

# Instructions

**Tektronix**

**TDS 300, TDS 300A, TDS 400 & TDS 400A  
Printer Pack**

**071-0164-00**

**CE**

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Tektronix, Inc., P.O. Box 1000, Wilsonville, OR 97070-1000

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## WARRANTY

Tektronix warrants that this product will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If any such product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; or c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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# General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

*Only qualified personnel should perform service procedures.*

The Seiko operation manual (included with the printer) provides specific instructions and precautions for using the printer.

## Injury Precautions

- |   |  |
|---|--|
| <b>Use Proper Power Cord</b>                  | To avoid fire hazard, use only the power cord specified for this product.  |
| <b>Avoid Electric Overload</b>                | To avoid electric shock or fire hazard, do not apply a voltage to a terminal that is outside the range specified for that terminal.  |
| <b>Ground the Product</b>                     | This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded. |
| <b>Do Not Operate Without Covers</b>          | To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.   |
| <b>Use Proper Fuse</b>                        | To avoid fire hazard, use only the fuse type and rating specified for this product.  |
| <b>Do Not Operate in Wet/Damp Conditions</b>  | To avoid electric shock, do not operate this product in wet or damp conditions.  |
| <b>Do Not Operate in Explosive Atmosphere</b> | To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.  |
| <b>Avoid Exposed Circuitry</b>                | To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.   |

## Product Damage Precautions

**Use Proper Power Source** Do not operate this product from a power source that applies more than the voltage specified.

**Provide Proper Ventilation** To prevent product overheating, provide proper ventilation.

## Safety Terms and Symbols

**Terms in This Manual** These terms may appear in this manual:



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

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**CAUTION.** Caution statements identify conditions or practices that could result in damage to this product or other property.

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**Terms on the Product** These terms may appear on the product:

**DANGER** indicates an injury hazard immediately accessible as you read the marking.

**WARNING** indicates an injury hazard not immediately accessible as you read the marking.

**CAUTION** indicates a hazard to property including the product.

**Symbols on the Product** The following symbols may appear on the product:



**DANGER**  
High Voltage



Protective Ground  
(Earth) Terminal



**ATTENTION**  
Refer to  
Manual





# Preface

This instruction manual provides the installation procedure, specifications, and service information for the printer pack.

Seiko® provides an *Operation Manual* with the printer that contains valuable information and instructions for using the printer.

## Contacting Tektronix

Product Support	<p>For application-oriented questions about a Tektronix measurement product, call toll free in North America: 1-800-TEK-WIDE (1-800-835-9433 ext. 2400) 6:00 a.m. – 5:00 p.m. Pacific time</p> <p>Or contact us by e-mail: tm_app_supp@tek.com</p> <p>For product support outside of North America, contact your local Tektronix distributor or sales office.</p>
Service Support	<p>Contact your local Tektronix distributor or sales office. Or visit our web site for a listing of worldwide service locations.</p> <p><a href="http://www.tek.com">http://www.tek.com</a></p>
For other information	<p>In North America: 1-800-TEK-WIDE (1-800-835-9433) An operator will direct your call.</p>
To write us	<p>Tektronix, Inc. P.O. Box 1000 Wilsonville, OR 97070-1000</p>

# Getting Started

The procedures in this section guide you through the process of unpacking and installing the printer pack on the oscilloscope.

## Equipment Compatibility

This product is compatible with the following oscilloscope models:

Option 14 required		Option 13 required	
TDS 310	B030100 and above	TDS 410	All
TDS 320	B030100 and above	TDS 420	B020100 and above
TDS 340	All	TDS 460	B020100 and above
TDS 350	B030100 and above	TDS 410A	All
TDS 360	All	TDS 420A	All
TDS 380	All	TDS 430A	All
TDS 340A	All	TDS 460A	All

## Unpacking the Printer

The shipping carton for the printer option contains the following items:

Quantity	Item
1 ea	Seiko DPU-414 Printer with manual
1 ea	Instructions
1 ea	Pouch with mounting plate and Velcro
1 ea	Oscilloscope front cover
1 ea	25-pin "D" to 32-pin Centronics cable
1 ea	Power cable
5 ea	Rolls of thermal paper

Refer to the *Replaceable Parts List*, page 19, for a complete list of part numbers and part ordering information.

## Attaching the Pouch

Use the following procedure to attach the pouch to the oscilloscope. The procedure does not require you to use any special tools or equipment or to remove any cabinet parts.

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**NOTE.** *To ensure correct assembly, read and rehearse this entire procedure before you remove the backing on the Velcro adhesive (step 2).*

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1. Place the pouch assembly on a flat surface with the bottom of the mounting plate facing up.
2. Remove the adhesive backing from the Velcro strip. Leave the mating pieces of the Velcro attached to each other and properly aligned.



