

High-Voltage Dead-Tank Circuit Breakers



PB123
PB145
PB170
PB245

PB 245

FAMILY OF BREAKERS

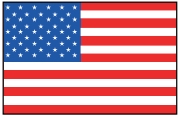


123kV – 245kV 63kA





PB245



All of PAB's operations are located in Canonsburg, Pennsylvania, USA, including all Management, R&D, Production, and Technical Support functions. Being strategically located in the USA means all directives, including management and technical decisions, are made quickly and consistently without relying on offices half a world away. Locating R&D personnel with Production ensures that equipment is built to the designers' standards.

Integrating R&D personnel with Technical Support means you have quick access to the people who know the product and its applications best—the design engineers. Headquartered within the facilities of Pennsylvania Transformer Technology, Inc. (PTTI), PAB has direct access to PTTI's 350+ employee workforce, technical expertise, and financial resources.

Dedicated Breaker Experts

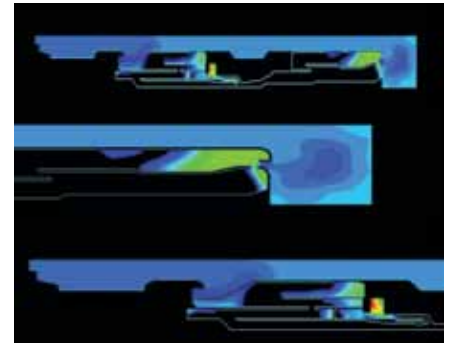
As circuit breaker experts, the employees and management of Pennsylvania Breaker (PAB) are dedicated to designing and building the industry's best high-voltage circuit breakers. Everything we do revolves around circuit breakers; our time and attention are not diluted or distracted by other products that need sold or serviced. Breakers are our name—they are who we are. You can be sure that your PAB circuit breaker was developed and is supported by a team of professionals focused solely on the advancement of high-voltage circuit breaker products.



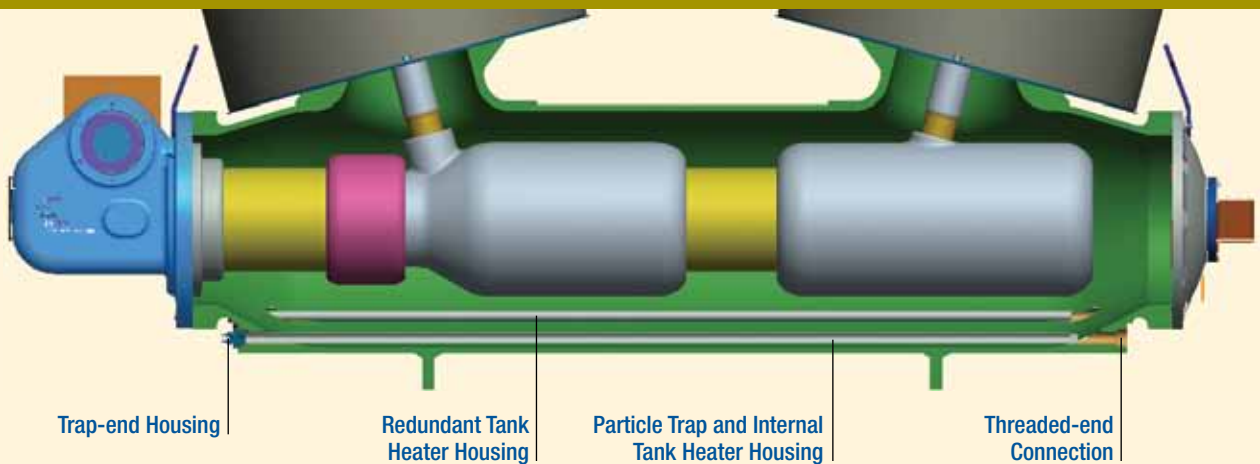
PAB's 90,000-square-foot production facility includes separate quality inspection areas, an interrupter-assembly clean room, and a high voltage test center containing a 1,000,000-volt hi-pot transformer and 2,500,000-volt impulse generator.

State-of-the-Art Technology

Pennsylvania Breaker R&D engineers have designed the industry's most modern circuit breaker configurations using the most powerful, sophisticated software design tools available. Computational fluid dynamics (CFD), finite element analysis (FEA), and 3-D CAD layout design systems have enabled PAB's R&D engineers to develop complete breaker families of ratings in significantly less time than ever before in the industry. The expert use of the latest design technologies has enabled PAB to implement the industry's fastest operating mechanisms and highest X/R ratio interrupters.



