Instructions

Tektronix

TDSXF13
RS-232/Centronics Upgrade Kit

070-9634-02

Warning
The servicing instructions are for use by qualified
personnel only. To avoid personal injury, do not
perform any servicing unless you are qualified to
do so. Refer to all safety summaries prior to
performing service.

Kit Description

The TDSXF13 kit includes parts and instructions for installing Option 13: RS-232/Centronics Interface into the oscilloscopes listed under *Instruments*.

Instruments

TDS500A and later	All serial numbers
TDS620A/B	All serial numbers
TDS640A	All serial numbers
TDS680B	All serial numbers

Minimum Tools and Equipment List

Tool	Part number
One screwdriver with a size T-20 Torx tip	n/a
One screwdriver with a size T-15 Torx tip	n/a
Torque driver capable of 16 inch-pounds (1.81 newton-meters)	n/a

Kit Parts List

The following table and Figure 1 identify the parts list for this kit.

| Qty	Part number	Name & description
1 ea	070-9634-xx	Manual, tech instructions;TDSXF13
1 ea	070-8567-xx	Manual tech: Option 13 RS-232/Centronics
1 ea	672-1397-00	Circuit board assy: ECB/Brkt Assy consisting of the following: (see Figure 1):
1 ea	671-2437-00	Circuit board assy: RS-232/Centronics
2 ea	407-3825-00	Bracket, ckt bd: plastic, rear
1 ea	386-6182-00	Plate, rear: aluminum, RS-232/Centronics
4 ea	131-0890-01	Lock, connector: 4-40 X 0.312 L, hex hd, stl
2 ea	348-1300-00	Shield, gasket, clip on
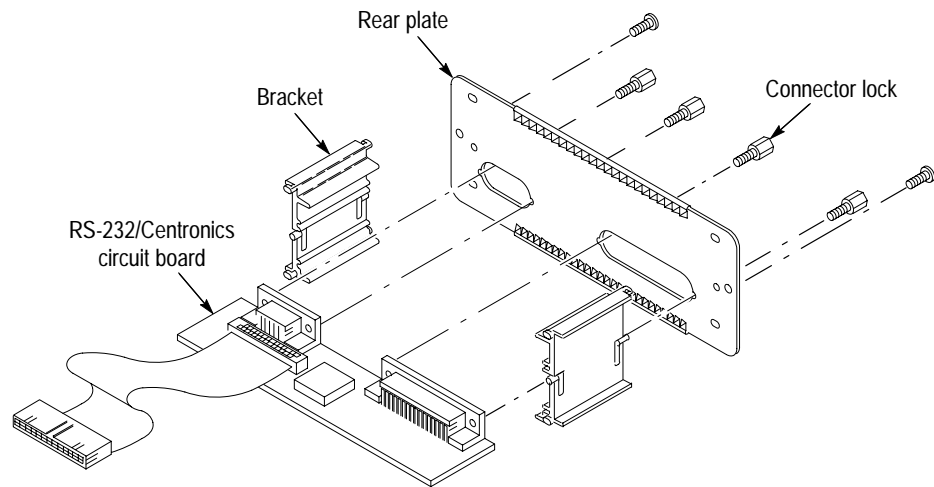
Figure 1: RS-232/Centronics hardcopy interface replaceable parts

Service Safety Summary

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WARNING. The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to the General Safety Summary *in the appropriate TDS service manual before performing any service.*

Do Not Service Alone
Do not perform internal service on this product unless another person capable of rendering first aid and resuscitation is present.

Avoid Exposed Circuitry
To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Use Care When Servicing With Power On
Dangerous voltages or currents may exist in this product. Disconnect the power, remove the battery (if applicable), and disconnect the test leads before removing protective panels, soldering, or replacing components.

Installation Instructions

The instructions needed to upgrade the TDS follow. It is assumed service personnel, somewhat familiar with the instrument, will install the upgrade. If further details are required for disassembly or assembly, refer to the appropriate TDS service manual. For assistance with installing this kit, please call your nearest Tektronix Service Center.

⚠ *CAUTION. To prevent static-discharge damage, service the instrument only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist and foot strap while installing this kit.*

Rear Cabinet and Cover Removal

Refer to Figure 2 while performing the following procedure:

1. Install the front cover. Set the oscilloscope face down with the front cover on the work surface and the bottom facing up.

