

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.

TEKTRONIX TYPE 80 PLUG-IN
 F A C T O R Y
 C A L I B R A T I O N P R O C E D U R E

The following instruments and equipment are needed:

- 1 TYPE 580 SERIES OSCILLOSCOPE
- 1 TYPE 105 SQUARE-WAVE GENERATOR
- 1 10:1 L PAD (B52-L5)
- 1 TYPE 80 PROBE

The 580 Series Oscilloscope should be set up as follows unless otherwise stated:

<u>HORIZONTAL DISPLAY</u>	<u>INTERNAL SWEEP</u> (TYPE 581)
	<u>A SWEEP</u> (TYPE 585)
<u>TRIGGERING SOURCE</u>	<u>INTERNAL</u>
<u>TRIGGER SLOPE</u>	+
<u>STABILITY</u>	<u>PRESET</u>
TYPE 105	<u>TERMINATE OUTPUT WITH 52Ω</u> L PAD AT INSTRUMENT

The Vertical System Electrical Center of the oscilloscope should be determined as follows:

Using a TEST LOAD UNIT, depress the PRESS TO SHORT INPUT button and observe the vertical level of the trace. If you use a plug-in unit, jumper between pins 9 and 11 on the connector plug on the rear of the unit and observe the vertical level of the trace.

PRECHECK.

Make a careful visual inspection of the unit for proper wire dress and check controls for smooth mechanical operation. Make the following resistance to ground checks on the 16 connector plug. Probe is not connected for the check.

<u>Pin #</u>	<u>Resistance (approximate)</u>	<u>Pin #</u>	<u>Resistance (approximate)</u>
1	500 k	9	Inf.
2	2.5 k	10	ground
3	No Connection	11	Inf.
4	100 k	12	No Connection
5	Inf.	13	No Connection
6	Inf.	14	5.7 k
7	No Connection	15	Inf. (without probe)
8	No Connection	16	5.7 k

1. CHECK DC OUTPUT LEVEL

Plug Type 80 into scope. Connect Type 80 probe to input connector. Measure from pin 9 and ground and pin 11 and ground on the rear connecting plug. The voltage will be approximately 48.5 volts.

2. ADJUST VERTICAL POSITION RANGE.

Center the VERTICAL POSITION pot. Adjust the VERT. POS. RANGE POT to center the trace on the Vertical Electrical Center. Now check the VERTICAL POSITION pot for approximately equal coverage on both sides of center. Reposition the knob on the shaft if necessary to get equal coverage on both sides of center. Reset the VERTICAL POSITION and VERT. POS. RANGE so that with the POSITION knob centered, the trace will be at Vertical System Electrical center.

3. CHECK GAIN.

Apply 0.2 v from the calibrator to the probe. There should be 2 cm of deflection on the crt.

4. ADJUST L8085.

Set the scope TIME/CM to 200 μ sec/cm. PROBE ON DC. Set the 105 at 10 kc. Connect a 10:1 L pad to the output connector and connect the probe to the pad. Adjust the 105 output for about 2 cm of deflection. Set L8085 for a flat wave form. It will be near minimum inductance.

5. CHECK HIGH FREQUENCY RESPONSE.

Connect a 107 through a pi pad to the probe. (The waveform is dependent on the probe, the plug-in, and the vertical of the scope. All three of these are adjusted together for best waveshape and risetime. This is done by scope Q.C. and need not be done by calibration.) Check the waveform. The risetime should be less than 4 millimicroseconds.

TEKTRONIX TYPE 80 PROBE
FACTORY
CALIBRATION PROCEDURE

PRELIMINARY INSPECTION

Remove the case and check that the cable is not twisted inside. Check the two screws that hold the two halves of the metal case together to see that they are run in from the right direction and are tight. Check the wiring for properly soldered connections. Inspect the connecting plug at the end of the cable.

1. ADJUST PROBE COMPENSATION.

Apply 10 kc from a 105 through a 5:1 "L" pad to the probe. With the probe set to DC, obtain approximately 2 cm of deflection. Adjust the probe compensation and the 80 PLUG-IN POSITION RANGE ADJUST for a flat topped wave form and to center the display on the graticule. There should be a minimum of 1.5 cm of range left on the VERT. POS. RANGE.

2. CHECK MICROPHONICS.

Remove the probe from the 105. Shake it back and forth. The trace should not move up and down over 2 mm.

3. CHECK GAIN.

Connect the probe to the scope CALIBRATOR. With .2 volts applied to the probe, there should be 2 cm of deflection $\pm 4\%$. If it is outside these limits, change R8016. Generally it will be 18 Ω or 22 Ω . More resistance gives less gain and less resistance gives more gain.

4. CHECK HIGH FREQUENCY RESPONSE.

Connect the probe to the output of a 107 through a pi pad. Adjust the 107 for about 2 cm of deflection. Check the risetime (4 millimicroseconds) and the waveshape.

TYPE 80 ATTENUATORS

F A C T O R Y

C A L I B R A T I O N P R O C E D U R E

RECOMMENDED EQUIPMENT:

Amplitude Calibrator. Scope square-wave calibrator.
108 fast rise mercury pulser. (Modified to put out flat topped pulses)
Specially checked Type 80 probe. (100k Ω resistor checked)
Type 80 plug-in
Coax adapter.

PRELIMINARY INSPECTION:

Check plating, mechanical fit, soldered joints, and threads on tip.

1. ADJUST ATTENUATOR COMPENSATION

Connect the Type 80 probe to the calibrator and set the scope gain.
Connect the attenuator to the probe and check the attenuation with the calibrator. $\pm 2\%$.
Set the scope sweep speed to approximately 20 μ sec/cm.
Connect the Coax adapter to the output of the 108. If it does not have a hole for adjusting the attenuator screw, one leaf may have to be removed to reach the screw.
Connect the probe to the coax adapter and observe the waveshape.
Connect the attenuator between the probe and the coax adapter and adjust the screw for the same waveshape as with the probe alone. Ringing and other distortion should be held to less than 4%.
Check for smooth operation of the adjusting screw. Roughness on the end of the adjusting screw may make the adjustment erratic.