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Approvals



UL Listed: UL 873

Attention



The installation and maintenance of this product must be done under the supervision of an experienced and trained specialist. Never perform work if gas pressure or power is applied, or in the presence of an open flame.

**Safety
first
O.K.**

On completion of installation on the CP-9302-702, perform a function test.



Please read the instruction before installing or operating. Keep the instruction in a safe place. You find the instruction also at www.dungs.com. If these instructions are not heeded, the result may be personal injury or damage to property.

**IFGC
UL CSA
ANSI
NFPA**

This product is intended to be used in combination with a control valve to modulate the flow of gas or air.



Any adjustment and application-specific adjustment values must be made in accordance with the equipment manufacturers instructions.

Explanation of symbols

1, 2, 3 ... = Action
• = Instruction

Specification

CP

The CP-9302-702 electronic actuator drive processes a variable input signal from a controller to provide proportional control of an electric actuator. The CP-930-702 is preset for current input (4 - 20 mA) and has additional wiring for connection to an override switch for applications requiring an external override of the input signal. The CP-9302-702 is equipped with built in jumpers and adjustable potentiometers, so that the type of input signal, deadband, input span, and start point may be readjusted in the field when necessary.



Electrical Ratings

Power supplied by the actuator

Input: 4 - 20 mA

Electrical Connection

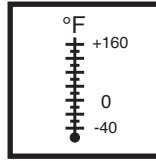
1/2" NPT conduit knockout

Deadband Adjustability (Hysteresis)

Factory set at 5 %, adjustable to 3 %

Grounded Input

Grounding either or both input wires will not cause damage



Ambient Temperature

-40 °F to +160 °F (-40 °C to + 71 °C)



Environment

NEMA Type 4 (weathertight)

Series Operation

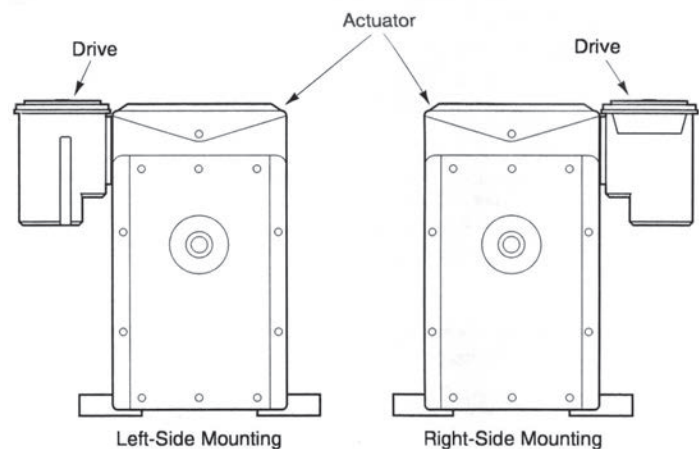
No offset in control point when operated in tandem

Open circuit Input

Drives actuator to low

Mounting

- 1) Inspect unit before installing, look for bent or broken parts or oil leaks from actuator.
- 2) Use NEAM Type 4 compatible type connectors.
- 3) Observe the barrier that separates the line voltage terminals from the low voltage which controls the actuator motor.
- 4) All connections to the line voltage side of the barrier (L1 and L2, 1, 5 and 6 terminals) must be made with Class 1 wiring; connections to the remaining terminals can be Class 2 thermostat cable if desired.
- 5) Allow 6 inches (152 mm) clearance above the actuator wiring compartment.
- 6) Disconnect all power to the valves before wiring to prevent electrical shock and equipment damage.
- 7) Do not exceed the elctrical ratings given in the specifications and on the actuator.
- 8) Attach a felxible 1/2 conduit to the actuator.
- 9) Route the wires through the conduit.
- 10) Use 14 or 16 guage wire for at least 75 °C (167 °F).
- 11) Connect the wiring to the appropriate screw terminals.
- 12) Remove the appropriate knock out on the side you wish to mount the sidebox.
- 14) Insert the sidebox into the actuator and leaving the o-ring on the sidebox.
- 15) Secure the sidebox to the actuator with the conduit locknut provided.



