

**050-3706-00**  
**WVR7000, WVR7100, WVR7020, and WVR7120**  
**Waveform Rasterizers**  
**WFM7000 and WFM7100**  
**Waveform Monitors**  
**Oscillator Replacement Kit Instructions**

[www.tektronix.com](http://www.tektronix.com)



075-0984-00

**Tektronix**

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- Worldwide, visit [www.tektronix.com](http://www.tektronix.com) to find contacts in your area.

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# Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* before performing any service procedures.

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

**Disconnect Power.** To avoid electric shock, disconnect the power cord from the mains power.

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 power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

## Kit Description

Use these instructions to modify the following EYE boards used in the WVR7000 series Waveform Rasterizers and the WFM7000 and WFM7100 Waveform Monitors.

- 679-6324-00
- 671-6324-00
- 679-9936-01
- 671-9936-01

## Products

This kit can be used for the following products:

- WVR7100 and WVR7120 with Option EYE or PHY
- WVR7000 and WVR7020 with Option EYE or PHY
- WFM7000 and WFM7100 with Option EYE or PHY

## Kit Parts List

Table 1: Kit parts list

Number of items	Item description	Tektronix part number	Reference designator (if relevant)
1 ea.	Kit instructions (this document)	075-0984-00	
1 ea.	EMI SUPPRESSION; FERRITE BEAD;120 OHMS@100MHZ,IMAX=200MA,DCR<0.2 OHM;BLM11A121SPT,0603,7 INCH T&R	276-5012-00	E423
2 ea.	RES, FXD; 0 OHM,+/-1%,0402	321-1864-00	R4215 R4216
1 ea.	OSCILLATOR; VCXO,36.020408MHZ,+/-20PPM,TUNE RANGE +-25PPM, 3.3V, CMOS OUTPUT W/ ENABLE,550CE36M0204DG,5 X 7MM,-40 TO 85 DEG C	158-0679-00	Y522
1 ea.	OSCILLATOR; VCXO,59.370079MHZ,+/-20PPM,TUNE RANGE +-25PPM, 3.3V, CMOS OUTPUT W/ ENABLE,550CE59M3701DG,5 X 7MM,-40 TO 85 DEG C	158-0680-00	Y521
1 ea.	RES,FXD,FILM; 162K OHM,1%,50V,62.5MW,100PPM,0402,T&R	321-1977-00	R5216
1 ea.	RES,FXD,FILM; 182K OHM,1%,50V,62.5MW,100PPM,0402,T&R	321-1978-00	R529

## Related Documents

The following documents contain information about the operation, installation, and service of the affected instruments.

Table 2: Related documents

Item	Tektronix part number
WVR6020, WVR7020, WVR7120, WVR6100 Opt MB, WVR7000 Opt MB, and WVR7100 Opt MB Waveform Rasterizers Service Manual	071-2235-XX
WVR6020, WVR7020, WVR7120, WVR6100 Opt MB, WVR7000 Opt MB, and WVR7100 Opt MB Waveform Rasterizers Specifications and Performance Verification Technical Reference	077-0083-XX
WVR6100, WVR7000, and WVR7100 Waveform Rasterizers Service Manual	071-1589-XX
WVR6100, WVR7000, and WVR7100 Waveform Rasterizers Specifications and Performance Verification Technical Reference	071-1591-XX

**Table 2: Related documents, (cont.)**

<b>Item</b>	<b>Tektronix part number</b>
WFM6120, WFM7020, WFM7120, WFM6100 Opt MB, WFM7000 Opt MB, and WFM7100 Opt MB Waveform Monitors Service Manual	077-0081-XX
WFM6120, WFM7020, WFM7120, WFM6100 Opt MB, WFM7000 Opt MB, and WFM7100 Opt MB Waveform Monitors Specifications and Performance Verification Technical Reference	077-0080-XX
WFM6100, WFM7000, and WFM7100 Waveform Monitors Service Manual	071-1896-XX
WFM6100, WFM7000, and WFM7100 Waveform Monitors Specifications and Performance Verification Technical Reference	071-1897-XX

## Minimum Tool and Equipment List

**Table 3: Equipment list**

<b>Equipment</b>	<b>Description</b>
Torx screwdriver with T-10 and T-15 tips	Used for removing instrument screws on boards. Torx-driver bit for T-15 size screw heads
Phillips head screwdriver	Used for removing instrument Phillips head screws
Bomar DB36400	Special BNC socket wrench with Controlled Torque. Used to remove BNCs
1/8 inch flat-bladed screwdriver	Screwdriver for unlocking cable connectors
Soldering iron	

## Lead Free Soldering

Lead-free manufacturing processes and components were used to make this product. The Tektronix Worldwide Service Organization uses lead-free solder in all repairs. Lead-free solder joints have a satin finish and are not shiny like lead-based solder joints.

The following equipment is recommended for performing the procedures in this document:

- Industry-acceptable lead-free solder or solder paste. (See Table 4.)

**Table 4: Lead-free solder and paste**

Material	Alloy	Vendor	Detail
Wire Core Solder	SAC305	Kester	275 w/Pb-free alloy
Syringe Paste	SAC305	Kester R	276SR w/Pb-free alloy

- Soldering iron (and tip) that provides a higher temperature (700° F) for proper melting of the lead-free solder.
- If you are using syringe paste, a hot air gun capable of providing temperatures slightly higher than 700° F.

## Component level repairs (lead free environment)

**Lead free soldering.** Tektronix, Inc. has used Lead Free Manufacturing processes and components in the making of this product and our Worldwide Service Organization has transitioned to using Lead Free solder in all component level repairs.

