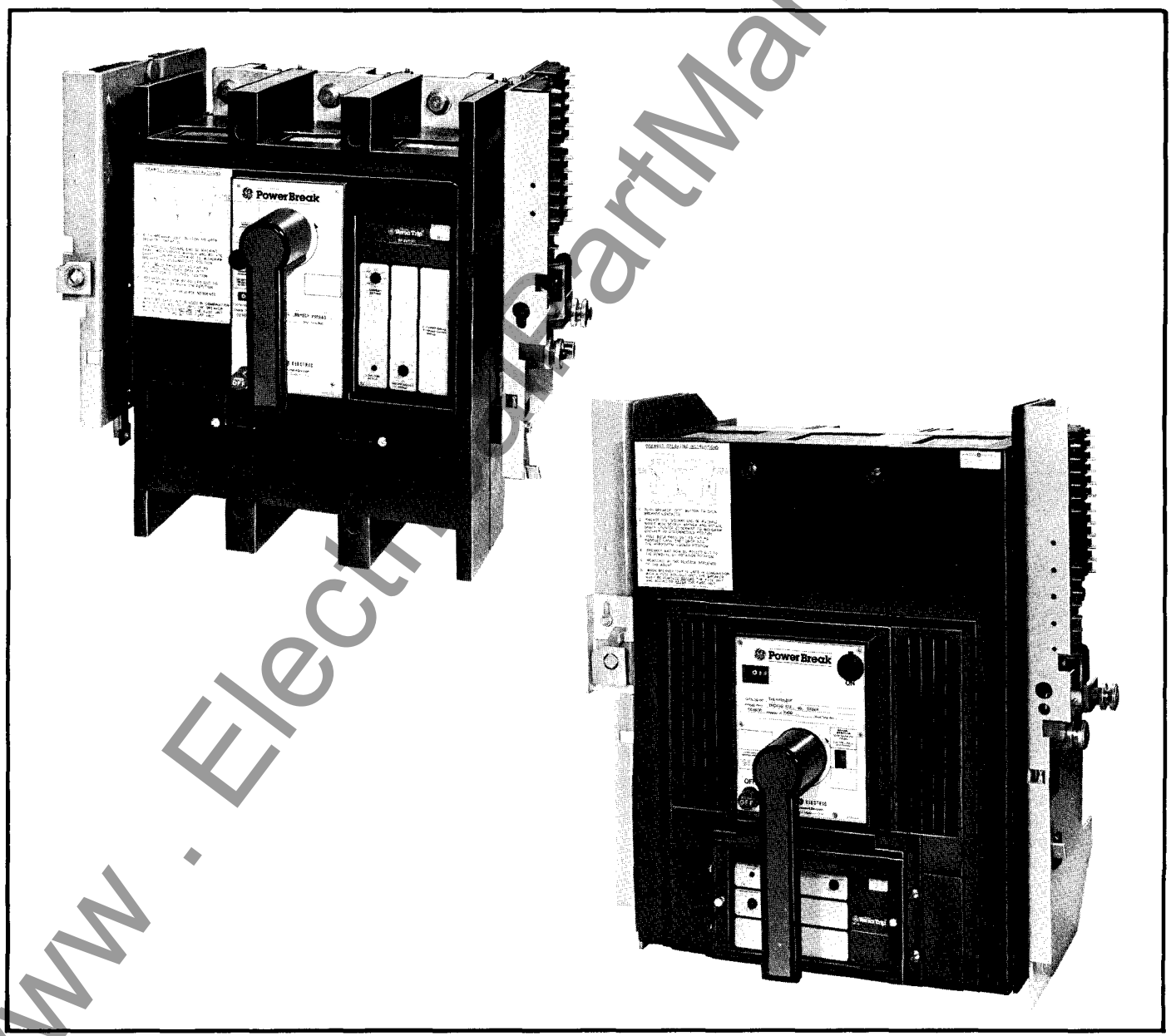
GEH-4698A

Installation
Instructions

POWER BREAK®

Draw Out Circuit Breakers 800—4000 Amperes



GENERAL ELECTRIC

POWER BREAK® Draw Out Circuit Breaker (800A 4000A)

