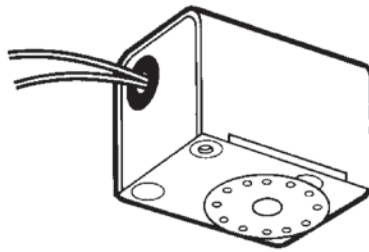
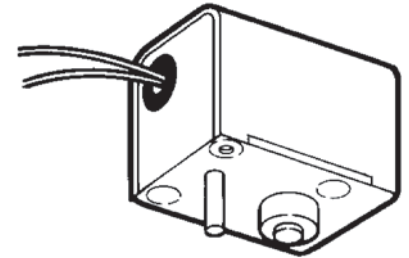


453X Series

Two-Position Damper Actuator



Linkage Drive



Direct Drive

Applications

The 453L, light duty damper actuators are designed for a variety of two-position, spring return, damper applications. The 453L uses a two-wire thermostat control.

The 453H, medium duty damper actuators are designed for a variety of two-position, Spring Return damper applications. The 453H uses a two-wire thermostat control.

The 453R, heavy duty damper actuators are designed for a variety of two-position, motor open and motor closed damper applications. The 453R uses a three-wire thermostat control.

Specifications

Inputs	
Voltage	24 Vac @ 50/60 Hz, 110/120 Vac @ 50/60 Hz, 220/230 Vac @ 50/60 Hz.
Power	See Model Table
Connections	Internal junction box, 18 in. leads, cord sets.
Outputs	
Mechanical	Optional End Switch 10 A @ 120 Vac.
Direction of Rotation	CW or CCW rotation is available.
Linkage	See Figure-4.
Direct Drive	For 5/16" maximum damper output shaft with maximum engagement of 7/8".
Environment	
Temperature limits:	
Shipping & Storage	-40 to 169°F (-40 to 71°C)
Operating	0...120°F (-17... 49°C)
Humidity	Non-condensing.
Shipping Weight	453L & 453H: 1.2 lbs (544 g); 453R: 1.7 lbs (771 g).
Location	NEMA 1.

Features

- Available with end switch
- Linkage or direct drive available
- Hysteresis synchronous motor with a "lost motion" drive to protect the gear train from closing shock

Agency Compliance

Models 453L, 453H are:

- UL Recognized Components, safety evaluated per UL 60730-1 & UL 60730-2-14, (which includes US FCC Part-15 Class-B emissions).
- cUR Certified safety evaluated per CSA/CAN E60730-1 & CSA/CAN E60730-2-14, (which includes Canadian ICES-003 Class-B emissions).

Models 453L, 453H, 453R are:

- EU CE Mark compliant, safety evaluated per EN 60730-1 & EN 60730-2-14, (which includes EU EN 61000-6-2 immunity & EN 61000-6-3 emissions).
- Rated for use in Plenum spaces.

Accessories

453-52	6-12 in. damper shaft kit.
453-69	12-20 in. damper shaft kit.
453-239	Damper shaft adapter converts direct coupled shafts from 5/16 to 1/2 in.

Table 1. Model Table

Model Number	Torque Rating in.-oz.				Power		Stroke Speed in Seconds	
	Motor Driven		Spring Return				Motor Driven	Spring Return
	0°	84°	0°	84°	W	VA		
453L	45	25	17	25	6.5	7	18 @ 60 Hz 22 @ 50 Hz	6 @ 50/60 Hz
453H	55	35	35	55	6.5	10	27 @ 60 Hz 32 @ 50 Hz	8 @ 50/60 Hz
453R	150	150	—	—	6.5	7	37 @ 60 Hz 45 @ 50 Hz	—