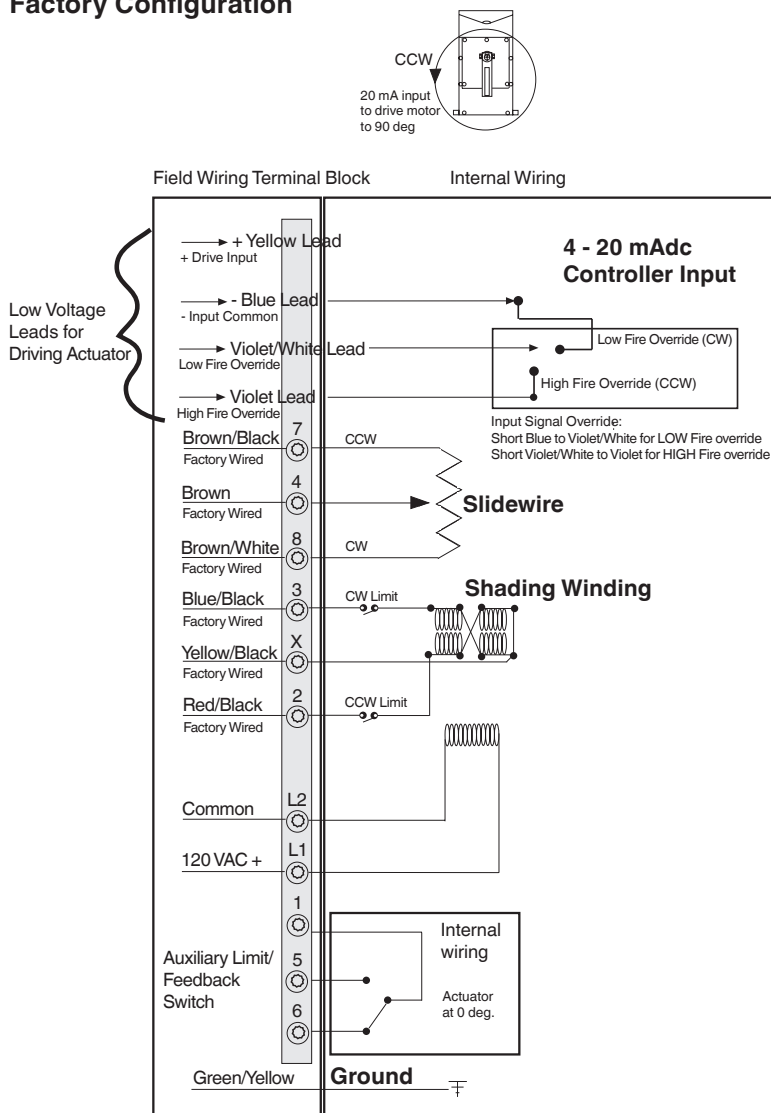
Installation

- 1) Inspect unit before installing, look for broken parts or leaks. Use NEMA Type 4 compatible type connectors.
- 2) Observe the barrier that separates the line voltage terminals from the low voltage which operates the actuator motor. All connections to the line voltage side of the barrier (L1 and L2, 1, 5 and 6 terminals) must be made with Class 1 wiring; connections to the remaining terminals can be Class 2 thermostat cable if desired.
- 3) Allow 6 inches (152 mm) clearance above the actuator wiring compartment.
- 4) Do not adjust the limit switch beyond 90° unless the standard slidewire has been replaced with a 180° slidewire; do not adjust beyond 180° for proportioning control.
- 5) In some applications, a Flame Safeguard (FSG) may have one or two overriding circuits. One being a low fire purge start and the other a high fire pre-purge. The function of the violet/white and violet wires are to provide an electrical connection so that the FSG can override, the temperature controller and drive the air damper actuator without a 4 mA signal. If such connections are not needed in the application, simply tape them off, and safely stow away.

