

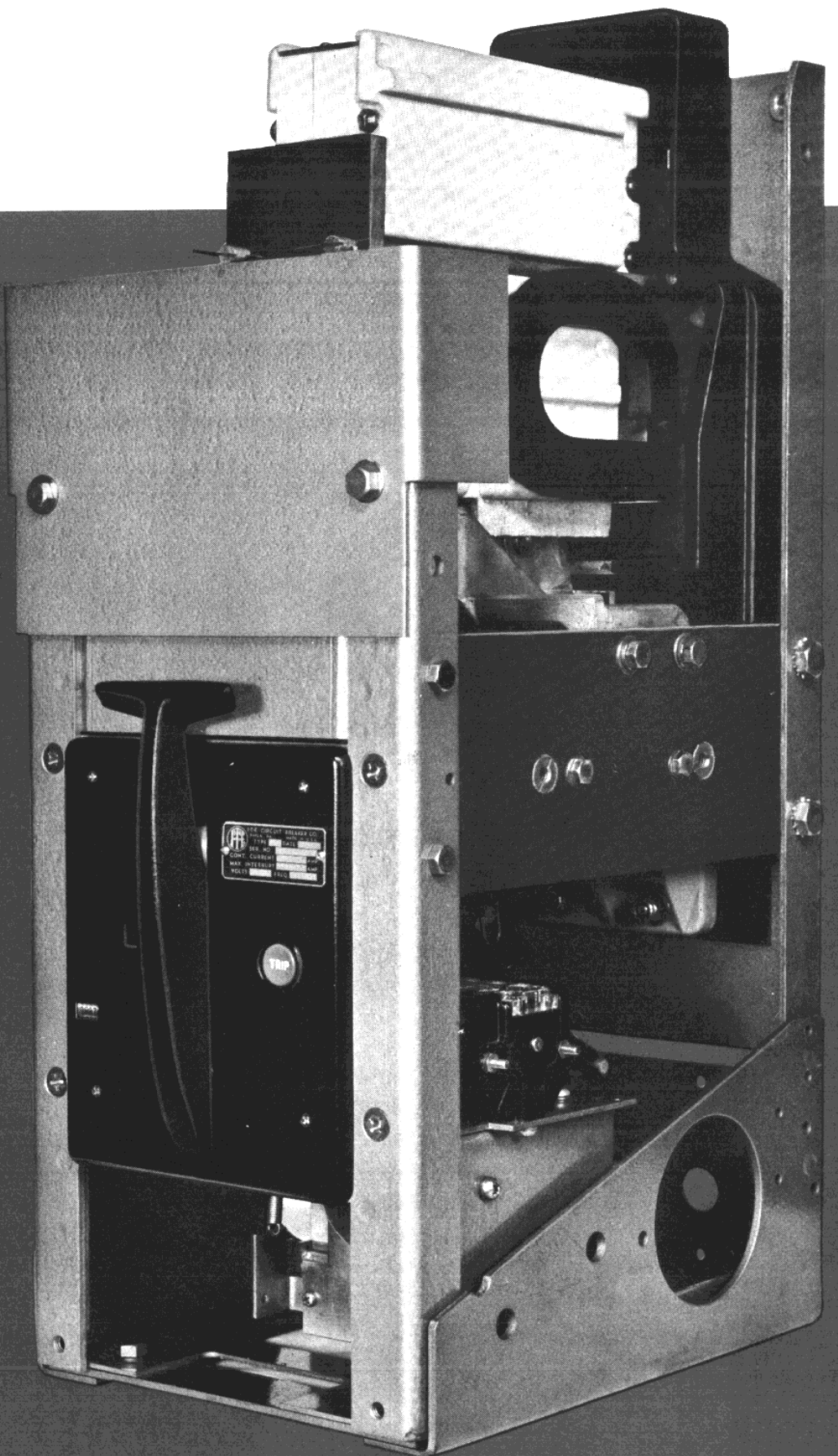
TYPE FB

GENERAL PURPOSE

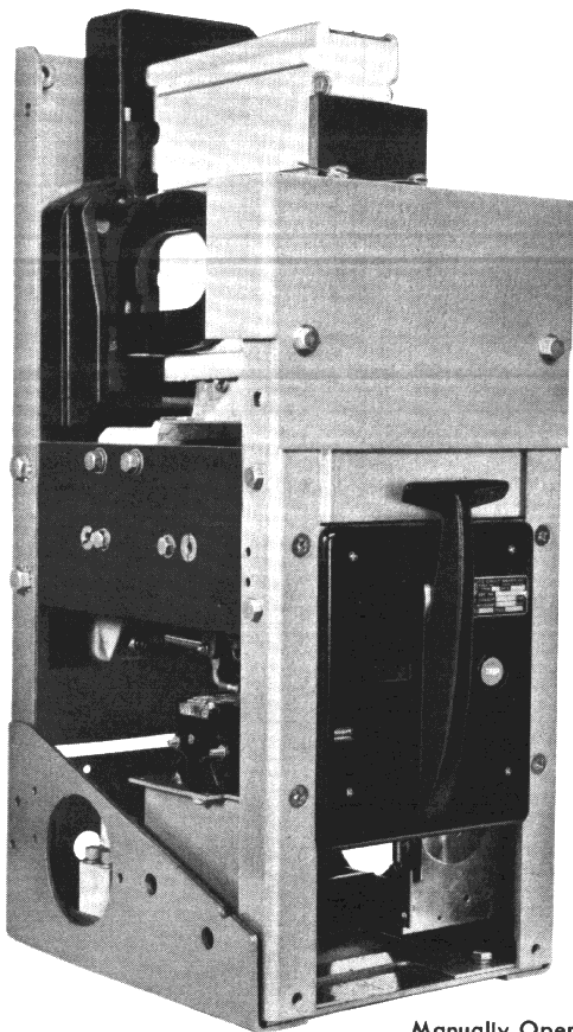
*Current
Limiting*

D-C CIRCUIT BREAKERS

RATINGS: 1000 VOLTS D-C
1200 to 12,000 AMPERES
1, 2 POLE



I-T-E CIRCUIT BREAKER COMPANY



Manually Operated,
Stationary FB-12 Breaker

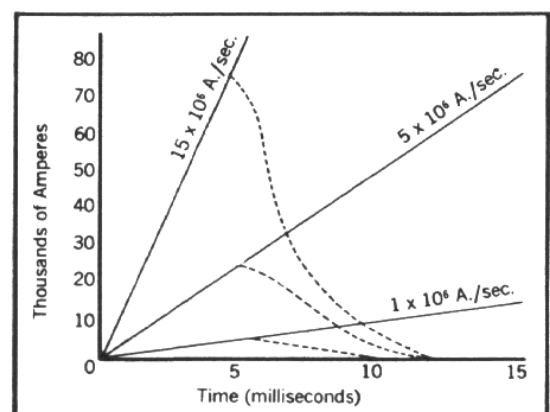
HEAVY DUTY, GENERAL PURPOSE FB CIRCUIT BREAKERS LIMIT FAULT CURRENT IN .006 SEC.

IDEALLY SUITED FOR THE PROTECTION OF:

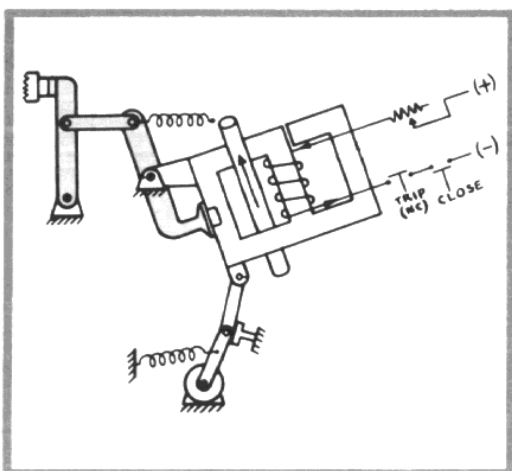
- D-C Generators
- D-C Traction or Driving Motors
- D-C Main, Tie, and Feeder Circuits
- Power Rectifiers
- Automatic Reclosing Circuits

Air magnetic, current limiting type FB circuit breakers are especially designed for application on high capacity industrial circuits having very high rates of current rise due to low fault impedances through rectifiers, generators, or motors.

