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IMPORTANT

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 purpose, the matter should be referred to the local Siemens sales office. The contents of this instruction manual shall not become part of or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statement contained herei does not create new warranties or modify the existing warranty.

SIGNAL WORDS

The signal words "DANGER", "WARNING" and "CAUTION" used in this manual indicate the degree of hazard that may be encountered by the user. These words are defined as below:

Danger - Indicates death, severe personal injury or property damage will result if proper precautions are not taken.

Warning - Indicates death, severe personal injury or property damage can result if proper precautions are not taken.

Caution - Indicates personal injury or property damage may result if proper precautions are not taken.

KEEP OUT

QUALIFIED PERSON ONLY

Disconnect power before working on this equipment. For the purpose of this manual and product labels a qualified person is one who is familiar with the installation, construction, operation, or maintenance of the equipment and the hazards involved. In addition this person has the following qualifications:

- (a) Is trained and authorized to energize, de-energize, clear, ground, and tag circuits and equipment in accordance with established safety practices.
- (b) Is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.
- (c) Is trained in rendering first aid.



WARNING

Hazardous voltage
Can cause death or serious injury.

Disconnect main power and control voltages before installation or maintenance on this equipment.

WARNING

Short-Circuit Explosion Hazard.
Can cause death, serious personal injury, or property damage.

Fully engage all door latches and spread ends of door hinge pins approximately 45 degrees before energizing equipment.



⚠ DANGER

Hazardous voltage.
Will cause death, serious personal injury, or property damage.

Always de-energize and ground the equipment before maintenance. Read and understand this manual before installing, operating or maintaining the equipment. Maintenance should be performed only by qualified personnel. The use of unauthorized parts in the repair of the equipment or tampering by unqualified personnel may result in dangerous conditions which may cause death or serious personal injury or equipment or property damage. Follow all safety instructions contained herein.

The following steps are for the installation of components in the enclosure kits. Once the components have been determined it is important to place them in the proper location.

Step 1

Refer to the component selection tables to determine the components required to assemble the desired pump panel.

Step 2

Based on the enclosure kit selected in step one, refer to the corresponding hole ID table and panel layout for the following steps.

- To locate the mounting holes for the components use the column marked "Hole No. ID".
- Match the hole number from the table to the hole number on the panel layout.
- Place the components in the locations identified making sure all mounting holes have been located.

Component Selection Table for Pump Panels with Solid-State Overload

| To Field Assemble This Pump Panel: | Assemble These Components | | | | | |
|------------------------------------|---------------------------|-----------------------------------------|-------------------|----------------|-------------------------|---------------------------|
| | Enclosure Catalog Number | Starter with Solid-State Overload Relay | Disconnect Switch | Fuse Load Base | Class R Rejection Clips | Motor Circuit Interrupter |
| 87DUB6F* | 49EB87GF242008 | 14DUB32A* | HFB612 | HBB612 | HR612 | - |
| 87DUC6F* | 49EB87GF242008 | 14DUC32A* | HFB612 | HBB612 | HR612 | - |
| 87DUD6F* | 49EB87GF242008 | 14DUD32A* | HFB612 | HBB612 | HR612 | - |
| 87DUD60* | 49EB87GF242008 | 14DUD32A* | HFB62 | HBB62 | HR62 | - |
| 87EUE6F* | 49EB87GF242008 | 14EUE32A* | HFB612 | HBB612 | HR612 | - |
| 87EUE60* | 49EB87GF242008 | 14EUE32A* | HFB62 | HBB62 | HR62 | - |
| 87FUF6F* | 49EB87GF242008 | 14FUF32A* | HFB62 | HBB62 | HR62 | - |
| 87FUF60* | 49EB87GF242008 | 14FUF32A* | HFB63 | HBB63 | HR63 | - |
| 87GUG6F* | 49EB87GF242008 | 14GUG32A* | HFB62 | HBB62 | HR62 | - |
| 87GUG60* | 49EB87GF242008 | 14GUG32A* | HFB63 | HBB63 | HR63 | - |
| 87HUG6F* | 49EB87JF362408 | 14HUG32A* | HFB63 | HBB63 | HR63 | - |
| 87HUG60* | 49EB87JM362408 | 14HUG32A* | MCS620R | FCK620 | SSRK34 | - |
| 87IUH6F* | 49EB87JM362408 | 14IUH32A* | MCS620R | FCK620 | SSRK34 | - |
| 87JUH6F* | 49EB87JM362408 | 14JUH32A* | MCS620R | FCK620 | SSRK34 | - |
| 87DUC6L* | 49EB87GF242008 | 14DUC32A* | HFB21 | HBB21 | HR21 | - |
| 87DUD6L* | 49EB87GF242008 | 14DUD32A* | HFB21 | HBB21 | HR21 | - |
| 87DUE6L* | 49EB87GF242008 | 14DUE32A* | HFB21 | HBB21 | HR21 | - |
| 87DUE6P* | 49EB87GF242008 | 14DUE32A* | HFB22 | HBB22 | HR612 | - |
| 87EUE6L* | 49EB87GF242008 | 14EUE32A* | HFB22 | HBB22 | HR612 | - |
| 87FUF6L* | 49EB87GF242008 | 14FUF32A* | HFB22 | HBB22 | HR612 | - |
| 87FUF6P* | 49EB87GF242008 | 14FUF32A* | HFB63 | HBB63 | HR63 | - |
| 87GUG6L* | 49EB87GF242008 | 14GUG32A* | HFB22 | HBB22 | HR612 | - |
| 87GUG6P* | 49EB87GF242008 | 14GUG32A* | HFB63 | HBB63 | HR63 | - |
| 87HUG6L* | 49EB87JF362408 | 14HUG32A* | HFB63 | HBB63 | HR63 | - |
| 87HUG6P* | 49EB87JM362408 | 14HUG32A* | MCS620R | FCK620 | SSRK34 | - |
| 87IUH6L* | 49EB87JM362408 | 14IUH32A* | MCS620R | FCK620 | SSRK34 | - |
| 87JUH6L* | 49EB87JM362408 | 14JUH32A* | MCS620R | FCK620 | SSRK34 | - |
| 87DUB6M* | 49EB87GB242008 | 14DUB32A* | - | - | - | ED63A003 |
| 87DUC6M* | 49EB87GB242008 | 14DUC32A* | - | - | - | ED63A010 |
| 87DUD6M* | 49EB87GB242008 | 14DUD32A* | - | - | - | ED63A025 |
| 87DUE6M* | 49EB87GB242008 | 14DUE32A* | - | - | - | ED63A030 |
| 87EUE6M* | 49EB87GB242008 | 14EUE32A* | - | - | - | ED63A040 |
| 87FUF6M* | 49EB87GB242008 | 14FUF32A* | - | - | - | ED63A050 |
| 87GUG6M* | 49EB87GB242008 | 14GUG32A* | - | - | - | ED63A100 |
| 87HUG6M* | 49EB87IB362408 | 14HUG32A* | - | - | - | ED63A100 |
| 87IUH6M* | 49EB87IB362408 | 14IUH32A* | - | - | - | ED63A125 |
| 87JUH6M* | 49EB87JB362408 | 14JUH32A* | - | - | - | FXD63A150L |