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**CAUTION.** *To ensure proper positioning of the mounting plate, do not let the adhesive on the Velcro touch any surface until you properly position and insert the front edge of the mounting plate.*

---

3. Position the pouch assembly above the cabinet and insert the front edge of the mounting plate (Figure 1).

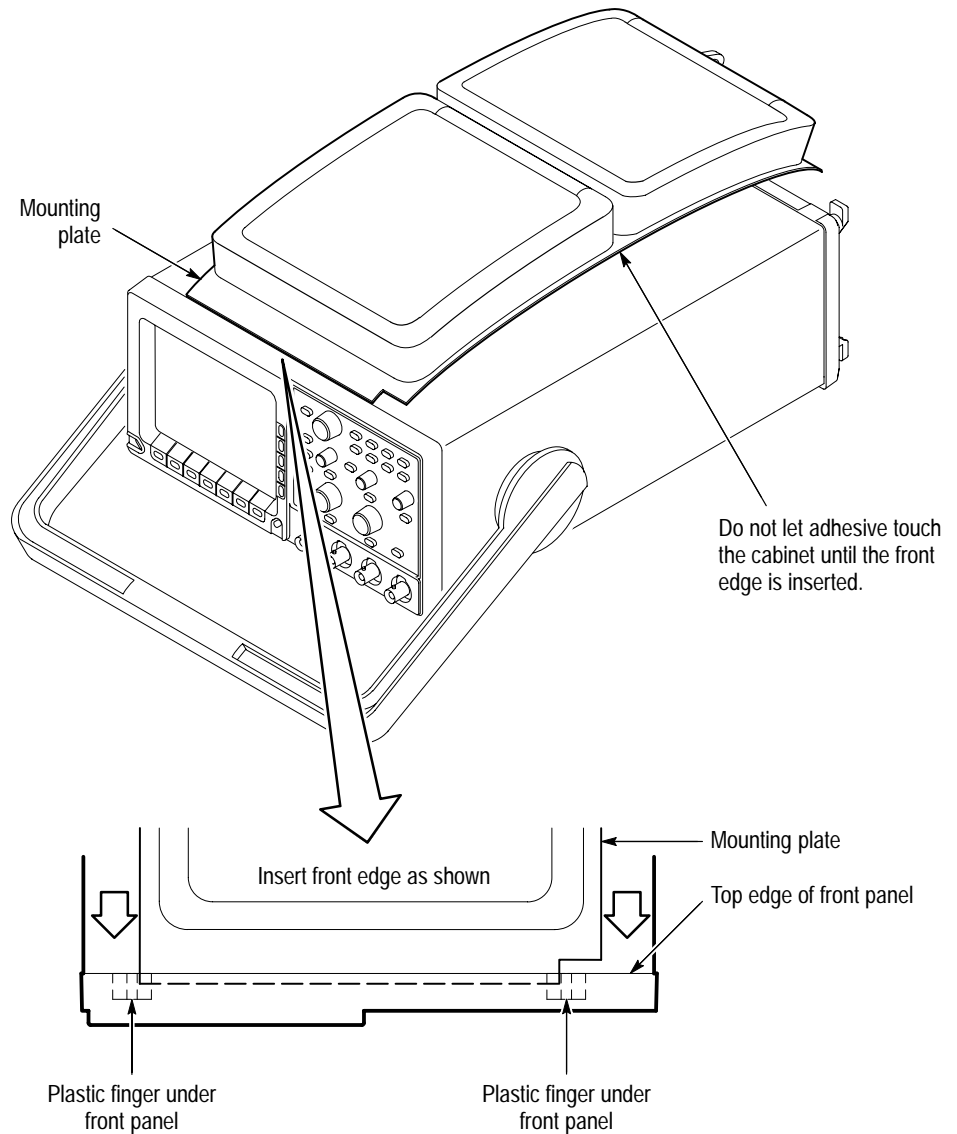
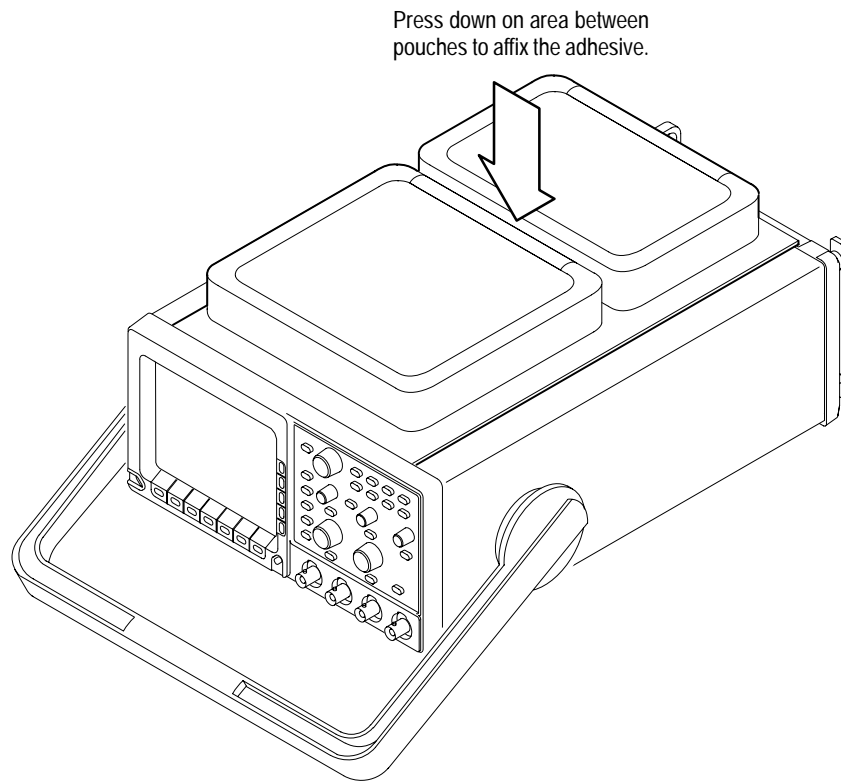


