

# EPS-PB10 Series Control Stations

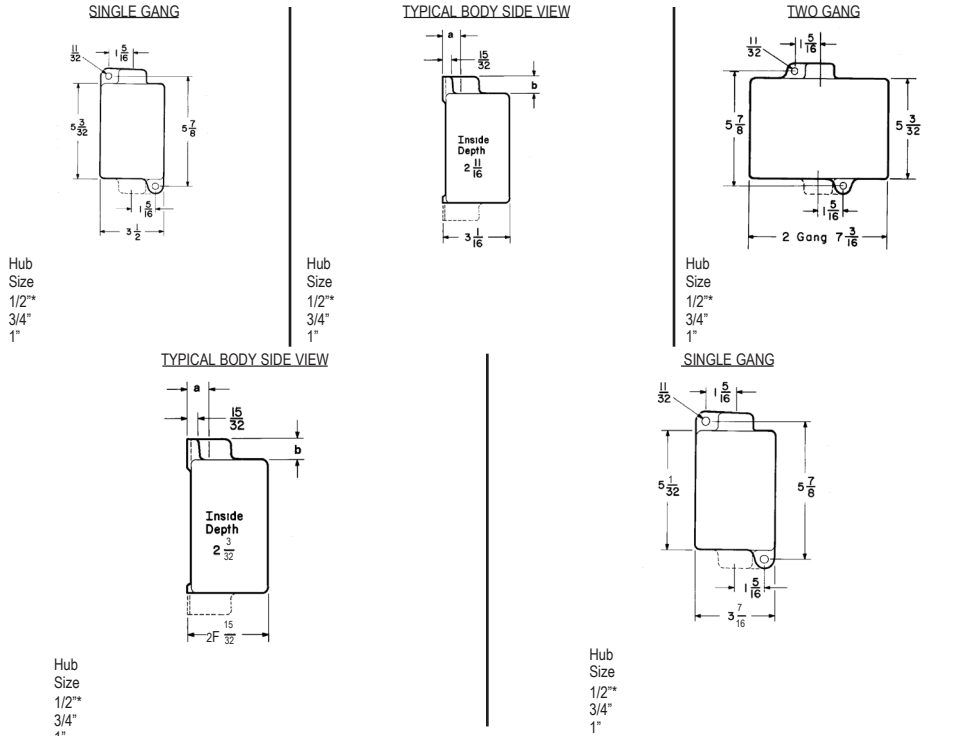
## Installation & Maintenance Information



SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

### APPLICATION

Control Devices are used in conjunction with magnetic starters or contactors for remote control of motors and to visually indicate that the desired function is being performed. The pushbutton stations, selector switches and factory sealed pilot lights are used separately or in combination with a variety of standard features and special options available.



\* Reducers required

### INSTALLATION OF BACK BOX

#### WARNING

To prevent explosions and shock hazard, electrical power must be OFF before and during installation and maintenance.

- Select a mounting location that will provide suitable strength and rigidity for supporting all contained wiring and control devices. Figure 1 shows the mounting dimensions of all Back Boxes. Drill and tap mounting holes in this location for the 5/16-18 bolts.
- Securely fasten the device body to the mounting surface, then attach the body into the conduit system.

Conduit Seal Requirements (Class I, Division 1)		
	Standard	XT Suffix
EDS	None	Within 1.5"
EDS GB Suffix	Within 1.5"	Not Allowed
EFS	Within 5 ft. on 1" conduit, none for 1/2" or 3/4" hub size	Within 18"

NOTE: Seals are not required for Class I, Division 2.

#### WARNING

To ensure proper installation, hazardous location information indicating the class and group the product is approved for is marked on the nameplate of each device. Conduit sealing fittings may be required to be installed to comply with the requirements of the latest edition of the NEC, Section 501-5 and/or 502-5, plus any other applicable standards. Review nameplate for specific information.

- Pull supply wires into the enclosure, making them long enough to make the required connections. Each conductor should be long enough to extend at least 3 inches outside the cover opening.
- Select the proper cover for assembly. Similar cover and back box materials can only be used (e.g. iron with iron; aluminum with aluminum). Make the electrical connection utilizing the wiring scheme established for your system. See 'Assembly of Pushbuttons and Pilot Lights' for instructions on how to assemble the cover assemblies. Disassembly of internal components may be required. See Figures 9 and 10 for wiring diagrams for the pushbuttons and pilot lights, respectively.

