



These installation instructions are intended for use with the ANSUL® HF Electric Actuator (Part No. 73327). Personnel responsible for the installation, recharge, or maintenance of an electrically-actuated Carbon Dioxide or INERGEN® Fire Suppression System must read and fully understand these instructions before attempting to install or service an HF electric actuator.

WARNING

The fire suppression system could actuate, releasing INERGEN agent or hazardous, high pressure Carbon Dioxide causing possible serious injury or death if these instructions and precautions are not followed. Always read instructions and follow them carefully during installation.

APPLICATION

When installed in accordance with article 510.2 of the National Electrical Code, the HF electric actuator (Part No. 73327) may be used in the following hazardous locations:

- N.E.C. Class I, Division 1, Groups B, C, D
- N.E.C. Class II, Division 1, Groups E, F, G

The HF electric actuator is approved for use in temperature ranges of –65 °F to 130 °F (–54 °C to 54 °C), depending on the type of system.*

* For hazardous locations, the HF electric actuator is approved for use in temperature ranges of –13 °F to 130 °F (–25 °C to 54 °C).

APPROVED VALVES

The HF electric actuator is designed for installation on, and electric actuation of **only** the following valves:

Valve	Part No.
CV-98 INERGEN Container Valve**	423033
CV-98 CO ₂ Container Valve**	423685
Valve, Selector,** 1 1/4 in., 1 1/2 in., 2 in.	427150
Valve, Selector,** w/ Pneumatic Actuator, 2 in., 2 1/2 in., 3 in.	57433
Valve, Selector,** w/ Pneumatic Actuator, 4 in.	57445
Valve, Selector,** Pressure Operated Actuator, 1 in., 2 in.	428566
200-Bar CV-98 Australian Valve	426679
150-Bar CV-98 Australian Valve	423689

** Booster Actuator (Part No. 428949) must be used in combination with the HF actuator.

When used with the above approved valves, see appropriate installation and maintenance manual (Part No. 427604 – CO₂; Part No. 416655 – 150 Bar INERGEN agent; and Part No. 430149 – 200 Bar INERGEN agent) for approved system temperature ranges.

WARNING

When the HF electric actuator is armed, the internal pin assembly is under high spring tension. Never attempt to disassemble the HF electric actuator under any circumstances as the pin assembly could act as a dangerous projectile, causing possible serious injury.

DESCRIPTION

The HF electric actuator specifications are:

Nominal Voltage	Rated Voltage		Actuator Part No.
	Minimum	Maximum	
12 VDC @ 0.57 amps	10.4 VDC*	14 VDC	73327

* Minimum operating voltage is 9.0 VDC

CAUTION

If maximum voltage is exceeded, the internal components could be damaged resulting in actuator malfunction when attempting to reset the actuator or at next operation. The actuator will not function if minimum voltage is not applied during operation. Make certain control unit release circuit is within actuator electrical rating. Control unit release circuit must be polarity reversing.

The swivel coupling at the lower actuator body has 1 1/4–18 female threads for connection to the booster actuator or approved valves. The 1 1/4 –18 male threads at the top of the actuator are provided for attachment of additional actuators. When additional actuators are not used, a protective cap (black) is provided to prevent access to the actuator pin.

The blue (+) and black (–) wire leads exit from the side opening which has female threads for the installation of a standard 1/2 in. conduit connector.

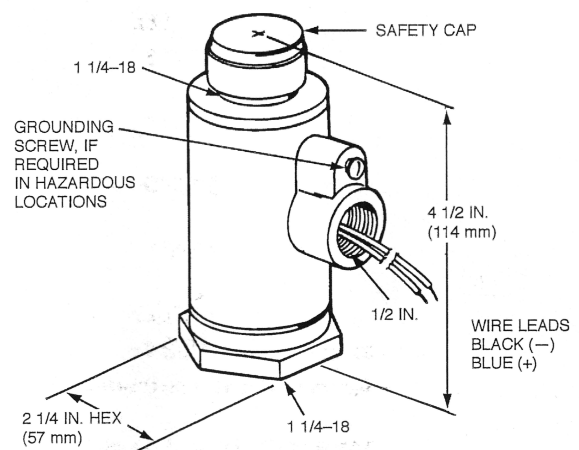


FIGURE 1
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FIGURE 4a
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INSTALLATION (Continued)

Wiring (Continued)

