

Instructions

A6302

Current Probe



SERVICING SAFETY SUMMARY

FOR QUALIFIED SERVICE PERSONNEL ONLY

Refer also to the preceding Operators Safety Summary.

Do Not Service Alone

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

Use Care When Servicing With Power On

Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections or components while power is on.

Disconnect power before removing protective panels, soldering, or replacing components.

OPERATORS SAFETY SUMMARY

The general safety information in this part of the summary is for both operating and servicing personnel. Specific warnings and cautions will be found throughout the manual where they apply, but may not appear in this summary.

Terms In This Manual

CAUTION statements identify conditions or practices that could result in damage to the equipment or other property.

WARNING statements identify conditions or practices that could result in personal injury or loss of life.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

Do Not Remove Covers or Panels

To avoid personal injury, do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed.

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INSTRUMENT SERIAL NUMBERS

Each instrument has a serial number on a panel insert, tag,
or stamped on the chassis. The first number or letter
designates the country of manufacture. The last five digits
of the serial number are assigned sequentially and are
unique to each instrument. Those manufactured in the
United States have six unique digits. The country of
manufacture is identified as follows:

B000000	Tektronix, Inc., Beaverton, Oregon, USA
100000	Tektronix Guernsey, Ltd., Channel Islands
200000	Tektronix United Kingdom, Ltd., London
300000	Sony/Tektronix, Japan
700000	Tektronix Holland, NV, Heerenveen, The Netherlands

DESCRIPTION

The A6302 is a dc to 50 MHz current probe designed specifically for use with the AM503 Current Probe Amplifier*. The A6302 is capable of measuring currents of 20 A (dc plus peak ac), and up to 50 A peak current, not to exceed the amp-second rating.

A Hall generator device is used in the probe to provide dc and low-frequency current information. Low-frequency (from the Hall device) and high-frequency information (from the current transformer) are combined in the current probe amplifier to produce an accurate representation of the current being measured.

A spring-loaded slide permits the current transformer core to open and close around a conductor. The slide must be pushed forward into the CLOSED position for measurement.

SPECIFICATION

The following instrument specifications apply over an ambient temperature range of 0°C to +50°C, providing the instruments were calibrated at an ambient temperature of between +20°C and +30°C. The AM503 must have been calibrated for the specific A6302, and the amplifier and probe must operate for at least 20 minutes before making measurements.

*Requires a TM500- or TM5000-Series Power Module Mainframe.

Table 1
ELECTRICAL CHARACTERISTICS

Characteristics	Performance Characteristics	Supplemental Information
Bandwidth	Dc to at least 50 MHz	
Risetime	7 ns or less	
Aberrations		
First 100 ns	$\leq \pm 5\%$, total not to exceed 7% p-p; on 100 MHz oscilloscope system	
After 100 ns	$\leq \pm 3\%$, total not to exceed 4% p-p; on 100 MHz oscilloscope system	
Noise	≤ 0.3 mA tangentially measured	Probe Amplifier Bandwidth at 100 MHz, sensitivity 1 mA
Maximum Input Current		
Dc + peak ac		20 A maximum (ac current not to exceed derating curve for continuous operation); see derating curve, Fig. 1
Peak Pulse		50 A maximum not to exceed Dynamic Range of AM 503
Maximum Voltage on bare conductor being tested		500 V (dc + peak ac)
External Voltage Feedthrough Susceptibility		250 μ A/V or less at 50 MHz

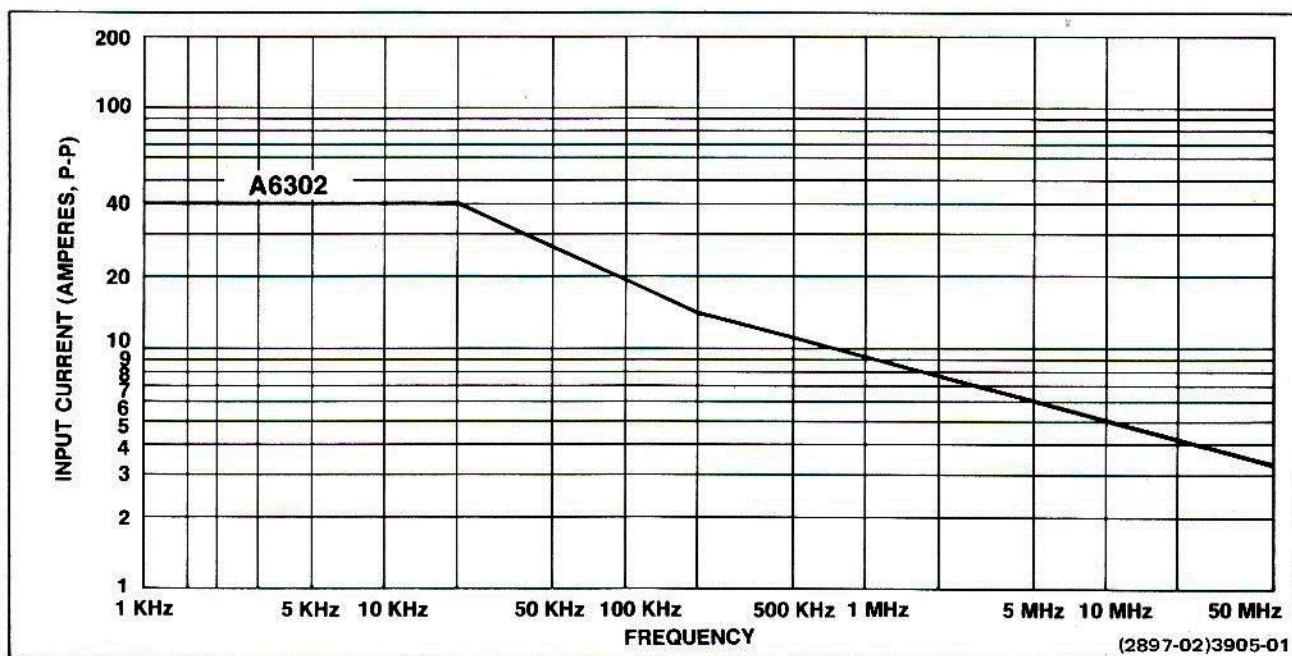


Fig. 1. Maximum input current derating curve.

Table 2
ENVIRONMENTAL CHARACTERISTICS

Characteristic	Information
Temperature	
Non-Operating (Storage)	-55°C to +75°C
Operating	0°C to +50°C
Altitude	
Non-Operating	50,000 feet
Operating	15,000 feet

Table 3
PHYSICAL CHARACTERISTICS

Characteristic	Information
Dimensions, Probe Head	
Length	7.875 inches
Height	1.25 inches
Width	0.4375 inch
Jaw Size	0.15 inch

OPERATING CONSIDERATIONS

System Description

A complete current-measuring system incorporating the A6302 consists of an AM503 Current Probe Amplifier, a TM500- or TM5000-Series Power Module Mainframe, and an oscilloscope.

An A6302 should always be assigned to a specific AM503, and the AM503 should be custom-calibrated for that particular A6302. Replacement or substitution of A6302's mandates recalibration of the AM503 for specifications to remain in effect. An AM503 may also be calibrated for one A6303 Current Probe without sacrificing calibration of the one A6302. Refer to the AM503 manual for more information.

Probe Handling

The Hall device in the probe tip is fragile and may break if subjected to excessive mechanical stress. To prevent damage, care should be taken to avoid dropping or applying physical strain to the probe tip.

CAUTION

With the probe transformer core open, do not allow it to touch a bare conductor. The core is not insulated until it is fully closed.

When making measurements with the A6302, always make sure that the spring-loaded slide is fully closed around the conductor. Failure to do so will result in a distorted response and higher susceptibility to damage from voltage on the conductor.

The Hall device in the probe measures magnetic flux, caused by current in a conductor. Keep this in mind when reading dc currents in ferrous leads (such as transistor leads) that may be magnetized. This lead flux causes erroneous readings in the more sensitive AM503 settings.

Direction of Current Flow

To display correct polarity, the probe should be clamped around a conductor with the probe arrow pointing in the direction of conventional current flow (positive to negative).

