JORDANVALVE

All About the Mark 80 Series

We often state that Jordan Valve manufactures some of the best temperature regulators in the world, and we are serious. We have put a considerable amount of time and technology into their design to make them that way.

Unfortunately, temperature regulators, in general, have a poor reputation. Reliability is suspect, and performance is often described as 'sloppy.' Jordan is the exception to these generalizations.

The secret of the success of this product line is the simple and superior design of the sliding gate seat.

The Jordan Valve MK 80, our standard temperature regulator offering, uses the sliding gate seat design to its full advantage. The MK 80 uses the LIQUID-VAPOR thermal system that is capable of delivering far more operating power than the simple liquid expansion system used on many competitive valves.

The operation of the MK 80 is fairly simple. A pre-measured amount of liquid fill is drawn into the thermal system, filling the upper diaphragm chamber, the capillary tube, and most of the bulb. As the controlled temperature increases, the volatile liquid fill in the sensing bulb begins to vaporize and creates pressure on the sealed system. This pressure drives the valve stem, which closes direct acting valves, or opens reverse acting valves.

Because of the shorter stroke length of the sliding gate seats, the MK 80 is able to utilize a sealed actuator with a stainless steel diaphragm, and does not require a bellows to operate. To seal the actuator, the upper and lower casings and diaphragm are heli-arc welded around the circumference to create a solid bond. This seal eliminates the need for any type of gasket. All sealing surfaces on the MK 80 are metal to metal. This not only prolongs the life of the valve, but is also a great advantage in steam applications.

In addition to long life expectancy, the MK 80 temperature regulators also offer higher accuracy, due to the sliding gate seats. Most competitive valves are usually globe style, and thus have a much longer stroke length (up to 3 times longer) than a MK 80. Simply stated, this means it takes less change of state within our actuator to change the seat position. The MK 80 will react to smaller temperature changes and need less time to travel to compensate for temperature variations resulting in more accurate regulation.

In contrast, the majority of temperature regulator valves on the market require the use of a bellows system in order to function. In general concept, these valves operate in the same fashion as the Jordan temperature regulator, because both react to temperature changes that cause expansion of the vapor fill. Because most competitive valves are globe style, the longer stroke requires the use of a bellows. The long stroke, combined with the small surface area of the bellows, is often attributed to the "sloppy" performance and lack of accuracy this type of valve offers. The bellows uses a vapor fill based on the desired temperature range. This fill expands or contracts the bellows to stroke the valve. Repeated valve action causes fatigue, and the bellows will eventually fail, allowing the fill to escape. In addition to bellows, most competitive units also utilize a body/bonnet gasket. Like the bellows, these gaskets will fail over time.

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Other Facts and Features Concerning the Mark 80

- Typical applications include tank heating, heat exchangers, and steam tracing.
- Thermal system replacement is very simple. The system is attached to the yoke by four screws for easy replacement and temperature range changes.
- Thermal systems are custom made and are permanently sealed. Because of this, we cannot accept actuator returns.
- The process industries are progressing toward systems which will provide feedback. In these cases it is important to tout the benefits of a fully mechanical system that can continue to function despite loss of electric power, plant air supply, or electronic communications failures. It would be beneficial to explain that all troubleshooting can be done at the valve.
- Please consult the catalog for additional temperature regulating products and options.

Troubleshooting

Trouble-shooting tips for Temperature Regulators

If the customer using the temperature regulator begins to experience Erratic Control:

- Verify the accuracy of the sizing. The valve may be oversized. Oversizing causes cycling and hunting, and reduces the rangeability of the valve. Make sure your sizing is correct. Use JVCV for flow calculations.
- Inspect the valve disc, and be sure that it is moving freely. Excessive foreign matter can accumulate on the seats and prevent them from closing fully. Clean the seats. See maintenance section of I&M. Install strainers in line.
- Check the stroke adjustment of the valve. If necessary, readjust and tighten locknuts securely. See the maintenance section of the corresponding I&M for details.
- Determine if any moving parts may be binding. Inspect and realign, or replace if necessary. See the maintenance section of the I&M for details.
- Look to see if the safety valve may be stuck open. Repair as needed.
- Consider other elements of the system. Steam traps downstream may need maintenance. Inspect and repair as needed.

If the valve is Under Heating:

- Inspect the shut-off valves to ensure they are fully open.
- Verify the accuracy of the sizing. If the valve cannot get close to, or hold the set temperature, it may be undersized. Make sure your sizing is correct. Use JVCV for flow calculations.
- Verify that the inlet pressure is adequate.
- Check the line strainers. Make sure they are clear.
- Confirm that all steam traps are functioning properly. If return line is cool, the steam coil may be clogged.

If the valve is Over Heating:

- Verify that seats are functioning properly. Seats may be stuck in the open position. Clean and/or replace per I&M instructions.
- Check the stroke adjustment. Readjust per stroke adjustment section of I&M.
- Inspect for damage or failure of the thermal system.

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If the valve is Under Cooling or Over Cooling:

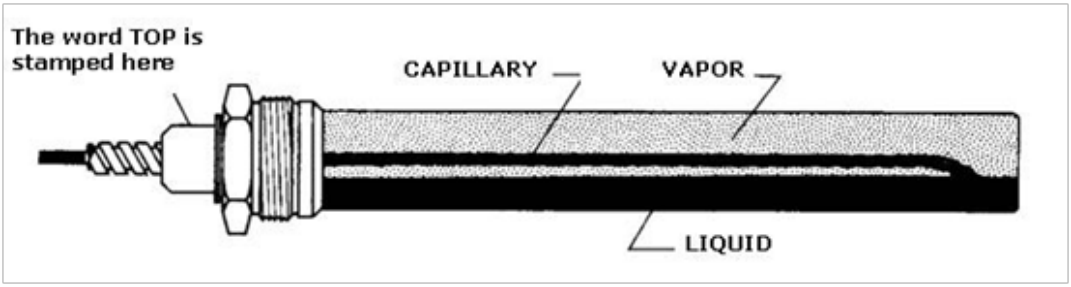
- Ensure that coolant is circulating properly and that all steps have been taken as indicated in Under Heating and Over Heating instructions above.

If the customer using the valve experiences Thermal System Failure:

- Look for specific symptoms. Thermal system failure is usually indicated by failure of the regulator to respond to temperature changes, and when all other trouble-shooting steps have failed to correct the problem. The adjusting spring will hold Direct Acting valves open and Reverse Acting valves closed.
- Test the system. The thermal system can be tested by placing the sensing bulb in a container which can be quickly heated with steam or hot water, or cooled with cold water or crushed ice. Observe the valve stem while alternating heating and cooling the bulb. If the stem does not move, it is likely that the thermal system has lost its fill. The thermal system is field replaceable but any repair efforts must be done at the factory.

Jordan Valve Installation & Maintenance Tip

When the bulb is to be mounted horizontally, it must be turned so that the word TOP (stamped on the adapter) faces upward.



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