



JORDAN VALVE

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I & M Mark 37 CML100 / CML250

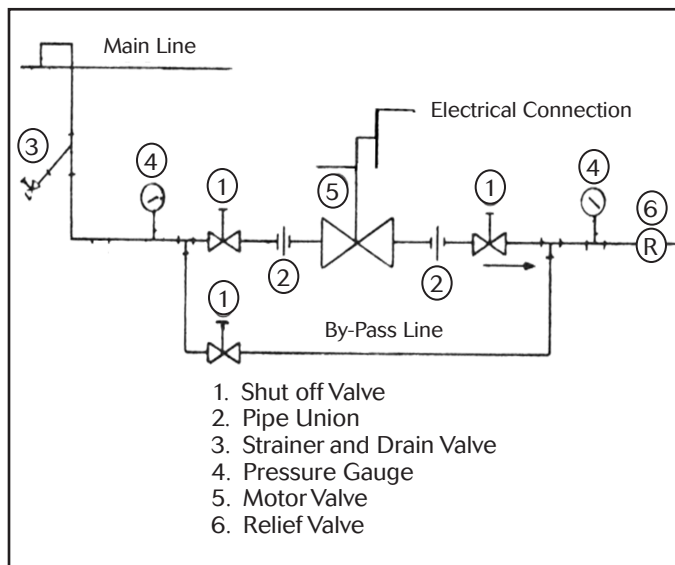
*Installation & Maintenance Instructions for Mark 37
Electric Control Valve with CML100/CML250 Motors*

Warning: Jordan Valve Electric Motor Control Valves must only be used, installed and repaired in accordance with these Installation & Maintenance Instructions. Observe all applicable public and company codes and regulations. In the event of leakage or other malfunction, call a qualified service person; continued operation may cause system failure or a general hazard. Before servicing any valve, disconnect, shut off, or bypass all pressurized fluid. Before disassembling a valve, be sure to release all spring tension.

Please read these instructions carefully!

Your Jordan Valve product will provide you with long, trouble-free service if it is correctly installed and maintained. Spending a few minutes now reading these instructions can save hours of trouble and downtime later. When making repairs, use only genuine Jordan Valve parts, available for immediate shipment from the factory.

Ideal Installation



1. To protect the valve from grit, scale, thread chips and other foreign matter, ALL pipelines and piping components should be blown out and thoroughly cleaned before the installation process begins.
2. Shutoff valves, pressure gauges and by-pass piping should be installed as indicated in the Ideal Installation Schematic to provide easier adjustment, operation, and testing.
3. A line strainer should be installed on the inlet side of the regulator to protect it from grit, scale and other foreign matter. A 0.033 perforated screen is usually suitable for this purpose. Line strainers are available from Jordan Valve.
4. In preparing threaded pipe connections, care

- should be exercised to prevent pipe-sealing compound from getting into the pipelines. Pipe-sealing compound should be used sparingly, leaving the two end threads clean. Jordan uses, and recommends, thread sealer Teflon ribbon.
5. Install the valve in the highest horizontal line of piping to provide drainage for inlet and outlet piping, to prevent water hammer and to obtain faster response.
6. The flow arrow on the regulator body must be pointed in the direction of the flow. The valve may be installed in any direction, but damage to the seating surfaces may occur if installed in a vertical line with the flow upwards.
7. To minimize condensation in hot vapor lines and to protect the motor from excessive heat, piping near the valve should be insulated.
8. If possible, install a relief valve downstream from the regulator. Set at 15 psi above the control point of the valve.
9. Expand the outlet piping at least one pipe size if the downstream pressure is 25% of the inlet pressure or less. A standard tapered expander connected to the outlet of the valve is recommended.
10. Where surges are severe, a piping accumulator is recommended.
11. For best control, 3' 0" straight sections of pipe should be installed on either side of the valve.

Wiring

Caution: Disconnect electrical power supply before wiring motor into circuit to avoid electrical shock or possible damage to equipment. Always disconnect power supply before attempting any wiring changes.

Make all wiring connections in accordance with local regulations and national codes. Use No. 18 wire or larger for all connections to the motor. No. 14 wire should be used on runs over 500 feet long. When wiring in conduit with other wires, motor actuator wires must have insulation equal to the other conductors in the conduit run. All splices are to be made in junction boxes using approved

PROTECT VALVES WITH LINE STRAINERS

solderless connectors or by soldering and then taping the connections. For specific wiring instructions based on your control range and command signal, see Supplemental Motor Literature supplied with your valve upon shipment.