Insertion Impedance

Figure 2 shows the insertion impedance versus frequency curve. The insertion impedance of the current probe is the equivalent circuit that is placed in the circuit under test when the probe is clamped around a conductor. When observing fast-rise signals, consider the insertion impedance. To minimize loading of critical circuits, clamp the probe at the low or ground end of a component lead whenever possible.

Ground Clip Leads

Two ground-clip leads are supplied with the A6302. These leads are provided to ground the probe shield at the probe head to reduce high-frequency electrostatic voltages that could be coupled back to the current transformer. Normally, the ground lead is not used in the 1, 2, 5, and 10 mA/div settings of the AM503, due to undesirable currents that may appear in these more sensitive positions. When observing high-frequency signals, use the short ground lead.

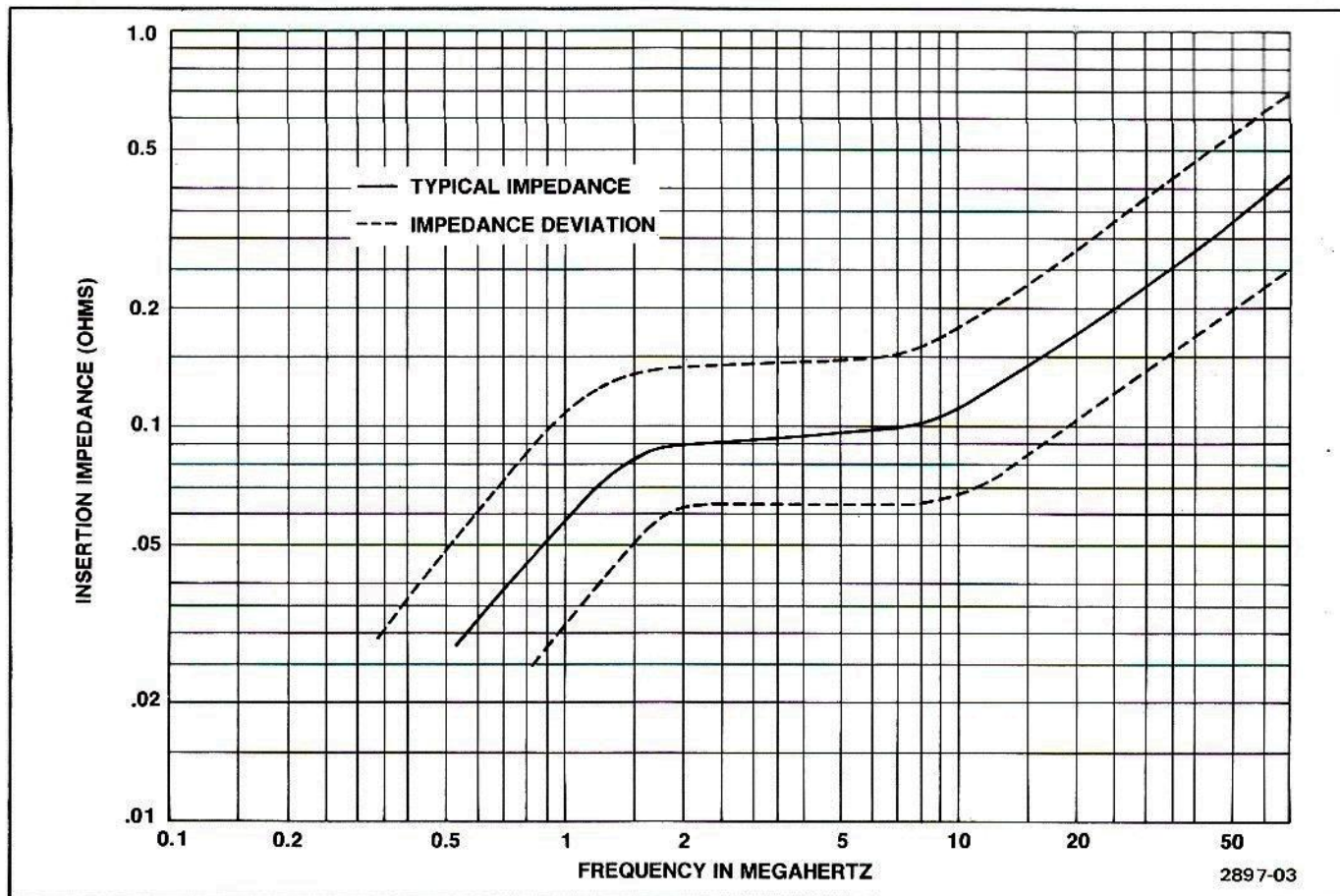


Fig. 2. Insertion impedance versus frequency in megahertz.

PERFORMANCE CHECK PROCEDURE

Introduction

This procedure checks the electrical characteristics that appear in the Specification portion of this manual. If the instrument fails to meet the requirements given in this performance check, an adjustment procedure should be performed. This procedure can also be used by an incoming inspection facility to determine acceptability of performance.

The electrical characteristics are valid only if the current probe amplifier is calibrated at an ambient temperature of $+20^{\circ}\text{C}$ to $+30^{\circ}\text{C}$ and operated at an ambient temperature of 0°C to $+50^{\circ}\text{C}$. Forced air circulation is required for ambient temperature above $+40^{\circ}\text{C}$.

Tolerances that are specified in this performance check procedure apply to the instrument under test and do not include test equipment error.

Test Equipment Required

The following test equipment, or equivalent, is required to perform the performance check. Test equipment characteristics listed are the minimum required to verify the performance of the equipment under test. Substitute equipment must meet or exceed the stated requirements. All test equipment is assumed to be operating within tolerances.

Modification of the test procedure may be required if alternate test equipment is substituted.

Special test devices are used where necessary to facilitate the procedure. Most of these are available from Tektronix, Inc. and can be ordered through your local Tektronix Field Office or representative.

Table 4
TEST EQUIPMENT REQUIRED

Description	Performance Requirements	Application	Examples
Test Oscilloscope	Bandwidth, 150 MHz; vertical deflection, 5 mV/Div; time/div, 2 ms	All measurements	TEKTRONIX 7704A with 7A16A Amplifier and 7B80 Time Base
Calibration Generator	Fast rise output; period 0.1 ms; duty cycle, approx. 50%; amplitude, 200 mV p-p, into 50 Ω	Risetime measurement	TEKTRONIX PG 506 ^a Pulse Generator
Constant Amplitude Sine Wave Generator	Frequency range, at least 100 MHz with 50 kHz reference frequency; amplitude range, to 5.5 V p-p; impedance, 50 Ω ; amplitude accuracy (50 kHz reference), within 3% of indicated amplitude on 5 V range, into 1% termination; flatness, output amplitude does not vary more than 3% from actual amplitude of 50 kHz reference.	Bandwidth checks	TEKTRONIX SG 503 ^a Leveled Sine Wave
Current Probe Amplifier	Bandwidth, 100 MHz; current/div accuracy, within 3%	All measurements	TEKTRONIX AM 503 ^a current probe amplifier
Cable	Impedance, 50 Ω ; length, 42 inches; connectors, bnc	Amplifier output to test oscilloscope	Tektronix Part No. 012-0057-01
Termination	Impedance, 50 Ω ; connector, bnc	Amplifier output to test oscilloscope	Tektronix Part No. 011-0049-01
10X Attenuator (2 required)	Attenuation accuracy, $\pm 2\%$	Noise check	Tektronix Part No. 011-0059-02
Calibration Fixture (Current Loop)	Impedance, 50 Ω	Bandwidth, rise-time, aberrations	Tektronix Part No. 067-0559-00

^aRequires TM 500-Series Power Module.

Preliminary Procedure

1. Ensure that all power switches are off.
2. Ensure that all test equipment and the power module into which the current probe amplifier will be installed are suitably adapted to the line voltage to be applied.
3. Install the current probe amplifier into the power module and connect the A6302 current probe. Install all other applicable TM 500-Series test equipment into the power module.
4. Connect the power module(s) and test equipment to a suitable line voltage source. Turn all equipment on and allow at least 20 minutes for the equipment to warm up and stabilize.

NOTE

All steps in the Performance Check require the following setup. (See Fig. 3.) With each of the more complex steps, an equipment setup illustration is provided. Titles for front-panel controls and connectors are initial capitals in this procedure (e.g., Current/Div, Balance, etc.).

