



**HIGH VOLTAGE, INC.**  
**AC DIELECTRIC TEST SETS**  
PFT SERIES PRODUCT CATALOG

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# PORTABLE POWER FREQUENCY AC HIPOTS DESIGNED FOR THE RIGORS OF FIELD USE

Enhanced portability by efficient design. Our late founder, Stanley Peschel was unparalleled at designing reliable high voltage transformers in the smallest possible space. We continue on in his tradition.

The PFT Series from HVI are portable power frequency AC hipot test sets designed for a variety of field and repair shop testing applications. Built in the USA at our factory in upstate New York, these inexpensive, compact and light weight units are rugged and reliable. Models range from 10kV to 100kV and 1kVA to 3kVA of output power. The 3kVA models offer a gapped core high voltage transformer for up to 3 kVA of output power with the draw of only 1.5 kVA so the hipot can be powered by a standard 120Vac or 230Vac input. The 1 and 2 kVA models are straight power with no gapped core. All are equipped with transit protected and anti-static glass faced meters.

## PFT Series Advantages

The top seller among the PFT Series is the PFT-503CM. It is rated 50 kVAC @ 3kVA and is the only single piece, cable output unit in the world at this voltage and power level. Our competitors offer a two-piece design, with the combined size and weight of their controller and separate high voltage section nearly twice the PFT-503CM's size and weight. Portability and shielded output cable make the PFT-503CM the industry standard for testing 15 kV breakers. Our PFT-503CM is also equipped with a triple range current meter with a Guard/Ground circuit for precise leakage current measurements. Our PFT-103CM and PFT-303CM also share these same industry leading features.

The 1 piece 3kVA rated PFT Series models are equipped with a 20' shielded high voltage output cable and contain a fixed internal inductance to cancel out more than half the capacitive reactance of the load. With most AC testing, the load is capacitive. We can test a capacitive load drawing up to 3kVA output power but only pull about 1.5 kVA of input power. This advantage allows our 3kVA rated models to be plugged in to a standard outlet.

The PFT-302CE and PFT-401CE are purpose built for the testing requirements of the international market. These models offer a key operated on/off switch, digital meters, a 10-110% of rated output current adjustable overload, and are CE marked as required by international customer base. The PFT-302CE is terminated with an X-ray shielded output cable while the PFT-401CE has a small external high voltage section terminated with a 1.5 inch (38mm) aluminum ball.

Our 2 piece PFT-652CM and PFT-1003CM enjoy many of the same innovative features as the single piece models including:

- Secondary Connected 2 Range Voltmeter (analog 2kVA, 3kVA models only)
- 3 Range Current Meter (analog 2kVA, 3kVA models only)
- 3.5 Digit Digital Meters Optional
- Factory Fixed Overcurrent Overload

- Anti-static Glass Faced Volt and Current Meters
- Transit Protected Volt and Current Meters
- Guard/Ground Circuit for Accurate Current Measurement (2kVA, 3kVA, CE Marked models only)
- Gapped Core Transformer for Capacitive Current Compensation (3kVA models only)

## Applications

The PFT series was designed for testing resistive or light capacitive loads to maintain the ideal size and weight for field portability. These units are well suited for pass/fail, AC over-voltage withstand test on high voltage apparatus like vacuum bottles, interrupters, switchgear, circuit breakers, reclosers, hotline tools/safety products, short lengths of bus duct, small motors, small transformers, electrical components, and many other apparatus needing an AC test voltage.

When AC testing, most loads appear capacitive. To apply high voltage AC at power frequency (50/60 Hz) to a capacitive load requires higher power and current ratings from the test set when compared to DC. Unlike DC where the capacitance of the load only needs to be overcome once, as you slowly raise the output voltage, AC must overcome the capacitance 2 times per cycle. Once while reaching the desired test voltage on the positive side and the second while reaching the desired test voltage on the negative side of the sinewave after crossing the zero reference. The output power or kVA requirement may be very different depending on the load of the apparatus that is being tested.



