



product modification

040-0583-03

M24082. M30475
M36282. M45519

CABINET TO RACKMOUNT CONVERSION

For the following TEKTRONIX® instruments:

5110	Single Beam Display	Serial Numbers B010100 - Up
5111	Single Beam Storage Display	Serial Numbers B010100 - Up
5111A	Storage Oscilloscope	Serial Numbers B010100 - Up
5112	Dual Beam Display	Serial Numbers B010100 - Up
5113	Dual Beam Storage Display	Serial Numbers B010100 - Up
5115	Single Beam Storage Display	Serial Numbers B010100 - Up
5116	Oscilloscope	Serial Numbers B010100 - Up
5440	Single Beam Display	Serial Numbers B010100 - Up
5441	Single Beam Storage	Serial Numbers B010100 - Up
5444	Dual Beam Oscilloscope	Serial Numbers B010100 - Up

This modification kit provides parts and instructions for converting any of the above instruments from a cabinet model to a rackmount instrument.

KIT PARTS LIST:

Quantity	Part Number	Description
2 ea	129-0456-00	Spacer, post. 0.751. w/4-40 stud
6 ea	210-0858-00	Washer, flat. #8
6 ea	212-0004-00	Screw, 8-32 x 0.312. pnh
4 ea	212-0040-00	Screw, 8-32 x 0.375 100°. csk flh
+3 ea	212-0103-00	Screw, 8-32 x 0.375 x 1/4 hex head
+3 ea	212-0104-00	Screw, 8-32 x 0.375 x 1/4 hex head (long head)
1 ea	337-2994-00	Shield, elec. circuit board, rack
1 pr	351-0104-03	Track, slideout section
1 pr	351-0195-01	Track, slide, stationary and intermediate
2 ea	361-0389-00	Spacer, flat
1 ea	390-0502-00	Cabinet side, right
1 ea	390-0503-00	Cabinet side, left
2 ea	390-0505-00	Cabinet, bottom
2 ea	407-0899-00	Bracket, rackmounting

INSTRUCTIONS:**WARNING**

Before proceeding, ensure the mainframe power switch is in the off position, then disconnect the instrument from the power source.

NOTE

When performing the following steps, refer to the drawing appropriate for your instrument (Fig. 2, Fig. 3, Fig. 4 or Fig. 5)

- () 1 Remove the cabinet sides from the Mainframe and from the Display Unit.
- () 2 Remove the High Voltage cover. In 5116 instruments, disconnect the cable connected between Q252 on the shield and P252 on the High Voltage/Deflection circuit board from P252 before removing the shield.
- () 3 Remove the screws that fasten the Display and the Power Supply/ Amplifier module

NOTE

To gain access to the right rear screw in the 5116 instrument, remove the two screws securing line filter FL201 (power cord receptacle) to the rear panel. Pull the filter out to gain access to the screw, then reinstall the filter.

- () 4. Disconnect one end of the interconnecting cables connected between the two modules, noting locations for later reassembling.
- () 5. 5440 AND 5441 ONLY. Unsolder the delay line leads from the Main Interface circuit board, noting locations for later reassembling.
- () 6. 5111A and 5116 ONLY. Remove the shield with spacers from between the Display and Power Supply/Amplifier units and discard.
- () 7. Remove the handle from the Display Unit.
- () 8. Install a rackmounting bracket on the right side of the Mainframe and one on the left side of the Display Unit using the 8-32 x 0.375 inch 100° counter sink screws.
- () 9. 5111A AND 5116 ONLY. Replace the upper two Storage circuit board mounting screws with the post spacers provided in the kit. Mount the provided electrical shield on the spacers, using the circuit board mounting screws removed previously (the lower edge of the shield should be positioned outside of the lower frame section). Refer to Fig. 1.
- () 10. Fasten the Mainframe and the Display Unit together as shown, using 3 each, pn 212-0103-00, screws in front and 3 each, pn 212-0104-00, screws in the rear.
- () 11. Install the slideout section of the chassis track, using the six 8-32 x 0.312 inch pan head screws and the #8 flat washers.
- () 12. Replace the cabinet bottoms on the Mainframe and the Display Unit with the new cabinet bottoms.
- () 13. Dress the interconnect cables as shown in Fig. 2, Fig. 3, Fig. 4, or Fig. 5, and reconnect the cables in the locations noted in step 4.

NOTE

Be sure the arrows on the cable connectors and the arrows on the circuit board are aligned.

