

Air vent valves with float

Series MVD, MV, MKV, MKL, 2161C, MXV



Main features

Automatic and/or manual devices for discharging air from heating and air-conditioning systems.

- Available with :
- Vertical
- Horizontal

discharge and shut-off valve to enable them to be replaced while the system is running.

High venting capacity version (Series MXV)

WATTS[®]
INDUSTRIES

A Division of Watts Water Technologies Inc.

Description

The valves called :

- DUOVENT** Series MVD, MVDR,
- MINIVENT** Series MV, MVR,
- MICROVENT** Series MKV, MKVR, MKL, MKLR,
- FLOATVENT** Series 2161C.
- MAXIVENT** Series MXV

are automatic and/or manual devices for discharging air from heating and air-conditioning systems.



MVD

DUOVENT. (PATENTED)

Automatic and manual air vent valve with unscrewable cover for inspection. Body and cover of brass CW617N. Corrosion-resistant polyethylene float. Nominal pressure: 12 bar. Max. operating pressure: 8 bar. Max. temperature: 115° C. Automatic venting capacity at 3 bar: 17.9 litres/min. Manual venting capacity at 3 bar: 139.5 litres/min. Also suitable for water containing additive (glycol up to 30%).

Type	Part number	Size body	Weight (g.)
MVD	0250608	1/4"	195
MVD	0250610	3/8"	200
MVD	0250615	1/2"	200



MVDR

DUOVENT

Air vent valve like MVD but complete with automatic shut-off valve RIA.

Type	Part number	Size body	Weight (g.)
MVDR	0250708	1/4"	210
MVDR	0250710	3/8"	220
MVDR	0250715	1/2"	250



MV

MINIVENT

Automatic air vent valve with unscrewable cover for inspection. Body and cover of brass CW617N. Corrosion-resistant polyethylene float. Max. pressure: 12 bar. Max. temperature: 115° C. Also suitable for water containing additive (glycol up to 30%).

Type	Part number	Size body	Weight (g.)
MV	0250008	1/4"	195
MV	0250010	3/8"	190
MV	0250215	1/2"	200



MVR

MINIVENT

Automatic air vent valve like MV but complete with automatic shut-off valve RIA.

Type	Part number	Size body	Weight (g.)
MVR	0250108	1/4"	215
MVR	0250110	3/8"	220
MVR	0250115	1/2"	240


MKV
MICROVENT

Automatic vertical air vent valve. Body and cover of brass CW617N. Sealed with O-Ring. Max. pressure: 10 bar. Max. temperature: 110° C. Also suitable for water containing additive (glycol up to 30%).

Type	Part number	Size body	Weight (g.)
MKV	0251210	3/8"	140


MKVR
MICROVENT

Automatic vertical air vent valve like MKV but complete with automatic **sealed** shut-off valve.

Type	Part number	Size body	Weight (g.)
MKVR	0251310	3/8"	165


MKL
MICROVENT

Automatic side air vent valve. Body and cover of brass CW617N. Sealed with O-Ring. Max. pressure: 10 bar. Max. temperature: 110° C. Also suitable for water containing additive (glycol up to 30%).

Type	Part number	Size body	Weight (g.)
MKL	0252210	3/8"	140


MKLR
MICROVENT

Automatic side air vent valve like MKL but complete with automatic **sealed** shut-off valve.

Type	Part number	Size body	Weight (g.)
MKLR	0252310	3/8"	165


2161C
FLOATVENT

Automatic vertical air vent valve. Sealed with O-ring. Designed for installation on head connections of flush manifolds. Brass CW617N body. Max. pressure: 10 bar. Max. temperature: 110°C.

