Greater Cairo Foundries
مسـابـك القـاهرة الكـبرى

GCF 6500 SEWAGE AIR VALVE

6500
SEWAGE AIR VALVE

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6500 SEWAGE AIR VALVE

GCF sewage air valve series 6500 Are Hydro mechanical devices designed to automatically release or admit air during pipeline filling, draining, or operation of a water pipeline or system. The safe operation and efficiency of a pipeline are dependent on the continual removal of air from the pipeline.

6500 SCOPE OF SUPPLY & DESIGN STANDARDS

RANGE OF SIZES	DN80 - DN200
PRESSURE RATINGS	PN10, PN16 ANSI B16.5-Class 150-300
TEMPERATURE RANGE	-20°C TO +70°C
DESIGN AND TYPE TO	AWWA C512
FLANGE DIMENSIONS	EN1092-2 (DIN2501) (ISO 7005-2)
HYDROSTATIC TESTING	AWWA C512
TYPE TESTING TO	AWWA C512

6500 MODEL FIELDS OF APPLICATIONS

- Sewage main transmission lines
- wastewater treatment plants
- Irrigation systems in presence of solids/debris in suspension

6500 SEWAGE AIR VALVE

DESIGN FEATURES

1 - Large lower body designed with strongly sloped funnel shaped walls to avoid deposit of grease or other material, and containing four ribs obtained by casting to guide the stainless steel float.

2 - Upper body containing a casing that protects the air release device against spurts during rapid filling.

3 - Maintenance can be easily performed from the top without removing the air valve from the pipe.

4 - Mobile block including a large AISI 316 stainless steel float, placed on the lower body, and connected through a stainless steel rod to the air release system.

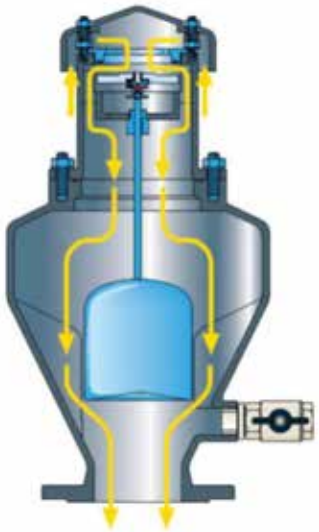
5- Flat obturator in solid polypropylene to avoid deformations and to prevent it from remaining stuck to the gaskets, while other materials have the tendency to do it.

6500 SEWAGE AIR VALVE

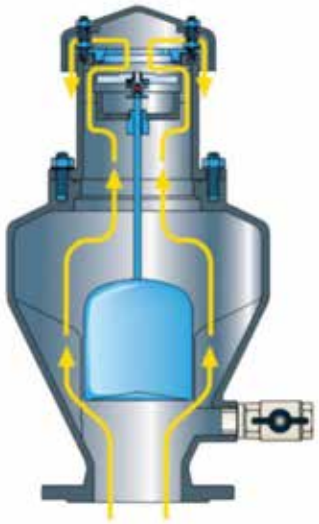
THREE FUNCTIONS AUTOMATIC AIR VALVE

GCF 6500 sewage air valve, sturdy and reliable, features a design allowing the perfect operation in raw sewage and waste water applications also in presence of solids, rugs and mud. This is due to the particular design with strong sloped walls that will prevent solids and grease balls from accumulating on the body creating possible malfunctioning.

A - Entrance of large volumes of air During pipeline draining or bursting Phases it is necessary to bring in as much air as the quantity of outflowing water, to avoid vacuum conditions.



