

- FULL VERSION -



Flange connection variant



Connection variant BAIO® spigot end

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1. Intended Use / Product Description

Medium:	Potable water
Operating temperature:	0° to 40°C
Operating range:	0 - 16 bar
Material:	see parts list
Connection variants:	Flange DN50, DN80 BAIO® spigot end DN80
Pipe cover depth:	1.0 m, 1.25 m, 1.5 m, 1.75 m

The air release valve set (ARVS) consists of a shaft with a shut-off device and an air release valve (ARV). Thanks to its compact design, the ARVS replaces elaborate, maintenance-intensive shaft structures. Removing the replacement valve assembly allows simple servicing, avoiding the hazards associated with entering shafts. The shaft cover is fitted with an integrated insect screen.

Installing a drainage hose Order No. 490-04 together with permeable backfill is recommended.

The air release valve HaVent® with rolling-diaphragm technology is ideally suited both for releasing and admitting large volumes of air while filling and draining the pipeline, and for venting large volumes of air within the operating range. The ARV operates continuously from 0 to 16 bar and seals perfectly even in a depressurized state. No minimum response pressure is required.

The rolling-diaphragm sealing principle has a pressure-surge-dampening effect. Thanks to its high venting capacity, the ARV also provides effective vacuum protection.

The shut-off unit contained in the ARVS can be opened and closed using a valve key Order No. 341-00. When the shut-off unit is closed, the ARV is automatically brought to a depressurized state. Manual pressure relief before servicing is not required, since the compressed air contained in the ARV can escape via the shut-off unit's automatic drainage function.

Before installation, the ARVS can be continuously shortened on site by up to 100 mm (see item 3.5). A shaft extension is possible on site using accessory Order No. 993-04 (see item 3.6).

Max. venting capacity: 700 m³/h (when filling the pipeline)
Air release/admission cross-section: 1,500 mm²
Operating vent cross-section: 200 mm²

The applicable standards and codes of practice, accident prevention regulations, and the requirements of the relevant trade associations must be observed and complied with during laying, installation, and maintenance. Laying, installation, and maintenance may only be carried out by suitably qualified personnel.

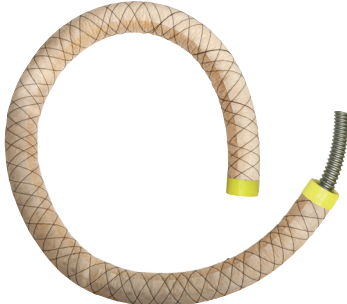
Product marking ARV inside:



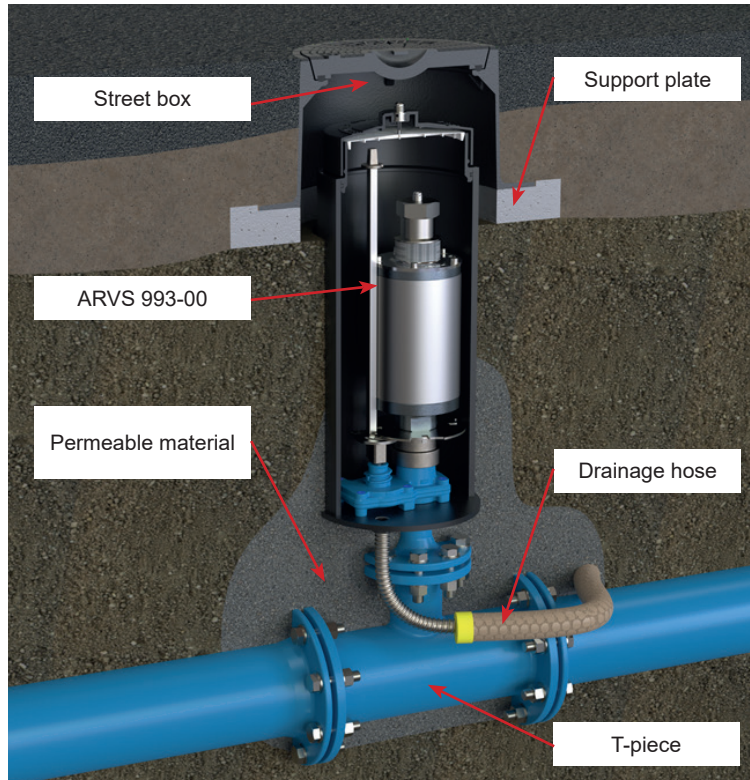
Product marking ARVS outside:



2. Accessories:

		
 211-00 / 204-04 Street box, rigid / Support plate	 211-04 / 204-04 Street box, rollable / Support plate	 206-02 Street box, rollable (For ARVS 993-00 WITH flood guard)
		
 490-05 Dirt and anti-rotation guard (Mandatory with BAIO® spigot end!)	 986-02 Warning sign	 490-04 Drainage hose
		
 993-01 Flood Guard for ARVS 993-00	 993-02 Assembly tool for ARVS 993-00	 993-04 Shaft Extension for ARVS 993-00
		
 993-05 Flushing and Sampling Assembly for ARVS 993-00	 341-00 Actuating key / valve key Order No. 341 001 0000	

3. Installation



Installation example

3.1 General

Air release valves and valve sets are installed at high points, at changes in pipe gradient, on falling sections, on long gently falling or horizontal pipe runs, upstream and downstream of control valves, and downstream of pumps.

Detailed planning guidance for new installations and retrofits can be found in the technical information for planners on air release valves and valve sets, as well as in the current DVGW code of practice W334.

The ARV or ARVS must be mounted on a vertical outlet directly on the pressure pipeline. The need for a vent dome per DVGW code of practice W334 must be checked. A laterally offset arrangement of air release valves/valve sets must be avoided.

Installation must be carried out in a depressurized state. A distinguishing feature is the option to tap and commission the ARVS under pressure using the appropriate accessories (see item 3.7).

3.2 Installing the ARVS onto the Pipeline



Connection variant flange: 2x open-end wrench SW 24

Flange connection:

When installing the ARVS into the pipeline, the applicable DVGW or DWA regulations for making a flange connection must be observed.

BAIO® connection:

When installing the ARVS with BAIO® spigot end into the pipeline, the BAIO® laying instructions must be observed.

For Hawle air release valve sets with vertical BAIO® spigot end, a dirt and anti-rotation guard Order No. 490-05 must always be used between the spigot end and the BAIO® socket. In addition to securing against accidental unlocking, this also protects against contamination.

3.3 Drainage Bed

In the drainage area, a bed of permeable material (particle size > 5 mm) should be installed to absorb the residual water produced during closing while also preventing the assembly from being undermined by water.

Installing a drainage hose Order No. 490-04 together with permeable backfill is recommended.

3.4 Drainage Hose Order No. 490-04

The drainage hose collects and slowly discharges the splash water that occurs inside the ARVS (produced during venting) and the residual water that occurs when removing the valve. It also prevents possible root ingrowth. The drainage hose consists of a flexible drainage pipe, d 50 mm, wrapped in filter fleece, with a matching connection to the valve's drain fitting. Thanks to its large surface area, the collected splash water/residual water is released evenly. The filter fleece reduces the ingress of fine-grained soil material via the drainage hose into the interior of the ARVS.

Recommended for use with:

- „fine-grained“ soils
- installation situations where silting into the housing is expected (groundwater)

Assembly:

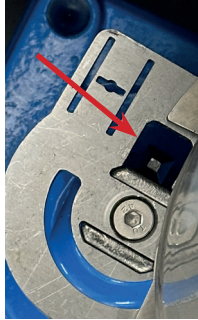
See the operating instructions “Drainage Hose Order No. 490-04”

3.5 Shortening

	Assembly tool (see Accessories) Order No. 993-02 Cordless screwdriver or Phillips screwdriver PH2 Tool for shortening the PE shaft pipe Angle grinder with cutting disc for stainless steel Spindle grease, e.g. Order No. 600 000 0015 Manual deburring tool or file
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Before installation, the ARVS can be continuously shortened on site by up to 100 mm as follows:

1.	Remove the cover (1) using the assembly tool Order No. 993-02. To do so, place the assembly tool onto the hexagon of the cover and, using the tool's knurled cap, screw it clockwise onto the threaded piece (2) as far as it will go. Pull the cover (1) upward with the assembly tool. This releases the cover's snap-fit connections.	
2.	Remove the four sheet metal screws (4) from the transition ring (3) in the shaft pipe (9) and lift off the transition ring.	

