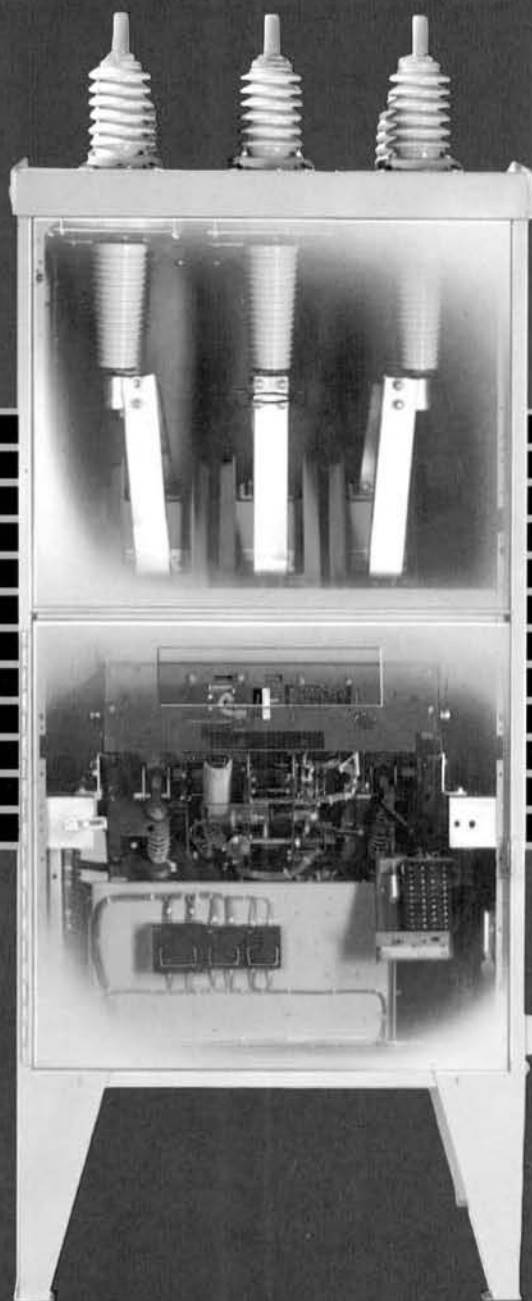


**POWER/VAC[®]**

Vacuum Distribution Breaker

**GENERAL  ELECTRIC**

A logical extension of **POWER/VAC®** breaker technology

POWER/VAC Distribution Breakers provide all the features required in outdoor switching, protection and control applications. They are rated 15.5 kV, 1200 and 2000 amperes, with symmetrical interrupting capacity of 20,000 amperes.

General Electric POWER/VAC Distribution Breakers incorporate the same POWER/VAC breaker element used

in GE POWER/VAC Metalclad Switchgear. Thousands of these breaker elements are in service and have established a proven reliability record domestically and in over 30 countries. They are manufactured in the world's most sophisticated switchgear facility in Burlington, Iowa, where thousands are produced annually. This high volume allows the benefits of CAD/CAM, Class A tooling and stringent testing to be extended to the manufacture of POWER/VAC Distribution Breakers.



Thousands of these breaker elements are in service and have established a proven reliability record domestically and in over 30 countries. They are manufactured in the world's most sophisticated switchgear facility in Burlington, Iowa, where thousands are produced annually. This high volume allows the benefits of CAD/CAM, Class A tooling and stringent testing to be extended to the manufacture of POWER/VAC Distribution Breakers.

Vacuum interruption provides the most efficient protection

At the heart of the Distribution Breaker is the POWER/VAC metalclad vacuum interrupter. To date, this design has accumulated over 500,000 interrupter years of reliable field service experience.

General Electric pioneered vacuum interruption technology in the 1920's; refined it with improved

materials and new manufacturing techniques in the '30's and '40's; and introduced the world's first vacuum interrupter distribution breaker in the 1960's. With the development of the POWER/VAC breaker element in the 1970's, General Electric introduced the first medium voltage metalclad switchgear line to use vacuum exclusively. Today this same proven breaker element is incorporated in the POWER/VAC Distribution Breaker.



