



PLEASE CHECK FOR CHANGE INFORMATION
AT THE REAR OF THIS MANUAL.

OPTICAL CALIBRATION SIGNAL GENERATOR

067-1056-00


Tektronix, Inc.
P.O. Box 500
Beaverton, OR 97077

070-5130-00
Product Group 22

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TABLE OF CONTENTS

	Page
LIST OF ILLUSTRATIONS	iv
OPERATOR SAFETY SUMMARY	v
SERVICE SAFETY SUMMARY	vii
 Section 1 GENERAL INFORMATION AND SPECIFICATION	
Product Description	1-1
Specification	1-1
Optical and Electrical Characteristics	1-2
Environmental Characteristics	1-4
Physical Characteristics	1-5
 Section 2 OPERATING INSTRUCTIONS	
Controls and Connectors	2-1
OUTPUT LEVEL Switch	2-1
CAL/RUN Switch	2-1
OPTICAL OUTPUT Connector	2-1
Current Source	2-3

TABLE OF CONTENTS (cont)

Section 2 OPERATING INSTRUCTIONS (cont)

Adjustments	2-3
Optical Source	2-3
Pulse Width	2-3
Preparation for Use	2-3
Equipment Required	2-5
Installation	2-5
Using the OCSG to Calibrate the OF152	2-6

Section 3 CALIBRATION

Signal Pulse Widths	3-1
Optical Output Power Levels	3-5

TABLE OF CONTENTS (cont)

Section 4 CIRCUIT DESCRIPTION
Current Pulse Generator 4-1
Optical Pulse Generator 4-1

Section 5 REPLACEABLE ELECTRICAL PARTS

Section 6 DIAGRAMS
OCSG Schematic 6-4

Section 7 REPLACEABLE MECHANICAL PARTS

Section 8 ACCESSORIES

LIST OF ILLUSTRATIONS

Figure	Page
2-1 OCSG Controls, Connectors and Adjustments	2-2
2-2 OCSG Extender Module Cable Connector	2-4
6-1 OCSG Circuit Board	6-6
7-1 Optical Calibration Signal Generator	7-8
7-2 OCSG Accessories	7-9

OPERATOR 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.

As Marked on Equipment

CAUTION indicates a personal injury hazard not immediately accessible as one reads the marking, or a hazard to property including the instrument itself.

DANGER indicates a personal injury hazard immediately accessible as one reads the marking.

Symbols

In This Manual



This symbol indicates, where applicable, cautionary or other information is to be found.

As Marked on Equipment



DANGER—High Voltage



ATTENTION—refer to manual.



Protective ground (earth) terminal.

SERVICE SAFETY SUMMARY

FOR QUALIFIED SERVICE PERSONNEL ONLY

Refer also to the preceding Operator's 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

To avoid personal injury, do not touch exposed connections and components while power is on. Disconnect power before removing protective panels, soldering, or replacing components.

Power Source

This product is intended to operate from a power source which is supplied by the parent instrument (OF152). Connections are made by way of the connector at the rear of the module. For safe operation, it is essential that you do not attempt to defeat this connector or apply power by any means other than plugging the module into the parent instrument or into an extender card which is plugged into the parent instrument.

GENERAL INFORMATION AND SPECIFICATION

Product Description

The Optical Calibration Signal Generator (OCSG) is a calibration fixture for the OF152 Fiber Optic Time Domain Reflectometer. The OCSG supplies three optical signal levels that may be used to verify the vertical scale of the OF152 display. Nine electrical signal levels are provided in 10 dB steps from 20 dB to 100 dB.

The OCSG has two operating modes. CAL, when selected, allows the OCSG optical output levels to be adjusted and their power content verified with an optical power meter. RUN, when selected, allows the OCSG to be used as a signal generator for calibration of the OF152. The OF152 is the power source for the OCSG.

NOTE:

The OCSG will need to be recalibrated if the Fiber Optic Cable is removed.

Specification

The following list of instrument characteristics and features apply to the OCSG after a 10 minute warmup in 20°C ambient air.

The Performance Requirement column describes the limits of the characteristic and the Supplemental Information column describes features and typical values or information that may be useful to the user.

**Table 1-1
OPTICAL AND ELECTRICAL CHARACTERISTICS**

Characteristic	Performance Requirement	Supplemental Information
Optical Output Amplitude		
CAL mode	0.108 μ W average power out of fiber	After adjustment
60 dB		
50 dB	match 60 dB output \pm 1%	After adjustment
40 dB	match 60 dB output \pm 1%	After adjustment
RUN mode	0.540 μ W average power out of fiber	15 μ W peak
60 d B		
Optical Pulse Width		After adjustment
CAL mode		Measured in 5.000 ns/m on the OF152 DISTANCE CAL
60 dB	500 meters, \pm 5%	5 μ s pulse width
50 dB	10 \times 60 dB pulse width, \pm 1%	50 μ s pulse width
40 dB	100 \times 60 dB pulse width, \pm 1%	500 μ s pulse width

Table 1-1 (cont)
OPTICAL AND ELECTRICAL CHARACTERISTICS

Characteristic	Performance Requirement	Supplemental Information
RUN mode	2500 meters, $\pm 5\%$	25 μ s pulse width
Optical output step accuracy		± 0.1 dB when calibrated to optical power meter, for ambient temperature variations of less than $\pm 5^\circ\text{C}$
Electrical output amplitude		measured with an external DC supply set to 8 V, $\pm 1\%$
100 dB		7.44 V, $\pm 5\%$ into 499 Ω
90 dB		2.92 V, $\pm 2\%$ into 499 Ω
80 dB		0.83 V, $\pm 2\%$ into 499 Ω
70 dB		3.77 V, $\pm 2\%$ into 24.9 k Ω
60 dB		0.73 V, $\pm 2\%$ into 24.9 k Ω
50 dB		0.079 V, $\pm 2\%$ into 24.9 k Ω
40 dB		7.50 V, $\pm 2\%$ open
30 dB		0.74 V, $\pm 2\%$ open
20 dB		0.0755 V, $\pm 2\%$ open
Electrical pulse width		50 μ s, $\pm 10\%$

General Information and Specification - OCSG

**Table 1-2
ENVIRONMENTAL CHARACTERISTICS**

Characteristic	Description
Temperature Operating	+10°C to +40°C
Non-operating	-25°C to +75°C
Altitude Operating	3,050 meters
Non-operating	12,000 meters
Vibration	5 to 55 Hz, 2 g maximum
Shock (operating and non-operating)	30 g
Bench handling	10 cm topple, 45°, or point of balance
Fungus inert	materials used are fungus inert
Package transit vibration	Tektronix Standard 062-2858-00, paragraph 9.1
Package drop	Tektronix Standard 062-2858-00, paragraph 9.2
Electrostatic discharge	Tektronix Standard 062-2868-00

NOTE: *This instrument meets the specifications of MIL-T-28800C, Type 3, Class 6, Style E, With the exception of the non-operating temperature specification and the humidity specification.*

Table 1-3
PHYSICAL CHARACTERISTICS

Characteristic	Description
Weight (including standard accessories, except instruction manual)	0.4 kg (0.9 lbs)
Dimensions	7600 × 6400 × 1780 mm (3.04 × 2.56 × 7.12 inches)

OPERATING INSTRUCTIONS

Controls and Connectors (See Figure 2-1)

OUTPUT LEVEL Switch

Nine selections in 10 dB steps from 20 to 100. All nine selections are active for the CURRENT OUTPUT (electrical signals). Only the 40, 50, and 60 dB selections are active for the OPTICAL OUTPUT signals. When an optical signal level is selected, the equivalent electrical signal level is selected.

