ASEA BROWN BOVERI

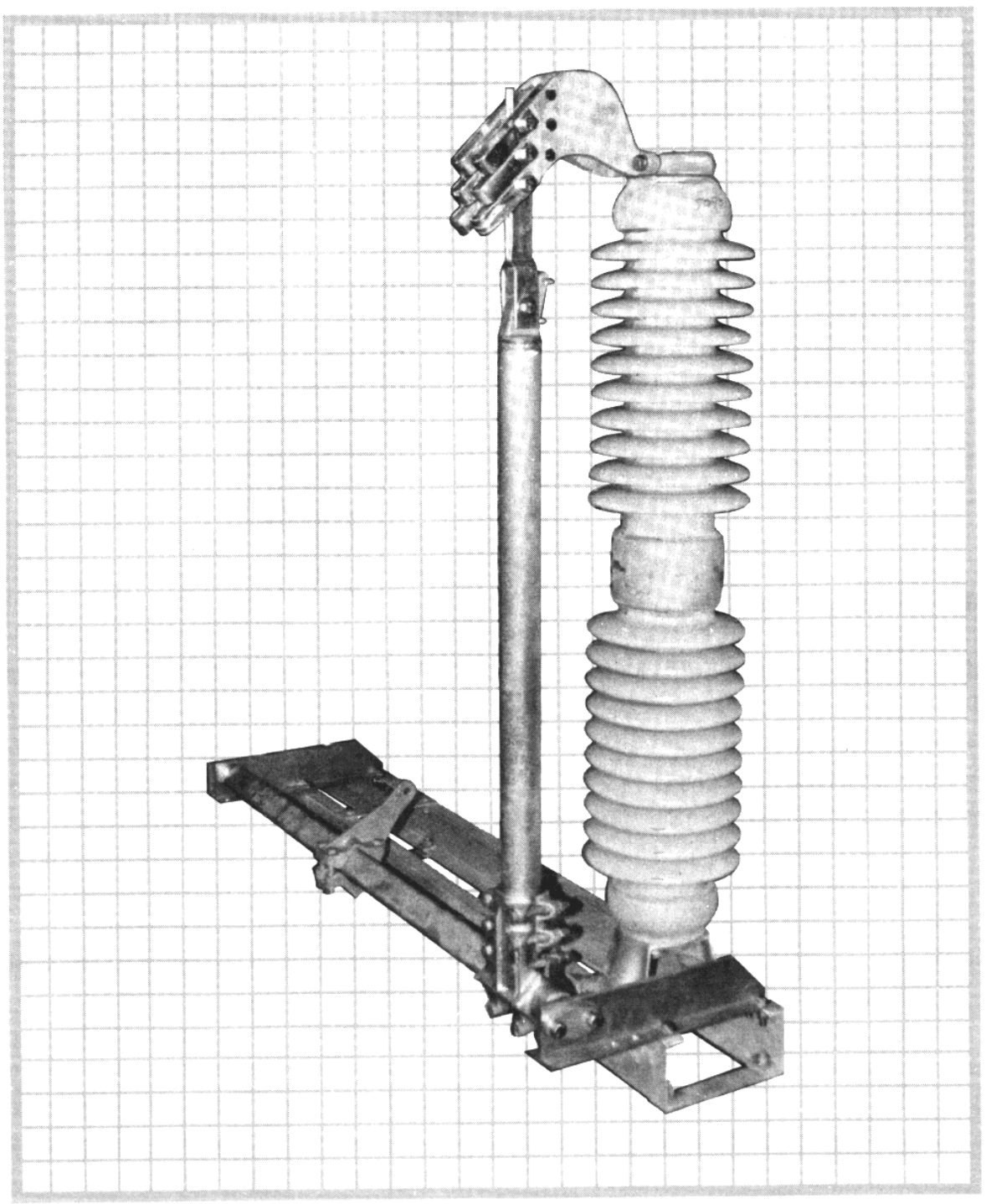
IB AG7-A

Installation/Maintenance Instructions

Outdoor Air Switches

AG-7 Group-Operated Grounding Switch

8.25P thru 242 kV Max. Design



IMPORTANT

Make absolutely sure applicable equipment is de-energized and properly grounded before proceeding with any installation or maintenance.

