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## I & M Mark 75E

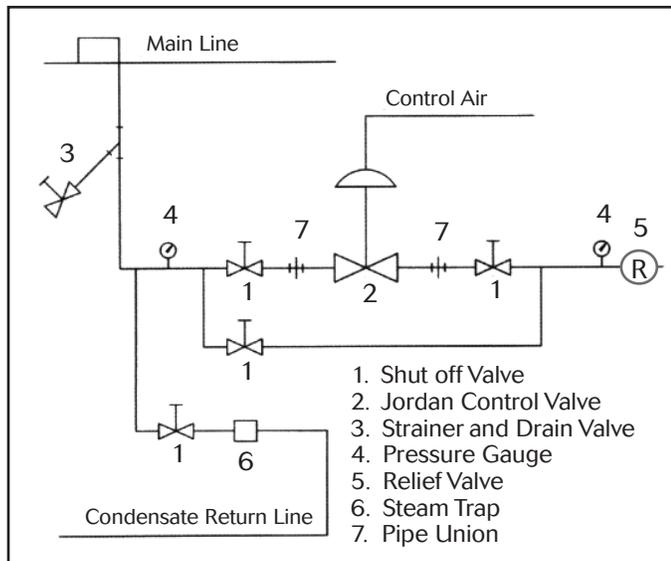
### Installation & Maintenance Instructions for Mark 75E Wafer Control Valve

**Warning:** Jordan Valve 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



- 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.
- Shutoff valves, pressure gauges and by-pass piping should be installed as indicated in the diagram above to provide easier adjustment, operation, and testing.
- A line strainer should be installed on the inlet side of the valve 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.
- For best control, 3' 0" straight sections of pipe

- should be installed on either side of the valve.
- The disc in the valve body must be positioned in the upstream portion of the flow, and the set-screws should be on the downstream side of the valve. Ideally for steam applications, the valve should be installed in the highest horizontal line of piping to provide drainage for inlet and outlet piping, to prevent water hammer, and to obtain faster response.
- If possible, install a relief valve downstream from the valve. Set at 15 psi above the control point of the valve.
- In hot vapor lines, upstream and downstream piping near the valve should be insulated to minimize condensation.
- In gas service, expand the outlet piping at least one pipe size, if the control pressure (downstream) is 25 percent of the inlet pressure or less. A standard tapered expander connected to the outlet of the valve is recommended.
- Where surges are severe, a piping accumulator is recommended.
- On steam control applications, install a steam trap with sufficient capacity to drain the coil or condenser. Be sure to have a good fall to the trap, and no backpressure. Best control is maintained if the coil or condenser is kept dry.
- Loosen the body set screws (42).
- Tighten pipe flange bolts just enough to effect a good seal (start with 12 ft-lbs).

### Start-Up Procedure

- Be sure that the action of the control valve and of the controller are such that you achieve the desired results.

Increase in pressure or temperature must:	And the action of the valve is:	Then the action of the controller must be:
Close Valve	Air to Close (Direct)	Direct
Close Valve	Air to Open (Reverse)	Reverse
Close Valve	Air to Close (Direct)	Reverse
Close Valve	Air to Open (Reverse)	Direct

### PROTECT VALVES WITH LINE STRAINERS

2. The control valve has been pre-set by Jordan Valve, however, finer adjustment may be required to compensate for the system conditions of your application.
3. With inlet, outlet and bypass shutoff valves closed, and no pressure in the downstream line, gradually open the inlet valve enough to start flow through the control valve. Increase the 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.
4. To shut off the line fluid, close the inlet shutoff valve first, and then close the outlet shutoff valve.
5. It may be necessary to re-torque the pipe flange bolts.

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## Maintenance

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**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 the downstream piping. Do not attempt to reverse the flow through 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.

