

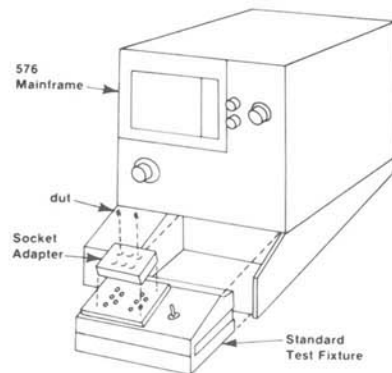
## 576

Tests Two- and Three-Terminal Discrete Semiconductors

Power Capability Up to 220 W

Convenient Scale Factor Readout

Other Test Fixtures for Testing Power Devices and Semiautomated Testing



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The Tektronix 576 Curve Tracer System continues to hold the title "standard of the industry". The 576 accepts three different test fixtures: the Standard Test Fixture, 172 Programmable Test Fixture (see page 405), and the 176 Pulsed High-Current Fixture (see page 406). The 576 is an excellent general purpose curve tracer system that performs well in applications where high-current testing is required.

With the Standard Test Fixture, the collector supply of the 576 delivers up to 220 watts peak to the device under test. The step generator can deliver up to 2 amps in both its current and voltage modes of operation. With the 176 High-Current Fixture, the 576 is capable of pulsed collector operation up to 200 amps peak.

One of the features that sets the 576 apart from the Tektronix 577 Curve Tracer System is the display area adjacent to the 576's CRT. These alphanumeric indicators provide readout of vertical and horizontal deflection factors, step amplitude, and Beta/div or  $g_m$ /div. The Beta or  $g_m$  readout saves the operator from the arithmetic usually necessary to arrive at these parameters. These indicators also provide a permanent record of major knob settings in 576 CRT photographs.

Another unique feature of the 576 is the Calibrated Display Offset. Combining a calibrated position control and a display magnifier, the Display Offset increases resolution and allows the operator to make more precise measurements.

Other features of the 576 Curve Tracer include: adjustable current limiting in the step generator, either 300  $\mu$ s or 80  $\mu$ s pulse width in pulsed base operation, pushbuttons to check display zero and calibration, and an illuminated graticule.



## CHARACTERISTICS COLLECTOR SUPPLY

### Modes

Norm: Positive or negative full-wave rectified ac (line frequency); dc positive or negative.

Leakage: Emitter current rather than collector current measurements with an increase in the basic vertical deflection factor to 1 nA/div.

### Voltages\*1

Range	15 V	75 V	350 V	1500 V
Max Continuous Peak Current	10 A	2 A	0.5 A	0.1 A
Peak Pulse Mode Current	≥20 A	≥4 A	≥1 A	≥0.2 A

\*1 Peak open circuit voltages within +35% and -5% of indicated range.

**Series Resistance** — From 0.3 Ω to 6.5 MΩ in 12 steps, all within 5% or 0.1 Ω. Peak Power Limit Setting: 0.1 W, 0.5 W, 2.2 W, 10 W, 50 W, 220 W.

**Safety Interlock** — Protects operator from 75 V, 350 V, and 1500 V collector voltages.

### STEP GENERATOR

**Current Mode** — Step/Offset Amplitude Range: 5 nA/mV/step (with X0.1 Mult) to 2 V/step, 1-2-5 sequence. Maximum Current (Steps and Aiding Offset): X20 Amplitude setting, except X10 (2 A) at 200 mA/step and X15 (1.5 A) at 100 mA/step. Maximum Voltage (Steps and Aiding Offset): At least 10 V. Maximum Opposing Offset Current: X10 Amplitude switch setting or 10 mA, whichever is less. Maximum opposing voltage is limited at 1 V to 3 V.

