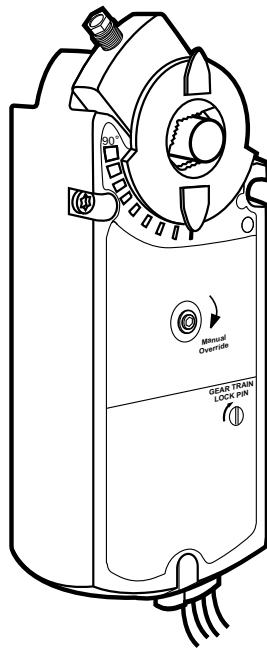


Installation Instructions

Rotary Electronic Damper

Actuators

160 lb-in Series



Graphics in this document are for representation only. Actual model may differ in appearance.

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:**

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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General Information

Note: Keep these instructions with the actuator or with the plant documentation.

Parts List

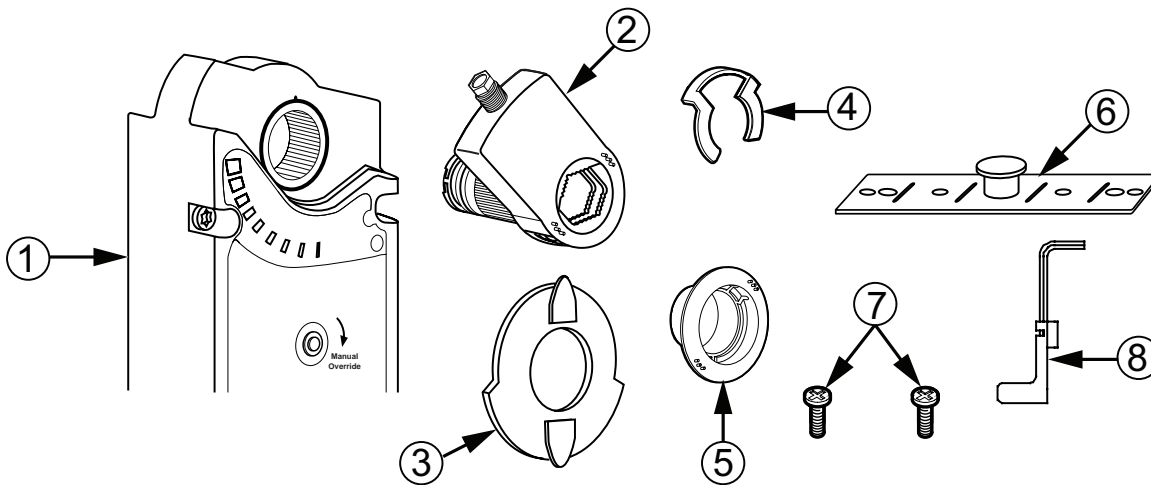
Table 1. Parts list

Item	Description	Qty
1	Actuator	1
2	Self-centering shaft adapter	1
3	Position indicator	1
4	Shaft adapter locking clip	1
5	Position indicator adapter	1
6	Mounting bracket	1
7	Mounting screws	2
8	3 mm hex wrench	1

Table 2. Required tools

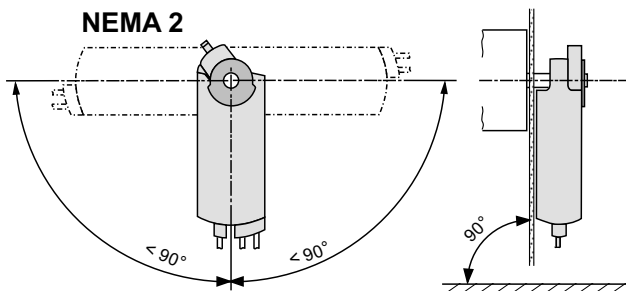
Qty	Description
1	10 mm (13/32-in.) open-end wrench
1	Drill
1	4 mm (5/32-in.) drill bit
1	3 mm hex wrench (provided)
1	Phillips screwdriver
1	Small flat-blade screwdriver
1	Marker or pencil

Figure 1. Rotary electronic damper actuator parts list



Mounting Positions

Figure 2. Acceptable NEMA 2-positions



Installation

Note: Actuator is shipped with 5° preload. When power is applied to the actuator, the preload is released. To manually release the preload, insert the 3 mm hex key in the override opening and turn the key in the direction of the arrow. See “Manual Override,” p. 7.