#### WARNING

To avoid explosions, check for dirt, grit or other foreign material on the mating surfaces of the cover and the back box. Be certain that each surface is wiped completely clean before assembling. Surfaces must seat fully against each other to provide a proper explosionproof joint.

- When cover assembly with operators is completely assembled per below steps, test wiring for correctness with continuity checks and also for unwanted grounds with an insulation resistance tester.
- Carefully assemble cover assembly to the device body with the cover screws. Check the tightness of the cover screws to ensure that the cover assembly is securely fastened.

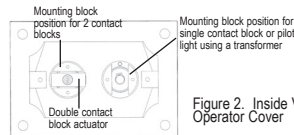


Figure 2. Inside View of Two Operator Cover

### ASSEMBLY OF PUSHBUTTONS

- Knowing the back box configuration, select the proper size cover (1, 2 or 3 device) for application.
- Select the DL Legend Plates with proper markings or marking windows. Orient them horizontally on the cover as desired. Note a marking window is provided for field marking customer's specific terms.

Description	Number of Contact Blocks (ESWP126)	Sub-assembly Catalog Number
Single pushbutton	1	DEV11
Single pushbutton – momentary	1	DEV11-S111
Single mushroom head pushbutton with lockout	1	DEV11-S153
Single mushroom head pushbutton – maintained with lockout	1	DEV11-S769
Single pushbutton – red	1	DEV11 R
Single pushbutton – green	1	DEV11 G
Single pushbutton	2	DEV12
Single pushbutton – momentary	2	DEV12-S111
Single mushroom head pushbutton with lockout	2	DEV12-S153
Single mushroom head pushbutton – maintained with lockout	2	DEV12-S769
Single pushbutton – red	2	DEV12 R
Single pushbutton – green	2	DEV12 G
Double pushbutton	2	DEV22
Double pushbutton – red	2	DEV22 R
Double pushbutton – green	2	DEV22 G
Two position selector switch	2	DEV42*
Three position selector switch – center OFF	2	DEV43*
Three position selector switch	2	DEV44*

Table 1 \*Including all selector switch options

- Reference Table 1 to determine the sub-assemblies needed to suit your specific requirements.

#### Single pushbutton with one contact block

- Install pushbutton operator assembly to the front side of the cover by threading it down tight to the cover in the desired location. Use a DL Legend Plate, if required, as noted in 'Assembly of Pushbuttons.'
- Position the lockout slots on the guard so it does not interfere with an adjacent device. Note the operator may be backed off up to 1/2 turn to orient the lockout slots without defeating the explosionproof integrity.
- On the inside of the cover, fasten the mounting block to the threaded portion of the pushbutton assembly. Orient the mounting block as shown in Figure 2. This step will allow the contact block to be in the proper position. Tighten the set screw, thereby locking the pushbutton assembly to the cover (see Figure 3).
- Assemble the necessary contact block per instructions in 'Installation of Contact Block' section.

#### Single pushbutton with two contact blocks

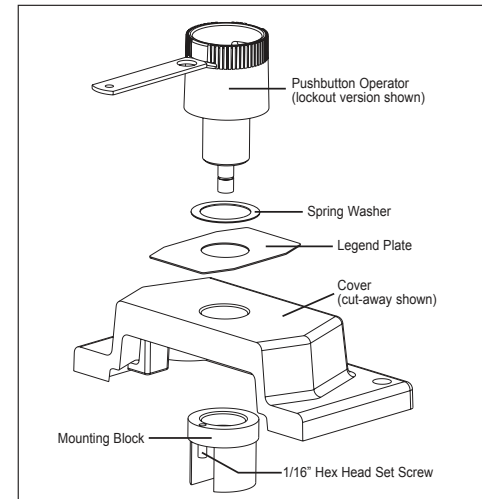


Figure 3. Assembly of Single Pushbutton Operator with One Contact Block

- Install pushbutton sub-assembly to the front side of the cover by threading it down tight to the cover in the desired location. Use a DL Legend Plate, if

required, as noted above. Note that the guards with lockout holes should allow a hasp of the lock to not interfere with an adjoining device. Fasten the mounting block to the inside of the cover. Orient the mounting block so that the contact blocks will be in the desired position (see Figure 2). Tighten the set screw, thereby locking the pushbutton assembly to the cover (see Figure 4 on next page). Using the one (1) #6-32 x 5/16 pan head screw and lock washer, fasten the double contact block actuator to the plunger of the pushbutton operator assembly. Next, fasten the mounting plate to the mounting block using the two (2) #4-40 pan head screws provided. Assemble the necessary contact blocks per instructions in 'Installation of Contact Block' section.