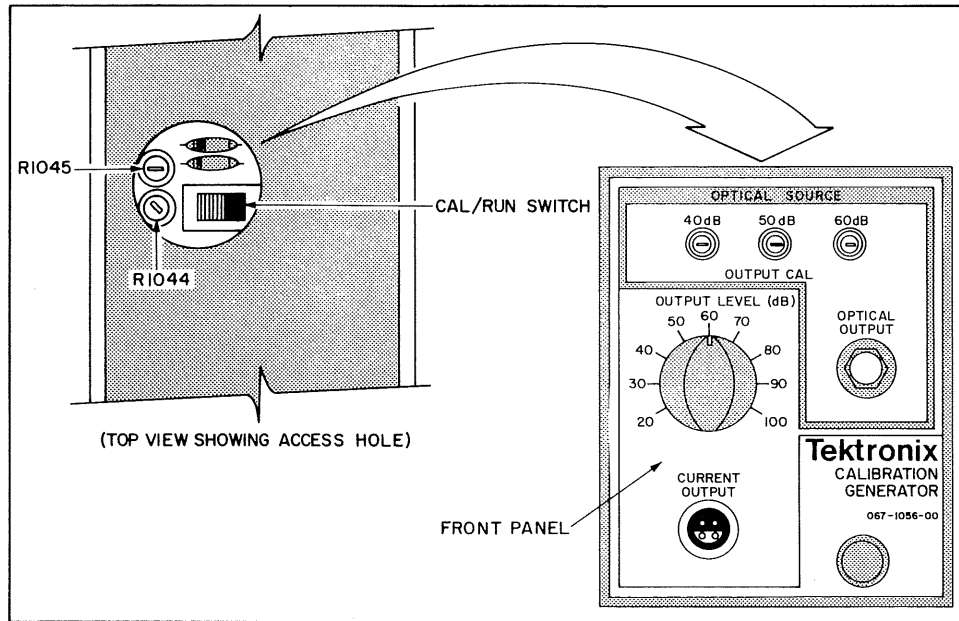
CAL/RUN Switch

This switch is located on the circuit board and is accessible through a hole in the top cover of the OCSG. When looking at the front of the OCSG, push the switch to the right to select CAL. This configures the OCSG for calibration of its optical output signals. The RUN selection (push to left) configures the OCSG for operation as a signal generator.

OPTICAL OUTPUT Connector

Source of the calibrated optical signals at 40, 50, and 60 dB levels.

Operating Instructions - OCSG



5130-00

Fig. 2-1. OCSG Controls, Connectors, and Adjustments.

Current Source

Source of electrical signals in 10 dB steps from 20 to 100 dB (typical) levels.

Adjustments

OPTICAL SOURCE

These three screwdriver adjustments are used to set the power output of the optical signal level selections.

Pulse Width

These two screwdriver adjustments are located on the circuit board, and they are accessible through the hole in the top cover of the OCSG. The front potentiometer, R1044, is used to adjust the pulse width of the 40 dB optical signal. The rear potentiometer, R1045, is used to adjust the pulse width of the 50 dB optical signal.

NOTE:

The voltage and current levels of the electrical signals from the CURRENT SOURCE are set by fixed resistors and are not adjustable.

Preparation for Use

The following procedure calibrates the pulse widths and power levels of the optical output signals. If this function is not required for a particular application, omit this procedure, set the CAL/RUN switch to RUN, insert the OCSG into the OF152 module compartment, and refer to the OF152 Service manual for setup and use instructions.

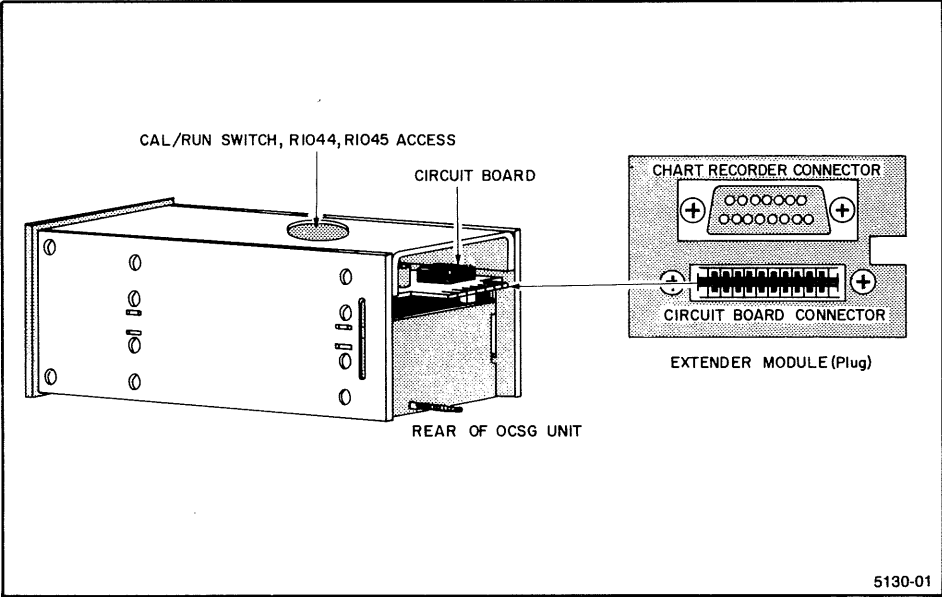


Fig. 2-2. OCSG Extender Module Cable Connector.

Equipment Required

The items required for calibration of the optical signals include:

- Extender Module (067-1071-00)
- Screwdriver, flat, 6" with 1/8" tip
- 2006 Photodyne Connector adapter (or equivalent)
- 575 Low Noise General Purpose Germanium Photodyne Head (or equivalent)
- 88XLA Photodyne Photometer/Radiometer (or equivalent)

Installation (for OCSG calibration)

1. Remove the blank module, Y-T Chart Recorder or XY1 from the OF152.
2. Insert the Extender Module into the OF152 module compartment.

3. Attach the Extender Module cable to the circuit board connector at the rear of the OCSG (see Figure 2-2).

The circuit board connector is not keyed. When correctly connected to the Extender Module cable, the connector that is used with the chart recorder is located above the OCSG connector as shown in Figure 2-2.

4. Remove the protective dust caps and connect the Optical Interface cable to the Optical Output port of the OF152.

NOTE:

1. *Always keep these caps in place when the optical connectors are not in use.*
2. *Do not sharply bend the Optical Interface cable.*

Using the OCSG to Calibrate the OF152

- a. Insert the OCSG in the OF152 module compartment.
- b. Set the CAL/RUN switch to RUN.
- c. Set the OUTPUT LEVEL to 60 dB.
- d. Refer to the OF152 Service Manual for OF152 calibration procedures.

WARNING

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. REFER TO OPERATORS SAFETY SUMMARY AND SERVICE SAFETY SUMMARY PRIOR TO PERFORMING ANY SERVICE.



CALIBRATION

NOTE:

1. If the Optical Interface Cable connection is improperly aligned with the OCSG OPTICAL OUTPUT port, the OPTICAL POWER OUT cannot be adjusted to meet power requirements. To align, loosen the cable connector and, while viewing the photometer, rotate the cable for maximum power indication, then retighten the connector. When using the 906 Amphenol connector, the plastic sleeve must be installed on the connector.

