

# durable

## AC DIELECTRIC TEST SETS

HVI offers a full line of AC Dielectric Test Sets up to 300 kV in voltage and 20 kVA in power. Conventional test sets are available as well as specialty models, like several designed specifically for motor winding testing. They are all rugged in design, with either oil filled steel or fiberglass high voltage sections and well designed, attractive controllers with all the features needed. Custom models are also available upon request. If lower power models are sufficient for your application, then consider our standard, portable PFT Series of 1 kVA and 3 kVA AC Hipots, available from 10 kV – 100 kV.



HPA-5010FC1  
0-50 kV @ 10 kVA

3 kV – 300 kV

5 kVA – 20 kVA



HPA-20020FC3  
0-200 kV @ 20 kVA

Also available are just the high voltage sections used within the test sets described here, like our 50 kV @ 10 kVA HV tank for testing rubber gloves, aerial lift liners, hot sticks, and other similar loads.

Multiple Controller Options

# economical

**HIGH VOLTAGE**<sup>®</sup>  
VLF HIPOT INSTRUMENTS  
INC.

[www.hvinc.com](http://www.hvinc.com)

## Selecting an AC Dielectric Test Set

AC high voltage testing requires higher power/current ratings than when DC testing the same load. There are several parameters that must be considered when selecting an AC test set, the most important one being the capacitance of the load, which dictates the power required from the test set. Following are several considerations when specifying a test set:

### Voltage Output

Select a test set with perhaps 20 – 25% more voltage than presently needed for possible future increases in testing standards or changes in application. However, the output current of the test set is based on the kVA rating at full voltage. Any increase in the output voltage rating for the same kVA rated test set will proportionately decrease the current rating.

### Power/Current Rating

When AC testing, most loads appear capacitive. To apply high voltage AC at 50/60 Hz to capacitive loads requires higher power and current ratings from the test set than typical portable AC hipots can supply. A test set rated for 10 – 20 kVA may be needed depending on the load to be tested. The capacitance of the load must be known in order to calculate the required current at the required voltage. Don't undersize the set: select a test set with at least 20 - 25% extra power than believed needed. To determine the current needed from the test set, the following formula should be used:

$$A = 2\pi fCV$$

A = Test current required in Amps (A)

f = Test frequency in Hertz (Hz)

C = Load capacitance in Farads (F)

V = Test voltage in volts (V)

Another way to determine the current needed at the required test voltage is to apply a lower voltage to the load and measure the current. The current required at the actual higher test voltage should be fairly linear. For example: if your load draws 10 mA @ 5 kV it will draw approximately 100 mA @ 50 kV. Remember, an AC test set is a constant current device. The maximum output current is the same at any output voltage.

### Duty Cycle

Most AC hipotting is performed for 60 seconds at a time. However, production testing may require consecutive tests over many hours. Most HVI AC test sets are duty rated for 50%, meaning full power can be delivered for one hour on followed by one hour off. The continuous duty rating is approximately 80% of full rating. Consult product specifications for details.

### Partial Discharge Requirements

Many HVI AC test sets are rated for <10pc of partial discharge at full voltage, but not all. Generally, steel tank bushing output models are <10pc while models with fiberglass HV sections and/or a cable output are not. Consult factory.



**HPA-1010FC3**  
10 kV @ 10 kVA  
one piece design  
with optional castors  
and warning light



**HPA-10010FC3**  
100 kV @ 10 kVA



**HPA-055FC1**  
5 kV @ 5 kVA  
Motor shop model  
Fig C1 controls  
with Burn Mode

## AC Dielectric Models

<b>5kVA Input: 230V, 50/60Hz, 1 Ph, 25A Duty: 5kVA 1 hr On.1hr Off, 4 kVA Continuous</b>														
VOLT. (kV)	MODEL	CURRENT (mA)	CONTROL SECTION					HV SECTION						
			W in mm	D in mm	H in mm	FIG.	LBS	KG	W in mm	D in mm	H in mm	LBS	KG	TYPE
10	HPA-105FC*	500	21 533	25 635	30.5 775	C1,2,3	200	91	none - one piece design					NA
30	HPA-305FC*	167	21 533	16 406	15 381	C1,2,3	75	34	13 330	13 330	21 533	95	43	steel
50	HPA-505FC*	100	21 533	16 406	15 381	C1,2,3	75	34	13 305	13 305	21 533	95	43	steel
75	HPA-755FC*	67	21 533	16 406	15 381	C1,2,3	75	34	14 356	14 356	25 635	100	45	steel
100	HPA-1005FC*	50	21 533	25 635	30.5 775	C1,2,3	145	66	18.5 470	18.5 470	34 864	300	136	steel