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## Valve Seats

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### A. Disassembly

The sliding Gate Seats of Jordan Valves are lapped to light band flatness. 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. Tighten the body set screws (34). Follow instructions under the Maintenance section to remove valve from line.
2. Disassemble the valve only as far as necessary to do the required work.
3. When replacing seats it is recommended by Jordan Valve that the packing be replaced if the valve is older than one year. Follow the instructions under Packing Replacement.
4. Remove the Set screws (34), and remove the Plate (32), Disc (31), and Gasket (33). Place the plate on

- the bench with the lapped surface up.
5. Clean all parts of the Body (1) with a good quality solvent. Remove Guide screws (30) and Guides (29)\*, the Disc (31) and Plate (32) can then be cleaned. Place a piece of 4/0 polishing cloth or jeweler's cloth on a smooth flat surface such as a surface plate and polish the Disc, and Plate lapped surfaces 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.

### B. Reassembly

1. Place the plate (32) on a clean, flat work surface with the lapped side up. The small single locator hole should be towards you.
2. If the valve action is "air to open", place the Disc (31) on the Plate with the words "TOP REVERSE" away from you. If the valve action is "air to close", the words "TOP DIRECT" should be away from you. Move the Disc (31) until the slots are in perfect alignment with those of the plate (32).
3. Place the Guides (29)\* on either side of the Disc (31), and secure them with the Guide screws (30) so that the Disc (31) can move freely up and down but not side to side.
4. Lightly lubricate both side of the Body Gasket (33) with an anti-seize compound. Place a new Body Gasket (33) into the Body (1).
5. Hold the Plate / Disc assembly together and insert it into the large end of the Body (1) with the slots perpendicular to the stem (28), taking care that the "T" slot in the Disc (31) engages the head of the valve stem. *The word "TOP" should be towards the actuator.*
6. Replace the Set screws (34) in the Body (1).
7. Follow instructions under Installation & Start Up Procedure when placing valve back in service.

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## Stem & Packing Replacement

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1. Remove the Plate (32) and Disc (31), following the procedure outlined under the Valve Seats section.
2. Loosen the Stem Connector Nut (15) and Bolt (16) and remove Connector Halves.
3. Back out the Yoke Bolts (26) and allow the Body (1) to separate from the Base Plate (19).
4. Remove the Packing Nut (17) and the Packing Follower (21).
5. Before pulling the Stem (28) completely out of the Body, you must remove the Stem T-Head (27)\* by unscrewing it from the Stem (28). Remove the Packing Assembly (22,23, & 24). The remaining parts of the Packing Assembly can "fished" out with a small screwdriver. *(Be careful not to damage the packing bore.)*
6. Clean the packing bore in the Body with solvent and blow dry.

7. Clean the Stem (28) with solvent if it is to be reused.
8. Replace the Packing Spring (23) and Packing Retainer (24) in the packing bore.
9. Reassemble the new Packing (22) on the stem (28) with the open part of the "V" downward (^). *There will be a flat on the top and bottom.* Place the Packing Follower (21) on top of the Packing (22). *(Coat each piece of the packing set with a suitable lubricant.)*
10. Gently push the Packing Follower (21) into the packing bore and place the Packing Nut (17) on the Bonnet (1).
11. Partially tighten the packing nut (17). *At this point it is recommended that you gently move the stem up and down three or four times to align the assembly.*
12. Tighten the Packing nut (17) until the Packing Follower (21) bottoms out on the top of the body.
13. Reassemble Yoke (20) to the valve Body (1) with the bolts and washers (25, 26). Reassemble the Seats by inserting in the body as outlined in Valve Assembly Section.

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## Actuator

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### A. Actuator Disassembly\*

\* Multi-stage actuators are not field serviceable. Please consult factory.

