



# S 2500 DRAWOUT ASSEMBLY

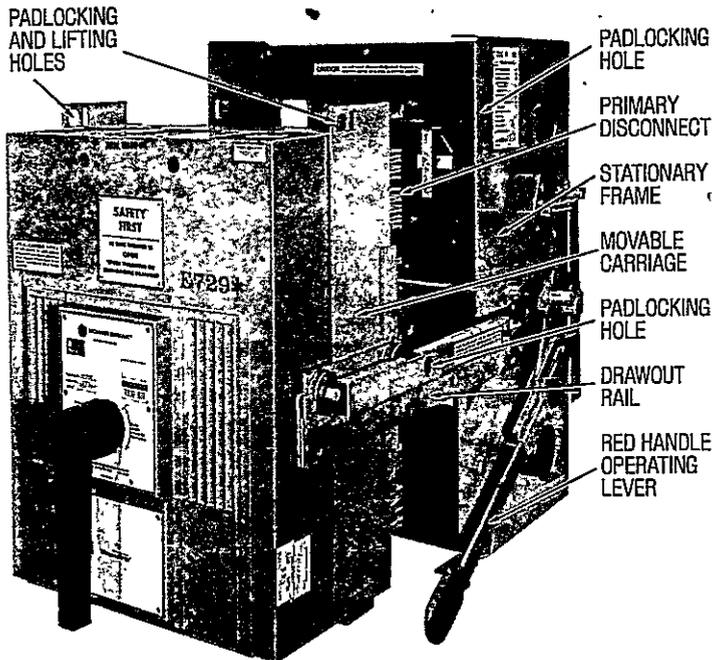


Figure 1

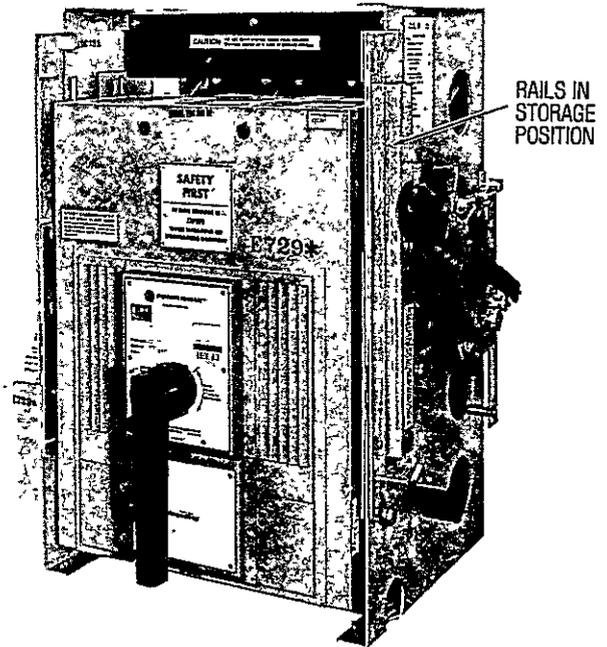


Figure 2

## DESCRIPTION:

The Drawout Assembly, Figure 1, permits rapid replacement and facilitates inspection and maintenance of S-2500 type circuit breakers without making it necessary to de-energize the entire system. The unit consists of a stationary frame and a movable carriage which supports the circuit breaker. Load current is carried through primary disconnects permitting attachment of bus or terminal lugs.

**NOTE:** Terminal lugs are not provided with Drawout Assembly, and must be supplied by customer.

Spring loaded fingers of primary disconnects are mounted to movable carriage and breaker assembly, permitting main-

tenance of fingers without complete de-energization of bus system. Accessory control circuits are made by means of secondary disconnects mounted to stationary frame and a matching set on the movable carriage.

The movable carriage and circuit breaker are supported by means of rollers which ride on two side rails permanently attached to the stationary frame.

When not in use these rails are pivoted for storage in a vertical position, as shown in Figure 2. The red handle operating lever and its associated dual cams provide mechanical force for engaging and disengaging the movable carriage.

