FACTORY CALIBRATION PROCEDURE

CONTENTS:

106

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:

0-136
January 1967

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. (RS)

EQUIPMENT REQUIRED:

The following equipment is necessary to complete this procedure:

a. TEKTRONIX Instruments

* 1	TYPE 546 (or 547) OSCILLOSCOPE
* 1	TYPE 1A1 DUAL TRACE PLUG-IN UNIT
1	TYPE 1S1 SAMPLING UNIT
1	TYPE P6028 1X Probe
1	TYPE P6008 10X Probe
1	TYPE 76 TU LINE VOLTAGE CONTROL UNIT
* 1	TYPE 184 TIME MARK GENERATOR

b. Test Fixtures and Accessories

1	LF Sine Wave Generator (067-0542-99)
3	50Ω cables, BNC (012-0057-00)
2	5ns, RG8 cables, GR (017-0502-00)
1	50Ω 2X Attenuator, GR (017-0080-00)
2	50Ω 10X Attenuator, GR (017-0078-00)
1	50Ω 2W Termination, GR to BNC (017-0078-00)
1	50Ω Termination, BNC (011-0049-00)
1	BNC T (103-0030-00)
1	GR to BNC Adapter (017-0063-00)
1	50Ω 5X Attenuator, BNC (011-0060-00)

c. Other Test Equipment

1	Multimeter, 20,000Ω/VDC

* This equipment must be traceable to NBS for instrument certification.

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. PRESETS

3. RESISTANCE CHECKS

4. POWER SUPPLIES

* c. Adjust Amplitude Cal (R247)
AMPLITUDE range unterminated: 7V PTP, max to 120V PTP, min
AMPLITUDE range into 50Ω: 0.5V PTP, max to 12V PTP, min

d. Check A supply regulation, OUTPUT terminated, ≤10% change from amplitude at 115 VAC

e. Check tilt 100 Hz: 5% tilt, max
10 Hz: 15% tilt, max

g. Check voltage and ripple

Supply	Tolerance	max line freq ripple
+10	±15%	.1V PTP
-10	±15%	.1V PTP
A -20V	±10%	.75V PTP
A+150V	±10%	.75V PTP
A-150V	±10%	.75V PTP
A supply	---	.75V PTP

5. SYMMETRY

a. Adjust Symmetry Range (R9): 50% duty cycle at 50 kHz

5. (cont'd)

b. Check SYMMETRY Duty cycle: adjustable from 45 to 55%

c. Check rep rate change with SYMMETRY: 10%, max

6. REP RATE MULTIPLIER CAL

b. Adjust Rep Rate Multiplier Cal X10 (R6): 10μs/cycle

c. Adjust Rep Rate Multiplier Cal X1 (R30): 10μs/cycle

d. Adjust Bias Level (R39): stable square-wave from 103.5 to 126.5 VAC

e. Recheck SYMMETRY Duty cycle: adjustable from 45 to 55%

* 7. REPETITION RATE RANGE AND MULTIPLIER ACCURACY
±10%, max

8. SYNC INPUT

b. Check square-wave sync: 2 to 50V PTP

c. Check sinewave sync: 5V PTP at 100 Hz and 1 MHz

9. TRIGGER OUTPUT

* b. Check amplitude: 0.1V, min, into 50Ω

* c. Check rate of rise into 50Ω: 50ns, max, from 0V to 0.1V

* d. Check delay time: 50ns, max

10. HIGH AMPLITUDE NO LOAD RISETIME

120ns, max

11. FAST RISE AMPLITUDE AND SYMMETRY

* a. Check + & - TRANSITION AMPLITUDE
ccw: 50mV, max; cw: 500mV, min
b. Check symmetry/amplitude change:
150ns, max

12. FAST RISE COMPENSATION

* b. Adjust C107, C118
Risetine into 50Ω: 1ns, max at 500mV
Aberrations: + & -2%, or + & -6mV,
whichever is greater
* c. Adjust C127, C138
Risetime into 50Ω: 1ns, max, at 500mV
Aberrations: + & -2%, or + & -6mV,
whichever is greater

13. HI AMPLITUDE INTO 50Ω

* b. Check risetime and aberrations
Risetime: 10ns, max, at 12V;
18ns, max at 0.5V
Aberrations, 1st 100ns: + & -2%, max
from 12V to 0.5V

* 14. TRIGGER JITTER 250ps, max

THE END

* Indicates measurement characteristic; test equipment used must be traceable to the NBS for instrument certifcation.