1. Remove the Stem Connector Nuts (15) and Bolt (16), and the Stem Connector Halves (14).
2. Apply enough air pressure to move the Actuator Stem (10) slightly, then turn the Actuator Stem counter-clockwise to remove the spring pre-load. Remove the air pressure, and if the Actuator Stem (10) can move freely, all spring pre-load has been removed.
3. Remove the Actuator Bolts (35). Lift the Upper Actuator Case (2) off of the Lower Actuator Case (3). Hold the Actuator Stem (10) under the lower case and turn the entire diaphragm assembly counter-clockwise until the Diaphragm Bolt (7) dis-engages from the Actuator Stem (10).
4. Lift the diaphragm assembly up and out, leaving the Springs (9) (Qty of 3 or 6) in the Lower Case (3).
5. Holding the Actuator Bolt (7), remove the two jam nuts (8). Remove the Lower Diaphragm Plate (5), the Diaphragm (6), and the Diaphragm Stop (4).
6. Clean all metal parts with a high quality solvent.

### B. Actuator Reassembly

1. Holding the Diaphragm Bolt (7), assemble in order: Diaphragm Stop (4), Diaphragm (6), Lower Diaphragm Plate (5), and Jam Nuts (8).
2. Hold the Diaphragm Bolt (7) and tighten Jam Nuts (8) securely.

3. Place the diaphragm assembly into the Lower Case, and thread the Diaphragm Bolt (7) into the Actuator Stem (10) by holding the Actuator Stem and turning the diaphragm assembly clockwise until the Lower Diaphragm Plate (5) makes contact with the Springs (9), then line the bolt hole pattern in the Diaphragm (6) up with the bolt hole pattern in the Lower Actuator Case (3).
4. Carefully place the Actuator Upper Case (2) onto the assembly, taking care to keep the bolt hole alignment with the Actuator Lower Case (3), Diaphragm (6), and Actuator Upper Case (2).
5. Insert Actuator Bolts (35) and thread into the Actuator Lower Case (3) about three turn for each bolt. Cross-torque the Actuator Bolts (2) in two stages to 200 in-lbs.

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## Valve Stroke Adjustment

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1. Loosen the Stem Connector Nuts (15) only enough to allow the Stem Adapter (12) to rotate. DO NOT REMOVE the Stem Connector (14). Proper positioning of the Valve Stem (28) and the Stem Adaptor (12) must be maintained while adjusting the seats.
2. For Direct Acting (Air to Close) Valves; Turn the Actuator Stem (10) clockwise until the Range Springs (9) are slightly compressed. This insures that the Actuator Stem is in its fully upward position. To confirm that the Actuator Stem is fully stroked up, check that it *cannot* be easily rotated without a wrench.
3. For Reverse Acting (Air to Open) Valves; Apply an air pressure of approximately 5 psi above the maximum range pressure (ex. 35 psi for 15-30 psi range) to the actuator. This insures that the Actuator Stem (10) is in its full downward position. To confirm that the Actuator Stem (10) is fully stroked down, check that it *cannot* be easily rotated without a wrench.
4. Check the alignment of the orifices in the Disc (31) and Plate (32). The orifices must be in the open position and in perfect alignment. If the orifices are not in proper alignment, loosen the Jam Nut (13) and thread the Stem Adapter (12) into, or out of, the Actuator Stem (10), which will move the Disc (31) up, or down, on the Plate (32).
5. After the proper alignment has been obtained, tighten the Jam Nut (13) against the end of the Actuator Stem (10). Recheck the seat adjustment. Repeat Step 4 if necessary.
6. Adjust the spring preload if necessary. See the Spring Adjustment section.

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## Spring Adjustment

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The signal range is preset by Jordan Valve; however, when the valve is installed this range may shift slightly

due to pressure drops across the valve. Additionally, preload adjustment may be required after one of the previous maintenance procedures.