Type	Part number	Size body	Weight (g.)
2161C	2161C38	3/8"	135
2161C	2161C12	1/2"	150
2161C	2161C34	3/4"	160
2161C	2161C1	1"	170

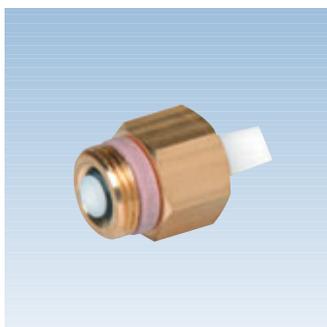


2311C

CHECKVENT

Sealed check valve for automatic vertical air vent valve 2161C38.

Type	Part number	Size body	Weight (g.)
2311C	2311C38	3/8"	25



RIA

Automatic shut-off valve for automatic air vent valves series MVD, MV, MKV, MKL. Complete with device for quick and total drainage of water from the valve.

Type	Part number	Size body	Weight (g.)
RIA	0259008	1/4"	25
RIA	0259010	3/8"	25
RIA	0259015	1/2"	45



MXV

MAXIVENT.

Automatic large capacity deaerator provided with manual air vent valve. Cast iron body and cover with epoxy finish. Max. operating pressure : 12 bar. Max. operating temperature : 115° C. Female air outlet connection 3/8".

Type	Part number	Size body	Weight (g.)
MXV	0253020	3/4"	4380
MXV	0253025	1"	4440
MXV	0253032	1.1/4"	4400

Application

These devices are used in all traditional heating systems (independent, central, radiant panel, etc) for discharging air during the filling phase and the air released into the water during the heating phase, which obstructs the normal circulation of the heat carrier fluid above all at the points where it circulates at a low speed (heat emitters), thus reducing their thermal efficiency. The air vent valves allow the air to be discharged at the points of the system where it accumulates (distribution manifolds, tops of the risers or directly in the boiler).

Operation

The automatic operation of the air vent valves is based on a float system ensuring tight seal: valve opening and closing is determined by the float movement (up-down).

When there is air in the valve, the force of the float weight acts on the lever which is integral with the plug, thus causing it to move down. In such situation the seat is free and allows the air to be vented outside.

When filling the system with water, the air entrapped in the water circuit is pushed towards the outside via the valves. As soon as all the entrapped air is discharged, the water, entering the tank, pushes the float up. Consequently the lever moves the plug to press against the seat thus ensuring tight sealing of the system, thus preventing the heat carrier fluid from flowing out.

The design feature of this device is that it enables air to be discharged from the system automatically while it is being emptied. The **Series 2311C** or **Series RIA** check valves may be used to carry out maintenance work while the system is pressurized.

The operation of the check valve is based on a spring-activated device, sensitive to the pressure of the system, which ensures a seal by means of O-Rings made of EPDM when there is no air vent valve.

The reliability of the air vent valves is ensured by a series of tests carried out on 100% of products to check that the body and its components are watertight.

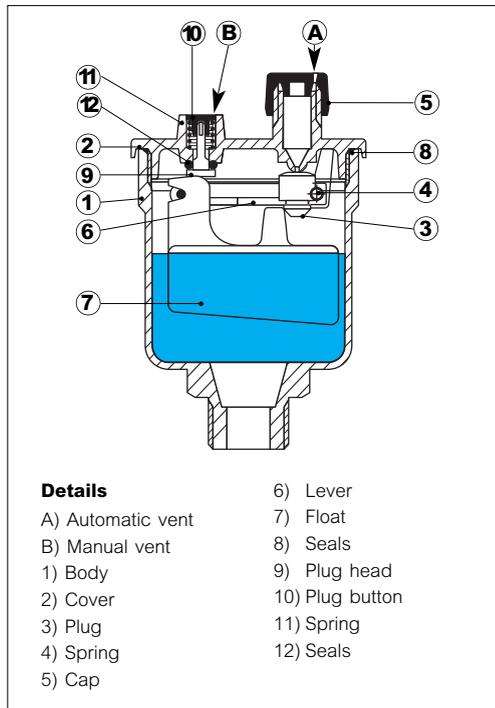
DUOVENT

In addition to its automatic air venting feature, the DUOVENT **MVD, MVR Series** valve is provided with a device allowing manual air venting.

