



KEYSTONE FIGURE 580 AND 583 BALLCENTRIC VALVES

INSTALLATION AND REPAIR INSTRUCTIONS

Complete storage, installation, disassembly and assembly instructions for Eccentric style, round ported plug valves:

- F580 - DN 80 to 100
- F583 - DN 150 to 300

STORAGE PROCEDURES

The valves should be stored on a pallet or 'skid' in a clean, dry warehouse. If outdoor storage is necessary the unit should be wrapped in plastic (not supplied by Emerson) and be kept off the ground and high enough to avoid standing water or exposure to extreme conditions.

The valves should be stored with the disc/plug fully open and ensure all flange protectors are kept in place.

INSTALLATION

Straightway ballcentric valves are asymmetrical in design. On all valves, one end flange is marked 'seat' and this marking should be used to identify the valve ends.

Some valves also have an arrow case on the body. This arrow points towards the seat end, and does not always indicate the preferred fluid flow direction.

In general, straightway ballcentric valves will seal against higher differential pressures when the pressure is applied from the end opposite to the seat end. If sealing against pressure applied from the seat end is critical, then this must be specified when ordering and the valves then tested for this condition.

With normal gas and liquid service, the shut-off direction and flow direction will commonly be the same and the valve should then be installed with the seat end downstream. In some applications, such as pump output shut-off valve, the purpose of the valve is to stop reverse flow when normal flow ceases; in this case the valve should be installed with the normal flow from the seat end so that the pressure against which the valve is to shut-off is applied from the end opposite the seat. In cases where shut-off is required in both directions, the valve should be installed so that the highest differential pressure at shut-off, or that against which the sealing is most critical, is applied to the end opposite the seat.

MAINTENANCE

The stem seals on the ballcentric valves are long life items and will not, under normal circumstances require replacement during the life of the valve. When the service is such that

the need for replacement is expected, this can usually be scheduled at plant shut downs or done with pressure removed from the line in which the valve is installed.

OPERATION

Wrench actuated valves

Wrench actuated straightway ballcentric valves close by 90° clockwise rotation. Indication marks are provided on the actuating stem to show the plug position at any time and stops are provided to limit the plug travel.

Gear actuated valves

Gear actuated valves cannot creep or slam. The worm gear actuators used are designed to prevent creep or slam (when properly adjusted) in extreme or in intermediate (throttle) positions. The valves are closed by turning the actuator/operator input shaft clockwise. The valve opens by turning the operator input shaft counterclockwise. Indication marks are provided to show the plug position at any time.

SAFETY PRECAUTIONS

The valve is a pressure vessel.

The valve must be depressurized prior to performing maintenance.

When the service is of a clogging type, likely to build up in the valve body space, it is best to arrange for the pressure to be shut-off from the seat end of the valve. In cases of extreme clogging, and when the pipeline is horizontal, the valve should be positioned so the valve stem is horizontal and the plug rises into the top of the body on opening. In vertical pipe runs, the valve should be installed with the seat end flange up. Valves to be buried should be opened and closed under pressure at least once before installation.

This is required to verify that no parts have become loose or damaged during shipment. After the valves have been installed in line and before use, gear actuator lubrication should be checked (see the appropriate operator maintenance manual).

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DISASSEMBLY INSTRUCTIONS

CAUTION

Never attempt to remove or perform maintenance on a valve that is pressurized and ensure that pipeline is isolated.

ACTUATOR REMOVAL

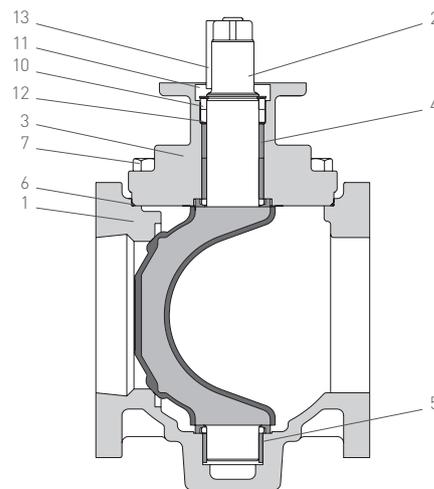
All figure 580/583 valves allow for direct mounting of actuators/gear operators. Removal of these may be accomplished by removing the mounting bolts used to hold the actuator on the top plate of the valve and then sliding the entire actuator assembly off of the valve stem.

1. On DN 150 and smaller valves, open valve fully.
2. Remove cap screws (7) in a diagonal pattern.
3. Lift cap (3) away from valve body.
NOTE: When cap is removed from body, plug will remain attached to cap.
4. Using a rubber mallet, drive plug (2) out of cap (3).
5. Remove o-ring (6) from valve body cap counter bore.
6. Remove packing (12) and grit excluder.
7. Remove upper spacer (9) from upper plug trunnion.
8. Remove retaining ring (11) from stem groove.
NOTE: Care should be taken when removing retaining ring. Use properly sized circlip pliers and wear appropriate safety glasses.
9. Remove bushing (10) from upper plug stem.
10. Remove stem packing seal (12) from upper plug stem.
11. Remove lower packing and grit excluder (8).
12. Remove lower spacer (9) from lower plug trunnion.
13. Check that bearings are not unduly pitted, galled or worn. If so, they will require replacement.
14. Using a bearing puller if required, pull the lower bearing (4) from the body bore and the top bearing from the cap bore.
15. If the lower bearing cannot be easily removed, fill the stem hole with grease and drive a plug of the same diameter as the stem into the bearing bore. The hydraulic forces generated will push out the lower bearing. Thoroughly clean all components and inspect all metal parts and valve bore for corrosion. Check the plug for nicks or wear on the rubber seating surface. Check all packing for cuts or deformation. Replace any parts needed. The seat area of the body should be inspected carefully for damage.