5. Set test oscilloscope vertical sensitivity for 10 mV/div.
6. With the test oscilloscope input coupling switch at ground, position the trace vertically to graticule center. Switch input coupling to dc.
7. Set the current probe amplifier function to adjust the dc level for zero output (trace centered on the test oscilloscope graticule).

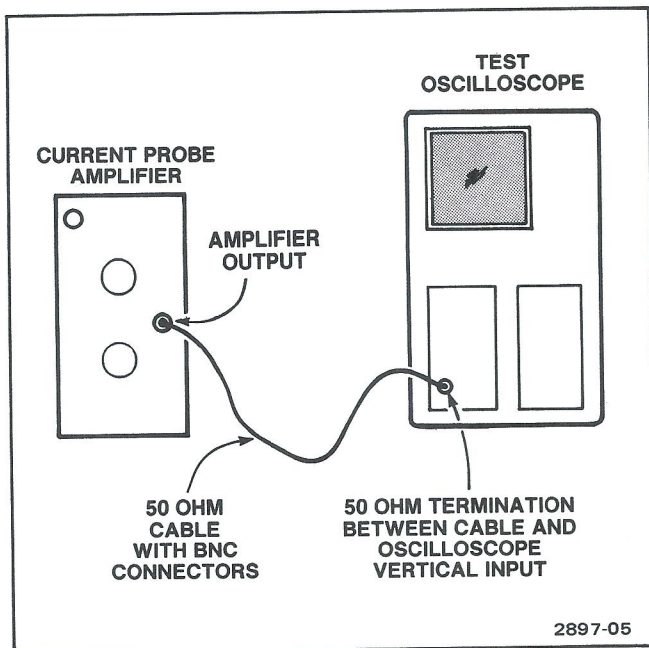


Fig. 3. Setup for preliminary procedure.

1. Risetime Check

See Fig. 4 for test setup.

Set Controls:

Current Probe Amplifier

Bandwidth	Full
Current/Div	2 mA

Calibration Generator

Period	1 μ s
Function	Fast Rise

Test Oscilloscope

Volts/Div	10 mV
Input Coupling	dc
Time/Div	20 ns

8. Set amplifier sensitivity for 1 mA/div.
9. Momentarily apply degaussing voltage to the probe.
10. Set current probe amplifier coupling to dc.
11. Set dc balance for zero output (trace centered on test oscilloscope graticule).
- a. Adjust calibration generator output for five-division vertical display on test oscilloscope.
- b. Switch test oscilloscope Time/Div to 2 ns.
- c. Measure risetime between 10% and 90% amplitude points.
- d. CHECK—for 7 ns, maximum risetime.

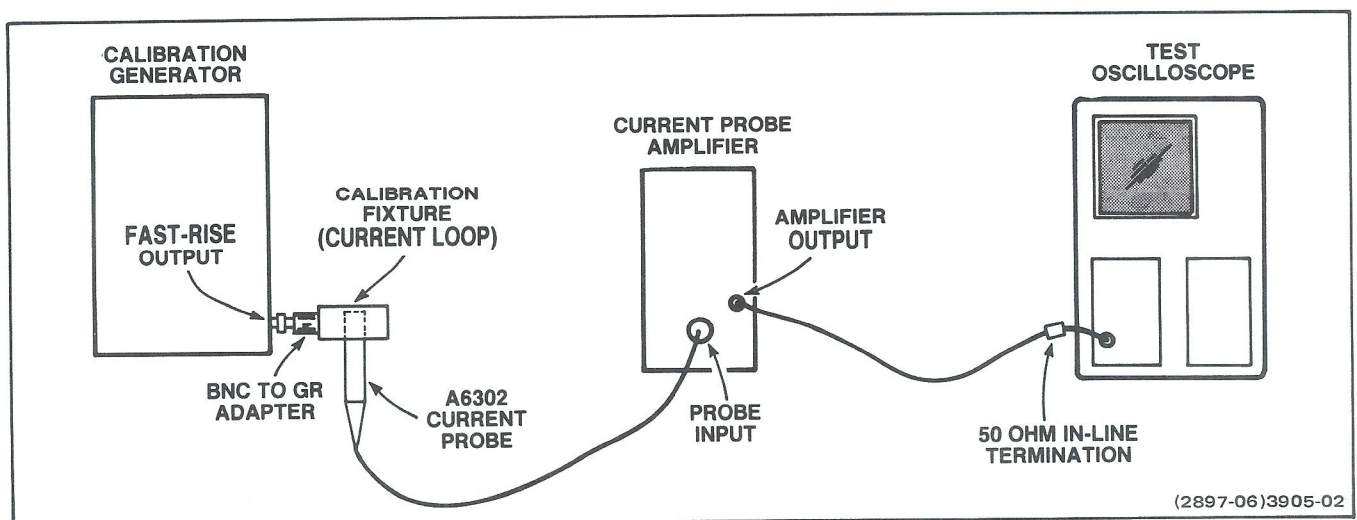


Fig. 4. Test setup for risetime check.

2. Aberrations Check

See Fig. 5 for test setup.

Set Controls:

Oscilloscope	
Vertical	10 mV
Coupling	dc
Time/Div	50 ns

Current Probe Amplifier	
Bandwidth	Full
Current/Div	5 mA

Calibration Generator	
Function	Fast Rise

- Set calibration generator for 4 div output, period 1 μ s.
- Adjust test oscilloscope vertical sensitivity for a five-division display (uncalibrated).

c. CHECK—display on test oscilloscope. ($\pm 5\%$, total not to exceed 7% p-p for the first 100 ns. After the first 100 ns $\pm 3\%$, total not to exceed 4% p-p.)

3. Noise Check

See Fig. 6 for test setup.

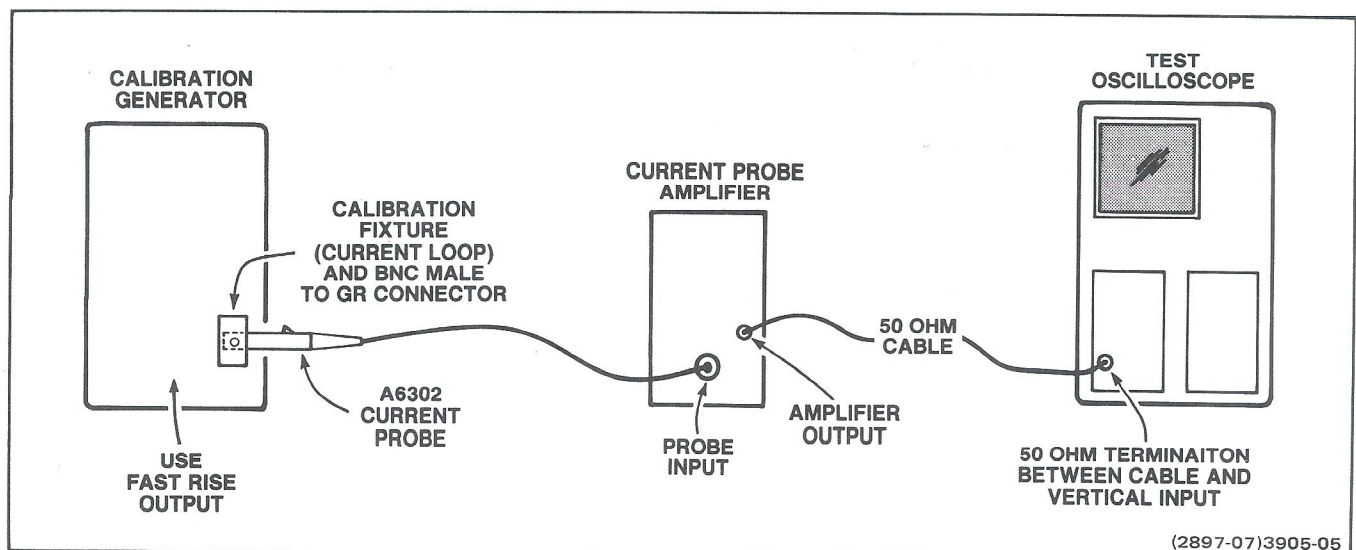


Fig. 5. Test setup for aberrations check.