Typical Application

Wiring

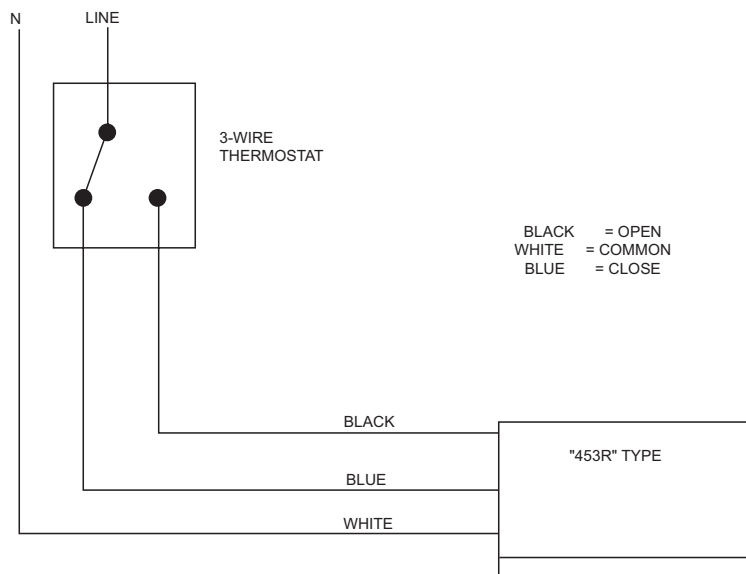


Figure 1. Typical Wiring With Three-Wire Thermostat

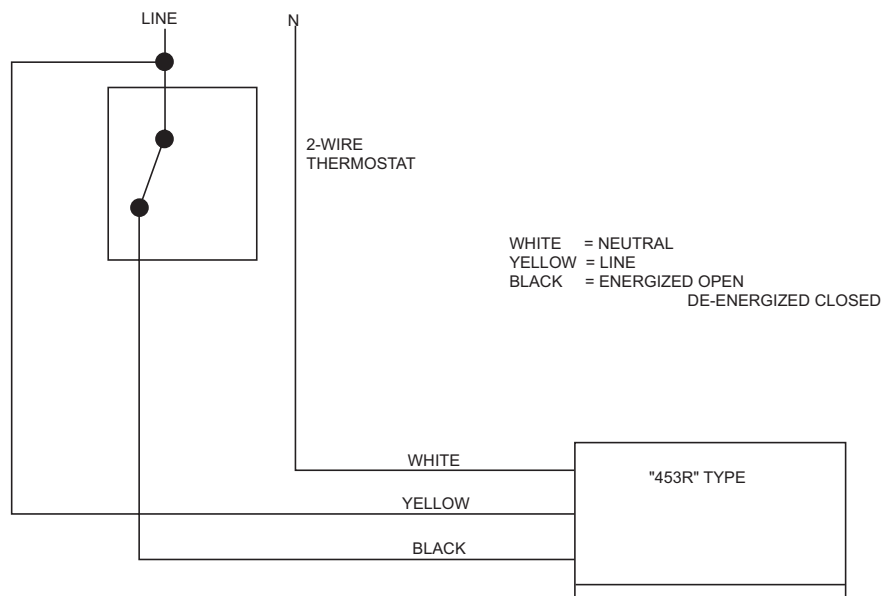


Figure 2. Typical Wiring With Two-Wire Thermostat

Installation

Inspection

Inspect the package for damage. If damaged, notify the appropriate carrier immediately.

If undamaged, open the package and inspect the device for obvious damage.

Return damaged products.