2. Unplug the power cord from its receptacle at the rear panel.

3. Remove the four screws securing the rear cover to the oscilloscope. Use the screwdriver with a size T-20 Torx tip. Lift off the rear cover.

4. Grasp the left and right edges of the cabinet at the rear. Pull upward to slide the cabinet off the oscilloscope. Do not bind or snag the cabinet on the internal cabling of the oscilloscope as you remove it.
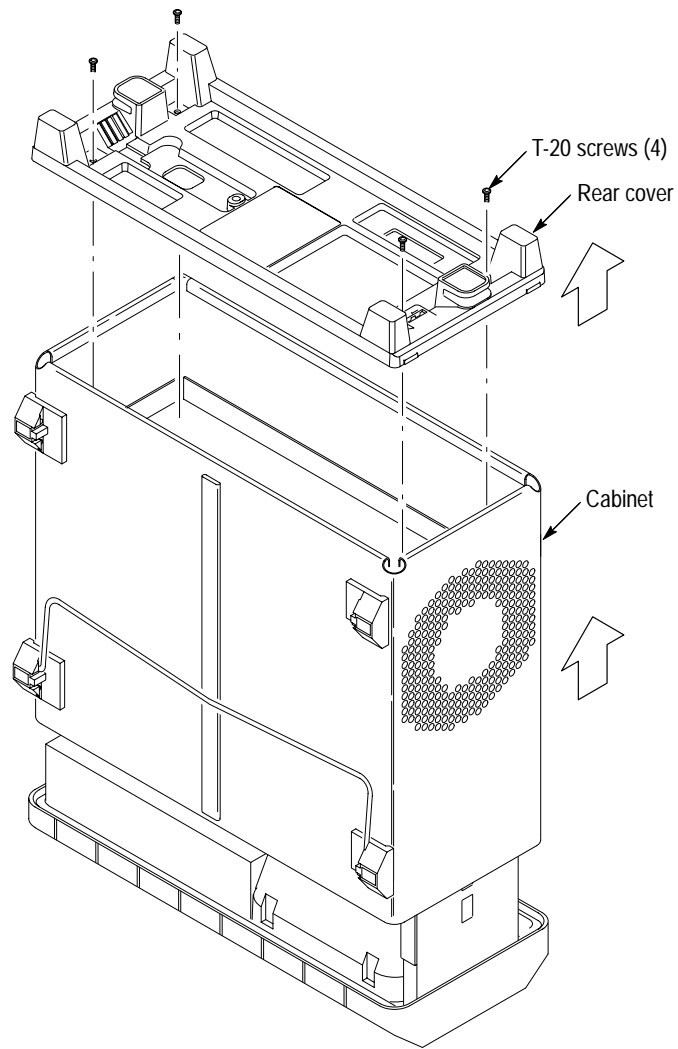
Figure 2: Oscilloscope rear cover and cabinet removal

Retainer Bracket Removal

Refer to Figure 3 while performing the following procedure:

1. Remove the two screws securing the retainer bracket assembly. Use the screwdriver with a size T-15 Torx tip. Set aside both screws for later assembly of the new rear plate.

