INSTRUCTIONS

GEI-31007D

SUPERSEDES GEI-31007C

INDOOR DISCONNECTING SWITCHES FOR STATION EQUIPMENT

(GROUP OPERATED)

Type LG-218

POWER CIRCUIT BREAKER DEPARTMENT

GENERAL ELECTRIC

PHILADELPHIA, PA.

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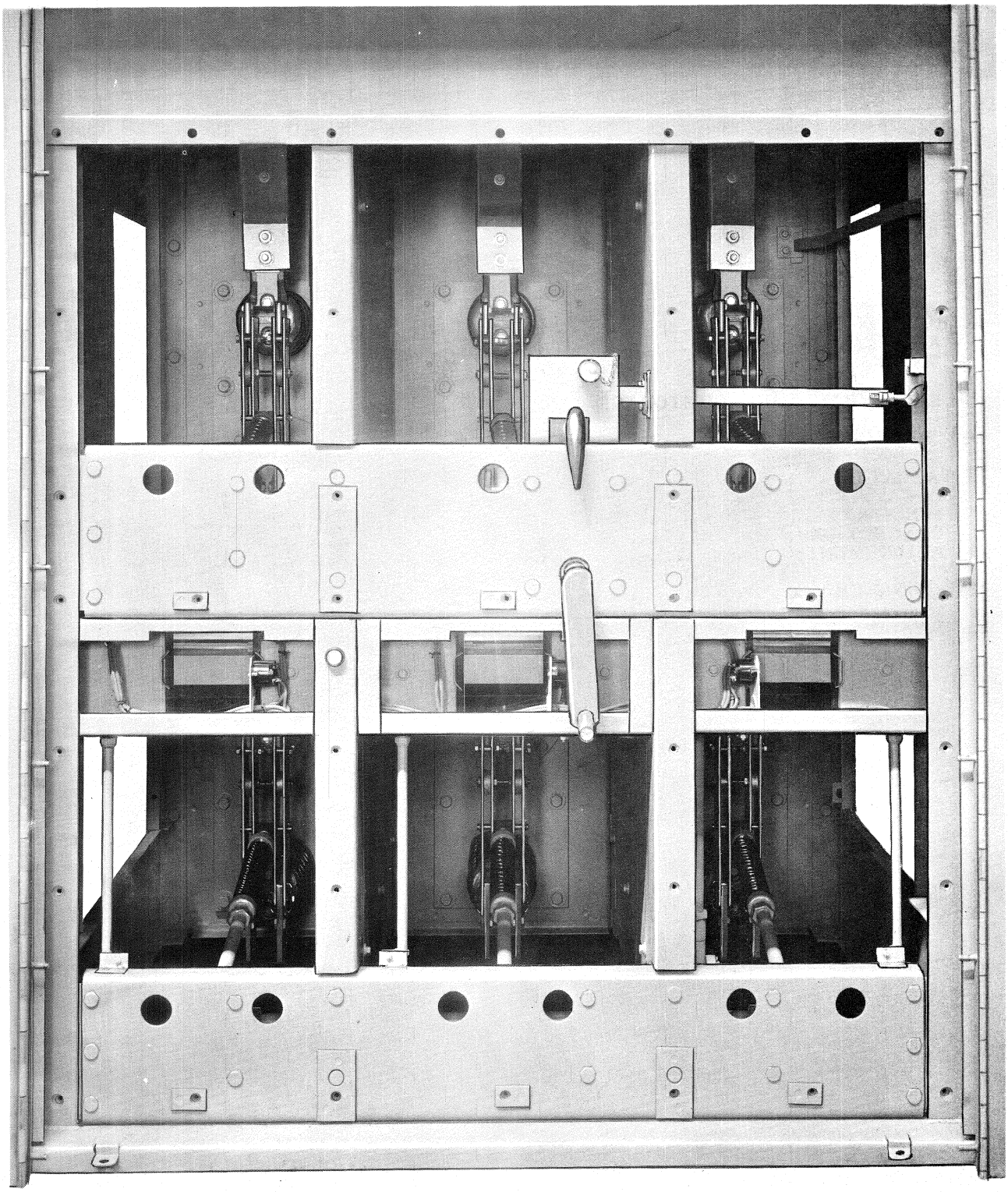

Fig. 1 (8019072)

Fig. 1 Type LG-218 Switches and Operating Mechanism used to Isolate a Breaker (Front View)

INDOOR DISCONNECTING SWITCHES GROUP-OPERATED TYPE LG-218

INTRODUCTION

The group operated Type LG-218 indoor disconnecting switches have laminated blades, silver-to-silver line pressure contacts, and solid-tongue contact blocks. These switches are mounted on porcelain insulators supported individually on steel bases and are multi-pole operated by various arrangements of mechanisms.