DESCRIPTION

Types TC, TD, THC and THD Power Break draw out circuit breakers are for use in type TDOS & THDOS substructures and kits providing the convenience and safety inherent in draw out breaker construction. Draw out construction permits activation of a new feeder, rapid replacement of a circuit breaker, and facilitates inspection and maintenance of the draw out breaker without making it necessary to de-energize the entire switchboard.

Features (See Fig. 1, 2 and 3)

Primary Disconnects. Primary power is fed through multiple finger primary disconnects when the breaker is in the connected position.

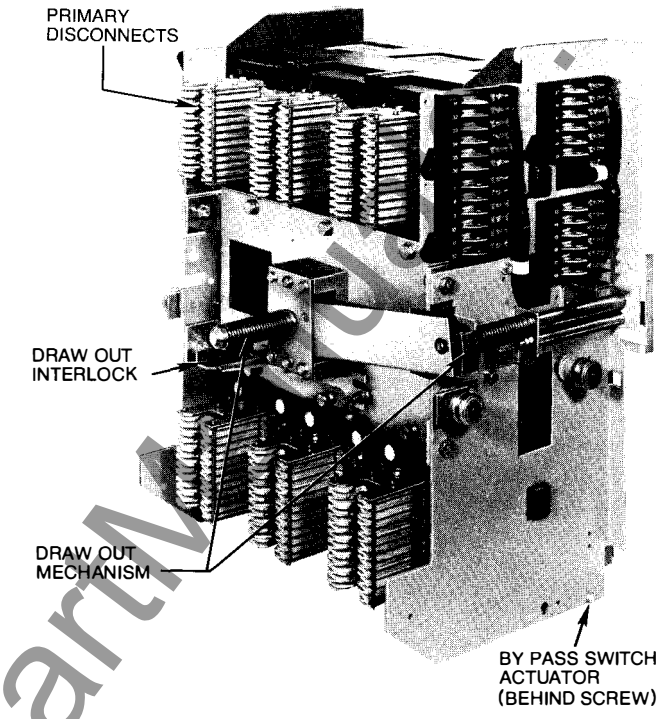
Secondary Disconnects. Control power is provided through the secondary disconnects in the test and connected position only.

Rollers. The breaker unit has rollers which ride on retractable rails for easy removal and installation.

Drawout Mechanism. A racking shaft powers a centrally mounted screw through a chain drive into a fixed nut in the substructure. A special speed wrench is supplied with an integral 1/2" square drive socket to aid in installation and removal.

Racking Shaft Wrench Lockout Plate. This interlock prevents engagement of the wrench when the breaker contacts are closed.

Draw Out Position Indicator. Indicates whether the breaker is in the connected, test or disconnect position.



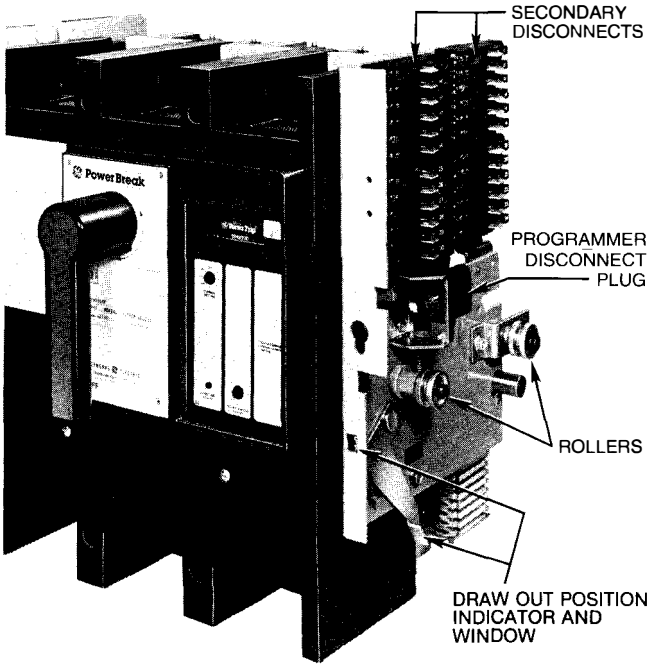


Fig. 2

DESCRIPTION (Cont.)