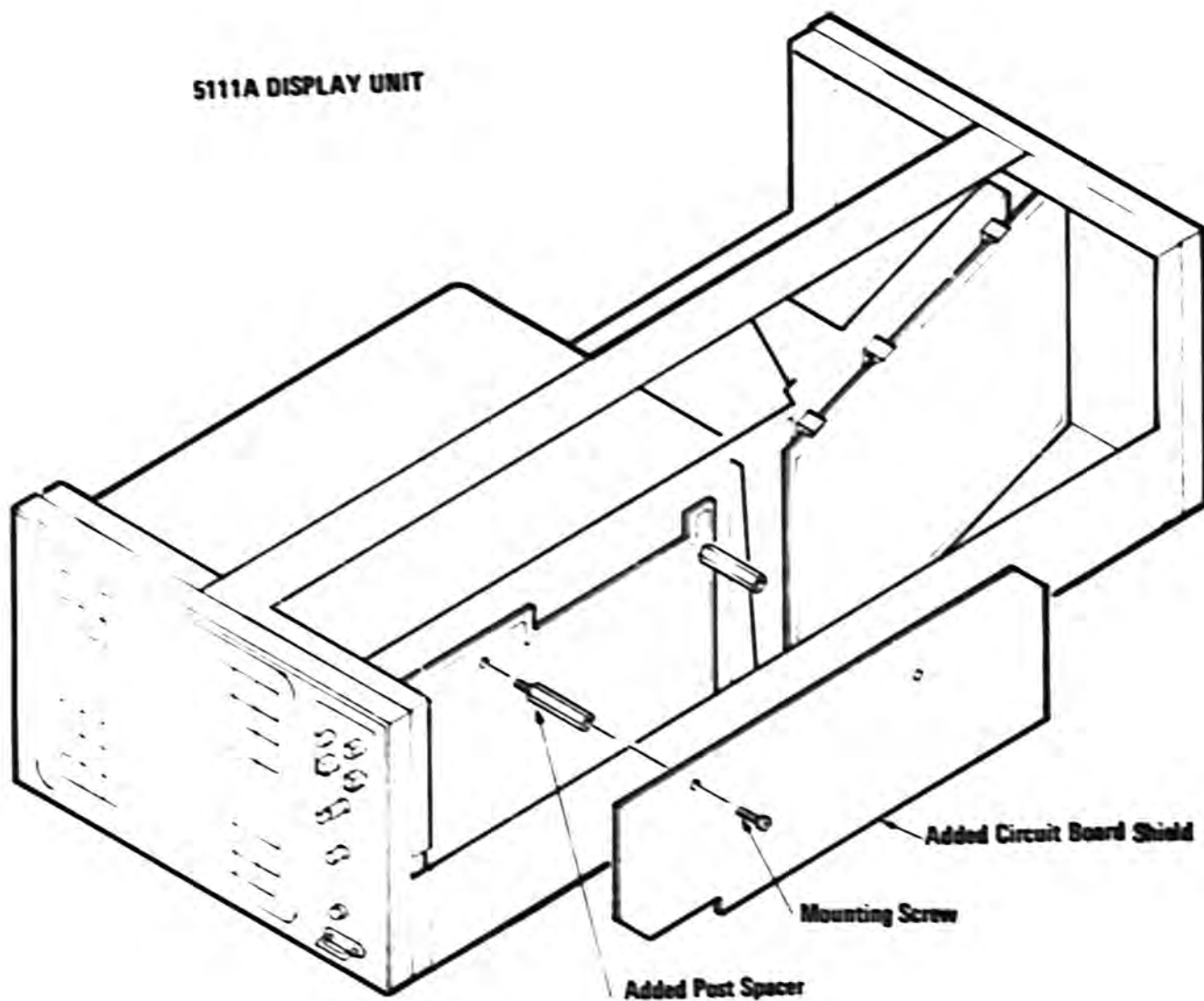


Fig. 1. Mounting method for shield on 5111A and 5116 instruments.

- () 14. 5440 AND 5441 ONLY. Resolder the delay line to the Main Interface circuit board in locations noted in step 5.
- () 15. Reinstall the H. V. cover and the new cabinet sides.
- () 16. For the 5116 instrument, refer to the attached Instruction Manual Modification Insert for rackmounting instructions. For rackmounting information on other instruments, refer to the appropriate Instruction Manual.