| Coil Table | |
|----------------------|------------------|
| 60Hz Voltage | Letter |
| 24 Separate Control | J |
| 120 Separate Control | F |
| 110-120/220-240 | A ⁽¹⁾ |
| 200-208 | G |
| 220-240 | C ⁽¹⁾ |
| 220-240/440-480 | L |
| 277 | H |
| 440-480 | F |
| 550-600 | E |

Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.

(1) Dual voltage coils not available in size 5-8 starters.

Step 3

Using the hardware specified in table “Hole ID Information”, secure the component in its location and torque accordingly.

Step 4

After all the components have been installed, wire according to the composite diagram.

Component Selection Table for Pump Panels with Bimetal Overload

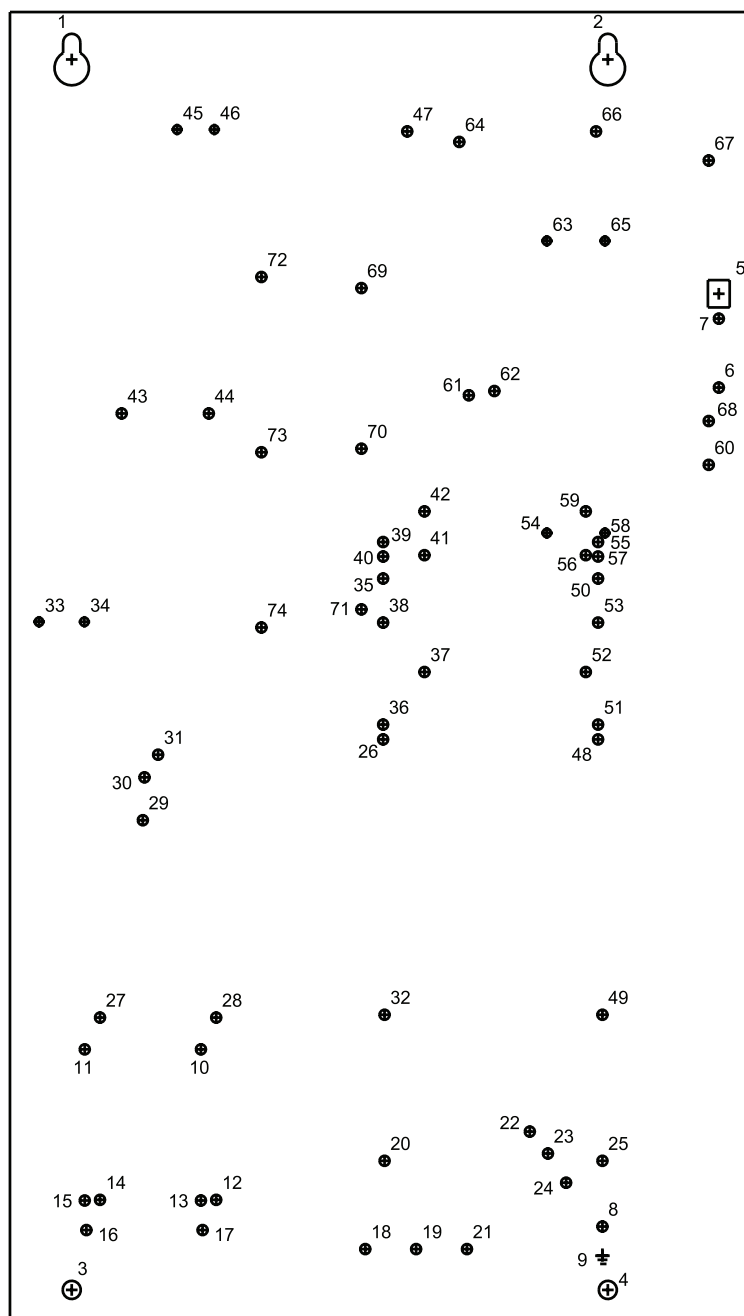
| To Field Assemble This Pump Panel: | Assemble These Components | | | | | |
|------------------------------------|---------------------------|-------------------------------------|-------------------|----------------|-------------------------|---------------------------|
| | Enclosure Catalog Number | Starter with Bimetal Overload Relay | Disconnect Switch | Fuse Load Base | Class R Rejection Clips | Motor Circuit Interrupter |
| 87DAE6F* | 49EB87GF242008 | 14DP32A*81 | HFB612 | HBB612 | HR612 | - |
| 87DAE60* | 49EB87GF242008 | 14DP32A*81 | HFB62 | HBB62 | HR62 | - |
| 87EAF6F* | 49EB87GF242008 | 14EP32A*81 | HFB612 | HBB612 | HR612 | - |
| 87EAF60* | 49EB87GF242008 | 14EP32A*81 | HFB62 | HBB62 | HR62 | - |
| 87FAJ6F* | 49EB87GF242008 | 14FP32A*81 | HFB62 | HBB62 | HR62 | - |
| 87FAJ60* | 49EB87GF242008 | 14FP32A*81 | HFB63 | HBB63 | HR63 | - |
| 87GAK6F* | 49EB87GF242008 | 14GP32A*81 | HFB62 | HBB62 | HR62 | - |
| 87GAK60* | 49EB87GF242008 | 14GP32A*81 | HFB63 | HBB63 | HR63 | - |
| 87HAN6F* | 49EB87JF362408 | 14HP32A*81 | HFB63 | HBB63 | HR63 | - |
| 87HAN60* | 49EB87JM362408 | 14HP32A*81 | MCS620R | FCK620 | SSRK34 | - |
| 87IAP6F* | 49EB87JM362408 | 14IP32A*81 | MCS620R | FCK620 | SSRK34 | - |
| 87JAR6F* | 49EB87JM362408 | 14JG32A*81 | MCS620R | FCK620 | SSRK34 | - |
| 87DAE6L* | 49EB87GF242008 | 14DP32A*81 | HFB21 | HBB21 | HR21 | - |
| 87DAE6P* | 49EB87GF242008 | 14DP32A*81 | HFB22 | HBB22 | HR612 | - |
| 87EAG6L* | 49EB87GF242008 | 14EP32A*81 | HFB22 | HBB22 | HR612 | - |
| 87FAJ6L* | 49EB87GF242008 | 14FP32A*81 | HFB22 | HBB22 | HR612 | - |
| 87FAJ6P* | 49EB87GF242008 | 14FP32A*81 | HFB63 | HBB63 | HR63 | - |
| 87GAL6L* | 49EB87GF242008 | 14GP32A*81 | HFB63 | HBB63 | HR63 | - |
| 87HAN6L* | 49EB87JF362408 | 14HP32A*81 | HFB63 | HBB63 | HR63 | - |
| 87HAN6P* | 49EB87JM362408 | 14HP32A*81 | MCS620R | FCK620 | SSRK34 | - |
| 87IAP6L* | 49EB87JM362408 | 14IP32A*81 | MCS620R | FCK620 | SSRK34 | - |
| 87JAR6L* | 49EB87JM362408 | 14JG32A*81 | MCS620R | FCK620 | SSRK34 | - |
| 87DAA6M* | 49EB87GB242008 | 14DP32A*81 | - | - | - | ED63A003 |
| 87DAB6M* | 49EB87GB242008 | 14DP32A*81 | - | - | - | ED63A010 |
| 87DAD6M* | 49EB87GB242008 | 14DP32A*81 | - | - | - | ED63A025 |
| 87DAE6M* | 49EB87GB242008 | 14DP32A*81 | - | - | - | ED63A030 |
| 87EAF6M* | 49EB87GB242008 | 14EP32A*81 | - | - | - | ED63A040 |
| 87EAG6M* | 49EB87GB242008 | 14EP32A*81 | - | - | - | ED63A050 |
| 87FAH6M* | 49EB87GB242008 | 14FP32A*81 | - | - | - | ED63A040 |
| 87FAJ6M* | 49EB87GB242008 | 14FP32A*81 | - | - | - | ED63A050 |
| 87GAK6M* | 49EB87GB242008 | 14GP32A*81 | - | - | - | ED63A050 |
| 87GAL6M* | 49EB87GB242008 | 14GP32A*81 | - | - | - | ED63A100 |
| 87HAN6M* | 49EB87IB362408 | 14HP32A*81 | - | - | - | ED63A100 |
| 87IAP6M* | 49EB87IB362408 | 14IP32A*81 | - | - | - | ED63A125 |
| 87JAR6M* | 49EB87JB362408 | 14JG32A*81 | - | - | - | FXD63A150L |