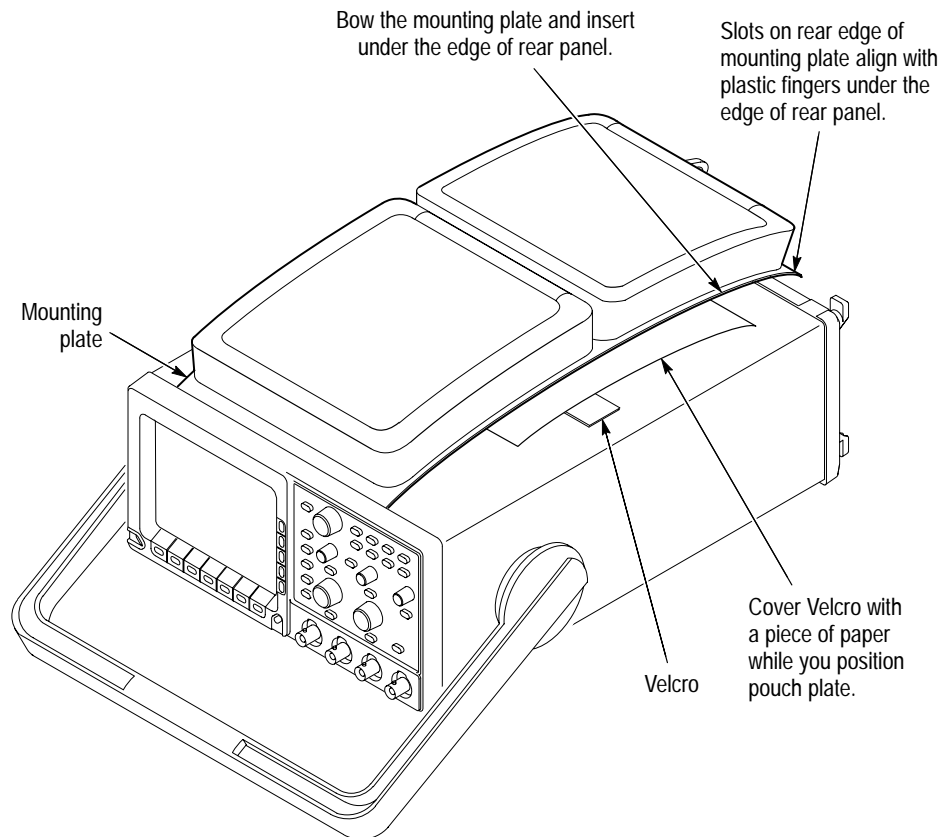
Figure 1: Inserting the front edge of the mounting plate

4. With the front edge fully inserted, carefully lay the pouch plate down on top of the cabinet and allow the adhesive to stick (Figure 2). Insert your fingers between the pouches and press down on the mounting plate along the entire length of the adhesive — this securely affixes the adhesive.



**Figure 2: Securing the mounting plate adhesive**

5. Lift the pouch plate carefully away from the cabinet making sure the Velcro strip you just adhered stays in place.
6. Refer to Figure 3. Cover the Velcro on the cabinet with a piece of paper. (The paper keeps the Velcro on the pouch plate and the cabinet from sticking together while you position the rear edge of the pouch plate.)
7. Flex the pouch plate upward by grasping the rear of the pouch plate and pushing toward the front of the oscilloscope.