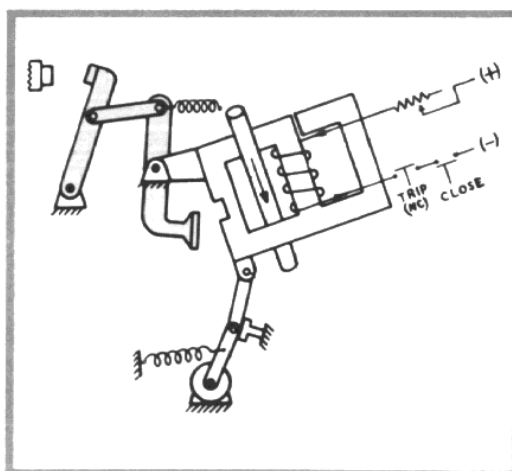
The FB breakers will limit the magnitude of fault current within .006 seconds to values materially less than the peak to which the circuit is capable and may be safely applied to 1000 volt d-c circuits having rates of current rise of 15,000,000 amperes per second or less. This represents an extremely severe circuit of low impedance which is only rarely found in practical applications. Industrial d-c circuits generally are capable of no more than 10,000,000 amperes per second and the majority of systems are below 5,000,000 amperes per second.



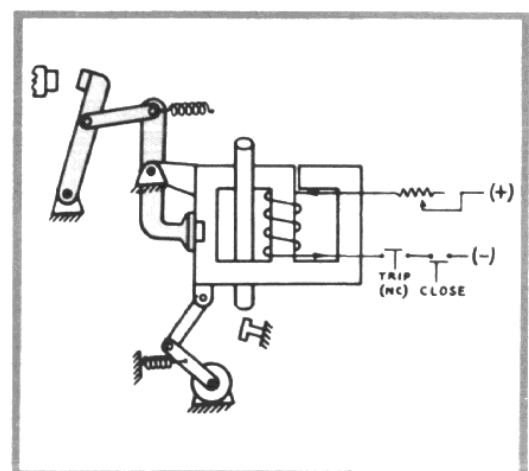
HOW CURRENT LIMITING OPERATION IS ACHIEVED IN FB BREAKERS



Closed Position—The armature, magnetically sealed to the magnet, closes the contacts as the magnet is driven upwards by the motor.



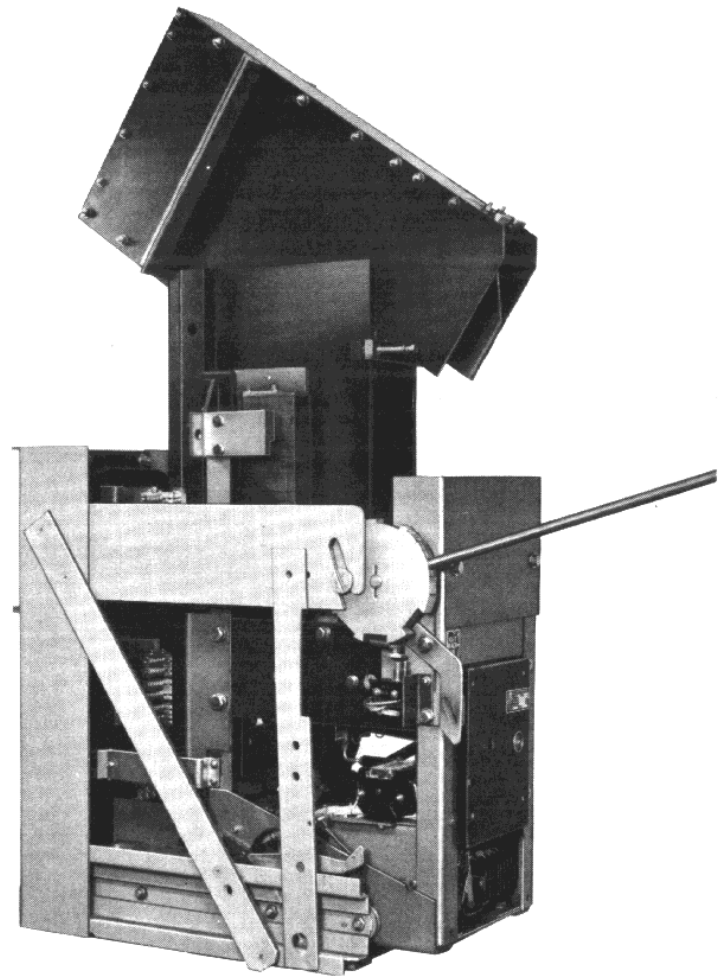
Tripping—The bucking bar flux (created by fault current) has caused the magnet flux to shift thru the air gap, de-magnetizing and releasing the armature, thereby permitting the lightweight contacts to be driven to the open position by high pressure springs.



