Penstock & Valve Specialists

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INSTALLATION AND MAINTENANCE RECOMMENDATIONS

SLUDGE VALVES AND SLUDGE PLUGS

Please read the following notes prior to commencing installation of the sludge valves or sludge plugs.

Handling and Storage

Store the valves vertically (operating condition) with the door fully closed to prevent ingress of debris between the body and door sealing faces. Store the valves as described on a pallet or similar to avoid damage to the connecting flange seal face.

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

General Notes

These installation guidelines apply to Express Valve Services Limited standard sludge valve and sludge plug product range using competent, trained personnel working with suitable equipment under safe site conditions to carry out the work.

Sludge valve and sludge plugs are supplied for connection to pipe flanges in accordance with BS4504, PN16 rating. The connecting flange on small valve sizes may be studded, in this case(s) the studs and nuts are supplied. For 'bolted' connections fasteners are not supplied unless specified at order placement. Gaskets are not supplied unless requested for either studded or bolted connections.

Pillar supporting (coping) brackets can be supplied for outreaches up to and including 450mm. For applications where the outreach exceeds 450mm we recommend the pillar and operator is supported on structural steelwork.

Generally, sludge valves and sludge plugs are despatched as units without the operating equipment attached, however, where more than one unit is involved the operating equipment will be identified with an item number to match the respective valve assembly.

Please note: Sludge Valve sizes 80mm and 100mm diameter have a studded flange connection.

Installation Sequence

Satisfactory sludge valve and sludge plug installation can be achieved using the following recommendations.

Flange Mounting the Valve- Sludge Valve

1. Check that the connecting holes in the valve and pipe flange match.
2. Thoroughly clean the area of the tank or chamber local to where the valve is to be installed.
3. Ensure that the connecting pipe flange is flat, clean and is horizontal. Place the gasket in position.
4. Clean the valve body base flange. Suspend the valve above the connecting pipe flange and remove any nuts from the mounting studs (when fitted).
5. Align studs/bolts in the valve flange with the holes in the pipe flange and lower the valve into position.
6. Fit the nuts, take up the slack in the nuts.
7. For safety purposes the handling/lifting equipment should remain in position until the valve is securely clamped.
8. Tighten the nuts uniformly, opposite nuts in turn.

Check the axis of the valve is vertical and the sealing faces for the non-acceptance of a 0.1mm (0.004") feeler gauge.

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Floor Mounted Sludge Valves

1. Present the valve to its required position over the aperture in the chamber floor. Using the holes in the valve flange as a template drill all holes to the diameter and depth specified by the manufacturer for the anchor bolts to be used.
2. During the drilling cycle anchor bolts may be placed in the drilled holes to prevent movement of the valve. Remove the valve and remove any debris or dust from the drilled holes.
3. Fellow the manufacturer's recommendations regarding the installation and use of the anchor bolts.
4. Position packing pieces or jacks of the required grout thickness local to the anchor bolts. Tighten the anchor bolts sufficiently to ensure movement of the valve does not occur during grouting. Ensure the valve is level and the stem vertical.

Shuttering and Grouting

1. Fully open the valve. Shutter up around the internal and external profile of the orifice and flange to provide a good seal for the grout without undue pressure.
2. Mix and pour a fluid grout in proportions of 50 Kg Ordinary Portland Cement, 50 Kg of silver sand and one small tub (0.277 Kg) of Conbex or equivalent non-shrink additive between the valve flange and the floor.
3. Recommended grout thickness 20/25mm.
4. Leave the installation undisturbed for the duration of the grout curing cycle as recommended by the Conbex or equivalent manufacturer. When the grout is fully cured check the anchor bolts are tight. Tighten if necessary.
5. Ensure all anchor bolts are tight. Remove the shuttering and generally clean up and remove any excess grout or debris from the valve. Pay particular attention to the valve sealing faces and ensure they are not damaged to minimise leakage.
6. Fully close the valve.

Operating Equipment – Sludge Valves

1. Sludge valves and operating equipment are despatched as described previously, however, where more than one unit is involved the operating equipment will be identified with an item number to match the respective valve assembly.
2. Manufacturers of proprietary operators (e.g. electric actuators, gearboxes, etc.) provide Installation, Maintenance and Operating Instructions for their equipment.
3. Express Valve Services Limited recommend the use of installation engineers experienced in commissioning operating equipment where electric actuators are involved. Damage can be caused to the sludge valve and operating equipment as a result of incorrect setting of limit and torque switches.
4. The following guidelines cover the installation of stems, guide brackets, coping brackets, pillars etc. Particular attention should be paid to Section 3 above with regard to installation and commissioning of electric actuators. Generally electric actuators will be despatched in their original packaging to avoid damage in transit. The actuator thrust base and drive sleeve assembly is fitted to the pillar actuator mounting flange. Remove the thrust base assembly at this stage to assist ease of final assembly. Retain and store the thrust base and fasteners until they are required.
5. Attach the extension stem assembly to the valve and support the operating equipment securely in vertical alignment. Use the stem as a guide to mark out the positions of guide brackets, coping brackets etc. Please note: When coping brackets are supplied the are generally fitted to the pillar base flange.
6. Fix and grout the guide bracket(s), coping bracket(s) etc. to the 'civils' for the type of anchor bolts specified.
7. Note, that the pillar should be set to provide correct vertical alignment of the stem support at the top of the pillar **before** fitting and tightening the fasteners/anchor bolts through the pillar base flange. This will ensure that the clearances in the pillar base flange do not create misalignment of the stem.