INTERRUPTER ASSEMBLY



COMPUTER-AIDED DESIGN

The POWER/VAC® Distribution Breaker offers these important features:

- **NO CONTACT MAINTENANCE.** One set of contacts performs both main and arcing contact functions. Maintenance is eliminated because the high vacuum environment isolates contacts from exposure to dirt, moisture and other pollutants.
- **RELIABLE ARC INTERRUPTION.** Arc interruption typically occurs at the first current zero after contact separation. The high dielectric strength of the vacuum gap results in an extremely short clearing time. From a normal CLOSED position, the breaker can complete fault interruption in five cycles.
- **QUIET OPERATION.** Arc extinction is silent, and the sound level of the mechanism is low. Quiet operation is particularly desirable near hospitals, residential areas and shopping centers.
- **LONG SERVICE LIFE.** POWER/VAC interrupters experience no significant contact erosion during normal duty. They're designed and tested to meet or exceed performance requirements of applicable ANSI, IEEE and NEMA standards.

STATIONARY
ELECTRICAL TERMINAL

METAL-TO-INSULATION
VACUUM SEAL

INSULATING
VACUUM ENVELOPE

VACUUM CHAMBER

ELECTRIC ARCING REGION

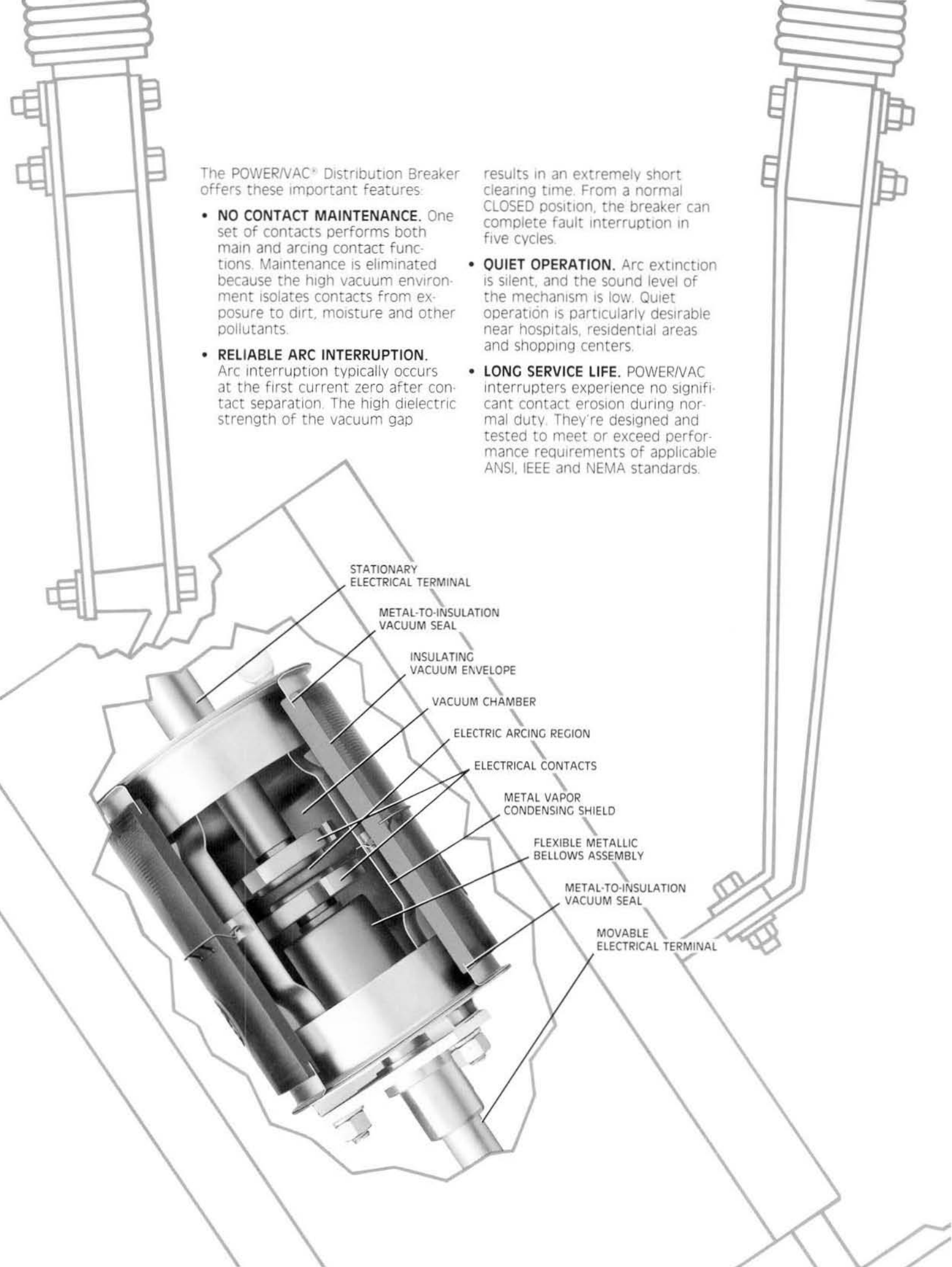
ELECTRICAL CONTACTS

METAL VAPOR
CONDENSING SHIELD

FLEXIBLE METALLIC
BELLOWS ASSEMBLY

METAL-TO-INSULATION
VACUUM SEAL

MOVABLE
ELECTRICAL TERMINAL



Modular design provides easy installation and accessibility

Easy installation. Distribution Breakers are shipped completely assembled ready for immediate installation, except for the legs which are available in selected lengths.

Continuous steel frame simplifies grounding and provides greater rigidity for added strength. This

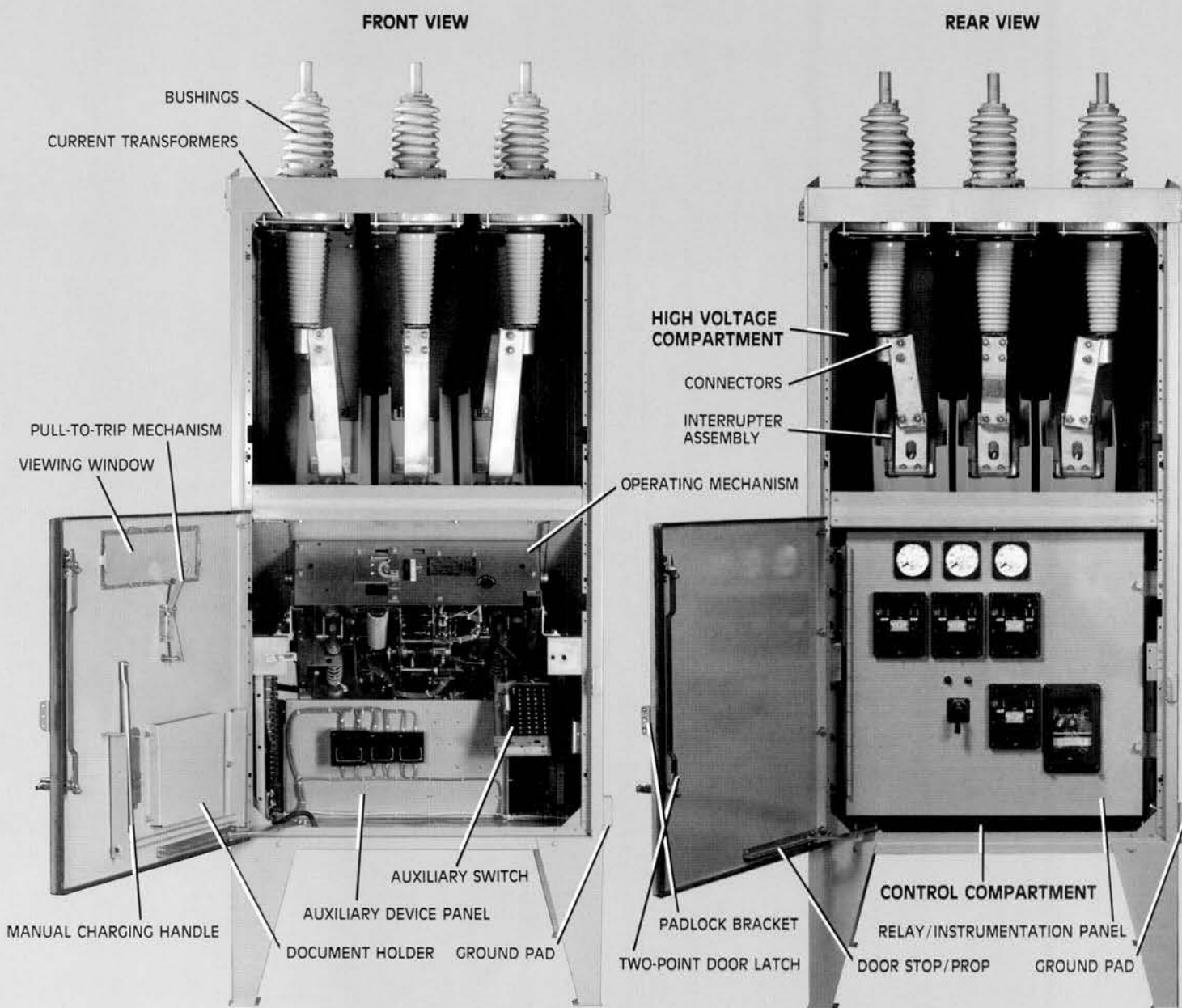
design has lower reaction forces during operation, and therefore a lighter foundation can be used.