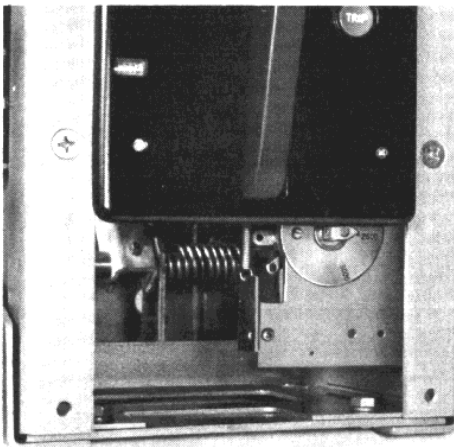
Reset—After tripping, the magnet drops by gravity and spring action to reseat the armature.

TYPE FB CIRCUIT BREAKER FEATURES:

- **Current-limiting action**—Reduces or eliminates thermal and mechanical damage, permits use of smaller related equipment.
- **Fast action**—reduces commutator flash-over.
- **Fast opening and closing stroke with 'no bounce' contacts**—provides long contact life, minimum maintenance.
- **Tilting arc chute**—permits easy contact inspection and maintenance.
- **Electrical closing or manual stored energy closing**—prevents contact teasing.
- **Grounded frame**—provides safety to personnel.
- **Lightweight and compact design.**
- **Forward or reverse trip.**
- **Inverse-time over current protection.**
- **Low closing current 5 amperes at 250 volts d-c.**
- **Mechanically and electrically trip free.**
- **Interchangeability** of breaker units.
- **Parts interchangeable between ratings**—fewer spare parts
- **No flexible connectors or pigtails.**

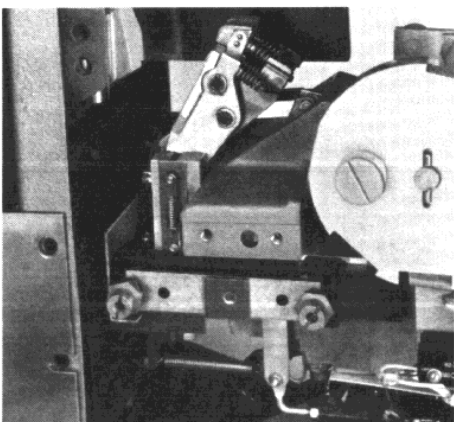


Electrically Operated,
Drawout, FB-40 Breaker



CALIBRATION ADJUSTMENT

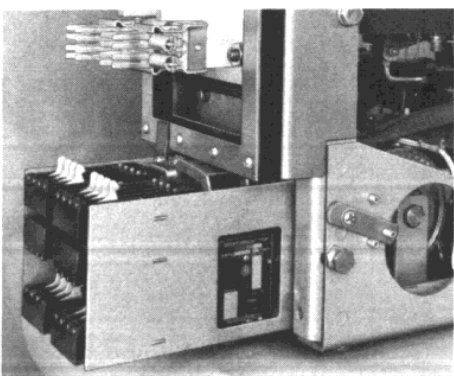
Instantaneous trip adjustment is simply accomplished by means of an adjustment knob conveniently located on the front of the breaker. The knob turns a variable resistor to vary the current in the holding coil. While the standard range of adjustment is 80% to 200% of the breaker rating, the basic design lends itself to a much wider range of calibration to fit any application.



MAIN CONTACTS AND BUCKING BAR

The moving main and arcing contact assembly is of very low inertia and is moved by strong, high pressure stainless steel springs to achieve a very high opening speed, greatly reducing the duty on the contacts. The main contacts are of silver-nickel alloy providing high conductivity, while the arcing contacts are of a silver-Molybdenum alloy embodying superior resistance to arcing damage.

The portion of the vertical bus below the moving contact assembly is designated the bucking bar. Current thru this bucking bar causes the magnet flux to shift through an air gap to de-magnetize the armature or magnetic latch and permits the initiation of a high speed operation.