The manual air vent device offers the following advantages :

- a) it allows checking the valve for correct operation
- b) it allows reducing times for discharging air from the system by increasing the discharge flow rate
- c) easier cleaning of the orifice by forcing water to flow through it.

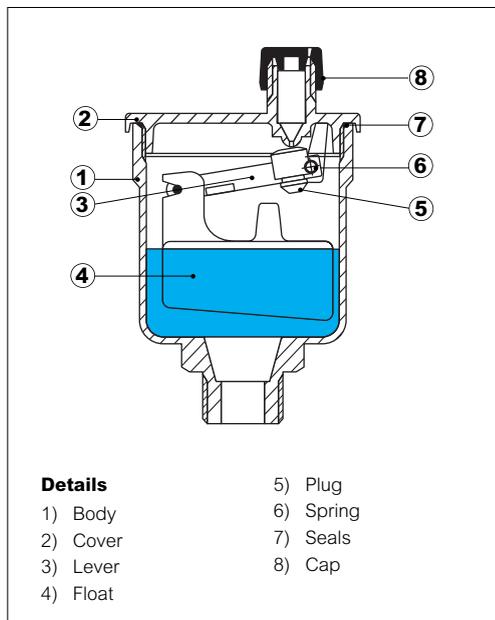
Manual venting is actuated by pushing down button (10); this can be done by exerting a pressure on the surface, for example with a screw driver. Such operation shifts head (9) integral with O-ring (12) to a position lower than the seat, thus allowing air and/or water to flow along stem (10). When water flows both from orifice (A) and (B), this indicates that all the air has been discharged from the system.



Design features	
Body	Brass OT 58
Cover	Brass OT 58
Plug	EPDM rubber
Spring	Stainless steel
Cap	Polyamide
Lever	Polyacetal
Float	High density expanded polyethylene
Seals	NBR rubber
Plug head	Polyacetal
Plug button	Polyacetal
Spring	Stainless steel
Connections	M 1/4" - 3/8" - 1/2" DIN - ISO 228/1

Technical features	
Nominal pressure	12 bar
Max. pressure	8 bar
Max. operating temperature	115°C

MINIVENT

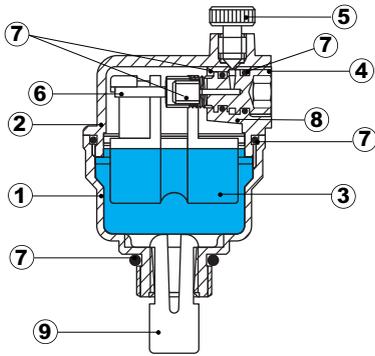


Design features	
Body	Brass OT 58
Cover	Brass OT 58
Lever	Polyacetal
Float	High density expanded polyethylene
Plug	EPDM rubber
Spring	Stainless steel
Seals	NBR rubber
Cap	Polyamide
Connections	M 1/4" - 3/8" - 1/2" DIN-ISO 228/1

Technical features	
Max. operating pressure	12 bar
Max. operating temperature	115°C

MICROVENT

The **MICROVENT Series MKV, MKVR, MKL, MKLR** valve is provided with a vacuum breaker tongue (close to the threaded connection) designed for improving the air venting characteristics. However such vacuum breaker tongue is not fitted when the **MICROVENT** valve is supplied with shut-off valve **Series RIA** which already incorporates the tongue.