**Voltage Mode** — Step/Offset Amplitude Range: 5 mV/step (with X0.1 Mult) to 2 V/step, 1-2-5 sequence. Maximum Voltage (Steps and Aiding Offset): X20 Amplitude switch setting, 40 V maximum. Maximum Current (Steps and Aiding Offset): At least 2 A at 10 V, derating linearly to 10 mA at 40 V. Short Circuit Current Limiting: 20 mA, 100 mA, 500 mA +100%, -0%; 2 A +50%, -0%. Maximum Opposing Offset Voltage: X10 Amplitude switch setting. Maximum Opposing Current: Limited at 5 mA to 20 mA.

### Accuracy

Incremental: Within 5%, between steps, within 10% with X1.0 Mult.

Absolute: Within 2% of total output including offset, or 1% of Amplitude setting, whichever is greater.

Offset Multiplier: 0 to X10 the Amplitude setting, continuously variable. Polarity Aid(s) or Oppose(s) the step polarity.

**Step Rates** — X0.5, X1 (Norm), and X2 the collector supply rate. The collector supply rate is twice line frequency.

**Pulsed Steps** — ≈80 μs or 300 μs width, at Norm or X0.5 rates.

**Offset Step/Offset Polarity** — The Step Gen polarity is the same as the Collector Supply polarity, and positive in the ac position. Step polarity may be inverted by actuating the Invert pushbutton.

**Step Family** — Repetitive or Single Family (manually actuated).

**Number of Steps** — Digitally selectable between one and ten.

## DEFLECTION CONTROLS

### Display Accuracies\*1

NORM and Dc MODES	Normal	OFFSET and MAGNIFIED with CENTERLINE VALUE from:		
		100-40 div	35-15 div	10-0 div
Vert Collector Current	3%	2%	3%	4%
Horiz Collector Volts	3%	2%	3%	4%
Horiz Base Volts	3%	2%	3%	4%
<b>LEAKAGE MODE</b>		NOT APPLICABLE		
Vert Emitter Current/div:				
10 nA-2 mA/div	3% ± 1 nA			
1 nA-200 μA/div (Magnified)		2% ± 1 nA	3% ± 1 nA	4% ± 1 nA
5, 2, 1 nA/div	5% ± 1 nA			
Horiz Collector or Base Volts with Emitter Current/div of:		NOT APPLICABLE		
≥1 μA	3%	2%	3%	4%
100, 10, or 1 nA	3% plus 25 mV/vert div	NOT APPLICABLE		
200, 20, or 2 nA	3% plus 50 mV/vert div			
500, 50, or 5 nA	3% plus 125 mV/vert div			
<b>Vert Step Gen Position</b>	4%	3%	4%	5%
<b>Horiz Step Gen Position</b>	4%	3%	4%	5%

\*1 With standard test fixture, shown as a percentage of highest on-screen value.

**Vertical Deflection Factor** — Collector Current: 1 μA/div to 2 A/div, 20 steps in 1-2-5 sequence (0.1 μA/div with X10 magnification). Emitter Current: 1 nA/div to 2 mA/div, 20 steps in 1-2-5 sequence. Step Generator: 1 step/div.

### Horizontal Deflection Factor

Collector Volts: 50 mV/div to 200 V/div 12 steps (5 mV/div with X10 magnification).

Base Volts: 50 mV/div to 2 V/div, 6 steps (5 mV/div with X10 magnification).

Step Generator: 1 step/div.

### Displayed Noise\*1

Range	15 V	75 V	350 V	1500 V
Vertical — Collector	1 μA	1 μA	2 μA	5 μA
Vertical — Emitter	1 nA	1 nA	1 nA	5 nA
Horizontal — Base	5 mV	5 mV	5 mV	5 mV
Horizontal — Collector	5 mV	5 mV	20 mV	200 mV

\*1 1% or less, or the values shown.

**Calibrator (Cal)** — Dc voltage (accurate within 1.5%) provided to check and adjust vertical and horizontal gain.

**Position Controls** — Fixed 5 div increments within 0.1 div. Continuous fine control over 5 div or less.

**Display Offset** — 21 calibrated positioning increments, vertically or horizontally, of 0.5 div or 5 div with X10 Magnifier.