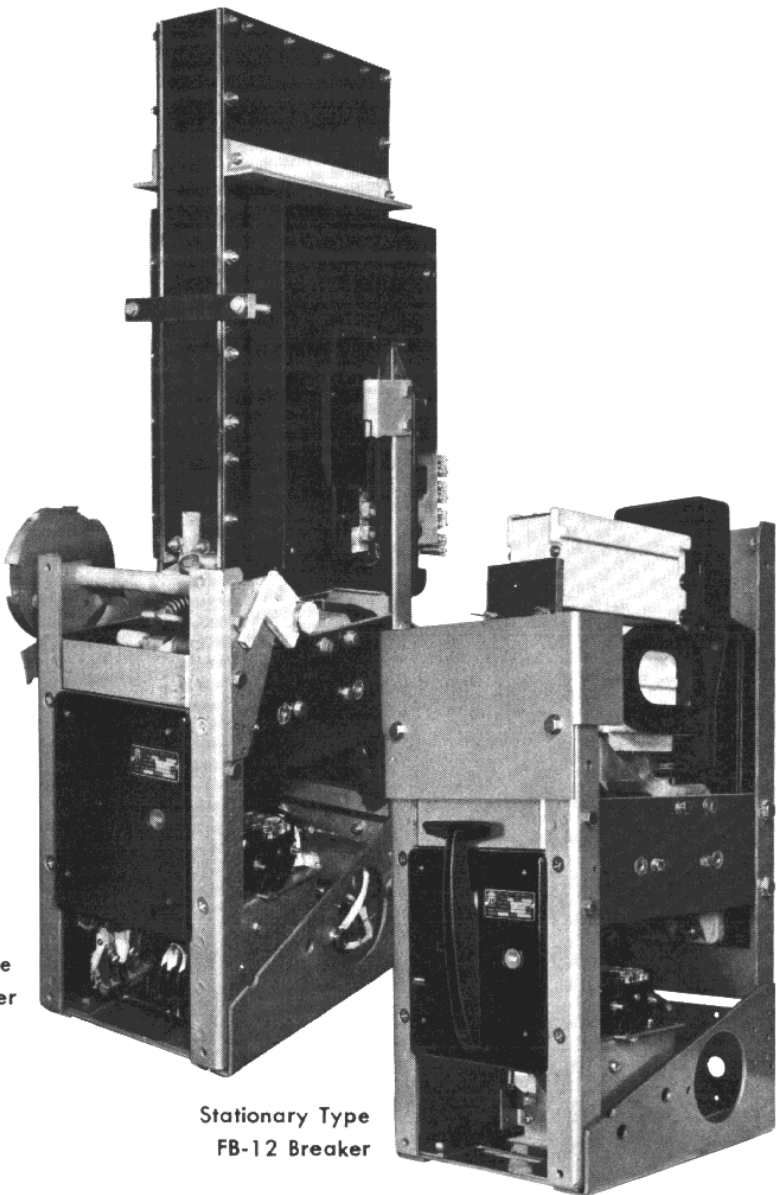
OD TRIP DEVICE

The OD (oil displacement) trip device is available as optional equipment to provide inverse-time overcurrent protection. An expanded range calibration of 50% to 125% has been incorporated to provide a greater number of usable calibrated long time trip settings. This feature permits a user to select a rating which provides adequate protection for present power requirements and also permits an increase in capacity by means of a simple adjustment.

Type FB circuit breakers are available with either manual stored energy close or electrical close. Electrically operated breakers may be supplied with either a-c or d-c control. Single pole and two pole arrangements are both available in stationary construction, drawout construction, and individual enclosures. Open type arrangements may be supplied for both panel and pedestal mounting. Control switch and lights for remote mounting and operation counter are available as optional equipment.

RATINGS: 1200 through 12,000 amperes continuous
1000 volts d-c 1, 2 pole

Drawout Type
FB-60 Breaker



Stationary Type
FB-12 Breaker

DIMENSIONS AND WEIGHTS (Approximate)

RATING		WEIGHT		OVERALL DIMENSIONS					
		1 Pole	2 Pole	1 Pole			2 Pole		
				W	H	D	W	H	D
FB-12	1200	175	330	13	30	19	22	30	19
FB-20	2000	190	360	13	30	19	22	30	19
FB-30	3000	280	550	13	42	20	22	42	20
FB-40	4000	280	550	13	42	20	22	42	20
FB-50	5000	375	750	13	42	20	22	42	20
FB-60	6000	375	750	13	42	20	22	42	20
FB-80	8000	790		22	42	20			
FB-100	10,000	815		22	42	20			
FB-120	12,000	840		22	42	20			



I-T-E CIRCUIT BREAKER COMPANY

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