Draw Out Interlock. This interlock will trip a closed circuit breaker if the wrench interlock is deliberately defeated. The interlock will trip the breaker, before the primary disconnects part, as the breaker is being racked out or in.

Rejection Feature. Prevents insertion of a breaker into an incorrect substructure. (Fig. 12) See label on breaker for proper substructure catalog number.

Programmer Disconnect Plug. This accessory is provided on MicroVersaTrip® breakers only, and maintains the following circuits in the connected and test positions:

1. Remote long time timing light.
2. Remote trip indication targets; overload, short circuit; or ground fault tripping.
3. Zone selective interlocking; ground fault and short time.

Padlock Accessory. When padlocked, it works with the racking shaft lockout plate to prevent engagement of the racking shaft wrench.

Shutter Actuator. A stud on 800A–2000A breakers, or on the bottom of the carriage side sheet on 2500A–4000A breakers, actuates the optional shutter accessory.

By-Pass Switch Actuator. Provided to operate the optional by-pass switch accessory.

Lifting Bar. A lifting bar, cat. no. TDOLB, used as shown in Fig. 4, is available to provide safe handling of the draw out breaker.

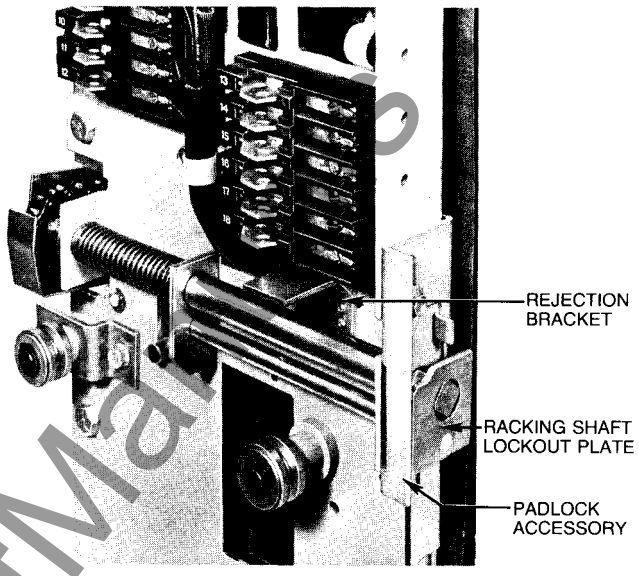


Fig. 3

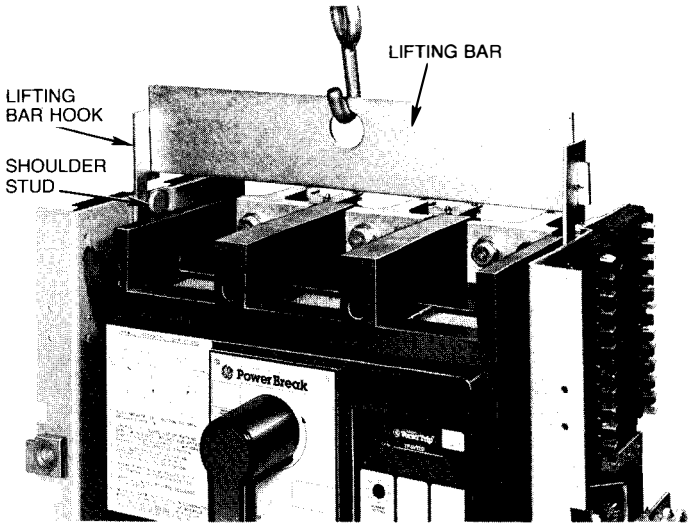


Fig. 4

POWER BREAK® Draw Out Circuit Breaker (800A 4000A)