Vacuum Bottles/Interrupters



Switchgear and Circuit Breakers



Substation Apparatus



Hotline Tools



Iso Phase Buss



Small Motors/Generators

## High Voltage Section Configurations



### Cable Output

Shielded output cable standard up to 50kV (except PFT-401CE).



### Toroidal Output

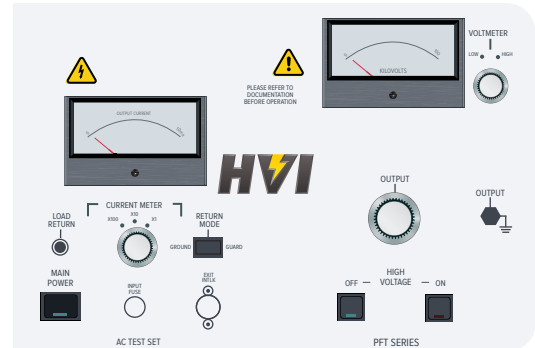
Toroidal dish or ball termination on top of a fiberglass cylinder, standard on the PFT-401CE, PFT-652CM, and PFT-1003CM.

## Controls and Configuration

Provisions

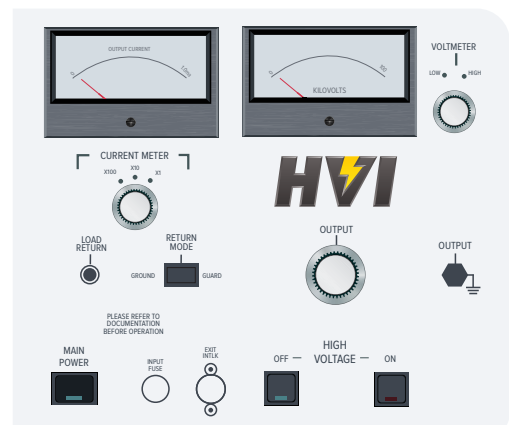
PFT-103CM, PFT-303CM, and PFT-503CM

- Continuously adjustable output voltage
- Secondary connected 2 range analog voltmeter
- 3 range analog current meter
- Guard/ground circuit for accurate leakage current measurement
- Transit protected, glass faced meters to prevent damage in transit
- Fixed overload set to 120% of variable transformer rated output current
- Zero start safety interlock
- External interlock provisions



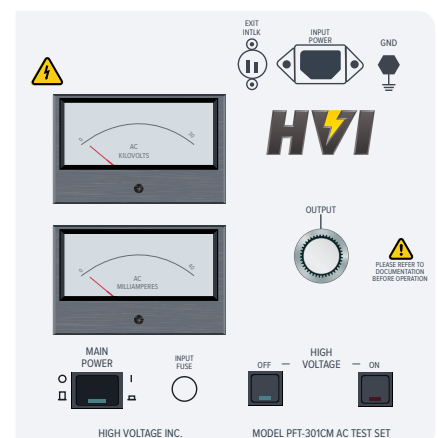
PFT-652CM and PFT-1003CM

- Continuously adjustable output voltage
- Secondary connected 2 range analog voltmeter
- 3 range analog current meter
- Guard/ground circuit for accurate leakage current measurement
- Transit protected, glass faced meters to prevent damage in transit
- Fixed overload set to 120% of variable transformer rated output current
- Zero start safety interlock
- External interlock provisions



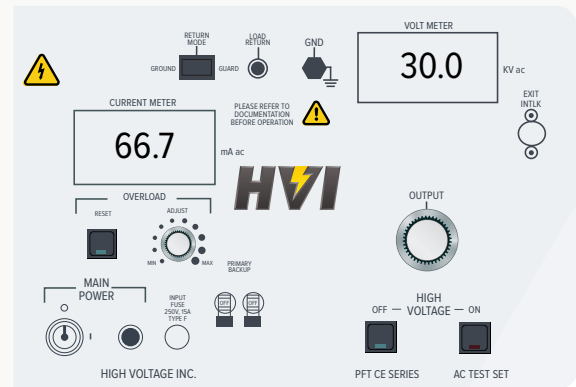
PFT-301CM

- Continuously adjustable output voltage
- Primary connected single range analog voltmeter
- Single range analog current meter
- Transit protected, glass faced meters to prevent damage in transit
- Fixed overload set to 120% of variable transformer rated output current
- Zero start safety interlock
- External interlock provisions