Z-10 SINGLE HF ACTUATOR – MAIN/RESERVE SWITCH
 1 – 12 VDC HF
 ELECTRIC
 ACTUATOR

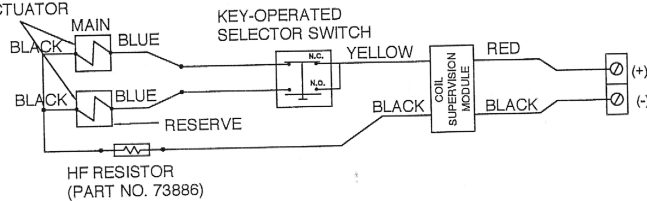


FIGURE 4b
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4. When using the HF electric actuator in hazardous locations, a conduit seal must be installed within 18 in. (457 mm) of the actuator conduit connector as shown in Figure 5. All wiring must be in accordance with Articles 500 through 503 of the National Electrical Code.

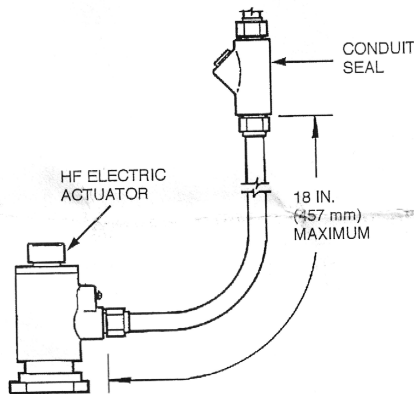


FIGURE 5
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Checking and Arming

⚠ WARNING

If the actuator pins are not fully retracted, the fire suppression system will actuate, releasing INERGEN agent or hazardous, high pressure Carbon Dioxide. This may cause serious personal injury or death. Before each installation and after each actuation, remove all actuators and ensure that each actuator pin is in the full "up" position.

1. Remove safety plug from female threads at the bottom of the HF electric actuator.
2. Remove safety cap from threads at top of actuator.

3. Check to see if actuator is armed or fired by referring to steps **a** and **b** respectively.

- a. The actuator is armed if the following conditions exist (See Figure 6):

- When the actuator is held upright, the plunger will be approximately flush with the top surface of the actuator.
- The pin is retracted 0.010 in. to 0.015 in. (0.25 mm to 0.38 mm) inside the reference surface at the bottom of the actuator.

ACTUATOR IN ARMED POSITION

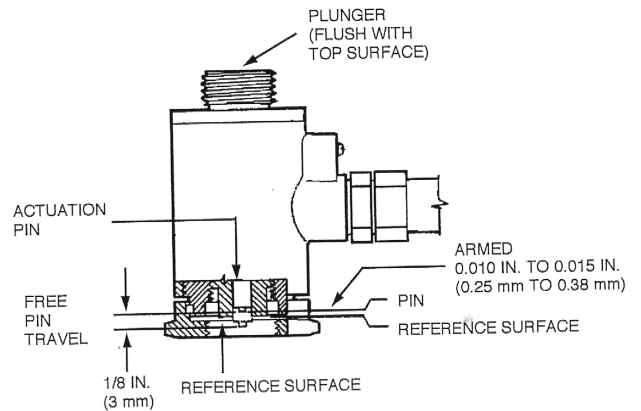


FIGURE 6
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- b. The actuator is in the fired position if the following conditions exist (See Figure 7):

- When the actuator is held upright, the plunger will be below the top surface of the actuator.

ACTUATOR IN FIRED POSITION

TOP OF PLUNGER APPROXIMATELY
 1/8 IN. (3 mm) BELOW TOP SURFACE

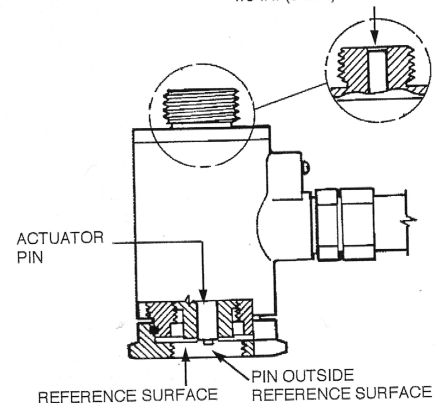


FIGURE 7
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INSTALLATION (Continued)

Checking and Arming (Continued)

4. If actuator is armed, go to the Functional Test section. If the actuator is fired, perform the following steps for setting.
5. To arm the actuator, use arming tool (Part No. 75433) to force the pin inside the reference surface until a distinct "click" is heard. (See Figure 8.) To verify that the actuator is properly armed, repeat step 3.

