

Fernco HDPE Flap Valve

1. Product

Fernco offers a range of high-quality Flap Valves from DN100 to DN600 that are manufactured to, and exceed the performance requirements of, class 5 valves from DIN 19569-4.

The Flap Valves are made from High Density Polyethylene (HDPE) and use an integrated EPDM seal to act as a Non-Return Valve for the prevention of backflow associated with rivers, estuaries, and chambers. Fernco HDPE flap valves are lighter weight than traditional cast iron valves, leading to a simpler, safer, and lower cost installation. The high strength HDPE will withstand being struck by the debris commonly present in marine environments and the high head pressures associated with back flow prevention. Fernco can also manufacture bespoke flap valves for sizes larger than DN600, a drawing of a DN1200 wall mounted flap valve is included in Appendix C.

The flap valves offer up to a 100-year life expectancy with regular inspection and appropriate maintenance, this is due to the high-quality materials used and their natural environmental resistance. HDPE is UV stable and corrosion resistant so there will be no problems caused by exposure to the sun, salt water or most hazardous chemicals. For use in environments with effluent not suitable for EPDM, a Nitrile seal will be supplied. All the steel used in the flap valve is 316 grade stainless steel, bolstering the corrosion resistance of the valve.

The product range comprises of (a) wall mounted and (c) flange mounted solutions.

Item	Type	Picture
1	Wall Mounted Flap Valve The wall mounted flap valves are supplied with a mounting set which includes all the necessary fixings to permanently install the valve.	
2	Flap Valve – Flange version For flange mounting, a flange adapter plate is used which bolts to the flange is present and attaches to the valve, using an EPDM seal between both connections.	

1.1 Benefits of HDPE Flap Valve

1. Lighter weight than traditional cast iron flap valves, leading to easier installation and lower installation costs
2. High strength HDPE will withstand being struck by rocks and other debris present in marine and river environments, which could shatter lighter weight plastics
3. Environmentally resistant and maintenance free material
4. Not at risk from theft as no inherent scrap value
5. Up to 100 year life expectancy with regular inspection and appropriate maintenance.

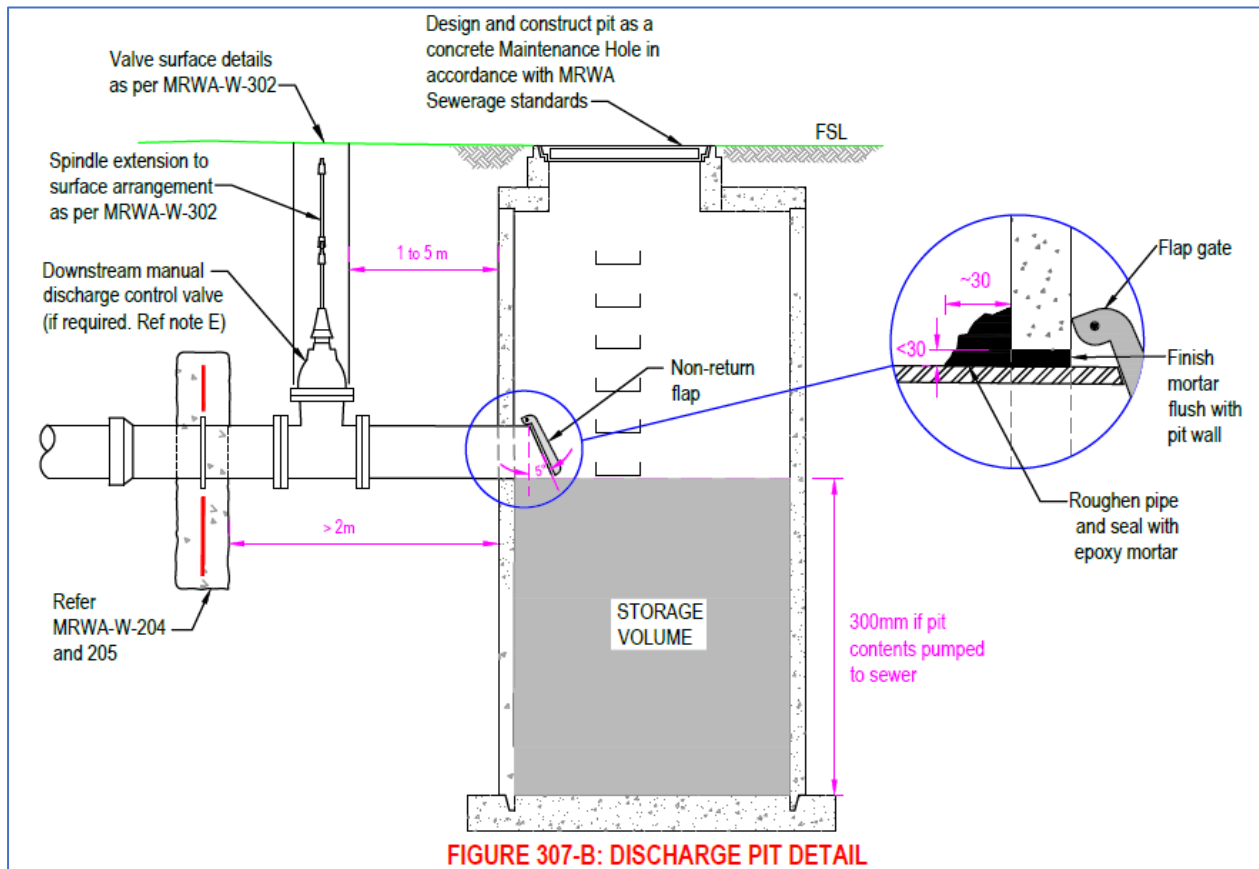
1.2 Installation of wall mounted flap valve on scour pit