1. PRELIMINARY INSPECTION

a. Make general examination

Check for unsoldered joints, rosin joints, lead dress and long leads. Check for loose hardware and protruding parts. Check controls for smooth mechanical operation. Correct all defects found.

b. Check fuse

115V operation	159-0023-00	1.25A mdl	slo-blo
230V operation	159-0019-00	0.6 A mdl	slo-blo

2. PRESETS

POWER	OFF
REPETITION RATE RANGE	1 kHz
MULTIPLIER	full cw
SYMMETRY	midr
AMPLITUDE	full ccw
+ TRANSITION AMPLITUDE	full ccw
- TRANSITION AMPLITUDE	full ccw
HI AMPLITUDE-FAST RISE	HI AMPLITUDE
115V↔230V (on rear panel)	115V

Set all internal adjustments to midr.

3. RESISTANCE CHECKS

Make the following resistance checks to ground using the 1k meter scale and negative lead to ground.

Supply	Approximate Resistance	Check
-10V	150Ω	Q217 emitter
+10V	5.5k	Q213 emitter
A -20V	4k	TP 269
A -150V	15k	TP 229
A +150V	30k	TP 259
A	3k	TP 249
T 201	inf	term 1 & 4

Set the 115V↔230V switch to 230V and check T 201 (term 1 & 4) for inf resistance to ground. Return switch to 115V position.

4. POWER SUPPLIES

a. Apply power

Connect the TYPE 106 to the TYPE 76 TU. Set the TYPE 76 TU to 115V and turn the TYPE 106 POWER switch ON. The POWER light must light.

b. Check AMPLITUDE control (A supply)

Connect the multimeter between A supply (TP 249) and ground. Check for a reading of approximately -8V. Turn AMPLITUDE control full cw, checking for a smooth increase in voltage to approximately -155V.

c. Adjust Amplitude Cal (R247)
AMPLITUDE range unterminated: 7V PTP, max to 120V PTP, min
AMPLITUDE range into 50Ω: 0.5V PTP, max to 12V PTP, min

Monitor OUTPUT voltage with test scope. Adjust Bias Level, R39 for a square-wave display. Turn AMPLITUDE full cw and set R247 for a test scope display of 120V PTP, min. Turn AMPLITUDE full ccw and check for 7V PTP, max.

Connect a 2W 50Ω Termination to OUTPUT and check OUTPUT voltage on test scope: 0.5V PTP, max. Turn AMPLITUDE full cw and check OUTPUT voltage: 12V PTP, min.

c. R247 adjustment

Compromise the setting of R247 to bring the terminated and unterminated voltage ranges within limits.

d. Check A supply regulation, OUTPUT terminated ≤10% change, from amplitude at 115 VAC

With AMPLITUDE full cw, check OUTPUT on test scope for ±10% amplitude change, or less, as line voltage is varied from 103.5 to 126.5 VAC. Return line to 115 VAC.

e. Check tilt 100 Hz: 5% tilt, max
10 Hz: 15% tilt, max

With AMPLITUDE full cw, check bottom of waveform for tilt at 100 Hz: 5%, max. Check at 10 Hz: 15%, max. Return REPETITION RATE RANGE to 1 kHz and MULTIPLIER full cw.

f. Check elevated filaments

Check T201 term 19 & 20 for A -150V (approx). Check T201 term 10 & 11 for A supply voltage (approx).

4. (cont'd)

g. Check voltages and ripple

Check power supply voltages and ripple as given below. Check regulation and ripple from 103.5 to 126.5 VAC line, with OUTPUT's terminated and all AMPLITUDE controls full cw. Set HI AMPLITUDE-FAST RISE switch to FAST RISE when checking + and -10V supply ripple, then return to HI AMPLITUDE.