APPLICATION

The disconnecting switches are used primarily for isolating a circuit breaker from the bus and the feeder circuits and for isolating bus sections.

RATINGS

Switches are available in standard current ratings from 1200 to 5000 amperes at 14.4 KV, 110 BIL (Basic Insulation Level) Impulse Withstand Voltage for ventilated compartments. These current ratings are reduced when switches are applied in non-ventilated compartments.

RECEIVING, HANDLING AND STORAGE

Immediately upon receipt of a switch, examine it for any damage or loss sustained in transit. If injury or rough handling is evident, file a damage claim at once with the transportation company, and promptly notify the nearest General Electric Apparatus Sales Office. Check the contents of all crates and boxes, separate from the switch units, against the shipping memorandum for the quantity of parts received. Notify the nearest General Electric Sales Office of any shortages or discrepancies.

Switches are normally installed in cubicles when shipped, and the information given in instruction book (GEI-25935) for the Cubicles covers the switches as well. If switches are received as single units for replacement, the normal care should be exercised to check for damage in shipment - check quantities - packing case - and if stored, locate in a clean, dry place.

DESCRIPTION

The group operated switches furnished in cubicles are single-pole units. The switches are furnished, in one case, mounted on individual bases for mounting on the partition wall between switch and breaker compartments.

After mounting in the switch compartment the switches are connected by means of a porcelain insulating-operating rod to the interphase operating shaft. The operating shaft is located in front of the switches and is mounted to the wall of the compartment by bearing brackets. On the operating shaft, there are operating cranks for each switch to which are coupled the insulating-operating rods. Rotation of the interphase shaft by means of direct coupled handle or a worm gear mechanism will operate the switches to either the closed or open position.

INSTALLATION

Switches are installed and tested in the cubicles before leaving the factory. It should not be necessary to check the adjustment of the switches unless damage from shipping or an obvious misalignment is evident.

Copies of approved outline drawings showing the dimensions and other data applying to the switch and its operating mechanism will be of considerable assistance during the installation. If not previously obtained, copies may be secured by sending a request to the General Electric Sales Office through which the switch was purchased, giving the catalog numbers of the switch and the mechanism (if separate), and if possible, the G-E requisition number applying to the order. If an overall arrangement drawing for both switch and mechanism is available, it should be followed during the installation.

LOCATION

Switches are mounted on flat surfaces provided in the cubicle. The phase spacing between poles is determined by the size of the cubicle.

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.

TABLE 1

Pound Pull * to move blade assembly when D is as shown

Ampere Rating Non-Vent	Ampere Rating Vent	D as shown in Fig. 4	With Blade Open 1/4"	With Blade Closed
-	1200	12-1/4"	5-15	60-100
1200	2000	12-1/4	5-15	60-100
2000	3000	12-1/4	6-18	60-110
3000	4000	11-7/16	7-18	70-125
4000	5000	14	6-18	60-110

* Per Blade Assembly for Multi-tongue Switches as Shown in Figs. 3 and 4.

MOUNTING

The mounting of the switch is very similar when used for both its purposes, that is, for isolating a breaker or for isolating a bus. The main difference is that for the former case, the switch is connected to the breaker by back-connected insulator studs, whereas, for bus isolation the switch is front-connected to the bus by flexible connectors.

For the former case, the breaker is mounted and aligned first, and the switch base is brought into position by lining up the back-connected stud of the switch with the bolted terminal connector of the breaker. When properly aligned, the holes in the switch base should be directly over the holes in the cubicle wall. If it is impossible to obtain alignment of the switch and the breaker, as a last resort, the insulators may be moved with respect to the switch base. This will require recontacting the switch for proper alignment (see ADJUSTMENTS).

Install the switches on the mounting surfaces so that the bases are not distorted when the mounting bolts are tightened. When required, metal shims should be used to keep the base flat after mounting and prevent distortion of the base.

Line up the interphase shaft so that it turns free. Close the switch and set the operating shaft so the cranks are at the angular position shown on the outline drawing. Check the spacing of the cranks on the shaft with the switch pole spacing and, if necessary, loosen the cranks and move them along the shaft until they line up with the centerline of the switch blade. Attach the insulating-operating rods and fittings to the switches and the cranks, first lubricating the pins at the switch blades with a good grade of grease. Make sure that the insulating-operating rod assembly lines up with the switch so that no cantilever load will exist in the insulating-operating rod. The length of the operating rods should be adjusted to suit the conditions at each pole by changing the setting of the nuts at the rod end next to the shaft crank.

