

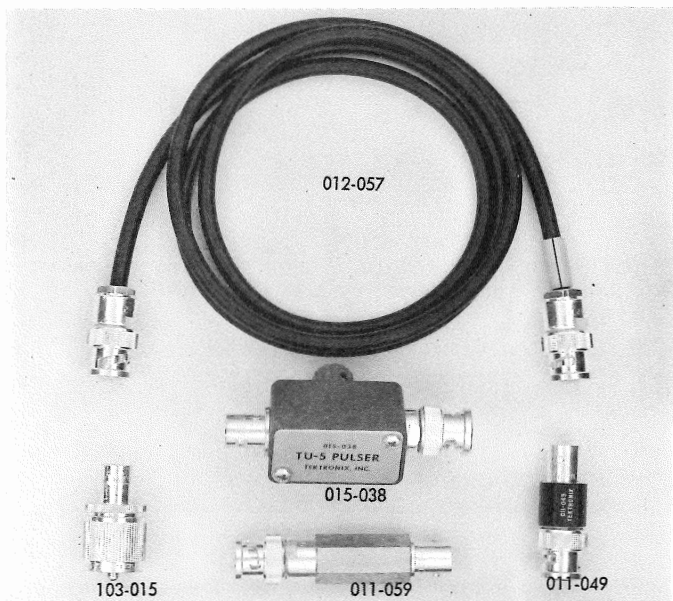
Accessories

TEST UNITS



TYPE TU-2 TEST-LOAD PLUG-IN UNIT—The unit is used to check Tektronix Type 530, 540, 550-Series Oscilloscope power-supply regulation under high load and low load demands of A to Z plug-in units. It can also be used to check vertical amplifier balance, vertical amplifier gain, and dual-trace function of the oscilloscope.

TYPE TU-2 TEST UNIT



TYPE TU-5 PULSER—The TU-5 tunnel diode pulser generates a fast-rise, flat-top square wave designed to aid in adjustment of transient response of the Tektronix 80-Series Plug-In Units. It can also be used with letter series and sampling plug-in units. When used with letter-series and 80-Series plug-in units the pulser is sufficiently fast to show the risetime of the oscilloscope and plug-in unit.

The oscilloscope calibrator output provides the proper input to the pulser.

A bias adjustment on the pulser provides for changes in tunnel-diode characteristics due to temperature variations, tolerance, or other variables.

RISETIME—less than or equal to 0.3 nsec into 50 ohms.

AMPLITUDE—at least 200 mv with 50-ohm termination, 20 mv with 10X attenuator and 50-ohm termination.

PULSE WIDTH—about 0.5 msec, dependent on oscilloscope calibrator output, (oscilloscope calibrator is 1 kc).

OUTPUT IMPEDANCE—50 ohms (25 ohms when used with 50 ohm termination).

SOURCE VOLTAGE—100 volt square wave (10 ma) from the oscilloscope calibrator output.

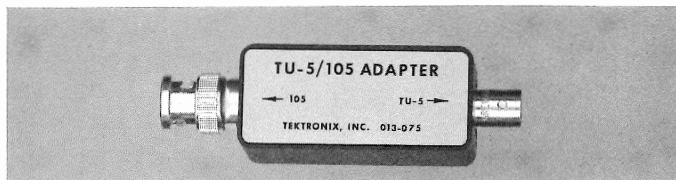
REPETITION RATE—same as source voltage (1 kc from oscilloscope calibrator output).

BNC CONNECTORS—for input and output.

TU-5 PULSER PACKAGE (015-043)

- Includes: 1—TU-5 Pulser, 015-038
- 1—UHF to BNC adapter, 103-015
- 1—10X attenuator, 011-059
- 1—50-ohm cable, 012-057
- 1—50-ohm termination, 011-049

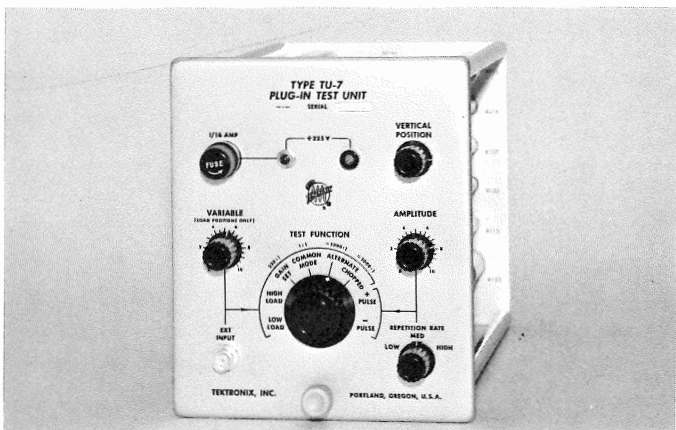
TU-5 PULSER ONLY (015-038)



TU-5/105 ADAPTER—allows the TU-5 Pulser to be used with the Type 105 Square-Wave Generator.

