040-1286-00

M68815

FIRMWARE ENHANCEMENT

For TEKTRONIX® 11802 Digital Sampling Oscilloscope

All Serial Numbers

This kit contains parts and instructions that replaces the firmware in the 11802 Digital Sampling Oscilloscope. The new firmware version 8.0 provides new features and enhancements.

NOTE

Instruments with serial numbers B010100 through B029999, U230 and U240 EPROM's were not installed on the Memory Expansion circuit board A29. Instruments B030000 and above, U230 and U240 EPROM's were installed with firmware version 8.0.

KIT PARTS LIST:

Ckt. Number	Quantity	Part Number	Description
	1 ea	**020-1717-01**	**Component. kit: EPROM s. firmware**
			Consisting of:
A5U300	1 ea	160-5632-XX	Microckt. dgtl: EPROM. ver 8.0
A5U310	1 ea	160-5581-XX	Microckt. dgtl: EPROM. ver 8.0
A5U400	1 ea	160-5580-XX	Microckt. dgtl: EPROM. ver 8.0
A5U410	1 ea	160-5582-XX	Microckt. dgtl: EPROM. ver 8.0
A7U602	1 ea	160-5502-XX	Microckt. dgtl: EPROM. ver 8.0
A7U612	1 ea	160-5503-XX	Microckt. dgtl: EPROM. ver 8.0
A17U240	1 ea	160-5491-XX	Microckt. dgtl: EPROM. ver 8.0
A17U250	1 ea	160-5490-XX	Microckt. dgtl: EPROM. ver 8.0
A18U600	1 ea	160-5479-XX	Microckt. dgtl: EPROM. ver 8.0
A18U612	1 ea	160-5477-XX	Microckt. dgtl: EPROM. ver 8.0
A18U620	1 ea	160-5475-XX	Microckt. dgtl: EPROM. ver 8.0
A18U630	1 ea	160-5473-XX	Microckt. dgtl: EPROM. ver 8.0
A18U700	1 ea	160-5619-XX	Microckt. dgtl: EPROM. ver 8.0
A18U712	1 ea	160-5478-XX	Microckt. dgtl: EPROM. ver 8.0
A18U720	1 ea	160-5476-XX	Microckt. dgtl: EPROM. ver 8.0
A18U730	1 ea	160-5474-XX	Microckt. dgtl: EPROM. ver 8.0
A28U611	1 ea	160-4288-XX	Microckt. dgtl: EPROM. ver 8.0
A29U210	1 ea	160-5420-XX	Microckt. dgtl: EPROM. ver 8.0
A29U220	1 ea	160-5421-XX	Microckt. dgtl: EPROM. ver 8.0
A29U230	1 ea	160-6515-XX	Microckt. dgtl: EPROM. ver 8.0
A29U240	1 ea	160-6516-XX	Microckt. dgtl: EPROM. ver 8.0
	1 ea	----- -----	Manual. tech: 11800 series supplement
	1 ea	----- -----	Label: 040-Kit

CAUTION

To prevent problems concerning duplication of U240 and U612 circuit locations, take the following precaution. Before installing the EPROM's refer to the part numbers as well as the Uxxx numbers printed on each EPROM's. This will ensure the microcircuits are installed in the correct circuit board.

A17U240, pn 160-5491-XX, on the Main Processor A17. A29U240, pn 160-6516-XX, on the Memory Expansion circuit board A29.

A7U612, pn 160-5503-XX, on the Display Controller circuit board A7. A18U612, pn 160-5477-XX, on the Memory circuit board A18.

INSTRUCTIONS:

WARNING

Dangerous shock hazards may be exposed when the instrument covers are removed. Before proceeding, ensure the mainframe power switch is in the off position. Then, disconnect the instrument from the power source. Disassembly should only be attempted by qualified service personnel.

CAUTION

Many components within the 11802 Digital Sampling Oscilloscope are extremely susceptible to 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 strap.

NOTE

These instructions assume a familiarity with the instrument. If additional assembly or disassembly details are required, refer to the 11802 Service Reference Manual.