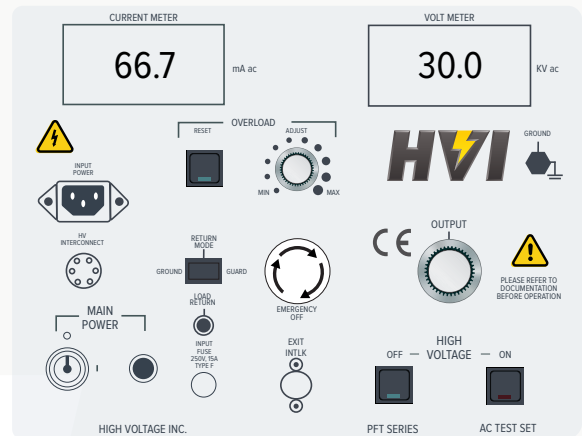
## PFT-302CE

- Continuously adjustable output voltage
- Key operated main power switch
- Secondary connected single range 3.5 digit digital voltmeter
- Single range 3.5 digit digital current meter
- Guard/ground circuit for accurate leakage current measurement
- Transit protected, glass faced meters to prevent damage in transit
- Adjustable overload from 10 to 110% of rated output current
- Zero start safety interlock
- External interlock provisions



## PFT-401CEF

- Continuously adjustable output voltage
- Key operated main power switch
- Emergency off mushroom switch for fast de-energizing of the high voltage output
- Secondary connected single range 3.5 digit digital voltmeter
- Single range 3.5 digit digital current meter
- Guard/ground circuit for accurate leakage current measurement
- Transit protected, glass faced meters to prevent damage in transit
- Adjustable overload from 10 to 110% of rated output current
- Zero start safety interlock
- External interlock provisions



## PFT Series Specifications



**PFT-103CM**



**PFT-301CM**

	<b>PFT-103CM</b>	<b>PFT-301CM</b>
<b>Input:</b>	120 V, 60 Hz, 15 A (PFT-103CM) 230 V, 50/60 Hz, 8 A (PFT-103CMF)	120 V, 60 Hz, 10 A (PFT-301CM) 230 V, 50/60 Hz, 5 A (PFT-301CMF)
<b>Output:</b>	0-10 kV AC, 1 kVA resistive load 3 kVA capacitive load Up to 300 mA current Output current is reduced at lower voltages	0-30 kV AC, 1 kVA resistive load 1 kVA capacitive load, 33 mA current
<b>Duty:</b>	3 kVA: 1 hour ON, 1 hour OFF 1.5 kVA: continuous	1 kVA: 1 hour on, 1 hour off 700 VA: Continuous
<b>Voltmeter:</b>	3.5", scaled 0-5/10 kV AC, $\pm 2\%$ F.S.	3.5", scaled 0-30 kV AC, $\pm 2\%$ F.S.
<b>Current Meter:</b>	3.5", scaled 0-1.0 mA, $\pm 2\%$ F.S. with range multipliers of x1, x10, x100 guard/ground load return	3.5", scaled 0-40 mA, $\pm 2\%$ F.S.
<b>Distortion:</b>	Less than 5%	Less than 5%
<b>Size &amp; Weight:</b>	21 x 11.25 x 15.25 in., 62 lb. 534 x 286 x 387mm, 28 kg.	17 x 11.5 x 14 in., 45 lb. 431 x 292 x 365mm, 20 kg.
<b>Output Termination:</b>	20 ft. (6 m.) shielded EPR output cable with alligator clamp	20 ft. (6 m.) shielded silicone output cable with alligator clamp
<b>Scope of Supply:</b>	20 ft. black ground lead, 20 ft. shielded return cable, external interlock plug, operations manual, calibration certificate	20 ft. black ground lead, external interlock plug, operations manual, calibration certificate





