

Installation Guide

Required Tools

- digital voltmeter
- small phillips screwdriver
- small flat-blade screwdriver
- 5/16" hex wrench

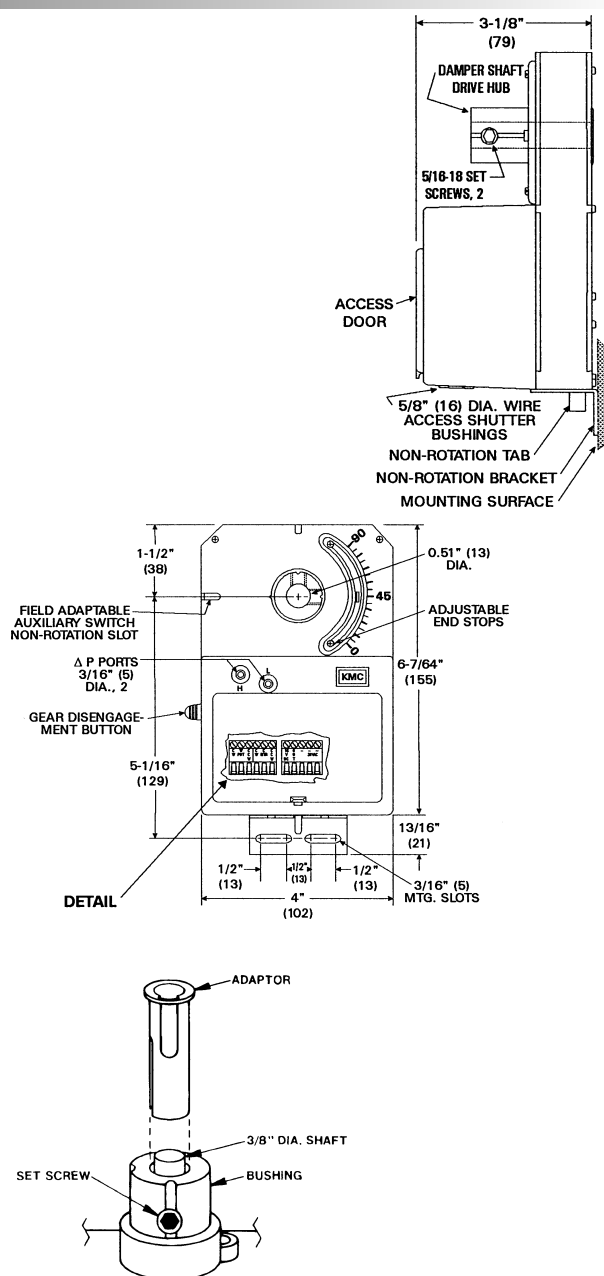
Mounting

The TSP-5003/23 is designed to mount on a standard 1/2" (13 mm) diameter shaft or a 3/8" (9.5 mm) shaft using the optional HFO-0011 adaptor.

1. Set the TSP-5003/23 in the desired location.
2. Slide the TSP-5003/23 unit directly on to the 1/2" diameter damper shaft. The shaft must extend a minimum of 1-3/4" from the mounting surface.
3. Place the non-rotation bracket (supplied) on the non-rotation tab.
4. Attach the anti-rotation bracket to the mounting surface using #8 or #10 self tapping screws (not included).
5. Depress the gear disengagement button and:
 - a. Rotate the drive hub until the indicator stops at the "90" mark if the damper is clockwise to close.
 - b. Rotate the drive hub to the "0" mark if the damper is counter clockwise to close.
6. Position the damper to full open.
7. Tighten the two (2) 5/16"-18 set screws (see diagram).
8. Depress the gear disengagement button and rotate the drive hub/damper to the closed position.
9. Loosen the adjustable end stop, position against the damper position indicator and retighten.

How to use the HFO-0011 Adaptor:

1. Mount the TSP-5003/23 actuator over the 3/8" shaft.
2. Slide the HFO-0011 over the shaft into the drive bushing of the actuator.
3. Align the adaptor slots with the set screws.
4. Tighten the set screws.