**Figure 3: Inserting the rear edge of the mounting plate**

8. Slip the rear edge of the mounting plate into the gap and allow it to relax into position.
9. Slide the front and rear ends of the mounting plate from side to side to ensure that they are properly locked into place.
10. Lift the center of the mounting plate slightly and remove the paper.
11. Press down the mounting plate over the Velcro strip.



**CAUTION.** Do not use the D-ring foot at the rear of the pouch plate to lift the oscilloscope. Using the D-ring to lift the oscilloscope may pull the accessory pouch off the oscilloscope, resulting in damage to the oscilloscope.

## Installing the Printer

Install the printer in the rear pouch and connect it to the oscilloscope through two cables; one cable supplies the power and the other carries printer data.

1. Remove the adhesive backing from the strips of Velcro inside the rear pouch. Carefully position the printer over the Velcro and firmly press the printer into place.

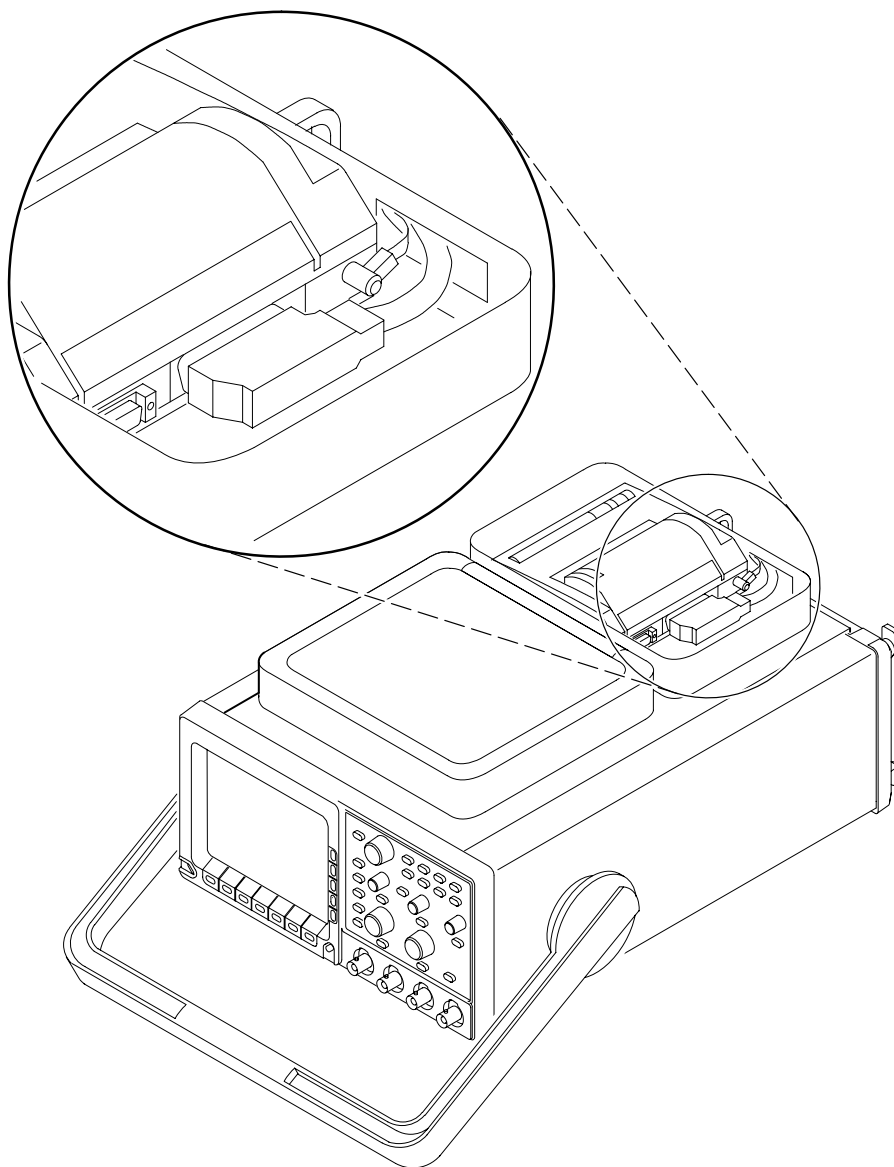
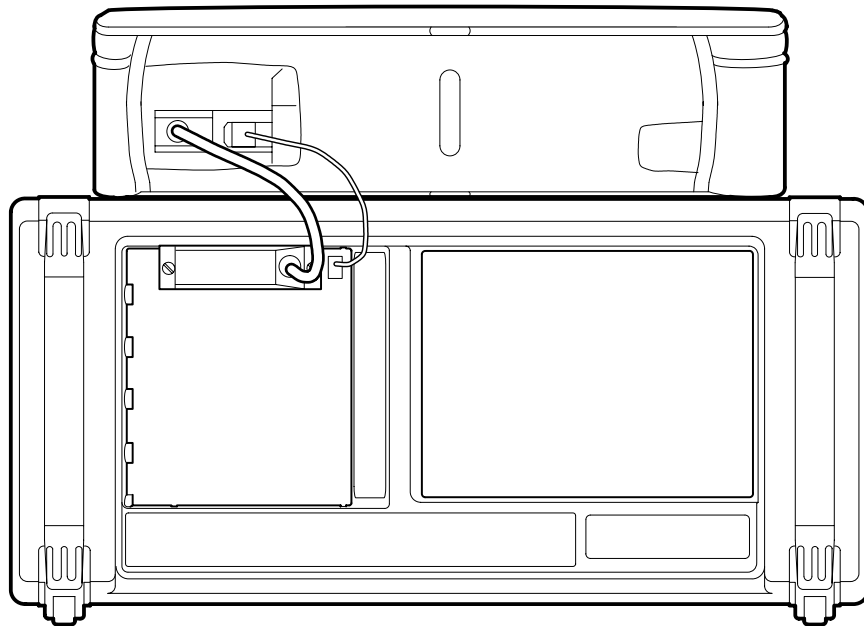