| Coil Table | |
|----------------------|------------------|
| 60Hz Voltage | Letter |
| 24 Separate Control | J |
| 120 Separate Control | F |
| 110-120/220-240 | A ⁽¹⁾ |
| 200-208 | D |
| 220-240 | G |
| 220-240/440-480 | C ⁽¹⁾ |
| 277 | L |
| 440-480 | H |
| 550-600 | E |

Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.

(1) Dual voltage coils not available in size 5-8 starters.

| Hole No. | ID | Hole Description |
|----------|----|---------------------------------------|
| 12 | D | Class 14 Starter Sz 2, 2/12 ESP OL |
| 13 | D | Class 14 Starter Sz 0-1 3/4 ESP/BM OL |
| 14 | D | Class 14 Starter Sz 2, 2/12 ESP OL |
| 15 | D | Class 14 Starter Sz 0-1 3/4 ESP/BM OL |
| 16 | D | Class 14 Starter Sz 2, 2/12 BM OL |
| 17 | D | Class 14 Starter Sz 2, 2/12 BM OL |
| 20 | D | CPT 200VA |
| 22 | D | CPT 50VA |
| 23 | D | CPT 100VA |
| 24 | D | CPT 150VA |
| 25 | D | CPT 200VA |
| 26 | D | Fuse Block 100A/600V Class R |
| 29 | D | Class 14 Starter Sz 0-1 3/4 ESP/BM OL |
| 30 | D | Class 14 Starter Sz 2, 2/12 BM OL |
| 31 | D | Class 14 Starter Sz 2, 2/12 ESP OL |
| 32 | D | CPT 200VA |
| 35 | D | Fuse Block 60A/250V Class R |
| 36 | D | Fuse Block 60A/600V Class R |
| 37 | D | Fuse Block 30A/600V Class R |
| 38 | D | Fuse Block 100A/250V Class R |
| 39 | D | Fuse Block 60A Class J |
| 40 | D | Fuse Block 100A Class J |
| 41 | D | Fuse Block 30A/250V Class R |
| 42 | D | Fuse Block 30A Class J |
| 47 | D | Disconnect 60/100A |
| 48 | D | Fuse Block 100A/600V Class R |
| 49 | D | CPT 200VA |
| 50 | D | Fuse Block 60A/250V Class R |
| 51 | D | Fuse Block 60A/600V Class R |
| 52 | D | Fuse Block 30A/600V Class R |
| 53 | D | Fuse Block 100A/250V Class R |
| 54 | E | Circuit Breaker 125A |
| 55 | D | Fuse Block 60A Class J |
| 56 | D | Fuse Block 30A/250V Class R |
| 57 | D | Fuse Block 100A Class J |
| 58 | E | Circuit Breaker 125A |
| 59 | D | Fuse Block 30A Class J |
| 61 | D | Disconnect 30A |
| 62 | D | Disconnect 60/100A |
| 63 | E | Circuit Breaker 125A |
| 64 | D | Disconnect 30A |
| 65 | E | Circuit Breaker 125A |
| 66 | D | Disconnect 60/100A |

**Note:**

All screws are to be thread forming.

(X) Use mounting hardware included in 49EB87 Enclosure Kit.