Supply	Tolerance	max line Freq ripple	check voltage from	to
+10V	±15%	0.1V PTP	Emitter Q213	gnd
-10V	±15%	0.1V PTP	Emitter Q217	gnd
A -20V	±10%	0.75V PTP	TP269	TP249
A +150V	±10%	0.75V PTP	TP259	TP249
A -150V	±10%	0.75V PTP	TP229	TP249
A supply	----	0.75V PTP	TP249	TP249

Disregard high frequency hash, spikes, transients, etc. Return line voltage to 115 VAC.

h. Check 230V operation

Check PTP voltage at term 16 of T201 with test scope. Set 115V↔230V switch to 230V. The voltage at term 16 should decrease about 50%. Note that fan operates at decreased speed.

Return 115V↔230V switch to 115V.

5. SYMMETRY

a. Adjust Symmetry Range (R9): 50% duty cycle at 50 kHz

Connect OUTPUT to test scope through 50Ω 2W Termination. Set REPETITION RATE RANGE to 10 kHz and MULTIPLIER to 5. With SYMMETRY at midr, adjust Symmetry Range R9 for 50% duty cycle.

b. Check SYMMETRY duty cycle: adjustable from 45 to 55%

Set SYMMETRY full ccw, set the test scope TIME/CM to 2μSEC and adjust the TYPE 106 MULTIPLIER to display 1 cycle in 10cm on test scope.

5b. (cont'd)

Check negative 1/2 cycle for at least 5.5cm. Turn SYMMETRY full cw, adjust test scope to display 1 cycle in 10cm and check negative 1/2 cycle for no more than 4.5cm.

Set REPETITION RATE RANGE to 100 kHz, MULTIPLIER to 10 and test scope TIME/CM and TIME/CM VARIABLE to display 1 cycle in 10cm. Repeat check.

c. Check rep rate change with SYMMETRY 10%, max

Set REPETITION RATE RANGE to 10 kHz and set test scope to display 1 cycle in 5cm. Rotate SYMMETRY from cw to ccw and note that cycle length is from 4.5 to 5.5cm at any SYMMETRY setting. Set SYMMETRY for a 50% duty cycle.

6. REP RATE MULTIPLIER CAL

a. Setup

TYPE 106 OUTPUT -- 5ns cable -- 50Ω 2W Termination -- TYPE 1A1 CHANNEL 1 INPUT

TYPE 184 MARKER OUTPUT -- 50Ω cable -- 50Ω Termination -- TYPE 1A1 CHANNEL 2 INPUT

Set the test scope TIME/CM to 10μSEC, VARIABLE to CALIBRATED. Set TYPE 1A1 MODE to ALT, CHANNEL 1 VOLTS/CM to 5 and CHANNEL 2 VOLTS/CM to 2.

b. Adjust Rep Rate Multiplier Cal X10 (R6): 10μs/cycle

Set REPETITION RATE RANGE to 10 kHz and MULTIPLIER on 10. Apply 10μS markers from TYPE 184 to TYPE 1A1 and adjust R6 for 1 cycle/marker on test scope display.

c. Adjust Rep Rate Multiplier Cal X1 (R30): 10μs/cycle

Set REPETITION RATE RANGE to 100 kHz and apply 10μS markers from the TYPE 184. Set MULTIPLIER on 1. Adjust R30 for 1 cycle/marker on test scope display. Recheck step b.

b., c. The MULTIPLIER knob must be mechanically centered on the shaft. The mechanical range of the pot will then extend beyond 1 and 10 by a few degrees, allowing overlap of the frequency ranges.

6. (cont'd)

d. Adjust Bias Level (R39): stable square-wave at 103.5 to 126.5 VAC

Set test scope TIME/CM to 1μSEC. Adjust R39 for a square-wave that remains symmetrical and stable (no scaling or oscillation) as the line voltage is varied from 103.5 to 126.5 VAC. Return line voltage to 115 VAC.

d. R39 adjustment

Optimum setting for R39 can be found by varying the line from 90-140 VAC. However, it is not necessary that the square-wave remain stable at these extremes.

e. Recheck SYMMETRY Duty cycle: adjustable from 45 to 55%

Turn MULTIPLIER full cw and check range of SYMMETRY control at 1 MHz. Duty cycle: adjustable from 45 to 55%. Return SYMMETRY to midr.