Simulated interruption modeled with CFD software.



Superior Performance

Coupling proven puffer interrupter technology with the high-speed OAV-16 operating mechanism enabled PAB engineers to certify the combination as one-half of a 550kV/63kA pole. You get the confidence of a conservatively-designed breaker that is certified for robust Transient Recovery Voltage, Capacitive Switching, High Asymmetry, and First-Pole-to-Clear performance.

Transient Recovery Voltage Performance

TRV testing for 100% terminal fault (T100) conditions was performed with peak voltages required for half-pole 550kV breakers (290kV) and rate of rise as required for 245kV breakers—well beyond ANSI standard performance requirements.

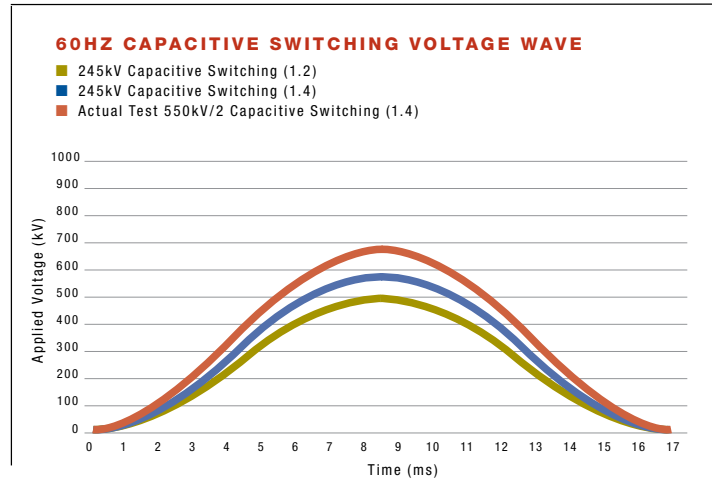
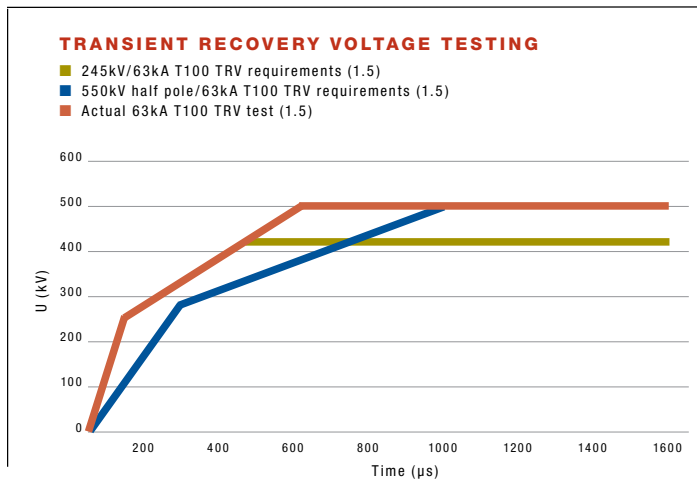
Capacitive Switching Performance

The PB245 Family was certified for capacitive switching performance using half-pole 550kV values—1.4 capacitive voltage factor (k_c) value at 290kV. The result is superior k_c factors of 1.6 at 245kV and 2.8 at 145kV.

Configuration

Maintenance-free OAV-16 Mechanism

Our nitrogen-spring hydraulic mechanism is designed for years of maintenance-free service. The mechanism is a completely sealed system that prevents entrance of moisture and outside contaminants. Its internal filtering system maintains the cleanliness of the hydraulic fluid so you don't have to. All moving parts are located within the fluid and are lubricated for life; no routine lubrication for you to perform. Proven, commercially-available gaskets and valves operating at lower pressures than with other hydraulic mechanisms ensure leak-free performance.



Design Features

Internal Tank Heater PAB's internal tank heater design provides the most efficient means of heating the interrupter's SF6 gas. Tank heaters are installed in the interrupter tank to directly heat the SF6 gas instead of being mounted on the outside of the tank as typically done with inefficient conventional tank heater systems. Within a few minutes, the heater element can be easily exchanged without opening the tank or removing the SF6 gas.

Integral Particle Trap Improved dielectric performance over the life of the circuit breaker is ensured because of PAB's patented particle trap design. Each breaker is supplied with a particle trap integral to the interrupter's enclosure. The trap ensures that any particles or arc by-products generated during breaker operation are electrically shielded at the enclosure's lowest point.