2. The OCSG OPTICAL OUTPUT pulse is active only during an OF152 sweep function. When adjusting the POWER SOURCE levels, Continuous Sweep mode should be used (press and hold SWEEP for approximately five seconds).

1. Check Optical Signal Pulse Widths

60 dB = 500 meters, $\pm 5\%$

50 dB = 10×60 dB width, $\pm 1\%$ (R1045)

40 dB = 100×60 dB width, $\pm 1\%$ (R1044)

Connect the OCSG to the OF152 as outlined in the Adjustments Section of the parent service manual. Turn the OF152 POWER ON, and hold the RECORD button while the LCD displays the number of the firmware version. This will disable the optical pulse generator so it will not interfere with the OCSG signal.

Calibration - OCSG

a. Set the controls to:

OCSG

CAL/RUN	RUN
OUTPUT LEVEL (dB)	60

OF152

DIST/DIV	500
FILTER	FAST
VERTICAL SCALE	10 dB/DIV
READOUT MODE	DIST
POWER	ON
MARKER	Set to zero

- b. Place the OF152 in continuous sweep mode and use the $\uparrow \downarrow$ POSITION control to align the bottom of the trace to the bottom graticule.
- c. Adjust the 60 dB OPTICAL SOURCE (see Fig. 2-1) to obtain approximately six major divisions of optical pulse referenced to the bottom graticule.
- d. Adjust the 50 dB OPTICAL SOURCE to obtain approximately five major divisions of optical pulse referenced to the bottom graticule.

e. Adjust the 40 dB OPTICAL SOURCE to obtain approximately four major divisions of optical pulse referenced to the bottom graticule.

f. Change the control settings to:

OCSG

CAL/RUN	CAL
---------	-----

OF152

DIST/DIV	50
FILTER	MEDIUM
VERTICAL SCALE	2 dB/DIV

g. Press the OF152 SWEEP control. A waveform showing the leading edge and the beginning of the 60 dB OCSG output pulse should be displayed.

h. Adjust the $\uparrow \downarrow$ POSITION control to place the top of the displayed waveform 1.5 major divisions above the center horizontal graticule so the point of intersection between the waveform's leading edge and the center horizontal graticule is -3 dB from the peak (steady-state) value.

i. Switch the OF152 DIST/DIV to 5.

j. Move the Marker to the intersection between the center horizontal graticule and the trace. Read and note the distance (typically five meters).

k. Change the OF152 DIST/DIV to 100, and move the Marker to the trailing edge of the 60 dB waveform.

l. Return the OF152 DIST/DIV to 5 and move the Marker to the intersection between the center horizontal graticule and the trace. Read and note the distance in meters.

Calibration - OCSG

- m. Subtract the distance found in step h from the distance found in step j. This difference is the -3 dB pulse width of the 60 dB OCSG output. The pulse width should equal 500 meters, $\pm 5\%$.

NOTE:

This completes the check procedure for the 60 dB optical pulse width. The check and adjustment procedure for the 50 dB optical pulse width begins with step n.

- n. Set the OUTPUT LEVEL (dB) to 50.
- o. Set the DIST/DIV to 100 and the Marker to zero meters.
- p. Position the display vertically to facilitate finding the -3 dB point on the leading edge of the displayed waveform.
- q. Switch the OF152 DIST/DIV to 10.
- r. Repeat step j. Read and note the distance (typically 11 meters).
- s. Set the OF152 DIST/DIV to 1000 and move the Marker to the end of the pulse.
- t. Set the OF152 DIST/DIV to 20.
- u. Add the distance found in step p to $10\times$ the pulse width of the 60 dB optical signal output and adjust the $\leftarrow \rightarrow$ POSITION and/or MARKER control to produce this readout.
- v. Switch the OF152 DIST/DIV to 50.
- w. If the difference between the trace intersection along the center horizontal graticule and the Marker is outside the limits of ± 1.0 major division (10×60 dB pulse width, $\pm 1\%$), press the SWEEP button and hold it for approximately five seconds, then adjust R1045 as necessary.

NOTE:

This completes the check and adjustment procedure for the 50 dB optical pulse width. The check and adjustment procedure for the 40 dB optical pulse width begins with step x.

- x. Set the OUTPUT LEVEL to 40.
- y. Set the DIST/DIV to 5000.
- z. Position the display vertically to facilitate finding the -3 dB point of the displayed waveform.
- aa. Use the ← → POSITION and MARKER controls to move the trailing edge of the waveform on screen and set the marker to the trailing edge.
- bb. Set the DIST/DIV to 200.
- cc. Adjust the ← → POSITION and/or MARKER control to produce a readout that is 100 × 60 dB pulse width.

dd. Switch the DIST/DIV to 500.

ee. If the difference between the trace intersection along the center horizontal graticule and the Marker is outside the limits of ±1.0 major division (100 × 60 dB pulse width, ±1%), press the SWEEP button and hold it for approximately five seconds, then adjust R1044 as necessary.

2. Check and Adjust Power of Optical Output Levels

- 60 dB = 0.108 μW, ±1%
- 50 dB = match 60 dB, ±1%
- 40 dB = match 60 dB, ±1%

a. Disconnect the Optical Interface cable from the OF152 (replace cap on port), and connect the cable to the input connector of the 88XLA Power Meter.

Calibration - OCSG

- b. Set the OUTPUT LEVEL to 60 dB.
- c. Press and hold the SWEEP button for approximately five seconds, then press FILTER SLOW.
- d. Note the photometer reading and, if necessary, use a screwdriver and adjust 60dB OPTICAL SOURCE, for a display of $0.108 \mu\text{W}$, $\pm 1\%$.
- e. Set the OUTPUT LEVEL to 50 dB.
- f. Note the OPTICAL POWER reading and, if necessary, adjust the 50 dB OPTICAL SOURCE to match the 60 dB reading, $\pm 1\%$.
- g. Set the OUTPUT LEVEL to 40 dB.
- h. Note the OPTICAL POWER reading and, if necessary, adjust the 40 dB OPTICAL SOURCE to match the 60 dB reading, $\pm 1\%$.
- i. Disconnect the Optical Interface cable from the photometer and replace the protective caps.

CIRCUIT DESCRIPTION

The OCSG contains two pulse generators to produce calibration signals for the OF152. Both generators are triggered by the PULSTRIG signal from the OF152, allowing them to be synchronized with the OF152 sampling system.

Current Pulse Generator

The current output pulse is generated by the monostable multivibrator, U1050B. The 50 μ s wide output pulse is then shifted by VR2030 to drive output switch Q2024. The collector of Q2024 is switched between ground and +8 V (supplied by U2052). The output pulse is applied to the output cable through S1000A and resistor network R2009 -

R2017. This resistor network, in conjunction with a network located on the OF152 Logamplifier, generates a current pulse to be connected in place of the Avalanche Photo Diode for calibrating the OF152 vertical scale display.

Optical Pulse Generator

The optical pulse is generated by switching the drive current to an infrared LED, DS10. The width of the pulse is set by U1050A and is a function of S1040 (CAL/RUN) and S1000E. In the RUN position, the pulse width is approximately 25 μ s and independent of the S1000E position. In CAL mode, the pulse width is selected by S1000E (5 μ s, 50 μ s

Circuit Description - OCSG

and 500 μ s at 60 dB, 50 dB and 40 dB respectively).

