FACTORY CALIBRATION PROCEDURE

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P6027
and
P6028

INTRODUCTION:

This is the guide for calibrating brand-new instruments, it therefore, calls out many procedures and adjustments that are rarely required for subsequent recalibration. *This procedure is company confidential.* In this procedure, all front panel control labels or Tektronix equipment names are in capital letters (VOLTS/DIV, etc.) internal adjustment labels are capitalized only (Gain Adj, etc.).

Tek form number:

0-434
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For all serial numbers.

FACTORY TEST LIMITS:

We initially calibrate the instrument to Factory Test Limits. These limits are often more stringent than advertised performance requirements. This helps insure that the instrument will meet advertised requirements after shipment, allows for inaccuracies of test equipment used, and may allow for changes in environmental conditions.

QUALIFICATION:

Factory test limits are qualified by the conditions specified in the main body of the calibration procedure. The numbers and letters to the left of the limits correspond to the factory calibration procedure steps where the check or adjustment is made. Instruments may not meet factory test limits if calibration or check-out methods and test equipment differ substantially from those in this procedure.

ABBREVIATIONS:

Abbreviations in this procedure will be found listed in TEKTRONIX STANDARD A-100.

CHANGE INFORMATION:

This procedure has been prepared by Product Manufacturing Staff Engineering. For information on changes that have been made to this procedure, to make suggestions for changing this procedure, or to order additional copies: please contact PMSE, 47-261. (DH)

EQUIPMENT REQUIRED:

The following equipment is necessary to complete this procedure:

a. TEKTRONIX Test Equipment

1 TYPE 546 OSCILLOSCOPE
1 TYPE K PLUG-IN UNIT (modified)(See PMPE Drawing No. 1521-B)
1 TYPE 109 PULSE GENERATOR
1 TYPE 113 DELAY CABLE
1 TYPE 130 L-C METER

b. Test Fixtures and Accessories

1 Standard Amplitude Calibrator (SAC)(067-0502-00)
1 600 VDC Power Supply (PMPE Drawing No. 665-A, 493-B, 494-B, 495-B, 496-B, 497-B, 352-C, 353-C, and 354-C)
3 BNC to Probe Adapters (013-0020-00)
2 RG 8A/U 50Ω 5ns cables (017-0502-00)
1 50Ω Termination (011-0049-00)
1 High Voltage Attenuation Block (see schematic at end of procedure)

Substitute test equipment may be used. The Plant Staff Engineer must approve any substitutions. All equipment listed must perform within its manufacturer's specifications, unless otherwise stated.

It is assumed that all equipment is provided with BNC connectors; if equipment used has other than BNC connectors, adapters, not listed, may be needed.

QUALIFICATION

Factory test limits are qualified by the conditions specified in the main body of the calibration procedure. The numbers and letters to the left of the limits correspond to the factory calibration procedure steps where the check or adjustment is made. Instruments may not meet factory test limits if calibration or checkout methods and test equipment differ substantially from those in this procedure.

1. PRELIMINARY INSPECTION

2. PRESET CONTROLS

3. ATTENUATION ±2%

4. HIGH FREQUENCY ABERRATIONS 2% P-P, max

5. RISETIME

3.5' probe	16nSEC
6' probe	21nSEC
9' probe	28nSEC
12' probe	42nSEC

6. INPUT CAPACITY

3.5' probe	75pF, max
6' probe	93pF, max
9' probe	119pF, max
12' probe	143pF, max

7. HIGH VOLTAGE 600 VDC

THE END

1. PRELIMINARY INSPECTION

Check physical appearance, workmanship, cables and connector. Check for obvious scratches, bubbles or other blemishes in the finished surface. Check the set screws on the probe body for tightness. Check the printing on the probe body.

2. PRESET CONTROLS

Set the TYPE 546 controls with the modified TYPE K installed.

HORIZONTAL DISPLAY	A
TRIGGERING LEVEL	0
TRIGGERING MODE	AUTO
TRIGGERING SLOPE	+
TRIGGERING COUPLING	AC
TRIGGERING SOURCE	NORM INT
TIME/CM	.2mSEC
VARIABLE TIME/CM	CALIBRATED
HORIZONTAL POSITION	midr

Set the modified TYPE K controls:

VERTICAL POSITION	midr
ATTENUATION SWITCH	1/1
CAPACITY	20
VARIABLE	CALIBRATED

3. ATTENUATION ±2%

Connect a 50Ω cable from the SAC OUTPUT to the TYPE K INPUT. Set the SAC AMPLITUDE control to .2 VOLTS and adjust the scope STABILITY and TRIGGERING LEVEL controls for a stable display. Set the TYPE K GAIN ADJ for exactly 4 cm of deflection. Remove the 50Ω cable from the SAC and TYPE K INPUT.

Connect a BNC to probe adapter to the SAC OUTPUT. Connect the probe to the TYPE K INPUT and insert the probe tip into the BNC to probe adapter. Check the display amplitude for 4 cm ±2%.

4. HIGH FREQUENCY ABERRATIONS: ±2%

Connect two RG 8A/U 5ns cables from the TYPE 109 PULSE GENERATOR CHG LINE 1 and CHG LINE 2 connectors to the TYPE 113 DELAY CABLE. Connect a GR to BNC female adapter to the 50Ω OUTPUT and attach a 50Ω BNC Termination. Connect a BNC to probe adapter to the 50Ω Termination and insert the probe into the adapter.

Set the TYPE 546 TIME/CM control to .1μSEC and adjust the STABILITY and TRIGGERING LEVEL contols for a stable display. Adjust the TYPE 109 AMPLITUDE and VOLTAGE RANGE controls for a 4 cm display.

Position the fast rise portion of the display to the graticule center. Check that the probe aberrations do not exceed ±2%.

5. RISE TIME

3.5' probe	16nSEC
6' probe	21nSEC
9' probe	28nSEC
12' probe	42nSEC

Set the TYPE 546 SWEEP MAGNIFIER to 5X. Position the fast rise portion of the display to the graticule center. Check the risetime. Remove the probe from the TYPE 109 50Ω OUTPUT. Set the TYPE 546 SWEEP MAGNIFIER to OFF.

6. INPUT CAPACITY

3.5' probe	75pF, max
6' probe	93pF, max
9' probe	119pF, max
12' probe	143pF, max

Connect a UHF to BNC adapter to the TYPE 130 LC METER UNKNOWN L or C connector. To this connect a BNC to probe adapter. Set the RANGE SELECTOR to 300 uF. Insert probe into the BNC to probe adapter. Check input capacity. Remove the probe from the TYPE 130.

7. HIGH VOLTAGE 600 VDC

Set the TYPE 546 TIME/CM to 1mSEC. Remove the probe from the TYPE K INPUT. Connect the High Voltage Attenuation Block to the TYPE K INPUT and connect the the probe to the 10/1 DIVIDER. Set the TYPE K ATTENUATION SWITCH to 1000/1. Touch the probe tip to the output of the 600 VDC supply and note 1.2 cm shift of the trace. Check the trace for any indication of arcing. Remove the probe from the high voltage supply.

THE END

The High Voltage Attenuation Block is nothing more than a 10:1 attenuator and is shown below.