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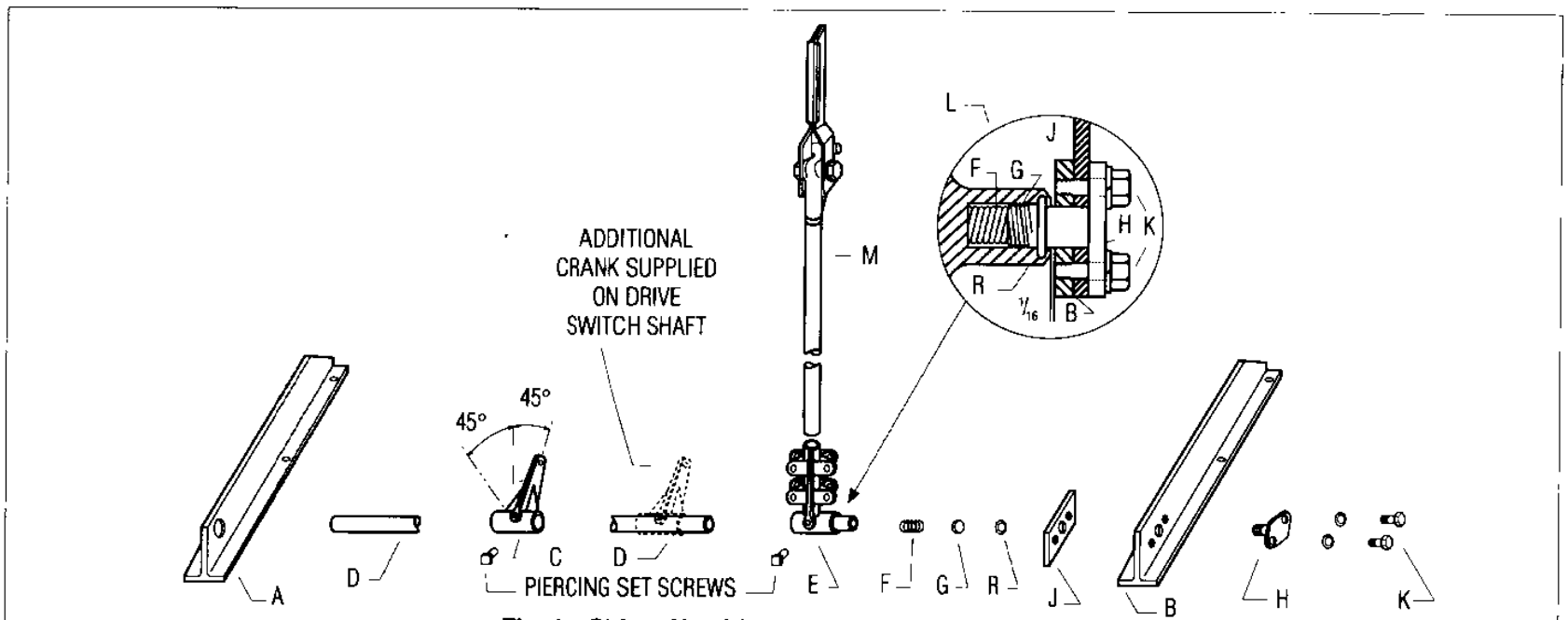
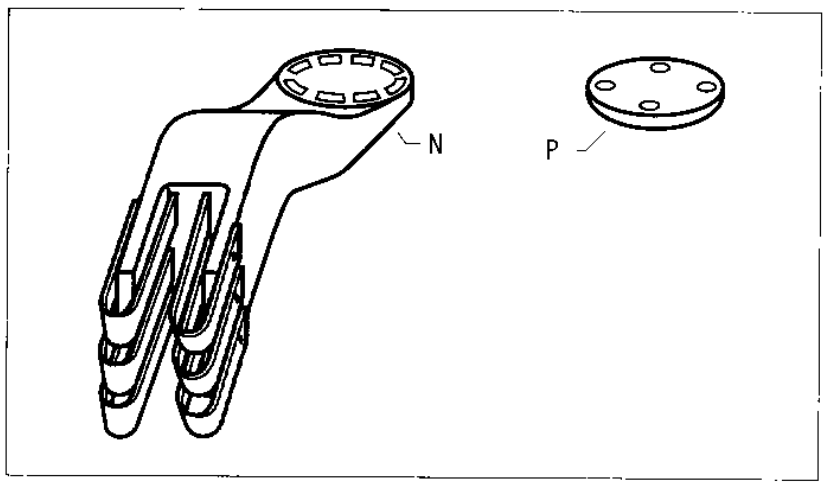


