

Installation Instructions

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|  | ⚠ DANGER |
| | Hazardous voltage. Will cause death or serious injury. |

Turn off power supplying device before installing.

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|  | SAFETY INSTRUCTIONS |
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These instructions outline the recommended installation procedure.

Table 2 - Compatible Components

| | |
|-----------------|--|
| Switch Operator | |
| FHOS20R | Right hand operator |
| Handle | |
| FHOHS | Suitable for type 1, 2, 3, 3R, and 12 enclosures |
| FHOHS4 | Suitable for type 4 and 4X enclosures |
| Cable | |
| FHOJC036 | 36 inch cable |
| FHOJC048 | 48 inch cable |
| FHOJC060 | 60 inch cable |
| Switch | |
| MCS620 R | (200 Amp right hand operated) |

General

- A complete handle operator for an MCS switch requires the following components: (1) handle, (1) cable, and (1) switch operator.
- The handle can be mounted on either right or left flange type enclosures.
- It can be locked in the “OFF” position with up to three padlocks.
- A two piece door catch is provided for handle interlock purposes.
- The flexible cable connects the handle to the switch operator.
- The handle operator is compatible with the DKR2, DKR3, DKL2, and DKL3 door latch mechanisms.

NOTE: Enclosures with cutouts for handles, door catches, and door latch mechanisms installed can be purchased from Hoffman and Rittal. Provisions for fuses, wire terminations and auxiliary switches for use with 200 amp MCS type switches are available from Siemens.



Installation Overview

Turn OFF and lock out all power supplying the equipment within the enclosure before installing.

- Determine all components are present for a complete installation (see step 2).
- Prepare enclosure for installation of handle and handle interlock (see step 3).
- Install handle for right or left operation and attach cable (see step 4).
- Adjust handle interlock cover catch. This interlock prevents opening of enclosure while Handle is in the ON position. (see step 5).
- Locate and drill mounting holes for switch and switch operator. Mounting location of optional fuse base is also provided (see step 6).
- Install switch operator bracket and attach cable (see step 7).
- Install switch and optional fuse base (see step 8).
- Adjust cable and check switch operation (see step 9).
- Compare to typical finished installation (see step 10).

Installation Instructions

Step 1 - Turn OFF and lock out all power supplying the equipment within the enclosure before installing.