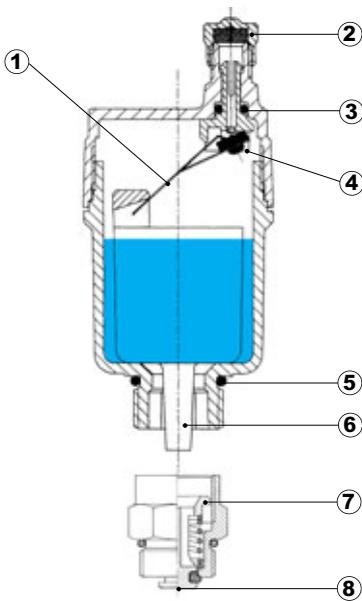


- Details**
- 1) Body
 - 2) Cover
 - 3) Float
 - 4) Plug
 - 5) End cap
 - 6) Lever
 - 7) Seals
 - 8) Spring
 - 9) Vacuum breaker

Design features	
Body	Brass OT 58
Cover	Brass OT 58
Float	High density expanded polyethylene
Plug	Polyphenylene oxide
End cap	Polyphenylene oxide, glass fibre reinforced
Lever	Polyphenylene oxide, glass fibre reinforced
Seals	NBR rubber
Spring	Stainless steel
Vacuum breaker	Polyacetal
Connections	M 3/8" DIN - ISO 228/1

Technical features	
Max. operating pressure	10 bar
Max. operating temperature	110°C

2161C



- Details**
- 1) Air venting control mechanism
 - 2) Safety cap
 - 3) Vent O-ring
 - 4) Plug
 - 5) Sealed with O-ring
 - 6) Jet breaker
 - 7) Retaining device
 - 8) Retaining plug

Design features	
Valve body	CW617N
Float	Stabilized polypropylene
O-Ring	EPDM
Plug	Silicone rubber
Control mechanism	Stainless steel
O-Ring sealing	EPDM
Retaining spring	Stainless steel
Retaining plug	Glass fiber reinforced polyamide

Technical features	
Max. operating temperature	115°C
Min. pressure	0.1 bar
Max. pressure	10 bar
Usable liquids	Water also with glycol ≤ 50%

MAXIVENT

Due to its considerable size, the **MAXIVENT Series MXV**, deaerator is used for automatically venting air from large-sized water distribution pipes (e.g. distribution manifolds in the central system, on risers) and in all cases where large quantities of air have to be removed from the system. The **MAXIVENT** deaerator is provided with manual air vent.

Design features	
Body	Cast iron G25 entirely coated with epoxy resin
Cover	Cast iron G25 entirely coated with epoxy resin
Manual vent valve	Chrome-plated brass OT 58
Lever	Stainless steel
Plug	NBR rubber
Float	High density expanded polyethylene
Seals	NBR rubber
Cap	Brass OT 58
Inlet connection	F 3/4" - 1" - 1.1/4" DIN-ISO 228/1
Outlet connection	F 3/8" DIN-ISO 228/1, brass

Technical features	
Max discharge pressure	6 bar
Max. operating pressure	12 bar
Min. seal pressure	0.1 bar
Max operating temperature	115°C