ASSEMBLY INSTRUCTIONS

NOTE: When installing new parts supplied by Emerson, all machine surfaces are coated with Pro-Coat to prevent rust. This coating can easily removed with paint thinner.

1. Make sure the lower trunnion hole is free of any foreign matter.
2. Using the proper bearing installation tool (relative to the size of the valve) tap lower bearing into body bore flush with inside machined counter bore on bottom of valve body.
3. Verify that lower plug trunnion is free of foreign matter.
4. Lubricate lower plug trunnion diameter with a coat of lubricant-never-seize.
5. Place lower spacer (9) on lower trunnion up to the rubber coated portion of plug. The lower spacer should be with counter bore facing away from rubber coated portion.
6. Lubricate lower packing and grit excluder (8) with a coat of lubricant-silicone grease.
7. Place lower packing and grit excluder (8) on lower trunnion so that it will seat in the groove of the spacer.
8. Make sure the inside diameter of the lower bearing (5) is clean and free of dirt, grit or any other foreign matter.
9. Install plug into valve body by placing the lower trunnion into the bearing that has been placed in bottom of valve body. Turn plug while forcing down until plug bottoms out.
10. Lubricate upper plug trunnion with a coat of lubricant-never-seize.
11. Place upper spacer (9) on upper inset) on upper trunnion up to the rubber coated portion of plug. The upper spacer should be with counter bore facing away from the rubber coated portion.
12. Lubricate upper packing (grit excluder) (8) with a coating of lubricant-silicone grease.
13. Place upper packing (grit excluder) (8) on the upper trunnion so that it will seal the groove of the spacer.
14. Place upper bearing (4) on the upper trunnion until it shoulders against the upper spacer.
15. Lubricate cap o-ring (6) with a coating of lubricant-silicone grease and fit cap o-ring in valve body cap counter bore.
16. Install cap (3) over plug stem rotating clockwise to ensure proper orientation.
17. Insert cap screws (7) into cap holes and tighten by hand. Use appropriate torque wrench and a diagonal pattern to tighten cap screws to the recommended torque value (appropriate for the valve size) listed below



RECOMMENDED CAP SCREW TORQUES

Valve size DN	Torque (Nm)
80	62.7
100	167
125	200
150	200
200	303
250	395
300	400

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NON-ADJUSTABLE STEM PACKING SEAL INSTALLATION (Standard)

- Lubricate stem packing seal with a coating of lubricant-silicone grease.
- Install stem packing seal (12) on upper plug stem and into cap counter bore with the "U" shaped side facing valve interior. Use the bushing to (4) push the seal into the stem bore.
NOTE: Use thin strapping material inserted in between stem diameter and stem seal inside diameter to help release air trapped under stem seal.
- Install retaining ring (11) in stem groove to hold bushing (4) in place.
NOTE: Care should be taken when installing retaining ring. Use only properly sized snap ring pliers and wear appropriate safety glasses. Take care so that the retaining ring does not spring out and hit you.

ASSEMBLY INSPECTION AND TESTING THE VALVE

- Rotate plug to ensure proper operation by hand, wrench, or operator.
- Visually check to ensure full contact of plug and seat.
- Valve assembly is now ready to be tested.

Rotate the valve to the full close position. Apply water pressure to the inlet side of the valve and check for leaks at the stem seal and plug.

ADJUSTABLE PACKING GLAND AND BRIDGE INSTALLATION (Optional)

- Place packing gland (16) on upper plug stem over stem bushing.
- Insert packing bridge studs (15) into body cap holes (Note: one end of the studs is a left handed thread and one end is right handed - the left handed thread should be inserted in the cap) and rotate CCW until two (2) to three (3) threads have been engaged.
- Place packing bridge (17) on upper plug stem over packing bridge studs and stem packing gland. Place nuts on packing bridge studs and tighten by hand. Use appropriate tool and adjustment nut to further tighten studs until snug.

TROUBLESHOOTING

Symptom	Probable cause	Solution
Leakage past the flange face	Flange bolts are not evenly torqued	Loosen the flange bolts and re-tighten the to correct torque per ASME requirements. Loosen the flange bolts and re-tighten the to correct torque per ASME requirements.
Leakage in the closed position (leakage in the pipeline)	Improper flanges	Confirm mating flange type by referring to AS2129
	The plug is not closing fully	Refer to actuator adjustment procedures.
	Actuator is not properly adjusted	
Leakage at the valve stem	Damage or improperly aligned plug	Follow 'Plug Installation' procedures or replace plug if damaged.
	Line pressure exceeds valves working pressure	Reduce line pressure to valve working pressure.
Excessively high torque	Packing (grit excluder) failure	Refer to plug installation
	Obstruction in the pipeline	Remove valve from pipeline and remove obstruction
	Valve stem or plug is bent	Replace plug/stem assembly (check for water hammer or freezing of line material)
	Scale build-up on stem or seat	Open and close the valve several times. Operate the valve at least once a month.