CONNECTIONS

Connections to the switch terminals should be made with conductors which are clean and bright, and in the case of flat bars, free from dents and burrs. The switch insulators should not be subjected to mechanical or thermal stresses originating in or transmitted through the conductors. To reduce such stresses to a safe value, it is recommended that the nearest conductor support should be located as near as possible to the switch insulator.

ADJUSTMENTS

All switches are adjusted at the factory before shipment. In cases where the switches are installed in the field or changes are made which may affect the switch adjustments, it is recommended that the adjustments be reviewed.

When checking the pressure adjustment, each blade assembly should be checked individually by removing the pin (Fig. 3) through the blades to disconnect the blades from the operating rod. Attach a spring balance to the blade at the centerline of the contact bolt (Fig. 4), measure the pull required to move the blade both when in full contact, and also when just clear of the contact. If the measured force is outside the range shown in Table I, change the settings of the nuts on the bolts at the hinge or contact end of the blade as required to bring the force within the proper range.

NOTE: Before changing the contact adjustment, always check and make sure the adjustment at the hinge end is correct.

Check the alignment of the blades and contacts by attempting to insert a 0.002" feeler gage between the raised silver lines on the blades and the contact tongue. If the gage can be inserted at any point along the contact line, the factory adjustment has been disturbed, and the alignment is not correct. Check to determine the cause of the misalignment. Loosen the connecting bars and studs, check the base for distortion in mounting, and shift the contacts or make other necessary adjustments to bring the blades into good alignment. In cases where the switch has been damaged during shipment or installation to such an extent that the blades or contact require straightening to obtain proper alignment, the switch should be returned to the factory for reconditioning.

When the individual switch adjustments are satisfactory, open and close the entire switch by use of the operating mechanism and check the oper-

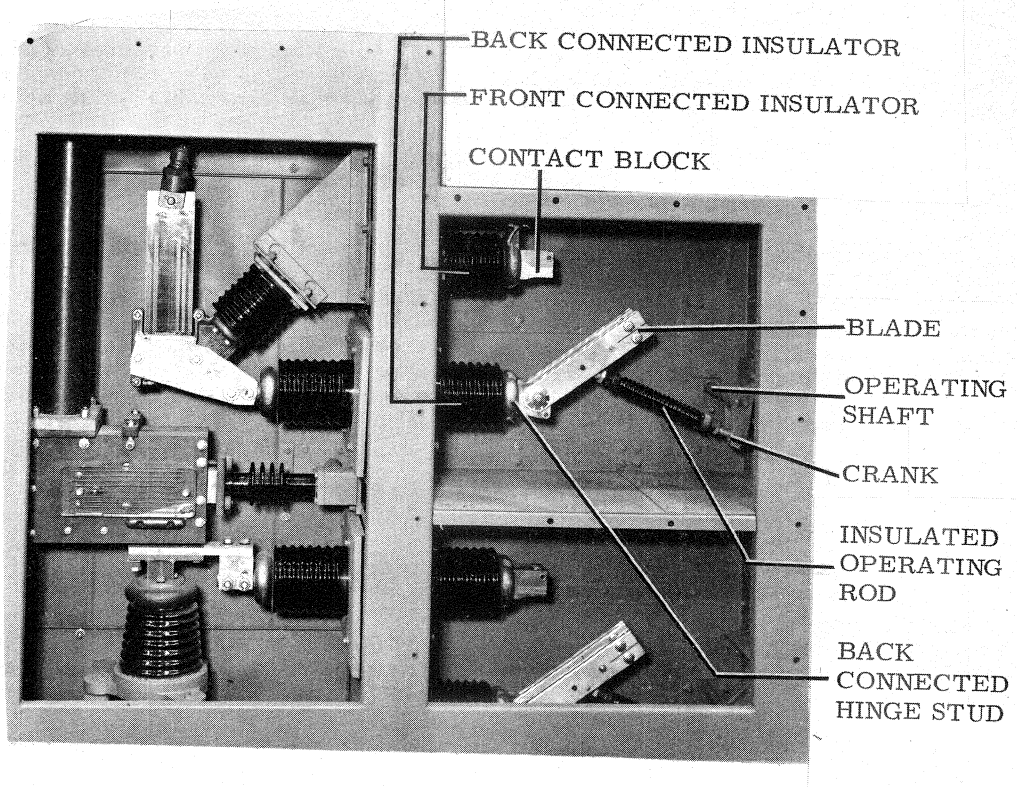

Fig. 2 (8003518)