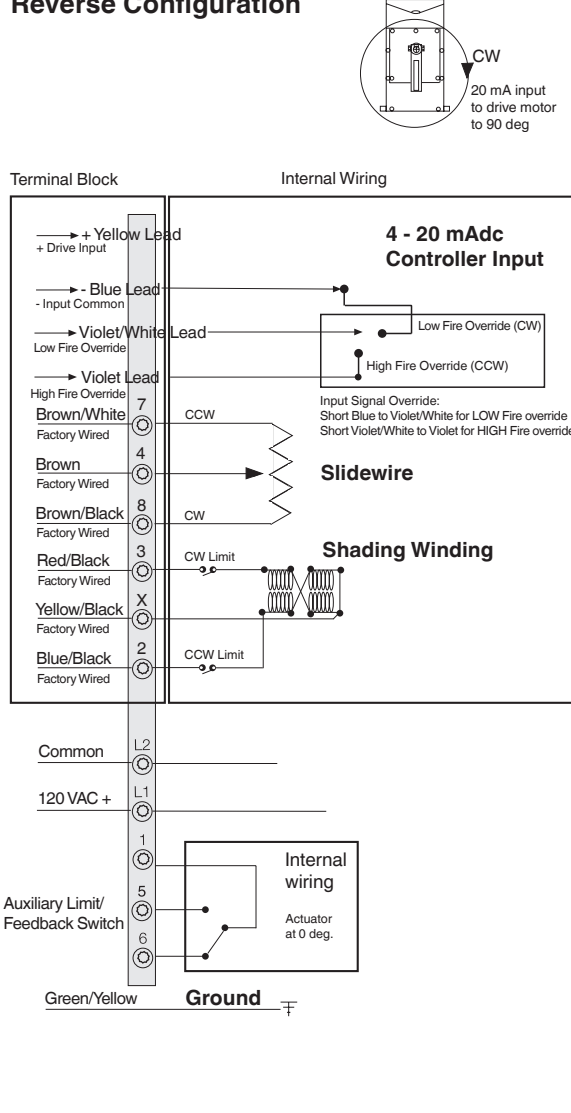
Wiring

- 1) Disconnect all power to the actuator before wiring to prevent electrical shock and equipment damage.
- 2) Do not exceed the electrical ratings given in the specifications and on the actuator.
- 3) Attach a flexible 1/2" NPT conduit to the actuator.
- 4) Route the wires through the conduit.
- 5) Use 14 or 16 guage wire for at least 105 °C (221 °F)
- 6) Connect the wiring to the appropriate terminals.

Factory Configuration



Reverse Configuration



Overriding the input signal will drive the actuator to the mechanical end of travel.



Applying line voltage to terminals input leads or to X, 2, 3, 4, 7 or 8 will permanently damage the motor.

Adjustment

If a CP-9302-702 requires adjustments to its startpoint, or input span, make adjustments according to the following:

CP-9302-702 Adjustment (Preparation)

From the factory, the actuator is calibrated such that it drives to 90 degrees with 20 mA applied and 0 degrees with 4 mA applies. To reduce the 90 degree position or increase 0 degree position, following the procedure below.

Initial Setup

- 1) Turn off all power and input signals to the actuator.
- 2) Remove the metal cover. This allows access to the potentiometers and the input/deadband jumpers.
- 3) Disconnect the drive's yellow and blue leads from the controller.
- 4) Connect the drive's leads to the corresponding lead on an instrument capable of producing 4 - 20 mA +/- 0.1 mA (current calibrator).

Minimum Position Calibration

- 1) Apply power to the actuator, then turn on the "current calibrator"
- 2) Adjust the "current calibrator" until the mA input equals the desired zero point current. This is typically 4 mA.