Figure 4: Printer and cable orientation



2. Carefully lift the printer out of the pouch making sure the Velcro strips stay attached to the printer.
3. Locate the power jack on the rear of the printer, position it near the cutout on the pouch, and plug in the right-angle end of the power cable.
4. Connect the data cable to the Centronics compatible connector on the rear of the printer. Secure the cable with the clips on the connector.
5. Place the printer in the rear compartment of the pouch and seat the Velcro.
6. Route the power and data cables through the opening in the rear of the printer pouch. See Figure 5.



**Figure 5: Connecting the cables from the printer to the oscilloscope**

7. Route the data cable so that it lies close to the cabinet to avoid interfering with the power cord that coils around the feet on the rear panel.
8. Connect and secure the 25-pin “D” connector of the data cable to the parallel printer connector on the oscilloscope.
9. Connect the power cable to the printer power jack on the oscilloscope.

## Loading Paper

Refer to the instructions in the Seiko manual for loading paper into the printer.

1. Turn on the oscilloscope.
2. Load paper into the printer according to instructions detailed in the Seiko manual.
3. Run the printer diagnostics. (Refer to the Seiko manual.)

## Configuring the Oscilloscope

Set the hardcopy parameters of the oscilloscope before attempting to print a hard copy.

### TDS 400 Series Configuration

1. Press **SHIFT HARDCOPY MENU** → **Format**.
2. Press **–more–** until the **DPU 411** selection shows.
3. Press **DPU 411**.
4. Press **Port** → **Centronics**.

### TDS 300 Series Configuration

1. Press **UTILITY** → **System I/O** → **Hcp Port** → **Centronics**.
2. Press **Hcp Format**.
3. Press **–more–** until the **DPU 411/II** selection shows.
4. Press **DPU 411/II**.

## Printing the Hard Copy

Press **HARDCOPY** to start the printer. Refer to the oscilloscope user or instruction manual for more information on how to use the hardcopy command.

## Printer Orientation

Although Seiko recommends installing the printer on a flat, stable surface, the Printer Pack allows you to use the printer with the oscilloscope inclined at any angle up to 90° from horizontal.

## Ordering Paper

You can obtain thermal paper for the printer in one of three ways:

1. Refer to the *Replaceable Parts List*, page 19, for the part number of the thermal paper and part ordering information.
2. Contact one of the Seiko offices listed on the back of the Seiko manual included with the printer.
3. Call the telephone number printed on the box of paper included with the printer pack.



# Specifications

This section provides specifications for the digitizing oscilloscope with the printer pack installed. It begins with a general description of the printer pack option. Three subsections follow, one for each of three classes of traits: *nominal traits*, *warranted characteristics*, and *typical characteristics*.

## General Product Description

The printer pack provides the digitizing oscilloscope with integrated thermal printer capability. Here are some key features of the printer pack:

- Durable pouch, mounted conveniently on top of the oscilloscope, provides protection for the printer and supplies additional storage for spare paper, probes, and other accessories.
- Printer power supplied by the RS-232/Centronics adapter allows you to move and operate the printer as part of the oscilloscope.
- Lightweight and durable printer uses four-inch thermal paper for high-contrast hard copies.
- A 128 K-word printer spooler allows you to use the oscilloscope while a hard copy is printing (TDS 400 and TDS 400A Series only).