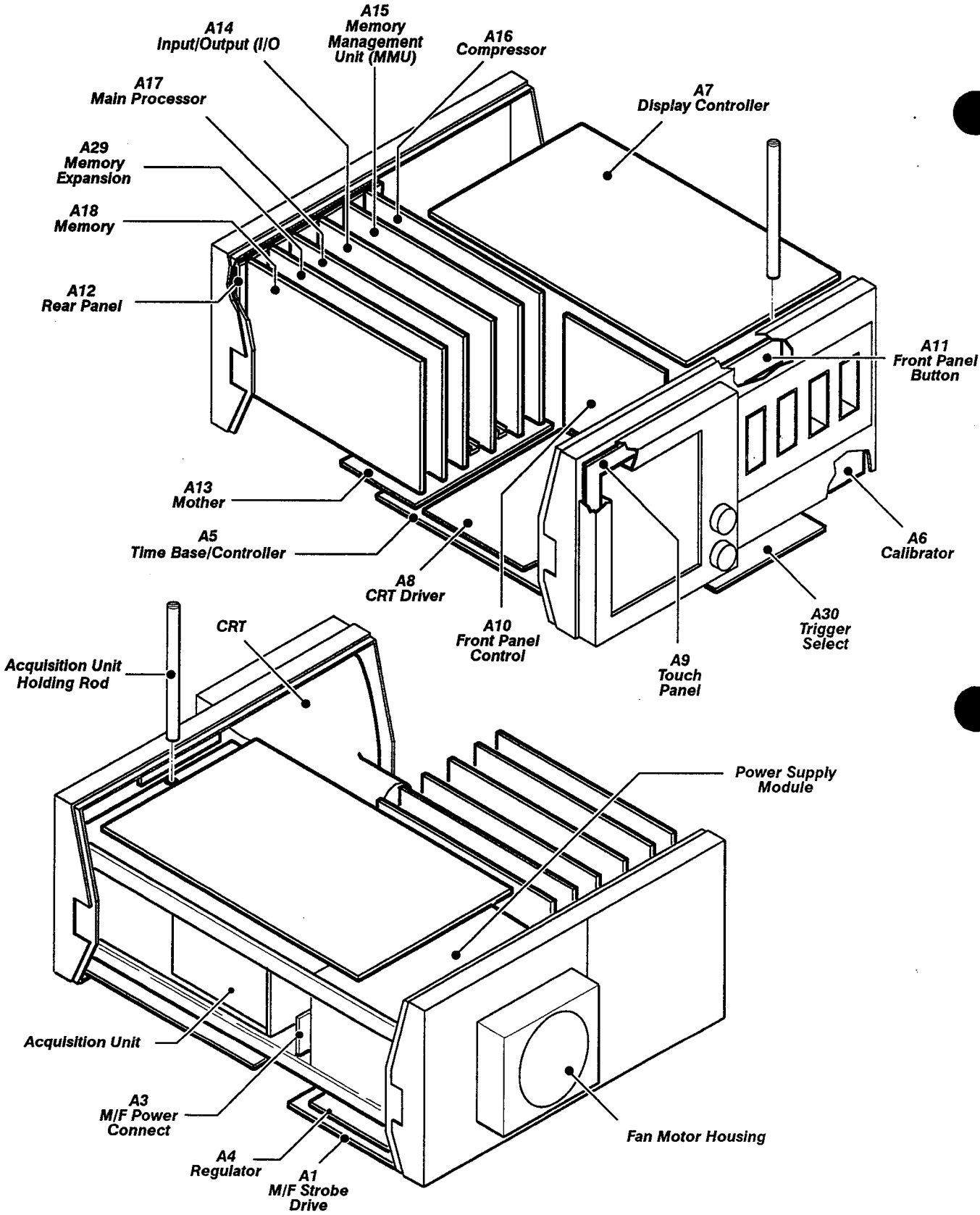


Figure 1 - Mainframe circuit board locations.