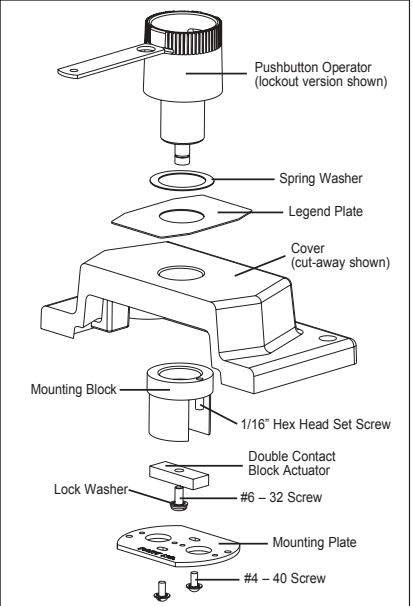


Figure 4. Assembly of Single Pushbutton Operator with Two Contact Blocks

#### Double pushbuttons

- Install double pushbutton bearing and spring washer to the front side of the cover by threading it down tight to the cover in the desired location (see Figure 5). If a DL Legend Plate is required, first position the legend plate onto the cover then the spring washer. Thread the bearing into place. Next, position the pushbutton guard onto the front of the cover with one rectangular opening above the other. Using the two (2) #5-40 x 3/16 screws, fasten the guard so that it is square to the cover. On the inside of the cover, thread the mounting block to the bearing. Orient the mounting block so that the contact blocks will be in the desired position (see Figure 2).
- Tighten the set screw, thereby locking the pushbutton assembly to the cover. From the inside of the cover, insert the two (2) plungers through the pass through holes in the bearing.
- On the outside of the cover, place one (1) spring onto each plunger. Using a #6-32 x 3/8 countersunk screw, fasten the proper colored pushbutton button onto the end of each plunger in the operator location as required. Next, fasten the mounting plate to the mounting block using the two (2) #4-40 x 1/4 pan head screws provided.
- Assemble the necessary contact blocks per instructions 'Installation of Contact Block' section.

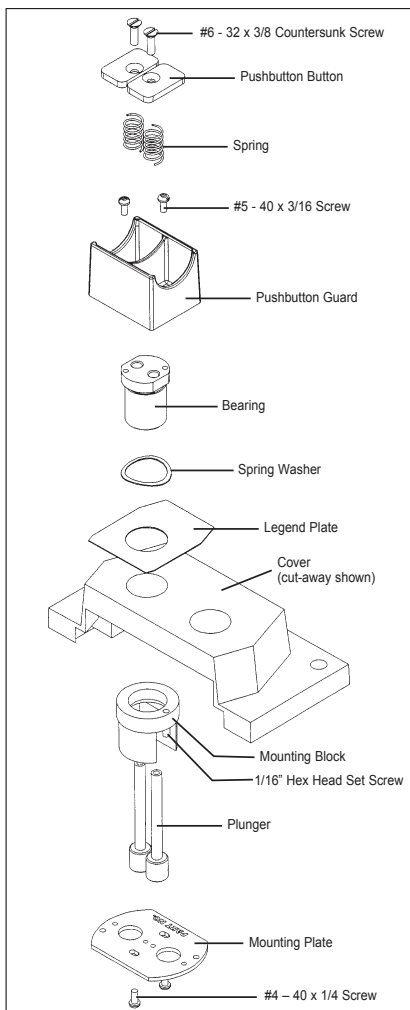


Figure 5. Assembly of Double Pushbutton Operator

**Momentary mushroom head pushbutton with one contact block**

- Install pushbutton sub-assembly to the front side of the cover by threading it down tight to the cover in the desired location. Use a DL Legend Plate, if required, as noted in 'Assembly of Pushbuttons.'
- Fasten the mounting block to the inside of the cover. Orient the mounting block so that the contact block is in the desired position as shown in Figure 2. This step will allow the contact block to be in the proper position. Tighten the set screw, thereby locking the pushbutton assembly to the cover (see Figure 6). Tighten the set screw, thereby locking the pushbutton assembly to the cover.
- Assemble the necessary contact block per instructions below.