OPERATION

A. To install and engage the breaker:

1. Using lifting bar TDOLB with suitable hoist, locate hooked portions beneath shoulder studs of breaker, Fig. 4, and lift.
2. Pull out the rails as far as possible until they drop into the horizontal locked position. Lower breaker until grooves in the rollers drop over rails. (Fig. 5).
3. Make sure grooves in all rollers straddle rails, Fig. 6, then remove lifting bar and push the breaker into the substructure until it stops. ("DISCONNECT" position). Then lift and push in rails to the stored position.
4. Check the secondary disconnect gap shown in Fig. 13. If required, equally adjust front and rear with washers.
5. *Breaker must be "OFF" before connecting.* Caution—if breaker is charged, depress "ON" button to close breaker contacts first and then depress the "OFF" button to open the breaker contacts.
6. Engage the 1/2" square end of the racking shaft with wrench, cat. no. TDORT, Fig. 7 and rotate shaft clockwise to draw in the breaker to the test or connected position. (Fig. 8) shows the compartment position indicator on the right side of the breaker.
7. Note: If breaker will not rack in, check rejector relationship shown in Fig. 12 to verify that a correctly rated breaker is being installed.

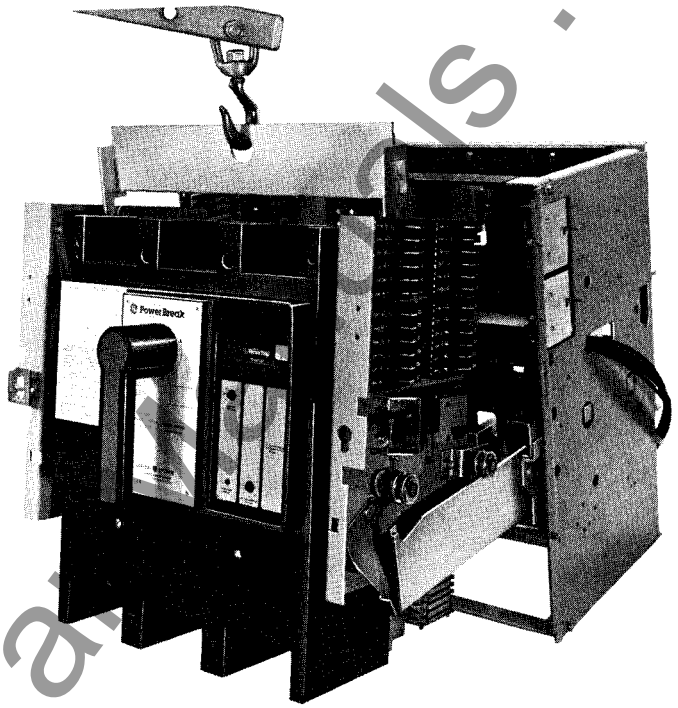


Fig. 5

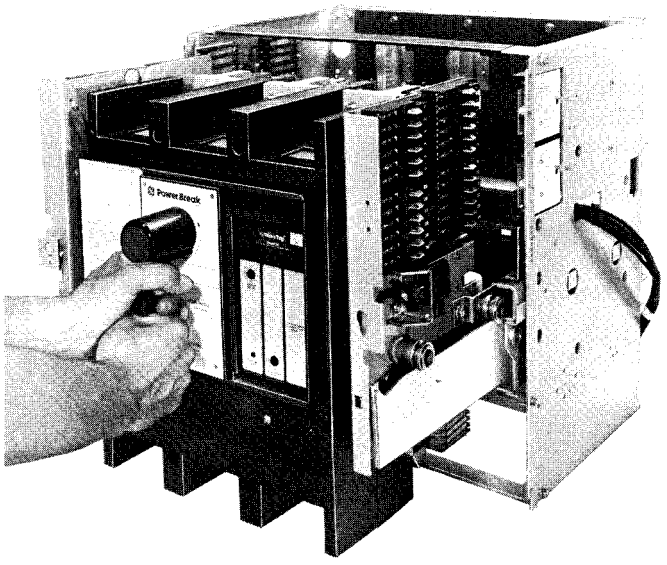


Fig. 6

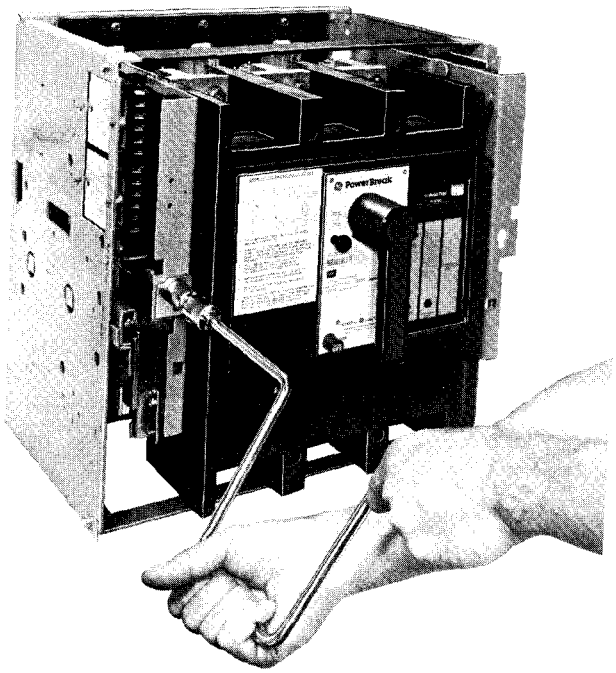


Fig. 7

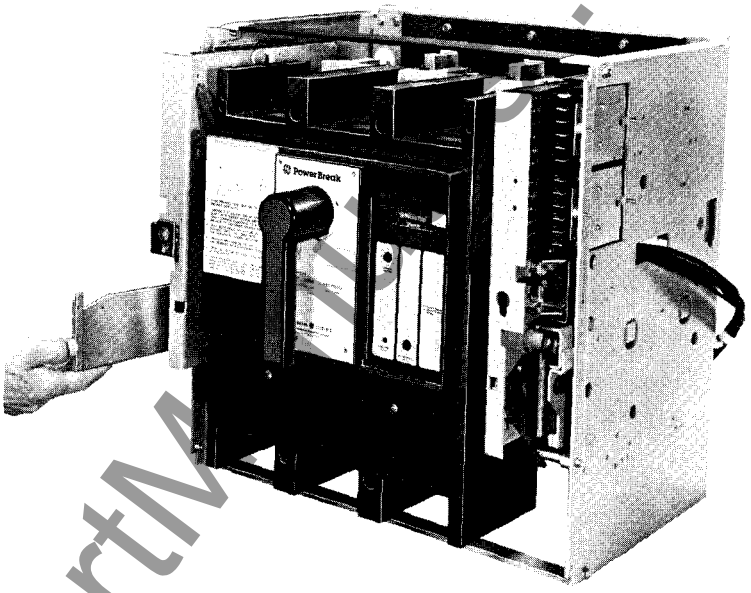


Fig. 9

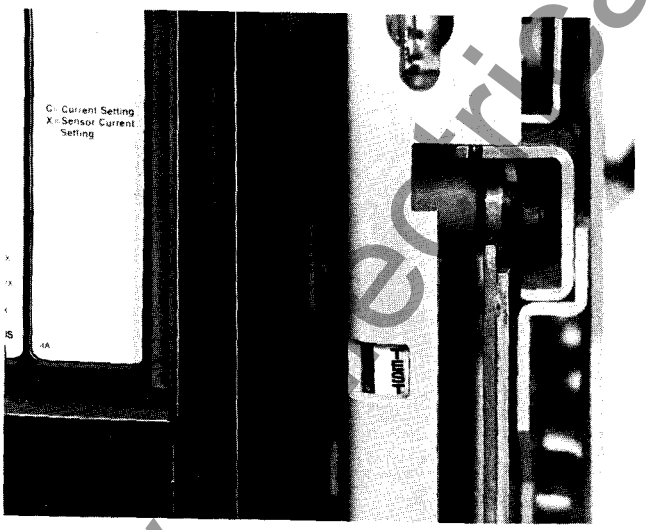


Fig. 8

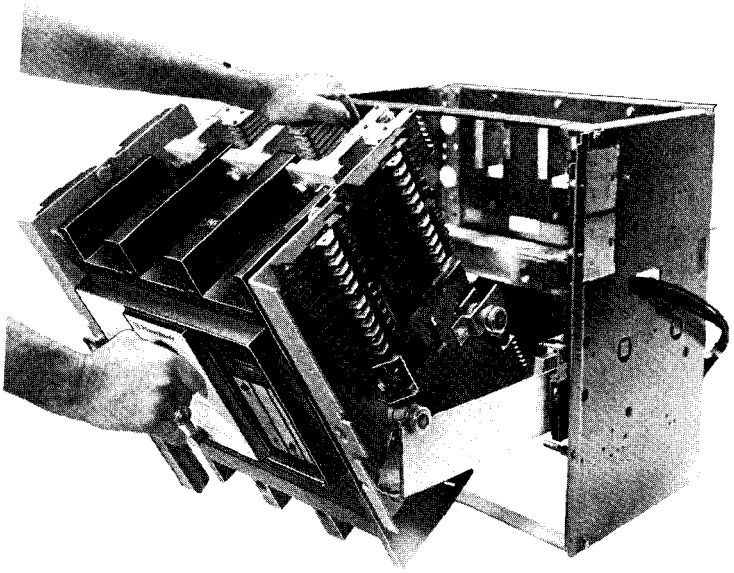


Fig. 10

POWER BREAK® Draw Out Circuit Breaker (800A 4000A)

OPERATION (Cont.)

B. To disengage and remove the breaker:

1. **Breaker must be "OFF" before disconnecting.**
2. Withdraw substructure rails by pulling out as far as possible until they drop into the horizontal locked position. (Fig. 9)
3. Engage the 1/2" square end of the racking shaft with wrench, cat. no. TDORT, (Fig. 7) and rotate the shaft counter clockwise to withdraw the breaker to the "TEST" or "DISCONNECTED" position. (Fig. 8)
4. From the disconnected position pull the breaker out on the rails until the front rollers fall into the detent. (Fig. 6).
5. The breaker can now be rotated by pulling forward, (Figs. 10 & 11), for inspection of rear of breaker, or it can be completely removed using the lifting bar as shown in Fig. 5.