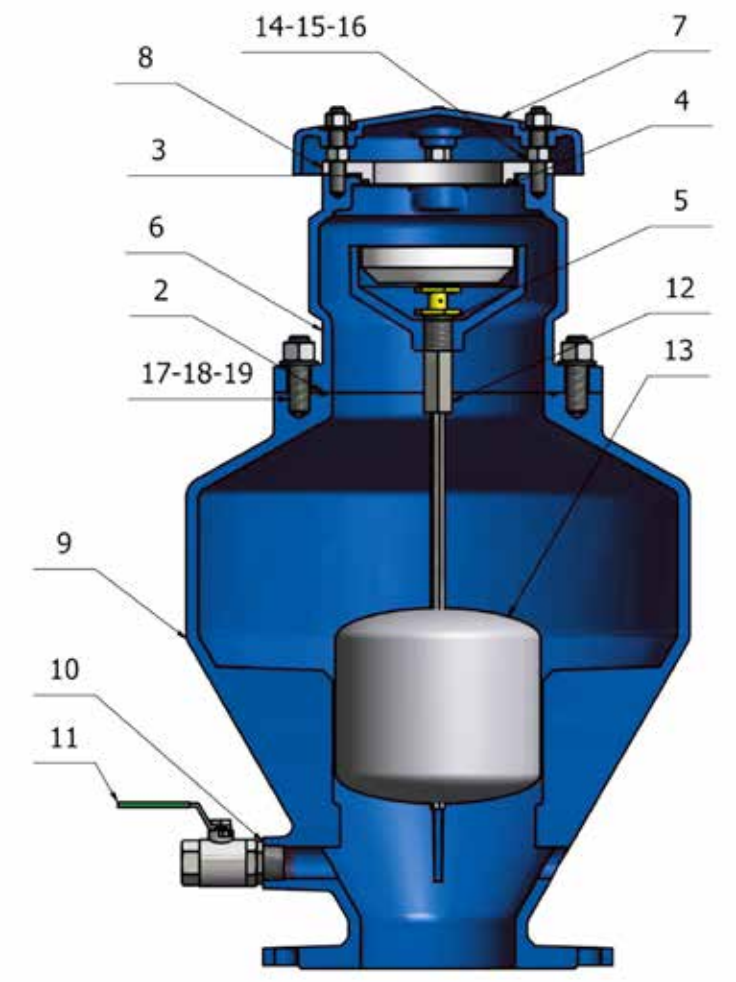
B - Discharge of large volumes of air during pipe filling it is necessary to discharge as much air as the water flowing in.



C - Air release during working conditions during operation, an air pocket accumulates in the upper part of the valve body; little by little it is compressed and released automatically.

