

Flow control

Water level control

Backflow prevention

Coarse Filtering devices

Monitoring devices

FluidVertic VSU

Vertically wet-mounted vortex valve



Installation and
Maintenance

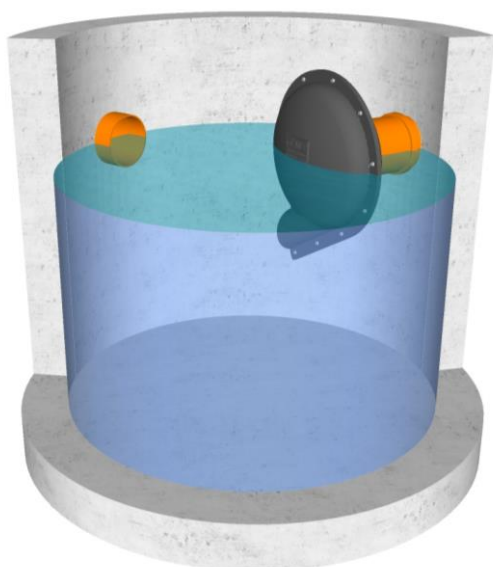


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1. Introduction

The vortex chamber shall only be used for the purpose for which it is intended or agreed upon when ordering. The customer cannot file a complaint if:

- Installation and maintenance instructions are not followed
- The product is used for purposes other than agreed
- If repairs, modifications or other actions are performed on the product without consulting with MFT.

2. Reception control

When receiving the vortex chamber, the receiver should look for transport damage. If the damage is detected, report this to MFT as soon as possible.

3. Documentation

The following documentation normally accompanies the delivery of FluidVertic VSU, and should be available during installation:

- Vortex valve drawing
- Installation and Maintenance document
- Datasheet

In addition, the project drawing should show the interface to the existing plant and the correct levels for the installation and location of the vortex chamber (not provided by MFT).

Safety

All intervention must be carried out following current safety and HSE regulations.

Special attention must be given to the following:

- **NB Danger of poisoning.** Before entering the sump, ensure that there is sufficient oxygen in the sump and that no toxic/flammable gases are present.
- In the event of large amounts of water, the risk of **drowning** should be considered separately. Great care must be taken in the event of a blockage upstream. Any upstream water pressure must be relieved before staying in the basin.
- Necessary safety and **protective** equipment must be used.
- There should always be a **minimum of 2 people** present during stays and work in the sump.

Implements, tools and equipment should never be placed on the edge of manhole openings/descent necks. They can pose a danger to those staying in the basin/overflow.

4. Preparations

FluidVertic VSU is a vortex chamber that regulates water flow (flow regulator). FluidVertic VSU is mounted on an outlet from a sump or detention tank. The vortex chamber is delivered ready adapted to the plant's requirements for water flow and heights. Since the water flow varies with the water pressure, the vortex valve and the surrounding pipe system must be installed with relative heights similar to those used for dimensioning the vortex valve. Furthermore, it is important that the minimum distance from the vortex valve to the manhole bottom, b , indicated on the product drawing, is maintained. Contact MFT if there are any changes in the interface in connection with installation.

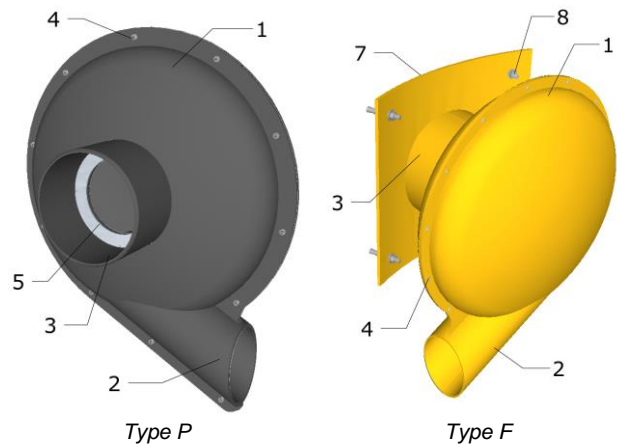
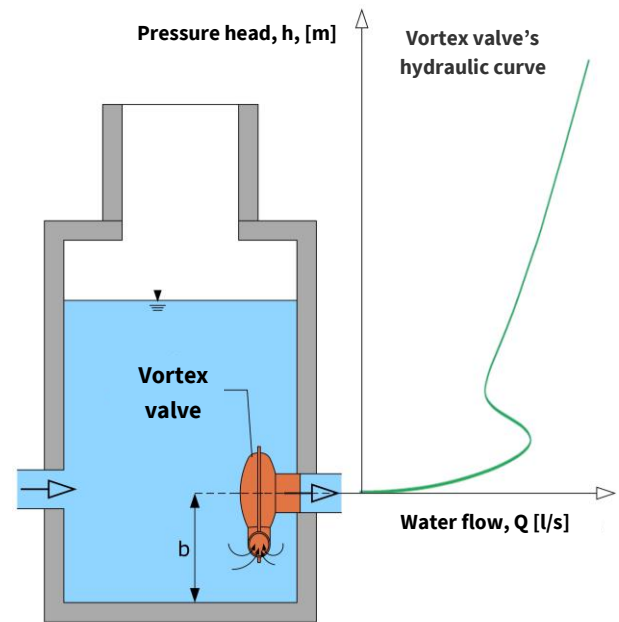
FluidVertic VSU comes in two editions. The behaviour is the same. But their method of mounting is different.