7. REPETITION RATE RANGE AND MULTIPLIER ±10%, max

Connect the TYPE 106 and TYPE 184 to test scope as in previous step. Check accuracy as follows:

TYPE 106 REPETITION RATE RANGE	TYPE 184 markers	TYPE 106 MULTIPLIER	Check cycles/marker	Test scope TIME/CM
100 kHz	10μS	10	9-11	1μSEC
100 kHz	10μS	5	4.5-5.5	1μSEC
10 kHz	100μS	9	8.1-9.9	10μSEC
10 kHz	100μS	4	3.6-4.4	10μSEC
1 kHz	1mS	8	7.2-8.8	.1mSEC
1 kHz	1mS	3	2.7-3.3	.1mSEC
100 Hz	10mS	7	6.3-7.7	1mSEC
100 Hz	10mS	2	1.8-2.2	1mSEC
10 Hz	100mS	6	5.4-6.6	10mSEC
10 Hz	100mS	1	.9-1.1	10mSEC

Remove connections from test scope and TYPE 106.

8. SYNC INPUT

a. Setup

Test scope AMPLITUDE CALIBRATOR --
BNC T -- 50Ω cable -- Test scope TRIGGER INPUT
-- 50Ω cable -- TYPE 106 SYNC INPUT

TYPE 106 OUTPUT -- GR to BNC adapter -- 50Ω 2W Termination -- 50Ω cable -- TYPE 1A1 CHANNEL 2 INPUT.

8. (cont'd)

b. Check square-wave sync: 2 to 50V PTP

Set TYPE 1A1 CHANNEL 2 VOLTS/CM to 5 and MODE to CH 2. Set test scope TRIGGER SOURCE to EXT and AMPLITUDE CALIBRATOR to 2 VOLTS. Set REPETITION RATE RANGE and MULTIPLIER so that TYPE 106 is free running at a frequency slightly below the AMPLITUDE CALIBRATOR frequency.

Rotate MULTIPLIER (if necessary) until stable drift free display is obtained. Remove AMPLITUDE CALIBRATOR signal from SYNC INPUT and note display drift due to no sync signal. Set AMPLITUDE CALIBRATOR to 50 VOLTS. Connect to SYNC INPUT and note synchronized display.

Remove BNC T from AMPLITUDE CALIBRATOR and connect it to the LF Sine-Wave Generator.

c. Check sinewave sync: 5V PTP at 100 Hz and 1 MHz

Apply 5V PTP of 100 Hz sinewave from the LF Sine Wave Generator to the TYPE 106 SYNC INPUT and test scope TRIGGER INPUT. Set TYPE 106 REPETITION RATE RANGE to 10 Hz and MULTIPLIER to about 10. Rotate MULTIPLIER slowly until stable drift free display is obtained.

Apply 5V PTP of 1 MHz sinewave from the LF Sine Wave Generator to the TYPE 106 SYNC INPUT and test scope TRIGGER INPUT. Set TYPE 106 REPETITION RATE RANGE to 100 kHz and rotate MULTIPLIER slowly until stable drift free display is obtained. Remove connections from test scope and TYPE 106.

9. TRIGGER OUTPUT

a. Setup

TYPE 106 TRIGGER OUTPUT -- 50Ω Termination -- 50Ω cable -- TYPE 1A1 CHANNEL 1 INPUT.

TYPE 106 OUTPUT -- 50Ω 2W Termination -- 50Ω cable -- TYPE 1A1 CHANNEL 2 INPUT.

Set TYPE 1A1; MODE, CH 1; CHANNEL 1 VOLTS/CM, .05; CHANNEL 2 VOLTS/CM, 5. Set test scope TIME/CM to 10μSEC and TRIGGER SOURCE to NORM.