Pull-to-trip lever on the outside of the breaker trips the breaker and prevents reclosing from any source until manually reset by the operator.

Viewing window permits convenient visual check of operations counter, OPEN/CLOSE indication,

spring charge indication, manual CLOSE and TRIP buttons and pull-to-trip lever.

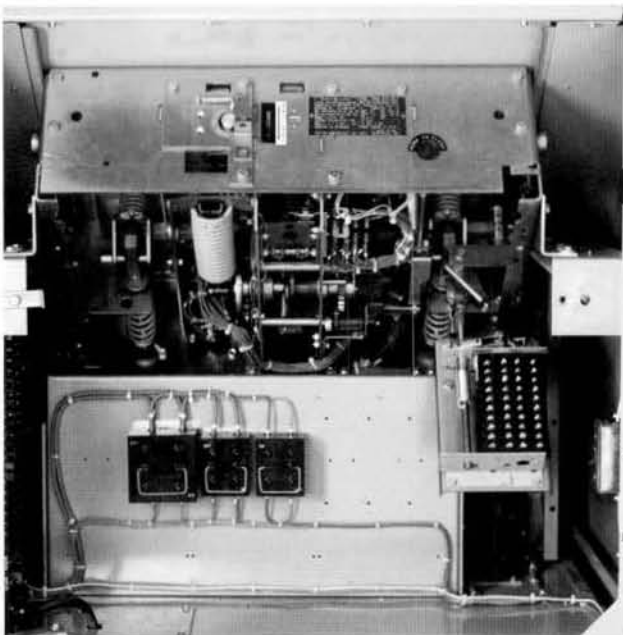
Modular breaker design consists of three pole assemblies and the breaker mechanism to simplify maintenance. The entire module can be removed with a minimum of effort.



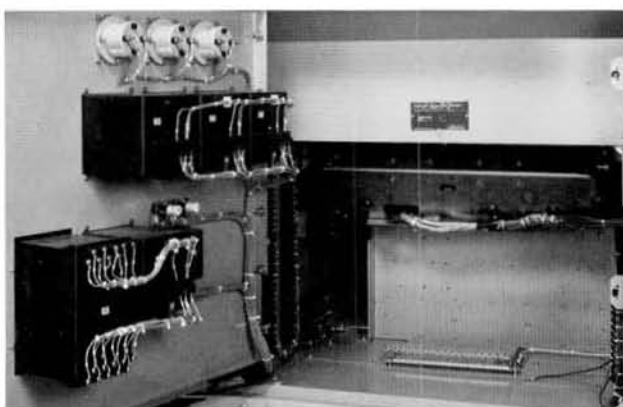
Bushings and current transformers are designed and built in Burlington to meet exacting ANSI standards. CT's are readily accessible; refer to Page 7 for ratings. This design features up to two current transformers per bushing, 12 per breaker. Linear couplers are available.

"E Coat" paint is applied with the cathodic electrodeposition method which bonds the paint to all surfaces to resist adverse effects of harsh environments. A final exterior finish coat provides extra protection. ANSI 61 Grey is standard; other color options are available.