Type P

The vortex valve is mounted on an outlet in a sump/detention tank and comes with a PVC tip for easy installation against the corresponding socket.

Type F

Supplied with mounting plate, gasket and expansion bolts for installation against manhole wall. A standard manhole hole is established where the outlet pipe ends edge-to-edge with the inner manhole wall. The mounting plate on the vortex chamber (supplied with gasket) encloses the opening on the outlet pipe.

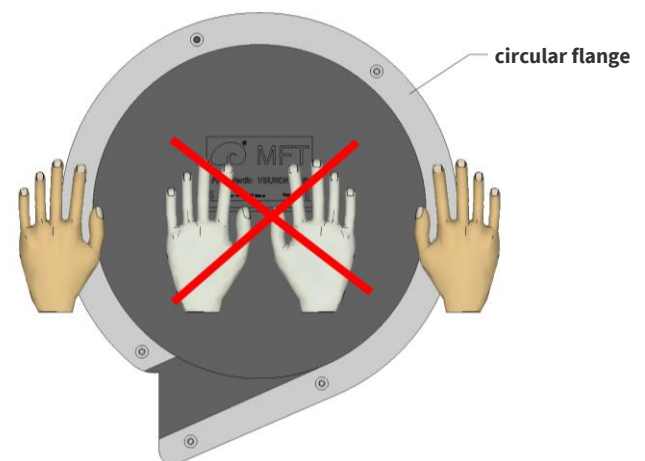
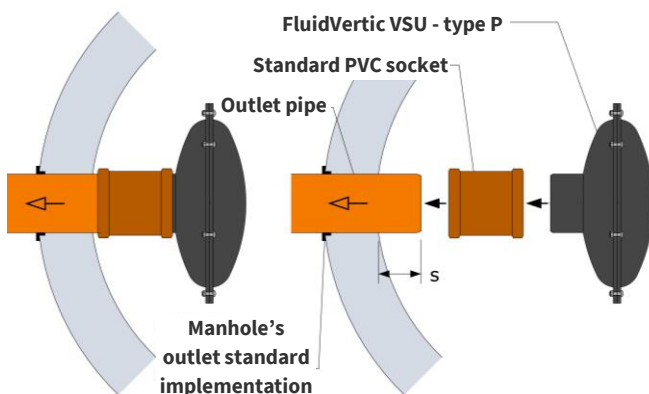


Description	Material	
	Type P	Type F
1 Vortex valve chamber,	Polyurethane	GRP
2 Inlet	Polyurethane	GRP
3 Outlet	Polyurethane	GRP
4 Bolts	316 acid-proof	316 acid-proof
5 Metal orifice	316 acid-proof	-
7 Mounting plate	-	GRP
8 Mounting bolts (expansion bolts)	-	316 acid-proof

5. Mounting type P

1. Complete the sump feed-through. Make sure that there is a socket available on the outlet pipe for mounting the socket (if necessary, outlet pipes with a built-in socket at the end can be used)
2. The PVC tip of the vortex chamber is mounted on the outlet/double socket of the outlet pipe.