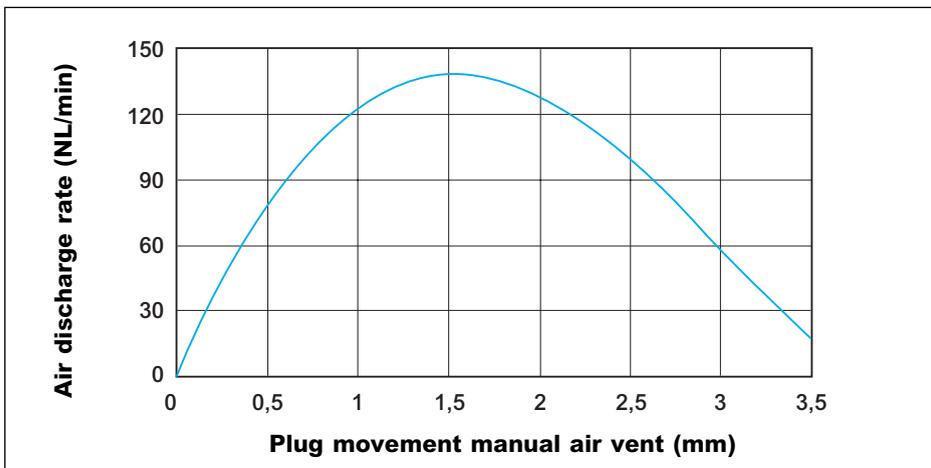
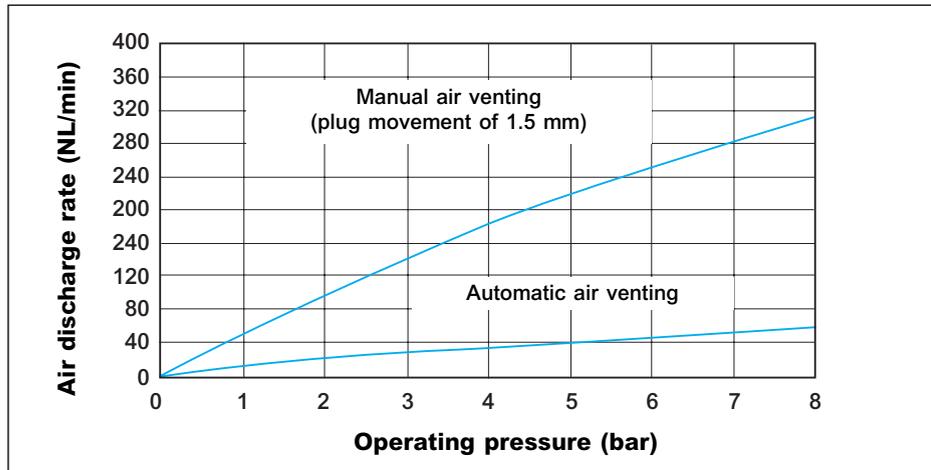
Flow rate-Operating pressure Charts

DUOVENT

Air discharge rate - Operating pressure

(comparison between manual and automatic venting)

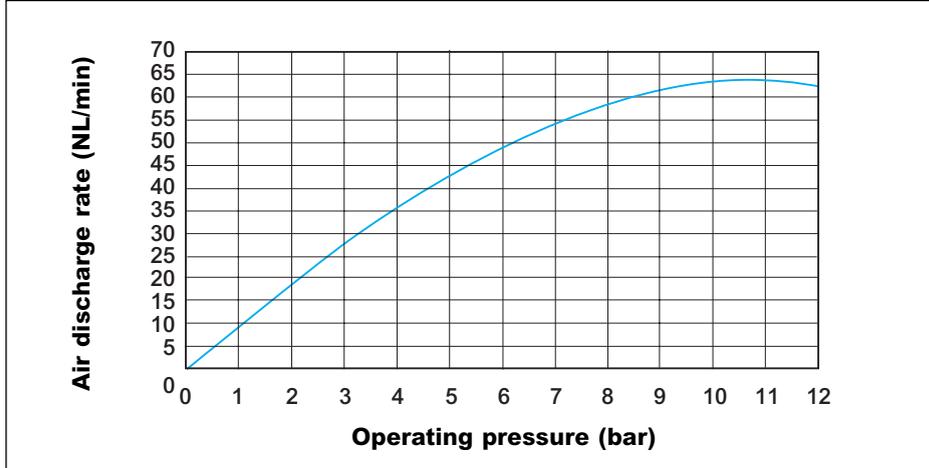
The following diagram shows the automatic and manual venting curves in relation to pressure, assuming a manual plug movement of 1.5 mm. It is clear that the manual venting allows an appreciable increasing in the discharge rate of **DUOVENT**.