The expected installation time is 30 minutes.

Important:

- Do not open actuator.
- Do not turn the 3 mm hex key against the direction of the arrow.

Table 3. Actuator positioning and damper control

Determining the Actuator Mounting Orientation	① Damper Type				
	② Power Fail Spring Return Position	 Close	 Open	 Close	 Open
	③ Actuator Mounting Orientation				

Modulating Control	ACT00986 160 lb-in	Y = 10V	 Open	 Close	 Open	 Close
		Y = 2V	 Open	 Close	 Open	 Close
	ACT00986 160 lb-in	Y = 2V	 Close	 Open	 Close	 Open
		Y = 10V	 Close	 Open	 Close	 Open

Installation

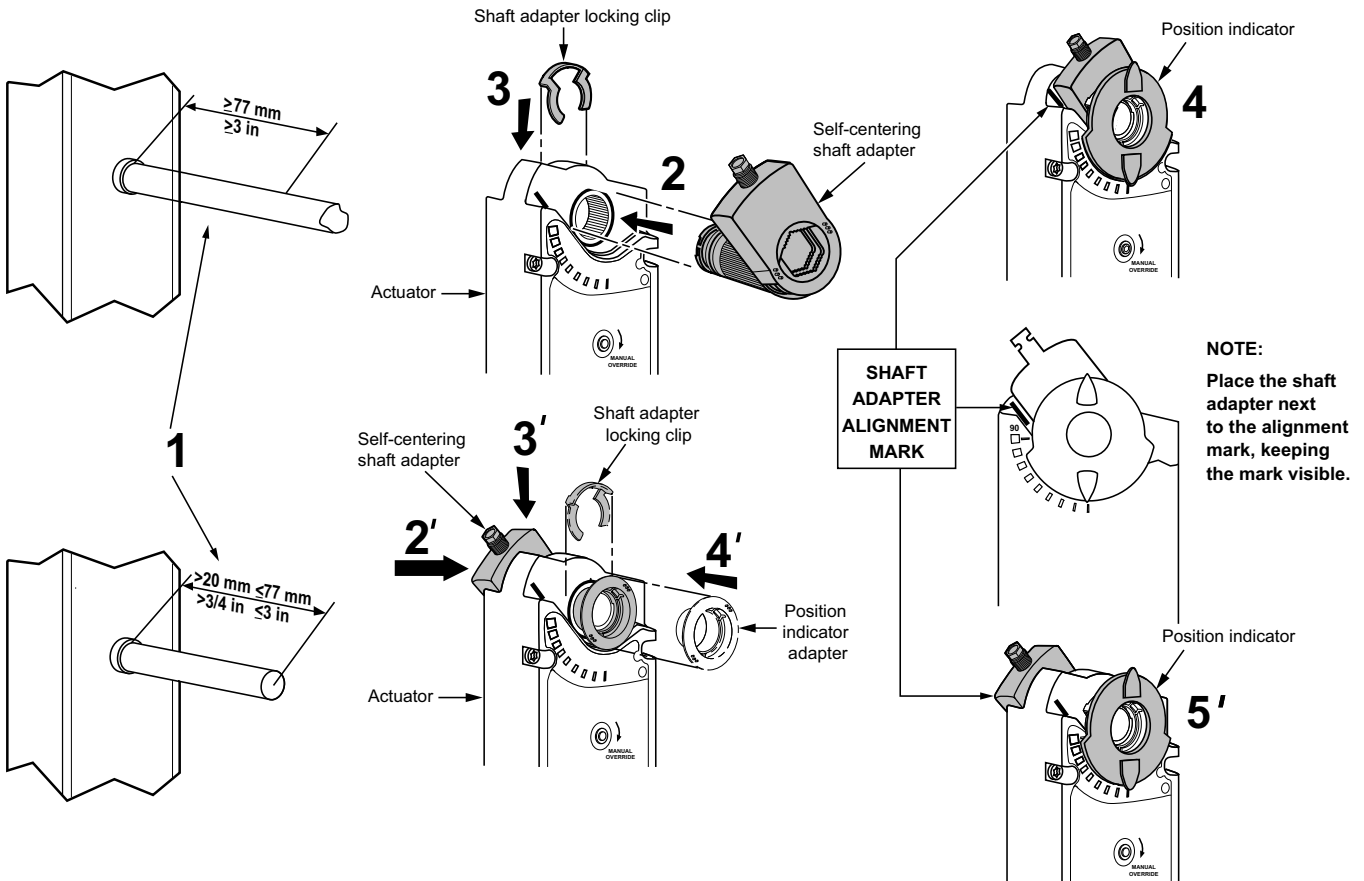
See [Figure 3, p. 6](#) for the [Step 1](#) through [Step 5](#).