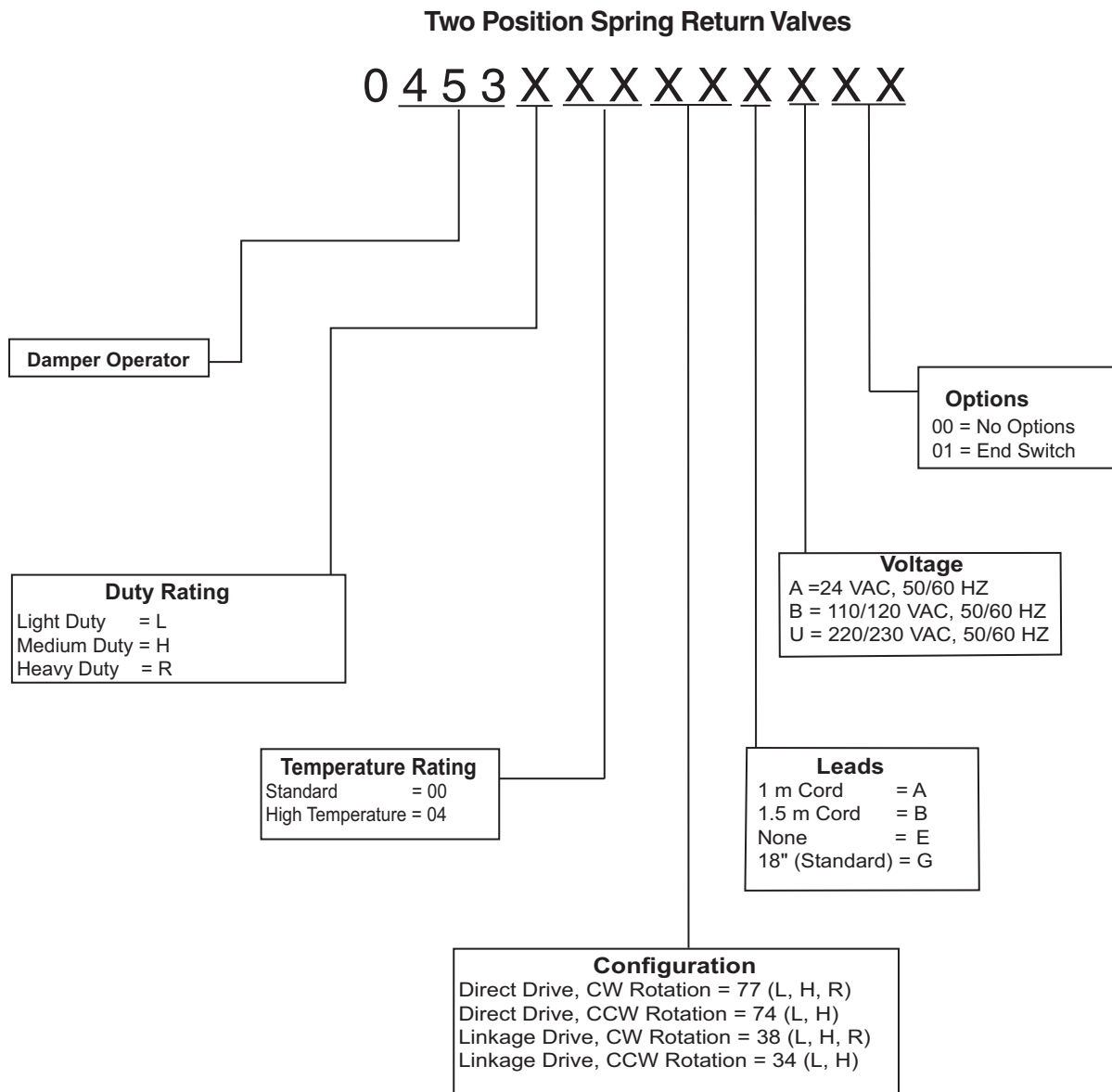
Requirements

- Tools (not provided)
- 7/32" Hex wrench
- #2 Phillips screwdriver

Training

- Installer must be a qualified, experienced technician
- Other accessories as appropriate

Part Number Selection



Precautionary Notes

- Avoid potential electrical shock. Disconnect main power before installation to prevent electrical shock or equipment damage.
- Make all connections in accordance with the electrical wiring diagrams and in accordance with national and local electrical codes.
- Avoid locations where excessive moisture, corrosive fumes, explosive vapors, or vibration are present.
- Avoid locations with electrical noise interference. Do not install near large electrical conductors, electrical machinery, or arc welding equipment.

Mounting

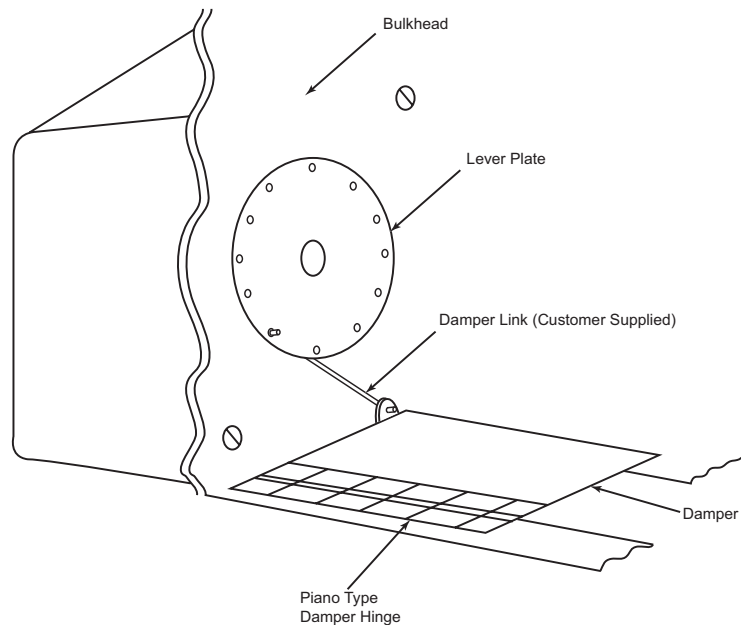


Figure 3. 453X Actuator Linked to Damper.

Normally Open Damper (Linkage Drive Actuator)

1. Manually place damper in the full open position.
2. Place shaft into bulkhead.
3. Secure actuator to bulkhead.
4. Attach lever plate using cotter pin.
5. Attach damper link with damper in the fully open position.

