plant, are warranted for the life of the instrument.

Any questions with respect to the warranty mentioned above should be taken up with your Tektronix Field Engineer.

Tektronix repair and replacement-part service is geared directly to the field, therefore all requests for repairs and replacement parts should be directed to the Tektronix Field Office or Representative in your area. This procedure will assure you the fastest possible service. Please include the instrument Type and Serial number with all requests for parts or service.

Specifications and price change privileges reserved.



P6006 Probe

P6006

®

# P6006 PROBE

## Introduction

The P6006 Probe is a passive probe with 10X attenuation, designed for oscilloscopes having an input resistance of 1 megohm and input capacitance of up to 55 picofarads (pf). The probe decreases resistive and capacitive loading on the circuit under test.

## Characteristics

Attenuation Factor 10X,  $\pm 3\%$

\*Input Resistance 10 megohms,  $\pm 2\%$

Probe Resistance 9 megohms,  $\pm 2\%$

\*Input Capacitance } See Table 1

Risetime }

Maximum Voltage Rating 600 vdc or 600 vac peak-to-peak or 600 v peak and dc

\*See the input  $R_p$  and  $X_p$  vs frequency curves.

combined. Maximum voltage must be derated at higher frequencies; see "Derating Curves".

Cable Length Nominally 3.5', 6', 9', or 12' measured between the bases of the cable strain reliefs.

Environmental Capacitance The 9-megohm resistor has been factory installed for best transient response. To replace the 9-megohm resistor, a new probe body must be ordered through your local Tektronix Field Office.

Operating Temperature The probe will operate normally at temperatures up to 75° C.

TABLE 1

Cable Length	Input Capacitance With		Risetime	
	20 pf Plug-In	47 pf Plug-In	Probe Alone	With 540-Series Oscilloscope and K Unit
3.5 ft	≈ 7.5 pf	≈ 9.5 pf	≈ 5 nsec	≈ 13 nsec
6 ft	≈ 8.5 pf	≈ 11 pf	≈ 7 nsec	≈ 14 nsec
9 ft	≈ 11 pf	≈ 13.5 pf	≈ 7 nsec	≈ 14 nsec
12 ft	≈ 13 pf	≈ 15.5 pf	≈ 14 nsec	≈ 18 nsec

## Accessories

	Tektronix Part No.
2—Miniature alligator clips	344-046
1—Banana plug	134-013
1—Probe holder	352-024
1—Hook tip	206-105
1—BNC tip	206-015
1—Spring tip	206-060
1—Pincer tip	013-071
1—5" ground lead	175-124
1—12" ground lead	175-125

plug-in unit to another. This will ensure accurate attenuation of transient and sine-wave signals.

To compensate the probe, touch the probe tip to the oscilloscope calibrator output connector and display several cycles of the signal. Loosen the flanged locking sleeve several turns. See Fig. 1(a). Adjust for the correct waveform by turning the probe body and tip assembly while holding the knurled section at the base of the probe. Fig. 1 (b) shows waveforms for a line-frequency oscilloscope calibrator, and Fig. 1 (c) shows waveforms for a 1-kc oscilloscope calibrator. After obtaining the correct waveform, hold the probe body and tip assembly and carefully tighten the locking sleeve. Make the final adjustment by holding the locking sleeve and probe body while turning the probe base.

## Compensation

The P6006 Probe should be compensated each time it is transferred from one oscilloscope or

### Derating Curves

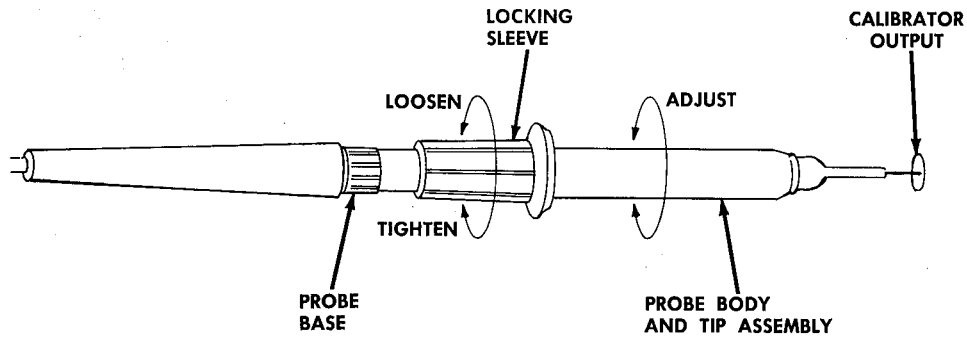
The derating curves show the maximum continuous-wave voltages that can be applied to the P6006 Probe at higher frequencies. To observe pulses with a given duty cycle and repetition rate, use the following information to determine the maximum peak voltage of the probe.

Maximum applied voltage at a particular frequency, E:

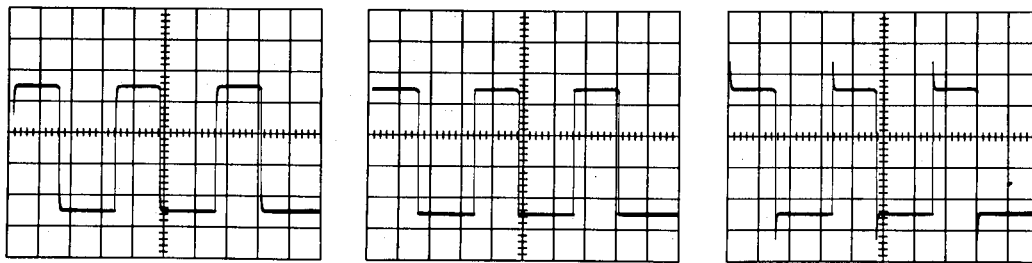
$$E = \frac{\text{Voltage from curve at CW frequency}}{\sqrt{\text{Duty Factor}}}$$

where: Duty Factor =  $\frac{\text{pulse duration}}{\text{pulse period}}$

For pulse durations longer than 1 second, consider the signal as dc.



(a) Probe adjustments

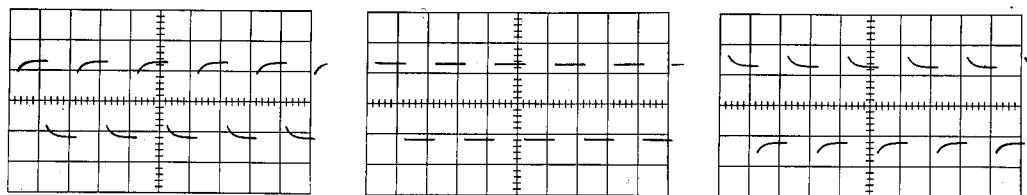


Incorrect

Correct

Incorrect

(b) Waveforms from line-frequency oscilloscope calibrator



Incorrect

Correct

Incorrect

(c) Waveforms from 1-kc oscilloscope calibrator

Fig. 1. Probe compensation.

