

INSTALLATION, OPERATION AND MAINTENANCE MANUAL



STAINLESS STEEL FLAP VALVE

WATERFRONT

We are a Glasgow based company providing water engineering solutions in fluid control for both the UK and International markets.



Waterfront Fluid Controls Ltd was formed in 1988 specialising in the installation and commissioning of Penstocks for Treatment Plants.

We offer a service to supply, refurbish and install valves, penstocks and ancillary equipment.

We have extended our range to incorporate a wide range of products for controlling Water Flows. These products cover all types of valves, penstocks and ancillary products.

Waterfront Fluid Controls LTD provides consistent high quality products and services.

W A T E R F R O N T

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GENERAL PRODUCT INFORMATION

The Waterfront Stainless Steel Flap Valve is manufactured in either Stainless Steel 316 or Stainless Steel 304. The Waterfront Flap Valve incorporates a Phosphor Bronze sealing faces, to provide the seal between the flap and frame.

Purpose of Usage & Principle of Functioning

The Waterfront Flap Valve is designed to discharge water from outfalls, and to operate under very low heads of water, to prevent backing-up of water in the pipe. The flap valve prevents water flowing back up the pipe, by closing when the downstream water level rises. Use the Waterfront Flap Valve only in gravity flow applications at ambient conditions -65 up to +85 degrees Celsius. The Waterfront Flap is well suited for applications involving Waste Water plants, sewage systems etc. Sudden impact as results of waves, water hammer should be avoided at all times.

HEALTH AND SAFETY

Safety, Health and Environmental Risks

The following risks should be regarded:

- Danger of trapping of fingers and hands when mounting or operating
- Electrical dangers during mounting or maintenance
- Falling during hoisting

Safety Precautions if Applicable

- Report all unsafe situations or defects to the responsible person on discovery
- Qualified personnel only may carry out Mechanical work
- Wear all necessary P.P.E

TRANSPORT AND STORAGE

Transport

The Waterfront Flap Valve is to be moved horizontally with flap facing up on a pallet of matching size. The Waterfront Flap Valve can be lifted with 'soft' suitable slings, using only the lifting points provided (flaps over 25kg only).

All necessary lifting should be carried out by fully trained personnel

Only lift the Waterfront Flap Valve by means of lifting slings and a lifting bar

Storage

It is recommended to store the Waterfront Flap Valve horizontally and free of dust, dirt and moisture.

INSTALLATION

Installation and Erection

If installing with mounting set materials on a flat wall.

General

The Waterfront Flap Valve is mounted to concrete or brick walls using Stainless Steel bolts, nuts, washers and chemical or mechanical anchor attachments.

Preparation Prior to Mounting

Check the mounting supplies:

- 1) EPDM compound (15mm thick)
- 2) Chemical anchor capsules and accessories, or mechanical anchors. On some large flap valves, it may assist installation to remove the flap from the frame before commencing, by removing the necessary bolts.

Check the concrete wall:

- 1) Check the concrete wall before installing the Waterfront Flap Valve to ensure the wall is smooth. For this application, it may be necessary to remove concrete from the bottom corners of the culvert, to ensure that the corners are square.
- 2) Correct any deviation. Any possible gravel pockets must be filled out and concrete remains must be removed.

Applying the EPDM compound to the backplate to the Waterfront Flap valve

100-500mm diameter

For Waterfront Flap valves in this size range, a pre-cut EPDM sealing gasket is supplied, which is self adhesive. The Flap valve is to be clean from grease, dirt and dust, and the gasket is to be fully aligned with the mounting holes.

600mm diameter+

- 1) Before placing the EPDM compound, ensure that the mounting face is clean and smooth.
- 2) Mark the holes with the white pencil, so you will be able to drill a hole in the compound, which now correspond with the existing holes in the frame.
- 3) The compound is self-adhesive on one side. Cut the compound oversized then remove the protection slip and fit the compound on the back of the frame.
- 4) The compound now should be cut to length and squared so that the corners connect properly.
- 5) Glue the corners precisely together by using the provided EPDM glue. When not glued properly it can lead to leakage between the sealing face and the concrete wall.
- 6) Grease the drill can on the outside with the copper grease to prevent ripping of the compound.
- 7) Drill the previously marked holes in the EPDM.