6500 SEWAGE AIR VALVE

MATERIAL STANDARDS

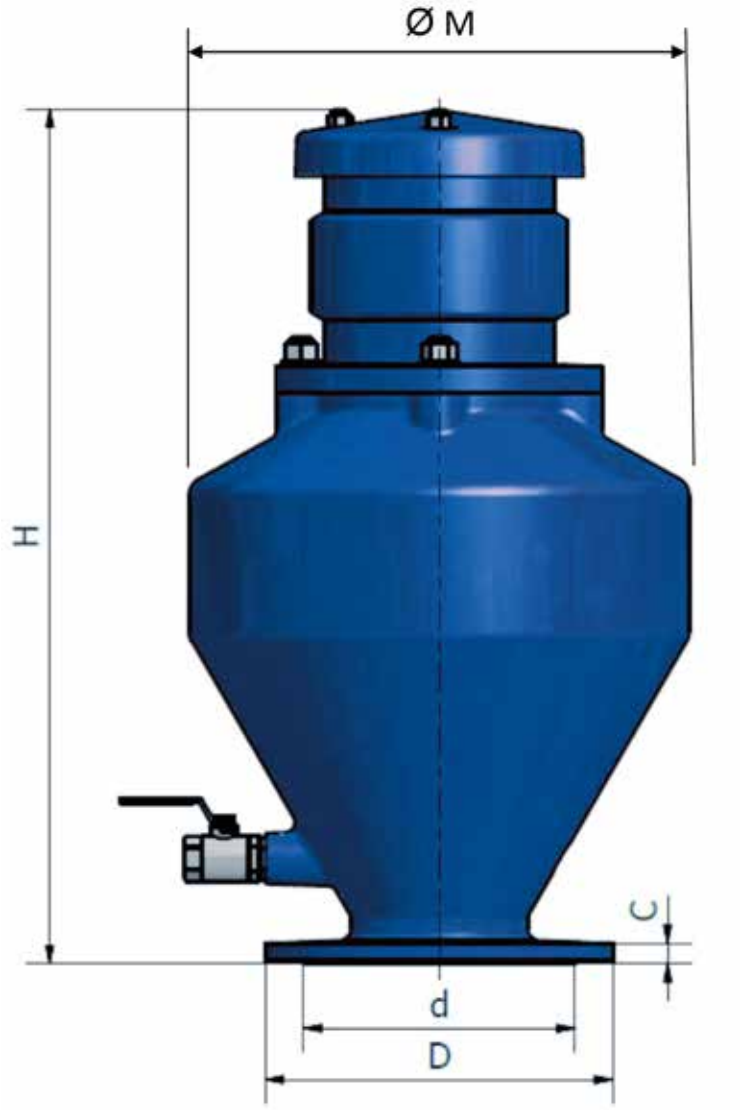


No	PART NAME	MATERIAL
1	Disc assembly	PTFE - St.St 304
2	Body seat	EPDM
3	Gland seat	EPDM
4	Disc seat	EPDM
5	Buoy Damper	EPDM
6	Upper body	ISO1083 Grade 500-7 Equivalent to DIN1693 (GGG50) and ASTM A536 grade 50-70-05
7	Cover	
8	Gland	
9	Body	
10	Hexagon nipple	St.St 304

No.	PART NAME	MATERIAL
11	Ball valve	St.St 304
12	Float stem guide	St.St 304
13	Float	St.St 304
14	Spring washer	St.St 304
15	Hexagonal nuts	St.St 304
16	Cover studs	St.St 304
17	Body studs	St.St 304
18	Spring washer	St.St 304
19	Hexagonal nuts	St.St 304

6500 SEWAGE AIR VALVE

DIMENSION TABLE FOR PN10/PN16 SEWAGE AIR VALVESE



MAIN VALVE DIMENSIONS			PN10&PN16 BAR FLANGES						
DN	H	Ø M	D	d	C	K	N	L2	BOLTS
80	690	370	220	132	19	160	8	19	M16
100	690	370	220	156	19	180	8	19	M16
150	880	500	340	211	19	240	8	23	M20
200	880	500	340	266	20	295	8/12	23	M20

COMBINATION SEWAGE AIR VALVES APPLICATIONS

Air inflow through the main orifice

They are normally dimensioned to protect pipeline from vacuum that may be caused by pipe bursting or by a sudden pump stop causing column separation; they must be placed as Follows:

1) High geometrical points

To size an air valve, maximum flow rate in such point must be determined in case of pipe bursting.

2) Negative slope changes

They are identified as descending segment slope increase or ascending segment slope decrease.

3) Long ascending segments

If the ascending segment is long, an air release valve should be placed at the top of the section and one every 600 m./ 2000 feet to guarantee air outflow and inflow during pipeline filling and draining operations.

4) Long descending segments

Air release valve choice and placement considerations are exactly like those regarding ascending sections.

