

INSTALLATION, OPERATION AND MAINTENANCE MANUAL



FLAP VALVE - HDPE

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 Flap Valve is manufactured in HDPE and Stainless Steel 316. The flap and back plate are manufactured in HDPE, with stainless steel 316 hinge-pin, counterweight and attachments. Due to the specific gravity of the HDPE, Waterfront fit a stainless steel counterweight to ensure closure when back-pressure is present, however very low heads of water are required to open the flap, as the design is such that the counterweight balances the flap correctly. The Waterfront Flap Valve incorporates an EPDM rubber lip seal, to provide the seal between the flap and frame, and also an EPDM sponge seal between the frame and wall is fitted to prevent leakage.

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.

TECHNICAL SPECIFICATION

Materials of Construction

Flap/Ribs HDPE

Back plate HDPE

Hinge Pin and Counterweight Stainless Steel 316

Sealing (between valve and back plate) EPDM Seal Compound

Sealing (between back plate and the wall) EPDM Sponge Seal

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
- 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

General

The **wall mounted** Waterfront Flap Valve is mounted to concrete or brick walls using Stainless Steel bolts, nuts, washers and chemical or mechanical anchor attachments. (mounting set sold as separate item to flap valve)

The **flange mounted** Waterfront Flap Valve is mounted to the existing pipe flange using a flange set (bolts , nuts , washers and gasket) (flange set sold as separate item to flap valve)

Preparation Prior to Mounting Wall Mounted Flap Valve (including standard wall mounted , tidal wall mounted and fish friendly wall mounted):

Check the mounting supplies:

- 1) EPDM self adhesive seal (5mm 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 and flat. 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 seal to the back plate to the Waterfront Flap valve

100-500mm diameter

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

600mm diameter+

- 1) Before placing the EPDM seal, ensure that the mounting face is clean and smooth.
- 2) Fit the seal on the back of the frame.
- 3) Cut through the holes in the EPDM corresponding to the holes in the flap valve.

Mounting with Chemical Anchor Bolts

- 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

WATERFRONT

- 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, 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

Preparation Prior to Mounting Flange Mounted Flap Valve:

- 1/ Using flange mounting set (or gasket set) fit the bolts through the mounting holes.
- 2/Fit over these bolts the gasket from the flange/gasket set.
- 3/Offer flange mounted flap valve to the flange of the pipe.
- 4/ Insert these bolts (with flap valve and gasket) through the existing flange.

5/ Fit washer and nut to bolts on the back side of the existing flange.

6/ Tighten all bolts.

7/ Leave area clean and free of debris.

Preparation Prior to Mounting Spigot Mounted Flap Valve:

1/ Using spigot mounting set (seal) place seal around spigot of flap valve.

2/ Push spigot of flap valve into pipe.

3/ Ensure that spigot flap valve has been pushed fully into pipe.

4/ Depending on size of spigot flap valve there may be bolts inserted into the end of the spigot to aid in securing the spigot flap valve into pipe.

5/ Once flap valve has been fully inserted into pipe tighten these bolts against the internal pipe to create a secure fixing.

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.