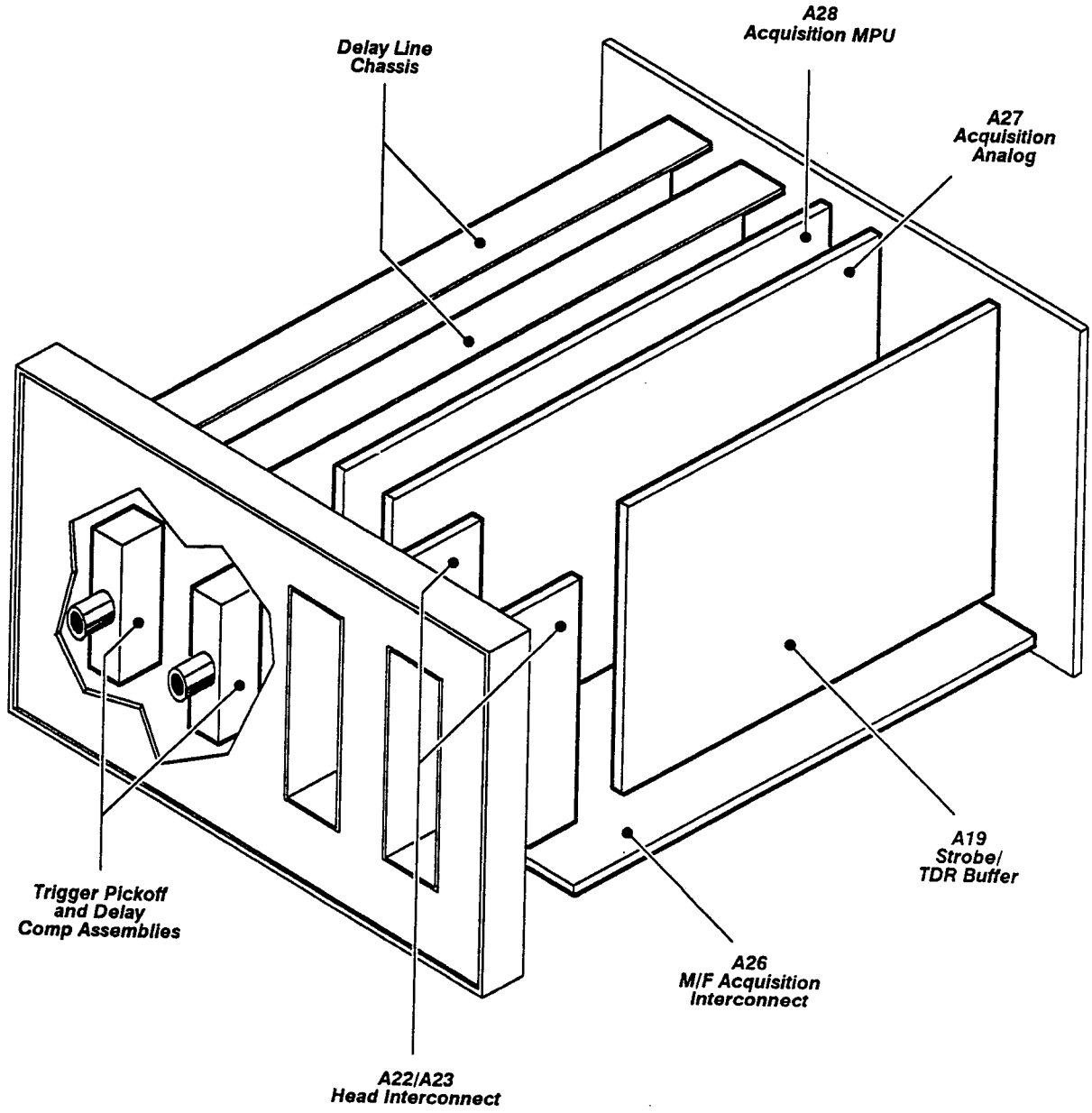
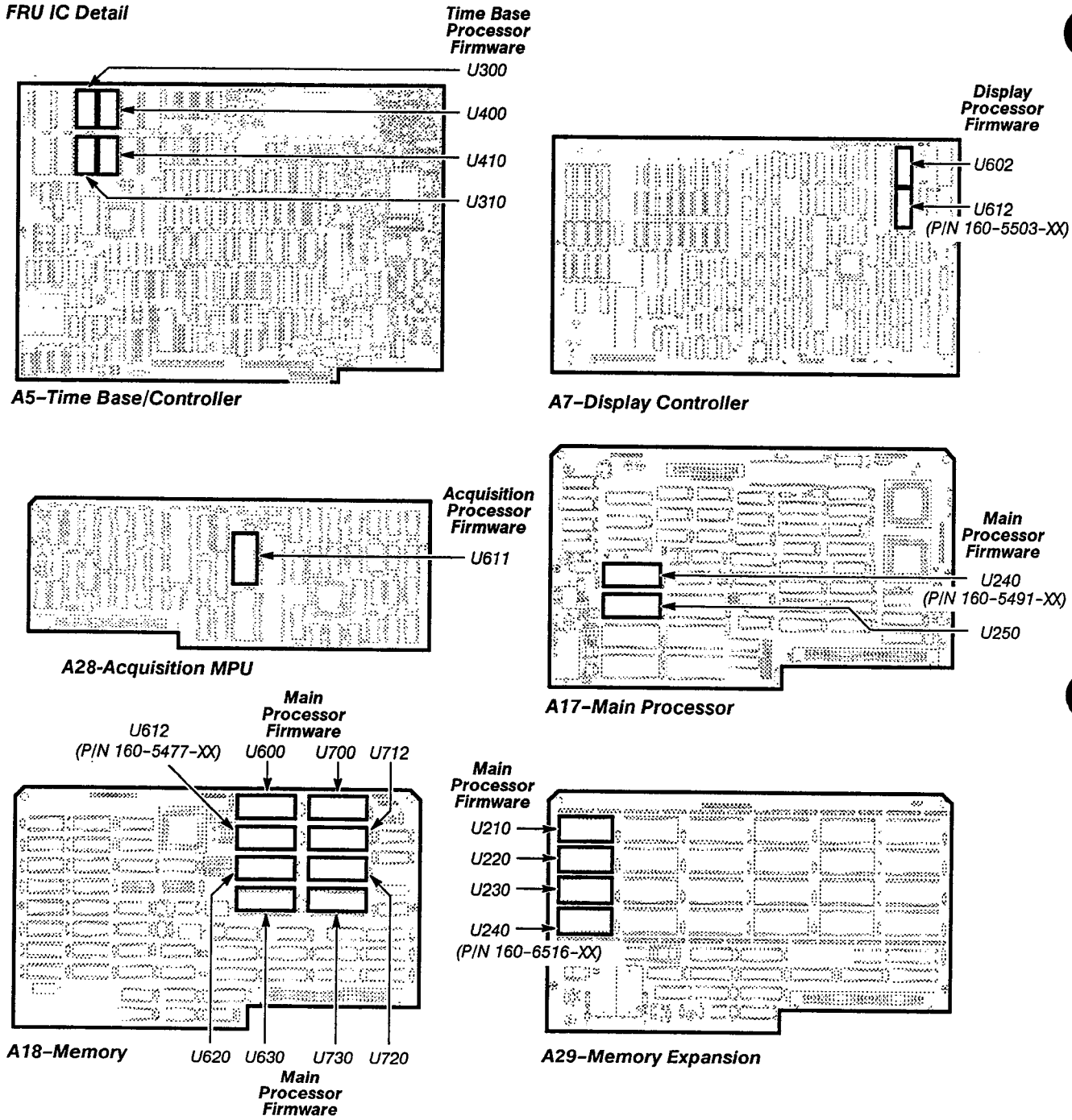