The output of U1050A drives a current switch formed by Q2042 and Q2044. The current that is switched by the FETs is generated by the current source consisting of U2038, Q2032, and a current sense resistor selected by S1000D. Transistor Q2034 buffers the output of the current source from high speed switching transients.

The reference voltage for the current source is developed across a resistor (R10, R12 or R14) selected by S1000C. The reference current that develops this voltage is generated by a temperature-compensated current source formed by U1056, Q1056, U1058, and resistor network R1020, R1056, R1058, R1059, R2018, and RT1053. Temperature compensation is used to stabilize the optical output as a function of temperature.

REPLACEABLE ELECTRICAL 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 provide 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 Field Office or representative will contact you concerning any change in part number.

Change information, if any, is incorporated on each page when the change occurs.

List of Assemblies

A list of assemblies can be found at the beginning of the Replaceable Electrical Parts list. The assemblies are listed in numerical order. When the complete component number of a part is known, this list will identify the assembly in which the part is located.

Cross Index:Mfr. Code Number to Manufacturer

The Mfr. Code Number to Manufacturer index for the Electrical Parts List is located immediately following this introduction. The Cross Index provides codes, names, and addresses of manufacturers of components listed in the Replaceable Electrical Parts List.

Replaceable Electrical Parts - OCSG

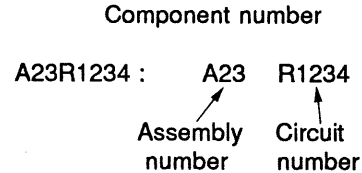
Abbreviations

Abbreviations conform to American National Standard Y1.1.

Component Number (Column One of the Electrical Parts List)

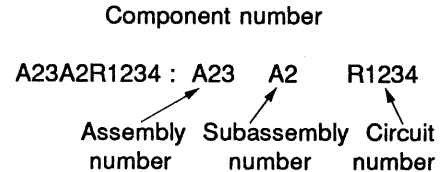
A numbering method has been used to identify assemblies, subassemblies, and parts. Examples of this numbering method and typical expansions are illustrated below.

Example a.



Read: Resistor 1234 of assembly 23

Example b.



Read: Resistor 1234 of subassy 2 of Assy 23

Only the circuit number will appear on the diagrams and circuit board illustrations. Each diagram and circuit board illustration is clearly marked with the assembly number. Assembly numbers are also marked on the mechanical

exploded views located in the Replaceable Mechanical Parts list. The component number is obtained by adding the assembly number prefix to the circuit number.

The parts list is divided and arranged by assemblies in numerical sequence (e.g., assembly A1, with its subassemblies and parts, precedes A2, with its subassemblies and parts).

Chassis-mounted parts have no assembly number prefix and are listed at the end of the Replaceable Electrical Parts list.

Tektronix Part No. (Column Two)

This indicates the part number to be used when ordering a replacement part from Tektronix.

Serial/Model No. (Columns Three and Four)

Column three indicates the serial number of the first instrument in which the part was used. Column four indicates the serial number of the last instrument in which the part was used. No entries indicates that the part is used in all instruments.

Name and Description (Column Five)

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

Replaceable Electrical Parts - OCSG

Mfr. Code (Column Six)

This indicates the code number of the actual manufacturer of the part. (The Mfr. Code Cross Index begins on the following page.)

Mfr. Part Number (Column Seven)

This lists the actual manufacturer's part number.

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
TK0020	UNITED CHEMI-CON INC	1128 LEXINGTON AVE	ROCHESTER,NY 14606
TK0900	UNITED CHEMI-CON INC	9801 W HIGGINS ROAD	ROSEMONT,IL 60018
TK1394	MURATA ERIE NO.AMERICAN INC	1148 FRANKLIN RD.SE	MARIETTA,GA 30067
01121	ALLEN BRADLEY CO	1201 SO.2ND STREET	MILWAUKEE,WI 53204
01295	TEXAS INSTRUMENTS,INC	13500 N.CENTRAL EXPSWY P O BOX 225012	DALLAS,TX 75265
02735	RCA CORP/SOLID STATE DIV	ROUTE 202	SOMERVILLE,NJ 08876
04099	CAPCO INC	P O BOX 2164	GRAND JUNCTION,CO 81501
04222	AVX CERAMICS DIV OF AVX CORP	19TH AVE SO P O BOX 867	MYRTLE BEACH,SC 29577
04713	MOTOROLA INC/SEMICOND GROUP	5005 E McDOWELL RD	PHOENIX,AZ 85008
07263	FAIRCHILD CAMERA & INSTRUMENT CORP	464 ELLIS STREET	MOUNTAIN VIEW,CA 94042
10389	ILLINOIS TOOL WORKS INC	1714 N DAMEN AVE	CHICAGO,IL 60547
14193	CAL-R INC	1601 OLYMPIC BLVD	SANTA MONICA,CA 90404
19396	ILLINOIS TOOL WORKS INC	900 FOLLIN LANE SE	VIENNA, VA 22180
	PAKTRON DIVISION		
32997	BOURNS INC/TRIMPOT DIV	1200 COLUMBIA AVE	RIVERSIDE,CA 92507
57668	R-OHM CORP	16931 MILLIKEN AVE	IRVINE,CA 92713
75042	TRW INC/FXD RES DIV	401 N BROAD STREET	PHILADELPHIA,PA 19108
80009	TEKTRONIX INC	4900 SW GRIFFTH DR P O BOX 500	BEAVERTON,OR 97077

Replaceable Electrical Parts - OCSG

Ckt.No.	Tektronix Part No.	Serial/Model No.		Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.			
A1	670-8783-00	R010100	R010106	CKT BOARD O.S.C.G	80009	670-8783-00
A1	670-8783-01	R010107		CKT BOARD O.S.C.G	80009	670-8783-01
A1C1028	283-0421-00			CAP,FXD,CER DI:0.1 μ F,+80-20%,50V	04222	MD015104MAA
A1C1048	285-0596-00	R010100	R010106	CAP,FXD,PLSTC:.01 μ F,1%,100V	04099	TEK-5
A1C1048	285-1056-00	R010107		CAP,FXD,PLSTC:0.005 μ F,1%,200V	19396	502F02PP460
A1C1050	283-0421-00			CAP,FXD,CER DI:0.1 μ F,+80-20%,50V	04222	MDO15104MAA
A1C1054	281-0773-00			CAP,FXD,CER DI:0.01 μ F,10%,100V	04222	MA201C103KAA
A1C2020	281-0791-00			CAP,FXD,CER DI:270pF,10%,100V	04222	MA101A271KAA
A1C2024	283-0421-00			CAP,FXD,CER DI:0.1 μ F,+80-20%,50V	04222	MDO15104MAA
A1C2026	290-0770-00			CAP,FXD,ELCTLT:100 μ F,+50-10%,25V	TK0900	25VBS10LL
A1C2040	281-0814-00			CAP,FXD,CER DI:100pF,10%,100V	04222	GC101A101K
A1C2042	283-0421-00			CAP,FXD,CER DI:0.1 μ F,+80-20%,50V	04222	MDO15104MAA
A1C2051	281-0786-00			CAP,FXD,CER DI:150pF,10%,100V	TK1394	RPA10COG151K
A1C2052	290-0804-00			CAP,FXD,ELCTLT:10 μ F,+50-10%,25V	TK0020	25VB-10LL
A1C2054	290-0804-00			CAP,FXD,ELCTLT:10 μ F,+50-10%,25V	TK0020	25VB-10LL
A1C2056	290-0804-00			CAP,FXD,ELCTLT:10 μ F,+50-10%,25V	TK0020	25VB-10LL
A1C2057	283-0421-00			CAP,FXD,CER DI:0.1 μ F,+80-20%,50V	04222	MDO15104MAA
A1C2059	283-0421-00			CAP,FXD,CER DI:0.1 μ F,+80-20%,50V	04222	MDO15104MAA