RH: rh

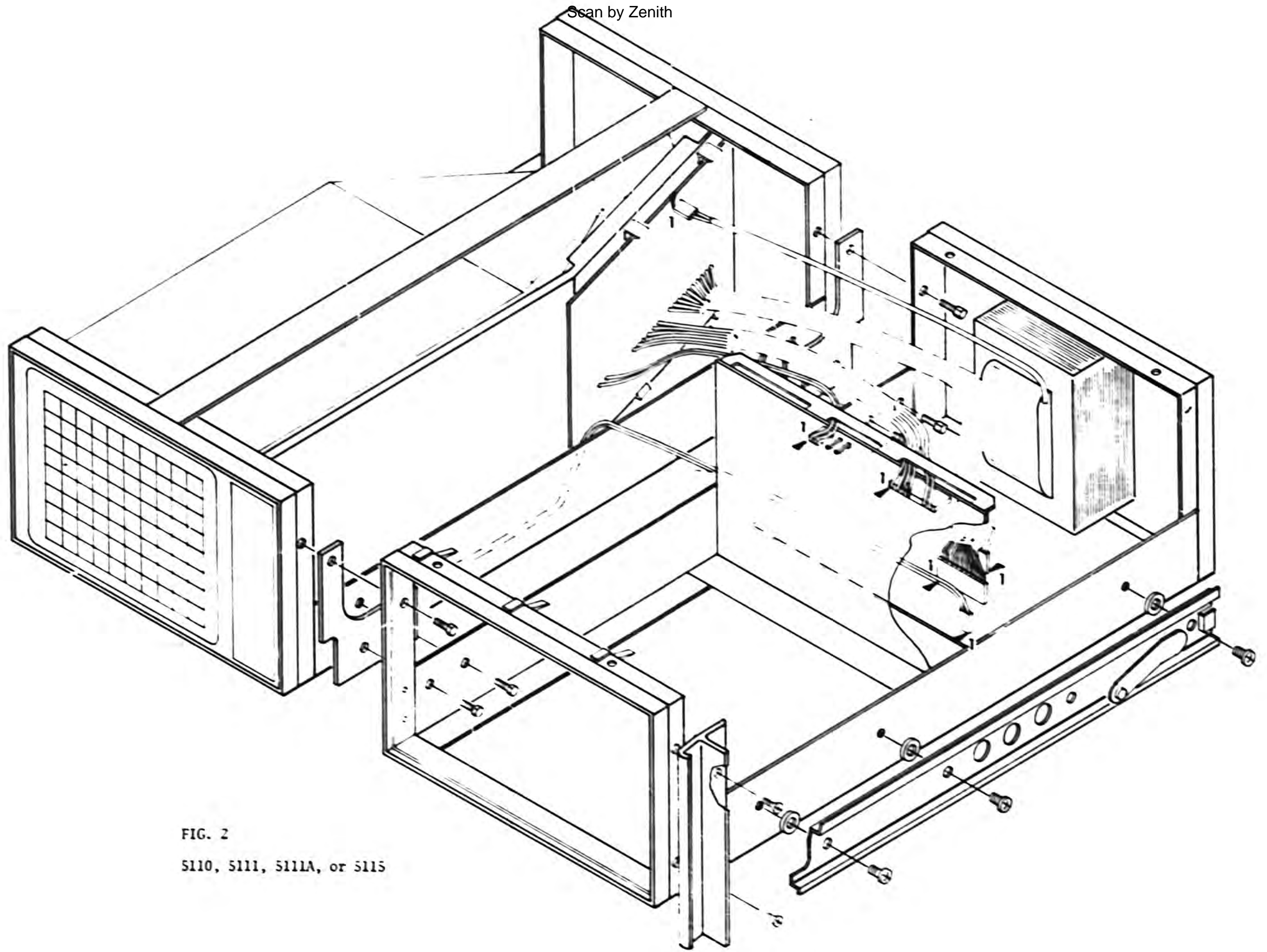


FIG. 2
5110, 5111, 5111A, or 5115

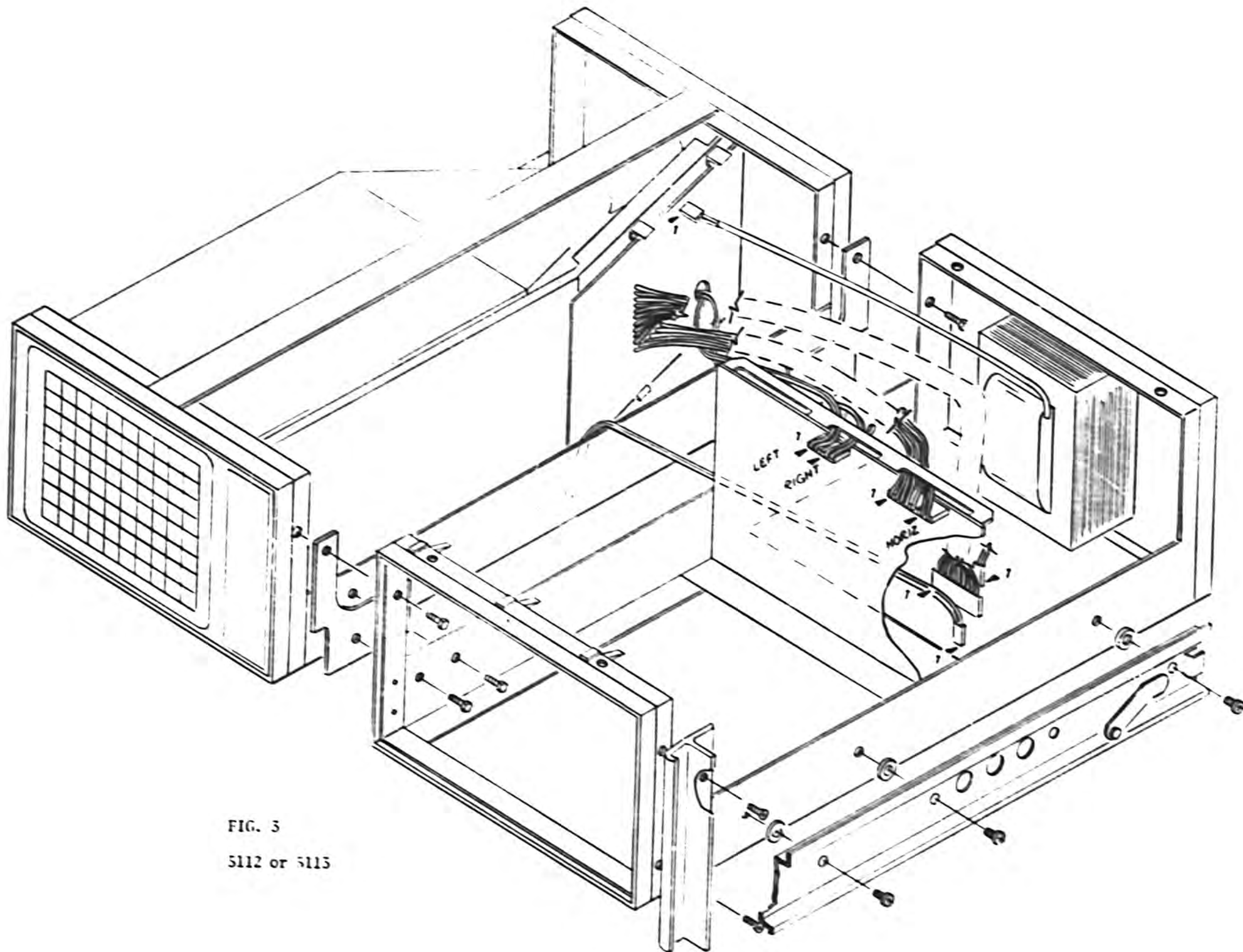


FIG. 5
5112 or 5115

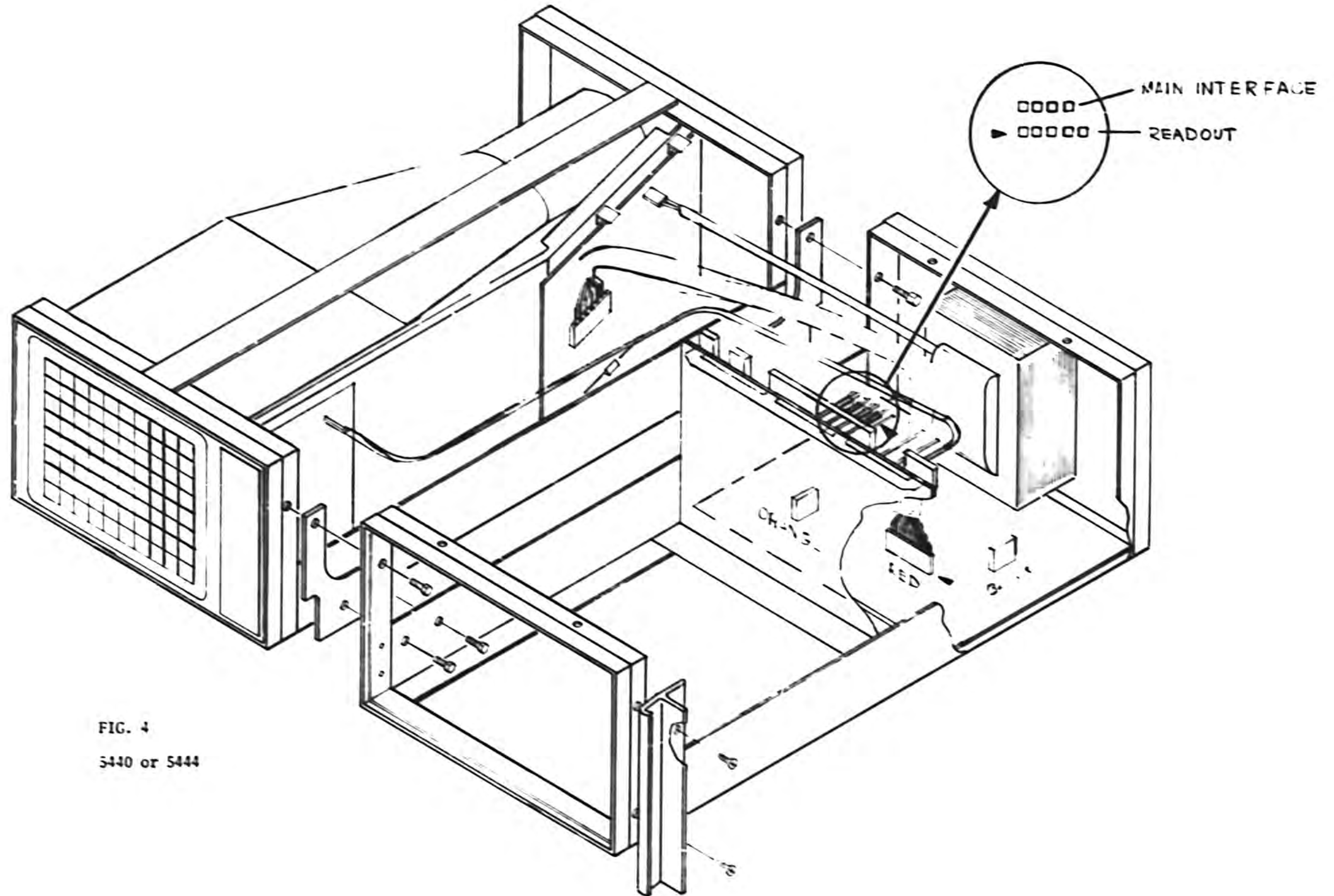


FIG. 4
3440 or 5444

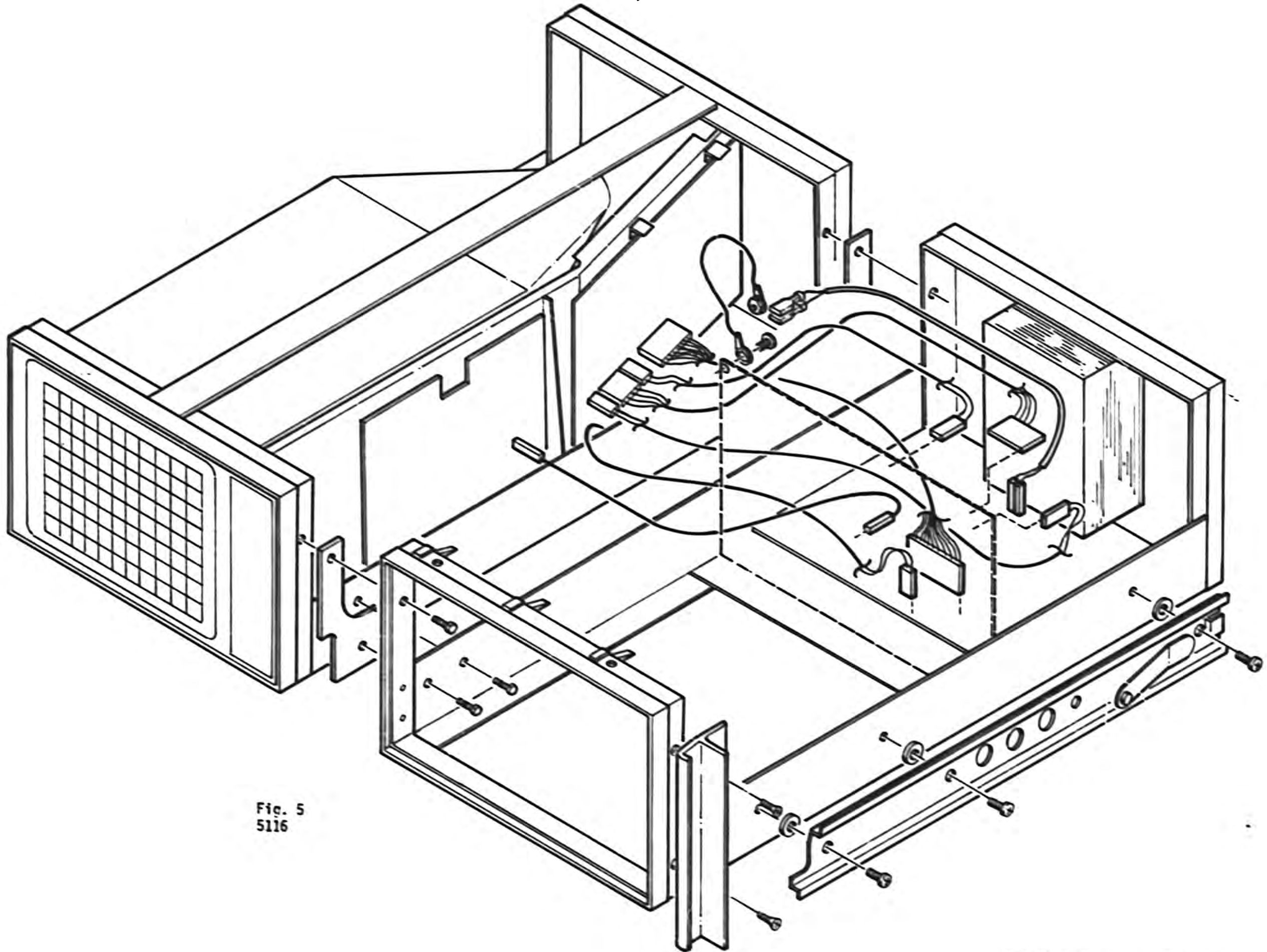


Fig. 5
5116

TEKTRONIX

MANUAL MODIFICATION INSERT

CABINET TO RACKMOUNT CONVERSION

for

5110	Serial Numbers B010100 - Up
5111	Serial Numbers B010100 - Up
5111A	Serial Numbers B010100 - Up
5112	Serial Numbers B010100 - Up
5113	Serial Numbers B010100 - Up
5115	Serial Numbers B010100 - Up
5116	Serial Numbers B010100 - Up
5440	Serial Numbers B010100 - Up
5441	Serial Numbers B010100 - Up
5444	Serial Numbers B010100 - Up

Installed in SN _____ Date _____

This modification insert is provided to supplement the manual for the above listed product(s). The information given in this insert supersedes that given in the manual.

Copyright © 1984 by Tektronix, Inc., Beaverton, Oregon. Printed in the United States of America. All rights reserved. Contents of this insert may not be reproduced in any form without the permission of the copyright owner.

GENERAL INFORMATION

This kit converted the bench model 5116 oscilloscopes to a rackmount configuration. The following pages contain information for mounting the rackmount configuration of the 5116 into a standard 19-inch wide rack which has a Universal, EIA or Western Electric hole spacing

RACKMOUNTING

Introduction

The R5100-Series Oscilloscope is designed for operation in a standard 19-inch wide rack which has Universal, EIA, RETMA, or Western Electric hole spacing. When properly mounted, this instrument will meet all electrical and environmental specifications given in Section 2.