Figure 2 - Acquisition Unit ckt bd locations.



802EPROM
Mod Kits folder

Figure 3 - EPROM locations.

( ) 1. Turn the slotted fasteners on the top and bottom dust covers one quarter turn counterwise, then remove the dist covers by lifting away from the instruments.

NOTE

Position the instrument with the top (card cage) facing the installer.

( ) 2. Remove both nylon circuit board guides from the top of the card cage. The guides are retained by two small catches located in the two (2) holes in the left bracket of the card cage. Both ends of the guides can be pried loose for removal.

( ) 3. Remove the three (3) screws that secure the card cage retainer, then remove the retainer from the instrument.

NOTE

When installing the new EPROM microcircuits be certain pin 1 is position correctly and all component pins are properly seated.

Avoid touching the IC's or its socket contacts with your fingers. finger oils can degrade component reliability.

The last two-digit portion of the part number on the replacement EPROM's should be higher than that of the removed EPROM's Again, ensure that pin 1 is oriented correctly. Refer to Figure 3, for component locations.

( ) 4. Remove the Memory circuit board A18 from the card cage.

( ) 5. Replace the following microcircuits on the Memory circuit board A18 with the new microcircuits provided in this kit:

U600	160-5479-XX
U612	160-5477-XX
U620	160-5475-XX
U630	160-5473-XX
U700	160-5619-XX
U712	160-5478-XX
U720	160-5476-XX
U730	160-5474-XX

( ) 6. Replace the Memory circuit board A18 its former location in the card cage.

( ) 7. Remove the Memory Expansion circuit board A29 from the card cage. The Memory Expansion circuit board is located next the Memory circuit A18.

( ) 8. Replace U210 and U220, microcircuits with the new microcircuits provided in this kit. Then install **U230** and **U240** microcircuits provided in this kit.

( ) 9. Replace the Memory Expansion circuit board A29 its former location in the card cage.

( ) 10. Remove the Main Processor circuit board A17 form the card cage. The Main Processor circuit board is located next to the Memory Expansion circuit board A29. J77 cable connector must be removed before the Memory circuit board can be removed from the card cage. Note the positions of the cable connector index marks for later reassembly.

( ) 11. Replace U240 and U250, microcircuits with the new microcircuits provided in this kit.

( ) 12. Replace the Main Processor circuit board A17 former location in the card cage. Then reconnect J77 cable connector removed in step 10.

( ) 13. Replace the card cage retainer with the three (3) screws removed in a earlier step, then replace the two (2) nylon circuit board guides.

( ) 14. Replace U602 and U612, microcircuits, located on the Display Controller circuit board A7, with the new microcircuits provided in this kit.

NOTE

Position the instrument with the bottom facing the installer.