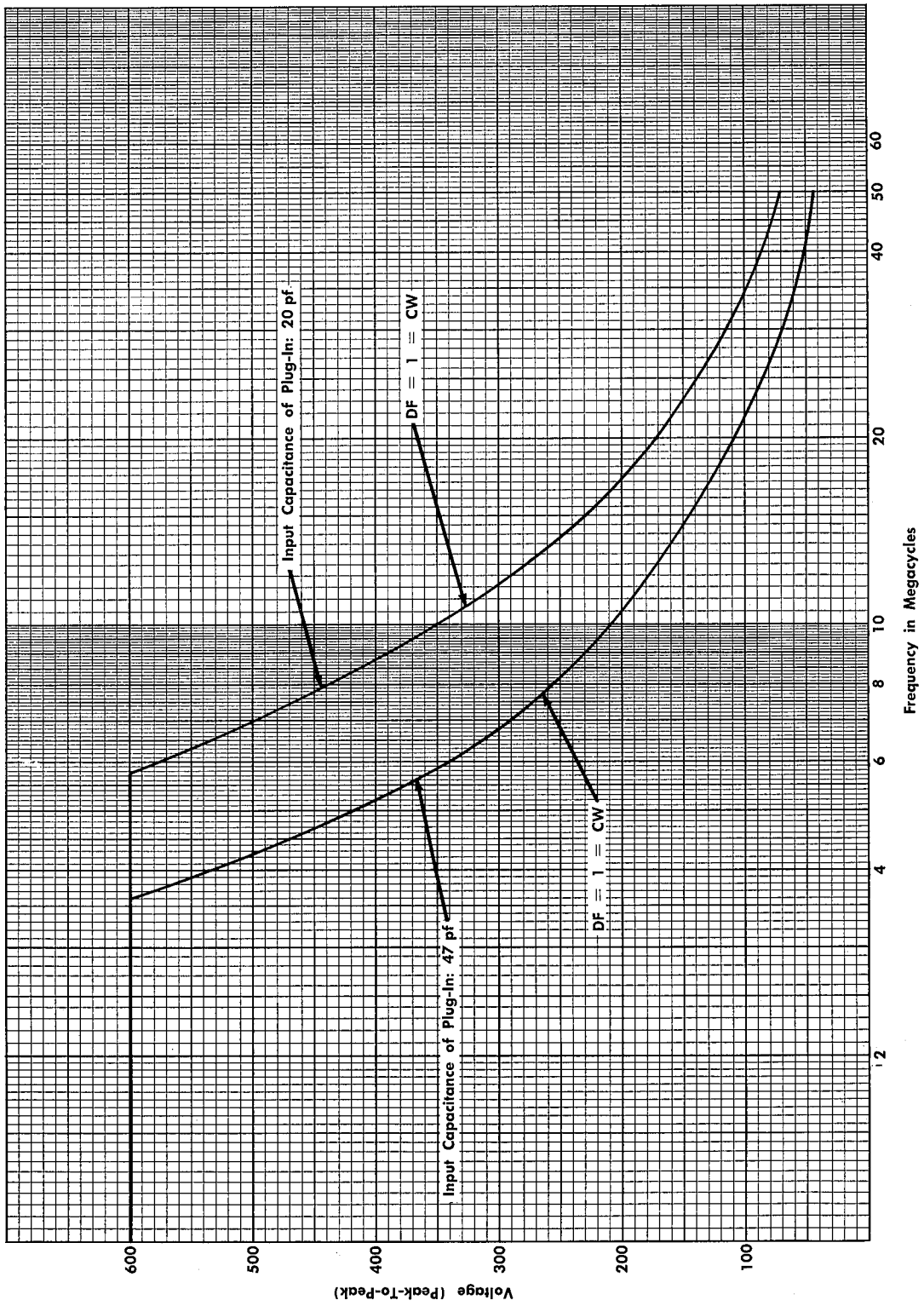


Fig. 2. P6006 derating curves (3.5-ft cable).