Normally Closed Damper (Linkage Drive Actuator)

1. Manually place damper in the full open position.
2. Place shaft into bulkhead.
3. Secure actuator to bulkhead.
4. Apply power to the actuator and allow the actuator to drive to full rotation.
5. Attach lever plate using cotter pin.
6. Attach damper link with damper in the fully open position.
7. Remove power from the actuator.

Normally Open Damper (Direct Drive Actuator)

1. Manually place damper in the full open position.
2. Slide actuator over the shaft with the anchor stud in anti-rotation hole.
3. With the hex wrench, tighten the set screw on the damper shaft.

Normally Closed Damper (Direct Drive Actuator)

1. Manually place damper in the full open position.
2. Apply power to the actuator and allow the actuator to drive to full rotation.
3. Slide actuator over shaft with the anchor stud in anti-rotation hole.
4. With the hex wrench, tighten the set screw on the damper shaft.
5. Remove power from the actuator.

Checkout

After the entire system has been installed and the actuator has been powered up, the following check can be made for proper system operation. Check for correct operation of the damper while actuator is being stroked.

1. Apply power to the actuator. The actuator and the damper should be driven to their powered position.
2. If the actuator is equipped with an optional auxiliary switch, check for correct switch operation.
3. Break power to the actuator. The actuator and the damper should return to their normal spring return position.

Theory Of Operation

The 453 Series damper actuators can be directly mounted or linkage mounted on to the dampers. The 453L and 453H actuators provide spring return operation for many smaller damper applications. The 453R actuator provides a non-spring return operation for small to mid size damper applications. Using a synchronous motor, and a gear reduction of 7.2 to 1 (9.9 to 1 for the 453R Series), these actuators provide 84° of travel.

The 453L and 453H actuators are available with an optional built in auxiliary SPDT end switch to control outside resources such as fan start-up.

When the 453L and 453H actuators are powered the actuator moves to the powered position, against the spring return system. When the power is removed the spring returns the actuator to the normal position.

Maintenance

The 453 series requires no maintenance. Replace defective modules

Regular maintenance of the total system is recommended to assure sustained, optimum performance.

Field Repair

Replace any damaged or failed components with functional replacements.