Flow rate-Operating pressure Charts

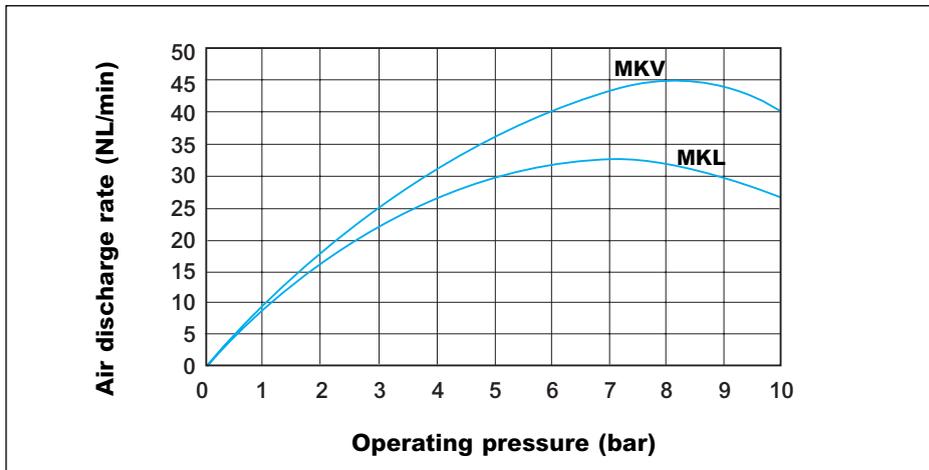
MINIVENT

Air discharge rate - Operating pressure



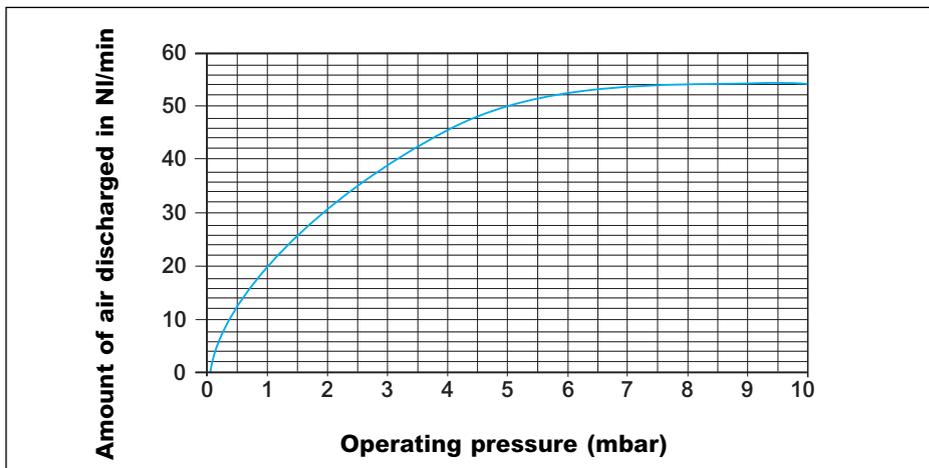
MICROVENT

Air discharge rate - Operating pressure



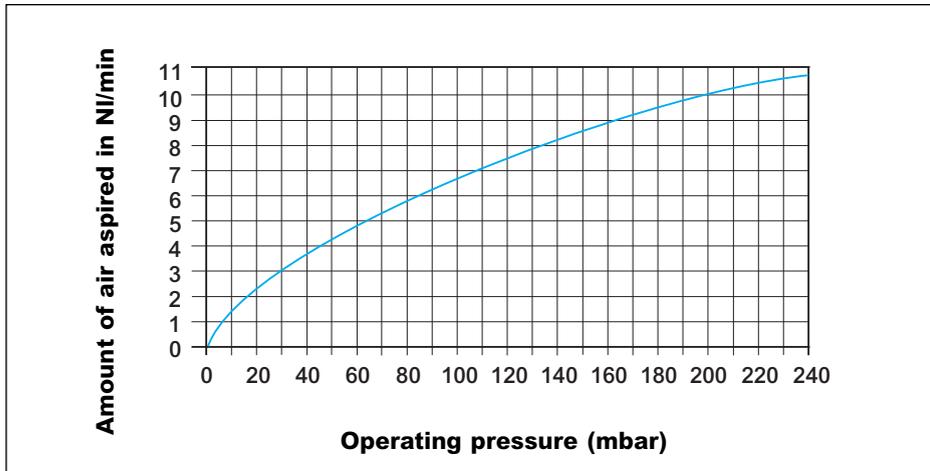
2161C

Discharge capacity



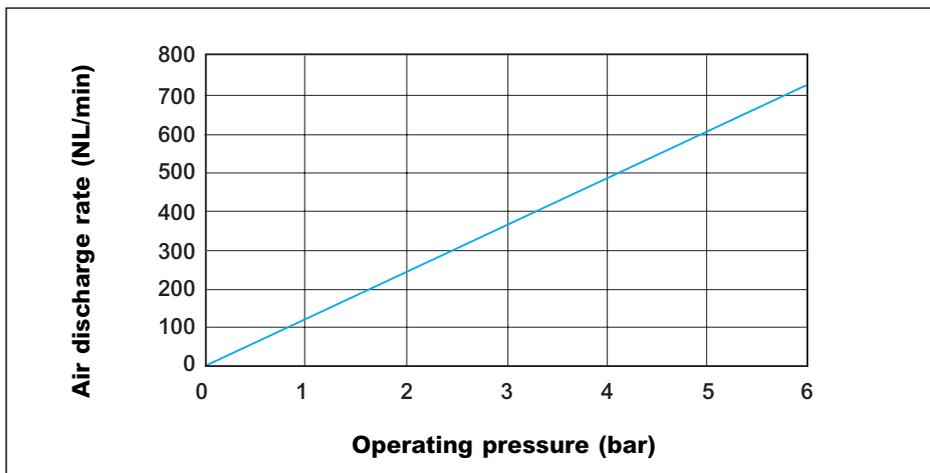
2161C

Aspired capacity



MAXIVENT

Air discharge rate - Operating pressure



Installation

The **DUOVENT, MINIVENT, MICROVENT, FLOATVENT, MAXIVENT** air vent valves are normally installed :

- at the top of risers in heating systems with a closed expansion vessel
- on distribution manifolds
- directly in the boiler (on the **Series SAF** air separator)

In order to ensure maximum air venting efficiency, it is advisable to install the valves in those points where water speed is relatively low.

After installation, in order to allow perfect air venting, unscrew the protective cap by at least two turns (such condition ensures the vent characteristics as given in the previous diagram).