**Temperature.** For Leaded solder 600° F tips are used whereas for Lead-Free solder 700° F tips are used due to the higher melting temperature required for the alloy. For Syringe Paste a hot air gun can be used where the temperatures tend to run slightly higher than 700° F.

**Special Tools.** With the exception of a soldering iron capable of providing the higher temperature for proper soldering, or a hot air gun for syringe paste no new hand tools are required for soldering components.

**Appearance.** When using leaded solder we have always been trained to look for a nice shiny solder joint to indicate that the joint is not a cold solder joint. However with lead free solder a normal solder joint is dull and will never be shiny.

**Lead free solder.** Industry acceptable Lead Free solder should be used for all component level repairs. (See Table 4.)

# Installation

These instructions are for qualified service personnel who are familiar with servicing the product. If you need further details for disassembling or reassembling the product, refer to the appropriate product manual. Contact your nearest Tektronix, Inc., Service Center or Tektronix Factory Service for installation assistance.



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

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## Remove, Modify, and Reinstall the EYE Board

Remove the EYE board from the instrument. For detailed removal instructions, refer to the Service manual for your instrument. (See page 3, *Related Documents*.)

Modify the EYE board by performing the following procedures. Use the diagram to find the component locations. (See Figure 1 on page 7.)

After you have modified the board, reinstall the board into the instrument using the detailed instructions in the Service manual. Once reinstallation is complete, perform the performance verification procedures for the Eye board. You will find these procedures in the Specifications and Performance Verification Technical Reference for your instrument. (See page 3, *Related Documents*.)

### Board Modification Procedures

1. Remove E422 and add E423.
2. Remove R4212 and add R4215.
3. Remove R4217 and add R4216.
4. Replace Y522 with 158-0679-00.
5. Replace Y521 with 158-0680-00.
6. Replace R5216 with 321-1977-00.
7. Replace R529 with 321-1978-00.
8. Relabel the board as a version -02, even if it is an -00 version.



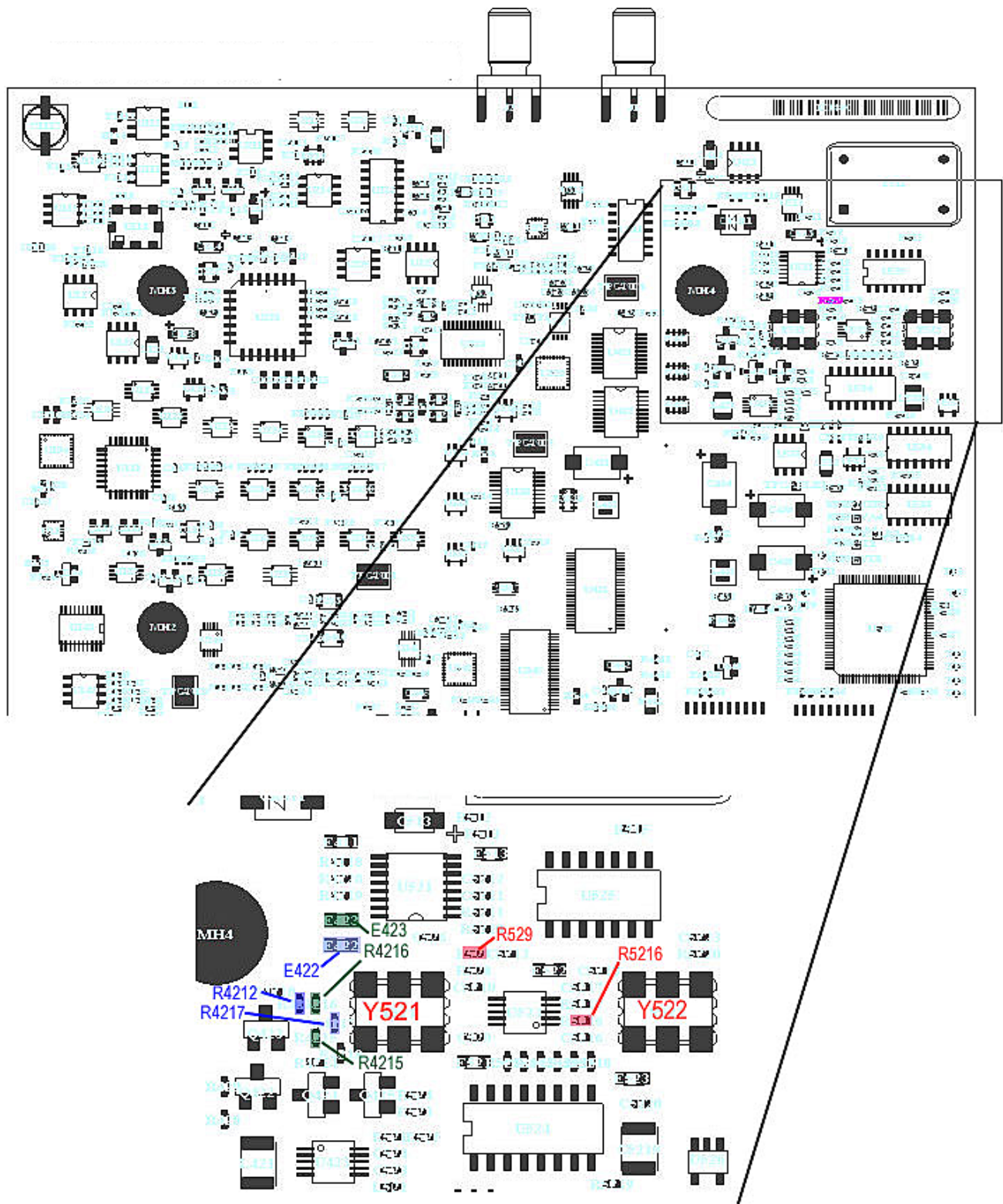


Figure 1: Component locations on board