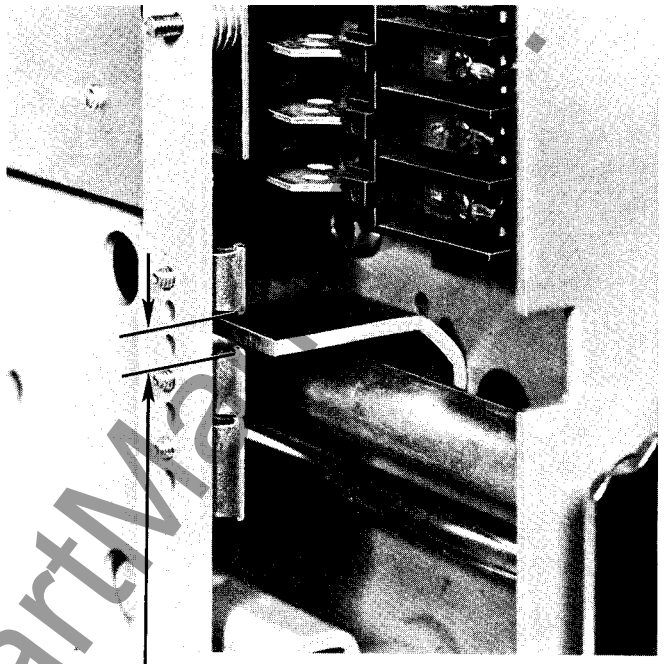


Fig. 12

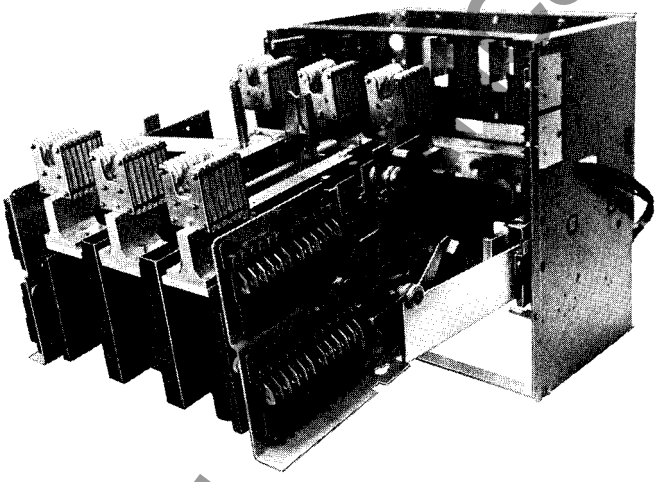


Fig. 11

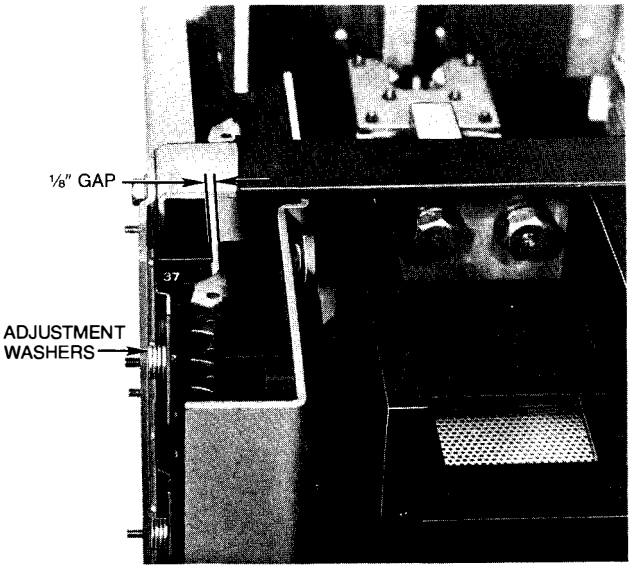


Fig. 13

Maintenance Procedures

CAUTION: Before attempting any work on draw out devices, make sure that sources of power—primary and secondary—have been de-energized.

A regular maintenance schedule should be established to obtain the best service and reliability. Plant operating and local conditions will dictate the frequency of inspection required.

A permanent record of all maintenance work should be kept with degree of detail dependent on operating conditions. In any event, it will be a valuable reference for subsequent maintenance work and station operation. It is recommended that records include reports of tests performed, condition of equipment, and repairs and adjustments made.

Maintenance employees must follow all recognized safety practices, such as those contained in the National Electrical Safety Code and in company or other safety regulations during maintenance. Solid insulation surrounding an energized conductor in power apparatus must always be relied upon to provide protection to personnel.