Dimensional Data

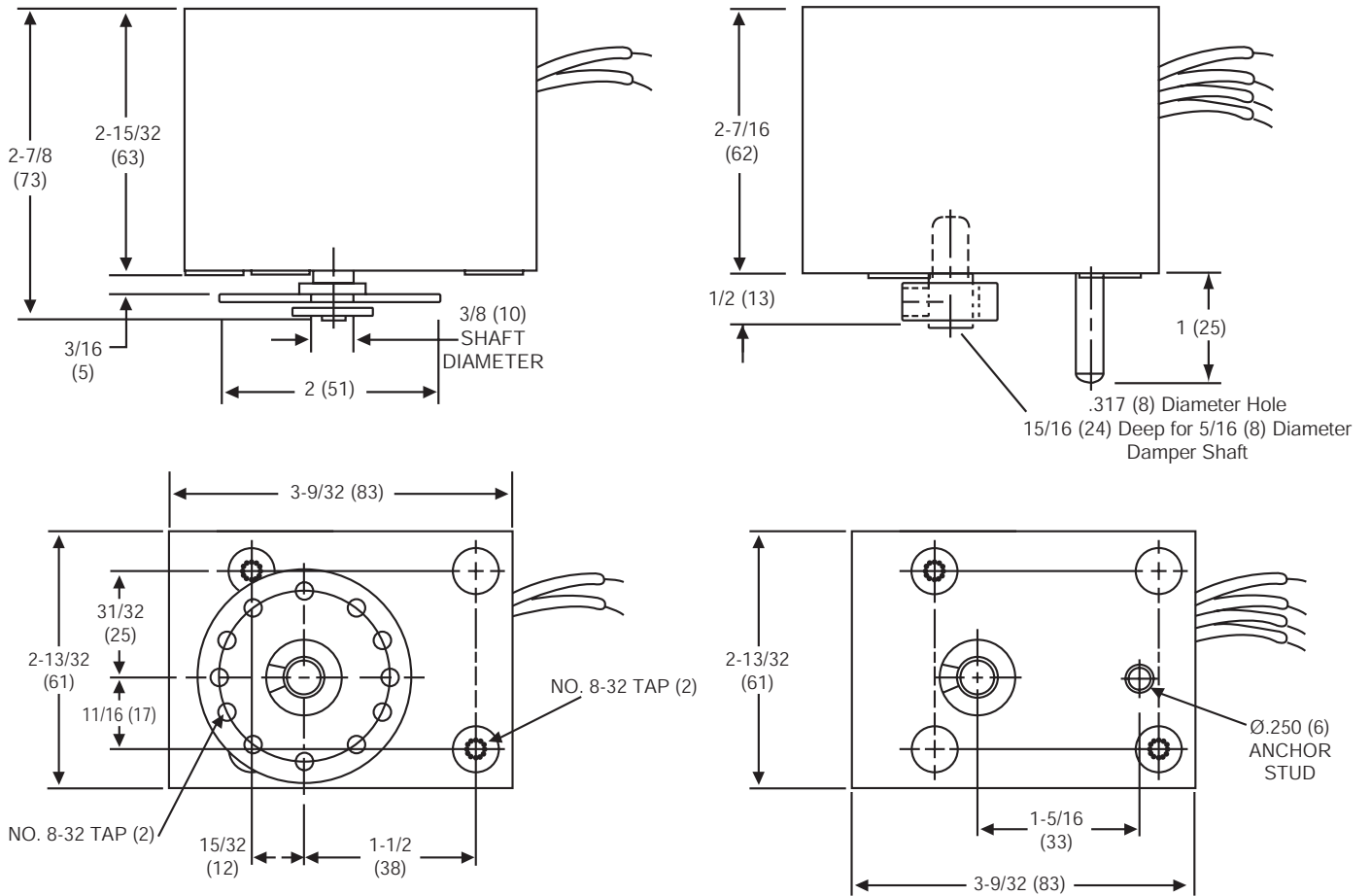


Figure 4. 453L & 453H Dimensions.

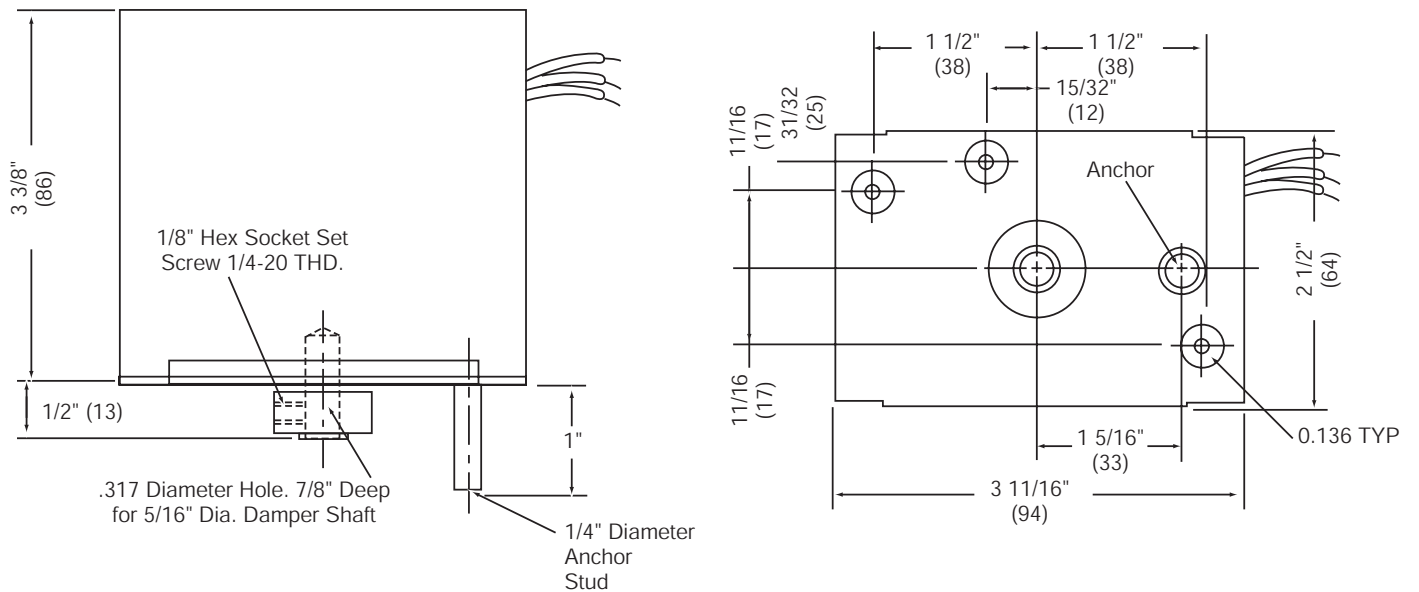


Figure 5. 453R Dimensions.