<b>10kVA Input: 230V, 50/60Hz, 1 Ph, 50A Duty: 10kVA 1 hr On.1hr Off, 8 kVA Continuous</b>														
VOLT. (kV)	MODEL	CURRENT (mA)	CONTROL SECTION					HV SECTION						
			W in mm	D in mm	H in mm	FIG.	LBS	KG	W in mm	D in mm	H in mm	LBS	KG	TYPE
10	HPA-1010FC*	1000	22 559	25.5 648	47.3 1200	C2,3	390	177	none - one piece design					NA
30	HPA-3010FC*	333	21 533	25 635	30.5 775	C2,3	200	91	13 330	13 330	25 635	215	97	steel
50	HPA-5010FC*	200	21 533	25 635	30.5 775	C2,3	200	91	13 330	13 330	25 635	215	97	steel
75	HPA-7510FC*	133	21 533	25 635	30.5 775	C2,3	200	91	17 432	17 432	32 813	275	125	steel
100	HPA-10010FC*	100	21 533	25 635	30.5 775	C2,3	200	91	18 457	18 457	37.5 953	325	147	steel
150	HPA-15010FC*	67	21 533	25 635	30.5 775	C2,3	200	91	28 711	28 711	56.5 1435	825	374	fiberglass

<b>20kVA Input: 230V, 50/60Hz, 1 Ph, 90A Duty: 20kVA 1 hr On.1hr Off, 16 kVA Continuous</b>														
VOLT. (kV)	MODEL	CURRENT (mA)	CONTROL SECTION					HV SECTION						
			W in mm	D in mm	H in mm	FIG.	LBS	KG	W in mm	D in mm	H in mm	LBS	KG	TYPE
30	HPA-3020FC*	600	22 559	25.5 648	47.3 1200	C3	300	136	17 432	17 432	25 635	300	136	steel
50	HPA-5020FC*	400	22 559	25.5 648	47.3 1200	C3	300	136	17 432	17 432	25 635	300	136	steel
75	HPA-7520FC*	267	22 559	25.5 648	47.3 1200	C3	300	136	17 432	17 432	32 813	325	147	steel
100	HPA-10020FC*	200	22 559	25.5 648	47.3 1200	C3	300	136	18.5 470	17.8 445	37.5 953	375	170	steel
150	HPA-15020FC*	133	22 559	25.5 648	47.3 1200	C3	300	136	35.5 902	35.5 902	56.5 1435	850	386	fiberglass
200	HPA-20020FC*	100	22 559	25.5 648	47.3 1200	C3	300	136	35.5 902	35.5 902	56.5 1435	850	386	fiberglass
300	HPA-30020FC*	67	22 559	25.5 648	47.3 1200	C3	300	136	35.5 902	35.5 902	82 2083	1150	522	fiberglass

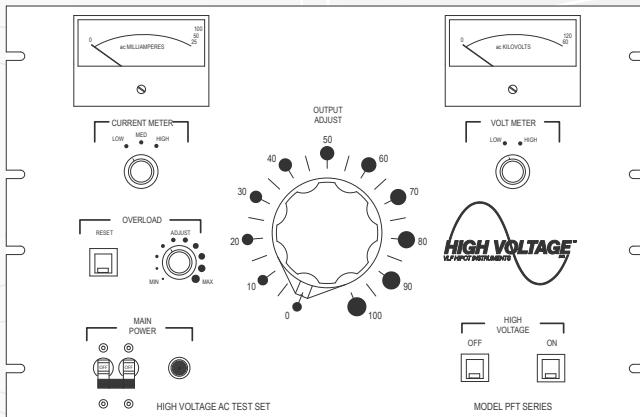
\* Insert a 1, 2, or 3 to the model number in place of the \* to specify which controller, described on page 4, will be needed.