( ) 15. Remove U300, U310, U400 and U410 microcircuits from the Time Base/Controller circuit board A5, and replace with the new microcircuits provided in this kit. The Time Base/Controller circuit board A5 is located on the bottom front of the instrument.

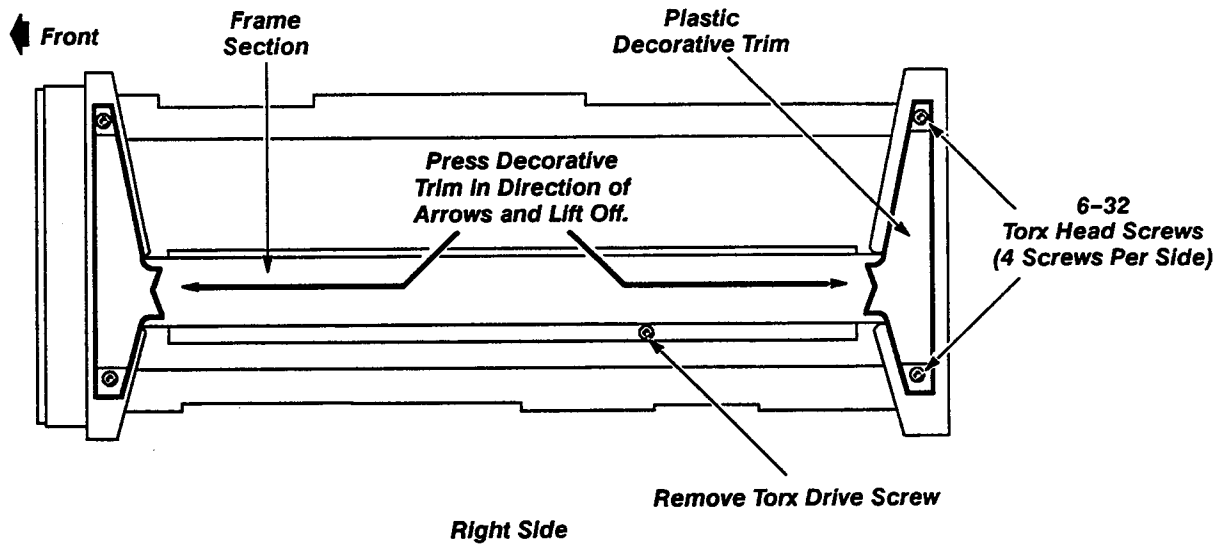


Figure 4 - Trim and frame removal.

NOTE

Position the instrument with the top right side towards the installer (as view from the front of the instrument).

Trim Cover Removal

Do not lift the trim covers to remove them; doing so will break the trim covers. There is a clip on the inside of the trim cover which slides over the end of the side frame section. To remove the trim covers properly and prevent breakage of these covers, move each cover towards the end of the oscilloscope where it is located. (The front cover moves forward and the rear moves backward.) Moving the clip about 1/8-inch will release the cover. Then, the trim cover can be removed from the oscilloscope. Refer to Figure 4 Trim and frame removal.

( ) 16. Remove the Torx screws that secure the right-side trim covers as (viewed from the front of the instrument.) Then remove the trim covers.

( ) 17. Remove the torx screws that secure the right-side frame section to the instrument. Then remove the frame section from the instrument.

( ) 18. Remove the long holding rod located on the top of the instrument in front of the Display Controller circuit board A7. The holding rod secures the Aquisition Unit into the instrument. Refer to Figure. 1. for the holding rod location.

( ) 19. Disconnect the coaxial cable connectors J29A, J30A, J32, J33A and J33B on the Strobe/TDR Buffer circuit board A19. Note cable locations for later reassembly.

( ) 20. Disconnect the ribbon cable connector J34 from the Strobe/TDR Buffer circuit board A19. Note cable location for later reassembly.

( ) 21. Disconnect the ribbon cable connector J10 from the M/F Acquisition Interconnect circuit board A26. Note cable location for later reassembly.

( ) 22. Remove the three (3) torx screws that secure the Trigger Select circuit board A32. The Trigger Select circuit board is located on the bottom of the instrument below the Acquisition Unit.

( ) 23. Disconnect coaxial cable connectors J86 and J89 from the Trigger Select circuit board. Note cable connector locations for later reassembly. Move the Trigger Select circuit board aside to allow J86 and J89 coaxial cables to be pulled though the grommets in the lower frame chassis. Refer to Figure 5 for J86 and J89 connector locations.