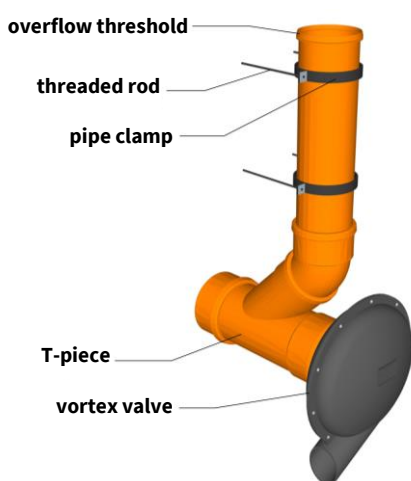
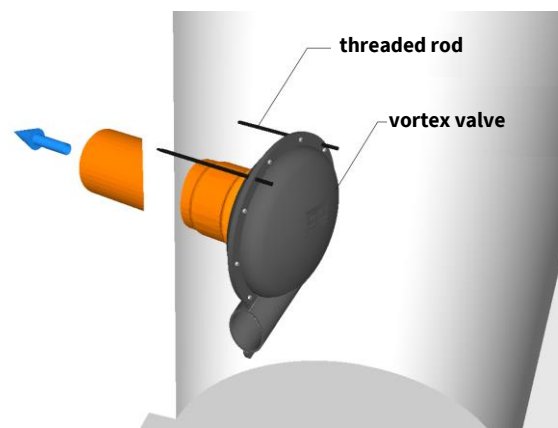
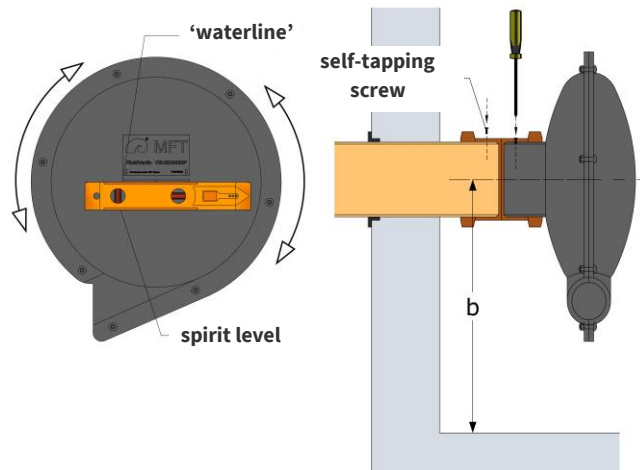
Note: When mounting the vortex valve against the socket, press on the circular flange of the vortex valve. Do not apply force to the centre of the vortex valve.



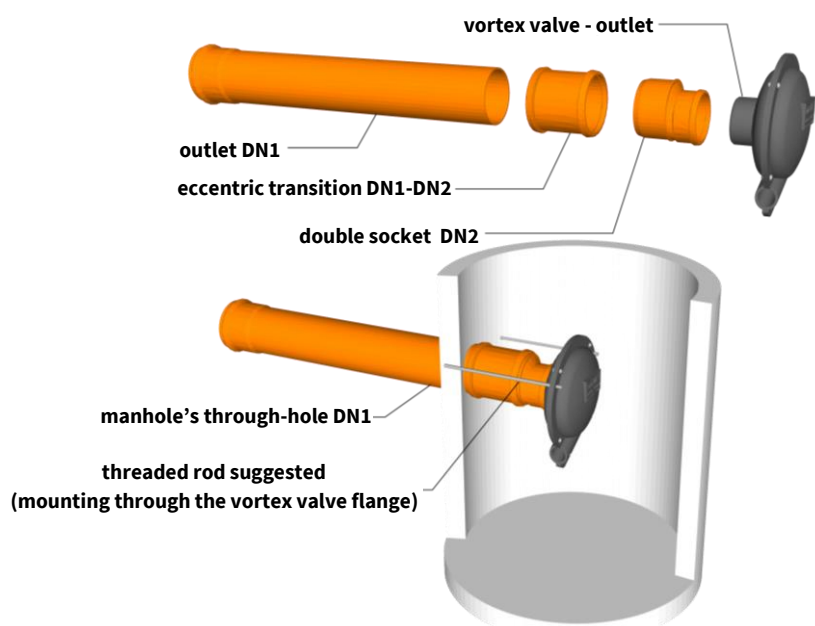
3. Check that the minimum distance from the bottom sump to the centre line of the vortex chamber, b_{min} , is maintained (see datasheet/product information).
4. Rotate the vortex valve around the outlet so that the tangential inlet is directed obliquely downwards. The 'waterline' of the vortex valve must be horizontal. Check with a spirit level. The 'waterline' can be found under the product sign on the front of the vortex chamber.
5. To prevent rotation of the vortex chamber, screw self-tapping screws through the socket. Make sure that the screw penetrates the outlet pipework and the vortex chamber. The following number of screws is recommended, evenly distributed in the circumference:

Dim outlet	Self-tapping screws per circumference	Min suggested tip length, s
110	2	110
160	2	130
200	2	150
250	3	160
315	3	240
400	3	280

6. Applies to models VSU4DN150 and VSU4DN200, as well as for installations where eccentric transitions between vortex valve and manhole hole are used (see below): It is recommended to mount two threaded rods through the outer flange, which are anchored in the manhole wall. Threaded rods are not included.
7. Applies only if the vortex valve is to be equipped with an integrated overflow: Standard pipe components can be used. The overflow pipe must be anchored in the manhole wall using pipe clamps and threaded rods. A minimum of 2 anchor points is recommended. The number depends on the height of the vertical overflow pipe. The recommended maximum distance between the anchorage points: 1.0m.



FluidVertic with integrated emergency

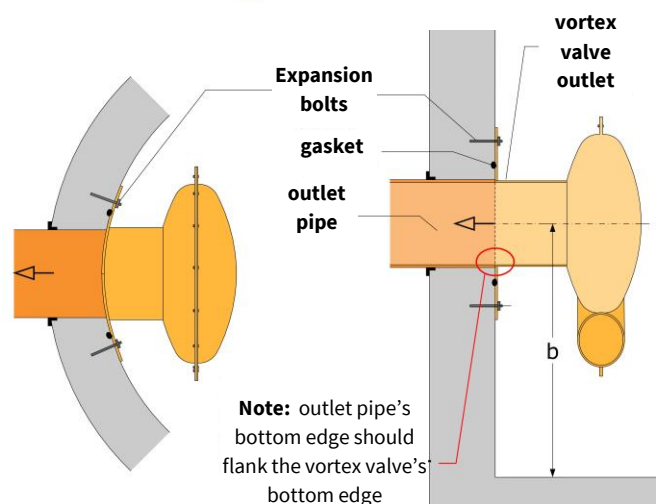
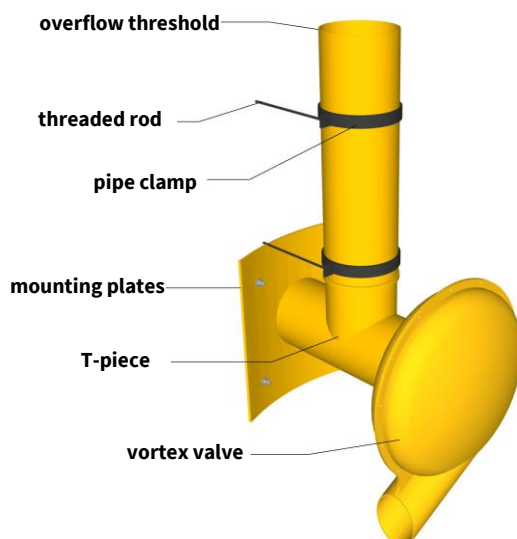
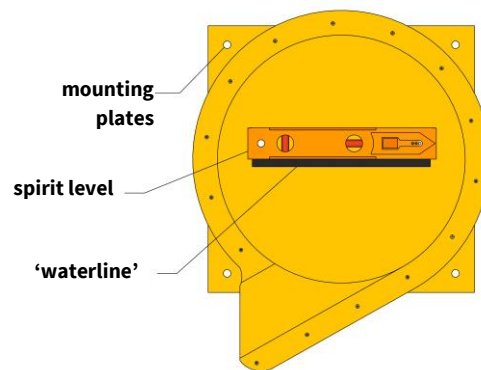
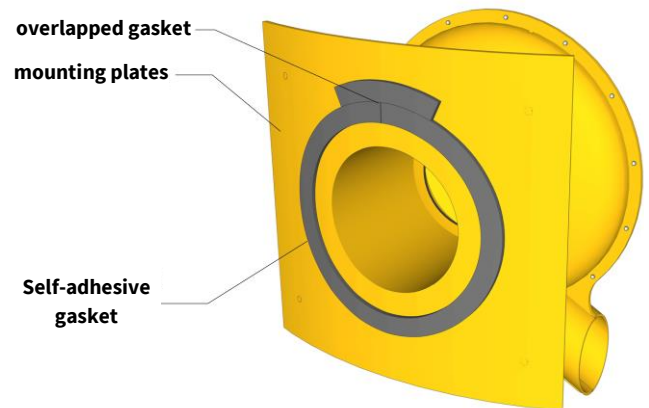
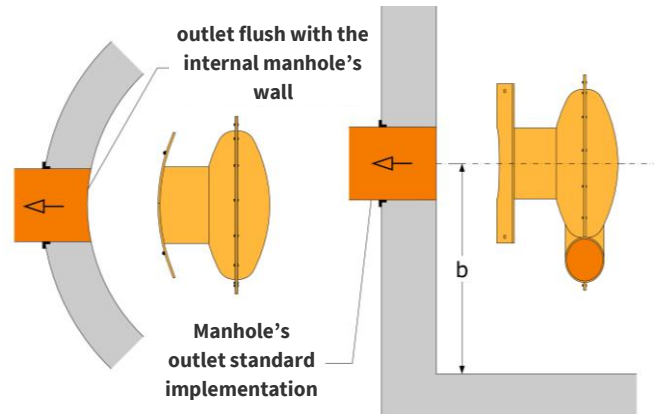