Fig. 2 Type LG-218 Switches Used to Isolate a Breaker (Side View)

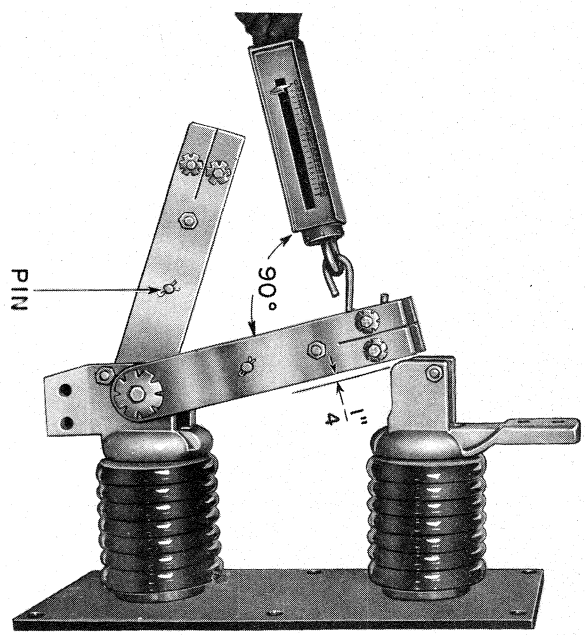

Fig. 3 (8019125)

Fig. 3 Type LG-218 Switch Showing Method of Measuring Pull for Hinge Adjustment

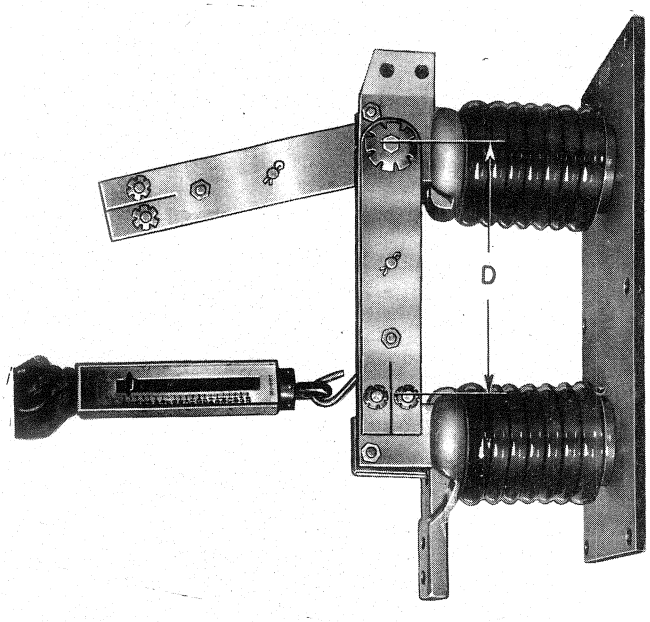

Fig. 4 (80 26)

Fig. 4 Type LG-218 Switch Showing Method of Measuring Pull for Contact Adjustment

ating travel. An adjustment may be made, with the switch in the closed position, to center the blades over the contact area by lengthening or shortening the operating rod. The measured break distance, when the switch is in the open position, should not be less than shown on the outline drawing.

MAINTENANCE

At regular intervals, depending upon service conditions, but at least once a year, switches should be de-energized for cleaning and inspection. Clean the switch parts and insulators by wiping with a clean cloth, and examine for any conditions which would interfere with continued operation. Insulators that have been cracked or chipped by abnormal conditions should be replaced.

Do not use an abrasive on the contact surfaces or attempt to file them to obtain proper alignment. After cleaning, apply a thin film of G-E No. 5485 lubricant to the contact tongues and wipe off any excess with a clean cloth. Disconnect the operating rods and check the contact pressure and alignment of each blade as described under ADJUSTMENTS.

RENEWAL PARTS

During normal life of the switch, no replacement of parts should be required. Extraordinary conditions may require prompt replacement of some parts, and to simplify identification for ordering, factory designations for the various renewal parts are shown in Fig. 2. Stock recommendations will depend upon local conditions.

When ordering renewal parts, address the nearest General Electric Sales Office, specify the quantity required, describe the part, and give the complete data from the nameplate on the switch base.

GENERAL ELECTRIC COMPANY, PHILADELPHIA, PA.

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