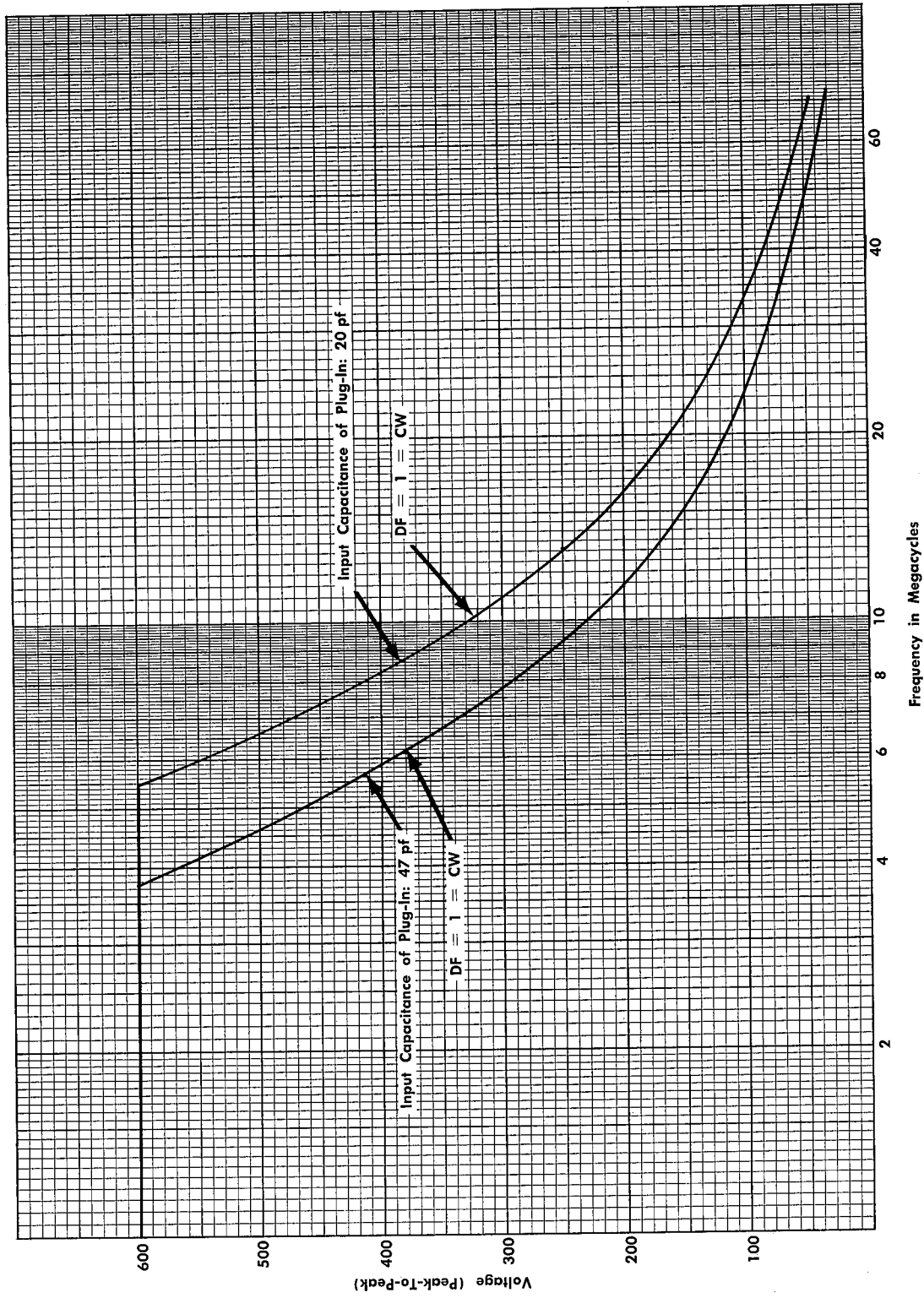


Fig. 3. P6006 derating curves (6-ft cable).



Fig. 3. P6006 derating curves (6-ft cable).

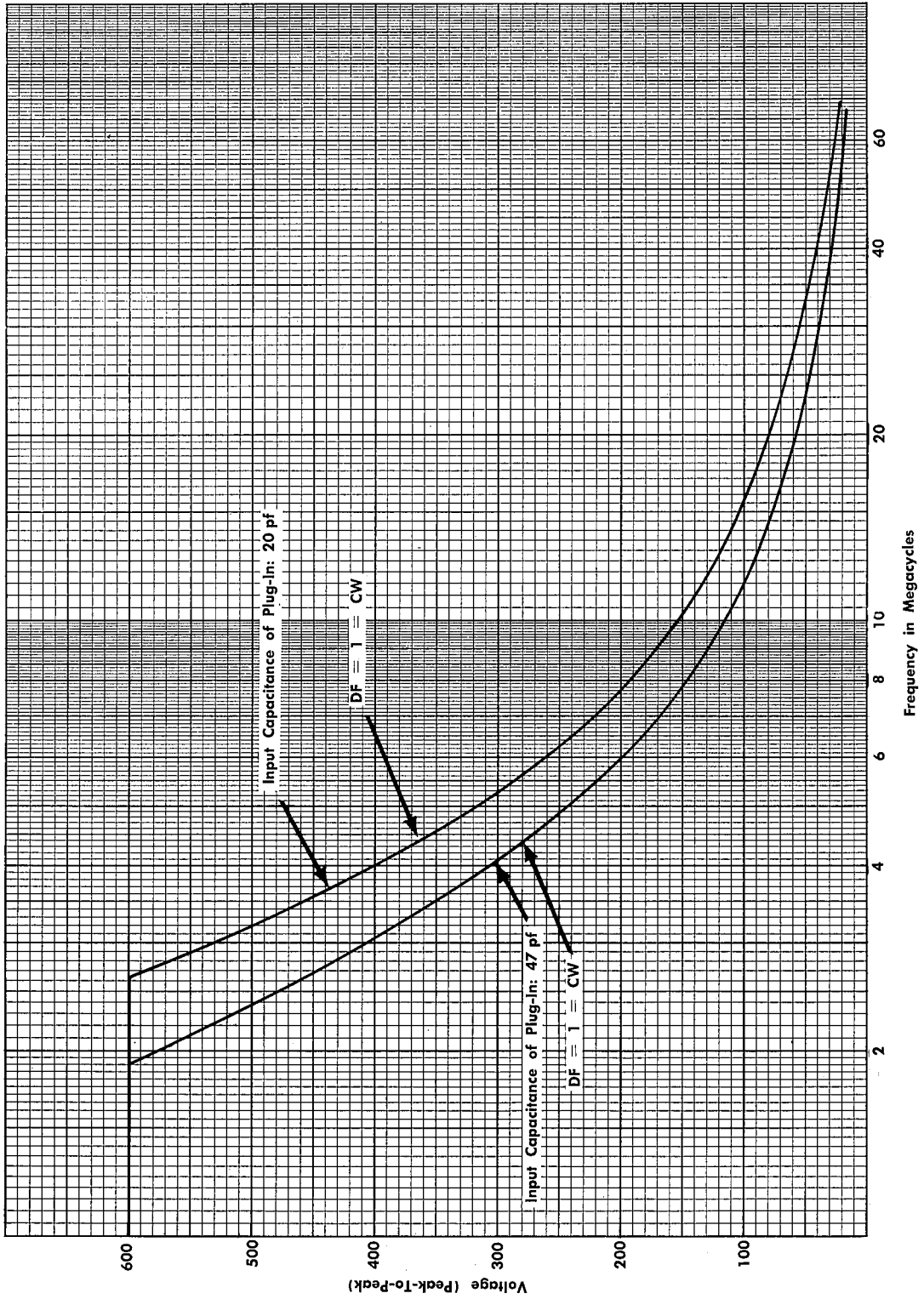


Fig. 4. P6006 derating curves (9-ft cable).