Replaceable Electrical Parts - OCSG

Ckt.No.	Tektronix Part No.	Serial/Model No.		Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.			
A1CR2059	152-0141-02			SEMICON DVC:SILICON,30V,150MA	01295	IN4152R
A1P1020	-----			(SEE 1-13 RMPL)		
A1P2010	-----			(SEE 1-13 RMPL)		
A1P2040	-----			(SEE 1-13 RMPL)		
A1Q1056	151-0301-00			TRANSISTOR:PNP,SI,TO-18	04713	ST898
A1Q2024	151-0301-00			TRANSISTOR:PNP,SI,TO-18	04713	ST898
A1Q2032	151-1108-00			TRANSISTOR:FE,N-CHANNEL,SI,TO-39	80009	156-1108-00
A1Q2034	151-0103-00			TRANSISTOR:NPN,SI,TO-5	80009	151-0103-00
A1Q2040	151-0190-00			TRANSISTOR:NPN,SI,TO-92	04713	SPS7969
A1Q2041	151-0190-00			TRANSISTOR:NPN,SI,TO-92	04713	SPS7969
A1Q2042	151-1108-00			TRANSISTOR:FE,N-CHANNEL,SI,TO-39	80009	151-1108-00
A1Q2044	151-1108-00			TRANSISTOR:FE,N-CHANNEL,SI,TO-39	80009	151-1108-00
A1R1020	321-0193-00			RES.,FXD,FILM:1K OHM,1%,0.125W	01121	ORD BY DESCR
A1R1030	323-0030-01			RES.,FXD,FILM:20 OHM,0.5%,0.5W	75042	CECTO-20R00D
A1R1032	321-0072-00	R010100	R010106	RES.,FXD,FILM:54.9 OHM,1%,0.125W	57668	CRB14 FXE 54.9OHM
	321-0077-00	R010107		RES.,FXD,FILM:61.9 OHM,1%,0.125W	57668	CRB14 FXE 61.9OHM

Replaceable Electrical Parts - OCSG

Ckt.No.	Tektronix Part No.	Serial/Model No.		Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.			
A1R1034	321-0116-00	R010100	R010106	RES.,FXD,FILM:158 OHM,1%,0.125W	01121	ORD BY DESCR
	321-0135-00	R010107		RES.,FXD,FILM:249 OHM,1%,0.125W	01121	ORD BY DESCR
A1R1040	321-0400-00	R010100	R010106	RES.,FXD,FILM:143K OHM,1%,0.125W	01121	ORD BY DESCR
	321-0395-00	R010107		RES.,FXD,FILM:127K OHM,1%,0.125W	01121	ORD BY DESCR
A1R1042	321-0301-00	R010100	R010106	RES.,FXD,FILM:13.3K OHM,1%,0.125W	01121	ORD BY DESCR
	321-0296-00	R010107		RES.,FXD,FILM:11.8K OHM,1%,0.125W	01121	ORD BY DESCR
A1R1044	311-0644-00			RES,VAR,NONWW:TRMR,20K OHM,0.5W	32997	3329H-G48-203
A1R1045	311-0609-00			RES,VAR,NONWW:TRMR,2K OHM,0.5W	32997	3329H-L58-202
A1R1046	321-0270-00	R010100	R010106	RES.,FXD,FILM:6.34K OHM,1%,0.125W	01121	ORD BY DESCR
	321-0265-00	R010107		RES.,FXD,FILM:5.62K OHM,1%,0.125W	57668	ORD BY DESCR
A1R1048	321-0205-00	R010100	R010106	RES.,FXD,FILM:1.33K OHM,1%,0.125W	01121	ORD BY DESCR
	321-0209-00	R010107		RES.,FXD,FILM:1.47K OHM,1%,0.125W	57668	ORD BY DESCR
A1R1049	307-0057-00			RES.,FXD,CPMSN:5.1 OHM,5%,0.5W	01121	EB51G5
A1R1050	315-0102-00			RES.,FXD,CPMSN:1K OHM,5%,0.25W	01121	CB1025
A1R1052	315-0102-00			RES.,FXD,CPMSN:1K OHM,5%,0.25W	01121	CB1025
A1R1054	321-0303-00	R010100	R010106	RES.,FXD,FILM:14K OHM,1%,0.125W	01121	ORD BY DESCR
	321-0273-00	R010107		RES.,FXD,FILM:6.81K OHM,1%,0.125W	01121	ORD BY DESCR

Replaceable Electrical Parts - OCSG

Ckt.No.	Tektronix Part No.	Serial/Model No.		Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.			
A1R1056	321-0256-00			RES.,FXD,FILM:4.53K OHM,1%,0.125W	01121	ORD BY DESCR
A1R1058	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	01121	ORD BY DESCR
A1R1059	321-0164-00			RES.,DXF,FILM:499 OHM,1%,0.125W	01121	ORD BY DESCR
A1R2009	321-0056-00			RES.,FXD,FILM:37.4 OHM,1%,0.125W	57668	CRB14-FXE 37.4OHM
A1R2010	321-0254-00			RES.,FXD,FILM:4.32K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2011	321-0187-00			RES.,FXD,FILM:866 OHM,1%,0.125W	01121	ORD BY DESCR
A1R2012	322-0519-01			RES.,FXD,FILM:2.49M OHM,0.5%,0.25W	03888	PME60-2.49M0.5P
A1R2013	321-0423-00			RES.,FXD,FILM:249K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2014	321-0332-00			RES.,FXD,FILM:28K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2015	321-0147-00			RES.,FXD,FILM:332 OHM,1%,0.125W	01121	ORD BY DESCR
A1R2016	321-0355-00			RES.,FXD,FILM:48.7K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2017	321-0450-00			RES.,FXD,FILM:475K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2018	321-0135-00			RES.,FXD,FILM:249 OHM,1%,0.125W	01121	ORD BY DESCR
A1R2020	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB2025
A1R2022	321-0260-00			RES.,FXD,FILM:4.99K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2027	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
A1R2029	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
A1R2032	323-0030-01			RES.,FXD,FILM:20 OHM,0.5%,0.5W	75042	CECTO-20ROOD
A1R2036	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
A1R2038	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725