Start-Up

1. Be sure that the action of the control valve and of the controller are such as to give the desired results.
2. With the inlet, outlet, and bypass shutoff valves closed, and no pressure in the downstream line, fully open the outlet shutoff valve. Slowly open the inlet valve just enough to start flow through the control valve. Increase flow gradually by slowly opening the inlet shutoff valve. Do not fully open the inlet valve until you are sure that the controller and control valve have control of the system. Usually the handwheel on the inlet valve will turn freely when this point is reached.
3. To shut off the line fluid, close the inlet shutoff valve first, then the outlet shutoff valve.

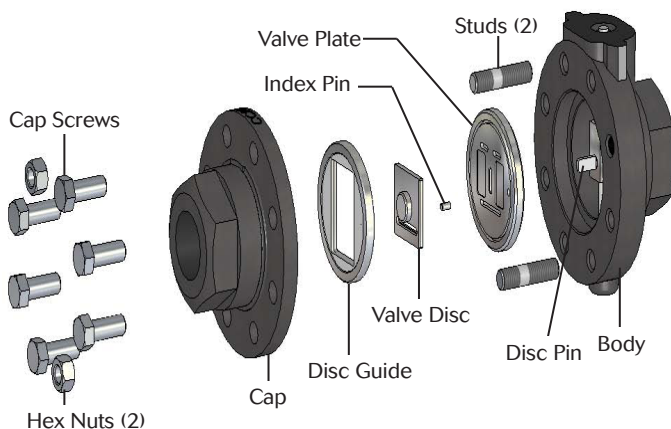
Maintenance

Caution: Make certain that there is no pressure in the valve before loosening any fittings or joints. The following steps are recommended:

1. Close the inlet shutoff valve.
2. Allow pressure to bleed off through downstream piping. Do not attempt to reverse the valve by bleeding pressure from the upstream side of the valve.
3. When the pressure gauges indicate that all pressure has been removed from the system, close the outlet shutoff valve, and the valve may be serviced.

Note: refer to the drawing at the end of this document for description and proper orientation of parts.

Valve Seats



A. DISASSEMBLY

The sliding gate seats of Jordan Valves are precision lapped. Maintaining such tolerances is of paramount importance for your assurance of excellent control and tight shutoff. DO NOT use metallic objects in removing the seats. Care in handling is imperative.

1. Close the shutoff valve on each side of the control valve, and remove the valve from the line.
2. Note the scribes "<" on the side of the valve body and cap. Secure the body flats in a vise. Remove the cap bolts and two nuts, and lift the cap straight up.
3. Before removing, check the valve disc for a stamped arrow. This arrow points to the "<" on the body. (Certain disc that can be rotated 180° without affecting valve stroke may not have an arrow.) Remove the disc guide and the valve disc. Place the valve disc on the bench with lapped surface facing up. Protect the lapped surfaces on both sides of the disc guide.
4. Clean all the parts, body, and cap with solvent. Place a piece of 4/0 polishing cloth or jewelers cloth on a smooth, flat surface such as surface plate, and polish the lapped seating surfaces of the disc, plate and disc guide using a "figure 8" motion. If the parts are scarred, do not attempt to re-lap them, but return them to the factory for repair or replacement. If the seats are not scarred deeply, they can be repaired at a nominal cost.
5. The vertical sections of the disc guide serve as guides for the valve disc while stroking. A 0.005 feeler gauge should be used to check for clearance between this surface and the side of the valve disc. If the clearance is less, clean the guide surfaces in the disc guide with a fine file.

B. REASSEMBLY

1. Place the plate in the body, lapped surface facing the cap. The index pin hole should be on the same side of the body as the "<" on the body. Align the disc pin so that it is centered in the body bore and that it protrudes through the center slot in the valve plate (this should be the longer of the two extensions if the disc pin is cast).
2. Place the valve disc on the valve plate, engaging the disc pin. The arrow on the disc should point to the index pinhole. Insert the index pin in the hole.
3. Place the disc guide onto the valve plate, engaging the index pin. Rotate the assembly slightly until the slot openings in the disc are parallel to the openings in the plate and perpendicular to the stem. Stroking the valve will aide in this alignment.
4. Align the ">" on the cap with the "<" on the body, and place the cap over the two studs in the body.

5. Install the nuts and cap bolts. Tighten uniformly. See back page for torque requirements and tightening procedures.

Stem, Disc & Pin Replacement

1. Remove the valve disc and valve plate, following the procedure outlined under VALVE SEATS.
2. Remove motor following procedure outlined under MOTOR REPLACEMENT.
3. Loosen the lock nut and rotate the disc pin counterclockwise, pulling the valve stem upward while doing so. Do not remove the valve stem completely, but raise it sufficiently so that the disc pin can be removed by pulling up and out. (If replacing stem, remove packing first).
4. Reassemble the disc pin by threading it onto the stem until approximately half the thread length is engaged in the disc pin.
5. Replace the motor assembly.
6. Adjust the seats per SEAT ADJUSTMENT section.