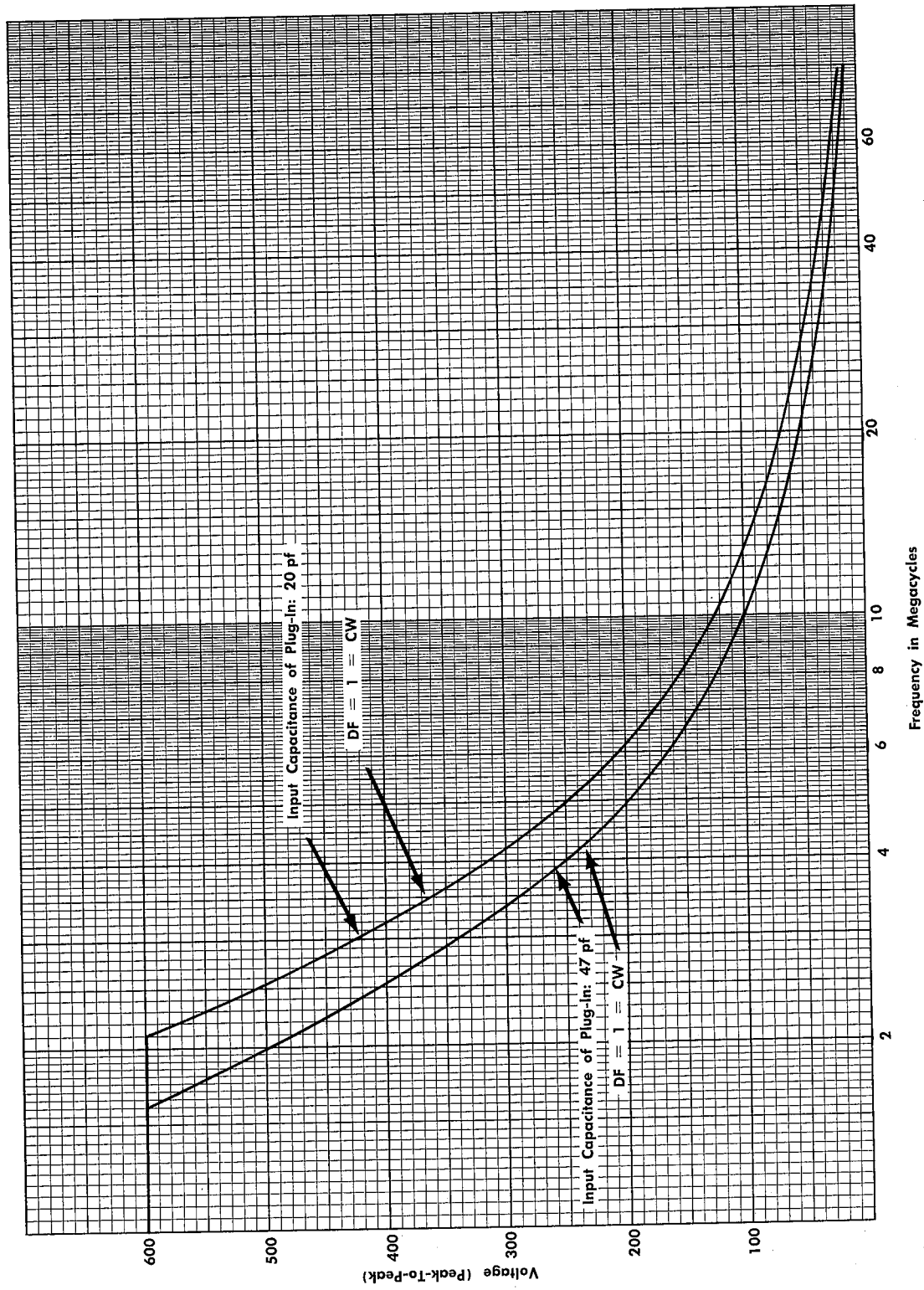


Fig. 5. P6006 derating curves (12-ft cable).

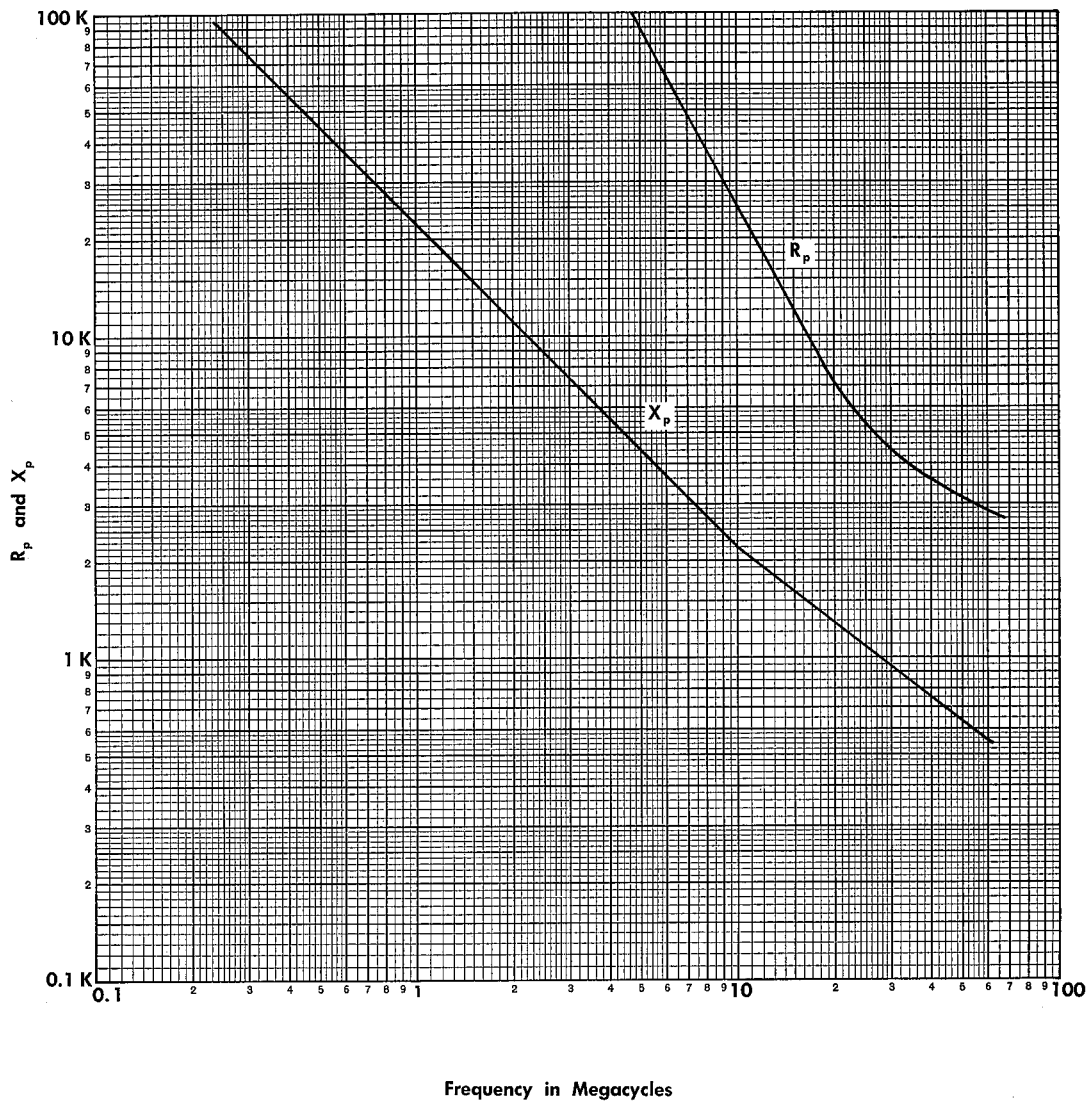


Fig. 5. P6006 derating curves (12-ft cable).