1. Remove the air signal line from the actuator and replace with a pressure gauge and an air regulator.
2. Loosen, but do not remove the Stem Connector Bolt and Nut (15,16).
3. Adjust the actuator air pressure to just below the starting point of the range<sup>(1)</sup> and rotate the Actuator Stem (10) until the stem just starts to move. Continue to rotate the Actuator Stem about one-half turn.
4. Remove the air pressure. Gradually increase the air pressure and check at what pressure the valve stem starts to move. Repeat Actuator Stem Adjustment (step 3) if necessary and again check to see if the stem starts to move at the desired pressure.<sup>(1)</sup>
5. After the preload has been properly adjusted, tighten the Stem Connector Bolt and Nut (15,16) and reattach the control air signal line.

NOTE: (1) 15 psi for 15-30 ranges, 30 psi for 30-60 ranges.

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## Changing Valve Action

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The action of a Sliding-Gate Valve may be changed from DIRECT ACTING to REVERSE ACTING, or vice versa, by rotating the Disc (31) on the Plate (28) 180°. Check the valve stroke and orifice alignment and adjust, if required, as outlined in the Valve Stroke Adjustment section.

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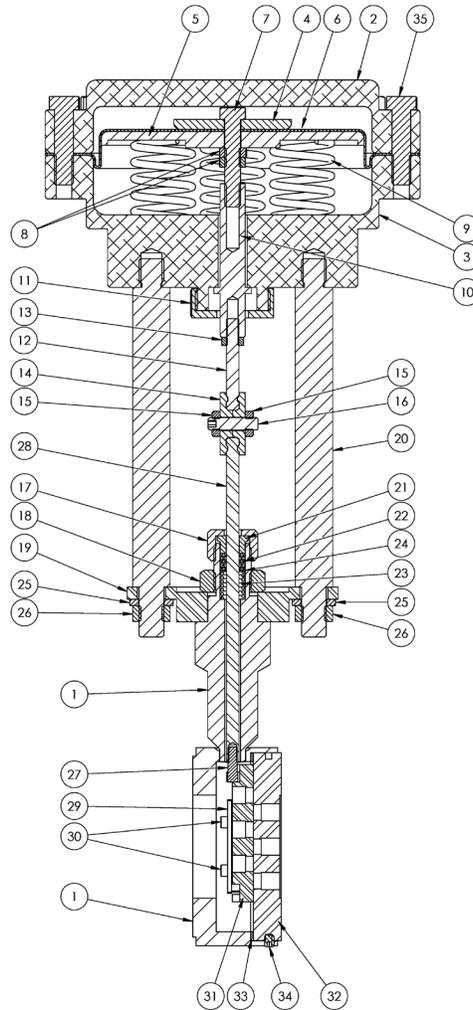
## Ordering Spare Parts

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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.

## Illustration and Parts List MK75E



Item	Description	Quantity	Item	Description	Quantity
1	Body/Bonnet	1	19	Actuator Base Plate	1
2	Upper Act. Case	1	20	Support Leg	2
3	Lower Act. Case	1	21	Packing Follower	1
4	Diaphragm Stop	1	22	Packing	1
5	Lower Diaphragm Plate	1	23	Packing Spring	1
6	Diaphragm	1	24	Retaining Washer	1
7	Diaphragm Bolt. HHCS 5/16-18 x 1.75	1	25	Lock Washer 1/2"	2
8	Jam Nut 5/16-18	2	26	Hex Nut 1/2-13	2
9	Spring	6	27	T-Head*	1
10	Actuator Stem	1	28	Stem	1
11	Gland Nut	1	29	Disc Guide*	2
12	Stem Adapter	1	30	Guide Screws	4
13	Jam Nut 1/4-28	1	31	Disc	1
14	Stem Connector	2	32	Plate	1
15	Jam Nut 1/4-20	2	33	Gasket	1
16	SHSS 1/4-20 x 1"	1	34	CPSSS 10-32 x 1/4"	3
17	Packing Nut	1	35	Actuator Bolts. HHCS 3/8-16 x 1/5"	10
18	Bonnet Lock Nut	1			

\*DN25 - DN50 Only