## Nominal Traits

Nominal trait descriptions are simple statements of fact. For example, “640 × 480” is a description for the trait “Pixel resolution” rather than the limit of a performance requirement.

Name	Description
Print head, method	Thermal serial dot
Interface	Centronics
Controls	On/Off, On line, and Feed
Pixel resolution	640 × 480

## Warranted Characteristics

The description for each warranted characteristic is a quantifiable performance requirement. This subsection lists only warranted characteristics.

**NOTE.** *Installing the printer pack option on a digitizing oscilloscope reduces the warranted characteristics for that product to the specifications listed below.*

Name	Description
Temperature range	0° C to 40° C, operating; -20° C to +60° C, non-operating
Relative humidity	30% to 80% relative humidity, operating; 40° C at 95% relative humidity, non-operating

## Typical Characteristics

The description for each typical characteristic makes a statement in terms of typical or average performance. The warranty does not apply to typical characteristics.

Name	Description
Weight	11.3 kg (25 lbs), TDS 400 series oscilloscope and option; 9.5 kg (21 lbs), TDS 300 series oscilloscope and option; 4.5 kg (10 lbs), option packaged for shipping
Overall dimensions (H × W × D)	241 mm × 362 mm × 471 mm (9.5 in × 14.25 in × 18.55 in)
Printer power consumption	≤ 14 Watts
Print time	Approximately three minutes (landscape)
Printing width	89.6 mm (3.53 in)
Printing height:	
landscape	Approximately 75 mm (2.95 in)
portrait	Approximately 100 mm (3.94 in)
Service life	> 13,000 copies

## Certifications and Compliances

The product complies with the following certifications:

Name	Description
EC Declaration of Conformity – EMC	Meets intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:  EN 50081-1 Emissions: EN 55022           Class B Radiated and Conducted Emissions  EN 50082-1 Immunity: IEC 801-2        Electrostatic Discharge Immunity IEC 801-3        RF Electromagnetic Field Immunity IEC 801-4        Electrical Fast Transient/Burst Immunity IEC 801-5        Power Line Surge Immunity
FCC Compliance	Emissions comply with FCC Code of Federal Regulations 47, Part 15, Subpart B, Class A Limits





# Maintenance

This section provides you with information you need to know if you encounter a problem with the printer. *Before Servicing* lists sources of other safety and service information that are important to consider. The diagram in *Troubleshooting* helps you isolate the particular module at fault. The subsection *Tektronix Service* tells you what to do if the printer or other warranted parts are at fault. Refer to the *Replaceable Parts List* on page 19 for specific part numbers and part descriptions.

## Before Servicing

Only qualified service personnel should attempt to repair the printer or the oscilloscope. Before you attempt to service the printer or the oscilloscope please read the following information:

- The *Seiko Operation Manual* supplied with the printer.
- The *General Safety Summary* on page iii.

## Troubleshooting

A failure of the printer may be caused by one or more of the following faults:

- Improper installation or setup of the printer
- Faulty connections between the printer and the oscilloscope
- A malfunction of the interface module
- A failure of the printer itself

Refer to the troubleshooting tree in Figures 6 and 7 to help isolate the cause of a printer malfunction.