The Adapter inverts the negative 100 v output of the Type 105 to a positive voltage source for driving the TU-5. A brighter trace display is possible because of the faster repetition rate of the Type 105 output.

TU-5/105 ADAPTER (013-075)



TYPE TU-7 PLUG-IN TEST UNIT is a calibration aid for Tektronix Type 530, 540 or 550-Series Oscilloscopes using 1-Series or Letter-Series Plug-in Units. The only plug-in required for calibration, the Type TU-7 features a built-in pulse generator for checking risetime and adjusting transient response of the oscilloscope vertical amplifier.

Other features include provisions for checking power supply regulation, chopped blanking operation, and alternate sync pulse circuitry. The TU-7 also checks dual-trace operation for instruments capable of displaying two time-base signals alternately.

TYPE TU-7 PLUG-IN TEST UNIT

TU-5

CALIBRATOR SYMMETRY

FEN 12-14-62

If, for some reason, the TD pulser will not fire, check the calibrator voltage in the following manner:

1. With a DC voltmeter check for 100 v at Cal Test Point with the calibrator off.
2. Turn calibrator to 100 v and check DC voltage at Cal Out with a DC voltmeter. The voltage should read between 45 and 55 volts.

The firing point of the TD varies with the voltage at the Cal Out connector (Cal at 100 v). This Cal Out voltage is determined by the symmetry of the 1 kc square wave.

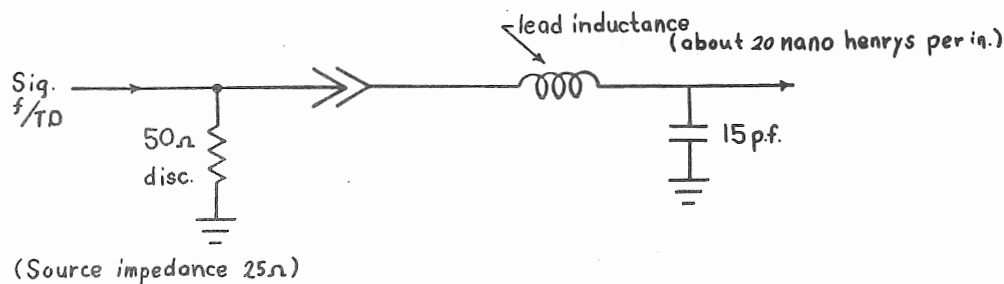
580 TRANSIENT RESPONSE WITH TU-5

FEN 12-14-62

The 82 requires a fast, clean step function for proper tweaking of transient response. The pulse must have sufficient risetime, be free from ringing, and have a flat top of several microseconds duration.

Our present pulse generators do not meet all of these requirements. We must also put our termination as close as possible to the front-panel input connector because, in transferring signal to the

input grid of 82, we acquire 20 nanohenrys of inductance per inch of wire. This combines with input capacity to form a K derived half section. If this filter has approximately 15 nh (0.6 in) of inductance, we will have correct response; however, more inductance will give an over-peaked response. Hence, it is desirable to terminate close to, or right at, the input connector in order to see only the unaltered response of the 82.

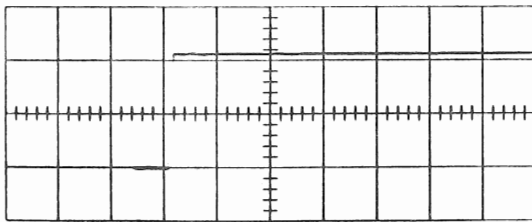


The transient response of the Type 82 Plug-in should be set using either a modified 107 or a special tunnel diode pulser. No modded 107's are available for field use, but a few special TD pulsers are being built for repair centers.

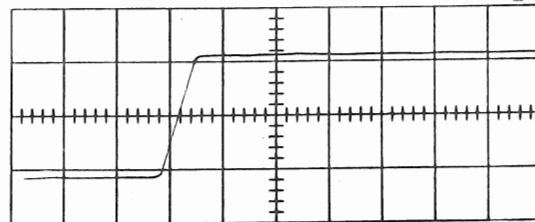
The tunnel diode pulser can be used to tune the 82 for optimum transient response in an indicator that has been "tweaked up" with the Type 84. A bias control is provided to allow compensation for changes in TD characteristics with temperature.