Fig. 6. P6006 input Rp and Xp vs frequency curves (3.5-ft cable).

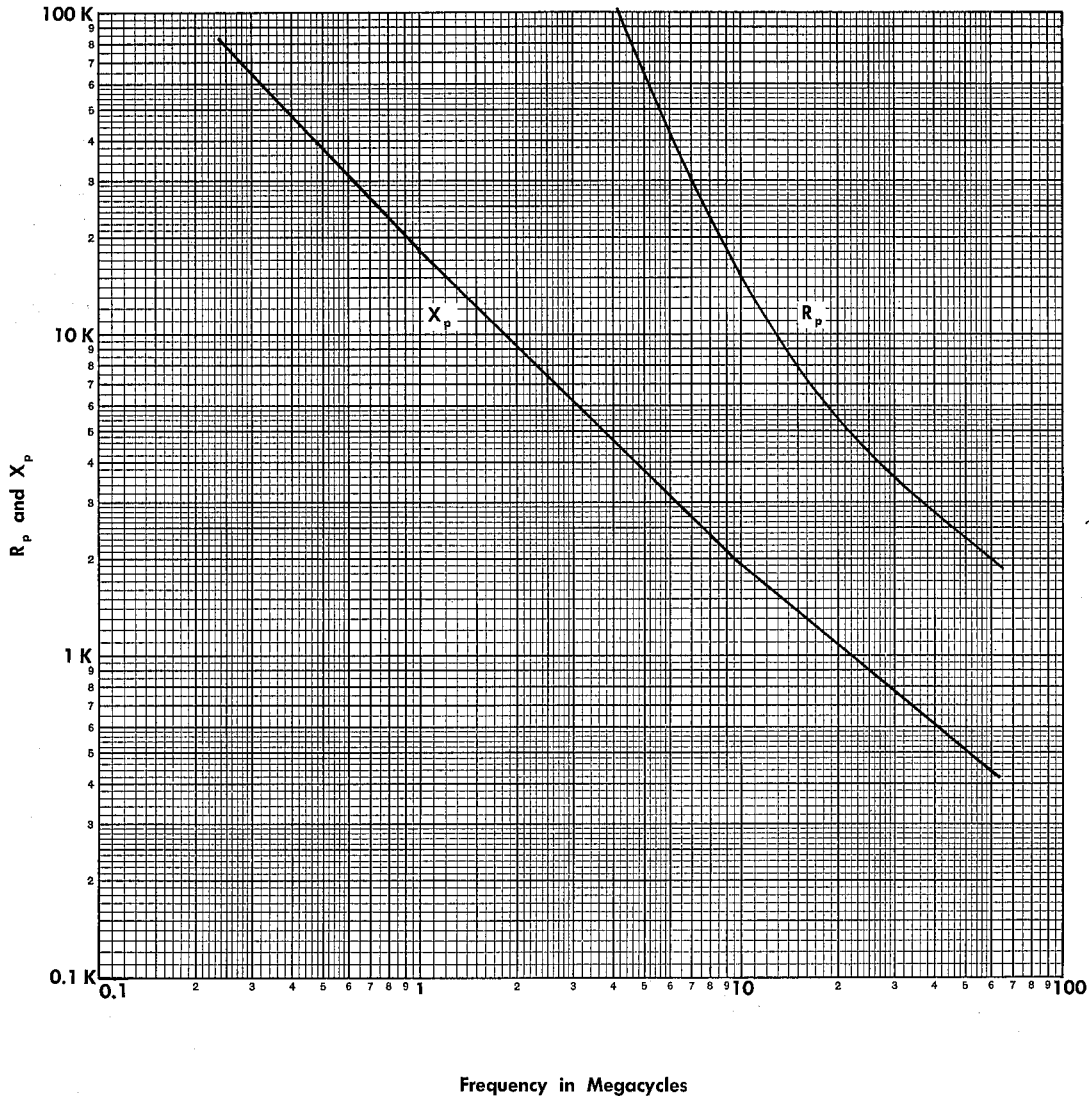


Fig. 7. P6006 input R<sub>p</sub> and X<sub>p</sub> vs frequency curves (6-ft cable).