Wall mounted Flap Valve has to be on the curved interior cylindrical wall of precast concrete MH as shown below in Figure 307-B used as a Scour Pit.

Fernco will supply 'a curved HDPE wall adaptor' as an additional device as shown in Figures 1 and 2 below, instead of supplying HDPE sheets and asking for welding on site.

This HDPE device will be bolted to the Flap Valve like a flange adapter but will be bespoke and have the same diameter as the curved wall.

Instead of welding the plate to the wall it will be attached using the chemical and mechanical anchors used to wall mount the flap valve range. The curved wall adapter uses an EPDM sponge to seal and can be used with flap valves.



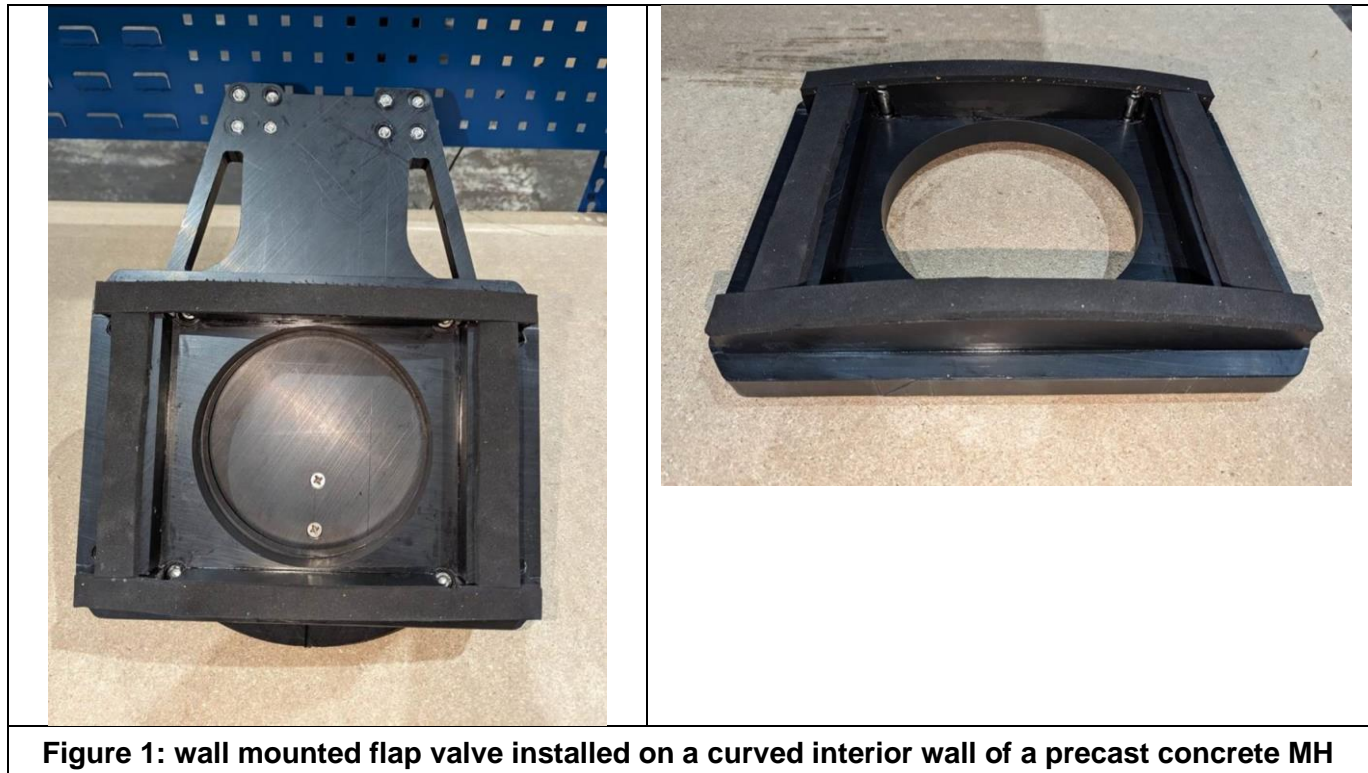


Figure 1: wall mounted flap valve installed on a curved interior wall of a precast concrete MH

2. Compliance with Product Standards

2.1 Material

Table 1: Material components forming assembly of Fernco Flap Valve product range.



Description	Material	Specification
Valve Body	High Density Polyethylene	HDPE300 / HMPE500
Flange Adapter		
Spigot Adapter		
Seal	EPDM Elastomer	EN681-1 Kitemarked Extrusion
Bolt	Stainless Steel	Grade 1.4401 (316)
Nut		
Enclosed Counterweight		
Washer		

Product Specification for Flap Valve	
Product Code(s)	FVXXX or FVSXXX
Description	Wall, Flange or Spigot Mounted Flap Valves
Size Range	DN100 to DN600
Materials	HDPE Backplate and Flap EPDM integrated seal Stainless Steel (316) hinge plate and fixtures