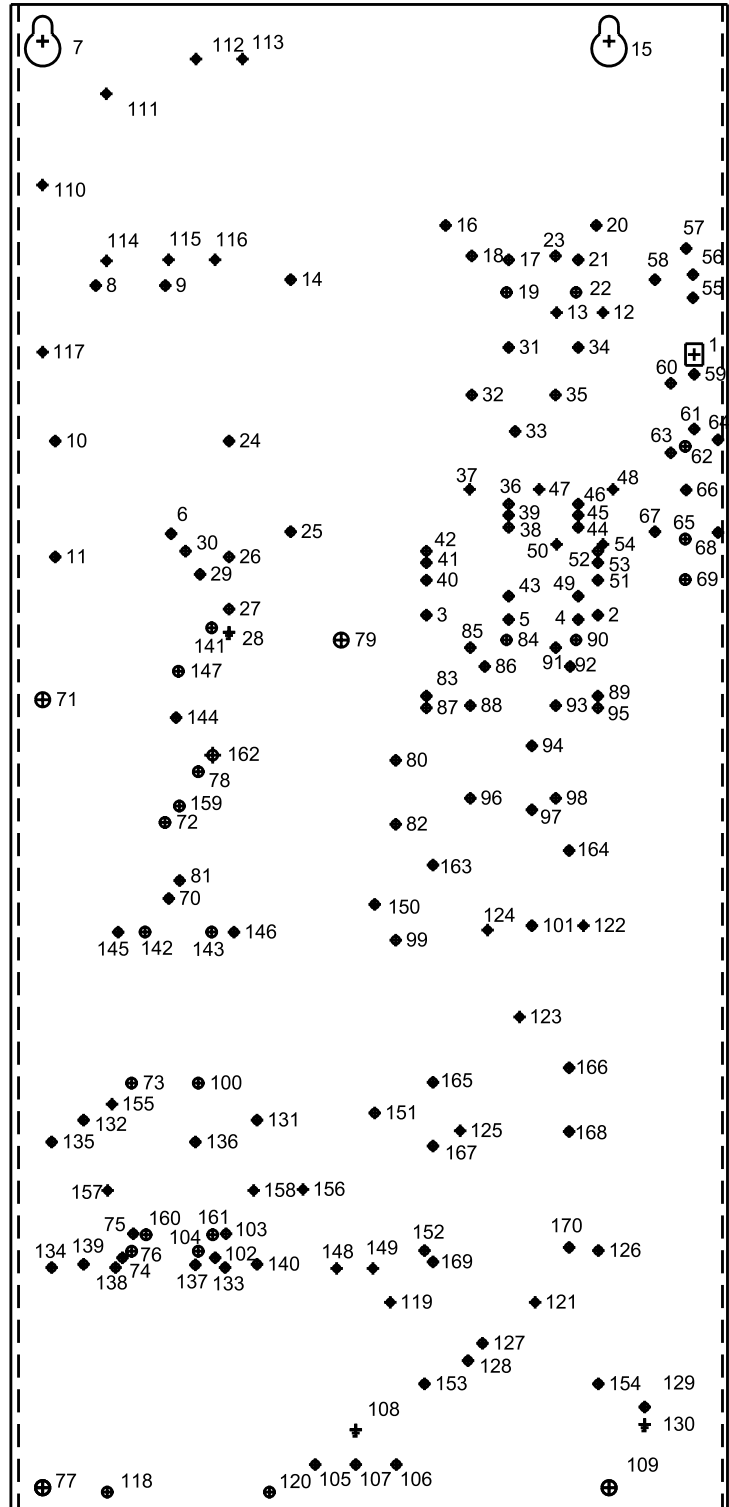
Hole ID Information

| I.D. | Description | Torque |
|------|---------------------|-----------|
| D | Screw #10-32 x 1/2 | 25 in-lbs |
| E | Screw #1/4-32 x 1/2 | 35 in-lbs |

| Hole No. | ID | Hole Description |
|----------|----|------------------------------|
| 2 | B | Fuse Block 100A/250V Class R |
| 3 | B | Fuse Block 100A/250V Class R |
| 6 | B | CPT 50VA |
| 10 | B | CPT 50-200VA |
| 12 | D | Circuit Breaker 125A |
| 13 | D | Circuit Breaker 125A |
| 14 | B | Disconnect 200A |
| 16 | B | Disconnect 100A |
| 19 | E | Circuit Breaker 250A |
| 20 | B | Disconnect 100A |
| 22 | E | Circuit Breaker 250A |
| 25 | B | Disconnect 200A |
| 26 | B | CPT 200VA |
| 29 | B | CPT 150VA |
| 30 | B | CPT 100VA |
| 33 | B | Disconnect 100A |
| 41 | B | Fuse Block 100A Class J |
| 50 | D | Circuit Breaker 125A |
| 53 | B | Fuse Block 100A Class J |
| 54 | D | Circuit Breaker 125A |
| 57 | B | Disconnect 100A |
| 58 | B | Disconnect 200A |
| 66 | B | Disconnect 100A |
| 67 | B | Disconnect 200A |
| 72 | F | Class 14 Starter Sz 3, 3/12 |
| 76 | F | Class 14 Starter Sz 3 - 4 |
| 78 | F | Class 14 Starter Sz 4 |
| 80 | B | Fuse Block 200A Class J |
| 82 | B | Fuse Block 200A/250V Class R |
| 83 | B | Fuse Block 100A/600V Class R |
| 84 | E | Disconnect 100A |
| 89 | B | Fuse Block 100A/600V Class R |
| 90 | E | Disconnect 100A |
| 94 | B | Fuse Block 200A Class J |
| 97 | B | Fuse Block 200A/250V Class R |
| 99 | B | Fuse Block 200A/600V Class R |
| 101 | B | Fuse Block 200A/600V Class R |
| 104 | F | Class 14 Starter Sz 3 - 4 |
| 110 | D | 3 RH Relay |
| 111 | D | 3 RH Relay |

Hole ID Information

| I.D. | Description | Torque |
|------|---------------------|-----------|
| B | Screw #10-32 x 1/2 | 25 in-lbs |
| D | Screw #8-32 x 1/2 | 20 in-lbs |
| E | Screw #1/4-20 x 1/2 | 35 in-lbs |
| F | Screw #1/4-20 x 1/2 | 35 in-lbs |



Note:

All screws are to be thread forming.