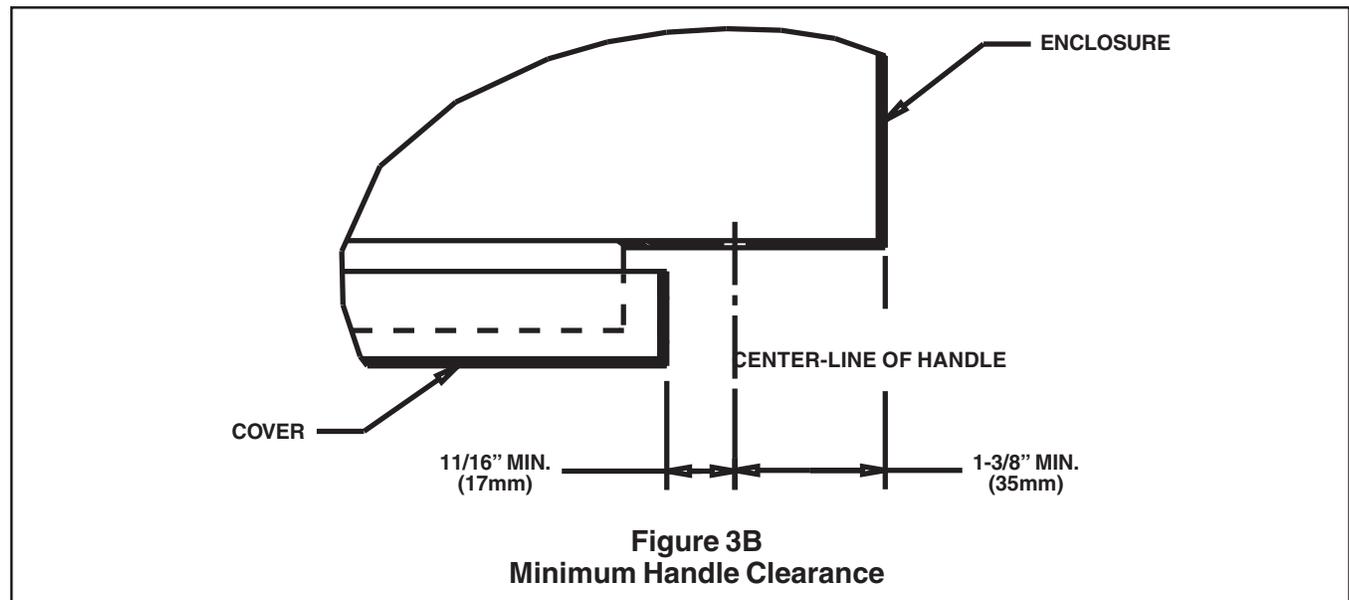
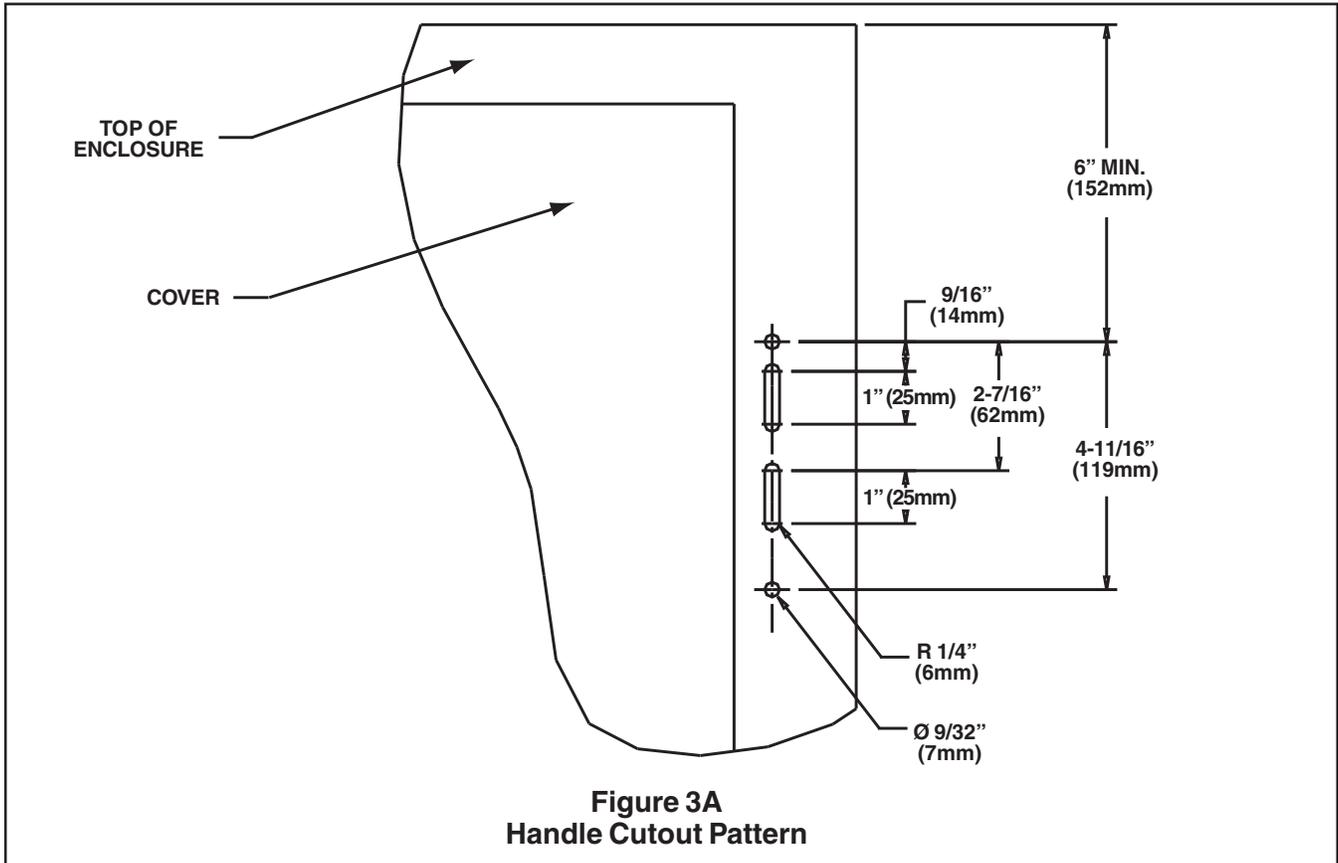
Step 2 - Determine all Components are Present

Check Table 2 at the beginning of this instruction sheet and make sure all parts are compatible. For a complete installation you must have a handle, cable, switch and switch operator. Fuse blocks and other accessories may be needed depending on the application.

Step 3 - Prepare Enclosure for Installation of Handle and Handle Interlock

3.1- Handle Cutout

Enclosure manufacturers such as Hoffman or Rittal can supply enclosures with flanges precut for this product's handles. Figure 3A shows a typical flange cutout pattern for the handle. If your enclosure does not have cutouts, follow Figures 3A and 3B to maintain the minimum clearance necessary for proper handle operation. Use handle cutout pattern (Figure 3A) to make the proper sized holes and slots in the enclosure ensure proper handle operation and sealing.