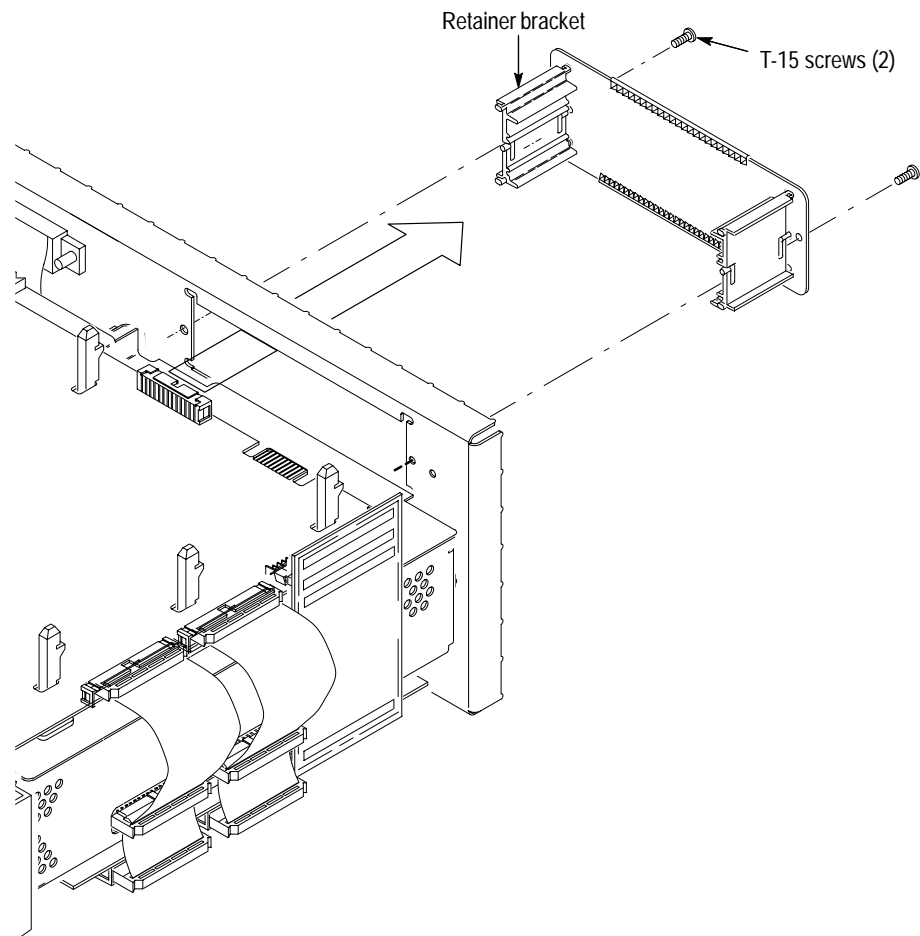2. Slide the retainer bracket assembly out and remove it from the rear chassis.

Figure 3: Retainer bracket removal

Circuit Board Assembly Installation

Refer to Figure 4 while performing the following procedure:

1. Slide the circuit board assembly into the rear chassis.

2. Connect the cable connector to the processor-display circuit board connector.

3. Replace the two screws securing the rear plate of the retainer bracket. Use the screwdriver with a size T-15 Torx tip.
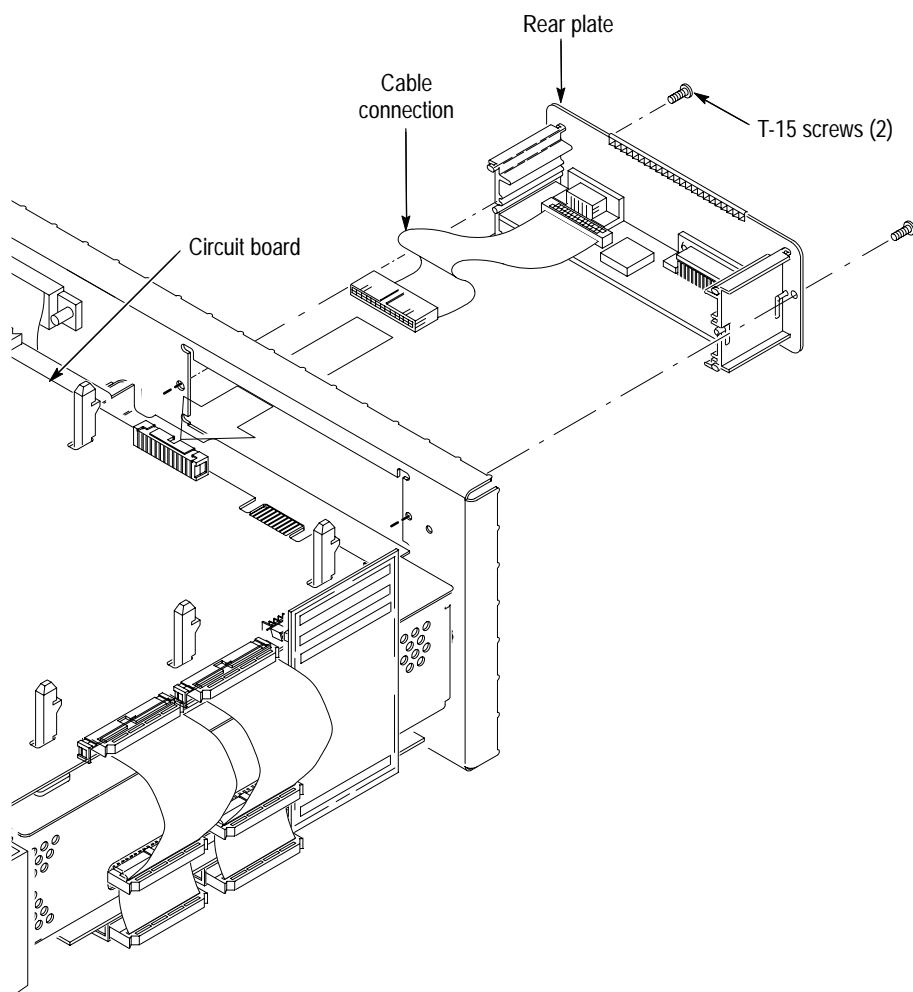
Figure 4: Circuit board assembly installation

