



040-0386-01

PUSHBUTTON ILLUMINATION

For the following TEKTRONIX® instruments:

7313/R7313	All Serial Numbers
7603/R7603	All Serial Numbers
7613/R7613	All Serial Numbers
7623/R7623	All Serial Numbers
7623A/R7623A	All Serial Numbers
7633/R7633	All Serial Numbers

This modification kit provides parts and instructions to add a +5V L (lights) voltage regulator to the power unit. The regulator supplies +5V L to pin 9A of the Interface plug-in connectors, J1, J2 and J3. The +5V L supply allows illumination of the pushbutton switches on those 7000-Series plug-in units offering this feature.

Since the oscilloscope power supplies were not designed for the +5V L regulator, some derating of maximum operating temperature and line voltage tolerance may be necessary. See the attached manual insert for detailed information on derating.

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28-NOV-1984
Supersedes: 27-AUG-1979

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KIT PARTS LIST:

Ckt. Number	Quantity	Part Number	Description
U821	1 ea		Assembly, Regulator, consisting of:
	2 ea	131-0707-00*	Contact, elec, 22-26 AWG
	1 ea	136-0135-01	Socket, pi-in, elec, transistor, 2-cont
	1 ea	156-0176-00	Microcircuit, II, voltage regulator, 309k
	1.292 ft	175-0825-00*	Cable, sp, elec, 2.26 AWG, strd, rbn
	1 ea	177-0369-00	Wire, elec, strd, 26 AWG, wht-brn
	1 ea	177-0382-00	Wire, elec, strd, 26 AWG, wht-red
	2 ea	211-0511-00	Screw, mach, 6-32 x 0.5", pnh, poz
	1 ea	352-0169-08*	Holder, term conn, 2-wire, gray, 0.1 sp
	1 ea	407-1434-00	Bracket, voltage regulator
	2 ea	211-0097-00	Screw, mach, 4-40 x 0.312, pnh, poz
	1 ea	-----	Label, 040-kit

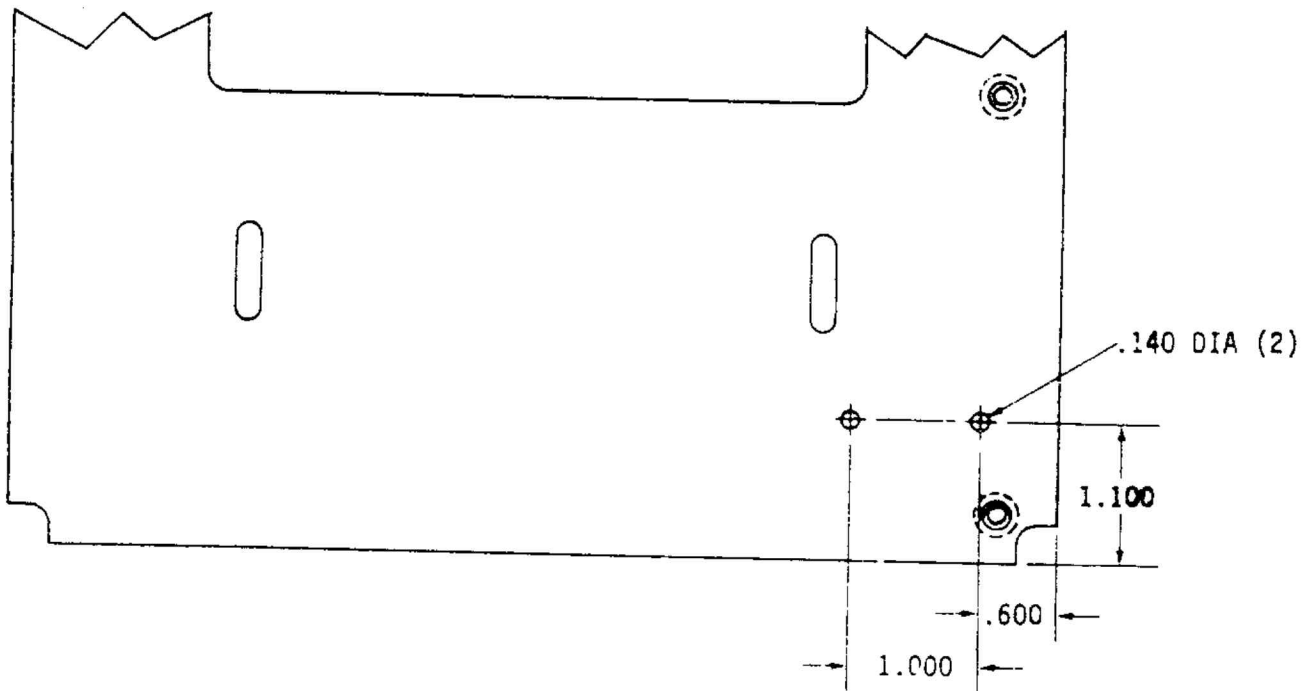


Fig. 1. Partial view of power unit bottom showing voltage regulator mounting holes. All dimensions are in inches.