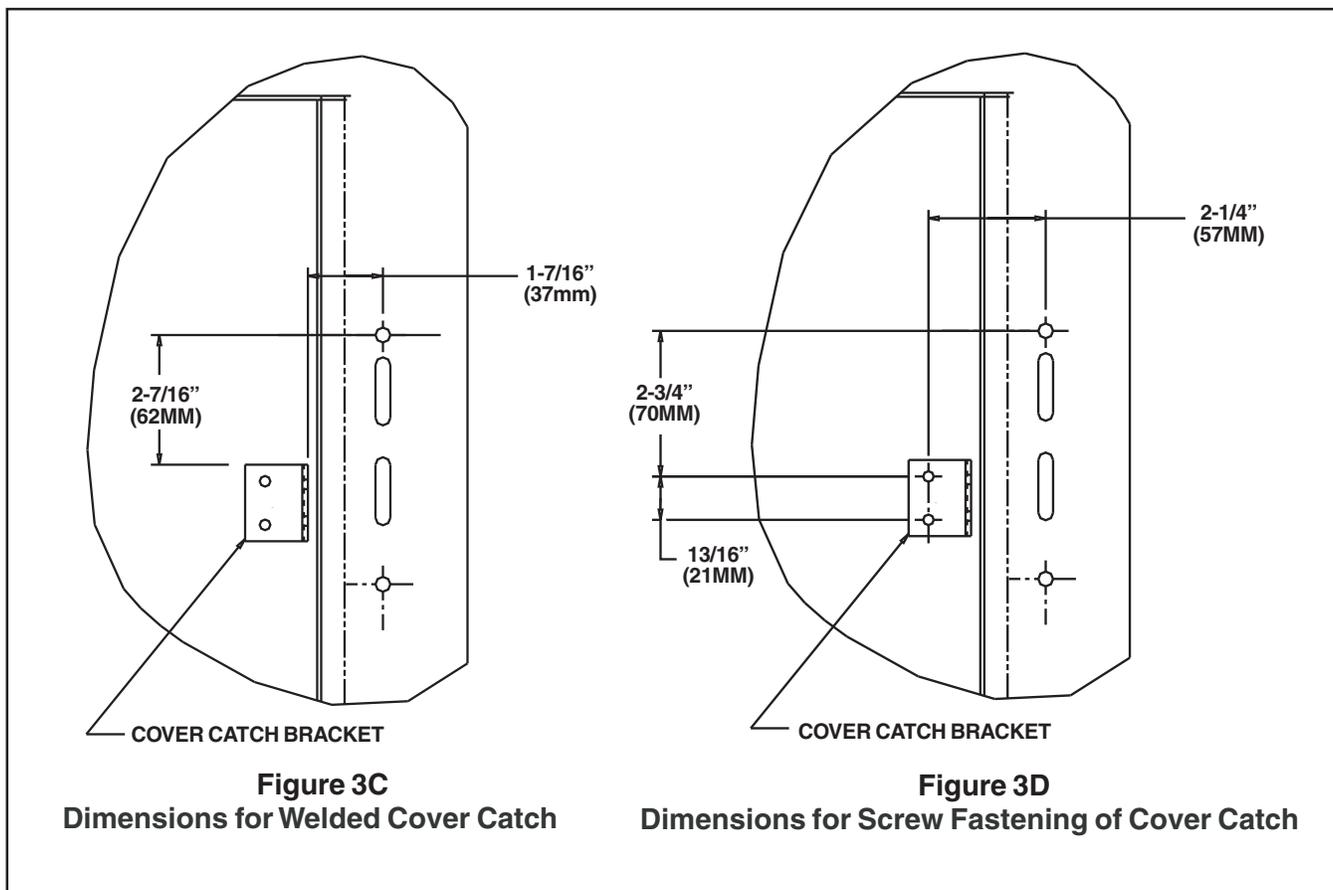
3.2 - Installing Interlock Cover Catch Assembly

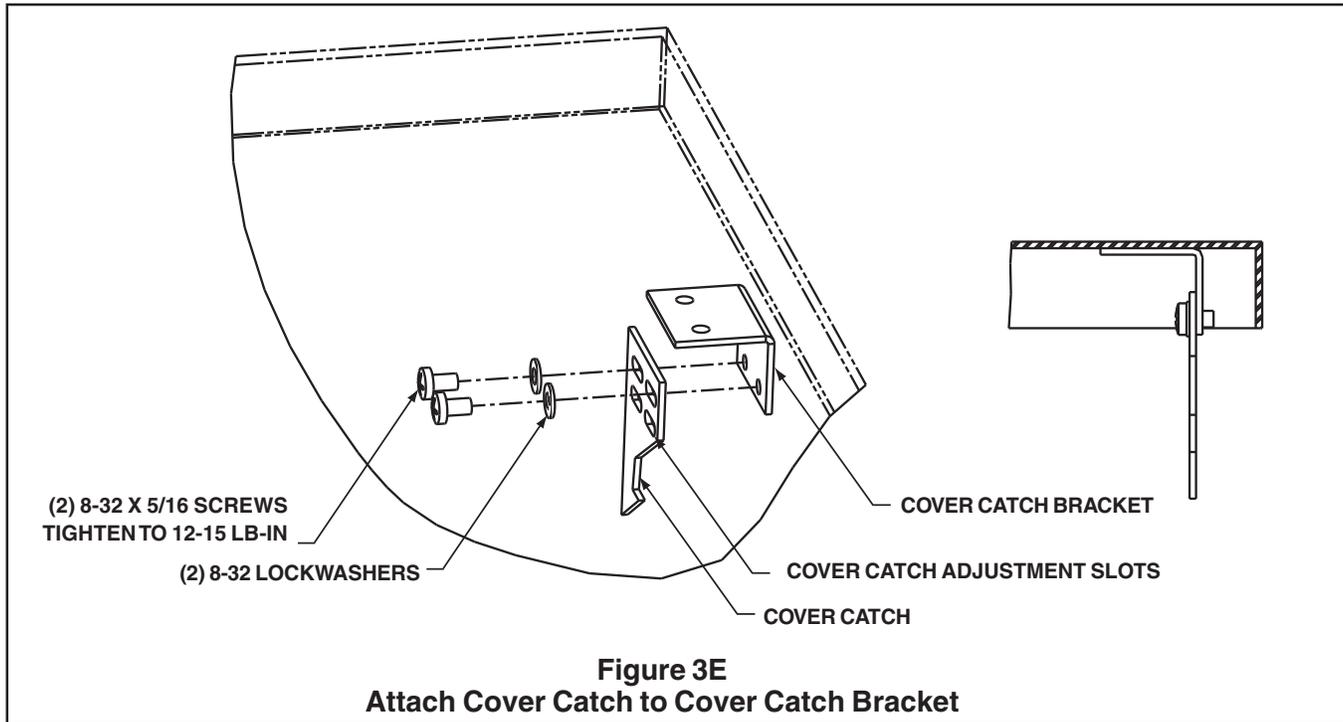
3.2.1 - Check door to see if you have an installed interlock cover catch. If not, use the interlock door catch and door catch bracket supplied in this kit. Weld the cover catch bracket to the inside of the door in the location shown in Figure 3C.