The optimum bias is easily set by turning the control back from the running condition to the point where the diode no longer switches. Then add just enough positive bias for proper operation.

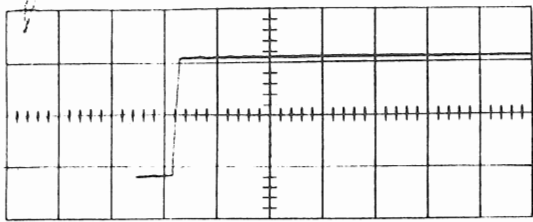
The set of pictures, below, shows a 585's transient response with a Type 84, and with a Type 82 and a Type 80/P80 when using the TD pulser. Note that some of the aberrations on the flat top of the step function are due to insufficient decoupling in the power supply. These aberrations can be detected by noting their change in position when changing the triggering level. Story and figures supplied by Field Maintenance Support.



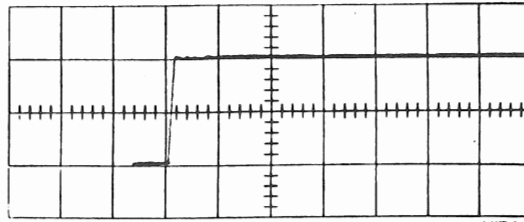
Type 585 with Type 84 Plug-in
Time/cm 50 nsec



Type 585 with Type 84 Plug-in
Time/cm 10 nsec



Type 585 with Type 82 Plug-in and TU-5
Time/cm 50 nsec



Type 585 with Type 80, P80, and TU-5
Time/cm 50 nsec

TU-5 WITH THE 540-SERIES

FEN 11-22-63

To check transient response of 540-series instruments with plug-ins that have a 50 mv straight-through position in the vertical amplifier; the two combinations of fittings shown in Figure 1 can be

used. Bernie Floersch of Field Technical Support checked these combinations and found no signal deterioration due to added L and C.

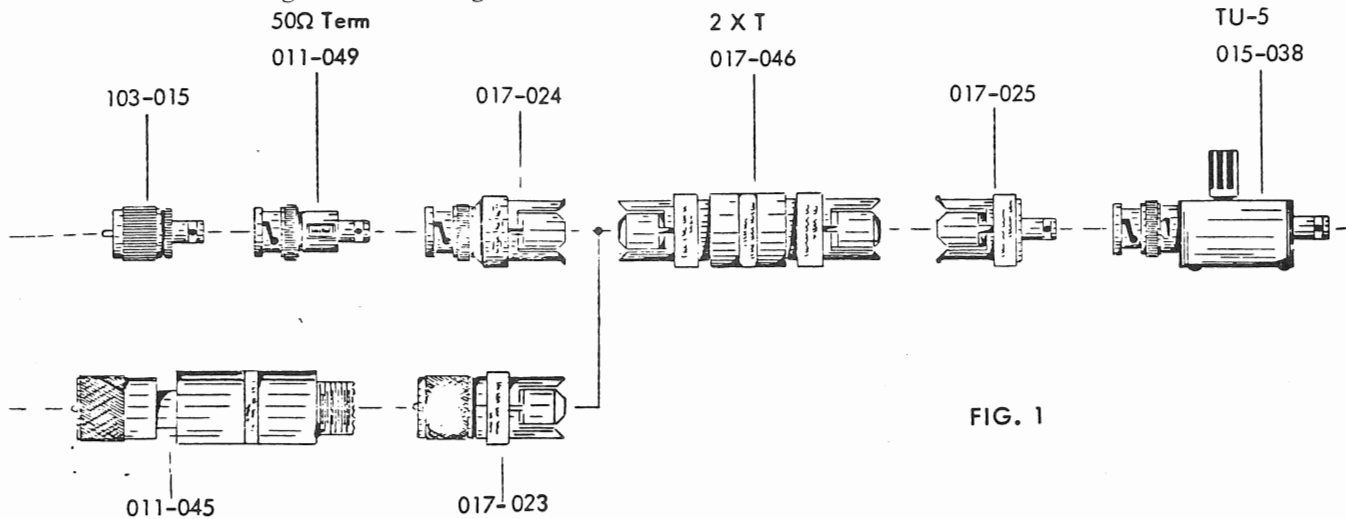


FIG. 1