### CRT AND READOUT

**CRT** — 165 mm (6.5 in) rectangular with parallax-free, illuminated graticule in centimeters. The calibrated area is 10 cm vertical by 10 cm horizontal (12 cm usable horizontal). GH (P31) Phosphor standard normally supplied.

**Readout** — The readouts, adjacent to CRT, are digital indicators of the following parameters: Per Vert Div from 1 nA/div to 2 A/div; Per Horiz Div from 5 mV/div to 200 V/div; Per Step from 5 nA/step to 2 A/step, 5 mV/step to 2 V/step; β (Beta) or 9m. Per Div from 1 μ to 500 k calculated from Current/Div, X10 Mag, Step Amplitude, and X0.1 Mult.

## STANDARD TEST FIXTURE (650-0459-01)

**Description** — A plug-in fixture with two sets of five pin test terminals, the Emitter Grounded or Base Grounded switch, Left-Off-Right switch, Step Gen Output Ext Base or Emitter input and the Operator Protection Box. The test terminals accept either the six pin universal adaptors, three pin adaptors, or the high-power transistor adaptors with Kelvin contacts.

### POWER REQUIREMENTS

**Power Source** — Operates only with an unbalanced-to-ground power source. For safe operation, the power line neutral (white or "identified" conductor) must be connected to the instrument neutral (unfused), and the power plug safety ground (green conductor) must return to ground through a different path than the power line neutral.

**Voltage Ranges** — The quick-change line-voltage range selector accommodates 90 V ac to 136 V ac or 180 V ac to 272 V ac (six positions) at a line frequency of 48 Hz to 66 Hz.

**Maximum Power Consumption (Including DUT Power)** — 305 W. Standby Power: ≈60 W.

### ENVIRONMENTAL CHARACTERISTICS

**Ambient Temperature** — Performance characteristics are valid over an ambient temperature range of +10°C to +40°C.

### PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	292	11.5
Height	381	15.0
Depth	584	23.0
<b>Weights</b>	<b>kg</b>	<b>lb</b>
Net	32.0	70.5
Shipping ≈	48.5	107.0

### INCLUDED ACCESSORIES

Standard test fixture (650-0459-01); transistor adaptor (013-0098-02); FET adaptor (013-0099-02); TO3 adaptor (013-0100-01); TO66 adaptor (013-0101-00); axial lead diode adaptor (013-0111-00); stud diode adaptor (013-0110-00); Kelvin sensors for large and small plastic transistors (013-0138-01); protective cover (337-1194-00); power cord; instruction manual.

## ORDERING INFORMATION

**576 Curve Tracer with Standard Test Fixture** ..... **\$11,455**

The 576 Option 01 deletes the parameter readout module but maintains provisions for insertion of the module (020-0031-00) at any time. **Option 01** ..... **-\$1,200**

**Auto Scale-Factor Readout Module** — Order 020-0031-00 ..... **\$1,650**

### INTERNATIONAL POWER CORD AND PLUG OPTIONS

**Option A1** — Universal Euro 220 V/16 A, 50 Hz

**Option A2** — UK 240 V/13 A, 50 Hz

**Option A3** — Australian 240 V/10 A, 50 Hz

**Option A4** — North American 240 V/15 A, 60 Hz

**Option A5** — Switzerland 220 V/10 A, 50 Hz

### OPTIONAL ACCESSORIES

**Test Setup Chart** — Package of 250. Order 070-0970-01 . **\$10**

**172** — Test Fixture. (See page 405.) ..... **\$4,815**

**176** — Test Fixture. (See page 406.) ..... **\$5,435**

**Socket Adaptors** — (See page 411.)

**Camera** — C-59A and adaptor. (See page 428.) ..... **\$1,315**