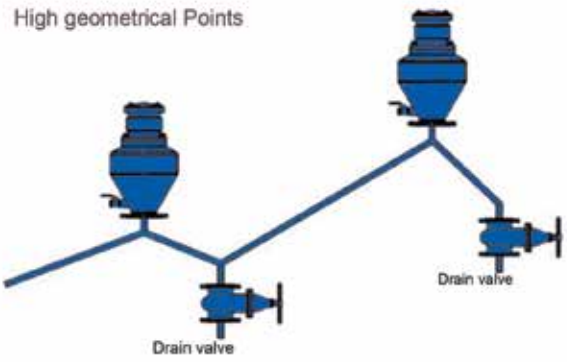
5) Long horizontal runs

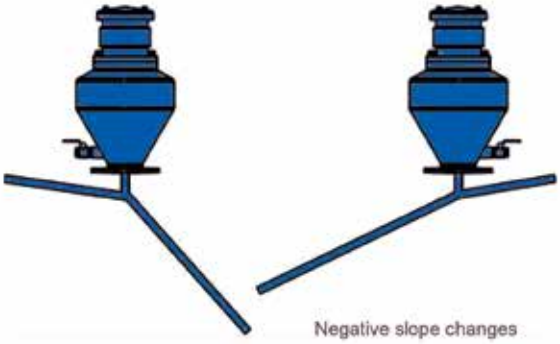
Long horizontal segments must be avoided as much as possible, but if it is not possible, we suggest to place an air release valve every 600 m./2000 feet, dimensioning them according to conduct filling operations.

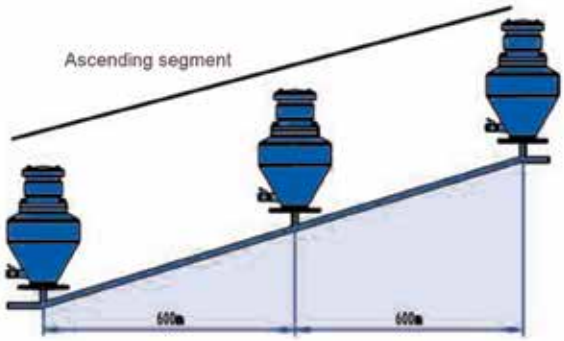
6) Pumping station - downstream check valve.

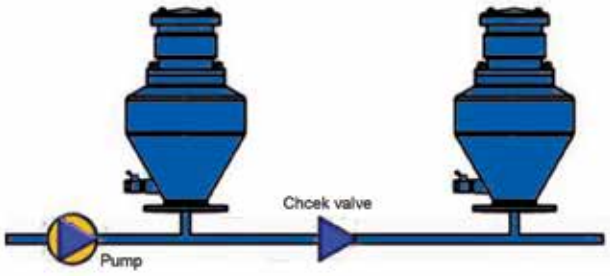
Air valve flow rate must be equivalent to pump capacity. Let's suppose a pump suddenly stops causing column separation. Conventional air valves in this point are not able to control air discharge when the two waves fronts start to join and thus, they will cause a water hammer.

Air vessels or special and controlled air outflow valves, are used to prevent this phenomenon.









COMBINATION SEWAGE AIR VALVES APPLICATIONS

AIR VALVE LOCATIONS ALONG A PIPELINE SUMMRY

The AWWA Steel Pipe Manual recommends Air Valves at the following points along a pipeline.

- High Points: Combination Air Valve.
- Long Horizontal Runs: Air Release or Comb. Valve at 1250 to 2500 ft. (380 to 760M) intervals.
- Long Descents: Combination Air Valve at 1250 to 2500 ft. (380 to 760M) intervals.
- Long Ascents: Air/Vacuum Valve at 1250 to 2500 ft. (380 to 760M) intervals.
- Decrease in an Up Slope: Air/Vacuum Valve.
- Increase in a Down Slope: Combination Air Valve

SOURCES OF AIR ENTRY INTO PIPELINES

Air in a pressurized, operating pipeline has three primary sources:

First:

Prior to start-up, the line is not empty; it is full of, much of this air will be pushed downstream and released through hydrants, but a large amount will become trapped at system high points.

Second:

Source of air is the water itself. Water contains approximately 2% air by volume based on normal solubility of air in water. The dissolved air will come out of solution with a rise in temperature or a drop-in pressure

Finally:

Air can enter through mechanical equipment such as pumps, fittings, and valves when vacuum conditions occur

EFFECT OF AIR IN PIPELINES

- Air pockets can lead to severe head losses for the systems.
- Water hammer and unexpected pressure variations.
- Energy consumed and pumps maintenance are directly proportional to the presence of air pockets on the line.

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