

# Electric Motor Driven Clutch Operator for Engine Automation Systems

The CO3 is an electrically controlled and driven actuator for automatic operation of two position, lever action equipment. Primarily designed to engage and disengage over-center clutches on engines, the CO3 has a wide variety of applications such as opening and closing of pipeline valves, engagement and disengagement of pumps, fixture positioning in automated process control, etc. The positive action screw-type actuator is fully adjustable for length of stroke up to 6 inches (152 mm). The CO3 motor is equipped with an overload clutch that slips if overloaded. In addition, the motor is protected with an automatic reset thermal overload. The CO3 is available for 12- or 24-VDC applications and is compatible with MurphyMatic® start-stop engine controllers.

Applications include:

- Engine disc clutches
- Butterfly and ball valves
- Brakes
- Two position lever-action equipment



## Specifications

### Voltage:

CO3-12: 12-VDC, negative ground

CO3-24: 24-VDC, negative ground

**Travel (adjustable):** 6 in. (152 mm) max

**Case Material:** Cast aluminum

**Built-in Circuit Breaker:** 20 A

### Operating Force:

CO3-12: 250 lb-f (1112N) max

CO3-24: 500 lb-f (2224N) max

### Duty Cycle @ 77° F (25° C):

CO3-12: 40% max. @ 125 lb-f (556N) to 25% @ 250 lb-f (1112N)

CO3-24: 100% max. @ 75 lb-f (334N) to 25% @ 500 lb-f (2224N)

### Speed:

CO3-12: 1.2 in./sec. (3 cm/sec.) @ 0 lb-f to 1.00 in./sec. (1 cm/sec.) @ 250 lb-f (1112N)

CO3-24: 2.4 in./sec. (6 cm/sec.) @ 0 lb-f to 1.35 in./sec. (3 cm/sec.) @ 500 lb-f (2224N)

**Drive:** Self-locking ACME screw

### Current:

CO3-12: 20 amp max

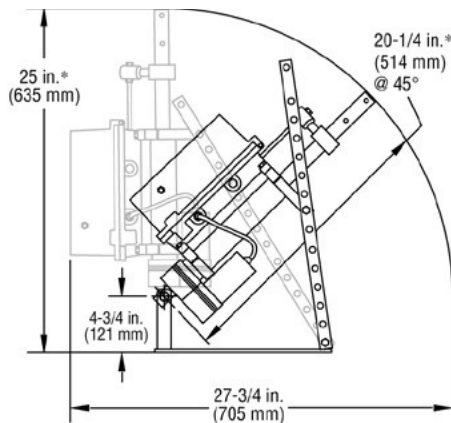
CO3-24: 14 amp max

**Operating Temperature:** -15 to 150° F (-26 to 66° C)

**Shipping Weight:** 40 lb (18.1 kg)

**Shipping Dimensions:** 25 x 14-1/2 x 12 in. (635 x 368 x 305 mm)

## Dimensions



\*These dimensions are given with the CO3 disengaged.  
When CO3 is engaged, add 6 in. (152 mm).

## Basic Operation

When the CO3 receives a signal to engage, the heavy-duty DC motor operates to extend the actuator shaft and yoke a predetermined length. Length of extension is controlled by the adjustable cams in the control housing. When disengaging, the motor reverses and retracts the actuator shaft. At engagement end of the stroke, the actuator backs off from its maximum travel to relieve pressure on the clutch or other device. Refer to Figure 4.

## How to Order

Part Number	Model and Description
Specify Model	CO3-12
	CO3-24

# Installation

1. Disengage clutch lever on the engine.
2. Remove the clutch lever and reposition it approximately 45 degrees from vertical, toward the rear of the clutch (Figure 4).
3. Locate and remove outer roller of the CO3 operating yoke (Figure 1).
4. Place the CO3 in direct line with the clutch lever until the inner roller touches the clutch lever at an approximate 90 degree angle (See detail in Figure 4).