Alternate screw attachment method -Close enclosure and mark off drill location using Figure 3D. Drill out weld bumps on cover catch bracket. Attach bracket with hardware that will keep the environmental integrity (NEMA rating) of the enclosure.

3.2.2 - Attach cover catch to cover catch bracket with #8-32 x 5/16 inch screws and lockwashers as shown in Figure 3E. Tighten screws to 15-20 lb-in.

NOTE: This interlock cover catch assembly works with the interlock lever (Step 4.6) to prevent the door from being opened while the switch is in the ON position. The handle has an interlock defeater screw (see Figure 4A) to allow qualified electrical personnel to override this safety feature. Adjustment of the interlock cover catch assembly is made with handle assembly in place. See Step 5.





Step 4 - Install Handle for Right or Left Operation and Attach Cable

- 4.1 Turn Handle to OFF position.
- 4.2 Secure gasket into handle assembly as shown in Figure 4A (Right Hand) or Figure 4B (Left Hand).
- 4.3 Secure cable to frame assembly as shown in Figure 4A (Right Hand) or Figure 4B (Left Hand). Cable shim must be between frame assembly and cable shown. Use #10-32 x 3/8 screws and lockwashers to secure cable retainer as shown in Figure 4A. Detent in cable retainer must interlock with groove in cable as shown in Figure 4A, Detail A. Tighten cable retainer screws to 20-25 lb-in.
- 4.4 Use 1/4-20 x 3/4 inch cap screws (3/16" hex) and lockwashers to mount handle assembly and frame assembly to the enclosure as using as shown in Figure 4A (Right Hand) or 4B (Left Hand). Tighten the cap screws to 40 lb-in.
- 4.5 Connecting Handle to Bellcrank- Hold bellcrank in position as shown in Figure 4A (Right Hand) or 4B (Left Hand) and place teflon washer between connecting link and bellcrank. Secure connection with 10 -32 Pan head screw, washer and nylon locknut as shown in Figure 4A (Right Hand) or View A, Figure 4B (Left Hand). Tighten the screw to 20-25 lb-in.
- 4.6 Attach the 2-1/4 inch long L shaped interlock lever extension into recess of the interlock lever per Figure 4A (Right Hand) or 4B (Left Hand) with #8-32 screw screw and #8 lockwasher. Tighten to 12 lb-in. This interlock lever works with the interlock cover catch (Step 3.2) to prevent the door from being opened while the switch is in the ON position when properly adjusted.
- 4.7 Check that the cable swivel has at least 1/8 inch of threaded rod projecting from it per Figure 4C. Attach cable swivel to the hole furthest from bellcrank pivot as shown in Figure 4C. Secure cable swivel with E-ring.