*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.*

CIRCUIT PROTECTIVE DEVICES DEPT., PLAINVILLE, CONN. 06062

GENERAL  ELECTRIC

## DESCRIPTION (cont.)

The Movable Carriage has four distinct operating positions, Figure 3, relative to its stationary frame: *fully engaged*, *test*, *disconnected* and *fully withdrawn*. *Engaged*, *test* and *disconnect* positions are referenced by an indicator on the right side rail. In the engaged position, primary and secondary disconnects are completely engaged. In the test position, primary disconnects are disengaged but secondary disconnects are engaged which permits check out of control circuits. In the disconnect position, both primary and secondary disconnects are disengaged; breaker is electrically disconnected from control circuits and system. In the fully withdrawn position, movable carriage and breaker are against the stop at the end of the side rails. In this position, the breaker can be removed from its stationary frame.

A system of Mechanical Interlocking is provided to permit safe operation. If the breaker is "ON" in the engaged or test position, the red handle operating lever will "break away" and the carriage cannot be moved. If the carriage is in the disconnected position and the breaker is "ON" it will be impossible to push the movable assembly into the test position.

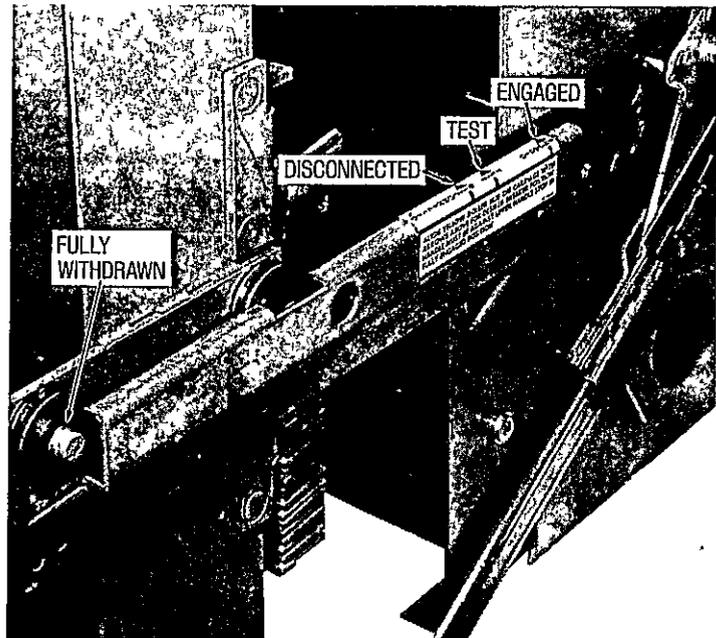


Figure 3

## INSTALLATION INSTRUCTIONS

### Stationary Frame

Place unit on supporting structure supplied by customer and bolt in place. Four mounting holes are provided as shown in Fig. 4 (space is available for adding other holes as desired). Complete units are supplied with primary stubs normally mounted in a vertical position. Attach bus work and cables to primary stubs and make accessory connections to secondary disconnect terminals, but do not tighten bus connections until breaker has been installed and door opening fit checked. Holes are provided in backplate for convenient location of accessory leads.

To relocate stubs horizontally, unsnap springs and withdraw stubs from rear of insulator, reinsert them horizontally and snap springs back into notches provided. Depressions molded in Insulator Face provide convenient pry points for using a screwdriver to pry spring clip off and on, Figure 5.