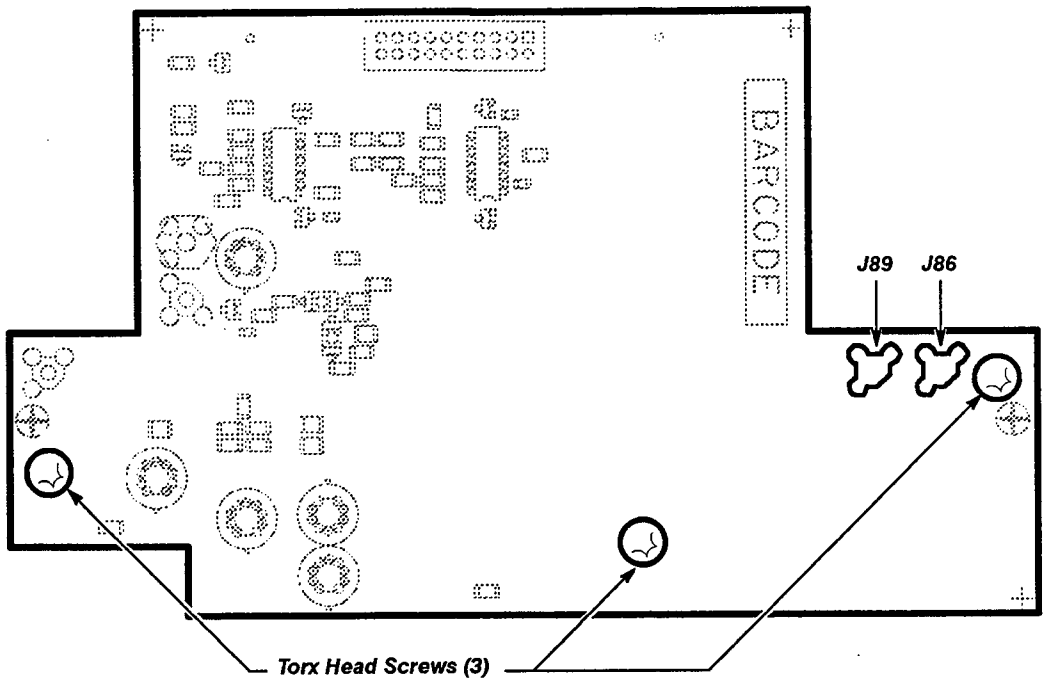


Figure 5 - Trigger Select ckt bd A32

( ) 24. Slide the Acquisition Unit forward enough to allow access to the Unit's rear housing.

( ) 25. Disconnect the grounding lug located at the rear of the Acquisition Unit's housing.

( ) 26. Slide the Acquisition Unit out of the instrument while guiding J86 and J89 coaxial cables up through the grommets.

( ) 27. Remove the two (2) Torx head screws that secure each black retaining brace located on the top of the Acquisition Unit. Then remove the retaining braces from the Acquisition Unit.

( ) 28. Pull up on the hinged tabs until Acqusition MPU circuit board A28 separates from P8 connector on the Acquisition M/F Interconnect circuit board A26. Then remove the circuit board from the Acquisition Unit.

( ) 29. Replace U611, microcircuit with the new microcircuit provided in this kit. Refer to Figure 3, for component location.

( ) 30. Replace the Acquisition MPU circuit board A28 to its former location in the Acquisition Unit.

( ) 31. Replace the black retaining braces using the hardware removed in a previous step.

( ) 32. Slide the Acquisition Unit partially into the instrument allowing the installer to feed J86 and J89 coaxial cables through the grommets in the lower chassis. It may be necessary to dress the cables with a slight bend to allow the cables to be fed through the grommets. Reconnect the grounding lug to the unit's rear housing that was disconnected in step 25

( ) 33. Slide the Acquisition Unit into place carefully guiding J86 and J89 coaxial cables through the grommets. Then secure the Acquisition Unit using the holding rod removed in step 18.

( ) 34. Replace the Trigger Select circuit board A32 securing it using the Torx screws removed in step 22.

( ) 35. Reconnect J86 and J89 coaxial cables to the Trigger Select circuit board removed in step 23. CHECK cables to ensure connections are as follows: Delay line 1 is connected to J89, and Delay line 2 is connected to J86.

( ) 36. Reconnect ribbon cable connectors J10 and J34 on the M/F Acquisition and Strobe/TDR Buffer circuit boards respectively.

( ) 37. Reconnect coaxial cable connectors J29A, J30A, J32, J33A, and J33B located on the Strobe/TDR Buffer circuit A19.

( ) 38. Replace the right-side frame section using the hardware removed in step 17.

( ) 39. Replace the right-side trime covers using the hardware removed in step 16.

( ) 40. Replace the top and bottom dust covers removed in step 1.

( ) 41. For future reference, fasten the attached instruction Manual Modification Insert in the Manual.