Replaceable Electrical Parts - OCSG

Ckt.No.	Tektronix Part No.	Serial/Model No.		Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.			
A1R2040	317-0510-00	R010107		RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
A1R2041	321-0289-00			RES.,FXD,FILM:10K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2042	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2043	321-0258-00			RES.,FXD,FILM:4.75K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2048	307-0057-00			RES.,FXD,CMPSN:5.1 OHM,5%,0.5W	01121	EB51G5
A1R2050	307-0057-00			RES.,FXD,CMPSN:5.1 OHM,5%,0.5W	01121	EB51G5
A1R2057	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	01121	ORD BY DESCR
A1R2058	321-0193-00			RES.,FXD,FILM:1K OHM,1%,0.125W	01121	ORD BY DESCR
A1RT1053	307-0477-00		RES,THERMAL:1K OHM,10%6MW/DEG C	14193	2J21	
A1S1000	260-2105-00		SWITCH,ROTARY:OUTPUT LEVEL	80009	260-2105-00	
A1S1040	260-1641-00		SWITCH,SLIDE:DPDT,0.5A,125VAC	10389	23-021-114	
A1U1050	156-1335-00	R010100 R010106		MICROCKT,DGTL:DUAL RETRIG,RESET	07263	96LS02(PCQR)
	156-0733-02	R010107		MICROCKT,DGTL:DUAL,MONOSTABLE,SCRN	01295	74LS221
A1U1056	156-1134-00			MICROCKT,LINEAR:OPERATIONAL AMPLIFIER	02735	CA3140EX
A1U1058	156-1173-00			MICROCKT,LINEAR:VOLTAGE REFERENCE,	04713	MC1403UDS
A1U2038	156-1134-00			MICROCKT,LINEAR:OPERATIONAL AMPLIFIER	02735	CA3140EX
A1U2052	156-1244-00			MICROCKT,LINEAR:VOLTAGE REGULATOR	04713	MC78L08AC6
A1VR2030	152-0195-00			SEMICON DVC,DI,ZENER,SI,5.1V,5%	04713	SZ11755RRL

Replaceable Electrical Parts - OCSG

Ckt.No.	Tektronix Part No.	Serial/Model No.		Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.			
- CHASSIS PARTS -						
J10	131-0771-00			CONN,RCPT,ELEC:2MALE,2 FEMALE,PM	TK1312	RAO-304 W/O NUT
J12	131-4001-00			CONN,RCPT,ELEC:PNL MT,FEMALE,FIBER ADPTR		
R10	311-1894-00			RES,VAR,NONWW:TRMR,5K OHM,10%,0.75W	02111	43P502T655
R12	311-1894-00			RES,VAR,NONWW:TRMR,5K OHM,10%,0.75W	02111	43P502T655
R14	311-1894-00			RES,VAR,NONWW:TRMR,5K OHM,10%,0.75W	02111	43P502T655
- WIRE ASSEMBLIES -						
W1020	175-4659-00			CA ASSY,SP ELEC:4,26AWG 3.0L RIBBON (FROM R10,11,12 TO A1P1020)	80009	175-4659-00
W2010	175-2101-00			CA ASSY,SP ELEC:3,26AWG 3.5L RIBBON (FROM J10 TO A1P2010)	80009	175-2101-00

DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS

Symbols

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

Logic symbology is based on ANSI Y32.12-1973 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 is in 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

American National Standards Institute
1430 Broadway
New York, New York 10018

Component Values

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

Diagrams - OCSG

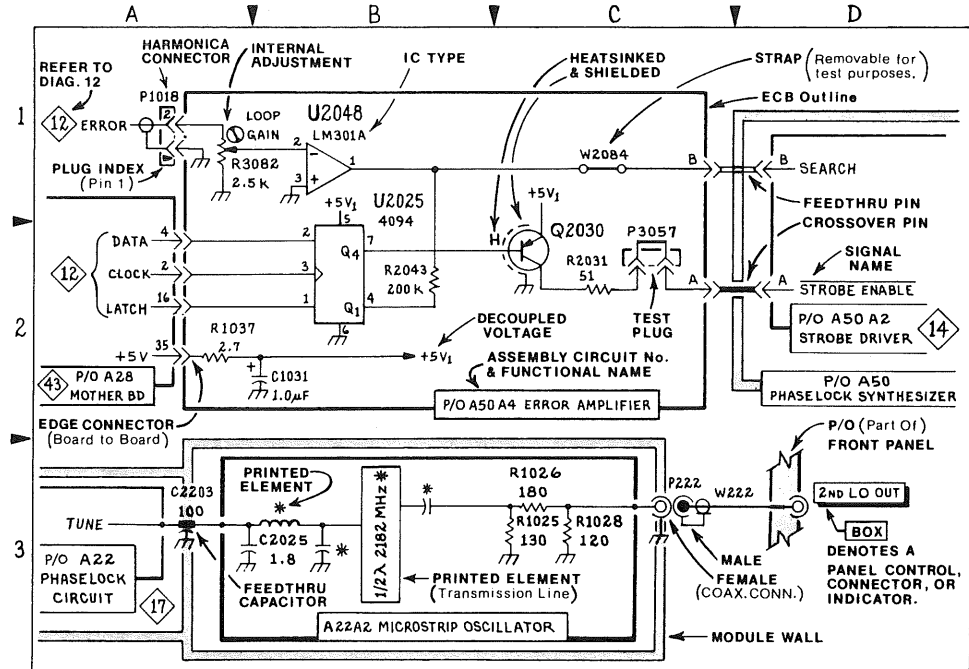
- Capacitors - Values one or greater are in picofarads (ρF). Values less than one are in microfarads (μF).
- Resistors - Ohms (Ω).

-- The information and special symbols below may appear in this manual --

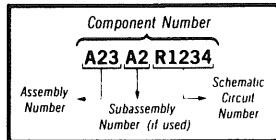
Assembly Numbers and Grid Coordinates

Each assembly in the instrument is assigned an assembly number (e.g., A13). The assembly number appears on the circuit board outline on the diagram, in the title for circuit board component location illustrations, and in the lookup table for the schematic and corresponding component locator illustration. The Replaceable Electrical Parts list is arranged by assemblies in numerical sequence. The components are listed alphabetically and numerically by component number.

The schematic diagram and circuit board component location illustration have grids. A lookup table with the grid coordinates is provided for ease of locating the component. Only the components illustrated on the facing diagram are listed in the lookup table. When more than one schematic diagram is used to illustrate circuitry on a circuit board, the circuit board illustration may only appear opposite the first diagram on which it is illustrated. The lookup table will list the diagram number of other diagrams on which the circuitry of that circuit board appears.