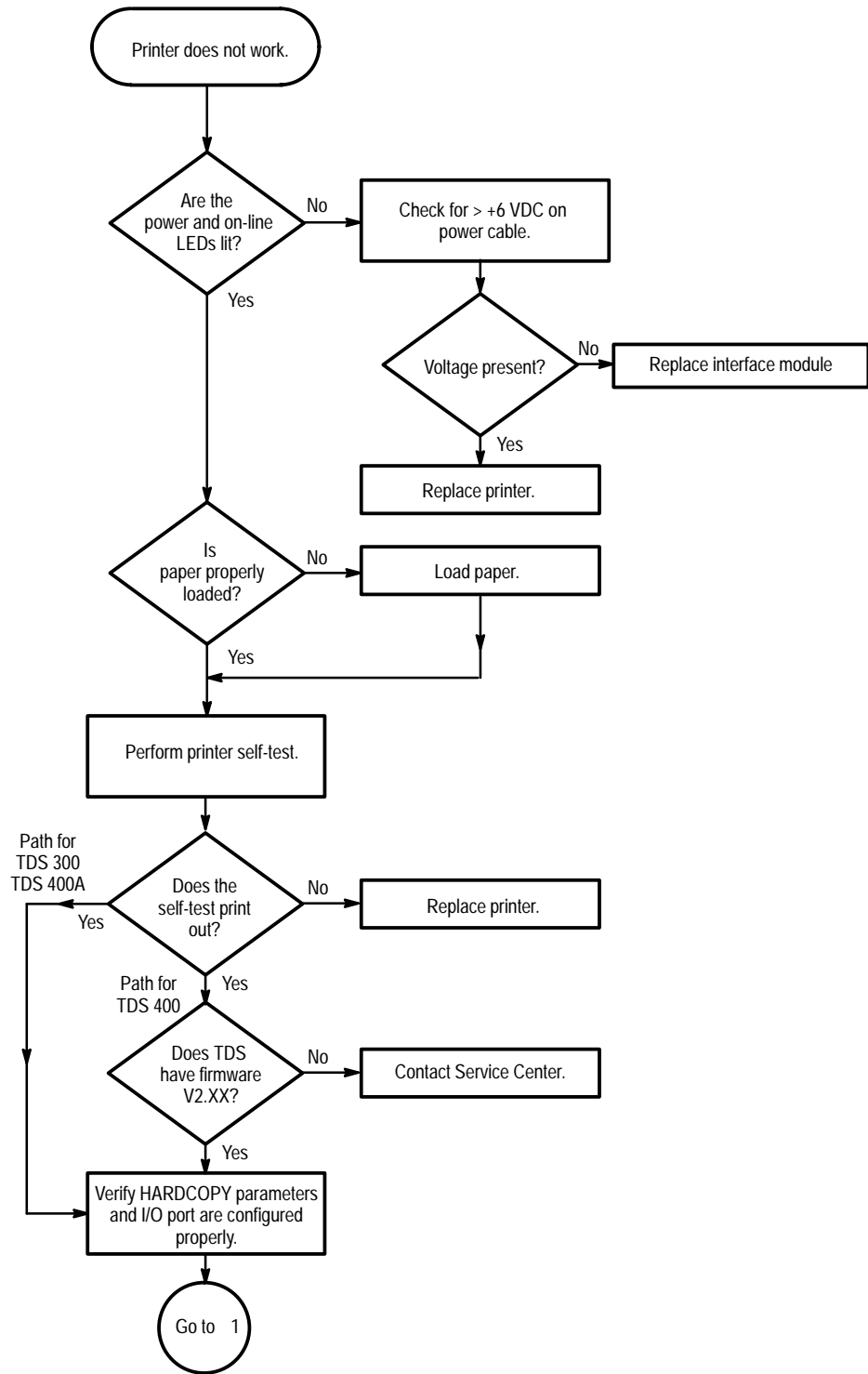


Figure 6: Troubleshooting tree — part 1

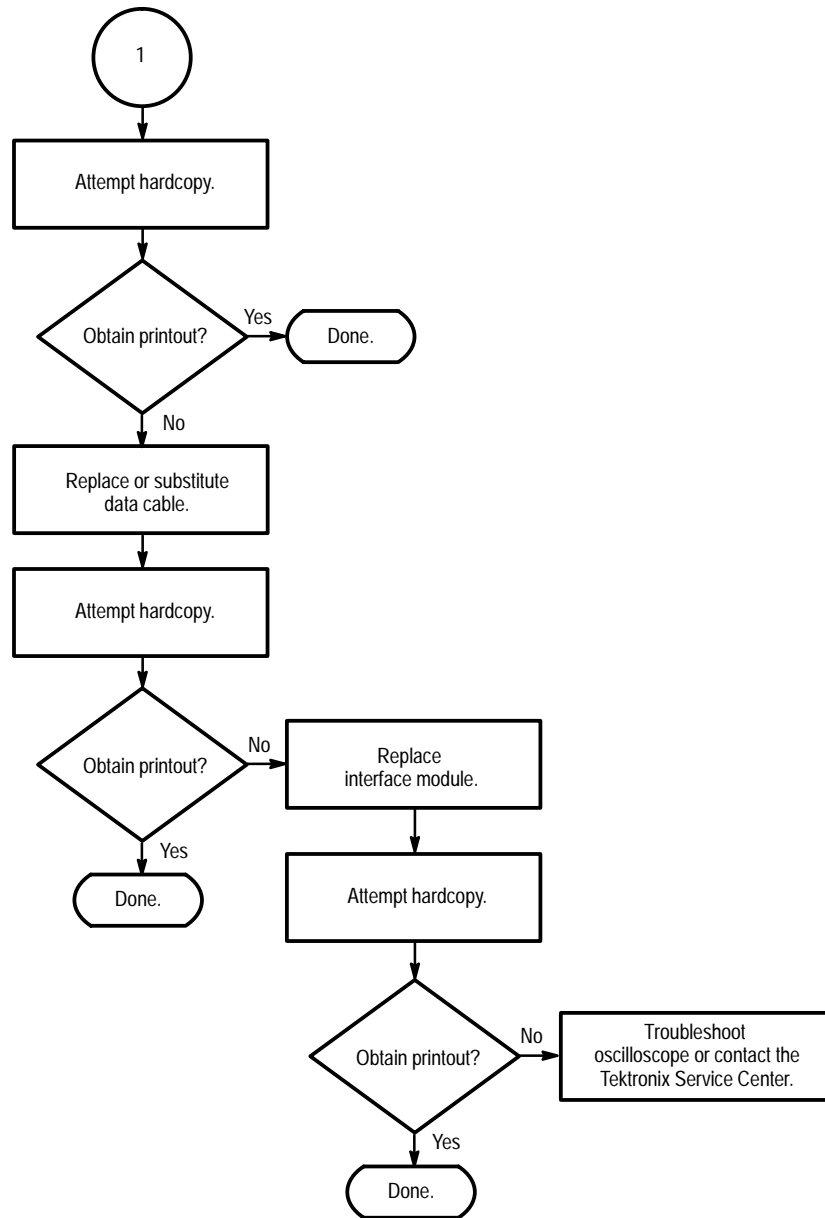


Figure 7: Troubleshooting tree — part 2

## Tektronix Service

Tektronix provides service to cover repair or replacement under warranty as well as other services that may provide a cost-effective answer to your service needs.

### **Warranty Service**

Tektronix warrants the printer pack for one year from date of purchase. (The warranty appears at the front of this manual.)

### **For More Information**

Contact your local Tektronix service center or sales engineer for more information on the warranty service just described.

# Replaceable Parts List

This section contains a list of the replaceable modules for the printer pack. Use this list to identify and order replacement parts.

## Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix products are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest improvements. Therefore, when ordering parts, it is important to include the following information in your order:

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If you order a part that has been replaced with a different or improved part, your local Tektronix 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.

## Module Servicing

Modules can be serviced by selecting one of the following three options. Contact your local Tektronix service center or representative for repair assistance.

**Module Exchange.** In some cases you may exchange your module for a remanufactured module. These modules cost significantly less than new modules and meet the same factory specifications. For more information about the module exchange program, call 1-800-TEK-WIDE, extension 6630.

**Module Repair and Return.** You may ship your module to us for repair, after which we will return it to you.

**New Modules.** You may purchase replacement modules in the same way as other replacement parts.

## Using the Replaceable Parts List

This section contains a list of the mechanical and/or electrical components that are replaceable for the printer pack. Use this list to identify and order replacement parts. The following table describes each column in the parts list.

