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QUICKSTART INSTALLATION AND OPERATIONS MANUAL

QUANTUM ROTARY MODELS:

764/864/765/865/784/789/711/811/722/822/777/877/360/366

(Complete Installation and Operations Manual, TECH-382, available at westlockcontrols.com)

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1. Introduction

1.1. Warnings

- Never remove enclosure cover or make/break electrical connections with power connected to the unit.
- Perform all wiring in accordance with site and local codes and the National Electric Code ANSI-NFPA-70 (US) or the Canadian Electric Code Part I (Canada) for the appropriate area classifications.
- Confirm that the Quantum model being installed is approved for the hazardous area (consult unit identification label).
- Ensure that approved and properly sized IS barriers are used in installations with 711, 811, 722 and 822 (confirm entity parameters from product ID label).
- Confirm that power supplied to switches and solenoid is within rated specifications listed on the unit identification label.
- Protect the unit from exposure to aggressive substances or atmospheres to ensure that hazard rating is not compromised.
- Disconnect power to solenoids and the inlet air supply before conducting any valve service or maintenance. Avoid the introduction of any contaminants into the valve.

1.2. Special Features/Conditions

To avoid build-up and discharge of static electricity in a hazardous area, only clean Westlock units with a static-free cloth dampened with water. Avoid the use of alcohol-based cleaners.

2. Installation

2.1 Mounting Instructions

Required Tools: Open-end wrenches or adjustable wrench to fit all sizes of hex head bolts in the mounting kit.

1. Obtain a mounting kit suited for the actuator/valve, commonly available through a local Westlock Controls distributor.
2. Attach the mounting bracket and coupler (if required) to the unit housing and shaft with the hardware provided (see Fig. 1).
3. Attach the unit and mounting system to the actuator.

4. Ensure proper axial alignment between unit shaft, coupler and actuator shaft. Failure to ensure alignment could result in long-term stress-related failure of unit shaft in high cycle or high torque applications.

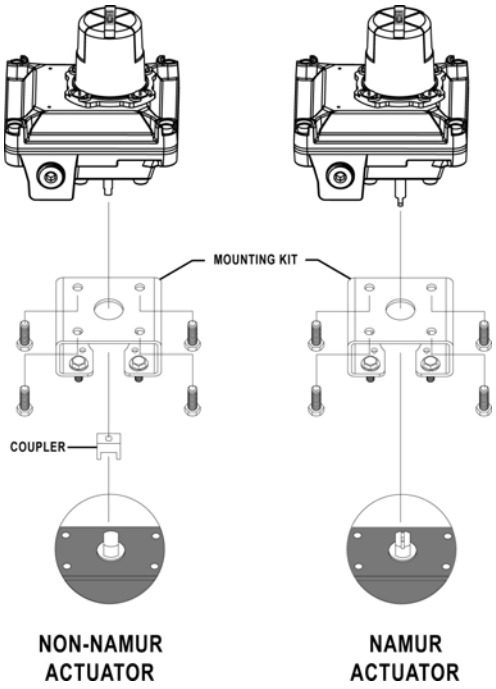


Fig. 1
Mounting the Quantum units with accessory bracket kits

2.2. Solenoid Valve Connection and Operating Instructions

2.2.1. Standard Valve Specifications

NOTE: ALWAYS consult the Quantum product ID label for coil electrical specifications and for pressure and temperature specifications for each unit, as they will vary with area classification, valve options and other factors.

Std. Operating Pressure: 45-120 PSIG
Std. Operating Temperature: -4° F to 176° F
(Agency approvals may be valid for different operating temperature ranges).
Operating Media: Lubricated or non-lubricated, dry air, filtered to 20 microns

2.2.2. Installation/Connection of Falcon Directional Control Valve

Porting Designation
1/4" NPT air ports for inlet, outlet, and exhaust
(3.5 Cv valve has 1/2" NPT air ports)

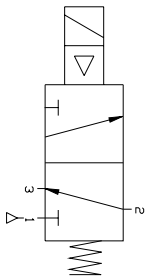
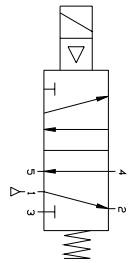
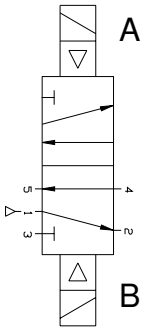


Fig. 2
Air Flow Diagrams



Spring Return 3-Way (3/2) Valve
Description of Operation: Solenoid De-energized - air flows from Outlet Port 2 to Exhaust Port 3. Solenoid Energized - air flows from Inlet Port 1 to Outlet Port 2.