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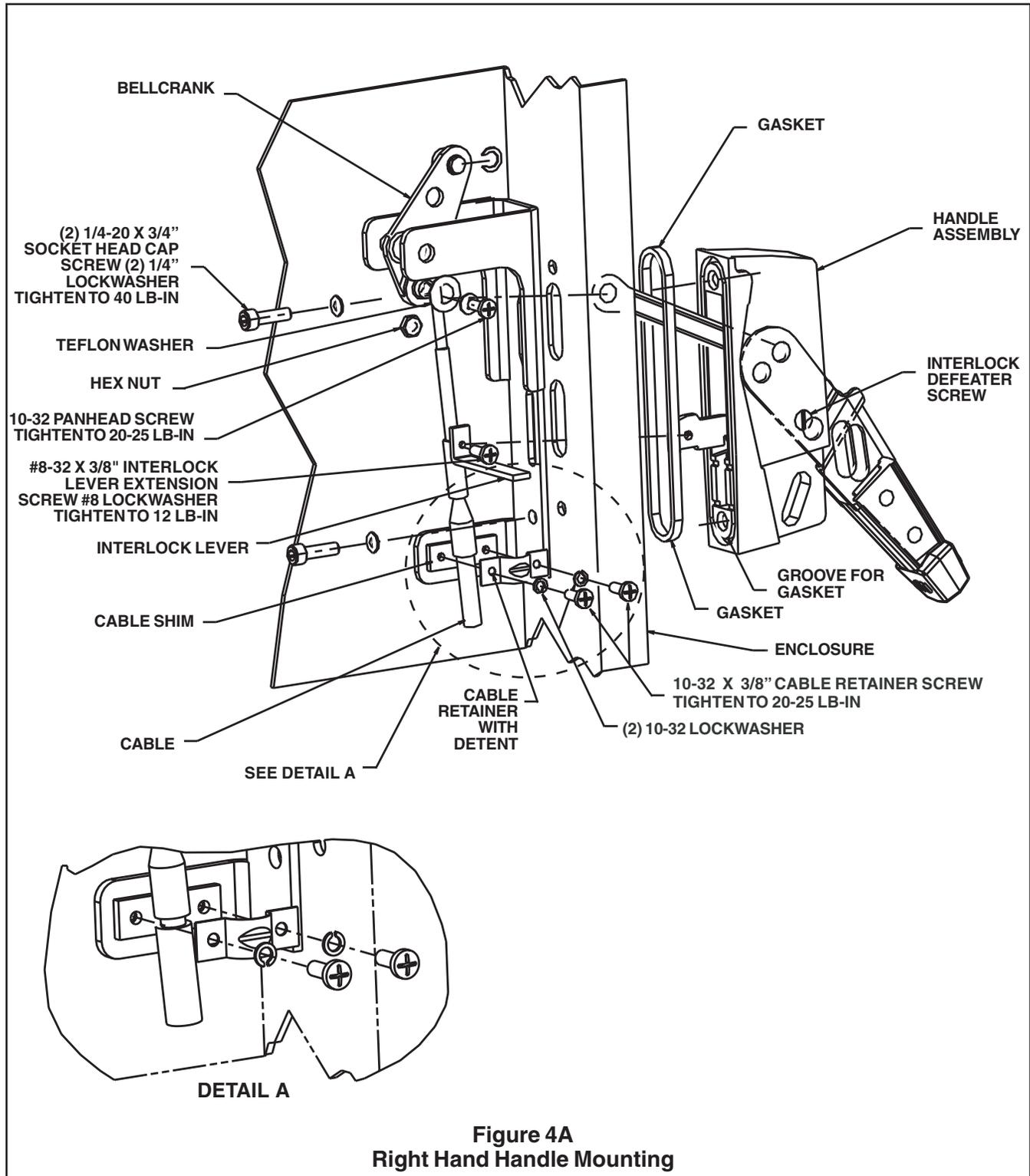
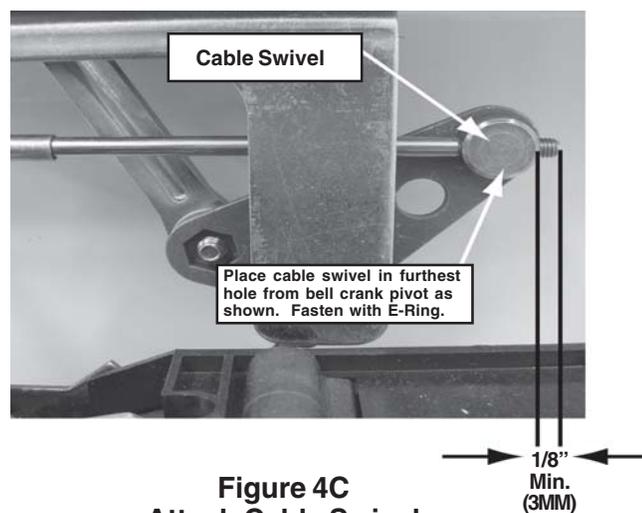
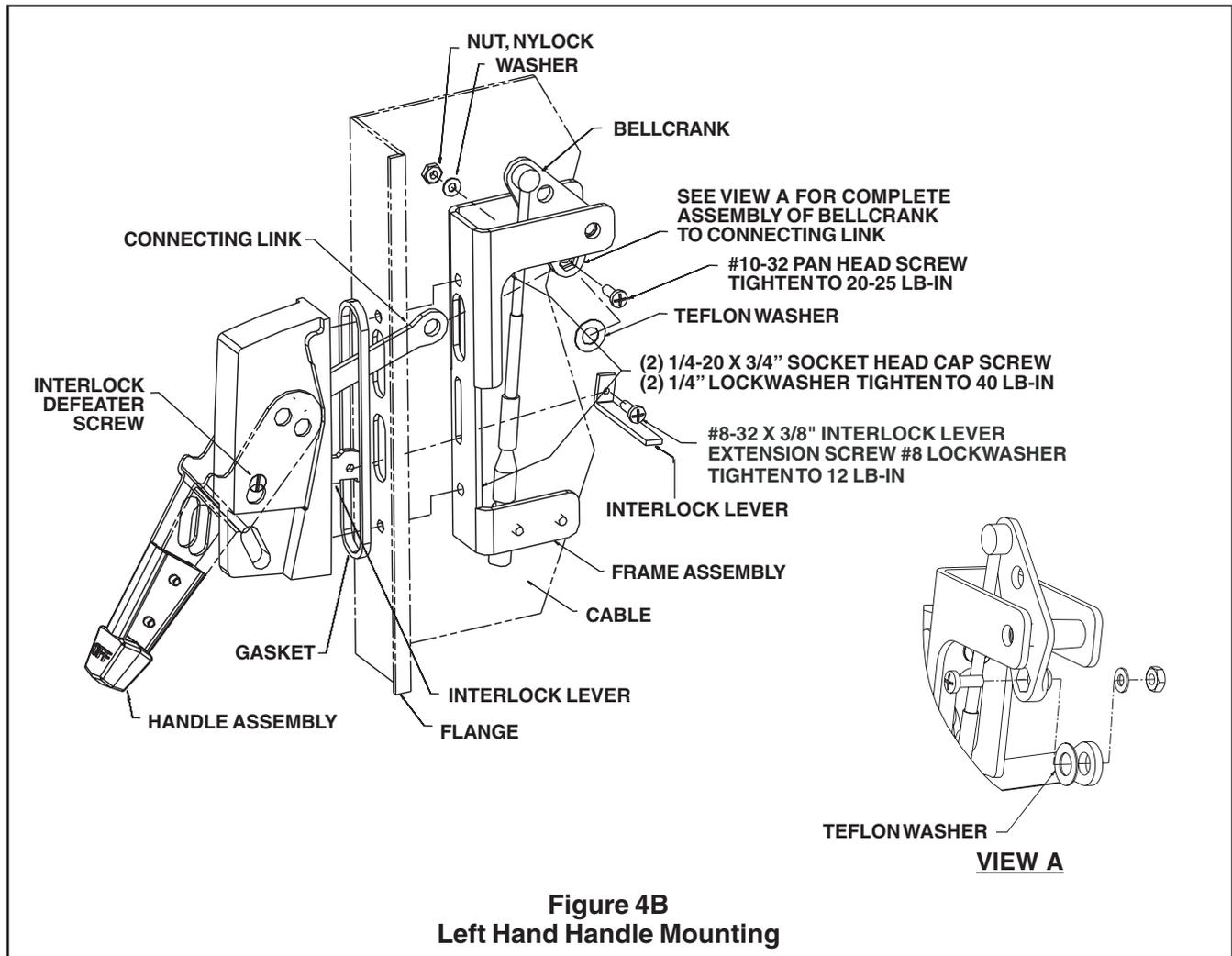


