MINI-BREAK
Load Interrupter Switch

CAUTION

Before attempting any service work, be sure switch is completely de-energized.

DESCRIPTION

Square D Mini-Break Switches are designed for use on 5kV power distribution systems. They function as a prime component in the system providing switching and short circuit protection for high voltage circuits. These switches are frequently used in service entrance equipment, unit substations or for sectionalizing high-voltage feeder systems. The switch is single throw and is rated for 200 amperes continuous current and 400 amperes maximum load break at 80% P.F.

INSPECTION, STORAGE & INSTALLATION

Prior to leaving the factory all switches are carefully inspected and packaged by workmen experienced in the proper handling and packaging of electrical equipment. Upon receipt of the switch a careful inspection should be made to determine if any damage might have occurred during transit. If damage is evident or there is any visible indication of rough handling, claims for damage should be filed at once with the transportation company and the local Square D field office should be notified.

If it is necessary to store the switch for any period of time, the following precautions should be taken to provide the best care for the equipment until installed and put into service:

1. Unpack the switch
2. Check for missing or damaged parts
3. Store the device in a clean, dry location
4. Cover to prevent deposit of dirt or other foreign materials on moveable parts and electrical contact surfaces.

To ensure proper operation of the switch a check should be made to ensure that there is no binding or misaligned parts. If the device is not properly aligned, the switch may be damaged during operation.

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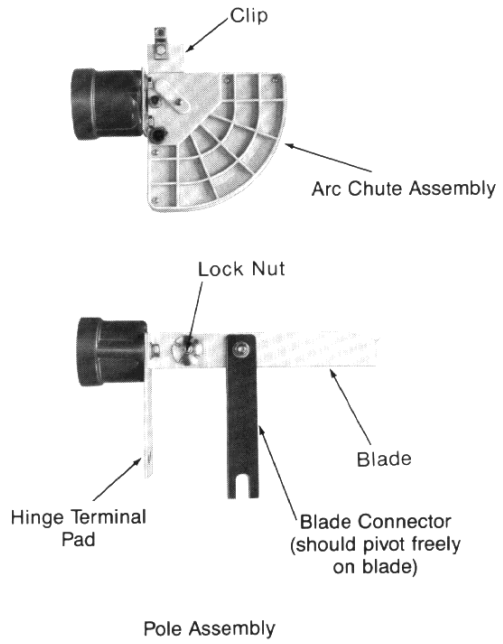
INSTALLATION INSTRUCTIONS FOR REPLACEMENT PARTS

ARC CHUTE ASSEMBLY, Fig. 1

1. CAUTION: The switch must be de-energized before attempting any service work.
2. Open the switch blades.
3. Remove the two 3/8-16 hex head bolts holding the arc chute assembly to the insulator.
4. Reassemble the new arc chute assembly and tighten the mounting bolts by hand until they are "finger tight."
5. Disassemble the blade connector from the operating mechanism cross arm at point "C."
6. Grasp the blade connector and slowly close the blade. The blade must be centered in the arc chute. Retighten the mounting screws once alignment is complete.
7. Open the blade by hand by pulling on the blade connector. Slowly reclose and recheck the alignment.
8. If alignment is correct, re-attach the blade connector to the operating mechanism cross arm. CAUTION: The 1/4-20 locknut should be snugged up against the bottom of the blade connector and then "backed off" approximately ½ turn. When properly tightened, the 1/4-20 screw and locknut should be able to be turned with your fingers.
9. Clean the blades (if necessary) and apply a very light coating of Shell Alvania #2 grease to the contact area only. *NEVER* PUT GREASE IN THE ARC CHUTE ASSEMBLY.

BLADE ASSEMBLY, Fig. 1

1. The switch must be in the open position before removing any parts or assemblies.
2. Disassemble the blade connector from the blade at points "A" and "C".
3. Remove the blade assembly by disassembling the 5/16-18 hinge bolt at point "B."
4. Lubricate the area shown in Figure 1 on the blade and reinstall.
   CAUTION: The silver tungsten arc contact tip on the blade must be positioned as shown in Figure 1.
5. Reinstall the blade bushing, hinge bolt, belleville washers and locking nut as shown in Figure 1.
6. Reassemble blade connector at point "A". Tighten the locknut only until snug. The blade connector must pivot freely on the blade.
7. Tighten the hinge bolt until the friction between the hinge terminals and the blade with the polyester glass blade connector will just remain in the horizontal position, then tighten the locknut an additional ½ turn.