Spring Return 4-way (5/2) Valve
Description of Operation: Solenoid De-energized - air flows from Inlet Port 1 to Outlet Port 2 and exhausts from Port 4 to Port 5. Solenoid Energized - air flows from Inlet Port 1 to Outlet Port 4 and exhausts from Port 2 to Port 3.



Dual Coil 4-way (5/2) Valve
Description of Operation: Coil B Energized -
air flows from Inlet Port 1 to Outlet Port 2 and
exhausts from Port 4 to Port 5.
Coil A Energized -
air flows from Inlet Port 1 to Outlet Port 4 and
exhausts from Port 2 to Port 3.

Note: The valve will not change state until the energized coil is de-energized and the opposite coil is energized in that order.

NOTES - For Dual Coil Valves

1. The valve may be in either position upon installation. Refer to the Air Flow Diagrams (Fig. 2) and energize the appropriate coil (with supply air present) to reset valve to the desired position.
2. Dual coil valves require both an electrical signal and appropriate air pressure to operate. If either or both inputs are lost the valve will remain in its current position.
3. Both coils should never be energized simultaneously.
4. If using overrides on a dual coil valve, the coils must be de-energized.

2.2.3. Plumbing and Air Supply Considerations

Proper drying and filtration of air supply per specifications in section 2.2.1 is critical to prevent premature failure of solenoid valves. If lubricators are used in the air line, use appropriate oil distribution equipment and oil grades, such as ISO and UNI FD22. The following general valve plumbing procedure should be followed:

1. Inspect port and connectors to ensure that the threads are free of dirt, burrs and excessive nicks.
2. Apply sealant/lubricant or Teflon tape to the male pipe threads. **With any sealant or tape, the first one or two threads should be left uncovered and care must be taken to avoid the application of excessive sealant media to avoid system contamination.**
3. Install connectors into ports and wrench tighten per the fitting manufacturer's recommendation to achieve an air-tight joint.

3. Calibration

Consult factory or a Westlock distributor for setting procedures of units with four switches and transmitter.

Note 1: Switch actuation can be confirmed using a signal detection device such as a multimeter or ohmmeter, set for "continuity".

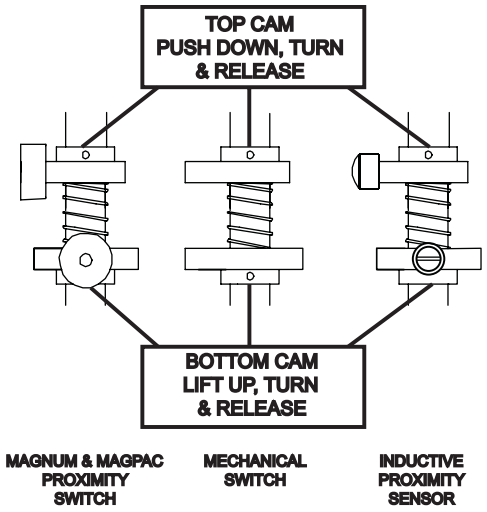
Note 2: For NAMUR P+F NJ2-V3-N type sensors, use test meter, P+F model #1-1350 or equivalent to check sensor actuation and calibration. If the proper meter is not available, contact the factory for additional assistance with the test procedure.

Note 3: Adjust cams by hand by pushing/pulling the cam against the shaft spring to disengage from the mating spline, rotating to adjust and re-engaging firmly onto spline.

Required Tools: Signal detection device (see note 1); slotted screw drivers for cover screws (M4, #10 or 5/16); allen key for cover screws (M5 or M8 socket head cap).

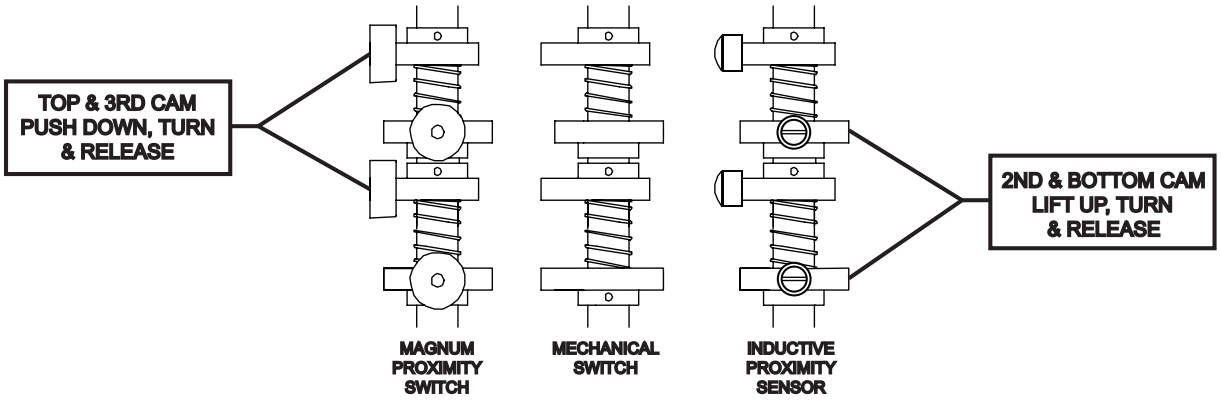
3.1. Switch Adjustment (two switches):