Instrument Conversion

The 5100-Series Oscilloscope can quickly be converted from a bench model to a rackmount model, or vice versa. Field conversion kits, including the necessary tools, parts, and instructions are available from Tektronix, Inc. Order 040-0583-XX . Bench to-rack conversion, 040-0584-XX. Rack to bench conversion.

Mounting Method

This instrument will fit most 19-inch wide racks whose front and rear holes conform to Universal hole spacing. The slide-out tracks easily mount to the cabinet rack front and rear vertical mounting rails if the inside distance between the front and rear rails is within 10-9/16 inches to 24-3/8 inches. If the inside distance exceeds 24-3/8 inches, some means of support is required for the rear ends of the slide-out tracks (for example, make extensions for the rear mounting brackets).

Rack Dimensions

Height. At least 5-1/4 inches of vertical space is required to mount this instrument in a rack. If other instruments are operated in the rack, an additional 1/4 inch is required both above and below the R5100 to allow space for proper circulation of cooling air.

Width. A standard 19-inch wide rack may be used. The dimension of opening between the front rails must be at least 17-5/8 inches for a cabinet in which the front lip of the stationary section is mounted behind an untapped front rail as shown in Fig. 1-A. If the front rails are tapped, and the stationary section is mounted in front of the front rail as shown in Fig. 1-B, the dimension between the front rails should be at least 17-3/4 inches. These dimensions allow room on each side of the instrument for the slide-out tracks to operate so the instrument can move freely in and out of the rack.

Depth. For proper circulation of cooling air, allow at least two inches clearance behind the rear of the instrument and any enclosure on the rack. If it is sometimes necessary or desirable to operate the R5100 in the fully extended position, use cables that are long enough to reach from the signal source to the instrument.

Installing the Slide-Out Tracks

General Information. The slide-out tracks for the instrument consist of two assemblies, one for the left side of the instrument and one for the right side. Each assembly consists of three sections. A stationary section attaches to the front and rear rails of the rack, the chassis section attaches to the instrument (and is installed at the factory), and the intermediate section fits between the other two sections to allow the instrument to fully extend out of the rack.

The small hardware components included with the slide-out track assemblies are used to mount the tracks to the vertical rack rails having this compatibility:

1. Front and rear rail holes must be large enough to allow inserting a 10-32 screw through the rail mounting hole if the rails are untapped (see Fig. 1-A).
2. Or, front and rear rail holes must be tapped to accept a 10-32 screw if Fig. 1-B mounting method is used. Note in Fig. 1-B right illustration that a #10 washer (not supplied) may be added to provide increased bearing surface for the slide-out track stationary section front flange.
3. Front and rear rail holes must be located on Universal spacing, that is, the sequence for the hole spacing is 1/2 inch, 5/8 inch, 5/8 inch, 1/2 inch, etc.

Because of the above compatibility, there will be some small parts left over. The stationary and intermediate sections for both sides of the rack are shipped as a matched set and should not be separated. The matched sets of both sides including hardware are marked 351-0195-XX on the package. To identify the assemblies, note that the automatic latch and intermediate section stop is located near the top of the matched set.

Mounting Procedure. Use the following procedure to mount both sides. See Fig. 1 for installation details.