Pole Assembly

8. Check the alignment between the blade and arc chute assembly. Grasp the blade connector and slowly close the blade. The blade must be centered in the arc chute.
9. If necessary, loosen the two mounting bolts on either the arc chute assembly or the hinge terminal to realign the blade and retighten the bolts.
10. Repeat step 8.
11. After the switch has been properly aligned, re-attach the blade connector to the mechanism cross arm. See step 8 under "Arc Chute Assembly" instructions.

FUSE CLIP ALIGNMENT

1. Align the fuse clips as follows:
   a) Loosen the mounting bolts securing the fuse clips to the terminal.
   b) Install the correct size fuse in the fuse clips.
   c) Retighten the mounting bolts.

INSULATOR REPLACEMENT

1. Replacement of the insulators under the arc chute assembly or the hinge and blade assembly requires realignment of the switch. Refer to the instructions in these sections for details.

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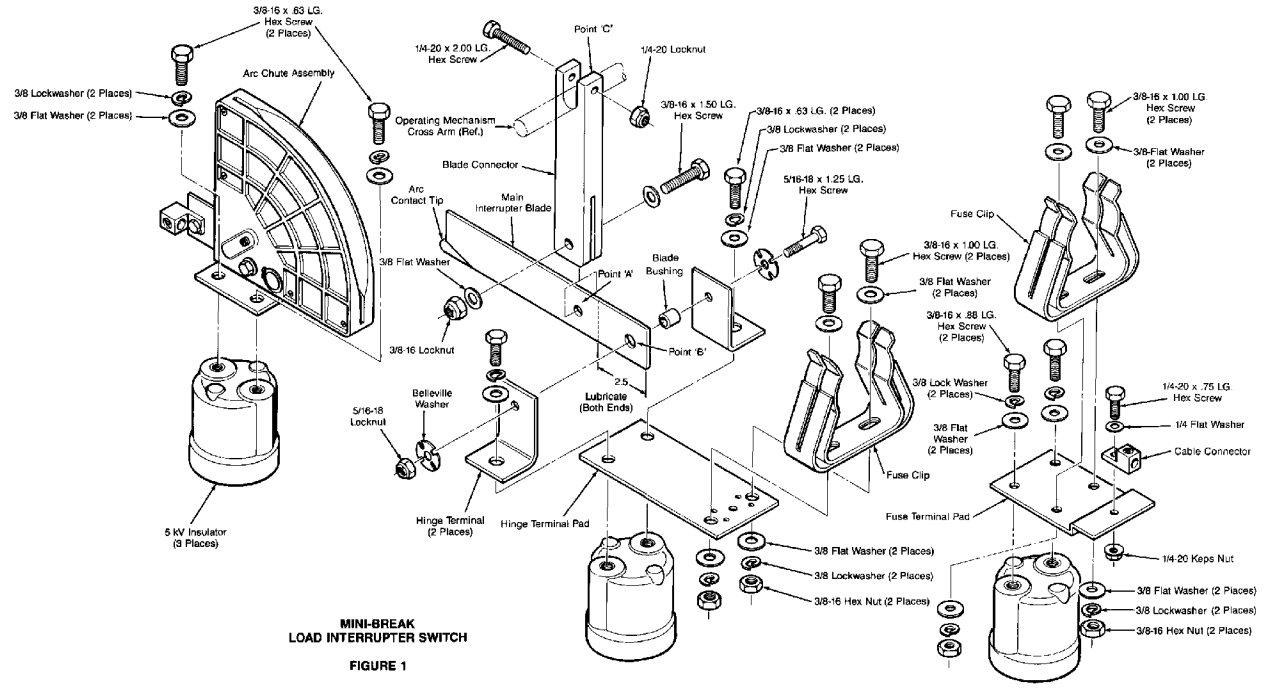

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FIGURE 1

MINI-BREAK
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MINI-BREAK
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MAINTENANCE AND ADJUSTMENT

INSPECTION

With normal use, the switch should require a minimum of maintenance. The blade, however, should be inspected after approximately every 100 operations. If the blade arcing tip is burned away approximately one-third, the blade and the arc chute assembly should be replaced.

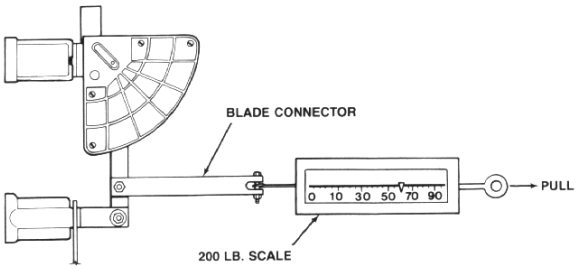


FIGURE 2

ADJUSTMENT

The adjustment of the arc chute assemblies is very important for proper operation of the switch.