NOTICE

Considerable force (45 lb to 50 lb (20 kg to 23 kg)) is required to arm the HF electric actuator.

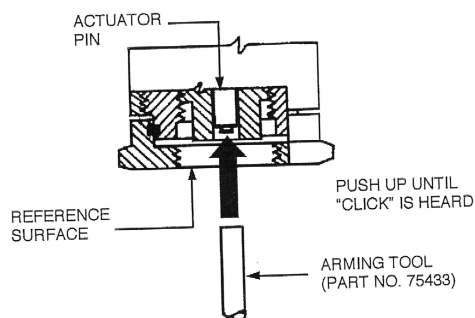


FIGURE 8
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6. If no other actuators are to be installed on top of the HF electric actuator, reinstall safety cap after arming.

Functional Test

⚠ WARNING

If the actuator is mounted to the valve when performing a functional test, the fire suppression system will actuate, releasing INERGEN agent or hazardous, high pressure Carbon Dioxide. This may cause serious personal injury or death. Never install actuator when activating the release circuit for a functional test.

Before the HF electric actuator is mounted to a valve, it must be test fired as follows:

1. Activate the release circuit of the control unit to operate the HF electric actuator(s). This is normally accomplished by activating a detector(s) or operating an electric pull station.

NOTICE

This actuator test is typically performed in conjunction with other control unit checks for activation of alarms, time delays, shutdown devices, and other devices connected directly to the control unit output and relay circuits. Refer to the control unit instruction manual.

2. Check that HF electric actuator has fired – See Step 3 of Checking and Arming. The actuator may not fire immediately. It is common for a control unit to run through a time delay before it activates the release output to the HF electric actuator(s).
3. If the actuator(s) has not fired, check the control unit or wiring for release circuit trouble (correct if required). Then, repeat Steps 1 and 2. If actuator(s) still does not fire, it must be replaced and the test must be repeated. If actuator(s) fires properly, reset the panel, re-arm the actuator(s) and refer to the following mounting instructions.

Mounting Additional Actuators To HF Electric Actuator

Before the HF electric actuator is installed on the discharge valve, any additional valve actuator(s) must be reset and attached to the HF electric actuator. This is accomplished by completing the following steps:

1. If an additional actuator(s) is being installed, remove the safety cap from the top threads of the HF electric actuator.

2.

⚠ WARNING

If the additional actuator(s) is not properly reset with the pin in the full "up" position, the fire suppression system will actuate, releasing INERGEN agent or hazardous, high pressure Carbon Dioxide. This may cause serious personal injury or death. Before each installation and after each actuation, remove and reset all actuators. See Figure 9.

Make certain additional actuator(s) is properly reset (actuator pin in fully retracted position) before installing on HF electric actuator. See Figure 9.

3. Thread actuator onto top threads of HF electric actuator. (Do not exceed 10 ft-lb (13.6 N·m) of torque.)
4. Check that HF electric actuator is still properly armed. (Refer to Step 3 of Checking and Arming.)
5. Refer to the appropriate system manual for proper mounting instructions.

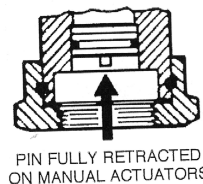


FIGURE 9
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Installing the Booster Actuator

1. Make certain the booster actuator is in the "set" (armed) position. This can be confirmed by visually checking the position of the top and bottom pins. When in the "set" position, the top pin will be approximately flush with the top of the actuator. The bottom pin will be flush with the inside surface of the actuator. If the booster actuator requires setting, use the reset tool (Part No. 429847). See "Resetting Booster Actuator" section for reset instructions.
2. Hand tighten the booster actuator onto the container valve or the selector valve.

INSTALLATION (Continued)

Resetting Booster Actuator (See Figure 10)

1. If necessary, remove the booster actuator from the CV-98 valve or selector valve.
2. Before installing reset tool (Part No. 429847) on the booster actuator, make certain the reset pin of the reset tool is backed out approximately three (3) turns.
3. Thread the reset tool into the booster actuator until hand tight/snug.
4. Using a 9/16 in. open end wrench, turn the reset pin clockwise (in) until the booster actuator resets. The booster actuator will "click" when it resets.
5. Remove the reset tool from the booster actuator. Re-install the booster actuator onto the CV-98 valve or selector valve.

