Penstock & Valve Specialists

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INSTALLATION AND MAINTENANCE RECOMMENDATIONS

DISC FLUSHING VALVES

Please read the following notes prior to commencing installation of the disc flushing valve(s).

Handling and Storage

Disc flushing valves should be stored with the mounting face flat on a horizontal surface with no other materials on top, particular care should be taken to avoid introducing twist or distortions to the body.

If chains or slings are to be used for handling purposes the body should be protected from damage with cloth sacking or similar material. Never use hooks unless eyebolts are fitted.

Installation Guidelines

The performance from an installed disc flushing valve is critically dependent upon the quality of installation. In view of this we strongly recommend specialist installation engineers experienced in installations of this type.

These installation guidelines apply to Express Valve Services Limited standard disc flushing valve product range using competent, trained personnel working with suitable equipment under safe site conditions to carry out the work, and the installation will take place on concrete having a minimum strength of 25 N/mm^2.

Due to civil work tolerances mounting of the disc flushing valve unit must be effected by grouting (wall mounting type) between the wall and body without contact between the body and wall avoiding distortion. Attempts to seal between the body and wall using mastic or resilient compounds may result in leakage.

Pressure from any locating jacks must be spread evenly using timber. Avoid point or concentrated loading to any part of the body, and never apply jacking loads to the door.

Installation Sequence

Disc flushing valve installation avoiding distortion and consequent leakage can be achieved using the following recommendations.

Wall Mounted Disc Flushing Valves – Expanding Anchor Bolts

1. Present the disc flushing valve unit into its required position ensuring the valve invert is flush with the 'civils' invert and the axis of the valve is vertical. Temporally fit the lifting handle if necessary to ensure the valve axis is vertical.
2. Using the disc flushing valve body as a template drill all holes to the diameter and depth specified for the anchor bolts to be used.
3. During the drilling cycle anchor bolts may be inserted into two holes to prevent movement of the disc flushing valve unit, place packing/jacking pieces local to the bolts to the recommended grout thickness. Tighten the anchor bolts sufficiently to hold the packing/jacking pieces in position.
4. The protective coating inside the body fixing holes may be damaged during the drilling operation. Any damage should be made good immediately after drilling in accordance with the paint specification to prevent corrosion.
5. Blow/remove dust or debris from the drilled holes.
6. Insert the remaining anchor bolts, place packing pieces or jacks of the required grout thickness as close as possible to the fixing. Tighten the anchor bolt sufficiently to 'nip' the packing piece or jack

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7. Check for plumb and level in all directions and adjust jacks or insert additional packing pieces to compensate for irregularities in the civil work.
8. Check seal faces with a feeler gauge for non-acceptance of 0.1mm (0.004") around the full perimeter of the aperture. Adjust the packing only where this tolerance is exceeded and sufficient only to close the gap.
9. Tighten all of the anchor bolts sufficiently to ensure movement of the disc flushing valve unit does not occur during grouting. If movement is suspected when tightening the anchor bolts the feeler gauge check and possible adjustment must be repeated.

Wall Mounted Disc Flushing Valves – Chemical/Resin Anchor Bolts

1. Present the disc flushing valve unit into its required position ensuring the valve invert is flush with the 'civils' invert and the axis of the valve is vertical. Temporally fit the lifting handle if necessary to ensure the valve axis is vertical.
2. Using the disc flushing valve body as a template drill all holes to the diameter and depth specified for the anchor bolts to be used.
3. The protective coating inside the disc flushing valve fixing holes may be damaged during the drilling operation. Any damage should be made good immediately after drilling in accordance with the paint specification to prevent corrosion.
4. Blow/remove dust or debris from the drilled holes.
5. Follow the recommendations and instruction provided separately with the chemical/resin anchor bolts.
6. Support the studs in the centre of each mounting hole square to the disc flushing valve unit mounting face until the resin is fully cured. If the studs are not kept square then the disc flushing valve unit may become 'wedged' by the misaligned studs.
7. Fit washers and nuts to the anchor studs, place packing pieces or jacks of the required grout thickness as close as possible to the fixing. Tighten the anchor bolt sufficiently to 'nip' the packing piece or jack.
8. Check for plumb and level in all directions and adjust jacks or insert additional packing pieces to compensate for irregularities in the civil work.
9. Check seal faces with a feeler gauge for non-acceptance of 0.1mm (0.004") around the full perimeter of the aperture. Adjust the packing only where this tolerance is exceeded and sufficient only to close the gap.
10. Tighten all of the anchor bolts sufficiently to ensure movement of the disc flushing valve unit does not occur during grouting. If movement is suspected when tightening the anchor bolts the feeler gauge check and possible adjustment must be repeated.