9. (cont'd)

b. Check Amplitude: 0.1V, min, into 50Ω

Set TYPE 106 REPETITION RATE RANGE to 100 kHz and MULTIPLIER to 1. Check both positive and negative trigger spikes for 0.1V peak, min. Set MULTIPLIER to 10 and repeat check. Return MULTIPLIER to 1.

c. Check rate of rise into 50Ω: 50ns, max from 0V to 0.1V

Set test scope TIME/CM to .1μSEC, SWEEP MAGNIFIER to 2X and check TRIGGER OUTPUT rate of rise: 50ns in first 100mV.

d. Check delay time: 50ns, max

Connect a 50Ω cable from TYPE 1A1 CH 1 TRIGGER OUT to test scope TRIGGER INPUT and set test scope TRIGGER SOURCE to EXT. Set TYPE 1A1 MODE to ALT and check time difference between TRIGGER OUTPUT and HI AMPLITUDE OUTPUT: 50ns, max. Return test scope TRIGGER SOURCE to NORM. Remove connections from test scope and TYPE 106.

10. HIGH AMPLITUDE NO LOAD RISETIME 120ns, max

Connect a 10X probe from the TYPE 1A1 to TYPE 106 OUTPUT. Set test scope VOLTS/CM to 2, TIME/CM to .1μSEC, SWEEP MAGNIFIER to 2X. Set TYPE 106 REPETITION RATE RANGE to 100 kHz, MULTIPLIER to 5 and adjust AMPLITUDE for 5cm of display on test scope. Measure risetime: 120ns, max. Remove connections from test scope and TYPE 106.

11. FAST RISE AMPLITUDE AND SYMMETRY

a. Check + and - TRANSITION AMPLITUDE ccw: 50mV, max cw: 500mV, min

Connect the +OUTPUT to the TYPE 1A1 INPUT with a 5ns cable and 50Ω 2W Termination. Set the test scope SWEEP MAGNIFIER to X1 OFF, TIME/CM to 1μSEC and VOLTS/CM to .1. Set the TYPE 106 HI AMPLITUDE-FAST RISE switch to FAST RISE and check range of +TRANSITION AMPLITUDE: ccw, 50mV max; cw, 500mV min.

11a. (cont'd)

Move the 5ns cable from the +OUTPUT to the -OUTPUT and check range of -TRANSITION AMPLITUDE: ccw, 50mV max; cw, 500mV min.

b. Check symmetry/amplitude change 150ns, max

Set the test scope TIME/CM to .1μSEC. Adjust the TYPE 106 MULTIPLIER to display 1 cycle/ 10cm. Turn the -TRANSITION AMPLITUDE full cw and note symmetry at the 50% amplitude points. Turn -TRANSITION AMPLITUDE full ccw and note change of symmetry: 1.5cm, max.

Move the 5ns cable to the +OUTPUT and repeat check, using the +TRANSITION AMPLITUDE control. Remove connections from test scope and TYPE 106.

12. FAST RISE COMPENSATION

a. Setup

Remove the TYPE 1A1 from the test scope and insert the TYPE 1S1. Set the test scope HORIZONTAL DISPLAY to EXT X10, TRIGGERING MODE switches to TRIG and TRIGGERING LEVEL controls full cw. Connect a patch cord from the TYPE 1S1 HORIZ OUTPUT to test scope HORIZ INPUT. Preset the TYPE 1S1 controls.

TIME POSITION	midr
FINE	midr
VERT POSITION	midr
DC OFFSET	midr
mVOLTS/CM	100
VARIABLE	CAL
TIME/CM	1nSEC
VARIABLE	CAL
SMOOTHING	cw
SAMPLES/CM	for max dot density with min flicker
DISPLAY MODE	NORMAL
TRIGGER SENSITIVITY	cw
RECOVERY TIME	midr
TRIGGER SOURCE	+EXT

TYPE 184 HF OUTPUT -- 50Ω cable -- BNC to GR adapter -- TYPE 1S1 SIGNAL IN

TYPE 184 TRIGGER OUTOUT -- 50Ω cable -- 5X Attenuator -- TYPE 1S1 EXT TRIG

12a. (cont'd)

Set the TYPE 184 TRIGGER SELECTOR to 1μS and HF SELECTOR to 2nS. Adjust the TYPE 1S1 TRIGGER SENSITIVITY and RECOVERY TIME for a stable display. Adjust the test scope VAR 10-1 for exactly 1 marker/2cm. Remove the signals from the TYPE 1S1 and set TRIGGER SOURCE to +INT.