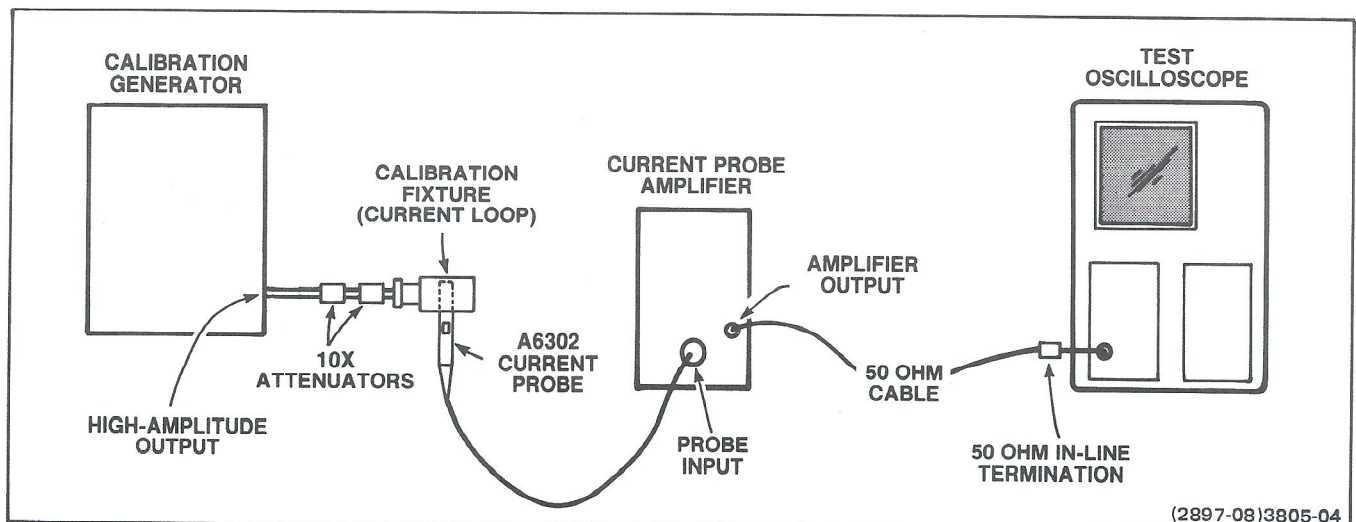


Fig. 6. Test setup for noise check.

Set Controls:

Current Probe Amplifier

Current/Div	1 mA
Bandwidth	Full

Test Oscilloscope

Time/Div	100 μ s
Volts/Div	10 mV

Calibration Generator

Frequency	1 kHz
Function	High Amp

a. Adjust calibration generator amplitude until two free-running traces just merge (no dark area between traces). See Fig. 7.

b. Remove one 10X attenuator.

c. Measure the display amplitude on the test oscilloscope. Divide display amplitude by 10.

Example: two divisions of display at 10 mV/Div = 20 mV (equivalent to 2 mA), divided by 10 = 0.2 mA of noise, measured tangentially.

d. CHECK—for ≤ 0.3 mA maximum noise, measured tangentially.

4. Bandwidth Check

See Fig. 8 for test setup.

Set controls:

Current Probe Amplifier

Bandwidth	Full
Current/Div	5 mA

Test Oscilloscope

Volts/Div	10 mV
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Sine Wave Generator

Frequency	50 kHz reference
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a. Set constant amplitude sine-wave generator amplitude for six-division display on test oscilloscope.

b. Increase constant amplitude sine-wave generator frequency until test oscilloscope vertical display amplitude decreases to 4.2 divisions.

c. CHECK—that constant amplitude sine-wave generator frequency is 50 MHz or greater.

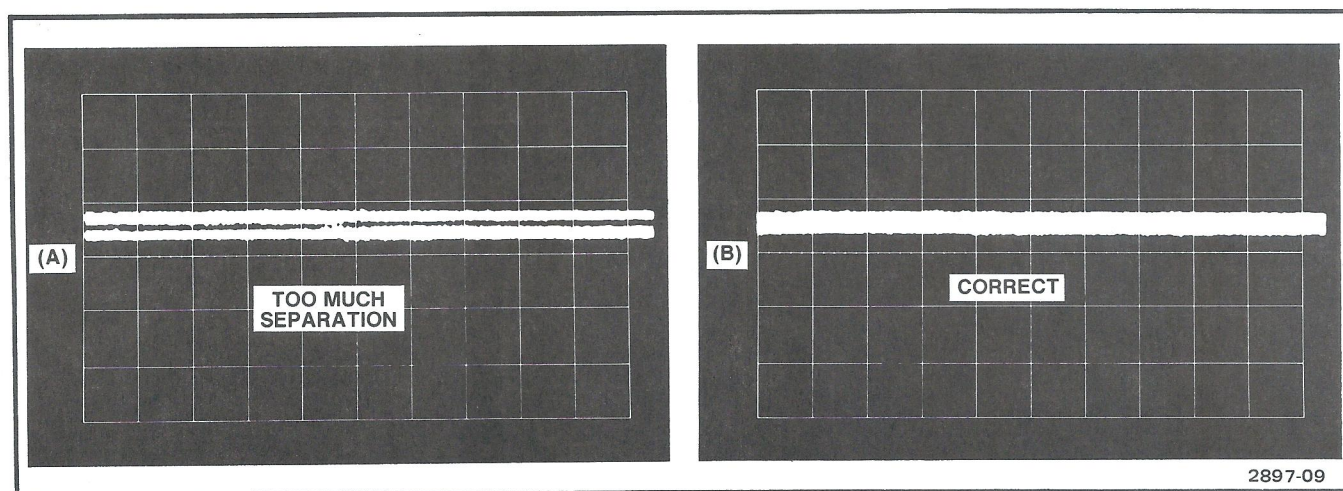


Fig. 7. Display of tangentially-measured noise (A) incorrect; dark area showing between traces, (B) correct display.

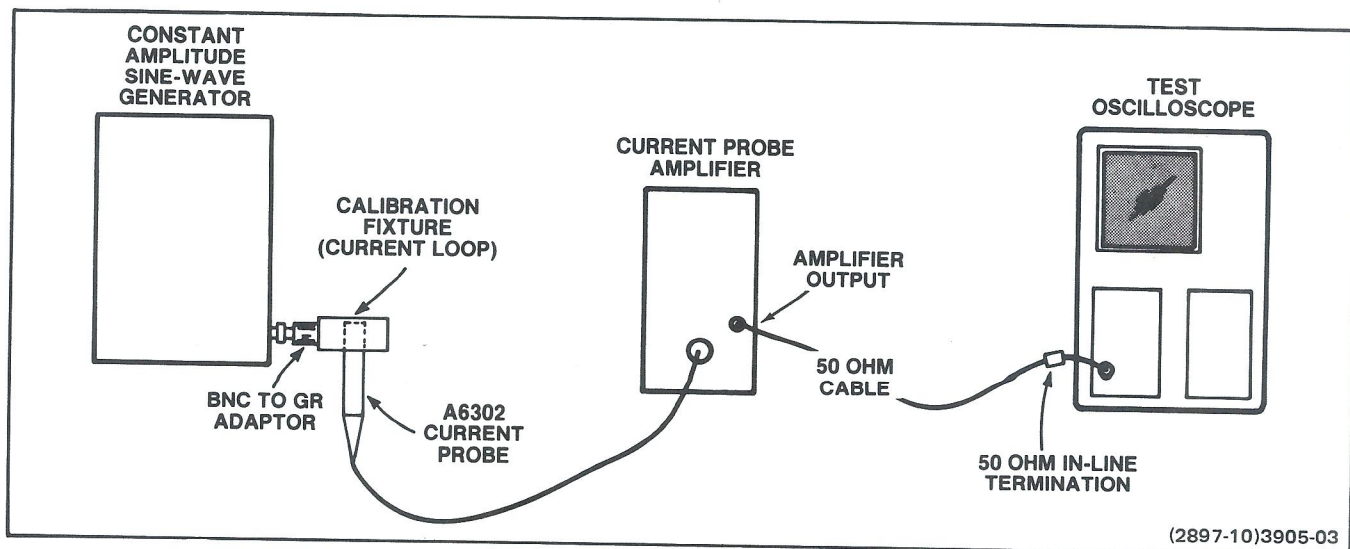


Fig. 8. Test setup for bandwidth check.