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8. On completion of the above procedure check that the operating equipment in vertical alignment. Fit the means of operation, e.g. handwheel, gearbox, actuator etc. Refer to Section 9 below for mounting electric actuators on pillars.
9. The keywayed extension stem end should project above the actuator mounting flange on the pillar provided the operating levels are correct. Remove any packaging used to retain or protect the stem end or feather key in transit.
10. Ensure the sludge valve is fully closed.
11. The thrust base assembly can now be re-assembled to the actuator mounting flange on the pillar. Align the keyway in the drive sleeve with the feather key on the extension stem and fully seat the thrust base assembly onto the actuator mounting flange on the pillar. The feather key must have full contact with the keyway in the drive sleeve. Insert and tighten the fasteners provided.
12. Carefully remove the actuator from its packaging. Locate the actuator/thrust base mounting fasteners, remove and retain for later use. Ensure the actuator position indicator shows a fully closed state.
13. Using appropriate and safe lifting equipment position the actuator over and slightly above the thrust base assembly on the pillar. Align the actuator/thrust base mounting holes. Note the position of the actuator drive dogs relative to the position of the drive sleeve connection. With the actuator in manual mode rotate the handwheel to fine tune the position of the drive sleeve dogs. Slowly and carefully lower the actuator, repeat the fine tune procedure until the drive dogs are fully engaged with the drive sleeve connection in thrust base assembly Ensure the actuator is fully seated on the thrust base assembly. Insert and tighten the fasteners provided.
14. The sludge valve/operating equipment is ready for commissioning by suitably qualified installation engineers.

Installation – Sludge Plugs

1. The disc, guide cone and lifting handle are despatched as an assembled unit, the valve body and support bracket are despatched as separate items.
2. Check that the connecting holes in the valve body and pipe flange match.
3. Thoroughly clean the area of the tank or chamber local to where the valve is to be installed.
4. Ensure that the connecting pipe flange is flat, clean and is horizontal. Place the gasket in position.
5. Clean the valve body base flange. Suspend the valve body above the connecting pipe flange.
6. Align the bolts in the valve body flange with the holes in the pipe flange and lower the valve body into position.
7. Fit the nuts, take up the slack in the nuts.
8. For safety purposes the handling/lifting equipment should remain in position until the valve body is securely clamped.
9. Tighten the nuts uniformly, opposite nuts in turn.
10. Lower the disc/lifting handle assembly in to position on the valve body.
11. Check the axis of the disc/lifting handle assembly is vertical and the sealing faces for the non-acceptance of a 0.1mm (0.004”) feeler gauge.
12. With the disc/lifting handle in position (valve fully closed) mark the location for the support bracket. During positioning of the support bracket provision must be made for the ‘lift’ of the disc (valve fully open).
13. Fix and grout the support bracket to the ‘civils’ for the type of anchor bolts specified.

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Operating Instructions

Prior to operating the sludge valve or sludge plug clean the valves to remove excess grout or debris. Partially open the sludge valve and inspect the body and door sealing faces and remove any debris. The sealing faces on the sludge plug are fully exposed during installation and will require cleaning to achieve a satisfactory seal.

Sludge Valves

1. Refer to the documentation provided by the manufacturers of proprietary operating equipment covering installation, commissioning, operation and maintenance.
2. Where handwheels are fitted the direction of closing the sludge valve is marked on the handwheel rim. For powered actuation opening and closing directions are marked on the operating unit.
3. If 'tight spots' are encountered during operation of the equipment avoid using excessive force since this may cause damage to the stem and/or drive nut. In such cases determine the cause and resolve the obstruction to correct operation of the equipment. The risk of potential leakage and operational problems can be reduced by implementation of a maintenance schedule.
4. The working life of the sludge valve will be prolonged if minimum force is used to achieve satisfactory performance.
5. Handwheel diameters and operator sizes will have been determined with the above in mind. Express Valve Services Limited does not advise increasing/changing to larger handwheels to resolve operating problems. Similarly, for powered actuation it is not advisable to alter the settings of torque or limit switches after these have been correctly set during commissioning of the equipment.
6. Operating equipment utilising rising stems should be fitted with protection tubes.

Sludge Plugs

1. The sludge plug is operated from closed by raising the lifting handle until the 'key' passes through the slot in the support bracket and rotated by 90° to support the disc in position.
2. Reversing the above procedure closes the sludge plug. The guide cone is used to locate the disc onto the valve body seats.
3. The specified 'lift' of the sludge plug must not be exceeded. Excessive lift of the valve disc may result in re-locating the guide cone with the valve body.

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.

Refer to the documentation provided by the manufacturers of proprietary operating equipment covering maintenance.

Handwheel thrust assemblies, electric actuators or gearboxes must not be removed from pillars unless the operating stem is adequately clamped to prevent movement of the valve door.

Every Six Months – Sludge Valves

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

- Remove the stem protection tube when fitted for rising stem applications,
- With the valve door fully raised remove the old grease and replace with a recommended grease suitable for the application,
- Clean the exposed areas of the sludge valve by hosing down with clean water,
- Check the tightness of accessible fasteners,

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- Check the equipment for signs of corrosion or damage to the paint system and repair as necessary.

Every Six Months – Sludge Plugs

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

- With the valve door fully raised remove the old grease local to the lifting handle key/support bracket slot and replace with a recommended grease suitable for the application,
- Clean the exposed areas of the sludge plug by hosing down with clean water,
- Check the tightness of accessible fasteners,
- Check the equipment for signs of corrosion or damage to the paint system and repair as necessary.

Recommended Lubricants

- For general lubrication purposes under normal operating conditions we recommend Shell Alvania R2 (or equivalent) for greasing stem screw threads, yoke/drive sleeves and thrust housings.
- For high duty or aggressive effluent applications we recommend Rocol Tuflube Allweather grease for lubricating stem and nut block screw threads.

For potable water applications we recommend using Rocol MX22 or Rocol MX66 grease.