Packing

1. Remove the valve disc and plate following the procedure outlined under VALVE SEATS.
2. Remove motor following procedure outlined under MOTOR REPLACEMENT.
3. Remove yoke by removing the set screws.
4. Remove both packing flange nuts.
5. Remove packing flange, packing follower, and packing.
6. Remove packing retainer and packing spring.
7. Clean packing bore with solvent and blow out thoroughly.
8. Assemble in reverse order and tighten packing nut so that the packing follower bottoms out on top of the valve body.
9. Engage valve stem and actuator stem with connector. Stroke adjustment is required as shown in SEAT ADJUSTMENT.

Motor Replacement

Should a replacement motor be required, only a replacement motor from Jordan Valve can be used because they are factory set for the proper valve stroke. The stroke is not field-adjustable.

1. Disconnect electrical power to valve, and relieve pressure in the valve. Caution: electric power must be disconnected before wiring motor into circuit to avoid electrical shock or possible damage to equipment. Always disconnect power supply to motor before attempting any wiring changes.
2. Remove the motor cover, mark the wires, and disconnect wires from the motor.

3. Remove the valve from the line.
4. Loosen stem connector lock nut.
5. Loosen motor lock nut.
6. Unscrew motor from yoke.
7. Remove the valve seats (see VALVE SEATS section) to prevent damage to the seats while replacing motor.
8. Adjust seats per SEAT ADJUSTMENT section.

Seat Adjustment

1. Remove the seats per VALVE SEAT section and loosen the lock nut.
2. Rotate disc pin until it disengages from stem.
3. For Direct Acting Valves (increase in signal closes seats): set command signal to minimum setting to position motor at full up and limit switch tripped. For Reverse Acting Valves (increase in signal opens seats): set command signal to maximum setting to position motor at full down and limit switch tripped.
4. Rotate disc pin onto stem until pin is at approximate center position in body bore.
5. Replace the plate in the body seat recess with the index pin hole on the same side as the scribed line on the body and with the disc pin protruding through the center slot in the plate.
6. Place the valve disc on the plate, engaging the disc pin, and with the arrow stamped on the disc pointing to the scribed line on the body.
7. With stem connector nuts locked again the stem connector, rotate stem connector until plate and disc slots are in perfect alignment.
8. Remove the seats and tighten the lock nut. Replace the seats.
9. Cycle the motor to closed position and back to open position. Recheck seat alignment and make further adjustments as required.
10. After seats are properly aligned, replace disc guide and cap per VALVE SEATS section. Check to make sure all bolts are tight.
11. Place valve back in service.

Trouble Shooting

If You Experience Erratic Control:

- Oversizing causes cycling and hunting, and reduces the rangeability of the valve. Make certain that your sizing is correct.
- Steam traps downstream may require maintenance.
- Safety valve may be defective and need repair.
- There may be excessive foreign matter on the seats, and seats should be removed and cleaned.
- Valve stroke may need readjustment.
- Valve disc may not be moving freely. Check disc guide clearance and correct if needed.

If Valve Will Not Operate:

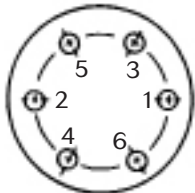
- Electrical power may be off or there may be a loose connection.
- There could be a defective control device.
- The motor actuator may be defective and require replacement.

Ordering Spare Parts

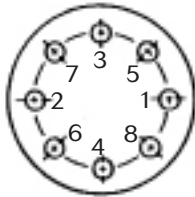
Use only genuine Jordan Valve parts to keep your valve in good working order. So that we can supply the parts, which were designed for your valve, we must know exactly which product you are using. The only guarantee to getting the correct replacement parts is to provide your Jordan Representative with the valve serial number. This number is located on the valve identification tag. If the serial number is not available, the parts needed for your valve might be determined using the following information: Model Number, Valve Body Size, Seat Material and Cv Rating, Spring Range and Set Point, Trim Material, Part Name - Number and Quantity.

NOTE: Any parts ordered without a valve serial number that are found to be incorrect are subject to up to a minimum 25% restock charge when returned.

Torque Values (in. - lbs.)