Notes: Anchor Bolts

1. The anchor bolts manufactures installation guidelines must be followed for safe application and use of their products.
2. When 'plated' mild steel anchor bolts are used the exposed portion of the bolt a protective coating should be applied to avoid corrosion.

Shuttering and Grouting

1. Shutter up around the external profile of the body and the internal aperture using timber faced with a thin neoprene type sponge material to ensure a good, clean seal without undue pressure.
2. Check again for plumb and levels, and non-acceptance of a 0.01mm (0.004") feeler gauge at the seal faces. If correct mix and pour a fluid grout in proportions of 50 Kg of Ordinary Portland Cement, 50 Kg of silver sand and one small tub (0.227 Kg) of Conbex or equivalent non-shrink additive between the disc flushing valve body and wall.

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3. Leave the installation undisturbed for the duration of the grout curing cycle as recommended by the Conbex or equivalent additive manufacturer. When the grout is fully cured, check that the anchor bolts are still tight in sequence (i.e. when one bolt has been checked follow on with the bolt diagonally or diametrically opposite).
4. If all anchor bolts are tight then remove the shuttering and generally clean up and remove any excess grout or debris from the penstock. Pay particular attention to the sealing faces to ensure they are not damaged to minimise leakage.
5. If 'excessive' tightening of any of the anchor bolts was required during the above checking procedure re-check the sealing faces for non-acceptance of a 0.1mm (0.004") feeler gauge.
6. Exposed portions of plated steel anchor bolts should be painted on completion of the installation.
7. Do not cut off protruding threads on chemical anchor studs when fitted.

Pipe Flange Mounting

1. The connecting flange on several sizes of disc flushing valves may be studded, in this case(s) the studs and nuts are supplied with the valve. For 'bolted' connections fasteners are not supplied unless specified at order placement. Gaskets are not supplied unless requested for either studded or bolted connections.
2. Ensure the pipe flange gasket surface is clean, flat and vertical.
3. Check that the connecting holes or studs in the disc flushing valve body and pipe flange are in alignment and the axis of valve is vertical. Temporally fit the lifting handle if necessary to ensure the valve axis is vertical.
4. Insert the bolts through the pipe flange and position the gasket into its seating position. Locate the disc flushing valve unit on to the flange bolts ensuring the valve is centrally positioned and fit nuts, ensure the axis of the valve is vertical and take up the 'slack' in the nuts.
5. For safety purposes the handling/lifting equipment should remain in position until the disc flushing valve is securely clamped.
6. Tighten the nuts uniformly, diagonally or diametrically opposite in turn. Excessive tightening of the studs or bolts/nuts is unnecessary.
7. Check the sealing faces for non-acceptance of a 0.1mm (0.004") feeler gauge. Compensate for minor discrepancies by adjusting the flange bolt clamping torque.

Lifting Handle Installation

1. Assemble the lifting handle to the disc flushing valve door and attach the washer and nut. Allow sufficient clearance between the washer and door for the handle to fit over the wall hook.
2. Ensure the disc flushing valve is fully closed and the lifting handle vertical.
3. Mark the position for the wall hook from the lifting handle (top hole in the lifting handle).
4. Remove the lifting handle from the disc flushing valve assembly.
5. Fit and grout the wall hook.
6. Allow the grout to fully cure and re-assemble the lifting handle to the disc flushing valve unit.

Operation

1. Holes are provided in the lifting handle for attachment to the wall hook for securing the door in the closed, intermediate and open condition.

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2. The disc flushing valve is fitted with an integral stop device to prevent over travel of the door.
3. The lifting handle connection to the door is slotted to provide an impact device to overcome 'sticking' in the closed position.
4. Raise the lifting handle to the degree of opening required and attach to the wall hook.

Maintenance Schedule

Frequency of maintenance is dependent on the frequency of use and operating duty, in view of this the following recommendations must be considered as minimum requirements.

Every Six Months

Carry out a thorough visual inspection and implement the following actions;

- Clean the disc flushing valve unit(s) by hosing down with clean water to remove grit or debris. Particular attention should be paid to the sealing faces and pivot assembly.
- Check for signs of leakage between the disc flushing valve body and 'civils', make good any faults. For pipe flange mounted valves check the gasket interface for leakage.
- Check the tightness of bolts/anchor bolts. Adjust as necessary.
- Check for damage to the disc flushing valve body, door and sealing faces. Repair and/or replace damaged components.
- Check the door pivot assembly, ensure there are no damage or worn components.
- Moving parts should be lightly oiled or greased as appropriate.
- Check the equipment for signs of corrosion or damage to the paint system. Repair as necessary.

Recommended Lubricants

- For general lubrication purposes under normal operating conditions we recommend Shell Alvania R2 (or equivalent).
- For seawater applications we recommend Rocol Tuflube Allweather grease.
- For potable water applications we recommend using Rocol MX22 or Rocol MX66 grease.