5. Optional DC Gain Accuracy Check

Equipment Required:

Fluke 5101B or equivalent

Fluke 8502A or equivalent

50 Ω coaxial cable (012-0057-01)

50 Ω termination (011-0049-01)

Dual banana-to-bnc female adapter (103-0090-00)

Ten-turn loop of No. 27 enameled wire (app. 5 ft.)

10 μ F mylar capacitor (285-1153-00)

PROCEDURE

a. Set the Fluke 8502A to the 20 VDC range, filter on. Connect the 10 μ F capacitor across the VOLTS terminals of the 8502A.

b. Connect the ten turn wire loop to the output terminals of the Fluke 5101B.

c. Connect the bnc cable to the AM503 output, the 50 Ω termination to the cable, and the dual banana adapter to the termination. Connect to the Fluke 8502A input.

d. Set the Fluke 8502A to VDC and the AM503 to the 1 mA position. Set the AM503 BW LIMIT to 5 MHz.

e. Connect the A6302 to the AM503 and degauss. Clamp the A6302 around the ten turn wire loop.

f. Set the AM 503 CURRENT/DIV according to the chart below.

g. Set the Fluke 5101B according to the chart below.

h. With the Fluke 5101B in STANDBY, adjust the AM503 DC LEVEL control for a reading of 0 volts (± 10 counts) on the Fluke 8502A.

i. Set the Fluke 5101B to OPR.

j. CHECK—that the Fluke 8502A reading, minus that obtained in step h above, is within the limits of the chart below.

k. Set the Fluke 5101B to STANDBY.

l. Repeat steps e through k using the values in the chart below.

AM 503 Current/Div	5101B Current	Min Reading	Max Reading
1 mA	.5 mA	.04850	.05150
2 mA	1 mA	.04850	.05150
5 mA	2.5 mA	.04850	.05150
10 mA	5 mA	.04850	.05150
20 mA	10 mA	.04850	.05150
50 mA	25 mA	.04850	.05150
100 mA	50 mA	.04850	.05150
200 mA	100 mA	.04850	.05150
.5 A	250 mA	.04850	.05150
1 A	500 mA	.04850	.05150
2 A	1 A	.04850	.05150
5 A	1.99999 A	.03880	.04120

MAINTENANCE

CLEANING

Dirt that accumulates on the probe head can be removed with a soft cloth dampened in a mild detergent and water solution. Abrasive cleaners should not be used.

CAUTION

Avoid the use of chemical cleaning agents which might damage the plastics used in this instrument. In particular, avoid chemicals which contain benzene, toluene, xylene, acetone, or similar solvents.

Recommended cleaning agents are isopropyl alcohol (Isopropanol) or ethyl alcohol (Fotocol or Ethanol).

SERVICING

The following servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing other than that contained in operating instructions unless you are qualified to do so.

The A6302 Current Probe is designed to withstand normal operation and handling. However, if the probe fails or breaks, replacement parts are available.

Obtaining Replacement Parts

Most electrical and mechanical parts can be obtained through your local Tektronix field office or representative. However, you should be able to obtain many of the standard electronic components from a local commercial source in your area. Before you purchase or order a part from a source other than Tektronix, inc., please check the Replaceable Electrical Parts list for the proper value, rating, tolerance, and description.

Lubrication

Do not lubricate the gap between the stationary and movable transformer core pieces. Any lubricant between the core pieces should be removed with a recommended cleaning agent.

Slide Switch. This switch is lubricated before leaving the factory. Should the switch become noisy, clean and lubricate with switch cleaning lubricant.

Movable Plastic Parts. Should the plastic slide assembly require lubrication, apply silicone-based grease sparingly to the plastic.

Probe Disassembly (see Fig. 9)

1. Move the probe slide assembly to the open position.
2. Remove the two screws from the bottom of the probe body and pull the strain relief boot back on the cable.
3. While holding the probe in a horizontal position with the slide assembly up, lift the top half of the body and slide the top half off the end of the probe.

NOTE

Do not let the metal ball, in the top of the slide assembly, fall out. The ball may be easily lost.

4. Remove the metal ball.
5. Lift the spring retainer and spring out of the spring holder. Remove the spring and retainer (lift the back of the slide assembly).
6. Lay the probe on its side and remove the slide assembly. When removing the movable portion of the transformer core and the contact spring for the slide assembly, note the position of the contact spring. Switch contacts are not removable from the slide assembly.
7. Remove the spring holder from the bottom half of the probe body.

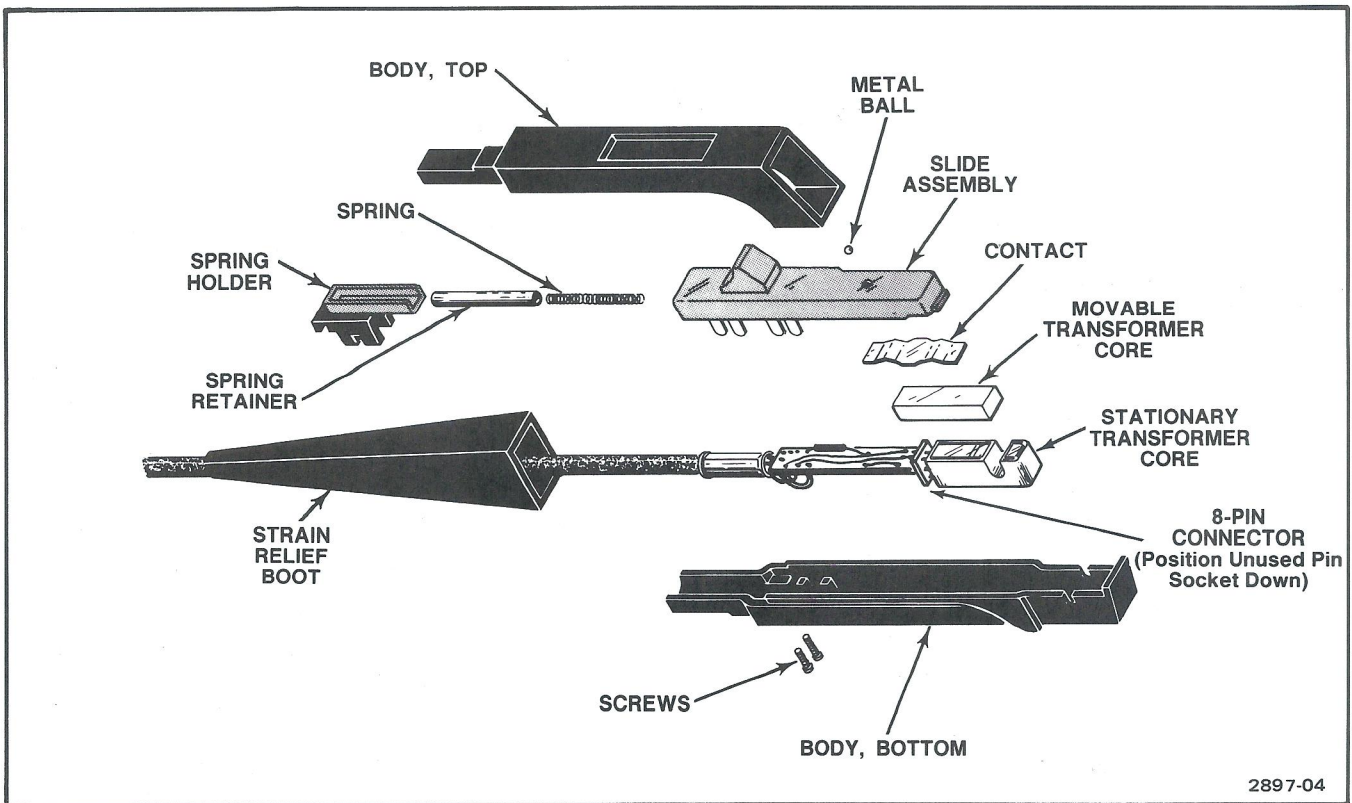


Fig. 9. Probe assembly exploded view.