**PFT-302CE**



**PFT-303CM**

	<b>PFT-302CE</b>	<b>PFT-303CM</b>
<b>Input:</b>	230 V, 50/60 Hz, 15 A	120 V, 60 Hz, 15 A (PFT-303CM) 230 V, 50/60 Hz, 8 A (PFT-303CMF)
<b>Output:</b>	0-30 kV AC, 2 kVA resistive load 2 kVA capacitive load, up to 67 mA current	0-30 kV AC, 1 kVA resistive load: 3 kVA capacitive load, up to 100 mA current Output current is reduced at lower voltages
<b>Duty:</b>	0-30 kV AC, 2 kVA resistive load 2 kVA capacitive load, up to 67 mA current	3 kVA: 1 hour ON, 1 hour OFF 1.5 kVA: continuous
<b>Voltmeter:</b>	3.5 digit LED, scaled 0-30 kV AC, $\pm 1\%$ F.S.	3.5", scaled 0-12/30 kV AC, $\pm 2\%$ F.S.
<b>Current Meter:</b>	3.5 digit LED, scaled 0-67 mA AC, $\pm 1\%$ F.S.	3.5", scaled 0-1 mA, $\pm 2\%$ F.S. with range multipliers of x1, x10, x100 guard/ground load return
<b>Distortion:</b>	Less than 5%	Less than 5%
<b>Size &amp; Weight:</b>	23 x 11.5 x 15.5 in., 62 lb. 584 x 292 x 394mm, 28 kg.	21 x 11.25 x 15.25 in., 75 lb. 534 x 286 x 387mm, 34 kg.
<b>Output Termination:</b>	20 ft. (6 m.) output cable with alligator clamp	20 ft. (6 m.) output cable with alligator clamp
<b>Scope of Supply:</b>	20 ft. green/yellow ground lead, 20 ft. shielded return cable, external interlock plug, main power key, operations manual, calibration certificate	20 ft. black ground lead, 20 ft. shielded return cable, external interlock plug, operations manual, calibration certificate

## PFT Series Specifications



**PFT-401CEF**



**PFT-503CM**

	<b>PFT-401CEF</b>	<b>PFT-503CM</b>
<b>Input:</b>	230Vac, 50/60Hz, 6A	120 V, 60 Hz, 15 A (PFT-503CM) 230 V, 50/60 Hz, 8 A (PFT-503CMF)
<b>Output:</b>	0-40kV AC, 1kVA resistive load (25mA Max) 1kVA capacitive load (25mA max)	0-50 kV AC, 1 kVA resistive load 3 kVA capacitive load, up to 60 mA current Output current is reduced at lower voltages
<b>Duty:</b>	1kVA: 1 hour ON, 1 hour OFF 0.8kVA: continuous	3 kVA: ½ hour ON, 2 hours OFF 2 kVA: 1 hour ON, 1 hour OFF 1 kVA: continuous
<b>Voltmeter:</b>	3.5" digital LED, scaled 0-40kV AC (RMS)	3.5", scaled 0-25/50 kV AC, ±2% F.S.
<b>Current Meter:</b>	3.5 digit LED, scaled 0-25ma AC (RMS)	3.5", scaled 0-1 mA, ±2% F.S. with range multipliers of x1, x10, x100
<b>Distortion:</b>	Less than 5%	Less than 5%
<b>Size &amp; Weight:</b>	14.5 x 12.5 x 23.5 in., 70 lb. 368 x 318 x 597mm, 32 kg.	21 x 11.25 x 15.25 in., 75 lb. 534 x 286 x 387mm, 34 kg.
<b>Output Termination:</b>	Top mounted 1.5 in aluminum ball	20 ft. (6 m.) shielded output cable with alligator clamp
<b>Scope of Supply:</b>	(2) 20 ft. green/yellow ground leads, 20 ft. shielded return cable, external interlock plug, operations manual, calibration certificate	20 ft. black ground lead, 20 ft. shielded return cable, external interlock plug, operations manual, calibration certificate