Fig. 1 Shims Used for Leveling Switches

A-Idler support
B-Bearing support
C-Interphase crank
D-Operating shaft
E-Hinge casting
F-Hinge contact pressure spring
G-Insulating disc
H-Hinge pin
J-Nut bar
K-Stainless-steel bolts and lockwashers
L-Sealed-pressure hinge assembly
M-Blade and toggle contact assembly
N-Jaw assembly
P-Spacer
R-O-ring seal

Identification of AG-7 Parts (Fig. 1)



ASSEMBLY AND ADJUSTMENT OF SINGLE-POLE AG-7 GROUNDING SWITCH

Omit steps 2, 3 and 4 for assembled switches.

1. Review equipment drawing supplied for mounting.
2. Mount support sections (A) and (B) to switch base with bolts finger-tight.
3. Assemble sealed-pressure hinge (L) as follows:
   a. Insert pressure spring (F), insulating disc (G), and O-ring seal (R) into hinge casting (E).
   b Insert hinge-pin (H) through opening in bearing support (B), and nut-bar (J) and screw hinge-pin into hinge casting (E), until proper clearance is obtained between hinge casting and nut-bar, see (L)
   c. Bolt hinge-pin to bearing support (B), with nut-bar (J), bolts (K), and lock washers.
4. Insert operating shaft (D), into idler support (A) and through interphase crank (C) and main driving crank on driving switch, and then into hinge casting (E). Secure operating shaft to hinge casting with piercing set screws. Tighten set screws until pipe is completely pierced and screws become easier to turn, then continue until screws are tight again.

Note - Contact coating on jaw and blade should not be removed.

5. Insert blade (M) into hinge casting and turn bolt finger tight. Check drawing for position and elevation of blade end.
6. Mount switch jaw (N) on top of insulator stack with bolts finger-tight. When mounting the grounding switch to main switch, if the ground jaw mounts between the live parts and the insulator, add spacers (P) to other insulator stacks of main switch to assure leveling of current carrying parts
7. Move switch blade into jaw to the fully closed positon (against the three nylon stops).
8. Jaw and blade should align in operating position. Bolt jaw tightly to insulator stack. Bolt blade tightly to hinge casting
   a. Some horizontal or angular adjustment may be required in the jaw mounting before tightening with a wrench.
   b. Vertical alignment is complete when the switch blade fully engages all contact fingers Blade can be moved in or out of hinge casting for the required alignment.
9. Tighten all bolts, making sure there is no binding.
10. With switch blade closed, set interphase crank (C) at proper location and to an angle of 45 degrees past vertical centerline, in closed position indicated, then pierce pipe with set screws as described in step 4.