(X) Use mounting hardware included in 49EB87 Enclosure Kit.

The class 49EB87 enclosure kits have the appropriate power wires provided for fusible pump panel starters. Follow the steps below to install fuse clips for a fusible pump panel starter.

Step 1

Make sure you have installed the proper fusible VBII disconnect in the location outlined.
(See Component Placement Section)

Step 2

Locate the fuse trailer block assembly below the disconnect. Make sure you locate the appropriate mounting holes for the proper fuse spacing. (See Component Placement Section) A sample fuse with the right Amp and Voltage can be used to verify fuse spacing. Follow instruction guides provided with the components.

Step 3

Secure the trailer block using (2) #10-32 x 1/2" thread forming screws and torque 25-28 in-lbs.

Step 4

Install power wire provided in the 49EB87 enclosure kit to the load side of the trailer block lugs and torque (Refer to Torque Requirements) (See Figure 1)

Step 5

Install remaining ends of the power wire to the line side of the starter making sure phases are in proper sequence and torque to specified value per the starter name plate.



Figure 1

Step 1

Locate the barrier under pivot assembly. Align the mounting holes with holes in the barrier. The barrier can be temporarily held in place using a small piece of adhesive tape.

Step 2

Locate the breaker over the barrier making sure the toggle on the circuit breaker is in the notch on the pivot assembly and secure using (4) #8 – 32 x 4.06" screws and (4) 3/8 x 13/16" flat washers (supplied). Torque screws to 20 in-lbs. Remove adhesive tape from barrier. (See Figure 2)

Step 3

No adjustment to the handle assembly required. Verify that the handle mechanism turns 'ON' and 'OFF' the circuit breaker.

Step 4

Manually trip the circuit breaker and verify that the handle assembly resets the circuit breaker. If the circuit breaker does not reset, contact tech support for assistance.

Step 5

Verify that the door cannot be opened with the handle in the 'ON' position.

Step 6

Install power wires on the load side of the breaker and torque screws. See torque values on circuit breaker. Install wire tie (provided) as shown in Figure 3.

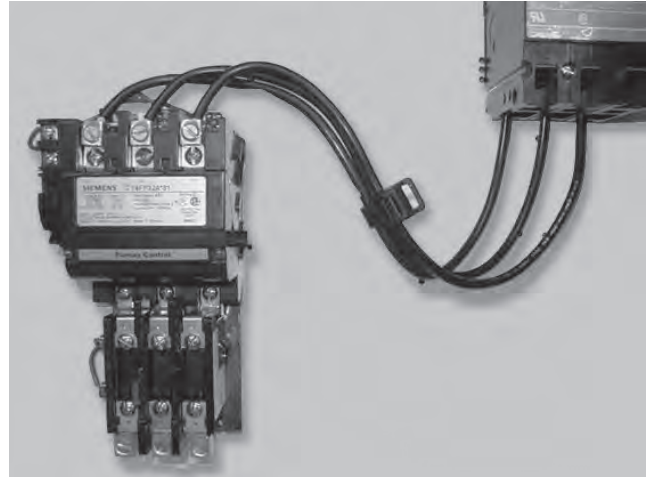


Figure 2

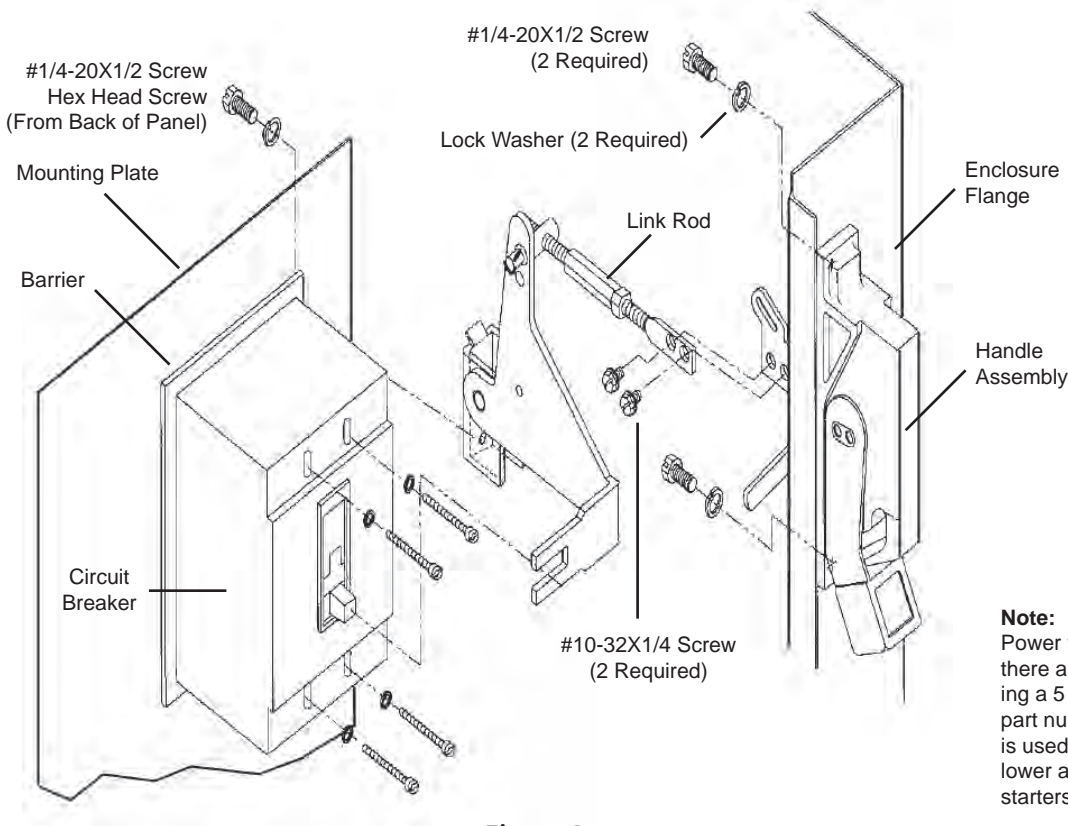


Figure 3

Note:

Power wire shall not be tin plated. Make sure there are no loose strains of wire. When installing a 5 or 10 amp breaker be sure to use wire part number D46205010 (provided). This wire is used to maintain the short circuit rating on lower amp circuit breaker style combination starters. Discard unused set of wire.