COMPONENT NUMBER EXAMPLE



Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List

3482 - 220

DIAGRAM TITLE & NUMBER → ERROR AMPLIFIER 13

ASSEMBLY A1

CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEM LOCATION	BOARD LOCATION
C1028	B3	B1	Q1056	B2	E1	R1053	B2	E1	R2038	B3	C2
C1048	B1	D1	Q2024	B4	B2	R1054	A4	E1	R2040	B5	C2
C1050	A5	E1	Q2032	B3	C2	R1056	B2	E1	R2041	B5	D2
C1054	A4	E1	Q2034	B3	C2	R1058	B2	E1	R2042	B5	D2
C2020	B5	B2	Q2040	B5	C2	R1059	B2	E1	R2043	A5	D2
C2024	B4	B2	Q2041	B5	C2	R2009	D5	A2	R2048	C2	D2
C2026	B4	B2	Q2042	C2	D2	R2010	C5	A2	R2050	C2	D2
C2040	B3	C2	Q2044	C2	D2	R2011	D5	A2	R2057	A5	E2
C2042	D1	D2	R1020	C4	B2	R2012	C4	A2	R2058	A5	E2
C2051	A5	E2	R1030	C2	C1	R2013	C5	A2			
C2052	A5	E2	R1032	C3	C1	R2014	C5	A2	S1000	D2,3,4	A1
C2054	A5	E2	R1034	C3	C1	R2015	B4	A2	S1040	B1	D1
C2056	A5	E1	R1040	D2	D1	R2016	B5	A2			
C2057	A5	E2	R1042	C2	D1	R2017	B4	A2	U1050	A3	E1
C2059	A5	E2	R1044	D2	D1	R2018	C4	A2	U1050A	B1	E1
			R1045	C2	D1	R2020	B4	B2	U1050B	A4	E1
CR2059	A5	E2	R1046	B1	D1	R2022	B5	B2	U1056	B2	E1
			R1048	C2	D1	R2027	B4	B2	U1058	B2	E1
P1020	D2	B1	R1049	C1	D1	R2029	B4	B2	U2038	B2	C2
P2010	D5	A2	R1050	B1	E2	R2032	C4	C2	U2052	B4	E2
P2040	D1	D2	R1052	B1	E2	R2036	B3	C2	VR2030	B4	C2
CR10	D1		DS10	D1		R12	D3		J10	D5	
CR11	D1		R10	D2		R14	D3				

REPLACEABLE MECHANICAL 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 incorporated on each page when the change occurs (note pages with REV dates).

SPECIAL NOTES AND SYMBOLS

- X000 Part first added at this serial number
- 00X Part removed after this serial number

INDENTATION SYSTEM

Replaceable Mechanical Parts - OCSG

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

Name & Description

Assembly and/or Component

Attaching parts for this Assembly or Component

---*---

. Detail Part of Assy or Component

. Attaching parts for Detail Part

---*---

.. Parts of Detail Part

.. Attaching parts for Parts of Detail Part

---*---

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. The separation - - - * - - - symbol indicates the end of attaching parts.

Attaching parts must be purchased separately, unless otherwise specified.

FIGURE AND INDEX NUMBERS

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

ITEM NAME

In this 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.

ABBREVIATIONS

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

Replaceable Mechanical Parts - OCSG

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
TK1312	LEMO USA INC	P O BOX 6626	SANTA ROSA, CA 95406
02111	SPECTROL ELECTRONICS CORP SUBSIDIARY OF CARRIER CORP	17070 E GALE AVE P O BOX 1220	CITY OF INDUSTRY, CA 91749
07322	MINNESOTA RUBBER CO	3630 WOODDALE AVE	MINNEAPOLIS, MN 55416
12327	FREEWAY CORP	9301 ALLEN DRIVE	CLEVELAND, OH 44125
22526	DUPONT E I DeNEMOURS & CO INC PHOTO PRODUCTS DEPT/BERG ELECTRONICS DIV	RTE 83	NEW CUMBERLAND, PA 17070
73743	FISCHER SPECIAL MFG CO	446 MORGAN STREET	CINCINNATI, OH 45206
74868	BUNKER RAMO CORP AMPHENOL NORTH AMERICA RF OPERATIONS	33 E FRANKLIN STREET	DANBURY, CT 06810
79136	WALDES KOHINOOR INC	47-16 AUSTEL PLACE	LONG ISLAND CITY, NY 11101
79807	WROUGHT WASHER MFG CO	2100 S O BAY STREET	MILWAUKEE, WI 53207
80009	TEKTRONIX INC	P O BOX 500	BEAVERTON, OR 97707
83309	ELECTRICAL SPECIALTY CO SUBSIDIARY OF BELDEN CORP	213 E HARRIS AVE	SOUTH SAN FRANCISCO, CA 94080
83385	MICRODOT MFG INC/GREER CENTRAL DIV	3221 W BIG BEAVER RD	TROY, MI 48098
86928	SEASTROM MFG CO INC	701 SONORA AVE	GLENDALE, CA 91201

Replaceable Mechanical Parts - OCSG

Fig. & Index No.	Tektronix Part No.	Serial/Model No.		Qty.	Name & Description	Mfr. Code	Mfr.Part Number
		Eff.	Dscont.				
1 -	067-1056-00			1	FIXTURE:CALIBRATION	80009	067-1056-00
-1	200-2734-01			2	.COVER:PLUG-IN U (ATTACHING PARTS)	80009	200-2734-01
-2	211-0101-00			8	.SCREW,MACHINE:4-40 X 0.025,100° FLH STL -----	83385	ORD BY DESCR
-3	426-1882-00			2	.SIDE RAIL:PLUG-IN,ALUMINUM (ATTACHING PARTS)	80009	426-1882-00
-4	211-0101-00			4	.SCREW,MACHINE:4-40 X 0.025,100° FLH STL -----	83385	ORD BY DESCR
-5	426-2062-00			1	.END FRAME:ALUMINUM (ATTACHING PARTS)		
-6	211-0101-00			2	.SCREW,MACHINE:4-40 X 0.025,100° FLH STL -----	83385	ORD BY DESCR
-7	366-0491-01			1	KNOB:GRAY,0.127 ID X 0.706 OD X 0.65 H	80009	366-0491-01
-	213-0153-00			1	..SETSCREW:5-40 X 0.125,STL BLK OXD,HEX SKT,CAP PT	TK0382	ORD BY DESCR
-8	210-0583-00			1	.NUT,PLAIN HEX:25-32 X .312 BRS CD PL	73743	2X20317-402
-9	210-0940-00			1	.WASHER,FLAT PLAIN:0.25 ID X 0.02 THK,STL 0.375 OD	79807	ORD BY DESCR
-10	-----			1	.CKT BOARD ASSY:OPTICAL CAL GEN (ATTACHING PARTS)		
-11	211-0207-00			3	.SCREW,ASSEM WSHR:4-40 X .312 DOUBLE SEMS/POZ	83385	ORD BY DESCR
-12	211-0105-00			3	.SCREW,MACHINE:4-40 X 0.188 FLH STL	TK0435	4-40X.188
-13	220-0547-01			3	.NUT BLOCK:0.38 X 0.282,(2)4-40 THD -----	80009	220-0547-01

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Replaceable Mechanical Parts - OCSG

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff. Dscont.	Qty.	Name & Description	Mfr. Code	Mfr.Part Number
1-14	131-0608-00		9	CKT BOARD ASSY INCLUDES: ..TERMINAL PIN:.365 L X 0.025 BRZ GOLD PL (SEE A1P1020,2010,2040 REPL)	22526	48283-036
-15	-----		1	.CONN,RCPT,ELEC:P NL MT,FEMALE,FIBER ADAPTER (SEE J12 CHASSIS PARTS - REPL)		
-16	-----		1	.CONN,RCPT,ELEC:4 CONTACT,QUICK DISCONNECT (SEE J10 CHASSIS PARTS - REPL) (ATTACHING PARTS)		
-17	210-0505-00		1	.NUT,PLAIN,HEX:0.375 X 0.5 HEX,BRS,CD PL -----	73743	2X3032-402
-18	366-1368-00	R010100 R010115	1	KNOB:0.125 ID X .375 OD 0.375 H	80009	366-1368-00
	366-0650-00	R010116	1	.KNOB:THUMBSCREW,CLEAR,0.12 X 0.37	TK0433	ORD BY DESCR
	213-0076-00	R010100 R010115	1	..SETSCREW:5-40 X 0.125,STL BLK,OXD,HEX SKT FLAT PT	TK0392	ORD BY DESCR
	213-0048-00	R010116	1	..SETSCREW:4-40 X 0.125,STL,BLK OXD	80009	213-0048-00
-19	210-1011-00		1	.WASHER,FLAT:0.13 ID X 0.01 THK,NYLON,0.375 OD	83309	ORD BY DESCR
-20	354-0538-00		1	.O-RING:0.125 ID X 0.062 DIA/XSECT	07322	8006-366Y
-21	384-1349-00		1	.PIN,STR,THD:6.417 L X 0.125 OD/W 4-40 THD	80009	384-1349-00
	354-0163-00		1	..RING,RETAINING:TYPE E EXT,U/O 0.125 ID SFT	79136	
-22	333-3165-00		1	.PANEL,FRONT:OF152 CAL FIXTURE		
-23	-----		3	.RES,VAR,NONWW:TRMR,5K OHM,10%,0.75W (SEE R10,R12,R14 CHASSIS PARTS)		

