



product modification

040-0413-00
M9725, M9726,
M9727, M9728

Types 67/2B67, 3B1,
3B3, 3B4

SAWTOOTH DRIVE FOR 3L5 AND 3L10

For the following TEKTRONIX® Time-Base Plug-in Units:

Type	67	Serial Numbers	101- 5000
Type	2B67	Serial Numbers	5001-15179
Type	3B1	Serial Numbers	101- 4039
Type	3B3	Serial Numbers	100- 4269
Type	3B4	Serial Numbers	100- 739

Modification Kit, PN 040-0413-00, adds a sawtooth drive output in the above listed instruments for compatibility with the 3L5 and 3L10 (and future "3" Series Spectrum Analyzer Plug-in Units).

The sawtooth signal, required by the Spectrum Analyzer sweep oscillator, is a standardized current ramp of $66\mu\text{A}/\text{cm}$ (nominal) fed from the sawtooth CF of the time-base via a standardizing resistor to pin 18 of the interconnecting plug.

The current signal is intended to drive a low-impedance circuit, such as the minus input of an operational amplifier or the emitter of a transistor, with a positive-going linear ramp of current. It cannot be used to drive two circuits (e.g., 3L10 and sawtooth out) at the same time, nor can it be used successfully as a "voltage" signal source, especially at faster sweep rates. The high source impedance of this signal prevents excessive crosstalk of sweep signal into vertical plug-ins in which pin 18 is open.

The sawtooth signal is provided by adding the standardizing resistor to the ceramic strips above the Sawtooth Cathode Follower, where it is connected between the CF cathode and a coax cable. The other end of the coax is connected to the interconnecting plug, pins 18 and 19.

NOTE: If the plug-in unit being modified by this kit will be used in a Type 561 below SN 579, the Type 561 must be modified by the installation of Modification Kit, PN 040-0267-00.

PARTS INCLUDED IN MODIFICATION KIT:

Ckt.No.	Quantity	Part Number	Description
	1 ea	214-0210-00	Spool, w/3 ft. silver-bearing solder
R166	1 ea	323-0383-00	Resistor, prec,MF, 95.3k 1/2W 1%
R170,R171	1 ea	323-0386-00	Resistor, prec,MF, 102k 1/2W 1%
R169	1 ea	323-0418-00	Resistor, prec,MF, 221k 1/2W 1%
	1 ea		Cable, coax, 175-0284-00, 50Ω 4"
	1 ea		Cable, coax, 175-0284-00, 50Ω 10"
	1 ea		Cable, coax, 175-0284-00, 50Ω 12"
	1 ea		Wire,#22 solid,176-0122-00, bare 2"

IMPORTANT: When soldering to the ceramic strips, use the silver-bearing solder supplied with this kit.

INSTRUCTIONS

NOTE: The metal-film resistors used in this kit are color-coded similar to a composition resistor, except that they have three significant figures instead of two. For example, a metal-film resistor coded brown-red-violet-orange-brown is a 127k 1% resistor.

A. FOR TYPE 67 PLUG-INS:

Use these parts (from kit) in the following steps: 221k resistor (323-0418-00), 10 inch coax cable, and 2 inch bare wire.

- () 1. Locate the ceramic strip notch to which is soldered a wire from pin-8 of V161 and a B161 neon bulb lead. This is CSD-16.
- () Unsolder the B161 bulb tip holder from the opposite ceramic strip notch (CSC-16). Save holder for later use.
- () 2. Solder the longer stripped center conductor of the coax to CSC-16.
- () 3. Solder the coax shield to the vacant end notch on the adjacent strip (CSC-15).
- () 4. Solder the bare wire from ground terminal of C321 (located near R176) to CSC-15.
- () 5. Solder R169, 221k resistor between CSC-16 and CSD-16.
- () 6. Replace the B161 tip holder at CSC-16.
- () 7. Dress the coax along the cable to the plug-in rear connector.
- () Solder the center conductor to connector pin 18 and the shield to pin 19.
- () Fasten the Modification Insert in your Instruction Manual.

Indicates change since last publication.

INSTRUCTIONS (continued)

B. FOR TYPE 2B67 PLUG-INS:

Use these parts (from kit) in the following steps: 221k resistor (323-0418-00) and 12 inch coax cable.

- () 1. Locate the front neon bulb (B161) on the ceramic strip near V161 socket.
- () Unsolder the B161 bulb tip holder (from ceramic strip notch CSC-23). Save the holder for later use.
- () 2. Solder the longer stripped center conductor of the coax to CSC-23.
- () Solder the shield to a ground lug on the V161 socket, dressing it beneath the ceramic strip.
- () 3. Solder R169, 221k resistor between CSC-23 and the opposite strip notch (to which is soldered a B161 lead and a white-yellow wire).
- () 4. Replace the B161 tip holder at CSC-23.
- () 5. Dress the coax along the cable to the plug-in rear connector.
- () Solder the center conductor to connector pin 18 and the shield to pin 19.
- () Fasten the Modification Insert in your Instruction Manual.

C. FOR TYPE 3B1 PLUG-INS:

Use these parts (from kit) in the following steps: 95.3k resistor (323-0383-00) and 10 inch coax cable.

- () 1. Locate the neon bulb (B164) on the ceramic strips near V161 socket.
- () Unsolder the B164 bulb tip holder (from ceramic strip notch CSM-23). Save the holder for later use.
- () 2. Solder the longer stripped center conductor of the coax to CSM-23.
- () Solder the shield to a ground lug on the V161 socket.
- () 3. Solder R166, 95.3k resistor between CSM-23 and the opposite ceramic strip notch (to which is soldered a B164 lead and a white-black-violet wire).
- () 4. Replace the B164 tip holder at CSM-23.
- () 5. Dress the coax along the cable to the plug-in rear connector.
- () Solder the center conductor to connector pin 18 and the shield to pin 19.
- () Fasten the Modification Insert in your Instruction Manual.

INSTRUCTIONS (continued)

D. FOR TYPE 3B3 PLUG-INS:

Use these parts (from kit) in the following steps: 102k resistor (323-0386-00) and 10 inch coax cable.

- () 1. Located the neon bulb (B164) on the ceramic strips near V161 socket.
- () Unsolder the B164 bulb tip holder (from ceramic strip notch CSN-19). Save holder for later use.
- () 2. Solder the longer stripped center conductor of the coax to CSN-19.
- () Solder the shield to a ground lug on the V161 socket.
- () 3. Solder R171, 102k resistor between CSN-19 and the opposite ceramic strip notch (to which is soldered a B164 lead and a white-black-violet wire).
- () 4. Replace the B164 tip holder at CSN-19.
- () 5. Dress the coax along the cable to the plug-in rear connector.
- () Solder the center conductor to connector pin 18 and the shield to pin 19.
- () Fasten the Modification Insert in your Instruction Manual.

E. FOR TYPE 3B4 PLUG-INS:

Use these parts (from kit) in the following steps: 102k resistor (323-0386-00) and 4 inch coax cable.

- () 1. Locate the ceramic strip notch (CSF-6) to which is connected the bare wire from pin-3 of V173 and the opposite vacant notch (CSE-6) near pin-7 of V173.
- () 2. Solder the longer stripped end of the coax to CSE-6.
- () Solder the shield to a ground lug on the V173 socket.
- () 3. Solder R170, 102k resistor between CSE-6 and CSF-6.
- () 4. Dress the coax along the cable to the plug-in rear connector.
- () Solder the center conductor to connector pin 18 and the shield to pin 19.
- () Fasten the Modification Insert in your Instruction Manual.

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