NOTE: The minimum position current input (zero point) potentiometer and maximum position current input (span) potentiometer can be physically turned indefinitely; but they have an effective limit of 25 turns. Relative to the start point (4 mA / 0 degrees), rotating the post CW causes the actuator to drive toward 90 degrees. Conversely rotating the pots CCW causes the actuator to drive back toward zero. This is true of both the START POINT and SPAN adjustments.

NOTE: There is a slight delay (approx. 3 seconds) in actuator movement when a potentiometer is adjusted. Make final adjustments slowly to prevent over adjusting. If adjusted properly, when the unit begins to drive, it should stop within 5 degrees. Over adjusting will lower the actual start point.

- 3) With the desired current input for the minimum position applied (typically 4 mA), adjust the zero point potentiometer so the actuator shaft drives to it's zero point (minimum position). It is best to adjust the start point potentiometer until the actuator shaft just starts to move off its zero point.

Maximum Position Calibration

- 1) Apply power to the actuator, then turn on the "current calibrator".
- 2) Adjust the "current calibrator" until the mA input equals the desired finish point (maximum position). This is typically 20 mA.
- 3) With the desired current input for maximum position (typically 20 mA), the actuator will drive towards 90 degrees. Once the actuator stops, adjust the span potentiometer so the actuator shaft drives to the maximum position. It is best to adjust the span potentiometer until the actuator shaft just moves to its finish point.
- 4) Remove the current calibrator and turn off power to the actuator. Then, reconnect the drive's leads to the controller.
- 5) Reinstall the cover.
- 6) Reapply power to the actuator and turn on the controller.

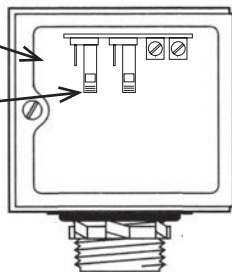
NOTE: Occasionally, an adjustment to the input span setting results in a change to the starts point setting, due to a small interaction between these two settings. After adjusting the input span potentiometer, ensure that both settings meet requirements by repeating steps 7 - 9.

NOTE: When setting the potentiometers; only move the actuator shaft in one direction. If the shaft is moved in the opposite direction, the deadband will affect the setting.

Top view of CP-9302-702 (the black box)

Metal cover of
CP-9302-702

Location of pot.
adjustments and
jumpers under
metal cover



Potentiometer Adjustments and Jumpers

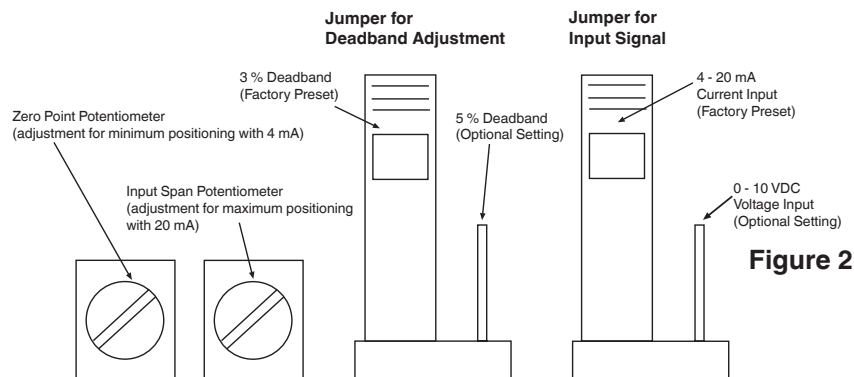


Figure 2

⚠ Do not apply a voltage source input to CP-9302 actuator drive that is configured for current input. Doing so may damage the drive.

⚠ Static charges produce voltages high enough do damage the electronic components. Follow static electricity precautions when servicing the device (s).