To check the adjustment, proceed as follows:

1. Disconnect the "blade connector" from the "operating mechanism crossarm", see point "C", Fig. 1.
2. Attach a spring scale to the "blade connector" as shown in Fig. 2.
3. Keeping the scale straight and level, pull on the scale with a smooth steady motion. A properly adjusted arc chute will register 50 to 70 lbs. on the scale when pulled in the direction indicated in Fig. 2.
4. If the blade disengagement from the arc chute does not fall within the 50-70 lbs. range on the scale, replace the arc chute assembly.
5. Repeat on all three (3) phases.

LUBRICATION

The switch should be lubricated with Shell Alvania #2 grease between the blade and hinge and blade and arc chute. See Fig. 1.

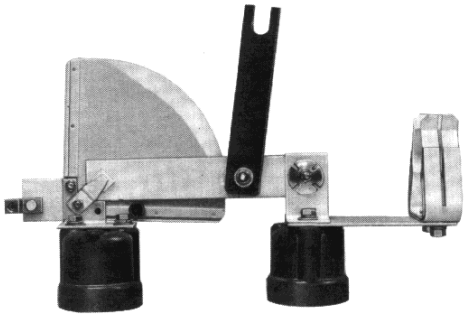
Lubrication should be used sparingly, particularly on the arc chute end of the blade. If grease accumulates on the inside of the arc chute, the switch may fail to interrupt properly.

A thin coat of grease should be applied to both sides of the blade with a finger or brush. Then, using a dry finger, wipe off all excess grease until only a very thin film remains.

SEQUENCE OF OPERATION
OPENING THE SWITCH

In the closed position, the switch blade is engaged in the arc chute. The circuit current flows through the main blades. (photo: Switch Blades Closed)

As the switch operating handle is moved towards the open position, the springs are charged. After the springs become fully charged, they toggle over the dead center position discharging force to the switch operating mechanism.

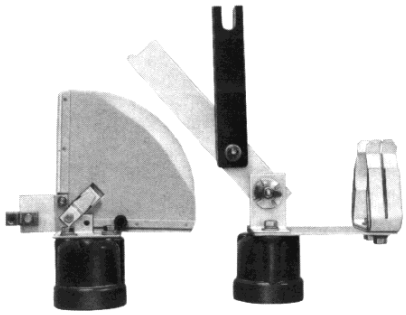


Switch Blades "Closed"

The action of the switch operating mechanism forces the blade out of the stationary main contacts.

The resulting arc, drawn between the stationary and movable interrupting contacts, is elongated and cooled as the arc chute absorbs heat and generates an arc extinguishing gas to break up and blow out the arc. The combination of arc stretching, arc cooling and extinguishing gas causes a quick interruption with only minor erosion of the contacts and arc chutes.

The blades continue to the fully open position and are maintained there by spring pressure. (photo: Switch Blades Open)



Switch Blades "Open"

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Part Index Letter	Description	Part Number	Recommended Spares For Number Of Switches Installed			
			1-4	5-10	11-15	16-25
A	Arc Chute Assembly	D44070-499-50	1	3	6	9
B	Main Interrupter Blade Assembly	C44070-541-50	1	3	6	9
C	Hinge Terminal	B44070-542-01	0	0	6	12
D	Blade Bushing	A44070-631-01	0	0	3	6
E	Belleville Washer	23903-42325	0	0	6	12
F	Blade Connector	B44070-455-01	0	0	3	6
G	Hinge Terminal Pad	A44070-457-01	0	0	0	0
H	5kV Insulator	29903-01920	0	0	0	0
I	Fuse Terminal Pad	B44070-416-01	0	0	0	0
J	Barrier-Top	C44070-511-01	0	0	0	0
K	Barrier-Bottom	B44070-509-01	0	0	0	0
L	Barrier Brace	B44070-510-01	0	0	0	0
M	Barrier Clip	29450-15190	0	0	0	0
N	Mechanism Cross Arm	C40512-009-03	0	1	2	3
O	Mecanism Housing Assembly	C44070-483-51	0	0	0	0
P	Cam Assembly	B44070-440-50	0	0	0	0
Q	Operating Handle Assembly	T40512-172-50-	0	0	0	0
R	Mechanism Operating Spring	B44050-045-01	0	1	2	3
S	Fuse Clip Kit #HVF07	C44070-619-50	0	0	0	0
T	Fuse Clip Kit #HVF08	C44070-619-51	0	0	0	0

ORDERING INFORMATION

Specify:

1. Description of part.
2. Quantity desired.
3. Part index letter.
4. Serial number of switch.
5. Original order information shown on switch nameplate.