Standards	Fernco Flap Valves satisfy the requirements of DIN19569-4, ISO 9001:2015

2.2 Dimensions

The flange adapters are manufactured as per the table C, D, and E flange arrangements in AS/NZS 4087.

Cracking Head

Nominal Diameter	Maximum Opening Pressure (Cracking Head) Above Water* (mm)	 Inclination (°)	Maximum Opening Pressure (Cracking Head) Above Water* (mm)	 Inclination (°)
100	31	0	59	10
150	29	0	58	10
200	30	0	59	10
250	30	0	63	10
300	31	0	65	10
350	33	0	67	10
400	33	0	70	10
450	33	0	72	10
500	33	0	77	10
600	33	0	84	10

*These values do not take into account any disturbing external factors such as currents or bulky debris.

Table 2: Pressure rating against backward pressure for all three types – Wall mounted, Flange and Spigot

Flap Valve size range	Pressure (meter water column)
DN100 to DN300	10 m
DN350	8 m
DN400	6 m
DN450	5 m
DN500	4 m
DN600	3 m

2.3 Closure of Flap Valve

Fernco Flap Valves close naturally with no acting pressure on the flap/gate. The flap valves are affixed with a HDPE counterweight unit on the flap/ door which houses enclosed 316 SS rods. The centre of mass of the housing is such that it creates a movement that ensures that the door engages onto the seal. The hinge bar sits in a slot which gives the door a degree of movement so once the door has been articulated and returned to the neutral position the seal will be fully engaged. Due the natural position of the flap engaging the seal, any low pressures against the direction of flow will compress the seal and keep the valve watertight.