After selecting the appropriate starter from the **Component Selection Guide**, place the starter in location detailed in the **Component Placement** section of this manual. Mount and secure. Torque as specified in **Torque Requirements** section of this manual.

Using the power wire supplied, wire from the load side of the fuse block to the line side of the starter as shown in Figure 4 below. The power wire should not be cut.

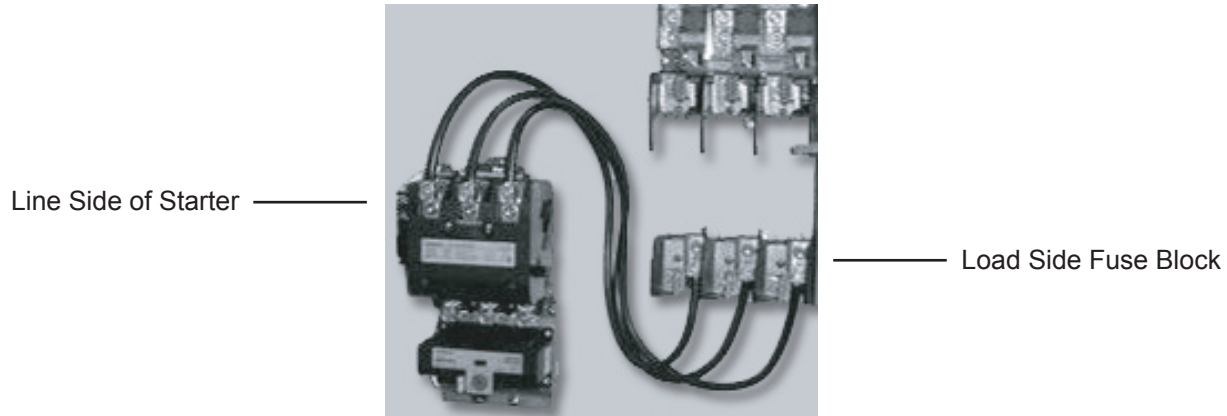


Figure 4

Reset Assembly Installation

Follow instructions included in reset assembly kit MARB except cut the reset rod to length per the table shown here.

| Starter Size | Overload Relay Type | Reset Rod Length |
|--------------|---------------------|-------------------------------|
| 1 - 1 3/4 | ESP200 Solid-State | 3 inches \pm 1/8inches |
| 1 - 1 3/4 | Bimetal Thermal | 3 7/16 inches \pm 1/8inches |
| 2 - 2 1/2 | ESP200 Solid-State | 2 1/2 inches \pm 1/8inches |
| 2 - 2 1/2 | Bimetal Thermal | 3 3/8 inches \pm 1/8inches |
| 3 - 4 | ESP200 Solid-State | 2 1/4 inches \pm 1/8inches |
| 3 - 4 | Bimetal Thermal | 2 7/8 inches \pm 1/8inches |

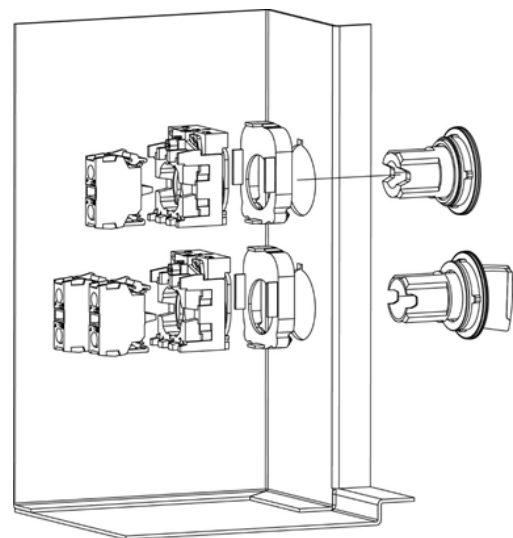


Figure 5

Pilot Device Installation and Removal

The pump panel enclosure kits include a Hand-Off-Auto selector switch and Start push button as standard (Figure 5).

Front plate thickness 1 ... 4 mm

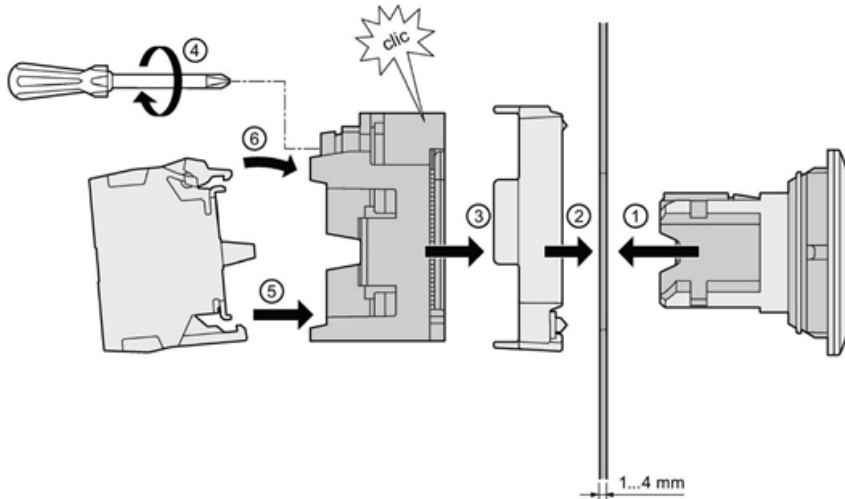


Figure 6

Procedure

1. Insert the 30 mm actuating / signaling element from the front into the opening of the front plate.
2. Fit the adapter from behind.
3. Fit the holder from behind.
4. Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm)
5. Snap the contact module(s) / LED module from behind onto the holder.
Fit the narrow snap hook into the associated contour on the holder.
6. Engage the broad snap hook into the associated contour on the holder
Ensure secure latching.