1. Adjust the shaft length for mounting the actuator.
2. Align the shaft adapter to the alignment mark on the actuator and insert the shaft adapter into the mounting hole on the adapter.

Note: Confirm that the shaft adapter is placed next to the alignment mark, keeping the mark visible.

3. Attach the adapter position indicator onto the shaft adapter from the other side of the actuator.
4. Using the locking clip, lock the shaft adapter in place.
5. Mount the position indicator onto the shaft adapter.

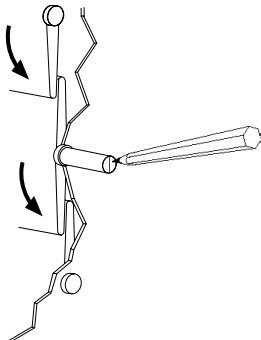
Figure 3. Shaft length and shaft adapter mounting location



6. Close the damper. See [Figure 4, p. 6](#).

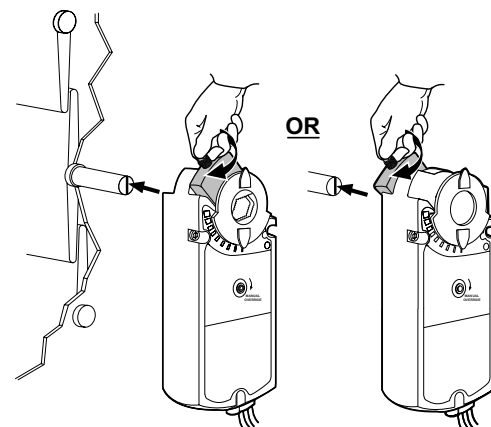
Note: If the damper fail-safe position is open, change the actuator preload from the preset 5° to 85°. See [“Manual Override,” p. 7](#).

Figure 4. Close Damper



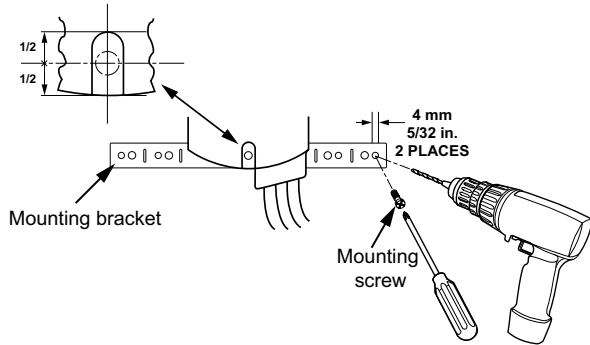
7. Mount the actuator onto the shaft. See [Figure 5, p. 6](#).

Figure 5. Mount actuator



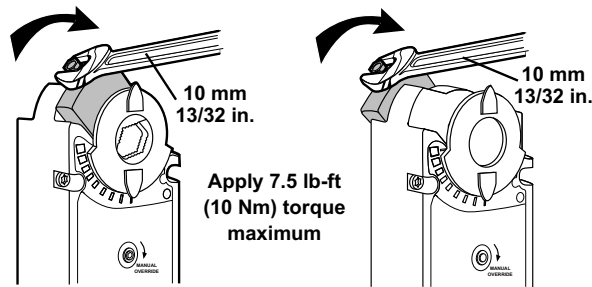
8. Using 4 mm (5/32-in.) drill bit, drill two holes one at each end of the mounting bracket. See [Figure 6, p. 7](#).
9. Attach the mounting bracket and fasten using two mounting screws. See [Figure 6, p. 7](#).