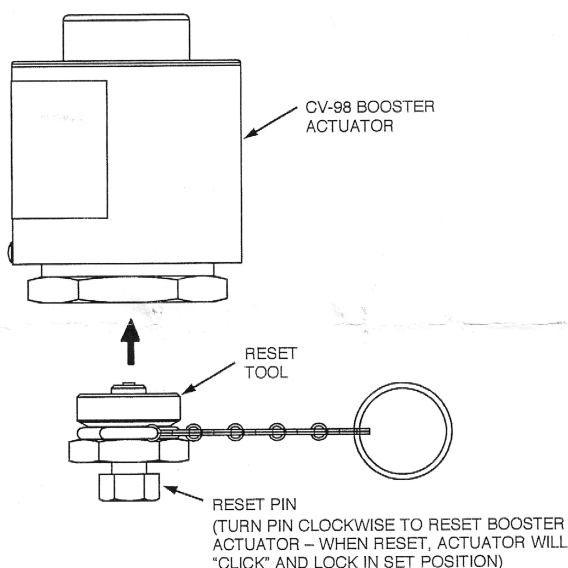


FIGURE 10
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Installing the HF Actuator

1. If all other installations are complete, connect electrical wiring to the HF actuator. Refer to appropriate AUTOPULSE manual and this document for detailed wiring information.
2. Make certain the HF actuator is in "set" (armed) position. (Refer to Step 3 of Checking and Arming, page 3.) If the actuator requires setting, use the arming tool (Part No. 75433).
3. Hand tighten the HF actuator onto the booster actuator (if required) or onto the valve.

Mounting to a CV-98 CO₂ Valve

Mounting the HF electric actuator (with any additional actuators already reset and installed) is always the last step in the installation of a system. The procedures for mounting the HF electric actuator to a CV-98 CO₂ valve are as follows:

⚠ WARNING

Make certain the tank is connected to the discharge manifold and is securely mounted to a rigid foundation. Failure to comply may result in violent tank movement if accidentally actuated.

The fire suppression system will actuate, discharging high pressure Carbon Dioxide if the actuator is not properly armed when mounted to the valve.

Evacuate all personnel from the area of discharge while installing the actuators. Accidental system actuation will discharge high pressure Carbon Dioxide into the protected area without warning, causing possible severe injury or death if personnel remain in the atmosphere.

1. Remove actuation shipping cap from top threads of CV-98 CO₂ valve.
2. Make certain HF electric actuator is properly armed. (Refer to step 3 of Checking and Arming.)
3. Thread the HF electric actuator onto top threads of CV-98 CO₂ valve. (Do not exceed 10 ft-lb (13.6 N-m) of torque.) See Figure 11.
4. Feed lead and wire seal (Part No. 75568) through hole in actuator swivel hex. Wrap around actuator body, over conduit connection, and back to swivel hex. Crimp seal to wire.

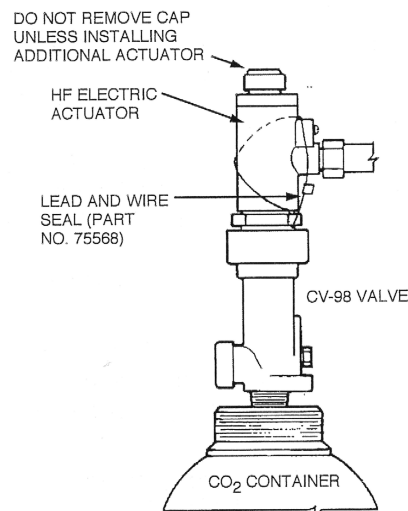


FIGURE 11
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RECHARGE AND MAINTENANCE

During recharge and maintenance of the entire fire suppression system, the following steps should be performed for the HF electric actuator.

1. Remove the HF electric actuator and any additional actuators from the discharge valve.

2.

WARNING

If the standard backpressure actuator is not properly armed before being installed in the MAX CO₂ valve, the fire suppression system will actuate, releasing hazardous, high pressure Carbon Dioxide into the protected area. This may cause possible severe injury or death if personnel remain in the atmosphere.

For MAX CO₂ valve – Using the arming tool (Part No. 75433), reset (arm) the stackable backpressure actuator by pushing the actuator pin to the fully retracted position. Thread stackable backpressure actuator into MAX valve actuation cap. (Use 10 ft-lb (13.6 N·m) of torque.)

For high flow CV-90 CO₂ valve – Install actuation safety cap on top of valve.

3. Recharge container and perform the following procedures while observing all safety precautions:
 - a. Checking and Arming
 - b. Functional Test
 - c. Mounting

Note: The converted metric values in this material are provided for dimensional reference only and do not reflect an actual measurement.

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