**PFT-652CM**



**PFT-1003CM**

	<b>PFT-652CM</b>	<b>PFT-1003CM</b>
<b>Input:</b>	120 V, 60 Hz, 15 A (PFT-652CM) 230 V, 50/60 Hz, 8 A (PFT-652CMF)	120 V, 60 Hz, 15A (PFT-1003CM) 230 V, 50/60 Hz, 8A (PFT-1003CMF)
<b>Output:</b>	0-65 kV AC, 2 kVA resistive load 2 kVA capacitive load, up to 30 mA current Output current is reduced at lower voltages	0-100 kVac, 1 kVA resistive load 3 kVA capacitive load, up to 30 mA current Output current is reduced at lower voltages
<b>Duty:</b>	2 kVA: 1 hour ON, 1 hour OFF 1.5 kVA: continuous	3kVA: 1 hour ON, 1 hour OFF 1kVA: continuous
<b>Voltmeter:</b>	3.5", scaled 32.5/65 kV AC, $\pm 2\%$ F.S	3.5 inch Scaled 0-50/100 kVac
<b>Current Meter:</b>	3.5", scaled 0-1 mA, $\pm 2\%$ F.S. with range multipliers of x1, x10, x100	3.5 inch Scaled 0-1.0 mAac, with x1, x10, x100 Range Multiplier
<b>Distortion:</b>	Less than 5%	Less than 5%
<b>Size &amp; Weight:</b>	Control: 16.5 x 10.13 x 10.15 in., 34 lb. 420 x 260 x 260mm, 15 kg.  HV Tank: 12 x 13 x 13.5 in., 50 lb. 310 x 330 x 350mm, 23 kg.	Control: 21 x 11.25 x 15.25 in, 245 lb. 533 x 286 x 387mm, 111 kg.  HV Tank: 13 x 13 x 22 in., 82 lb. 330 x 330 x 559mm, 38 kg.
<b>Output Termination:</b>	Top Toroid	Top Toroid
<b>Scope of Supply:</b>	20 ft. black ground lead, 20 ft. shielded return cable, external interlock plug, operations manual, calibration certificate	20 ft. black ground lead, 20 ft. shielded return cable, external interlock plug, operations manual, calibration certificate

## Optional Accessories



### Hand and Foot Safety Interlock Switches

Dead man style safety switches that connect to the external interlock provisions on the front panel of the PFT AC Hipot Test Set. The switch must be depressed before "HV On" and remain depressed during the duration of the testing. Releasing the switch has the same effect as hitting "HV Off", turning off the high voltage circuit. Supplied with 12 foot lead.



### Grounding Sticks

Safely confirm the device under test has been discharge and is at ground potential before handling after testing.



### Handcart

Optional handcart for increased portability of larger 2 piece PFT-652CM and PFT1003CM.



### Reusable Shipping Center

Reusable hard shipping cases designed for safe transportation of your PFT Series AC Hipot.

## Optional Upgrades



### Digital Metering

Add 3.5-digit digital meters to models with analog meters as standard equipment. Deletes or alters volt and/or current meter range switches.



### BURN Circuit

An optional BURN reactor provides the ability to enable current limiting of the output for burning a fault within the device under test in order to locate it. The OVERLOAD function is disabled when BURN is ON. Available on all control packages.



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© **COPYRIGHT 2021 - HIGH VOLTAGE, INC.** – Manufacturers of high voltage test equipment. Products include portable VLF AC .1Hz to .01Hz. Very Low Frequency, sinewave output hipots up to 200 kV; Tan delta and PD diagnostic measurement bridges for cable diagnostics, portable switchgear and bottle testers up to 100 kV AC ; Portable DC Hipots/Megohmmeters to 300 kV DC ; Oil Test sets at 60 kV or 100 kV; Aerial lift and bucket truck testers to 300 kV AC; High Power AC Dielectric test sets up to 300 kV AC @ 40 KVA; OHM Check concentric neutral tester; Controlled energy cable fault locators, Radar and Tracing devices; 150 kV and 300 kV HV voltage dividers.