8. To remove the stationary transformer core, first lift out the transformer-circuit board assembly, then carefully grip the stationary transformer core and pull it out of its socket. If necessary, unsolder the cable connection to the bottom half of the probe body.

Probe Assembly (see Fig. 9)

1. If unsoldered, resolder the cable connections (2) to the bottom half of the probe body.

2. Plug the stationary transformer core into the eight-pin connector.

3. Place the circuit board and transformer core into the bottom half of the probe body and replace the spring holder.

4. Replace the contact spring and movable core in the slide assembly. Place the spring and spring retainer in the spring guide on the slide assembly.

5. With both halves of the probe body held upside down, insert the slide assembly tip into the slot at the front of the probe body and bring the two pieces together. Be sure that the slide assembly switch contacts go on the inside (toward the center) of the stationary contacts. As the two pieces are brought together, push the spring retainer into the spring holder.

6. Hold the probe with the slide assembly up and place the metal ball into the hole in the slide assembly.

7. Replace the top half of the probe body, the strain relief boot, and the two screws.

8. The transformer assembly, when ordered, comes with an offset resistor (R18). The polarity marking (+ or -) on the tape attached to the transformer indicates which Hall Bias resistor it will be tied to (R16 is +, R17 is -).

REPLACEABLE PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

1	2	3	4	5	Name & Description
					<i>Assembly and/or Component</i>
					<i>Attaching parts for Assembly and/or Component</i>
					****END ATTACHING PARTS****
					<i>Detail Part of Assembly and/or Component</i>
					<i>Attaching parts for Detail Part</i>
					****END ATTACHING PARTS****
					<i>Parts of Detail Part</i>
					<i>Attaching parts for Parts of Detail Part</i>
					****END ATTACHING PARTS****

Attaching Parts always appear in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation.

Attaching parts must be purchased separately, unless otherwise specified.

ABBREVIATIONS

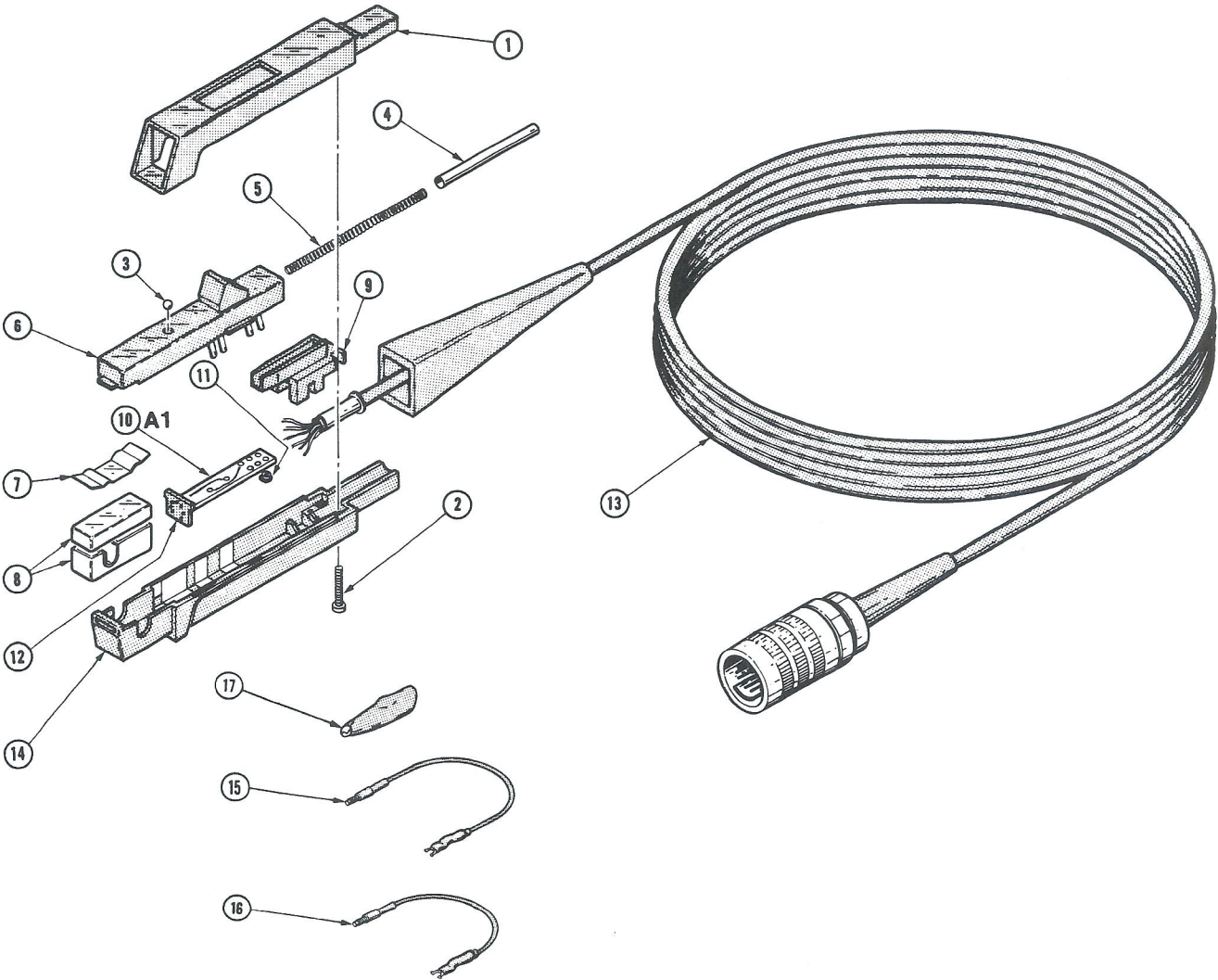
"	INCH	ELCTRN	ELECTRON	IN	INCH	SE	SINGLE END
#	NUMBER SIZE	ELEC	ELECTRICAL	INCAND	INCANDESCENT	SECT	SECTION
ACTR	ACTUATOR	ELCTLT	ELECTROLYTIC	INSUL	INSULATOR	SEMICON	SEMICONDUCTOR
ADPTR	ADAPTER	ELEM	ELEMENT	INTL	INTERNAL	SHLD	SHIELD
ALIGN	ALIGNMENT	EPL	ELECTRICAL PARTS LIST	LPHLDR	LAMPHOLDER	SHLDR	SHOULDERED
AL	ALUMINUM	EQPT	EQUIPMENT	MACH	MACHINE	SKT	SOCKET
ASSEM	ASSEMBLED	EXT	EXTERNAL	MECH	MECHANICAL	SL	SLIDE
ASSY	ASSEMBLY	FIL	FILLISTER HEAD	MTG	MOUNTING	SLFLKG	SELF-LOCKING
ATTEN	ATTENUATOR	FLEX	FLEXIBLE	NIP	NIPPLE	SLVG	SLEEVEING
AWG	AMERICAN WIRE GAGE	FLH	FLAT HEAD	NON WIRE	NOT WIRE WOUND	SPR	SPRING
BD	BOARD	FLTR	FILTER	OBD	ORDER BY DESCRIPTION	SQ	SQUARE
BRKT	BRACKET	FR	FRAME or FRONT	OD	OUTSIDE DIAMETER	SST	STAINLESS STEEL
BR	BRASS	FSTNR	FASTENER	OVH	OVAL HEAD	STL	STEEL
BRZ	BRONZE	FT	FOOT	PH BRZ	PHOSPHOR BRONZE	SW	SWITCH
BSHG	BUSHING	FXD	FIXED	PL	PLAIN or PLATE	T	TUBE
CAB	CABINET	GSKT	GASKET	PLSTC	PLASTIC	TERM	TERMINAL
CAP	CAPACITOR	HDL	HANDLE	PN	PART NUMBER	THD	THREAD
CER	CERAMIC	HEX	HEXAGON	PNH	PAN HEAD	THK	THICK
CHAS	CHASSIS	HEX HD	HEXAGONAL HEAD	PWR	POWER	TNSN	TENSION
CKT	CIRCUIT	HEX SOC	HEXAGONAL SOCKET	RCPT	RECEPTACLE	TPG	TAPPING
COMP	COMPOSITION	HLCPS	HELICAL COMPRESSION	RES	RESISTOR	TRH	TRUSS HEAD
CONN	CONNECTOR	HLEXT	HELICAL EXTENSION	RGD	RIGID	V	VOLTAGE
COV	COVER	HV	HIGH VOLTAGE	RLF	RELIEF	VAR	VARIABLE
CPLG	COUPLING	IC	INTEGRATED CIRCUIT	RTNR	RETAINER	W/	WITH
CRT	CATHODE RAY TUBE	ID	INSIDE DIAMETER	SCH	SOCKET HEAD	WSHR	WASHER
DEG	DEGREE	IDNT	IDENTIFICATION	SCOPE	OSCILLOSCOPE	XFMR	TRANSFORMER
DWR	DRAWER	IMPLR	IMPELLER	SCR	SCREW	XSTR	TRANSISTOR