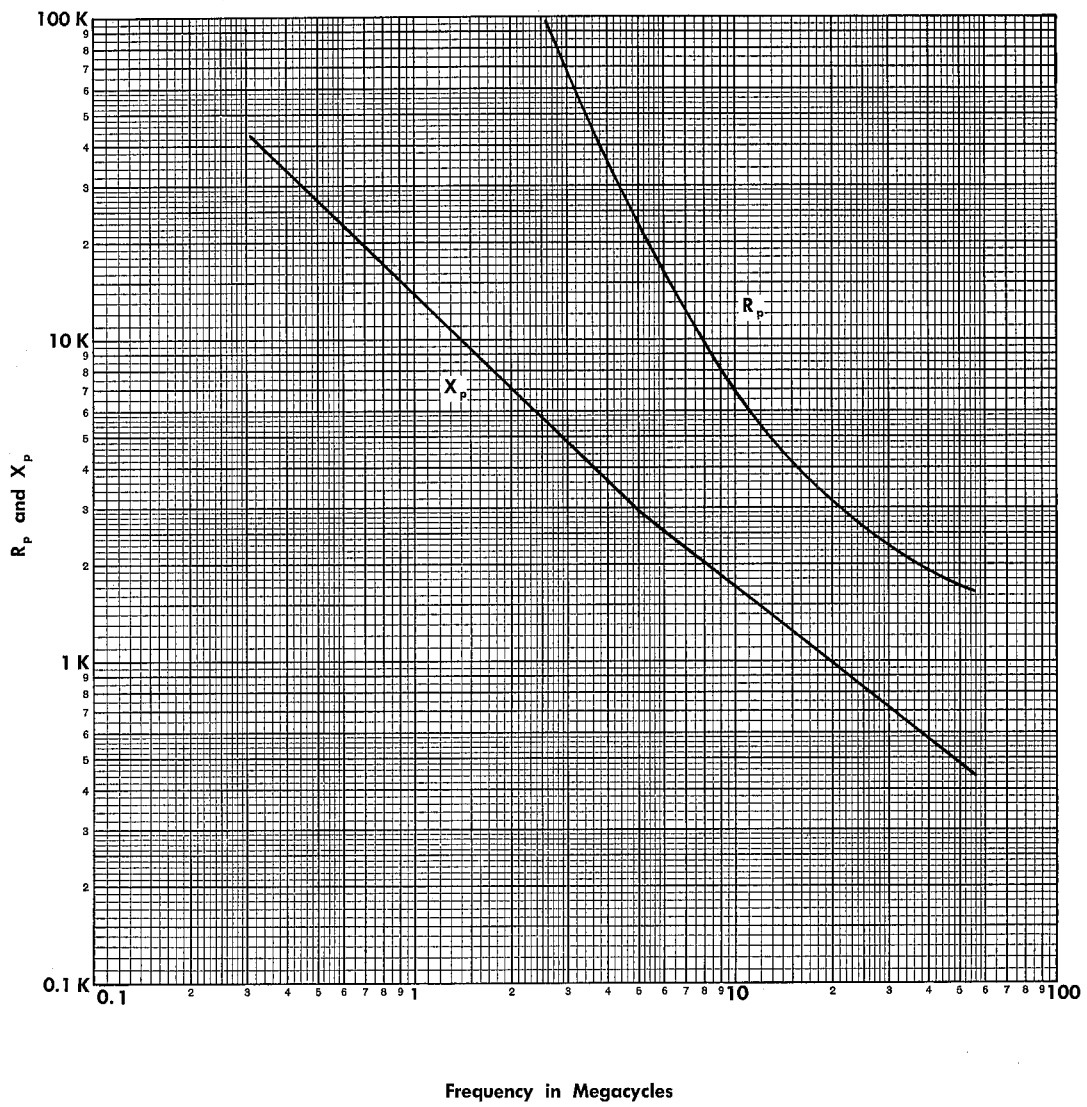


Fig. 8. P6006 input  $R_p$  and  $X_p$  vs frequency curves (9-ft cable).

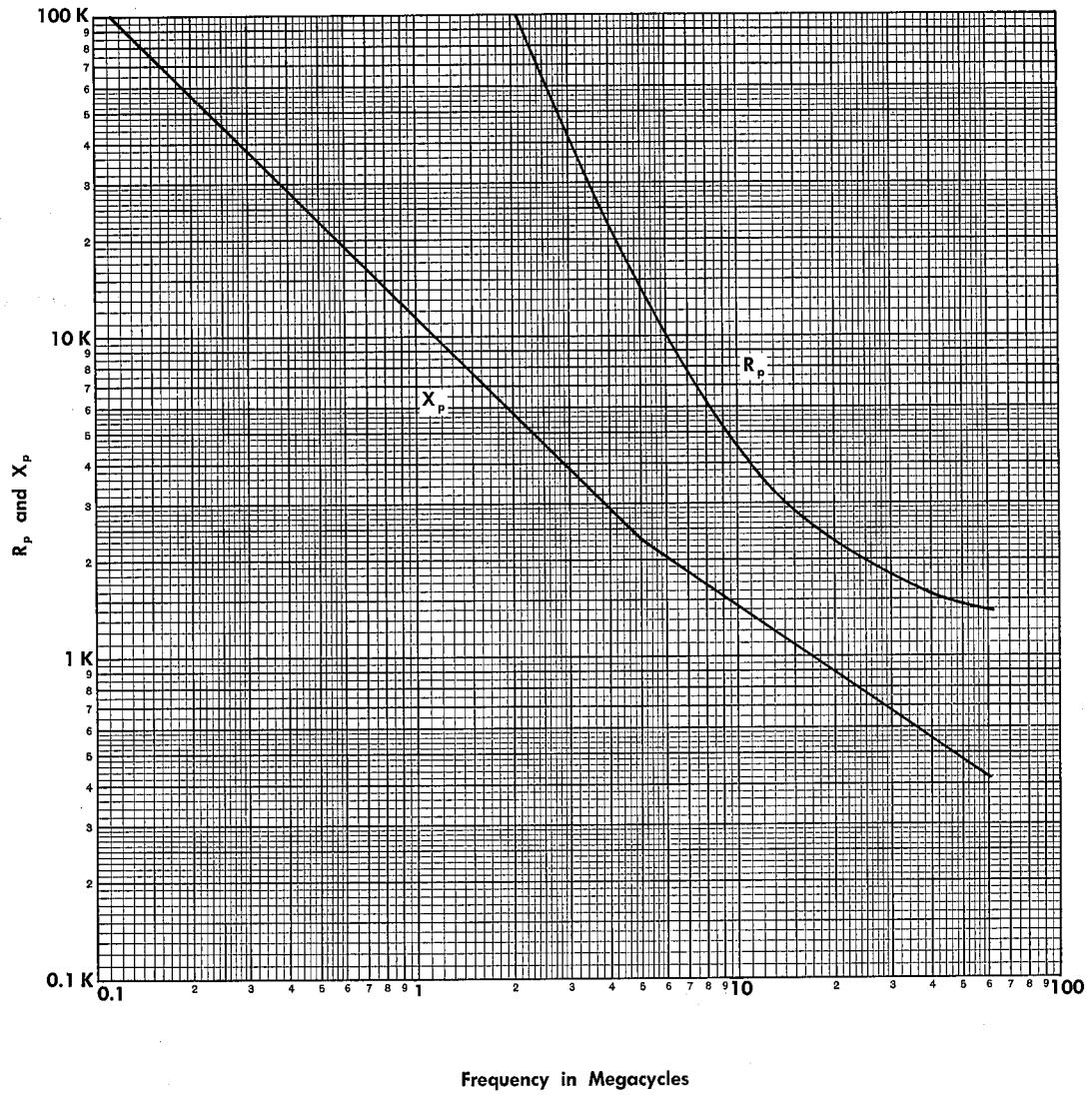
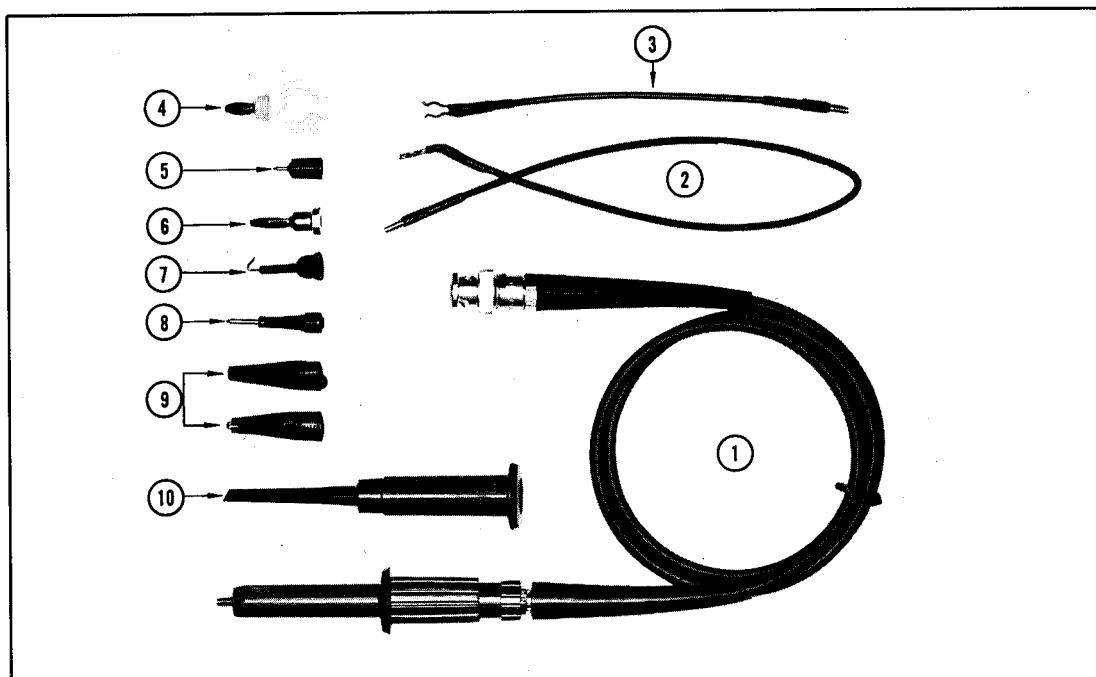