Figure 6. Install mounting bracket



10. Using the 10 mm (13/32-in.) open-end wrench, fasten the shaft adapter to the damper shaft. See [Figure 7, p. 7](#).

Figure 7. Fasten shaft adapter



Manual Override

To manually override or set preload:

1. Insert the 3 mm hex key in the override opening.
2. Turn the key in the direction of the arrow until it reaches the desired degree of opening.
3. Hold the key in place.
4. Insert a small flat-blade screwdriver into the gear train lock pin. Turn the screwdriver in the same direction as the arrow until it clicks or meets slight resistance (approximately 5 degrees rotation).

NOTICE

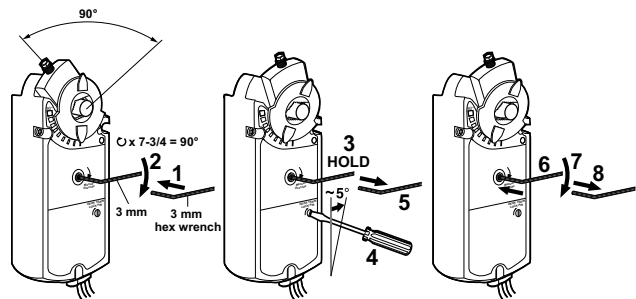
Equipment Damage!
To avoid stripping the gear train lock pin, do not turn past the click or point of resistance.

To release manual override or preload:

1. Insert the 3 mm hex key in the override opening.
2. Turn the key only a short distance in the direction of the arrow.
3. Remove the key. The actuator will return to 0 (failsafe) position.

Note: Applying power and sending a control signal will release manual override.

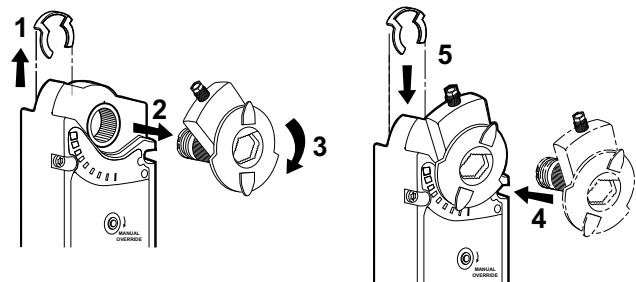
Figure 8. Manual override



Mechanical Range Adjustment

Confirm the actuator is in the 0 (fail-safe) position when making this adjustment. If making the adjustment before the actuator is in service, take into account the preset 5° preload. To release the preload, see “Manual Override,” p. 7.

Figure 9. The angular rotation is adjustable between 0° and 90° at 5 degree intervals



Wiring

- All wiring must conform to NEC and local codes and regulations.
- Use earth ground isolating step-down Class 2 transformers. Do not use autotransformers.

Note: The maximum rating for a Class 2 stepdown transformer is 100 VA. Determine the supply transformer rating by adding the VA ratings of all actuators and all other components used. It is recommended that not more than 80% of the transformer VA be utilized. The 160 lb-in actuator consumes 8 VA or less.

Either AC line voltage from the same phase must be applied to all six outputs of the dual auxiliary switches, or UL-Class 2 voltage must be applied to all six outputs.

Note: With Plenum cables, only UL-Class 2 voltage is permitted.

Table 4. Actuator type

Actuator	Operating Voltage	Power Consumption
Modulating Control		
ACT00986	24 VAC/DC	7 VA/5W