* Part of wire assembly

INSTRUCTIONS:

WARNING

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

- () 1. Remove the side covers from the standard oscilloscope or the top cover from the rackmount oscilloscope.
- () 2. Remove the screws securing the power supply unit to the oscilloscope frame. In the standard oscilloscope, the unit is secured with six screws -- three on each side. In the rackmount, five screws are used -- three on the right side and two on the bottom.

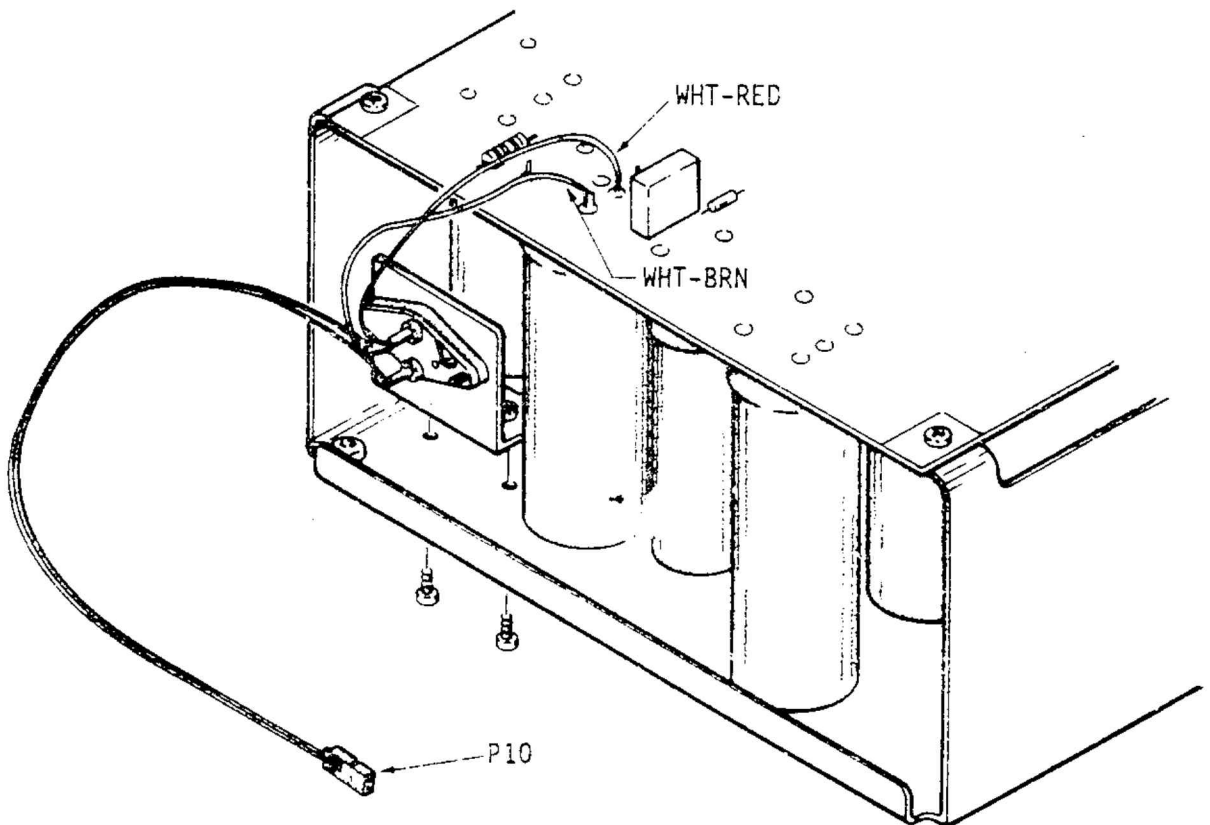


Fig. 2. Voltage regulator assembly mounting

- () 3. Carefully slide the power unit out the rear of the instrument, ensuring that the interconnecting cabling does not catch on other parts. Some cables may have to be removed to allow access to the bottom of the Power Unit.