Wiring

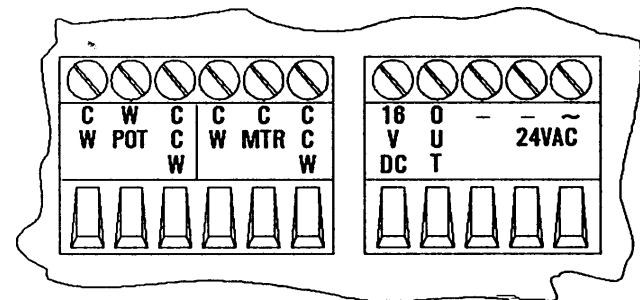
Refer to the wiring diagram detail.

1. Remove the TSP's wiring access door by pulling back on the door's tab and lifting upward.
2. Access for wire or cable is via two 5/8" (16 mm) diameter snap-in shutter bushings located on the rear of the TSP's cover.
3. Connect to the actuator. (Connectors not supplied, order separately):
 - a. HMO-4518 for 1/2" flexible conduit.
 - b. HMO-4520 compression connector for plenum rated cable.
 - c. HMO-4526 for rigid 1/2" conduit.
4. Remove snap-in shutter bushing and replace with the HMO-4518 or 4520 if required.
5. Connect the TSP as follows:
 - a. Terminal "CW" to 24 VAC clockwise motor drive.
 - b. Terminal "COM" to common for CW or CCW motor drive.
 - c. Terminal "CCW" to 24 VAC CCW motor drive.
 - d. Terminal "OUT" (+ output) air velocity readout signal.
 - e. Terminal "16 VDC" (optional 22 mA power supply).

- f. Terminal "--" air velocity readout reference (& 16 VDC reference if required).*
- g. Terminal "-" to the neutral or ground side of the transformer.*
- h. Terminal "~" to the phase side of a 24 VAC , -15% / +20%, 50/60 Hz transformer.

NOTE: Both "--" terminals are internally connected .

6. Replace the wiring access door.



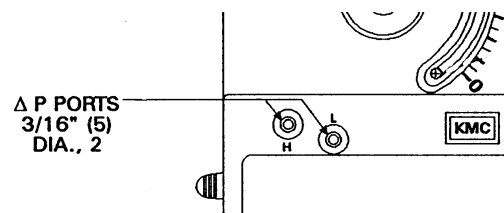
Wiring Detail

Setup

The TSP-5003/23 is factory calibrated to function with the SSS-1002 through SSS-1005 DP pickup.

Using 24" of 1/4" OD x .040" wall "FR" instrument and control tubing, 1/4" x 3/8" union fitting (HFO-0108) and 1" of 3/8" OD x .062 Wall "FR" tubing for both connections:

1. Connect "H" port to the "total velocity" (high side) of the velocity pickup.
2. Connect the "L" port to the "static" (low side) of the velocity pick up.



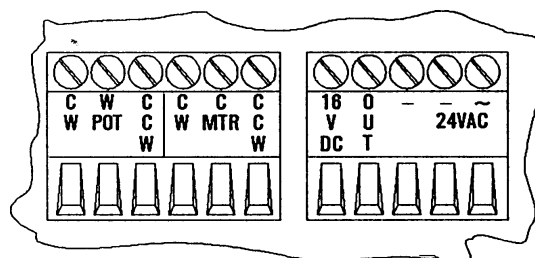
Calibration

The TSP will have a range of 0–3,300 FPM with a 1–5 VDC velocity output signal when using any SSS–1002-1005 series velocity pickup. Fine tuning to a specific range is possible.

NOTE: The TSP's wiring access door must be removed to complete any of these adjustments. Refer to removal instructions in *Wiring*.

To set a range:

1. Apply the desired Velocity Pressure, maximum flow to the "H" and "L" ports.
2. Adjust the SPAN potentiometer until the 1–5 VDC Velocity Output signal indicates 5 VDC (read between terminals "out" and "-").



Testing

Test the TSP actuator's motor operation:

1. Temporarily disconnect wires at "CW", "CCW" and "COM" terminals.
2. Jumper "COM" terminal to "-" terminal.
3. Jumper the "CW" terminal to the "24 VAC" terminal. The shaft drive hub should be rotating in the CW direction.
4. Jumper "COM" terminal to the "-" terminal.
5. Jump "CCW" terminal to the "24 VAC" terminal. The shaft drive hub should be rotating CCW.

Maintenance

No routine maintenance is required. Each component is designed for dependable, long term reliability and performance. Careful installation will also ensure long term reliability and performance.

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