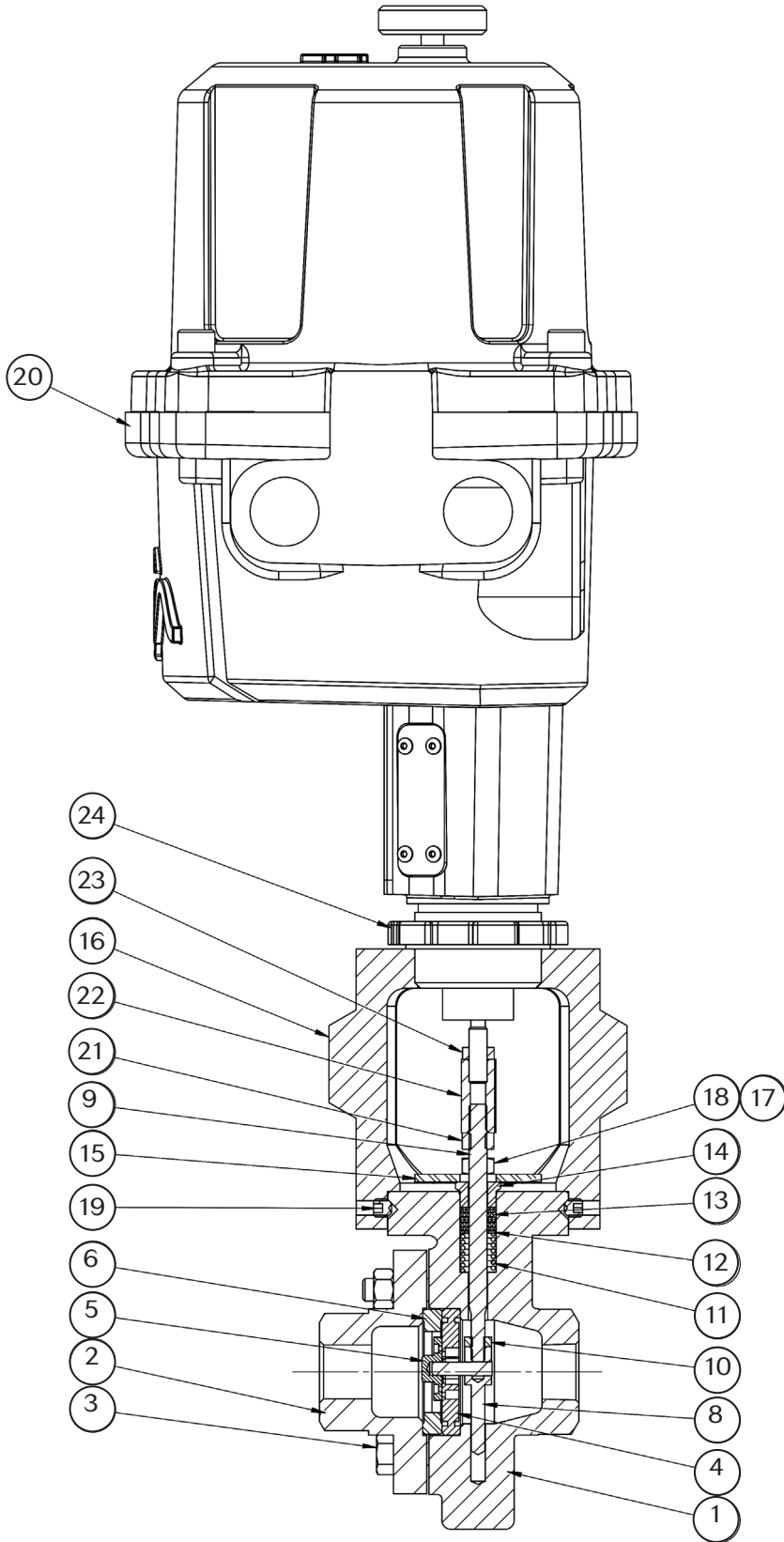
6 bolts
(or multiples)



8 bolts
(or multiples)

Valve Size	Valve Body Material	
	Cl or BRZ	DI, CS, SS
1/4" & 3/8"	70	150
1/2" - 2"	140	200

Illustration and Parts List



Item	Description
1	Body
2	Cap
3	Cap Bolt
*4	Plate
*5	Disc
*6	Disc Guide
*7	Index Pin (not shown)
*8	Disc Pin
*9	Stem
*10	Lock Nut
11	Packing Spring
12	Packing Retainer
*13	Packing Set
14	Packing Follower
15	Packing Flange
16	Yoke
17	Packing Nut
18	Packing Stud
19	Set Screw
20	Motor
21	Nut
22	Stem Connector
23	Nut
24	Motor Nut
*	Recommended Spare Parts