NOTE

Sometime during 1973, two 0.140 inch diameter holes were added to the bottom of the power unit chassis. These holes are used to mount the +5V L regulator assembly included in this kit. For pre-modified units, the holes will need to be drilled. Refer to Fig. 1 for location and dimensions of the holes.

- () 4. Install the +5V L regulator assembly as shown in Fig. 2, using the two 4-40 screws (included in the kit). To ensure maximum heat transfer, apply silicone grease between the bracket and the power unit chassis.
- () 5. Solder the white-red wire (connects to regulator input) to the positive terminal of C821 on the top side of the Rectifier circuit board. This terminal of C821 also connects to pin 3 of P890.
- () 6. Solder the white-brown wire (connects to regulator common) to the negative terminal (ground) of C821.
- () 7. Connect the gray, 2-conductor connector to the two square pins designated P10 on the back of the Main Interface circuit board, A1. These square pins are located on the left side (looking from the front) of the board between P13 and the left vertical compartment plug-in connector, J1. Ensure the pin 1 indicators on the connector housing and the circuit board are aligned.
- () 8. Referring to the appropriate Instruction Manual to determine proper cable connections, install the power unit into the oscilloscope.
- () 9. Refer to the Calibration Section of the appropriate service manual and check oscilloscope operation, especially the power supply. Also, check the operation of the pushbutton lights on an appropriate plug-in unit.
- () 10. Remove the protective backing from the 040-kit label (included in the kit) and apply the marker to a clean, dry area on the rear panel of the power unit. The label indicates installation of the kit for future reference.
- () 11. Install the oscilloscope cover(s).
- () 12. Attach the manual insert (which follows) to the appropriate Instruction Manual

RH:rh

TEKTRONIX

MANUAL MODIFICATION INSERT

PUSHBUTTON ILLUMINATION

for

7313/R7313	Serial Numbers All
7603/R7603	Serial Numbers All
7613/R7613	Serial Numbers All
7623/R7623	Serial Numbers All
7623A/R7623A	Serial Numbers All
7633/R7633	Serial Numbers All

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.

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GENERAL INFORMATION

This modification kit added a +5V L (lights) voltage regulator to the power unit. The regulator supplies +5V L to pin 9A of the interface plug-in connectors, J1, J2 and J3. The +5V L supply allows illumination of the pushbutton switches on those 7000-Series plug-in units offering this feature.

The oscilloscope power supplies were not designed for this added feature. In some cases, the maximum operating temperature and minimum line voltage may need to be derated. Refer to the information on the next page for details.

DERATING INFORMATION

I_T (+5V & +5V L) for 3 PLUG-INS	DERATING REQUIRED	LINE VOLTAGE TOLERANCE	OPERATING TEMPERATURE
< 1.5 A	NO	±10%	0°C to +50°C
1.5 - 3.0 A	YES	+10%, - 5%	0°C to +40°C

I_T (+5V & +5V L) = Total +5V and +5V L current

+5V and +5V L TOTAL CURRENT (I_T) FOR INDIVIDUAL PLUG-IN UNITS

PLUG-IN UNIT	I_T (A)	PLUG-IN UNIT	I_T (A)	PLUG-IN UNIT	I_T (A)
7A11	0.4	7B10	0.3	7D11	0.5
7A12	0.7	7B15	0.45	7D12	0.5
7A13	0.55	7B50	0.4	7D13	0.3
7A14	0.25	7B50A	0.5	7D14	0.8
7A15	Nil	7B52	1.0	7D15	0.75
7A15A	0.5	7B53A/AN	0.45	7R11	Nil
7A16	Nil	7B53N	0.55	7L12	0.4
7A16A	Nil	7B70	0.4	7M11	Nil
7A18	Nil	7B71	0.4	7M13	0.6
7A19	Nil	7B80	0.3	7S11	0.25
7A22	0.1	7B85	0.35	7S12	Nil
7A24	Nil	7B92	0.65	7S14	0.45
7A26	Nil	7B92A	0.7	7T11	0.6
7A29	Nil	7CT1N	0.25	7T13	1.05
		7D10	0.3		

Examples:

1. $I_T = I_T(7A26) + I_T(7D15) + I_T(7B53A) = Ni1 + 0.75 + 0.45 = \underline{1.2A}$

The total +5V and +5V L current for these three plug-in units is less than 1.5A and no derating is required.

2. $I_T = I_T(7A12) + I_T(7A12) + I_T(7B52) = 0.7 + 0.7 + 1.0 = \underline{2.4A}$

The total current is between 1.5A and 3A and derating is required.