Cabinet and Rear Cover Replacement

Install the cabinet and rear cover. Perform the reverse of the *Rear Cabinet and Cover Removal* procedure beginning on page 3.

NOTE. When reinstalling the four screws at the rear panel, use the torque driver to tighten the screws to 16 inch-lbs torque (1.81 newton-meters).

Diagnostics

The oscilloscope has two levels of internal diagnostics: short confidence and extended. The oscilloscope automatically executes the short set when powered on. If the hardcopy feature fails the short diagnostic routine, use the following procedure to execute the extended diagnostics.

Prerequisites: Power on the oscilloscope and allow a 20 minute warm-up before doing this procedure:

1. Press **SHIFT UTILITY** → **System** (main) → **Diag/Err** (pop-up) → **Execute** (main) → **OK Confirm Run Test** (side).

2. The internal diagnostics routine checks the oscilloscope functions, but does not check the printer function. When finished, the oscilloscope displays an on-screen report of any failed modules, features, or interfaces.

3. If the hardcopy feature fails diagnostics, verify that all cables are securely seated and have not been damaged.

4. If the hardcopy feature continues to fail diagnostics, order a replacement RS-232/Centronics circuit board (see the *Parts List* on page 1). Then follow the installation instructions beginning on page 3.

Verify Installation

The following procedure uses a RS-232 or Centronics compatible hardcopy device to verify that you have correctly installed the TDSXF13 upgrade kit.

1. Connect the power cord from the rear-panel power connector to the power system.

2. Connect your hard copy device to the RS-232 or Centronics interface on the rear panel (as shown in Figure 5).

Many printers, such as the Tektronix HC220, use Centronics interfaces. Many hardcopy devices, including the HC100 with option 03, provide RS-232 support.
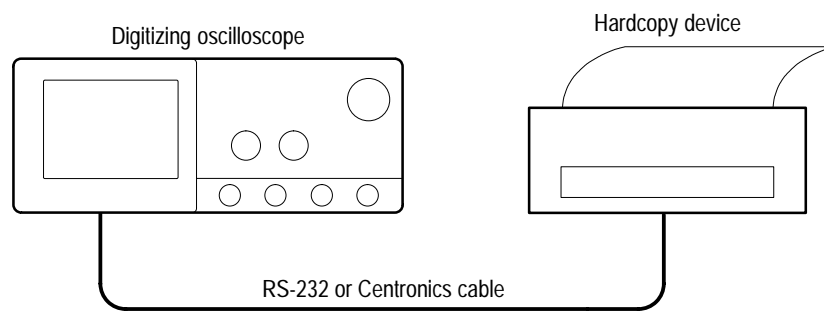

Figure 5: Connecting the digitizing oscilloscope directly to the hardcopy device

Setup Communication Parameters

To set up the communication parameters for a printer attached directly to the oscilloscope RS-232 or Centronics port, do the following:

Press **SHIFT UTILITY→System**(main) → **I/O** (pop-up) → **Configure**(main) → **Hardcopy (Talk Only)**(side).

Setting Hardcopy Parameters. To specify the hardcopy format, layout, and type of port using the hardcopy menu do the following:

1. Press **SHIFT HARDCOPY MENU** to bring up the Hardcopy menu.

2. Select the format that is compatible with your hardcopy device.

3. Press **SHIFT HARDCOPY MENU→Port** (main) to specify the output channel to send your hardcopy through. The choices are **GPIB**, **RS-232**, **Centronics**, and **File**. Choose **RS-232** or **Centronics**.

4. Press **HARDCOPY** to print your hardcopy. Your hardcopy device should now print a picture of the digitizing oscilloscope screen.

If you have problems, call the nearest Tektronix, Inc., field office for assistance.

■■ **End of document** ■■