Wiring Diagrams

Figure 10. Modulating 2 to 10 VDC control, 24 VAC/DC: ACT00986

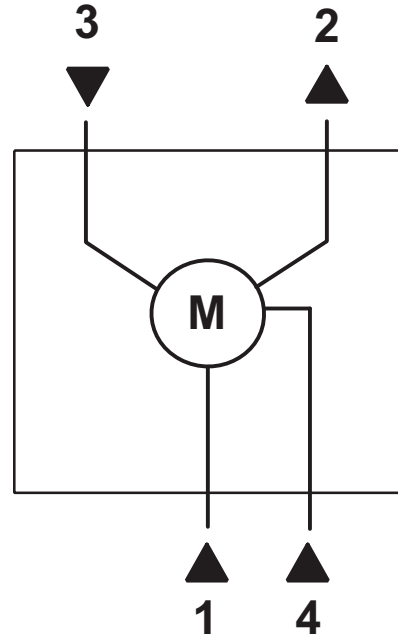
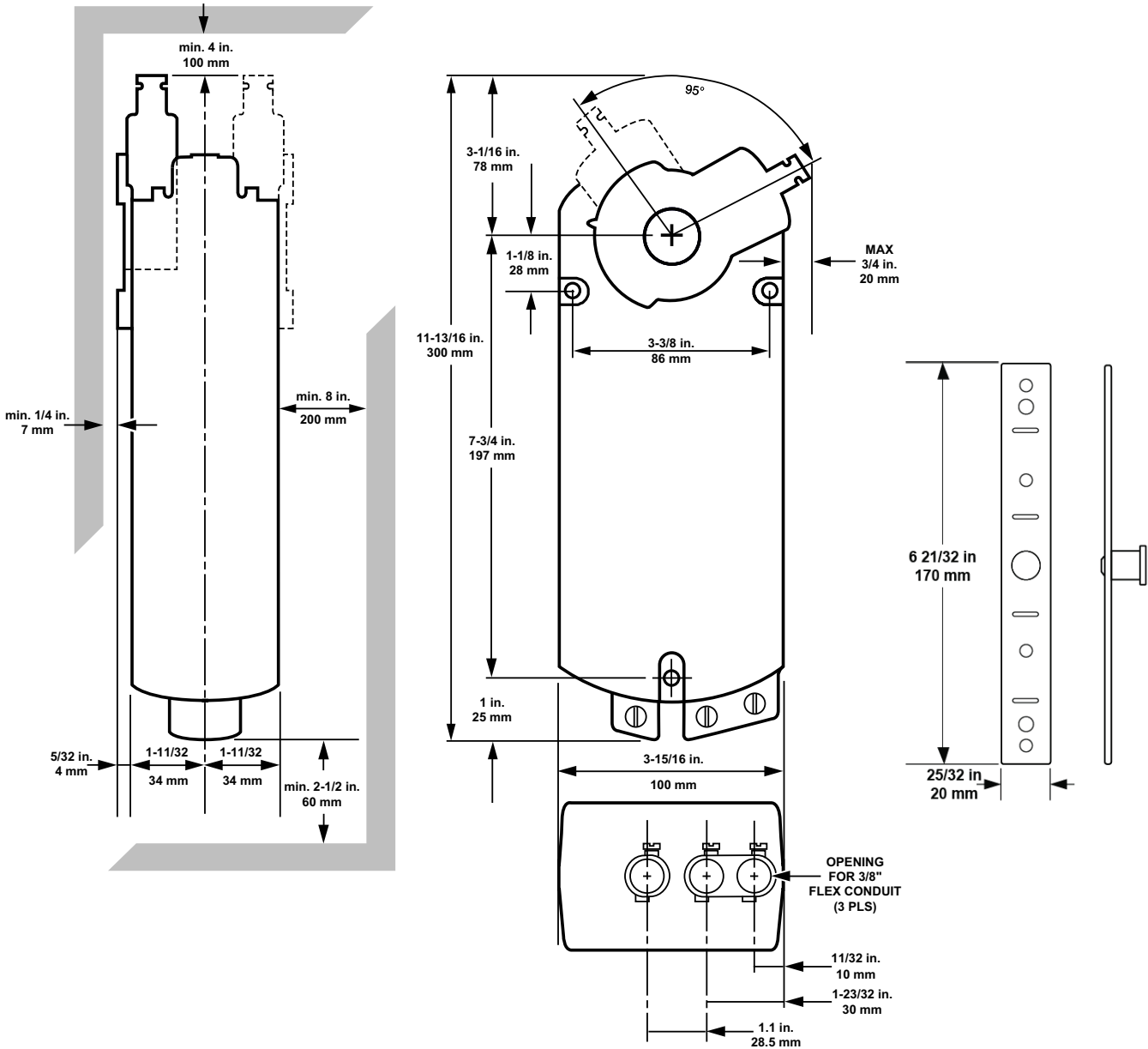


Table 5. Wire designations

Pin Out Locations	Function	Terminal Connection	Color
			Plenum
1	Supply (SP)	G	Red
4	Neutral (SN)	G0	Black
3	Input Signal 2 to 10 VDC (ACT00986)	Y	Pink
2	Position Output 2 to 10 VDC (ACT00986)	U	Grey

Dimensions

Figure 11. Open air actuator and mounting bracket in inches (millimeters)



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