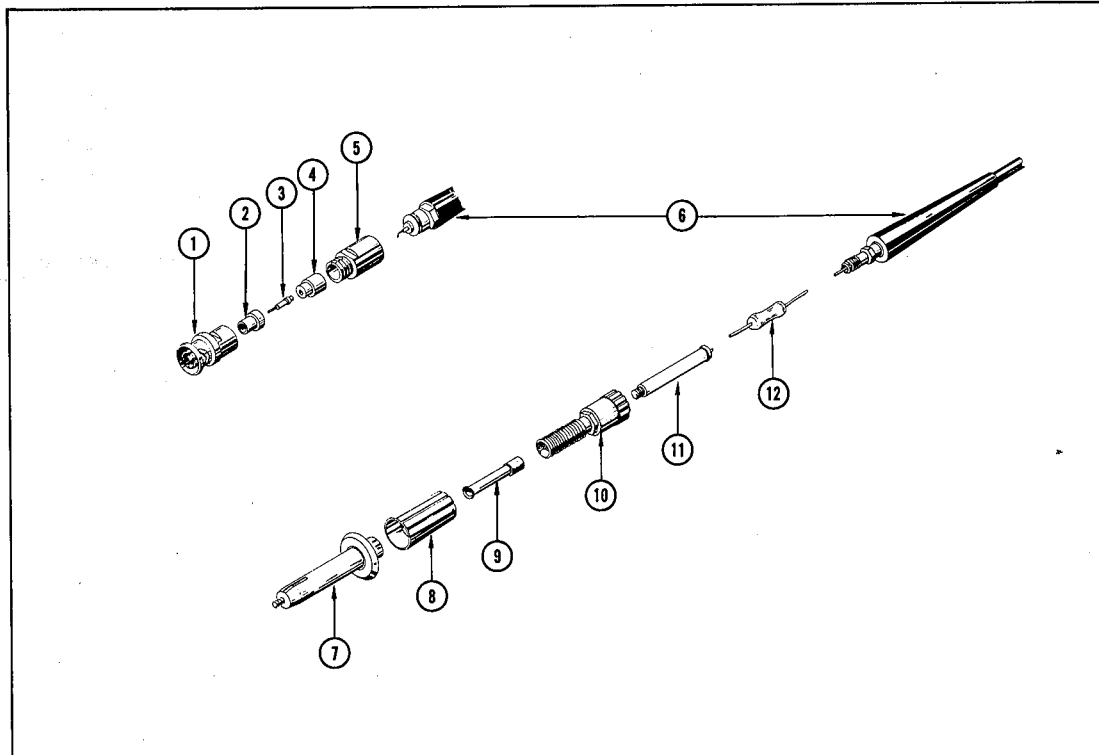
Fig. 9. P6006 input  $R_p$  and  $X_p$  vs frequency curves (12-ft cable).

PROBE WITH ACCESSORIES



REF. NO.	PART NO.	SERIAL NO.		QTY.	DESCRIPTION
		EFF.	DISC.		
<b>PROBE PACKAGE</b>					
1-10	010-127				PROBE (BNC) 3.5 ft. with standard accessories
	010-125				PROBE (UHF) 3.5 ft. with standard accessories
	010-160				PROBE (BNC) 6 ft. with standard accessories
	010-158				PROBE (UHF) 6 ft. with standard accessories
	010-146				PROBE (BNC) 9 ft. with standard accessories
	010-142				PROBE (UHF) 9 ft. with standard accessories
	010-148				PROBE (BNC) 12 ft. with standard accessories
	010-144				PROBE (UHF) 12 ft. with standard accessories
<b>PROBE ONLY</b>					
1	010-128				PROBE (BNC) 3.5 ft. } PROBE (BNC) 6 ft. } See page 5 PROBE (BNC) 9 ft. } PROBE (BNC) 12 ft. }
	010-161				
	010-147				
	010-149				
	010-126				PROBE (UHF) 3.5 ft. } PROBE (UHF) 6 ft. } See page 6 PROBE (UHF) 9 ft. } PROBE (UHF) 12 ft. }
	010-159				
	010-143				
	010-145				
<b>STANDARD ACCESSORIES</b>					
2	175-125			1	CABLE, ground lead, 12 inch
3	175-124			1	CABLE, ground lead, 5 inch
4	352-024			1	HOLDER, assembly, probe
5	206-015			1	TIP, straight, BNC
6	134-013			1	PLUG, banana
7	206-105			1	TIP, probe, hook
8	206-060			1	TIP, probe, spring
9	344-046			2	CLIP, probe
10	013-071			1	PINCER TIP, assembly