When it is necessary to mount a MICROVENT valve provided with vacuum breaker tongue on a RIA shut-off valve, merely lift out the tongue with two fingers.

Maintenance

Normally the **DUOVENT, MINIVENT, MICROVENT, FLOATVENT, MAXIVENT** valves do not require maintenance.

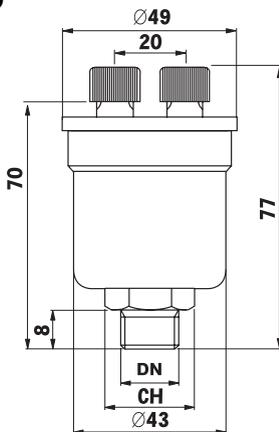
The valves may be inspected by unscrewing the cover from the tank or, with the **MAXIVENT** valve, by unscrewing the screws that secure it to the body. A tight seal between the tank and cover is ensured by the presence of an O-ring; therefore it is also possible to clean the internal parts (float and lever) in case of ingress of foreign matter in the valve.

Long-term efficiency and performance of the vent movement is ensured by the valve design features. The seal system is designed to withstand vibrations, therefore it is unaffected by any external vibrations.

If the **Series MVD, MV, MKV, MKL 2161C** have to be replaced, the use of the **Series RIA** or **Series 2311C** check valves allows this operation to be performed without the system having to be emptied.