Rackmounting

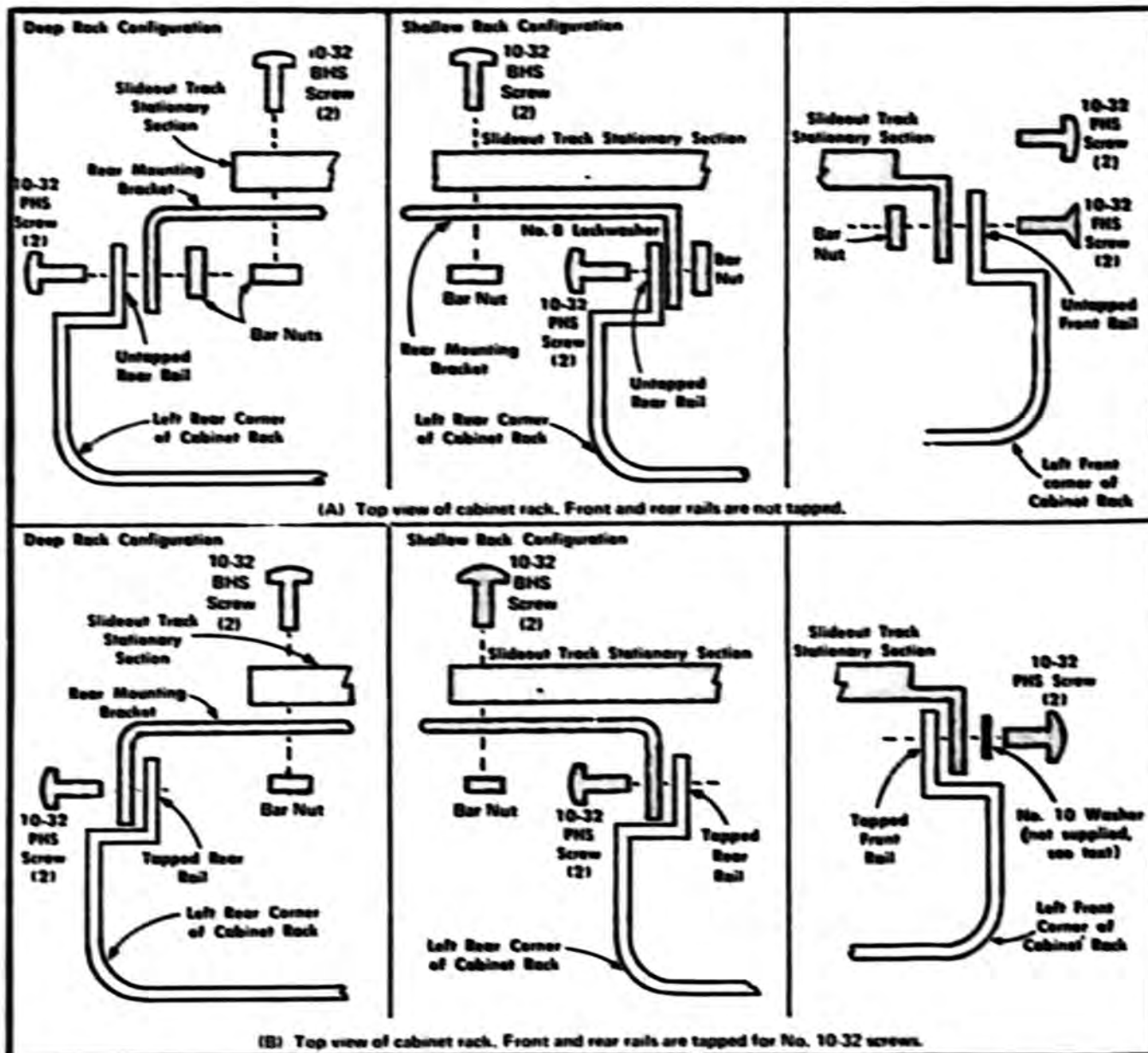


Fig. 1. Mounting the left stationary section (with its matched intermediate section, not shown in illustrations A and B) to the rack rails.

1. To mount the instrument directly above or below another instrument in a cabinet rack, select the appropriate holes in the front rack rails for the stationary sections, using Fig. 2 as a guide.

2. Mount the stationary slide-out track sections to the front rack rails using either of these methods:

(a) If the front flanges of the stationary sections are to be mounted behind the front rails (rails are countersink or not tapped), mount the stationary sections as shown in Fig. 6-1A right illustration.

(b) If the front flanges of the stationary sections are to be mounted in front of the front rails (rails are tapped for

10-32 screws), mount the stationary sections as shown in Fig. 1-B right illustration. To provide increased bearing surface for the screw head to securely fasten the front flange to the rail, a flat washer (not supplied) may be added under the screw head. However, consider that when this mounting method is used, the front panel will not fit flush against the front rail because of the stationary section and washer thickness. If a flush fit is preferred, method 2 (a) should be used.

3. Mount the stationary slide-out sections to the rear rack rails using either of these methods:

(a) If the rear rack rail holes are not tapped to accept 10-32 machine screws, mount the left stationary section