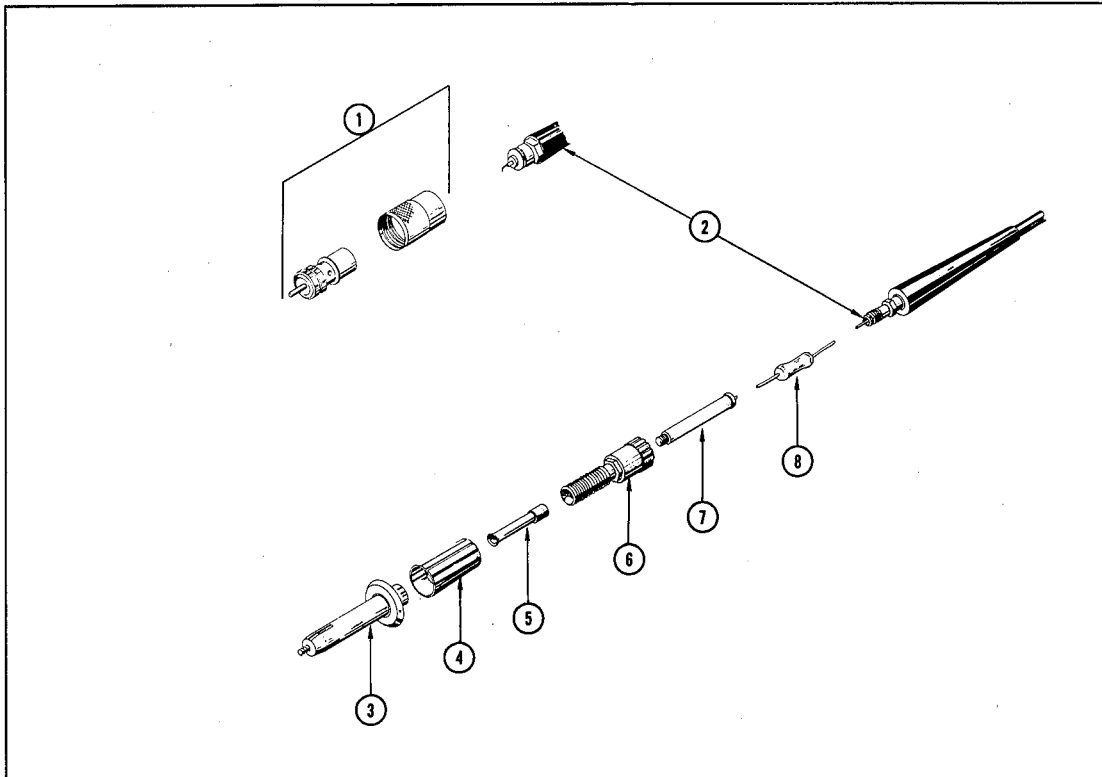
REPLACEABLE PARTS (BNC)



REF. NO.	DESCRIPTION	PART NUMBER			
		3.5 ft.	6 ft.	9 ft.	12 ft.
	CABLE LENGTH				
	PROBE ONLY (BNC)	010-128	010-161	010-147	010-149
1	PLUG, probe	134-044	134-044	134-044	134-044
2	BUSHING, insulator	358-072	358-072	358-072	358-072
3	PIN, probe contact	214-109	214-109	214-109	214-109
4	SPACER, with center hole	361-022	361-022		361-022
5	CONNECTOR, adapter	.....	.....	131-270	.....
	SLEEVE, adapter (not shown)	.....	.....	166-326	.....
	COIL, .6 $\mu$ h (not shown)	.....	.....	108-262	.....
6	CABLE, assembly	175-272	175-279	175-280	175-281
7	BODY, ass'y (with resistor)	204-142	204-185	204-186	204-187
8	SLEEVE, locking	166-285	166-285	166-285	166-285
9	SLEEVE	166-282	166-340	166-340	166-340
10	BUSHING, base	358-194	358-194	358-194	358-194
11	BUSHING, inner base	358-192	358-192	358-192	358-192
12	RESISTOR, 360 $\Omega$ , 1/2 w, 5%	301-361	.....	.....	.....
	RESISTOR, 180 $\Omega$ , 1/2 w, 10%	.....	302-181	.....	.....
	RESISTOR, 430 $\Omega$ , 1/2 w, 5%	.....	.....	301-431	.....
	RESISTOR, 360 $\Omega$ , 1/2 w, 5%	.....	.....	.....	301-361

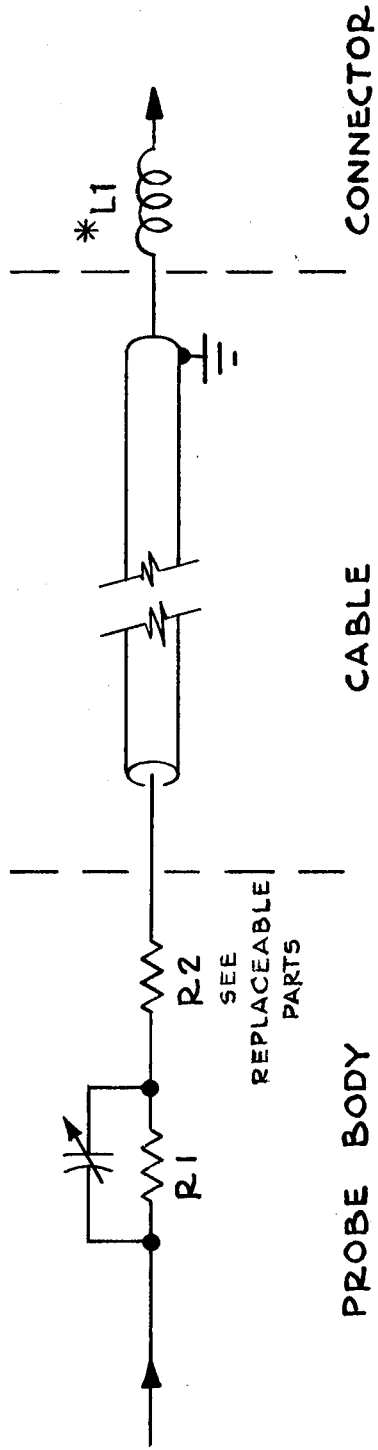


REPLACEABLE PARTS (UHF)



REF. NO.	DESCRIPTION	PART NUMBER			
		3.5 ft.	6 ft.	9 ft.	12 ft.
	CABLE LENGTH				
	PROBE ONLY (UHF)	010-126	010-159	010-143	010-145
1	CONNECTOR, coax. Consisting of: COVER, connector CONNECTOR, male COIL, .6 $\mu$ h (not shown)	131-058	131-058	131-058	131-058
2	CABLE, assembly	175-261	175-278	175-266	175-267
3	BODY, ass'y (with resistor)	204-143	204-182	204-183	204-184
4	SLEEVE, locking	166-285	166-285	166-285	166-285
5	SLEEVE	166-282	166-340	166-340	166-340
6	BUSHING, base	358-194	358-194	358-194	358-194
7	BUSHING, inner base	358-192	358-192	358-192	358-192
8	RESISTOR, 360 $\Omega$ , 1/2 w, 5%	301-361	.....	.....	.....
	RESISTOR, 180 $\Omega$ , 1/2 w, 10%	.....	302-181	.....	.....
	RESISTOR, 430 $\Omega$ , 1/2 w, 5%	.....	.....	301-431	.....
	RESISTOR, 360 $\Omega$ , 1/2 w, 5%	.....	.....	.....	301-361

P6006



P6006 PROBE  
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Ω

\* 9' CABLE ONLY

®