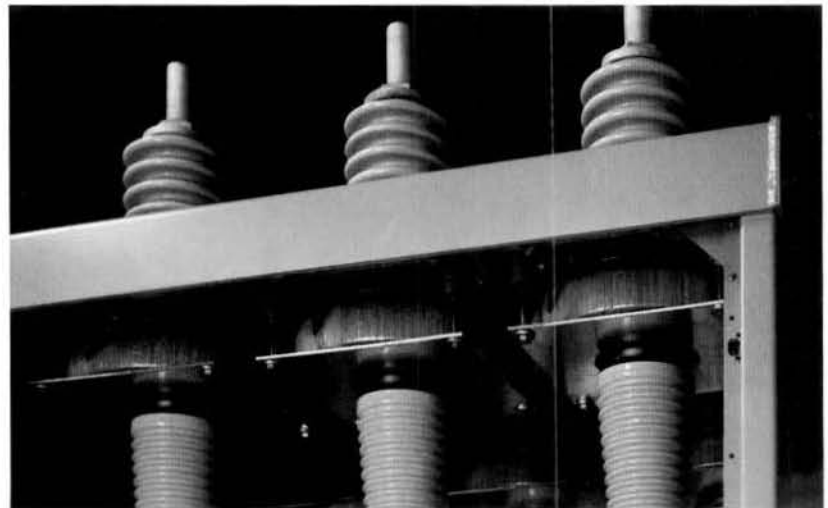
Low maintenance. The POWER/VAC breaker element is designed for 10,000 full load operations prior to maintenance. After 15 full fault interruptions, it is recommended that the contact erosion indicator be checked to estimate remaining interrupter life.



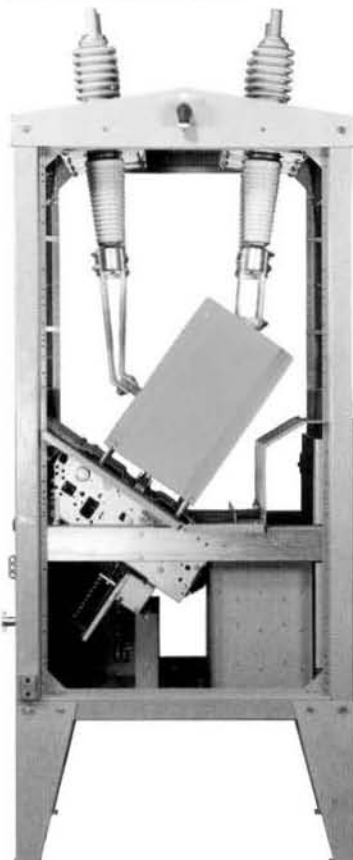
INSIDE FRONT MECHANISM AND CONTROL COMPARTMENT



INSIDE REAR CONTROL COMPARTMENT



CURRENT TRANSFORMERS



SIDEVIEW WITH PANELS REMOVED



VIEWING WINDOW AND PULL-TO-TRIP LEVER

Rigid quality standards and thorough testing assure high reliability

POWER/VAC® Distribution Breaker quality begins with the basic materials — steel, copper, aluminum, fiberglass reinforced polyester and porcelain — proven in both indoor and outdoor use. All breaker elements and purchased components are thoroughly inspected to assure they meet specifications. In addition, each breaker's insulation materials receive numerous production and laboratory tests.

During manufacture, numerically controlled machines and high quality tooling produce accurate parts. This helps reduce assembly and alignment problems and improves reliability.

All breakers are design tested to applicable industry standards. Some of the test procedures include:

1. Preliminary breaker adjustment assures that all components are within specifications.
2. Every breaker element undergoes a 300 operation CLOSE/OPEN mechanical run-in test, because most component failures occur within this period. Thus, this stress test catches nearly all problems in the factory before they can impact system integrity.
3. Vacuum interrupter wipe, gap and stroke are adjusted to precise tolerances.
4. High potential tests are made on primary and secondary circuits, and

the resistance of each pole assembly is measured against specification.

5. The breaker element mechanism is operated at maximum, minimum and rated voltages, and speed/time checks are made to assure reliable operation.

6. A series of tests is conducted with the breaker element in the equipment to verify operation. Interlocks, auxiliary switches, wiring, relays and other components are tested for continuity and correctness.