**NOTE:** Device must be properly fitted and free of distortion.

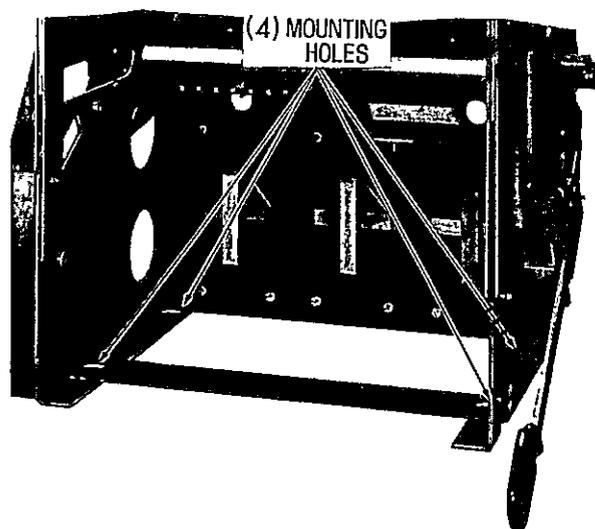


Figure 4

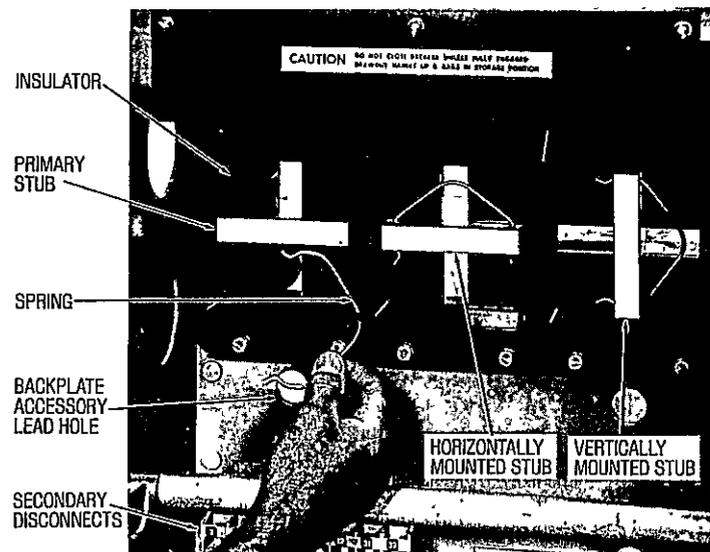


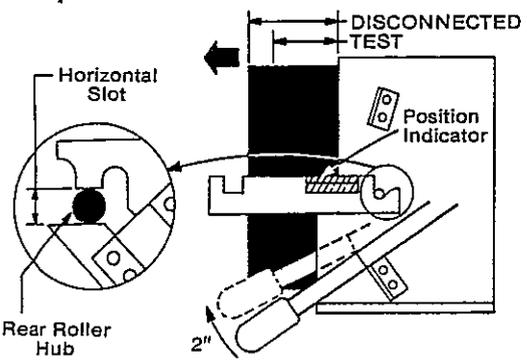
Figure 5

WORK HERE  
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**Step 6**

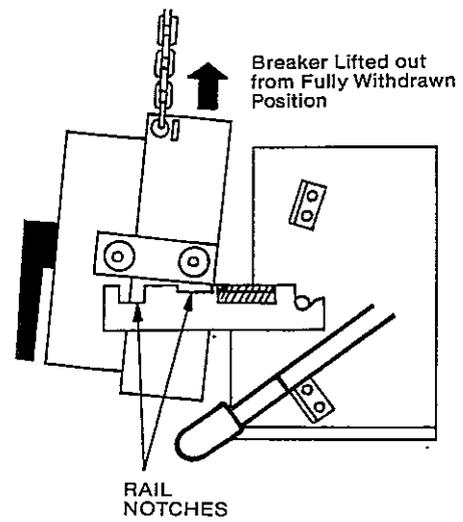
To move from test to disconnected, first verify that breaker is OFF.

**Step 7**



Lift handle approx. 2" (to align horizontal seat in handle cam with rear roller hub). Carriage and breaker can now be rolled out to the DISCONNECTED position. Refer to Position Indicator on right hand rail.

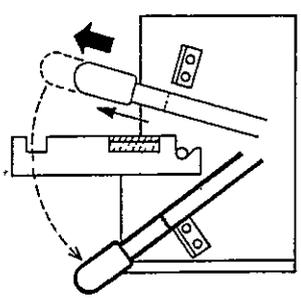
**Step 8**



To move from Disconnected Position to Fully Withdrawn Position, roll breaker all the way out to STOP at end of side rails. At this point the carriage may be removed, using a suitable lifting device attached to the lifting holes. Raise unit slowly and lift rollers out through notches in the rails.

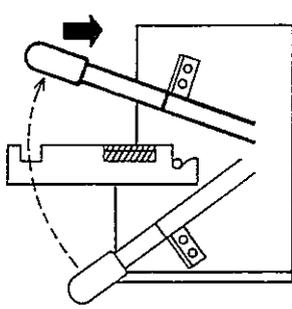
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**Step 12**



Pull handle outward and swing down to bottom "stop".