<b>Motor Shop Models</b>												
VOLT. (kV)	MODEL	CURRENT (mA)	POWER (kVA)	INPUT Voltage (V)	INPUT Current (A)	FREQ. (Hz)	ONE PIECE - SIZE & WEIGHT					
							W in mm	D in mm	H in mm	CONTR. FIG.	LBS	KG
3	HPA-033M	1000	3	230	13	50/60	14.5 368	21 533	48 1219	C1	140	68
5	HPA-055M	1000	5	230	22	50/60	26 660	26 660	48 1219	C1	225	109

## High Voltage Section Configurations

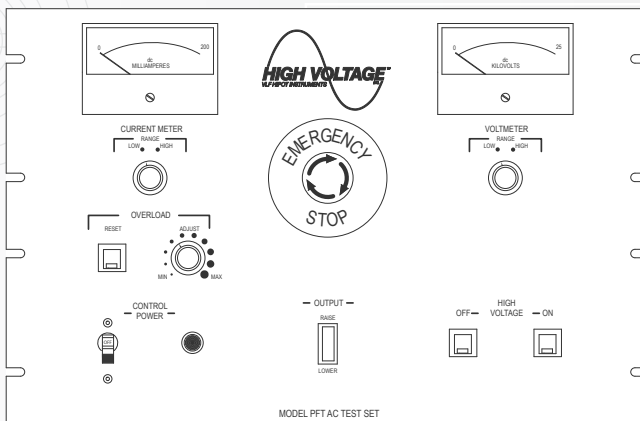
Except for the two lowest voltage 5 kVA and 10 kVA models that contain the HV section within the control cabinet, all models have a separate HV section. There are two HV section designs, a steel tank with a bushing output and a fiberglass cylinder with a toroid/spinning output. HVI can supply a one piece design on several of the lower voltage models, like the 10 kV model pictured in this brochure. A steel tank with a cable output on models rated up to 50 kV is possible on a custom basis. No HV output cable is provided on bushing and spinning output models. See the pictures in this brochure for examples of the various layout configurations.

## Three Standard Control Packages – Variations Available On a Custom Basis



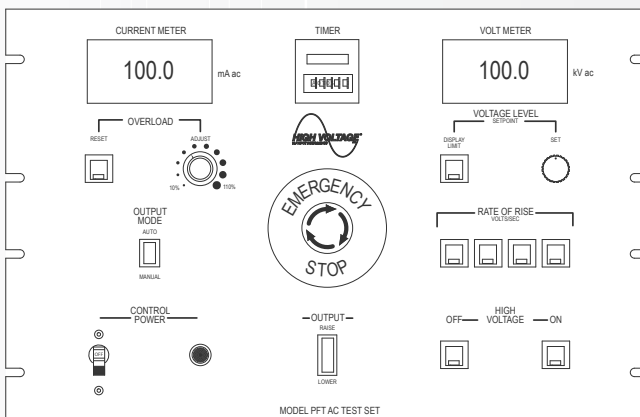
**Fig. C1**  
Simplified Controls w/manual output voltage control – up to 5 kVA

- Voltage meter: two range
- Current meter: three range
- Main Power breaker/indicating light
- HV On/Off
- Output Adjust control knob
- Variable Overload w/reset



**Fig. C2**  
Simplified Controls w/motorized output voltage control – up to 10 kVA

- Voltage meter: two range
- Current meter: three range
- Control Power breaker/indicating light
- HV On/Off
- Voltage Raise/Lower control
- Fixed voltage rate-of-rise
- Variable Overload w/reset
- Emergency Off button



**Fig. C3**  
Automatic Controls & Digital Metering – any kVA

- Voltage meter: digital 3.5 digits
- Current meter: digital 3.5 digits
- Control Power breaker
- HV On/Off
- Output Mode Manual/Auto
- Output Voltage Raise/Lower control
- Four fixed volts/second rates-of-rise  
10 – 100 seconds, consult factory
- Test Dwell timer
- Variable Overload w/reset
- Emergency Off button