1. Remove unit cover as follows: loosen (but do not remove) captive screws, rotate cover slightly to grip corners, pull firmly.
   DO NOT PRY COVER WITH TOOLS.
2. With valve in the closed position, adjust bottom cam until bottom switch (#2) actuates.
3. Stroke valve to the open position, adjust top cam until top switch (#1) actuates.
4. Cycle actuator several times to confirm proper switch indication at each end of stoke. Finely adjust cams if necessary.
5. Skip to Field Wiring section or replace unit cover, applying approximately 20 in-lbs of torque to cover screws.



3.2. Switch Adjustment (four switches, no CS transmitter):

Follow steps as above for the calibration of two switches but adjust the first and third cams from the top for switches #1 and #2 and the second and fourth cams from the top for switches #3 and #4 (see illustration below).



3.3. Transmitter setting (optional CS transmitter):

For the calibration of optional current signal (CS) transmitter, see Westlock Controls Installation/Operations Manual TECH-301, available through your local sales representative or at westlockcontrols.com.

3.4. Beacon Adjustment:

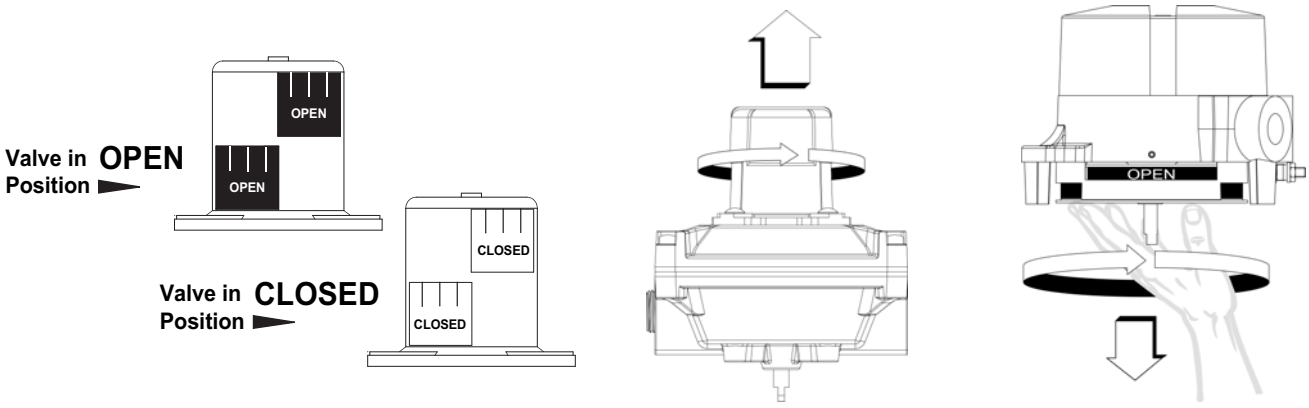
Note: Skip this step if cover is flat or Beacon already displays the correct valve status.

Required Tools: slotted screw driver for #12 screws.

1. For two-way OPEN/CLOSED: remove, rotate and re-fasten outer beacon to synchronize displayed position with valve position.
2. For three-way flow paths: remove, rotate and re-fasten outer beacon and/or inner beacon coupler to synchronize displayed flow path with valve/actuator flow path.

For the 360 and 366 models:
Required Tools: set screw driver for M4 set screws and snap ring tool.

1. Remove shaft snap ring and inner beacon.
2. Disengage set screws from outer beacon, rotate and re-fasten outer and inner beacon to synchronize displayed position with valve position.



4. Field Wiring

See the warnings section of this document for important warnings pertaining to the wiring of Quantum units. Remove and replace cover before and after wiring, per instructions given in the Switch Adjustment section above.

Required Tools: slotted screw drivers for terminal strip screws (#2), some cover screws (M4, #10 or 5/16), and ground screw (#8 or M4); wire strippers as required for field wires; allen keys for some cover screws (M5 or M8 socket head cap).

1. Wire the Quantum control monitor strictly according to the wiring diagram on the inside of the enclosure cover.
2. Confirm that ground wires are secure under grounding screws.
3. Seal all unused conduit entries as required with suitably certified plugs having an ingress protection rating of IP67 or better.
4. Ensure that only suitably certified cable glands are used, having an ingress protection rating of IP67 or better.
5. Ensure that the temperature rating of all field wiring meets the service temperature range of the application.