PB245

DIMENSIONS (INCHES)

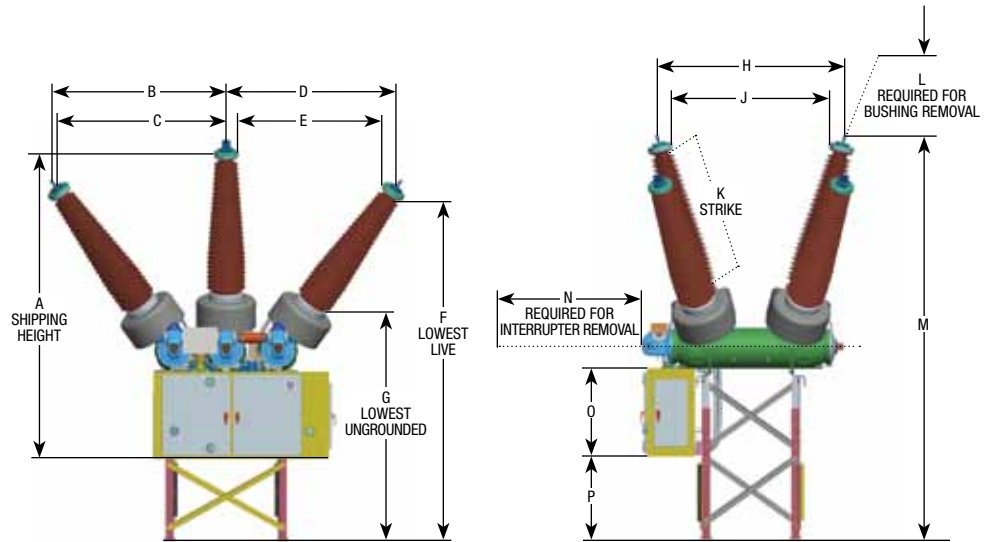
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
PB123-63	139	78	76	76	65	159	119	84	71	48	20	185	80	45	42
PB145-63	139	78	76	76	65	159	119	84	71	48	20	185	80	45	42
PB170-63	145	79	79	79	69	165	119	86	75	56	20	193	80	45	43
PB245-63	160	92	88	88	75	176	119	96	81	71	20	208	80	45	43

Standard Features

- Integral particle trap
- Internal tank heater
- Porcelain insulators
- Slip-over CT design
- NEMA four-hole universal positioning terminals
- Galvanized support frame
- Powder-coated NEMA 3R control cabinet
- Stainless steel door handles
- Stainless steel SF6 tubing
- Ganged SF6 monitoring
- SAE hardware
- Fully assembled shipments

Optional Features

- Low-temperature performance to -50°C
- ASME Pressure Vessel Certification
- Composite insulators
- Extra-high creep/high-altitude insulators
- High seismic performance
- Individually-phased SF6 monitoring
- NEMA 4X mechanism/control cabinet
- Custom control package
- Extra auxiliary contacts
- Custom support structure
- Side-mounted position indicator for long-distance viewing



RATINGS	PB123-63	PB145-63	PB170-63	PB245-63
Standards	ANSI/IEEE	ANSI/IEEE	ANSI/IEEE	ANSI/IEEE
Maximum Voltage	123kV	145kV	170kV	245kV
BIL	550kV	650kV	750kV	900kV (1050kV)
Frequency	60Hz	60Hz	60Hz	60Hz
60Hz Withstand	260kV	310kV	365kV	425kV
Short-Circuit Current	63kA	63kA	63kA	63kA
Continuous Current	2kA/3kA/4kA/5kA	2kA/3kA/4kA/5kA	2kA/3kA/4kA/5kA	2kA/3kA/4kA/5kA
Interrupting Time	2 cycles	2 cycles	2 cycles	2 cycles
Duty Cycle	O-0.3s-CO-15s-CO	O-0.3s-CO-15s-CO	O-0.3s-CO-15s-CO	O-0.3s-CO-15s-CO
Temperature	-50°C to +50°C	-50°C to +50°C	-50°C to +50°C	-50°C to +50°C
Altitude above sea level	up to 3,300ft	up to 3,300ft	up to 3,300ft	up to 3,300ft
Seismic Qualification (IEEE693-2005)	High	High	High	High
Normal Operating Pressure	87psig @ 20°C	87psig @ 20°C	87psig @ 20°C	87psig @ 20°C
Minimum pressure to interrupt fault current	72psig @ 20°C	72psig @ 20°C	72psig @ 20°C	72psig @ 20°C
Minimum pressure to interrupt load current	72psig @ 20°C	72psig @ 20°C	72psig @ 20°C	72psig @ 20°C



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