With a dimensional transition in the manhole (only vortex valve is included in the standard delivery)

6. Mounting type F

The figures show a curved mounting plate. The same principles apply to the flat mounting plate

- Complete the manhole through-hole. The outlet pipe is cut so that it is flush with the inner manhole wall. Any unevenness in the manhole wall where the mounting plate is to be mounted is milled away.
- The supplied package is self-adhesive. This is attached to the mounting plate. The gasket should enclose the outlet opening. It is recommended that the joint point be overlapped with a short packing length.
- Position the vortex valve so that:
 - the inner bottom edge of the vortex valve is flush with the inner bottom edge of the outlet pipe.
 - the 'waterline' of the vortex valve is level (use spirit level). Mark the position of the mounting holes in the top two corners.
- Drill holes for the expansion bolts (supplied) in the marked positions and fasten the bolts. Attach the vortex chamber temporarily and check the position and orientation as per stage 3. Adjust if necessary. Also check that the minimum distance from the bottom sump to the centre line of the vortex chamber, b , is maintained (refer to vortex valve's drawing).
- Mark the position of the remaining mounting holes and remove the vortex chamber.
- Drill holes for the remaining expansion bolts and install them.
- Check that the gasket is fitted correctly (ref point 2). Hook on the vortex valve, attach it to the expansion bolts with the supplied washers and nuts.
- Applies if the vortex chamber is delivered with integrated overflow: The vertical overflow pipe must be anchored in the manhole wall by means of pipe clamps and threaded rods. A minimum of 2 anchor points is recommended. The number depends on the height of the vertical overflow pipe. Check that the overflow pipe is level (use a spirit level).



7. Final check

After installation, a visual inspection is performed:

- Check that the tangential inlet faces obliquely downwards (level line in level)
- Check that no damage has occurred during installation
- Check the regulator inlet and chamber and remove any foreign objects.
- For vortex chambers with integrated overflow:
 - check that the overflow is perpendicular.
 - check that the overflow's top level (overflow edge) is at the correct level (ref project drawing)

8. Operation and maintenance

FluidVertic has no moving parts so requires little or no maintenance. The stormwater characteristics (liquids, fouling, suspended solids) and variation of the inflow determine inspection requirements. Good routines related to emptying sand traps and removing floating particles are essential to reduce clogging risk. If necessary, the vortex valve's housing can be opened by loosening the flange bolts.

Recommended maintenance plan

	What	When/How often
1	Visual inspection of vortex chamber and manhole. Remove any external material.	After the first rainfall episode after the installation is operational
2	Visual inspection of vortex chamber and manhole. Check for clogging. Remove any external material. Sand trap/sludge volume is emptied.	After heavy rainfall. Min 1 time per year.
3	Loosen the vortex chamber, check for internal overgrowth and flush the inside if necessary.	Every 5 years