**Momentary mushroom head pushbutton with two contact blocks**

- Install pushbutton sub-assembly to the front side of the cover by threading it down tight to the cover in the desired location. Use a DL Legend Plate, if required, as noted in 'Assembly of Pushbuttons' section.
- Fasten the mounting block to the inside of the cover. Orient the mounting block so that the contact blocks will be in the desired position (see Figure 2). Tighten the set screw, thereby locking the pushbutton assembly to the cover (see Figure 6). Using the one (1) #6-32 x 5/16 pan head screw and lock washer, fasten the double contact block actuator to the plunger of the pushbutton operator assembly. Next, fasten the mounting plate to the mounting block using the two (2) #4-40 x 1/4 pan head screws provided.
- Assemble the necessary contact blocks per instructions in 'Installation of Contact Block' section.

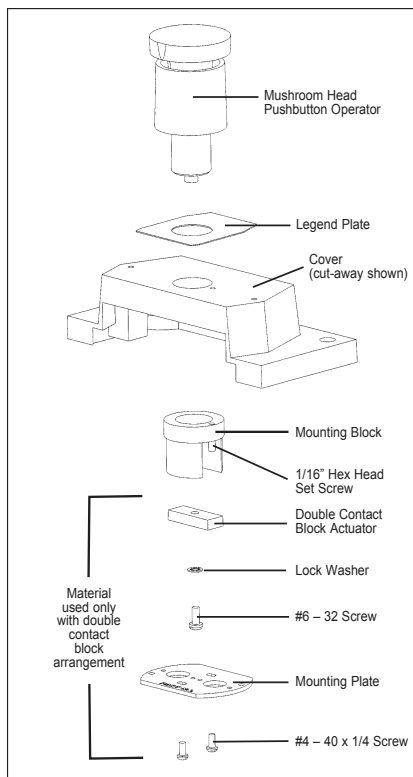


Figure 6. Assembly of Momentary Mushroom Head Pushbutton Operator

**Maintained mushroom head pushbutton with contact block(s)**

- Referring to Figure 7, install pushbutton sub-assembly, including lockout tab, to the front side of the cover by threading it down tight to the cover in the desired location. Orient this assembly so that the lockout tab allows a hasp of the lock to not interfere with an adjoining device. Use a DL Legend Plate, if required, as noted in 'Assembly of Pushbuttons.'
- This step will allow the contact block(s) to be in the proper position. Fasten the mounting block to the pushbutton sub-assembly on the inside of the cover. If using one (1) contact block (operator part number DEV11-S769), orient the mounting block so that the two (2) drilled and tapped mounting holes are parallel to the long side of the cover. If two (2) contact blocks (operator part number DEV12-S769) are to be used, orient the contact block mounting screws so that the two (2) drilled and tapped mounting holes are perpendicular to the long side of the cover. Tighten the set screw using a 1/16" Allen wrench, thereby locking the pushbutton assembly to the cover (see Figure 7). For DEV12-S769 only, using #6-32 screw and lock washer, fasten double contact block actuator to operator plunger. The countersunk hole is designed to accept this screw head. Fasten mounting plate to mounting block using two (2) #4-40 screws and washers per Figure 7.
- Assemble the necessary contact block(s) per instructions in 'Installation of Contact Block' section.

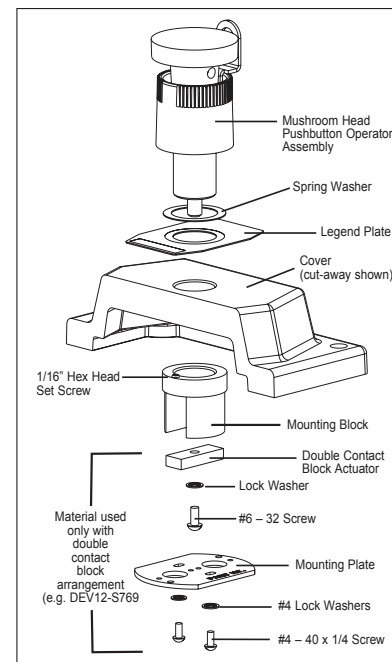


Figure 7. Assembly of Maintained Mushroom Head Pushbutton Operator

- Note the mounting block may need to be backed off 1/2 turn to ensure proper operation of contact blocks.

**INSTALLATION OF CONTACT BLOCK (Catalog Number ESWP126)**

Install the required number of contact blocks to the mounting block or mounting plate.

The field wiring terminals on the contact block are marked. The "O" and "C" indicate normally open contacts; and "A" and "B" indicate normally closed contacts of the contact block. The lugs on the contact block are provided with binding head screw terminals.

- Strip the insulation on each conductor wire back 3/8".
- Use a slotted or Phillips head screwdriver to loosen the field wiring terminal screws the required three (3) or four (4) turns.
- Insert the bare wire conductor(s) on either side of the terminal screw(s), under the terminal clamp(s) and securely tighten the screw(s).