**NOTE: Reposition clutch lever so it does not bind between rollers when actuator is fully extended and fully retracted.**

5. Bolt the CO3 to the stabilizer arm to hold the angle of incidence to the clutch arm (Figure 4).
6. Temporarily attach the CO3 mounting plate to the engine skid or base, or mark its location on the skid or base. (See Figure 2 for dimensions.)
7. Open control housing cover and locate Cam A (Figure 1). Loosen the two set screws on Cam A and slide the cam all the way to Cam B.

**NOTE: Do not disturb setting of Cam B. It is factory adjusted for proper operation.**

8. Temporarily wire Battery Negative to terminal #5, Positive to terminal #4 of the CO3 (Figure 3).
9. Apply a momentary N.O. push button between terminals #1 and #3. When the push button is pressed the CO3 actuator will extend (Figure 3).



**CAUTION: Be ready to release the push button when the clutch arm is fully engaged. Damage to the clutch or the CO3 can occur if the actuator is allowed to continue to push against the clutch arm.**

**NOTE: This is best done by energizing the CO3 for short intervals as the clutch arm approaches full engagement. Disconnect battery and remove push button from terminals #1 and #3.**

10. Firmly affix the CO3 mounting plate to the engine or skid or pad.
11. Move Cam A back toward the front end of the CO3 so that it fully depresses the roller of limit switch SW-2. Re-tighten both set screws.
12. Reconnect battery and the temporary push button across terminal #1 and #3. The actuator should back-off a short distance until clutch lever is between both rollers to insure removal of load from throw out bearings. If minor adjustment is necessary, move SW-2 forward to reduce back-off or aft to increase back-off. Maximum adjustment is 1/2 in. (13 mm). Remove momentary push button.
13. Place a N.O. momentary push button across terminals #2 and #3 (Figure 3). Press push button. Actuator should retract and disengage clutch. Actuator will back-off and stop when clutch is fully disengaged.

**Disconnect battery and remove push button from terminals #2 and #3.**

14. Reconnect battery. The CO3 is now ready for operation. A maintained contact closure across terminals #1 and #3 will engage clutch. A maintained contact closure across terminals #2 and #3 will disengage clutch.

**NOTE: Readjust CO3 after any clutch repair.**

## SALES CONTACT

**WARNING Before beginning installation of this Murphy product:**

- Disconnect ALL electrical power to the machine.
- Make sure the machine CANNOT operate during installation.
- Follow all safety warnings of the machine manufacturer.
- Read and follow all installation instructions.

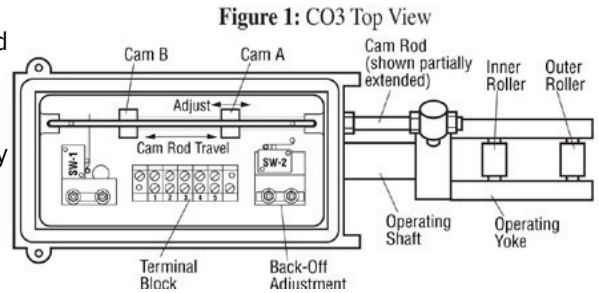


Figure 2: Mounting Plate Dimensions

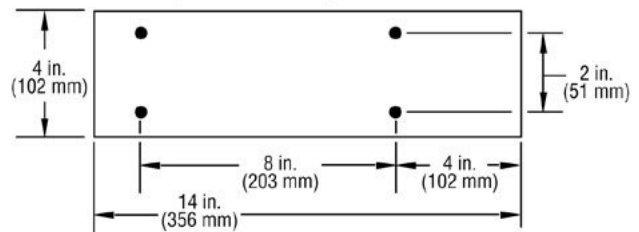


Figure 3: Customer Wiring

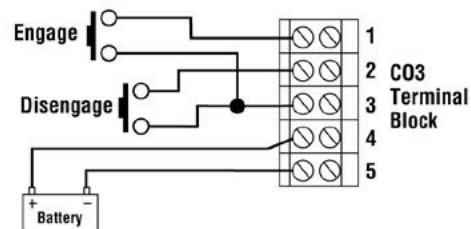


Figure 4: CO3