Replaceable Mechanical Parts - OCSG

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff. Dscont.	Qty.	Name & Description	Mfr. Code	Mfr.Part Number
				(ATTACHING PARTS)		
1-24	210-0597-00		6	.NUT,PLAIN HEX:10-32 X 0.312,BRS CD PL -----	73743	2X-2001-402
-25	386-3229-05		1	.SUBPANEL,FRONT:ALUM CAST	80009	386-3229-05
-26	-----		1	.LED:W/LEADS (SEE DS10 CHASSIS PARTS)		
				(ATTACHING PARTS)		
-27	211-0034-00		2	.SCREW,MACHINE:2-56 X .500 PNH STL -----	83385	ORD BY DESCR

Replaceable Mechanical Parts - OCSG

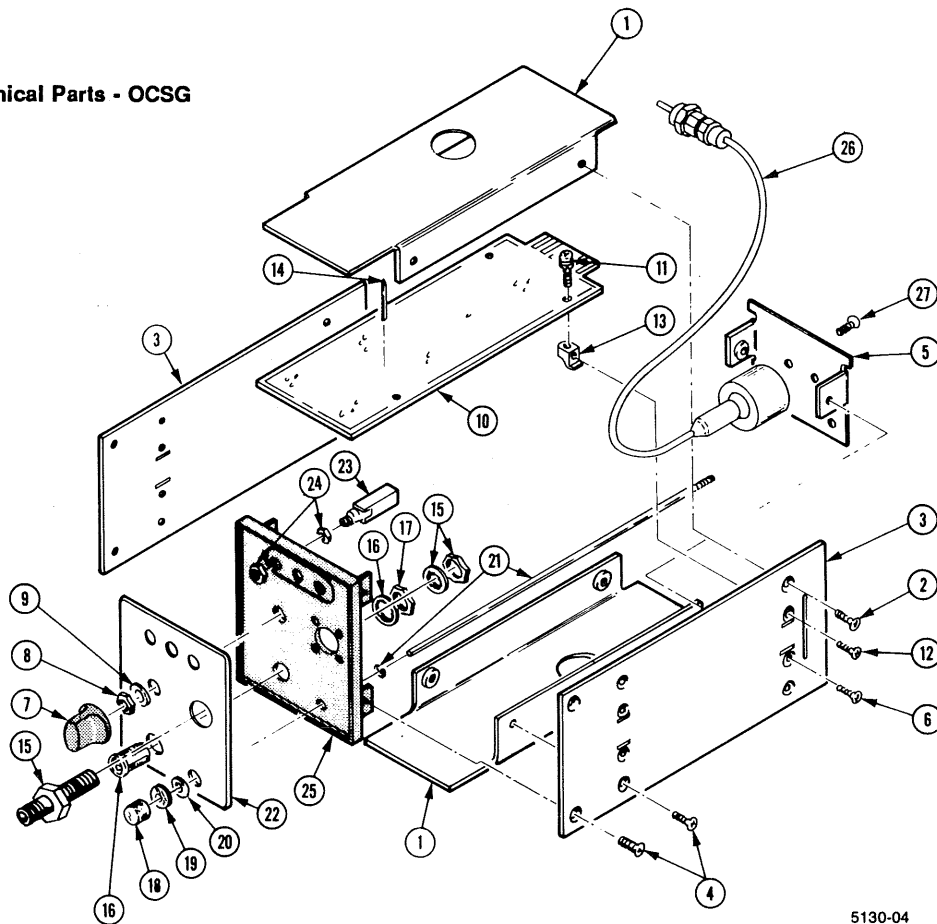


FIGURE 7-1
OPTICAL CALIBRATION SIGNAL GENERATOR

Replaceable Mechanical Parts - OCSG

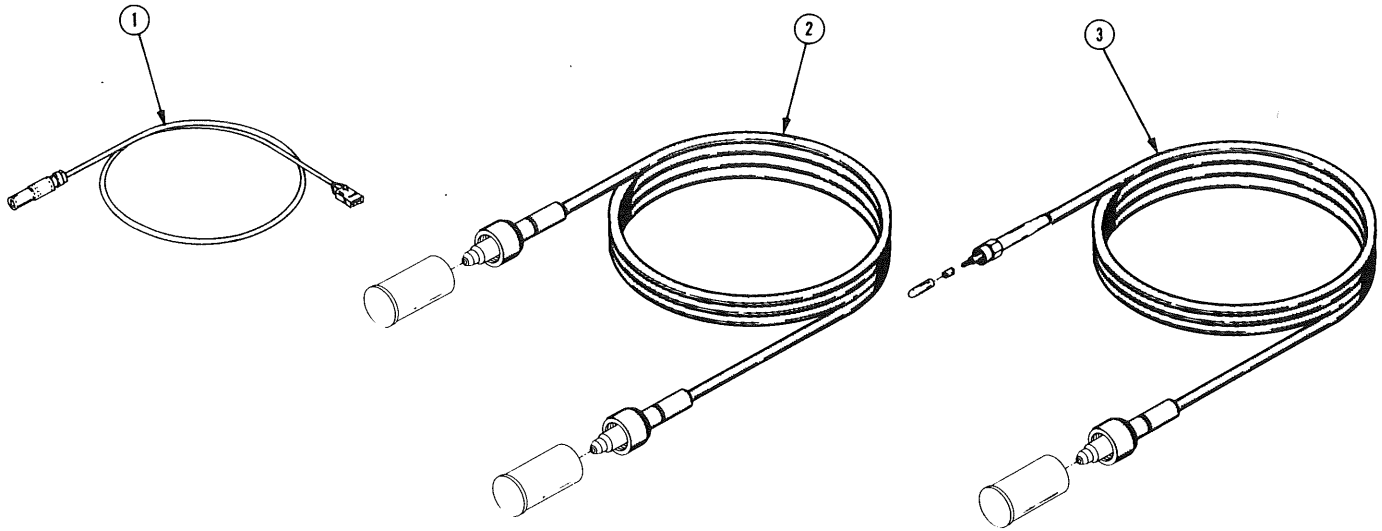


Fig. 7-2. OCSG Accessories.

5130-05

ACCESSORIES

Standard Accessories

Description	Quantity
Electrical Interface Cable (175-4755-00)	1
Instruction Manual (070-5130-00)	1

Optional Accessories

Description	Part Number
Optical Interface Cable (Standard OF152 - Deutsch to Deutsch)	175-4572-01
Optical Interface Cable (OF152 with Option 20 - Deutsch to Amphenol)	175-4573-01