Note: Do not exceed 15 in.-lbs. of torque.

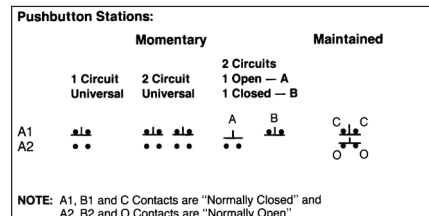


Figure 8. Wiring Diagram for Pushbutton Stations

**ASSEMBLY OF PILOT LIGHTS (INCLUDING TRANSFORMERS)**

Select the DL Legend Plates with proper markings or marking windows. Orient them horizontally on the cover as desired. Note a marking window is provided for field marking customer's specific terms. Assemble the pilot light assembly through the legend plate and onto the cover. Tighten the pilot light assembly to the cover until it bottoms out on the thread. Use the 3/4-20 lock nut on the inside of the cover to secure the pilot light to the cover. See Figure 9.

If using a transformer, do NOT use the 3/4-20 lock nut. Fasten the mounting block to the pilot light assembly from the inside of the cover. Orient the mounting block so that the transformer does not interfere with an adjoining device, as shown in Figure 2. Tighten the set screw, thereby locking the pushbutton assembly to the cover (see

Figure 9). Mount the transformer to the mounting block using the mounting screw and lock washer. Connect both wire leads of the pilot light to the secondary side of the transformer using its white wires. Safely insulate each of these connections by use of wire nuts. The primary side of the transformer (black wires) is to be connected to the power supply. See Figure 10 for wiring diagram of pilot light.

Note that one of the holes in the mounting block is tapped to accept the mounting screw. With the lock washer on the mounting screw, insert mounting screw first into untapped hole.

Test wiring for correctness with continuity checks and also for unwanted grounds with an insulation resistance tester.

Carefully assemble cover assembly to the back box with the cover screws. Check the tightness of the cover screws to ensure that the cover assembly is securely fastened.

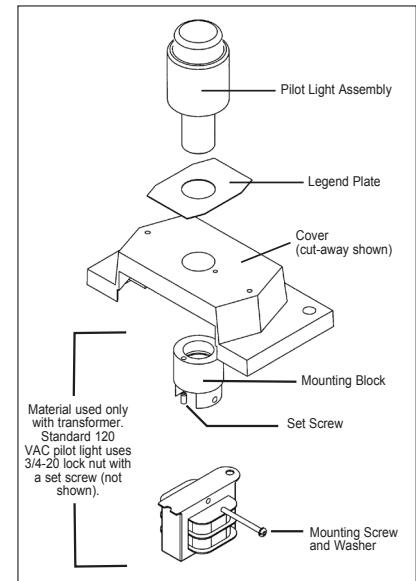


Figure 9. Assembly of Pilot Light (Including Transformers)

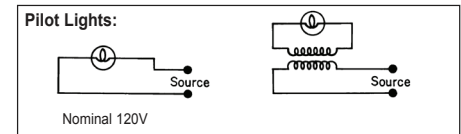


Figure 10. Wiring Diagram for Pilot Lights (Including Transformers)

**SELECTOR SWITCH**

- Referring to Figure 11, install bearing/shaft sub-assembly to the front side of the cover by threading it down tight to the cover in the desired location. Use a DL Legend Plate, if required, as noted in 'Assembly of Pushbuttons.'
- This step will allow the contact block(s) to be in the proper position. Fasten the mounting block to the bearing/shaft sub-assembly on the inside of the cover. Tighten the set screw using a 1/16" Allen wrench, thereby locking the mounting block to the cover. Orient the mounting plate on cam module assembly so that the two (2) flat sides are parallel with the long side of the cover. Then, slide operator module assembly onto shaft. Fasten the cam module assembly to the cover using #6-32 lockwashers and screws.
- Assemble the necessary contact block(s) per instructions in 'Installation of Contact Block' section.
- Orient the knob/lock tab assembly so that the indicating mark points to the desired position for full travel for both 2 and 3 position selector switches. Tighten #4-40 screw to fasten knob/lock tab assembly in this proper position.
- Referring to Figure 12, test wiring for correctness with continuity checks and also for unwanted grounds with an insulation resistance tester.
- Carefully assemble cover assembly to the device body with the cover screws. Check the tightness of the cover screws to ensure that the cover assembly is securely fastened.