Figure 4A
Right Hand Handle Mounting

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Step 5- Adjust Handle Interlock Cover Catch

- 5.1 Close enclosure door. This should release the interlock allowing the handle to be turned ON. If the handle cannot be turned ON, loosen cover catch screws (Figure 3E) and move cover catch towards interlock extension lever. Retighten screws to 15-20 lb-in.
- 5.2 Turn handle ON and attempt to open door. The interlock should hold the door closed. If the door can be opened, loosen cover catch screws (Figure 3E) and move cover catch away from interlock extension lever. Retighten screws to 15-20 lb-in. Repeat steps 5.1 and 5.2 to insure that the door cannot be opened when the handle is in the ON position.

Note: If door cannot be opened when the handle is in the OFF position rotate interlock defeater screw on the handle (see Figure 4A) to release the door and follow adjustment steps 5.1 and 5.2.

Step 6 - Locate and Drill Mounting Holes for Switch and Switch Operator

6.1 - Location of the switch and operator relative to the handle operator

Establish Switch and Switch Operator Location -

Figure 6A shows how right and left hand handles and a right hand switch operator can be installed.

NOTE: WHEN INSTALLED, THE BEND RADIUS OF THE CABLE MUST NOT BE LESS THAN THREE INCHES.

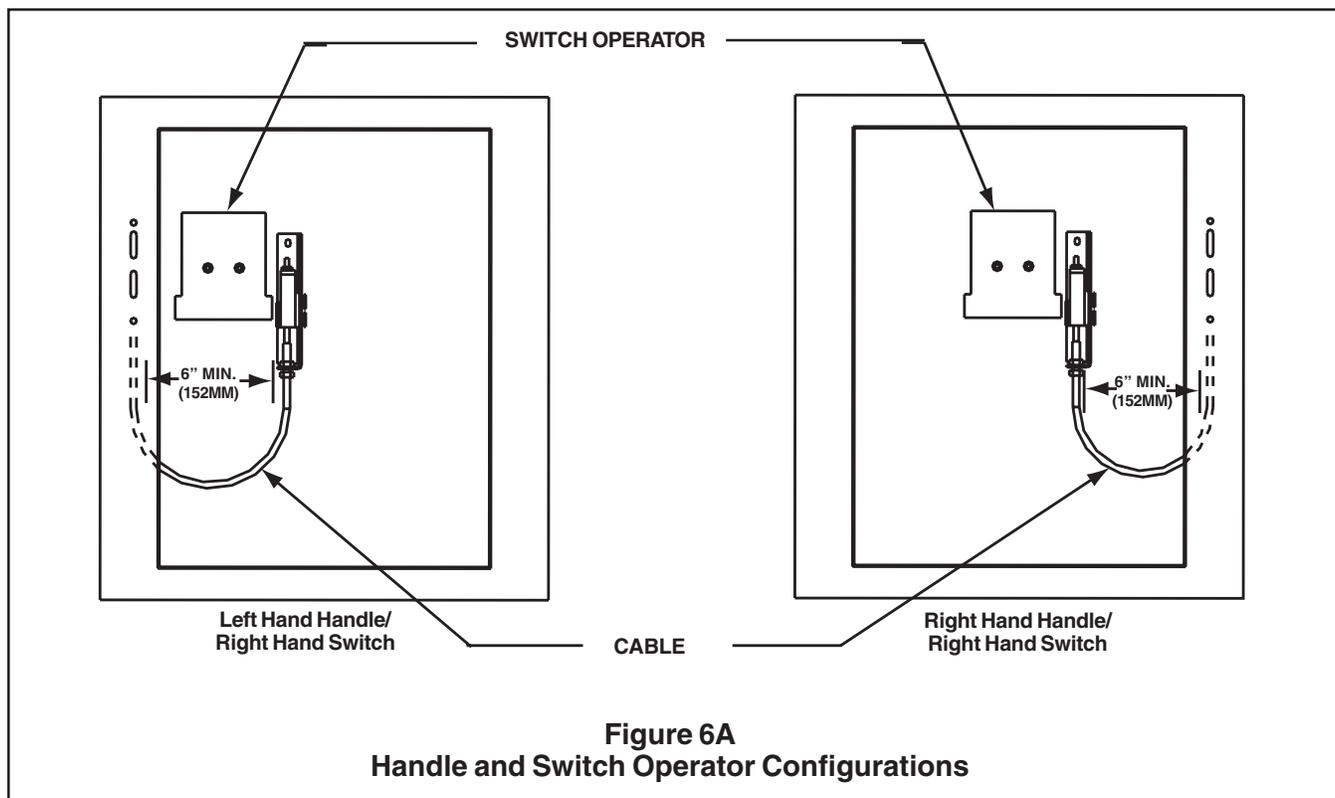


Figure 6A
Handle and Switch Operator Configurations



6.2 - Drill holes for switch and switch operator.

6.2.1 - Use Figure 6B to drill holes for mounting the switch and switch operator. For fusible applications drill holes for fuse block using dimension "A" from Table 6.2.

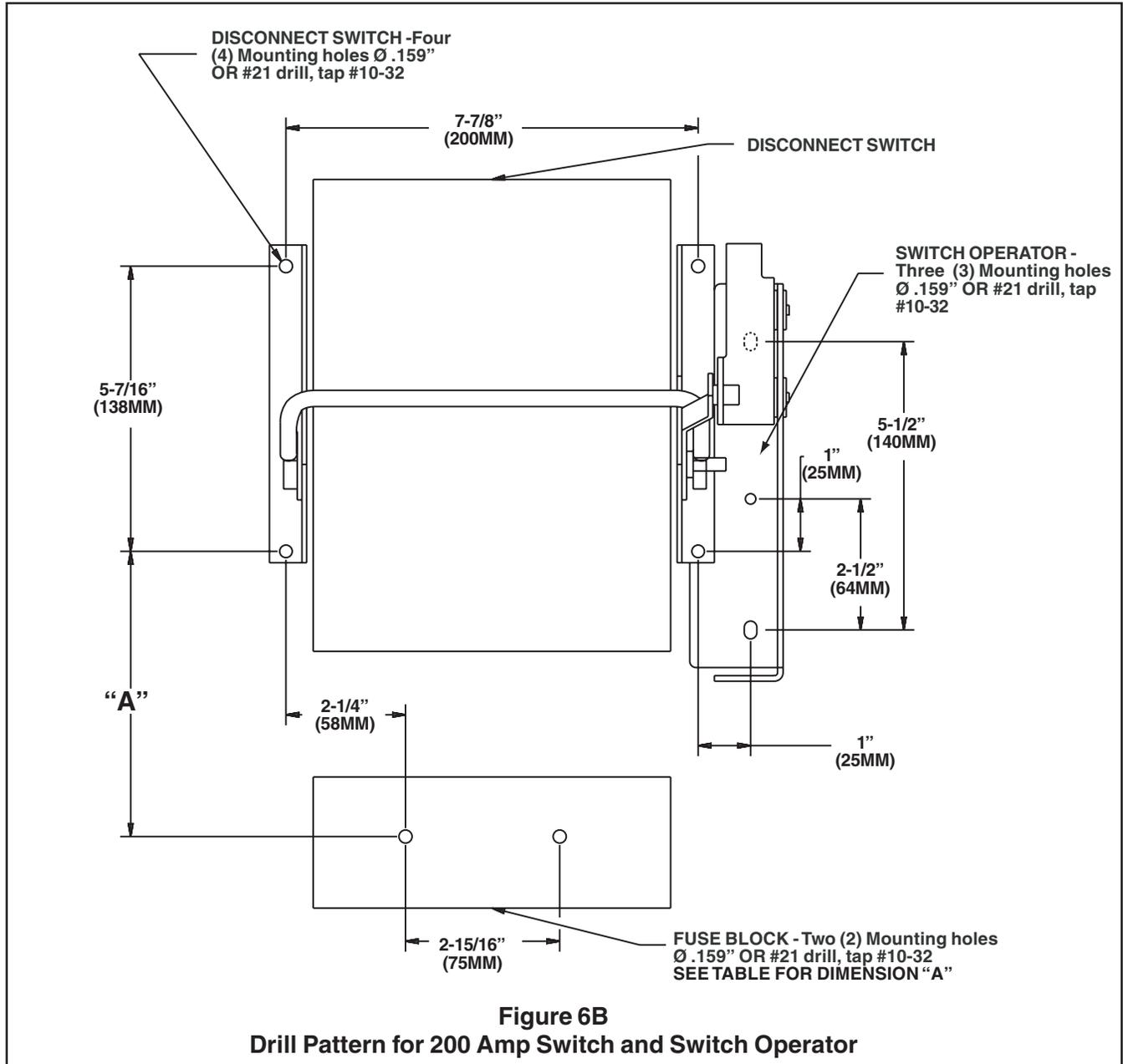


TABLE 6.2 - 200 A Fuse Block Location

| CATALOG NO. | FUSE TYPE | AMPS | VOLTS | DIM "A" (IN) | DIM "A" (MM) |
|-------------|-----------|---------|------------|--------------|--------------|
| FCK620 | H,R | 101-200 | 250 600 | 6.06 8.56 | 154 217 |
| FCK620 | J | 101-200 | 600 | 4.69 | 119 |