Testing

Test 1

Connect the drive's leads to the corresponding lead of a suitable current signal source (current calibrator). Apply power to the actuator, then turn on the current signal source (current calibrator). Adjust the current signal source (current calibrator) until the mA meter reading equals the desired zero point current (2 to 16 mA). Adjust the current signal source (current calibrator) until the mA meter reading equals the finish point current. With the desired finish point current applied, the actuator shaft should drive to the finish point. If the actuator fails this test repeat the CP-9302.702 adjustment section. Short the violet/white wire to the violet wire; the actuator shaft should turn counterclockwise. Short the violet / white wire to the blue wire; the actuator shaft should turn clockwise. When you break the connection between the violet / white and violet wires, the shaft should return fully clockwise. If the actuator fails this test, perform Test 2.

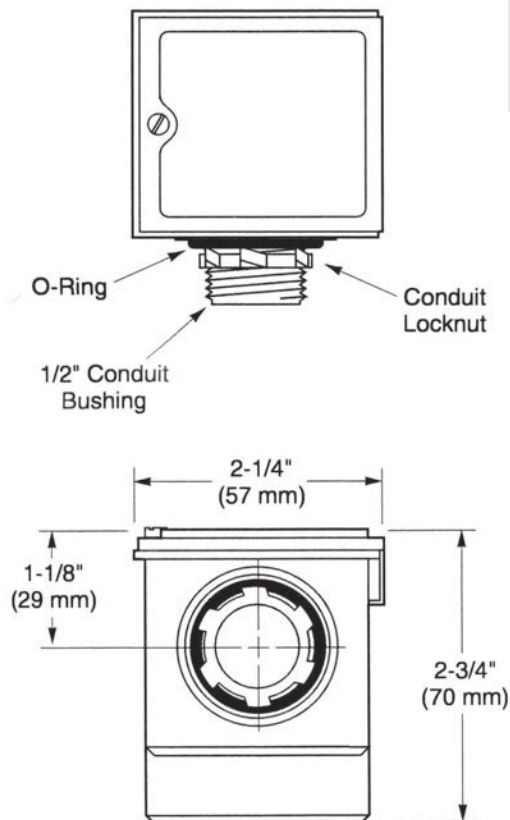
Test 2

Disconnect the yellow/black wire from terminal "X". Jumper actuator terminal "X" to terminal 2; the actuator shaft should turn clockwise. When the connection between terminals "X" and 2 is broken, the shaft should remain stationary.

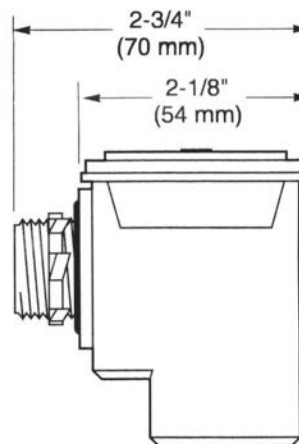
Then jumper terminal "X" to terminal 3; the shaft should turn counterclockwise. If the actuator passes this test, but failed Test 1, the side-mounted control is defective and must be replaced.

If the unit failed both tests, the actuator itself is defective and must be replaced. Contact Dungs for replacement information.

Dimensions



! When replacing a CP 8391-703 control unit with a CP 9302 702 in NEMA Type 4 applications, a seal must be installed into the unused conduit knock out to maintain NEMA Type 4.



We reserve the right to make modifications in the course of technical development.



Karl Dungs, Inc.
 3890 Pheasant Ridge Drive NE
 Suite 150
 Blaine, MN 55449, U.S.A.
 Phone 763 582-1700
 Fax 763 582-1799
 e-mail info@karldungsusa.com
 Internet <http://www.dungs.com/usa/>

Karl Dungs GmbH & Co. KG
 P.O. Box 12 29
 D-73602 Schorndorf, Germany
 Phone +49 (0)7181-804-0
 Fax +49 (0)7181-804-166
 e-mail info@dungs.com
 Internet <http://www.dungs.com>