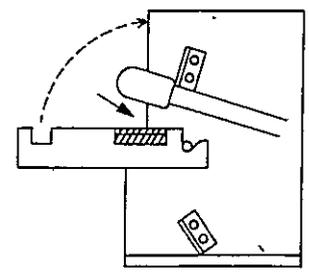
**Step 13**



Bring handle up again against top "stop" to fully engage breaker.

**NOTE:** Approximately 60 lbs. of force is required to move the red handle operating lever to the final engaged position.

**Step 14**

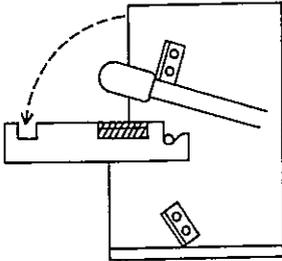
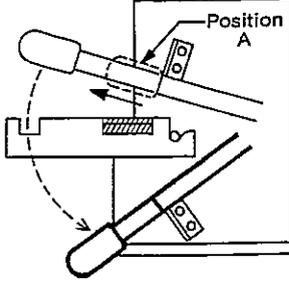
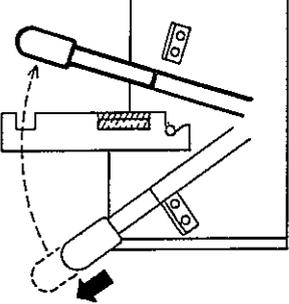
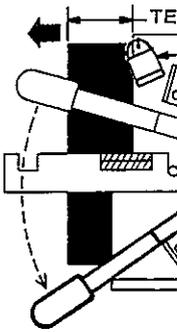


Push in handle and rotate rails upward.

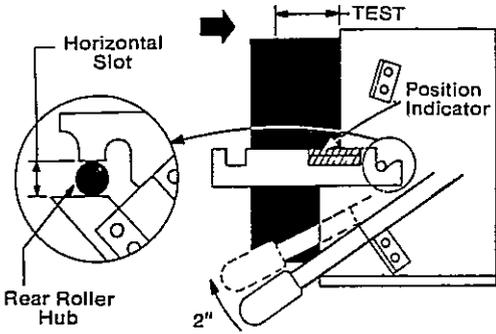
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## DRAWOUT OPERATION

### Breaker Withdrawal

<p><b>Step 1</b></p>  <p>To withdraw carriage, open breaker by pressing red OFF button on circuit breaker escutcheon.</p> <p><b>Step 2</b></p> <p>Lift side rails and rotate them to a horizontal position.</p>	<p><b>Step 3</b></p>  <p>Slide red drawout ratchet handle outward and swing down to bottom "stop".</p>	<p><b>Step 4</b></p>  <p>Pull handle still further outward and swing upward to "detent".</p>	<p><b>Step 5</b></p>  <p>Swing handle to bottom "stop" and breaker moved out to "test" position. (Carriage padlocked in this position.)</p>
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### Engaging Breaker

<p><b>Step 9</b></p> <p>To engage breaker roll carriage back to DISCONNECTED Position.</p>	<p><b>Step 10</b></p>  <p>Lift handle approx. 2" to align rear roller hub with cam slot, and roll carriage back into TEST position.</p>	<p><b>Step 11</b></p> <p>Swing handle to the "ON" position.</p>
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## MAINTENANCE

**NOTE:** De-energize equipment completely by removing all sources of power, both primary and secondary.

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.

Drawout 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 by withdrawing breaker to disconnect or fully withdrawn position.

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 (other than contact surfaces) with suitable lubricant such as aero grade lubricate.
2. 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 rating plus 1000" volts.

3. Check primary and secondary disconnecting device surfaces for signs of abnormal wear or overheating. Clean contacts with suitable solvent. Discoloration of silvered surface is not originally harmful unless atmospheric conditions cause deposits such as sulphides on the contacts

Before replacing movable carriage, wipe off primary and secondary disconnects, and apply a thin coat of contact lubricant D50H47 to primary disconnect fingers.

4. Check to see that all anchor bolts and bolts in the structure are tight. Inspect all cable 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.
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. Stress corrosion cracking of stainless steel finger springs may result where highly stressed parts are subjected to various corrosive atmospheres. If the equipment is located near pickling tanks or other corrosive installations where the atmosphere contains chlorine or chlorides, the springs must be protected with a grease such as D50H47 and replaced periodically as part of the regular maintenance program.

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.