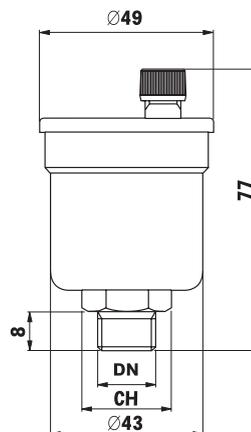
Overall dimensions (mm)

MVD



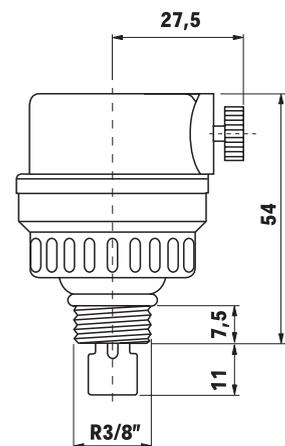
DN	CH
1/4"	19
3/8"	19
1/2"	22

MV

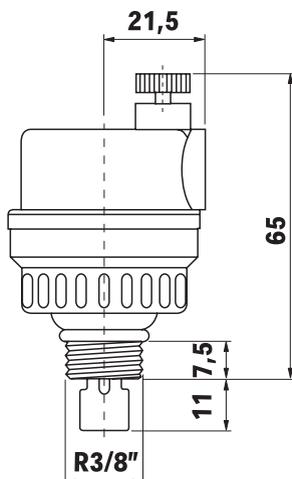


DN	CH
1/4"	19
3/8"	19
1/2"	22

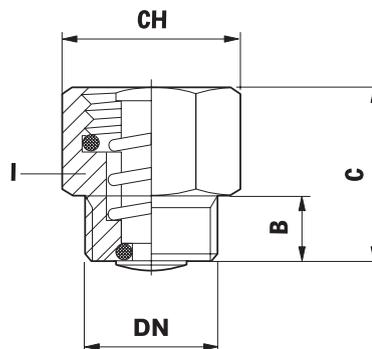
MKL



MKV

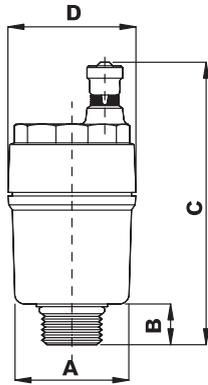


RIA

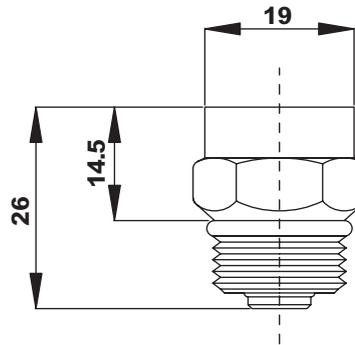


DN	B	C	CH
1/4"	8	11	19
3/8"	8	11	19
1/2"	8	11	24

2161C

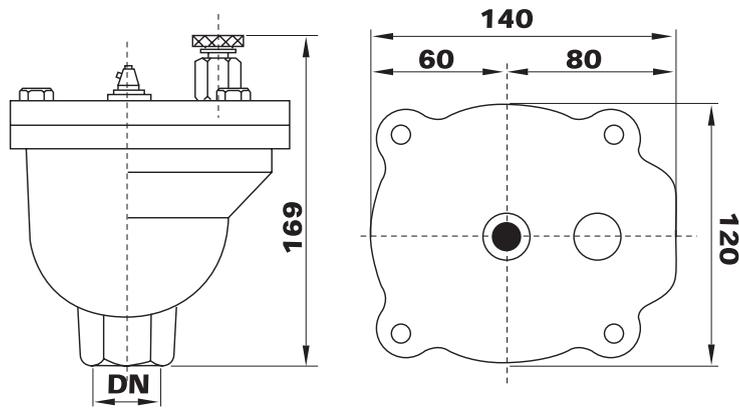


2311C



DN	A	B	C	D
3/8"	30	10	77	36
1/2"	30	10	77	36
3/4"	32	12	79	36
1"	37	12	79	36

MXV - 3/4" - 1" - 1.1/4"



Product range Watts Industries

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- Butterfly valves
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- Gas products
- Electronic controls
- Installation protection products
- Radiator valves
- System products
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