( ) 42. Remove the protective backing from the 050-kit label and place it on the clean, dry area on the rear panel of the instrument. This label indicates that this kit has been installed.

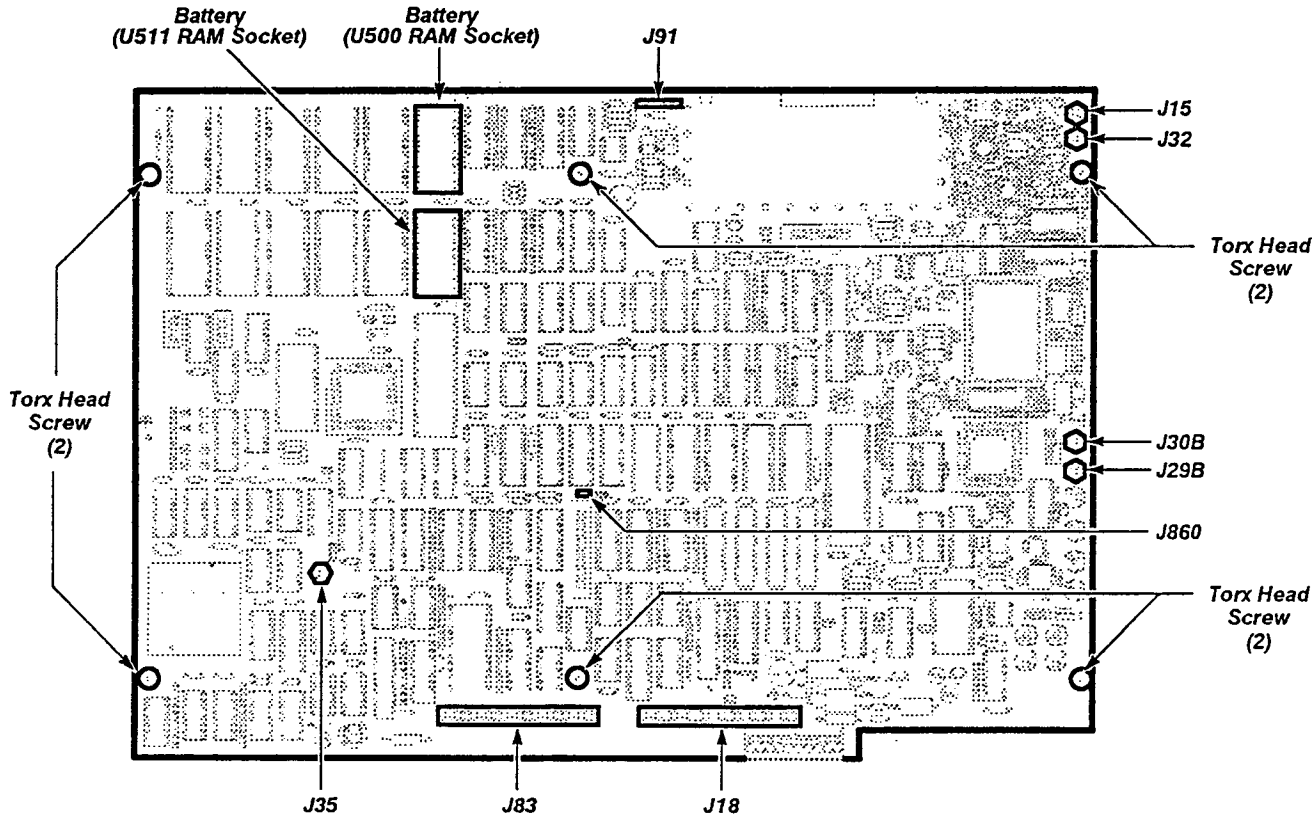


Figure 6 - Time Base/Controller ckt bd A5.

TEKTRONIX

MANUAL MODIFICATION INSERT

FIRMWARE REPLACEMENT

for

11802 Digital Sampling Oscilloscope All Serial Numbers

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.

GENERAL INFORMATION

This kit contained parts and instructions that replaced the firmware in the 11802 Digital Sampling Oscilloscope. The new firmware version 8.0 provided new features and enhancements.

NOTE

Instruments with serial numbers B010100 through B029999, U230 and U240 EPROM's were not installed on the Memory Expansion circuit board A29. Instruments B030000 and above, U230 and U240 EPROM's were installed with firmware version 8.0.

Tektronix®
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MANUAL CHANGE INFORMATION

Date: 2/20/89 Change Reference: C1/0289

Product: 11802 Service Reference

Manual Part No.: 070-7047-00

Product Group: 47

DESCRIPTION

These changes are effective at serial number B030000 and on instruments in which parts kit 050-2519-00 has been installed.