### Parts List Column Descriptions

Column	Column name	Description
1	Figure & Index Number	Items in this section are referenced by figure and index numbers to the exploded view illustrations that follow.
2	Tektronix Part Number	Use this part number when ordering replacement parts from Tektronix.
3 and 4	Serial Number	Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entries indicates the part is good for all serial numbers.
5	Qty	This indicates the quantity of parts used.
6	Name & Description	An item name is separated from the description by a colon (.). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.
7	Mfr. Code	This indicates the code of the actual manufacturer of the part.
8	Mfr. Part Number	This indicates the actual manufacturer's or vendor's part number.

**Abbreviations**      Abbreviations conform to American National Standard ANSI Y1.1-1972.

**Mfr. Code to Manufacturer Cross Index**      The table titled Manufacturers Cross Index shows codes, names, and addresses of manufacturers or vendors of components listed in the parts list.

**Manufacturers Cross Index**

<b>Mfr. code</b>	<b>Manufacturer</b>	<b>Address</b>	<b>City, state, zip code</b>
62712	SEIKO INSTRUMENTS USA	2990 W LOMITA BLVD	TORRANCE CA 90505-5102
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077-0001

**Replaceable Parts List**

<b>Fig. &amp; index number</b>	<b>Tektronix part number</b>	<b>Serial no. effective</b>	<b>Serial no. discont'd</b>	<b>Qty</b>	<b>Name &amp; description</b>	<b>Mfr. code</b>	<b>Mfr. part number</b>
	006-7580-00			5	THERMAL PAPER:112MM X 48MM X 28M	62712	TP411-451-25C
	016-1230-02			1	POUCH:POUCH & PLATE	80009	016123002
	071-0164-00			1	MANUAL,TECH:INSTRUCTION, PRINTER PACK	80009	071016400
	119-5835-00			1	PRINTER,THERMAL:SERIAL,DOT,RS-232	80009	119583500
	174-3476-00			1	CABLE ASSY,SP:CENT-DB25,10 L	80009	174347600
	174-3030-00			1	CABLE ASSY,PWR:DISCRETE,POWER	80009	174303000
	200-3232-01			1	INSTRUMENT FRONT COVER	80009	200323201







