

NOTE REGARDING FACTORY CALIBRATION PROCEDURES  
AND TEST SPECIFICATIONS

Factory Calibration Procedures and Test Specifications are intended for use at the factory as a general guide for calibrators and quality control men. Most of the tolerances listed in these sheets are closer than advertised specifications. This is done purposely in order to insure that the instrument will meet or exceed advertised specifications when it reaches the customer.

These calibration procedures and test specifications should be used, therefore, as a guide only.

Some of the test equipment referred to in the calibration procedures is not available commercially; the Tektronix field engineer will be glad to suggest alternate approaches.

TYPE P PLUG-IN UNIT

FACTORY CALIBRATION PROCEDURE

The following instruments and equipment are needed:

- 1 TYPE 540-Series Oscilloscope
- 1 Flexible plug-in extension
- 1 Standard P PLUG-IN TEST UNIT

The 540-Series oscilloscope should be set up as follows unless otherwise stated:

<u>HORIZONTAL DISPLAY</u>	<u>INTERNAL SWEEP</u> (Type 541) <u>MAIN SWEEP NORMAL</u> (Type 545) <u>NORMAL (X 1)</u> (Type 543)
<u>TRIGGERING MODE</u>	<u>AUTOMATIC</u>
<u>TRIGGER SLOPE</u>	<u>+INT</u>
<u>TIME/CM</u>	<u>5 MILLISEC</u>
<u>MULTIPLIER</u>	<u>1</u>

The "Vertical-System Electrical Center" of the 540-Series oscilloscope should be determined in the following manner.

Using a TEST LOAD UNIT, depress the PRESS TO SHORT INPUT button and observe the vertical level of the trace. If you use a Tektronix plug-in unit, jumper between pins 1 and 3 on the 16 pin connector and observe the vertical level of the trace. This level will be referred to later in the calibration procedure.

PRECHECK

Make a careful visual inspection of the unit for proper wire dress and check controls for smooth mechanical operation. Check clearance between contacts of mercury switch and pole faces (1/32" to 1/16"). Make the following resistance to ground checks on the amphenol 16-pin connector:

AMPHENOL CONNECTOR PIN NUMBER	RESISTANCE TO GROUND IN $\Omega$
1	3.4 K
2	0
3	3.4 K
4	Infinite
5	Infinite
6	Infinite
7	Infinite
8	Infinite
9	18 K
10	7.5 K
11	10.5 K

PRECHECK (Continued)

12	Infinite
13	Infinite
14	Infinite
15	500
16	Infinite

Plug P unit into oscilloscope through flexible plug-in extension.

1. CHECK DC OUTPUT LEVEL  
Measure between pin 1 and ground and between pin 3 and ground of the 16-pin amphenol plug (65-70 v).
2. SET COIL CURRENT ADJUST  
Place P unit in either of its operating positions and turn COIL CURRENT ON. Adjust COIL CURRENT ADJUST for maximum sound. Use VERTICAL POSITION and AMPLITUDE controls to obtain approximately 3 cm of positive going pulses. Slightly reposition COIL CURRENT ADJUST to obtain the most stable display.
3. CHECK FOR OPERATION IN EITHER OPERATING POSITION  
Place plug-in in its other OPERATING POSITION and check for a stable display.
4. SET AMPLITUDE AND VERTICAL POSITION CONTROLS  
Adjust AMPLITUDE and VERTICAL POSITION controls until there is no vertical deflection and the trace is positioned at the "Vertical-System Electrical Center". Loosen set screws, physically center knobs and tighten set screws.
5. CHECK OUTPUT AMPLITUDE  
Turn AMPLITUDE full right (cw) and check for at least 3 cm of positive going pulses. (.3 v) Turn AMPLITUDE control full left (ccw) and check for at least 3 cm of negative going pulses.
6. CHECK OUTPUT WAVEFORM  
Turn AMPLITUDE and VERTICAL POSITION to obtain 3 cm of vertical deflection with the tops of the pulses at the "Vertical-System Electrical Center". Turn TRIGGERING MODE to AC FAST. Adjust STABILITY and TRIGGERING LEVEL controls to trigger on positive going pulses. Turn TIME/CM to .1 μSEC/CM and adjust FOCUS, ASTIGMATISM and INTENSITY controls to obtain a sharply defined waveform. Observe waveform obtained and check the level and leading edge. Check risetime with MAGNIFIER ON. Compare this waveform against a standard P unit. There should be no visible difference between the two P unit waveforms. Note: The square wave of the P unit has such a fast rise time and has been compensated in such a manner that any deviation from a perfect squarewave must be attributed to the vertical amplifier being used for this test. If no standard P unit is available, the P unit may be checked against a properly compensated 540-Series vertical amplifier.