b. Adjust C107, C118 Risetime into 50Ω: 1ns, max at 500mV; Aberrations: + & -1% or + & -6mV, whichever is greater

Connect the TYPE 106 +OUTPUT through a 5ns cable to the TYPE 1S1 SIGNAL IN. Adjust TIME POSITION, VERT POSITION and TRIGGER SENSITIVITY to display the leading edge of the positive transition. Adjust +TRANSITION AMPLITUDE for 5cm of display. Adjust C118 for optimum risetime, 1ns or less, and C107 for optimum square corner and minimum ringing. Aberrations in the first 5ns should not exceed + and -2%. Check aberrations throughout range of +TRANSITION AMPLITUDE (50-500mV): + & -2% or + & -6mV, whichever is greater.

c. Adjust C127, C138: Risetime into 50Ω: 1ns, max at 500mV; Aberrations: + & -2%, or + & -6mV, whichever is greater

Move the 5ns cable to the -OUTPUT and set the TYPE 1S1 TRIGGER SOURCE to -EXT. Repeat step c., displaying the leading edge of the negative transition and adjusting C127, C138. Remove FAST RISE signal from TYPE 1S1.

12b., c. + & - OUTPUT match

Adjust C107, C118 and C127, C138 for best possible match of the + and - OUTPUT square-waves, while maintaining an optimum square-wave.

13. HI AMPLITUDE INTO 50Ω

a. Setup

TYPE 106 OUTPUT -- 10X Attenuator -- 5ns cable -- 2X Attenuator -- TYPE 1S1 SIGNAL IN

TYPE 106 TRIGGER OUTPUT -- 50Ω cable -- 5X Attenuator -- TYPE 1S1 EXT TRIG

13. (cont'd)

b. Check risetime and aberrations
Risetime: 10ns, max, at 12V;
18ns, max, at 0.5V
Aberrations, 1st 100ns: + & -2%, max, from 12V to 0.5V

Set the TYPE 106 HI AMPLITUDE-FAST RISE switch to HI AMPLITUDE. Set the TYPE 1S1 TIME/CM to 5nSEC and TRIGGER SOURCE to +EXT. Check timing accuracy and adjust if necessary as in step 12a. Use the TYPE 184 as a reference. Adjust the TYPE 1S1 TIME POSITION, VERT POSITION and TRIGGER SENSITIVITY to display the leading edge of the positive transition. Check risetime and aberrations throughout range of AMPLITUDE control (0.5-12V). Maximum risetime: 10ns at 12V, increasing to 18ns at 0.5V. Maximum aberrations in first 100ns: + &-2% from 12V to 0.5V. Remove 5ns cable and attenuators from OUTPUT. Leave the TRIGGER OUTPUT connected to TYPE 1S1.

b. Other aberrations

The preshoot in the last 100ns preceding the negative transition will be quite prominent at low AMPLITUDE settings. Disregard this preshoot, and the overshoot of the negative transition. The overshoot will appear as a spike when displaying a full cycle at low or medium repetition rates. At high repetition rates the time constant of the overshoot will be an appreciable part of the pulse duration. When adjusting AMPLITUDE for a given PTP display, select a negative reference point that is far enough from the leading edge to exclude the overshoot; typically 400ns.

14. TRIGGER JITTER 250ps, max

Switch TYPE 106 POWER off, remove power cord and install TYPE 106 in cabinet. Connect power cord and switch POWER ON. Connect +OUTPUT to TYPE 1S1 SIGNAL IN with 5ns cable. Set the TYPE 106 HI AMPLITUDE-FAST RISE switch to FAST RISE.

Set TYPE 1S1 TIME/CM to 1nSEC and MAGNIFIER to .5nSEC. Adjust TYPE 1S1 triggering for "clean" waveform display. Check TYPE 106 trigger jitter at all positions of MULTIPLIER: 250ps (0.5cm) max.

Move 5ns cable from +OUTPUT to -OUTPUT and repeat check. Remove cables from the TYPE 106.

THE END