Draw out structure and connections should be given the following overall maintenance at least annually. The frequency of maintenance period will depend upon severity of service and atmospheric conditions around units. Equipment subject to highly repetitive operation may require more frequent maintenance.

None of the following operations should be undertaken until it is certain that equipment is completely de-energized.

1. Thoroughly clean by removing all dust and other accumulations from the equipment. Wipe or vacuum clean, buses and supports. Avoid use of compressed air for blowing out equipment. Inspect buses and/or terminal lug connections carefully for evidence of overheating or weakening of insulating supports. Check indicating devices, mechanical and key interlocks for proper functioning. Lubricate all moving and rubbing parts with suitable lubricant such as GE material D50HD38.
2. Check primary and secondary disconnecting device surfaces for signs of abnormal wear or overheating. Clean contacts with suitable solvent if required. Discoloration of silvered surface is not originally harmful unless atmospheric conditions cause deposits such as sulphides on the contact surfaces.
3. Check to see that all anchor bolts and bolts in the structure are tight. Inspect all cable or bus connections for signs of overheating and tighten all loose connections. Check to ascertain that all secondary connections are secure and all control wiring is intact.
4. After cleaning with breaker removed, megger, and record resistance to ground and between phases of insulation of buses and connections. Since definite limits cannot be given for satisfactory insulation resistance values, a record must be kept of readings. Weakening of insulation from one maintenance period to the next can be recognized from recorded readings. Readings should be taken under similar conditions each time, if possible, and record should include temperature and humidity.
   High potential tests are not required, but if it seems advisable, based on insulation resistance tests or after repairs, test voltage should not exceed 75% of factory test voltage which is "2 times ratings plus 1000" volts.
5. Operate each breaker while in the "TEST" position to be sure it functions properly. This is particularly important for breakers that normally remain in either the opened or closed positions for long periods of time.
6. When the equipment is subject to unusual conditions, such as contaminating fumes, excessive moisture, etc., maintenance should be scheduled at more frequent intervals. In this case, the procedure listed above may not be sufficient for proper maintenance, and additional precautions may be necessary to protect the equipment from the unusual conditions encountered.

While some of the above can be done with the breaker in the tilt-out position, a complete check can be made only after removing the breaker from the rails.

Lubrication

All the areas subjected to mechanical friction have been liberally coated at the factory with grease, GE material D50HD38. If contact surfaces and breaker power screw were cleaned in step 2, then coat the primary disconnect contact surfaces and the threads of the nut or screw with D50HD38. (See Fig. 14.)

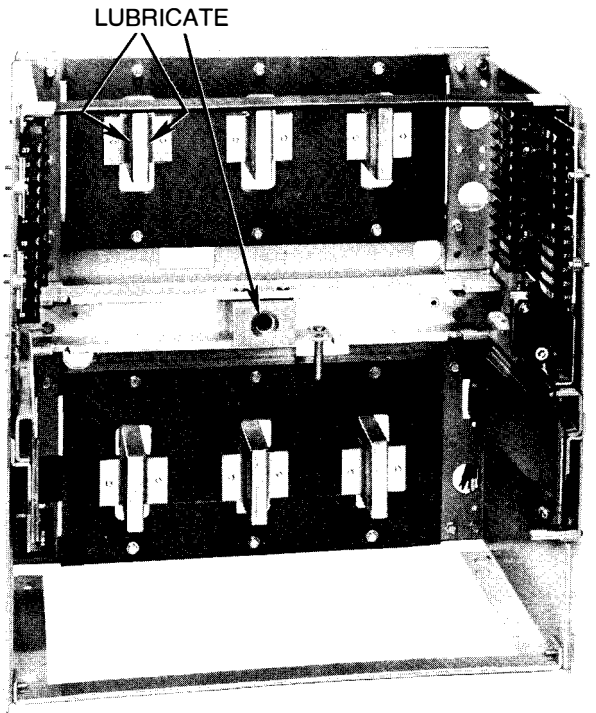


Fig. 14

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

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

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