300 OPERATION TEST



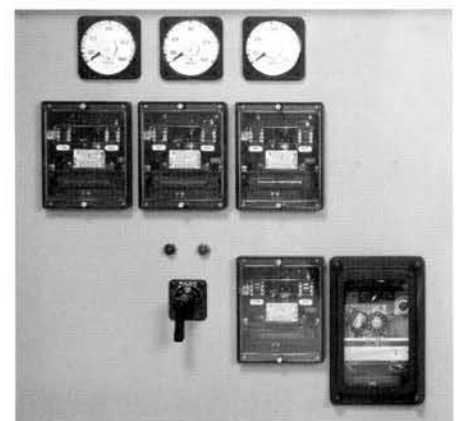
COMPUTER-AIDED MANUFACTURE

Optional overcurrent protection assembly

The distribution breaker relay assembly is designed to accommodate all control protection and indication functions. Each relay panel assembly is engineered, assembled and tested as a unit to assure consistent, coordinated operation.

Features include:

- **All current transformer** secondary leads are continuous from the transformer to the short circuiting type terminal boards.
- **Terminal boards** are positioned for ease of access to facilitate connection of external leads.
- **Relays and controls** are mounted on a swinging panel for easy access.
- **Reclosing relay**, either solid state or electromechanical, is provided with a toggle switch to cut off the reclosing feature, when desired.
- **Circuit breaker control switch** and indicating lamps are positioned for ease of operation.
- **Indicating ammeters** are standard.
- **Other devices** are available.



RELAY PANEL

Distribution Breaker Ratings and Dimensions

Breaker Type	Symmetrical Basis of Rating													
	Rated Values								Related Required Capabilities					
	Voltage		Insulation Level		Current					Current Values			Shipping Wt. in lbs.	
	Max. kV, Rms	Range Factor K	Withstand Test Voltage		Continuous Current at 60 Hz Amp, Rms	Short-circuit Current (At Rated Max. kV) kA, Rms	Interrupting Time Cycles	Rated Permissible Tripping Delay Y-Seconds kA, Rms	Max. kV Divided by K kV, Rms	Maximum Symmetrical Interrupting Capability	3-Sec. Short Time Current Carrying Capability	Closing and Latching Capability 1.6K Times Rated Short-circuit Current		
			Low Frequency kV, Rms	Impulse kV, Crest						K Times Rated Short-circuit Current	kA, Rms	kA, Rms		kA, Rms
PVDB1-15.5-12000	15.5	1.0	50	110	600	12	5	2	15.5	12	12	20	2000	
PVDB1-15.5-16000	15.5	1.0	50	110	800	16	5	2	15.5	16	16	26	2000	
PVDB1-15.5-16000	15.5	1.0	50	110	1200	16	5	2	15.5	16	16	26	2000	
PVDB1-15.5-20000	15.5	1.0	50	110	1200	20	5	2	15.5	20	20	32	2000	
PVDB1-15.5-20000	15.5	1.0	50	110	2000	20	5	2	15.5	20	20	32	2300	
PVDB1-15.5-25000	15.5	1.0	50	110	1200	25	5	2	15.5	25	25	40	2000	
PVDB1-15.5-25000	15.5	1.0	50	110	2000	25	5	2	15.5	25	25	40	2300	

Note: Ratings apply for 20 cycle reclosing time.