Component No.	Tektronix Part No.	Serial/Assembly No. Effective Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	670-4647-00		CIRCUIT BD ASSY:PROBE	80009	670-4647-00
LR15	108-0330-00		COIL, RF: FIXED, 403NH	TK1345	108-0330-00
R14	317-0101-00		RES, FXD, CMPSN: 100 OHM, 5%, 0.125W	80009	317-0101-00
R16	317-0270-00		RES, FXD, CMPSN: 27 OHM, 5%, 0.125W	80009	317-0270-00
R17	317-0220-00		RES, FXD, CMPSN: 22 OHM, 5%, 0.125W	80009	317-0220-00
R18	-----		(SELECTED)		
T5	120-0464-02		TRANSFORMER, CUR: UPPER & LOWER (SELECTED WITH R18)	80009	120-0464-02
T15	120-0741-00		XFMR, TOROID:	80009	120-0741-00

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
1-	-----		1		A6302 PROBE, CURRENT:		
-1	204-0288-00	B010100	1		.BODY HALF, PROBE: UPPER	80009	204-0288-00
	204-0288-01	B039462	1		.BODY HALF, PROBE: UPPER A6302 (ATTACHING PARTS)	80009	204-0288-01
-2	213-0087-00		2		.SCREW, TPG, TC: 8-32 X 0.375, TYPE T, TRH, STL (END ATTACHING PARTS)	80009	213-0087-00
-3	214-0997-00		1		.BALL, BEARING: 0.094, SST	05469	ORDER BY DESC
-4	214-0849-00		1		.RTNR RETURN SPR: BRS CD PL	80009	214-0849-00
-5	214-0835-00		1		.SPRING, HLCPS: 0.127 OD X 2.65 L, SST	80009	214-0835-00
-6	351-0121-00		1		.CONT ASSY, ELEC: PROBE SLIDE ASSY	80009	351-0121-00
-7	214-0854-00		1		.CONTACT, ELEC: UPPER SHELF, CU BE	80009	214-0854-00
-8	-----		1		.TRANSFORMER, CUR: (SEE T5 REPL) (SELECTED WITH R18)		
-9	352-0106-00		1		.HOLDER, SPR RTNR: DELRIN	80009	352-0106-00
	175-1836-01		1		.CA ASSY, SP, ELEC: W/CIRCUIT BOARD	80009	175-1836-01
-10	-----		1		.CKT BOARD ASSY: PROBE (SEE A1 REPL)		
-11	136-0252-00		7		.SOCKET, PIN TERM: U/W 0.018 DIA PINS	80009	136-0252-00
-12	352-0287-00		1		.HOLDER, CKT BD: DELRIN	80009	352-0287-00
-13	175-1836-00		1		.CABLE ASSY, RF: 6, 30 AWG, 2, 50 OHM COAX	80009	175-1836-00
-14	204-0714-01	B010100	1		.BODY HALF, PROBE: BOTTOM W/CONTACTS	80009	204-0714-01
	204-0714-02	B039462	1		.BODY HALF, PROBE: BOTTOM W/CONTACTS	80009	204-0714-02
					STANDARD ACCESSORIES		
	070-3905-01		1		MANUAL, TECH: INSTR, A6302	80009	070-3905-01
	175-0124-01		1		LEAD, ELECTRICAL: STRD, 23 AWG, BLACK, 5.0 L	80009	175-0124-01
	175-0263-01		1		LEAD, ELECTRICAL: STRD, 23 AWG, BLACK, 3.0 L	80009	175-0263-01
	344-0046-00		2		CLIP, ELECTRICAL: ALLIGATOR, 1.56 L	80009	344-0046-00

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
05469	BEARINGS INC	3634 EUCLID P O BOX 6925	CLEVELAND OH 44101
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077-0001
TK1345	ZMAN & ASSOCIATES		



DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS

Symbols and Reference Designators

Electrical components shown on the diagrams are in the following units unless noted otherwise:

Capacitors = Values one or greater are in picofarads (pF).
Values less than one are in microfarads (μ F).

Resistors = Ohms (Ω).

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

The overline on a signal name indicates that the signal performs its intended function when it goes to the low state.

Abbreviations are based on ANSI Y1.1-1972.

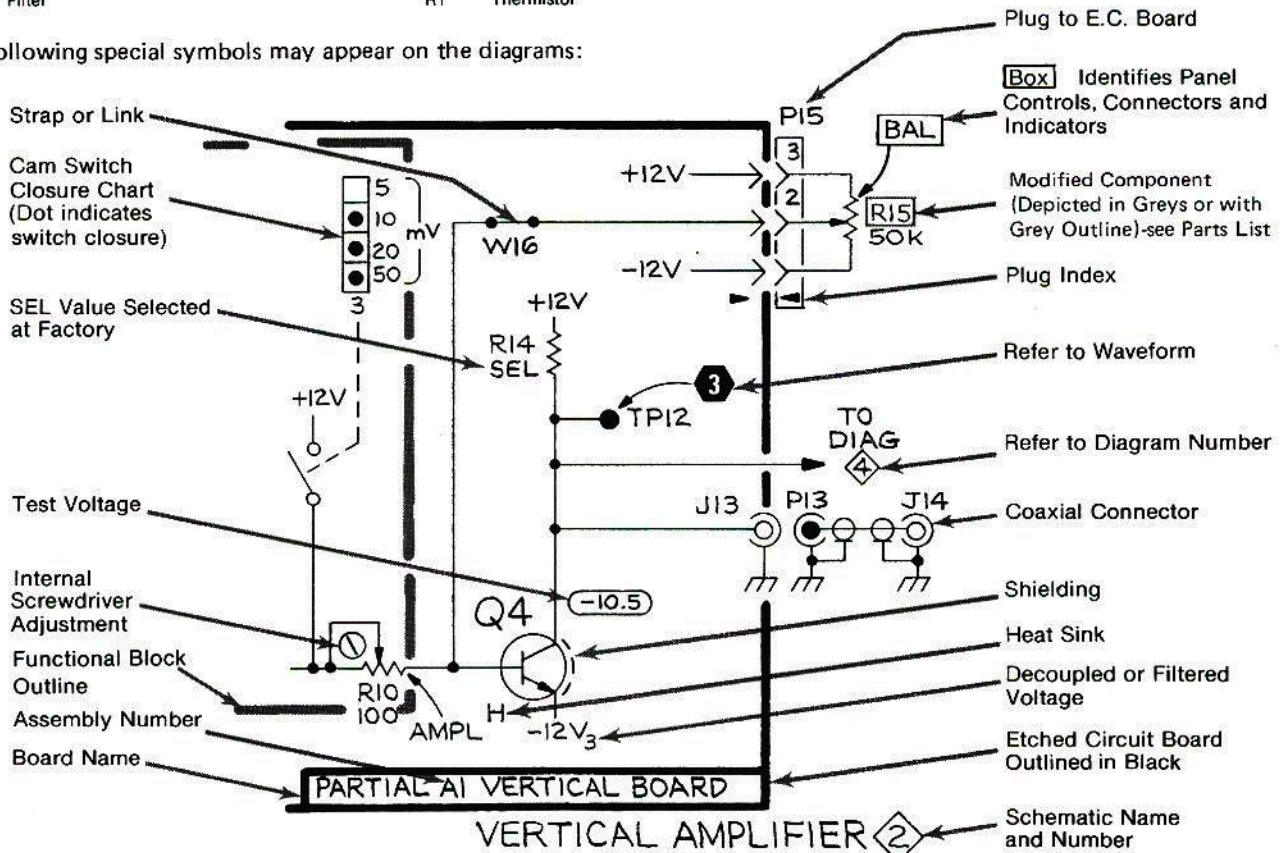
Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