Step 7 - Install Switch Operator Bracket and Attach Cable

- 7.1 Mount switch operator bracket to enclosure panel with the three # 10-32x 1/2 inch screws, washers and lockwashers as shown in Figure 7. Tighten to 20-25 lb-in.
- 7.2 Place one #10 slide plate nut to approximately 1 3/4 inches from the end of cable. Put end of the cable thru the hole in the slide plate as shown in Figure 7. Place cable mounting thread in U shaped slot in switch operator bracket and use cable mounting nuts to secure cable in slot as shown.
- 7.3 Secure cable to slide plate with second # 10-32 slide plate nut and #10 lockwasher. Tighten slide plate nuts to 20-25 lb in.
- 7.4 Preadjust cable for switch by adjusting cable mounting nuts so that slide plate is approximately 2 1/4 inches from back of support switch operator bracket as shown in Figure 7.
- 7.5 Tighten cable mounting nuts to 30-40 lb-in.

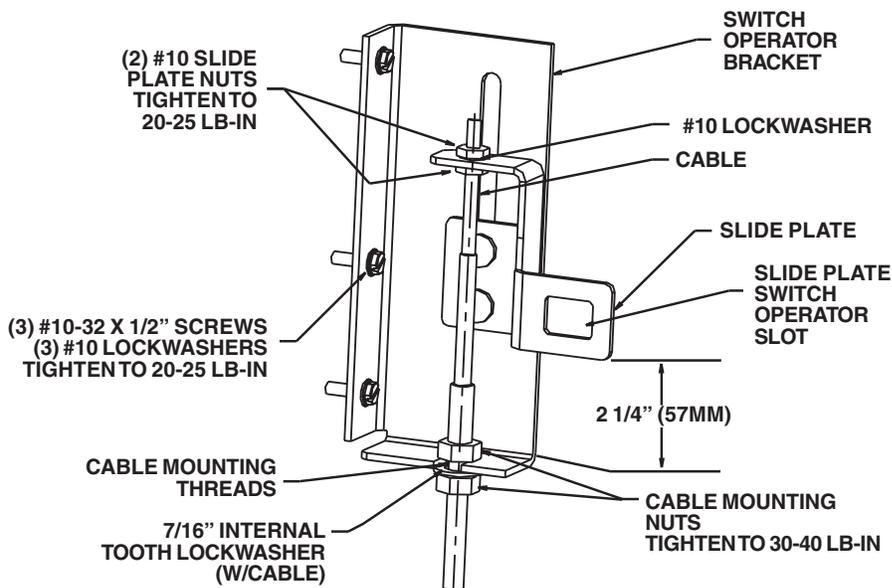


Figure 7
Switch Operator Mounting and Cable Attachment

Step 8 - Install Switch and Optional Fuse Base

- 8.1 Turn handle to OFF position and make sure switch is OFF (switch blades are open). Remove Line shield from switch.
- 8.2 Slide switch mechanism pin into slide plate operator slot per Figure 8.
- 8.3 Using hardware provided with switch and/or fuse base, mount components as per instructions provided with switch.
- 8.4 Replace all components and line shield before proceeding to next step.



Figure 8
Installation of Switch Mechanism Pin Into Slide Plate Operator Slot



Step 9 - Adjust Cable and Check Switch Operation

9.1 Check that the switch turns OFF and ON by moving the operator handle.

Caution - Potential Handle Breakage - Defeat the cover catch interlock by pulling interlock extension lever towards handle OFF position before cycling the switch handle ON and OFF with enclosure door open. See Figure 9.

9.2 If switch does not turn OFF and ON, adjust cable mounting nuts (see Step 7) that attach cable to switch operator bracket until switch functions correctly. Retighten adjusted cable mounting nuts to 30-40 lb-in.

Note: The Max Flex operator should turn the switch ON and OFF without binding. If a binding occurs make sure the cable swivel is in the hole furthest from the bellcrank pivot as shown in Figure 4C.



Figure 9
Defeating Cover Catch Interlock

Step 10 - Compare to Typical Finished Installation

Figure 10 shows a typical finished installation for 200 Amp MCS switch coupled to the Max Flex operator.

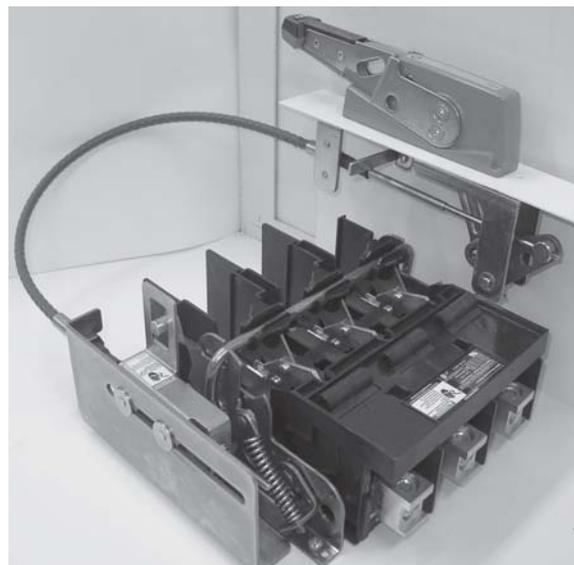


Figure 10
Typical Installation