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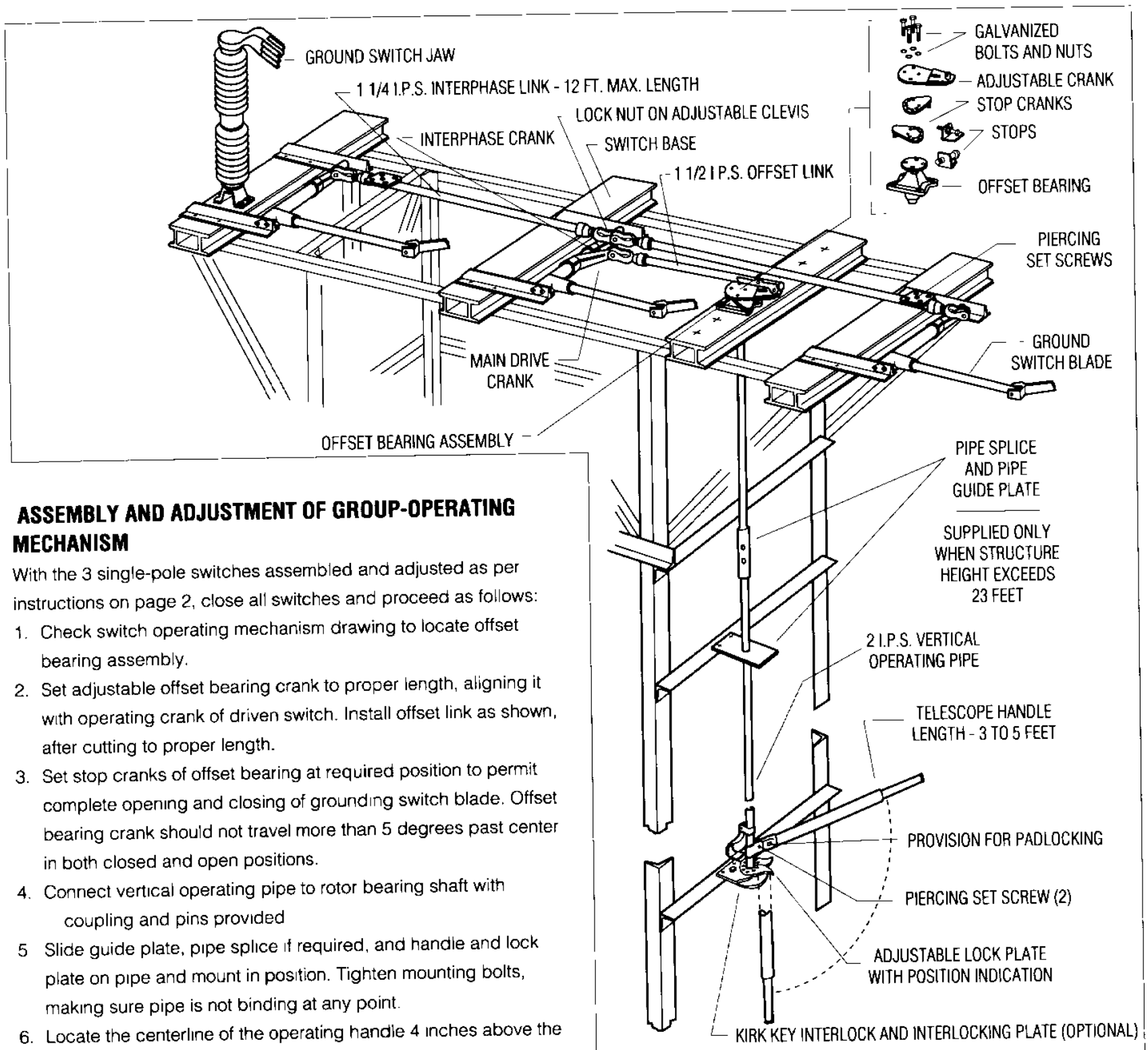

Worm gear or motor mechanism also available

ASSEMBLY AND ADJUSTMENT OF GROUP-OPERATING MECHANISM

With the 3 single-pole switches assembled and adjusted as per instructions on page 2, close all switches and proceed as follows:

1. Check switch operating mechanism drawing to locate offset bearing assembly.
2. Set adjustable offset bearing crank to proper length, aligning it with operating crank of driven switch. Install offset link as shown, after cutting to proper length.
3. Set stop cranks of offset bearing at required position to permit complete opening and closing of grounding switch blade. Offset bearing crank should not travel more than 5 degrees past center in both closed and open positions.
4. Connect vertical operating pipe to rotor bearing shaft with coupling and pins provided
5. Slide guide plate, pipe splice if required, and handle and lock plate on pipe and mount in position. Tighten mounting bolts, making sure pipe is not binding at any point.
6. Locate the centerline of the operating handle 4 inches above the lock plate and in a position which will permit operation of the switch. Clamp the handle to the pipe by slightly tightening the two piercing set screws for trial operation. Do not pierce the pipe.
7. Operate one switch pole which is now connected, and adjust offset bearing and link until switch operates properly.
8. Install interphase link to next switch pole and operate two poles connected. Interphase links are provided with clevis adjustment of one inch, plus or minus.
9. Install interphase link to third pole and operate all three switch blades, making adjustments as detailed previously for proper interphase length.
10. Locate the lock plate stops so that they provide some residual torque in the vertical operating pipe when the handle is engaged with the stops.
11. Relocate the handle if necessary so that it can be moved downward and engage the stops on the lock plate in both open and closed positions. Securely connect handle to pipe by piercing the pipe and tightening set screws.
12. Check the wording on the lock plate stops to see that it is appropriate for the open and closed positions. If not remove the stops, interchange them, and reassemble.
13. Check the installation. Test and see that all bolts are tight.
14. If a worm gear or motor mechanism is used, refer to the switch operating mechanism drawing
15. If Kirk key interlocks or other mechanical interlocks are required, they should be installed last in accordance with instructions supplied with the interlock.

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MAINTENANCE

WARNING WARNING WARNING WARNING

Before servicing the switch, be sure it is disconnected from all electric power sources and is properly grounded.

A certain amount of care and inspection is recommended. The frequency of inspection depends on the atmospheric conditions at a given switch location and the frequency of operation. This service interval must be determined by the user. Recommended maintenance is similar to that listed in the latest industry standards.[1] First, it is important that the insulators are always clean. It is also important that the contacts be examined to see that they are aligned, clean, and have a firm uniform pressure. If the contacts are pitted, or burned to some extent, they should be removed and replaced.

Under normal service conditions, the jaw contacts should be examined and maintained at least once a year, depending upon the type of atmosphere to which they are exposed

Periodic maintenance should consist of cleaning the contact surfaces thoroughly by carefully scraping off any contamination or deposits. With the contact surfaces entirely clean, a coating of lubricant should be applied. Suggested lubricants are DARINA 2 grease or NO-OX-ID "A Special". DARINA 2 is a Shell Oil Company product, NO-OX-ID is made by SANDCHEM INC.

In general, operating linkages require virtually no maintenance. However, in contaminated atmospheres or where operation under sleet conditions is common, some lubricant at pivot points may be desirable. The grease used should be durable even when exposed to the elements, and should retain its viscosity over a wide temperature range.

TABLE 1
Field Lubrication of Outdoor Switches

Part Name	Type Lubricants Recommended	Amount Applied	Qty. Req'd. for (6) Three-pole Switches
Jaw Fingers	NO-OX-ID Grade "A" Special or Darina #2 Grease	Medium Coat	
Blade Ends	NO-OX-ID Grade "A" Special or Darina #2 Grease	Medium Coat	(1) Quart
Pins (On current carrying parts)	Darina #2 Grease or DC-4	*	
Pins (On control parts)	Darina #2 Grease or DC-4	Light Coat	(1) Quart
Bearing Areas (On control parts)	Darina #2 Grease or DC-4	Medium Coat	
Terminal Connections	NO-OX-ID Grade "A" Special or NO 2 EJC	Heavy Coat	(1) Quart

Refer to maintenance information above for surface preparation.

NOTE:
NO-OX-ID Grease may be obtained from:
SANDCHEM INC.
1600 South Canal St.
Chicago, IL 60616

Darina #2 Grease from:
Shell Oil Co., New York , NY

DC-4 Grease from:
Dow Corning Corporation
Midland, Michigan

NO 2 EJC - Electrical Joint Compound
Alcoa Conductor Products Co.
Division of:
Aluminum Company of America
Pittsburgh, PA 15212
(Local distributors usually stock some of the above lubricants)

*None required at installation unless switches were exposed to abnormal conditions for a considerable length of time. During regular cleaning, give them a light coat of grease.