- | | |
|--------------|--|
| Y14.15, 1966 | Drafting Practices. |
| Y14.2, 1973 | Line Conventions and Lettering. |
| Y10.5, 1968 | Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering. |

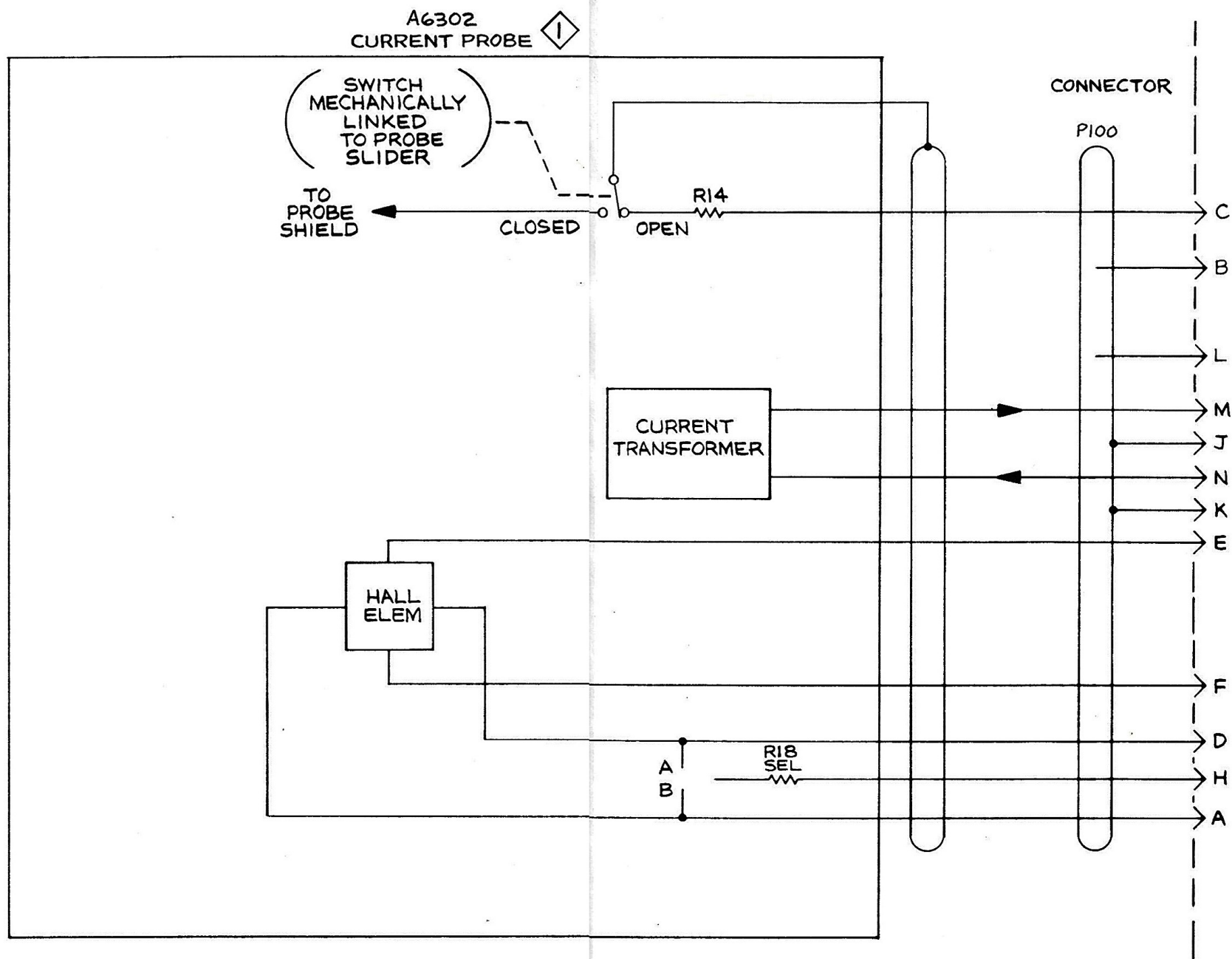
The following prefix letters are used as reference designators to identify components or assemblies on the diagrams.

A	Assembly, separable or repairable (circuit board, etc)	H	Heat dissipating device (heat sink, heat radiator, etc)	S	Switch or contactor
AT	Attenuator, fixed or variable	HR	Heater	T	Transformer
B	Motor	HY	Hybrid circuit	TC	Thermocouple
BT	Battery	J	Connector, stationary portion	TP	Test point
C	Capacitor, fixed or variable	K	Relay	U	Assembly, inseparable or non-repairable (integrated circuit, etc.)
CB	Circuit breaker	L	Inductor, fixed or variable	V	Electron tube
CR	Diode, signal or rectifier	M	Meter	VR	Voltage regulator (zener diode, etc.)
DL	Delay line	P	Connector, movable portion	W	Wirestrap or cable
DS	Indicating device (lamp)	Q	Transistor or silicon-controlled rectifier	Y	Crystal
E	Spark Gap, Ferrite bead	R	Resistor, fixed or variable	Z	Phase shifter
F	Fuse	RT	Thermistor		
FL	Filter				

The following special symbols may appear on the diagrams:



REV AUG 1981



A6302

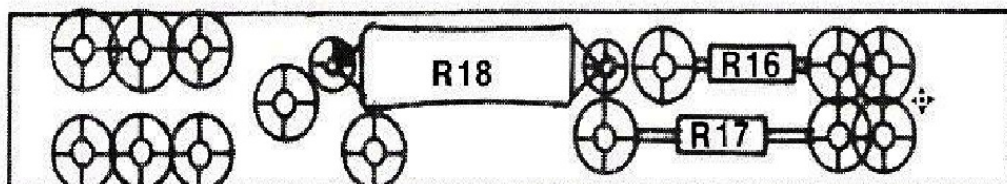
REV AUG 1981
(2897-11)3905 -7

BLOCK DIAGRAM

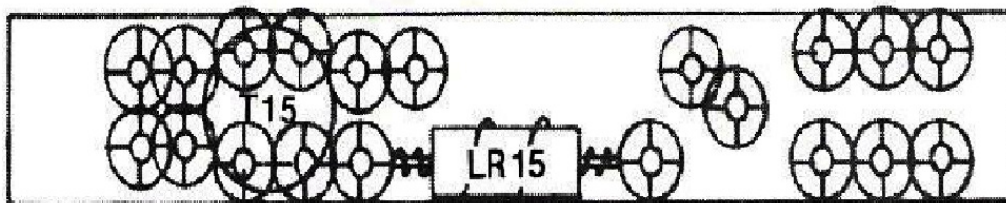
PROBE 

A6302 Current Probe

FRONT



BACK



3905-6

Location of components on Probe Board.

Date: 30-APR-92

Change Reference: M77622

Product: A6302 Current Probe Instructions

Manual Part No.: 070-3905-01

DESCRIPTION

Product Group 51

Effective for All Serial Numbers

Note to Users of the AM 503S Current Probe System:

Your A6302 Current Probe is part of a current probe measurement system. The measurement system comprises a current probe, a current probe amplifier, and a TM 500- or TM 5000-series power module.

Effective May, 1992 Tektronix has replaced the AM 503 Current Probe Amplifier with an improved design: the AM 503A Current Probe Amplifier.

*If you are using your A6302 current probe with the **AM 503** Current Probe Amplifier, this manual and your AM 503 manual will provide you with the information necessary to operate and service your current measuring system.*

*If you are using your A6302 current probe with the **AM 503A** Current Probe Amplifier, you should discard this manual and use your AM 503S User manual for operating information, and AM 503S Service manual for maintenance and service information. The procedures in this probe manual are not applicable to an A6302 used with an AM 503A Current Probe Amplifier.*

If you have an AM 503A and have lost or misplaced your AM 503S User or Service manual, you can order them from your Tektronix sales representative. The part numbers are provided below:

AM 503S User Manual	070-8170-00
AM 503S Service Manual	070-8174-00