Terminal designations

The terminal designations of the contact modules comply with EN 50013

The terminal designations are 2-digit, e.g. 13, 14; 21, 22:

Units digit = function digit (specified on the contact module)

- 1-2 for normally closed contacts (NC)
- 3-4 for normally open contacts (NO)

Tens digit = Identification number (specified on the holder)

- Related terminals have the same sequence digits

Terminal designation example (Figure 7)

Left-hand module:

- Sequence digit on holder = 1
- Function digit on module = .3
- ➔ Terminal designation = 13

Right-hand module:

- Sequence digit on holder = 2
- Function digit on module = .4
- ➔ Terminal designation = 24

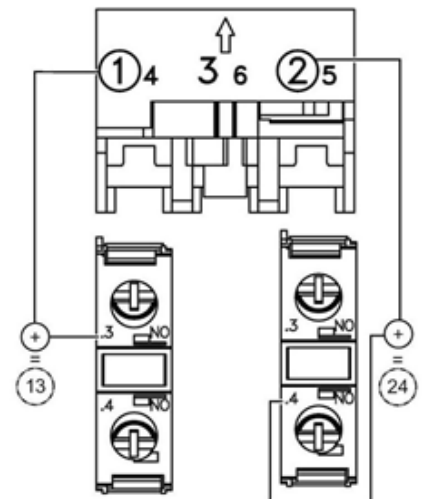


Figure 7

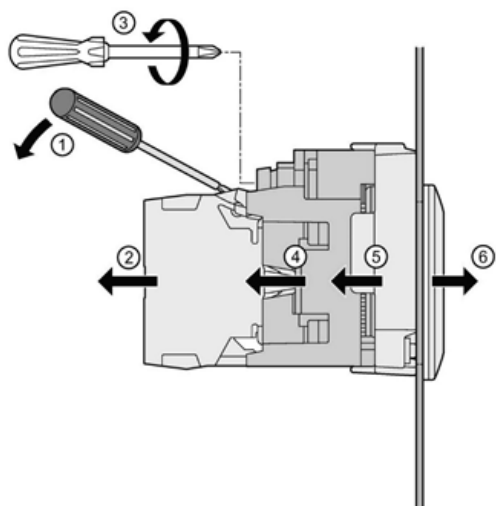
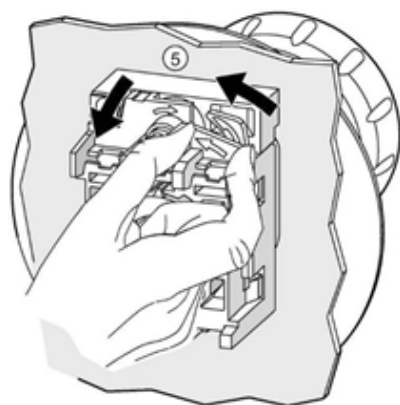


Figure 8

Procedure

1. Insert a screwdriver into the opening of the latches (broad snap hook) of the contact modules or LED modules. Press the screwdriver down to open the module latches.
2. Remove the modules.
3. Loosen the fastening screw from the holder.
4. Unlock the holder (Refer to Figure 9). Remove the holder to the rear from the actuating or signaling element.
5. Remove the adapter to the rear from the actuating or signaling element.
6. Remove the actuating or signaling element.



Unlock the holder

Figure 9

Torque Requirements

All screws intended for mechanical connection (such as mounting of components) shall use the torque values that are recommended per the instruction sheet. If no instruction sheet is supplied, or the torque value is not stated, then follow tables below.

Mechanical Connections

| Tightening Torques (In Metal) | | Tightening Torques (in Plastic) | | Tightening Torques (Thread Forming Screws) | |
|----------------------------------|-------------------------|------------------------------------|-------------------------|--------------------------------------------------|----------------------------|
| Screw Size | Min. Torque (In-Lbs) | Screw Size Type 25 | Min. Torque (In-Lbs) | Screw Size | Min. Torque (In-Lbs) |
| #2 | 3 | 2-32 | 3 | 6-32 | 14 |
| #3 | 4 | 3-28 | 4 | 8-32 | 20 |
| #4 | 6 | 4-24 | 6 | 10-32 | 25 |
| #5 | 8 | 5-20 | 8 | 1/4 - 20 | 35 |
| #6 | 11 | 6-20 | 10 | | |
| #8 | 20 | 8-28 | 18 | | |
| #10 | 32 | 10-16 | 29 | | |
| #12 | 47 | 12-14 | 42 | | |
| 1/4 | 75 | 1/4 - 24 | 68 | | |
| 5/16 | 100 | | | | |
| 3/8 | 200 | | | | |
| 1/2 | 300 | | | | |

Electrical Connections

| Control / Power Wire | Wire Gauge Range | Min. Torque - Inch lbs | |
|--------------------------|------------------------|------------------------|----------|
| Starter / Contactor Size | | Stranded Wire | Stake-on |
| 00 & 0 | All | 20 | 20 |
| 1 | ≤ 10 | 20 | 20 |
| 1 | 8 | 35 | 20 |
| 1 3/4 | ≤ 10 | 20 | 20 |
| 1 3/4 | 8 | 20 | 20 |
| 1 3/4 | 6 | 35 | 20 |
| 2 , 2 1/2 | ≤ 10 | 45 | 35 |
| 2 , 2 1/2 | 8 | 40 | 35 |
| 2 , 2 1/2 | 6 | 45 | 35 |
| 3 , 3 1/2 | ≤ 10 | 35 | 35 |
| 3 , 3 1/2 | 8 | 60 | 35 |
| 3 , 3 1/2 | 6 - 4 | 110 | 35 |
| 3 , 3 1/2 | ≥ 3 | 120 | 35 |
| 4 | ≤ 10 | 35 | 70 |
| 4 | 8 | 60 | 70 |
| 4 | 6 - 4 | 110 | 70 |
| 4 | ≥ 3 | 120 | 70 |
| Circuit Breaker | | | |
| Amps 3 - 35 | | Refer to torque | 35 |
| 40 - 150 | | level on device | 35 |
| Fusable Disconnects | | | |
| Pressure Plate 30 - 35A | | Refer to torque | 20 |
| Box Lugs 60 - 100A | | level on device | 35 |
| Terminal Blocks | | Refer to torque | 11 |
| 16 - 12 Ga. | | level on device | 20 |
| 10 - 8 Ga. | | | 35 |
| 6 - 4 Ga. | | | |
| Coil Terminals | | 10 - 15 | |
| Overload Terminals | | 10 - 15 | |