TEXT & PARTS LIST CHANGES

Checks and Adjustments, page 2-12, **Procedure to Invoke Extended Diagnostics**

CHANGE TO READ:

Step 3: Touch **Diag/Self Test**.

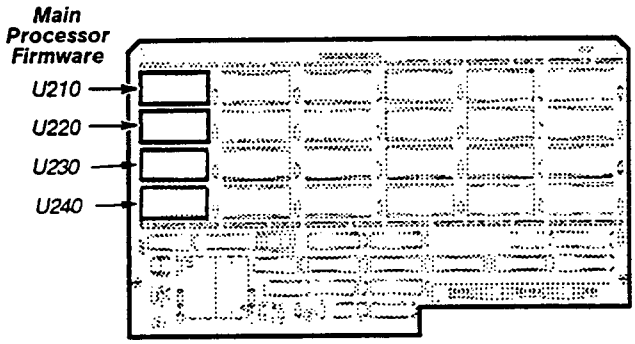
Step 4: Touch **Extended Diagnostics** in the **Diag/Self Test** pop-up menu.

Page 2-25, after Step 2:, **ADD:**

Touch **Diag/Self Test.**

Touch **Extended Diagnostics** in the **Diag/Self Test** pop-up menu.

Maintenance, page 3-59, Figure 3-33, board **A29-Memory Expansion**, **ADD**: U230 and U240 as shown in the diagram below:



A29-Memory Expansion

Product: 11802 Service Part No.: 070-7047-00 Date: 2/20/89 Change Ref.: C1/0298

Page 3-63. **CHANGE** Step 2 to read:

Step 2: On the A29 Memory Expansion board, replace ICs U210, U220, U230 and U240 (see Fig. 3-33 in this section).

Page 3-76, after the first paragraph **ADD**:

The knobs control the screen intensity during the four main diagnostics menu levels. The touch panel ON/OFF buttons enables/disables the touch panel from responding to user touches.

Page 3-78, **CHANGE** the Note to read:

Note: *Turning the oscillosope off while Extended Diagnostics is executing one of the NV RAM memory tests may cause failure of the NV RAM battery test. If the diagnostics report an NV RAM battery failure, then exit the diagnostics. This will rewrite the confidence words into the NV RAM. Turn off the oscilloscope for at least one hour. Then, turn the oscilloscope back on. If the diagnostics still indicate an NV RAM battery failure, then the battery should be tested.*

Page 3-79, Replace the second paragraph to **READ**:

Clearing **NV RAM**

Before a power-up Self-Test begins—but just after the Executive processor has run its Kernel Diagnostics—the front panel buttons are scanned by the Executive processor. If the Executive processor senses that the WAVEFORM and TRIGGER buttons, and only these two buttons, are pressed in (ie. closed) during this time, then the Executive processor resets its NV RAM to a default state. This essentially destroys all stored settings and saved trace descriptions (there are no stored waveforms in NV RAM). When this occurs, the NV RAM is initialized by filling all but a few locations with a default value. The following items are left intact after the NV RAM is reset:

Number of instrument power-ons (POWERON?)
Instrument power-on time (UPTIME?)
Mainframe serial number (UID? MAIN)

Page 3-82, fourth paragraph, **CHANGE TO READ**:

Table 3-11 lists the Executive processor manual tests and the verification procedures. If the conditions specified in the verification procedure are not met, then the suspect FRU's can be found using the **(?) Help** function.

Pages 3-83, 3-84 and 3-85, Table 3-11, **REMOVE** the third column,**"Verification Procedure Failure: Suspect Board FRUs"**. Also, in Table 3-11 , **CHANGE** all headings **"Internal I/O"** to read: **"Input/Output"**. **CHANGE "External I/O"** to **: "Input/Output"**, and **CHANGE "GPIB"**, to read: **"Input/Output** GPIB".

REMOVE page 3-88.

Product: 11802 Service Part No.: 070-7047-00 Date: 2/20/89 Change Ref.: C1/0289

ELECTRICAL PARTS CHANGES

CHANGE TO:

Fig. 3 -9	671-0823-01	CKT BD ASSY:MEMORY
Fig. 3 -10	671-0264-51	CKT BD ASSY:MEMORY EXPANSION
Fig. 3 -12	671-0822-01	CKT BD ASSY:MAIN PROCESSOR
Fig. 3 -20	670-8848-51	CKT BD ASSY:DISPLAY CONTROLLER
Fig. 3 -29	670-9362-52	CKT BD ASSY:TIME BASE/CONTROLLER
Fig. 4 -29	670-9363-01	CKT BD ASSY:ACQUISITION MPU