Current Transformers for 1200 and 2000 Amp Breakers

MULTI-RATIO, RELAYING ACCURACY

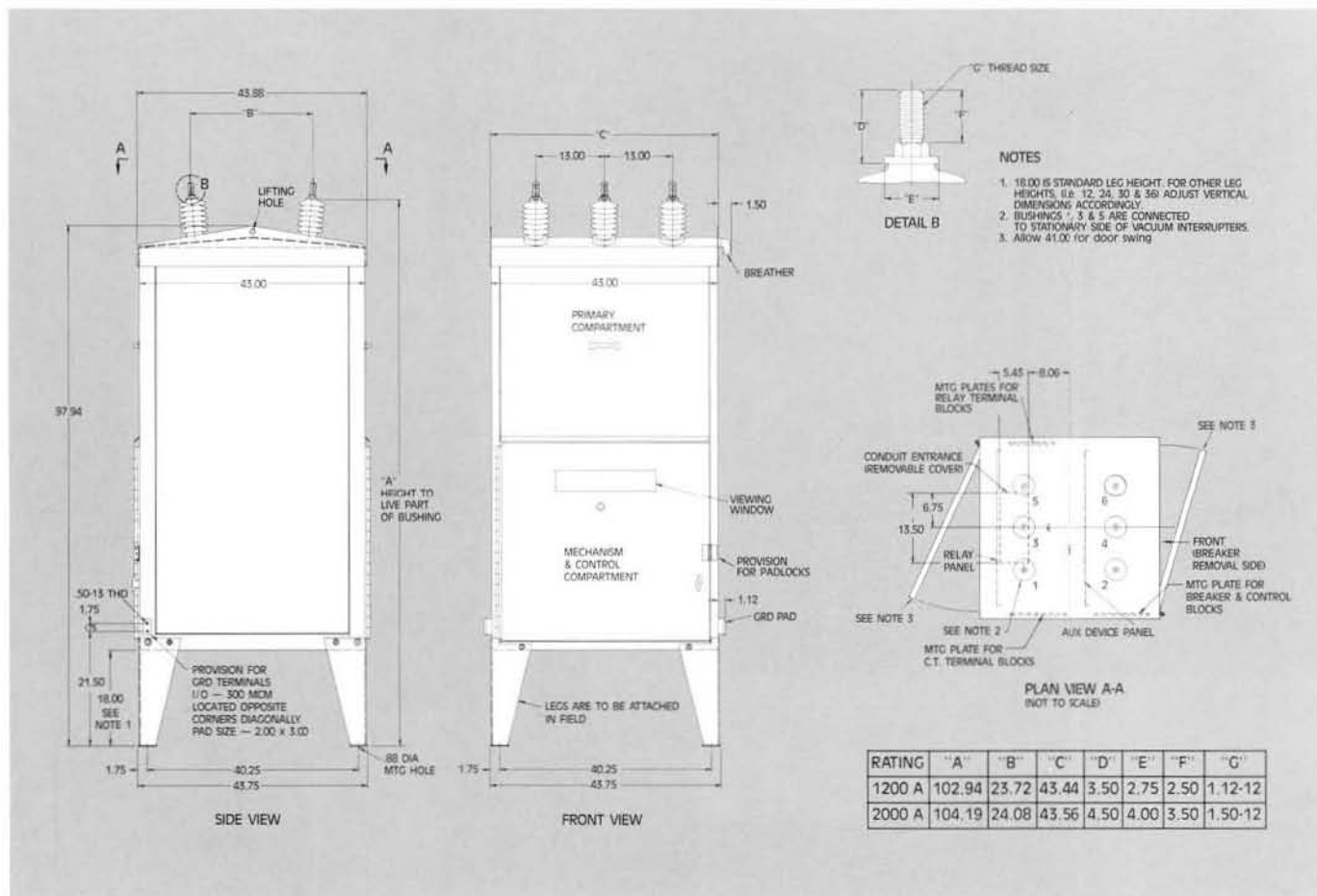
Standard Accuracy Full Turns Ratio	Class	*Double Accuracy Full Turns Ratio	Class
600:5	C100	600:5	C200
1200:5	C200	1200:5	C400
2000:5	C400	2000:5	C800
3000:5	C400	3000:5	C800

*Maximum of 1 CT per Bushing

SINGLE-RATIO, METERING ACCURACY

1200 Amp Breaker Only Full Turns Ratio	Class	1200 and 2000 Amp Breaker Full Turns Ratio	Class
300:5	0.6B0.9	1200:5	0.3B1.8
400:5	0.6B1.8	1500:5	0.3B1.8
600:5	0.3B1.8	2000:5	0.3B1.8
800:5	0.3B1.8	3000:5	0.3B1.8

For Linear Couplers, Consult Factory



© 1985 GENERAL ELECTRIC COMPANY

For further information
call or write your local
General Electric
Sales Office or . . .

General Electric Company
Construction Equipment
Business Operations
P.O. Box 488
Burlington, IA 52601 U.S.A.

Outside the U.S. and Canada write: Export Sales and Services,
570 Lexington Avenue, New York, NY 10022.

GEA-11366A 0585RAE

GENERAL  **ELECTRIC**