Rackmounting

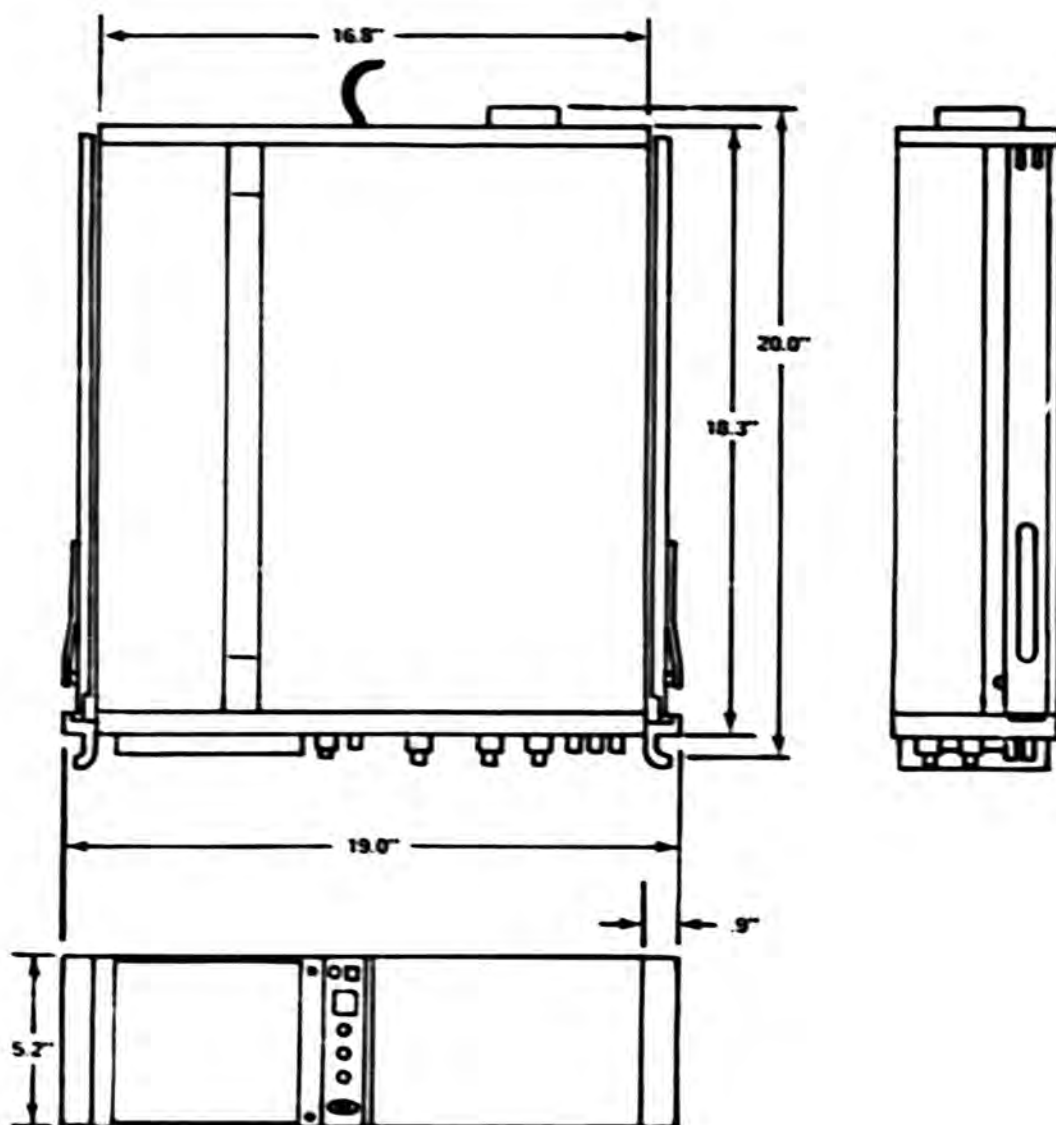
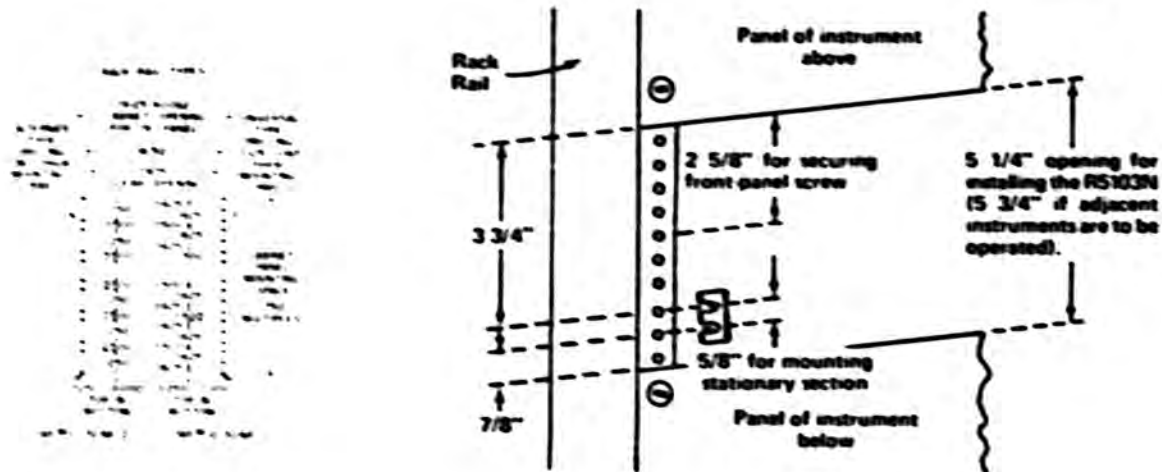


Fig. 2. Dimensional diagram.

Rackmounting

with hardware provided as shown in the left or center illustration of **Fig. 1A**. Note that the rear mounting bracket can be installed either way so the slide-out tracks will fit a deep or shallow cabinet rack. Use **Fig. 1-A** as a guide for mounting the right stationary section. Make sure the stationary sections are horizontally aligned so they are level and parallel with each other.

(b) If the rear rack rail holes are tapped to accept 10-32 machine screws, mount the left stationary section with hardware provided as shown in the left or center illustration of **Fig. 1-B**. Note that the rear mounting bracket can be installed either way so the slide-out tracks will fit a deep or shallow cabinet rack. Use **Fig. 1-B** as a guide for mounting the right stationary section. Make sure the stationary sections are horizontally aligned so they are level and parallel with each other.

R5100 Installation and Adjustment

To insert the instrument into the rack, proceed as follows:

1. Pull the slide-out track intermediate sections out to the fully extended position.

2. Insert the instrument chassis sections into the intermediate sections.

3. Press the stop latches on the chassis sections and push the instrument toward the rack until the latches snap into their holes.

4. Again press the stop latches and push the instrument into the rack.

To adjust the slide-out tracks for smooth sliding action, loosen the screws used to join the stationary sections to the rails of the rack. Center the instrument, allowing the slide-out tracks to seek the proper width, then tighten the screws.

Maintenance

The slide-out tracks require no lubrication. The special dark gray finish on the sliding parts is a permanent lubrication.