Lug and Clamp Torque

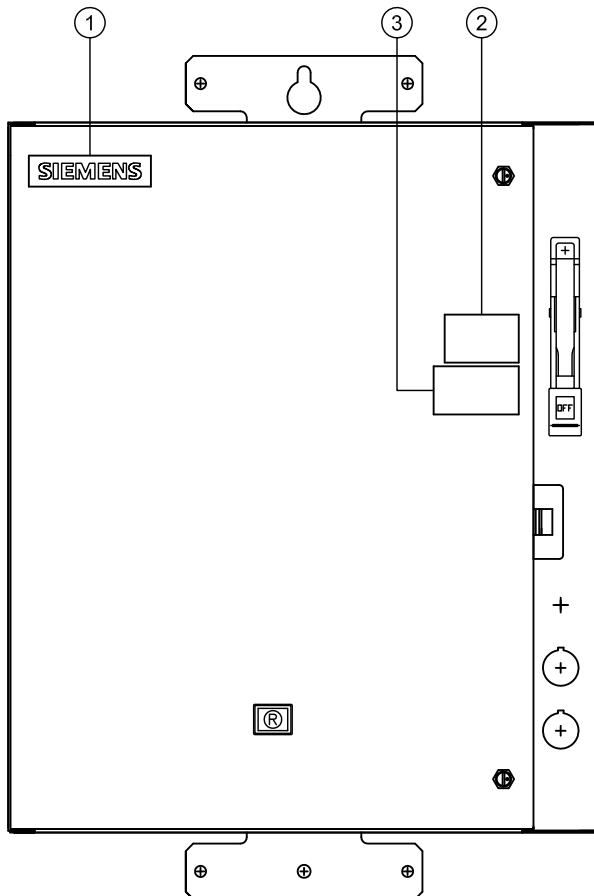
| Screw Size | Description | Minimum Torque |
|---------------|----------------------------------------|-------------------|
| #8 or Smaller | Pressure or Saddle Clamp Slotted | 12 in-lbs |
| #10 or Larger | | 35 in-lbs |
| 5/16 | Lug - Slotted | 20 in-lbs |
| 3/8 | Lug - Slotted | 20 in-lbs |
| 7/16 | Lug - Slotted | 35 in-lbs |
| 1/8 | Lug - Allen Head | 35 in-lbs |
| 3/16 - 1/4 | Lug - Allen Head | 50 in-lbs |
| 5/16 - 3/8 | Lug - Allen Head | 75 in-lbs |
| 7/16 - 1/2 | Lug - Allen Head | 100 in-lbs |
| 9/16 | Lug - Allen Head | 125 in-lbs |
| 5/8 - 11/16 | Lug - Allen Head | 150 in-lbs |
| 3/4 | Lug - Allen Head | 200 in-lbs |

Label Installation

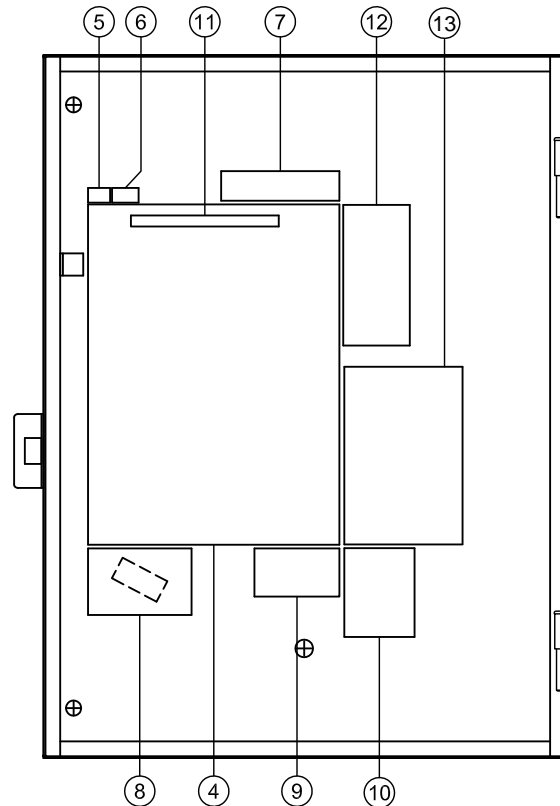
1. When installing labels, locate as outlined in the figures shown below.
2. Fill out the 'Modified to' label (11) by writing in the new catalog number with black ink in the space labeled 'Modified To' making sure that the catalog number does not run off the label. Enter the Company name and initials of the person making the modification in the area labeled 'By' and the date the modification was made in the area labeled 'Date'.
3. When installing a starter with a thermal overload relay, apply the heater table label (12) furnished with the starter.
4. Check off the appropriate box (s) for modifications made to the unit on the exterior carton label using black permanent marker.
5. Labels (7) and (11) are part of the Carton Tri-Label.

- (1) Siemens Logo 25-157-003-003
- (2) Warning Label D46264001
- (3) Service Label D44607040
- (4) Composite Label D63677012 (Wiring Diagram)
- (5) NEMA Type Label D29578004
- (6) UL Label D36002015
- (7) Disc. Term. & Wire Spec. Label
- (8) Yellow Envelope SFFM-16160 & Service Disconnect Label D27009001
- (9) Short Circuit Rating Label D68790001
- (10) Warning Label D68791001
- (11) 48EC Product ID / Modified to: (To be filled in when unit is modified)
- (12) Heater Table (Bi-Metal Overload Only)
- (13) 3SU1 Pilot Device Assembly Instruction

Exterior view of door



Interior view of door



1. Follow these instructions if the pump panel, assembled from the enclosure kit, is to be shipped to a different location or stored for a future installation.
These instructions may be skipped if the pump panel will immediately be installed. If it is not possible to reuse the original container, find a suitable box and package the items securely. A suitable box is one in which all items can be placed without deforming the box flaps. This can be accomplished by completely filling the box with packaging material after items have been placed in it. The box should be firm and not subject to crushing during normal handling. Affix an appropriate size, blank label to the box. Complete the label by printing the correct catalog number. Fill in any other applicable information on the shipping label.
2. Securely tape the box closed. Be sure that the tape does not prevent the ability to read any part of the shipping label.
3. Fill in the carton label with the catalog number of the assembled pump panel and any other applicable information.

Installation Instructions

For instructions on installing the assembled pump panel, refer to instruction sheet 87-HFG, included in the enclosure kit.