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SAFETY WARNING Make sure that contact with the EPDM glue to your skin and eyes is prevented. If this does occur, contact your doctor immediately.

Mounting with Chemical Anchor Bolts

When all points made above are addressed and the EPDM compound is applied then continue with following the installation procedure:

- 1) With suitable lifting slings, lift the Waterfront Flap valve up and adjust to ensure that it is vertical and level
- 2) Lower the Waterfront Flap valve into the right position
- 3) Check and adjust the Flap valve into the correct position, ensuring that the Flap valve invert is level with the invert of the pipe invert
- 4) Mark the mounting holes for the upper corners onto the wall
- 5) Remove the Waterfront Flap valve and drill the holes to the required depth for the chemical or mechanical anchors

Follow the instructions supplied by the manufacturer of the chemical anchors ensure that the holes are drilled to the correct depth and that the holes are fully cleaned out and free of dust. The curing time should be considered precisely.

ONLY USE THE MOUNTING ACCESRIES SUPPLIED WITH THE WATERFRONT FLAPVALVE

- 6) Insert the chemical anchor capsules into the pre-drilled holes
- 7) Re-position the Waterfront Flap valve to previous position, adjust as necessary
- 8) With mounting accessories supplied and suitable electric drill, following chemical anchor instructions insert mounting bolts.

The curing time should be considered precisely.

- 9) After curing time has elapsed fasten hexagon nuts to mounting bolts apply copper grease on anchors and nuts, (use copper grease to prevent the nuts to get stuck on the anchor!) and tighten the nuts by hand. **NOTE: Do not allow the bolts to take the weight of the flap, they have only been installed to assist positioning of the Flap valve.**

- 10) Check the Waterfront Flap valve again for correct position
- 11) Mark the remaining holes and remove the Flap valve
- 12) Drill remaining holes as above
- 13) Re-position the Waterfront Flap valve and continue inserting mounting bolts
- 14) When all mounting bolts, washers, spring washers and nuts are installed, tighten by hand
- 15) Once resin has fully cured, tighten bolts to manufacturer's recommended torque compressing the seal evenly to ensure a good seal between the Flap valve and the wall

- 16) The Flap valve is not allowed to deform in any way.

If installing using grout cement mix.

WALL MOUNTED FRAME – LOCATION USING EXPANDING ANCHOR BOLTS

1. Supporting the frame along the whole of its bottom cross member, or by hanging from a crane, present the unit to its required position.
2. Using the frame as a template, drill holes to accept the anchor bolts specified.
3. Insert the top two anchor bolts and place packing pieces, to the recommended grouting thickness, between the back of the frame and the concrete wall, close to the inserted bolts. Tighten the bolts sufficiently to hold the packing pieces in position.
4. Insert the remaining anchor bolts and by using jacks and packing pieces of suitable thickness, locate the frame in its correct final position. Carefully check for plumb and level in all directions.
5. Check seal faces with 0.05 or 0.1mm feeler gauge using light pressure only, to check for and gaps in the seal and use jacks or packers of sufficient thickness to close the gap. Light pressure is required as these are resilient face units and excessive pressure may give false indications.
6. Having checked for plumb, correct level, alignment and location you can now grout the flap valve.

SHUTTERING AND GROUTING

1. Shutter up the frame for grouting 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 position. If correct, mix and pour a fluid grout in proportions of 50kg. cement, 50kg. silver sand and 0.22kg (small tub) cebex 100 plasticized expanding grout admixture (or equivalent) between the frame and wall or recess.
3. When the grout is set, finally re-tighten the anchor bolts in sequence, i.e. when one bolt head has been dealt with, follow on with the bolt diagonally or diametrically opposite. After all bolts are tightened, remove the shuttering and generally clean up and remove any excess grout or debris from the flap valve. Pay attention to the sealing faces so see that they are not damaged in any way, otherwise the unit may leak.

MAINTENANCE

The Waterfront Flap Valve is constructed in a way that a minimum of maintenance is required.

For a correct functioning of the Flap Valve it is recommended to carry out a visual check of the Flap Valve annually.

The following parts require attention in particular and need to be cleaned if necessary:

Parts Material

Sealing (dirt and wear) Sealing EPDM

In an aggressive environment or in a situation where there is a large amount of silt or debris, it is strongly recommended to increase the inspection interval to suit the location of the Flap Valve.