Image 1: Shut-off unit (10) open: 	Image 2: Shut-off unit (10) closed: 	Image 3: Replacement valve assembly (6) locked: 	Image 4: Replacement valve assembly (6) unlocked: 
3.	Shut-off unit(10) with the valve key Order No. 341-00 by turning it a half turn (180°) clockwise (Image 2), and remove the key rod (8) (Image 3). Place the assembly tool onto the end cap (7) of the replacement valve assembly (6) and screw it on clockwise using the knurled cap. Unlock the replacement valve assembly by turning it counterclockwise (Image 4).		
4.	Remove the complete replacement valve assembly (6) and set it aside protected from dirt.		
5.	Shorten the shaft pipe (9) as needed using a suitable tool, up to max. 100 mm. Make sure the cut is straight!		
6.	Deburr the inside of the shaft pipe using a manual deburring tool or file.		
7.	Shorten the key rod (8) at the plain end accordingly, using an angle grinder with a cutting disc for stainless steel, and deburr it.		
8.	Reinsert the transition ring (3), fit the four screws (4), and tighten flush.		
9.	Refit the replacement valve assembly (6) and lock it by turning clockwise. Insert the key rod (8) and open the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) counterclockwise.		
10.	Fit the cover (1). The snap-fit connection must engage.		

3.6 Shaft Extension Order No. 993-04

Using the shaft extension (standard version, see Accessories), the ARVS can be extended on site at a later date by up to 250 mm.

Further extensions (custom-made) available on request.

Assembly:

See the operating instructions "Shaft Extension for ARVS 993-00 Order No. 993-04"



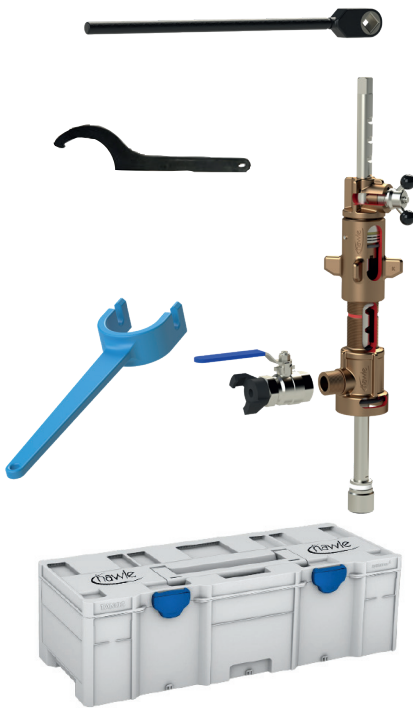
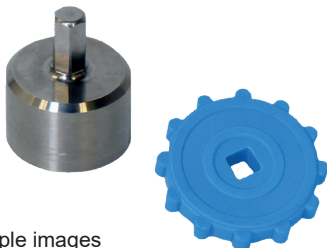
3.7 Subsequent Tapping of the Pipeline through the Air Release Valve Set

The air release valve set can be fitted onto the main pipe using a tapping saddle and subsequently tapped under pressure. For this, use, for example, the Hawle tapping saddle 359-01 for cast iron, steel, or AC pipe, or the HAKU tapping saddle Order No. 523-00 for PE or PVC pipe. For information on the respective tapping saddle, see the separate operating and maintenance instructions.

The applicable standards and codes of practice, accident prevention regulations, and the requirements of the relevant trade associations must be observed and complied with during the tapping process.

In addition to the matching tapping saddle, the following accessories are needed to tap the ARVS.

Accessories:

		
	 Order No. 831 900 0002 Drill spindle, length 1800 mm Suitable for tapping the ARVS at all standard pipe cover depths CAUTION: 1000 mm extension required!	
		
	 Order No. 831 200 1055 Extension, 1000 mm for drill spindle	
		
	Example images	Example images
 831-01 Order No. 830 010 0000 Tapping Machine "Hawlo-mat" Potable Water Base unit in Systainer case with: Feed key, ratchet, hook wrench, ball valve, and GEKA threaded piece	 831-01 Drilling tool and accessories – see the separate overview table. CAUTION: The ARVS Order No. 993-00 must be tapped at max. 45 mm!	 831-00 Accessories for the tapping machine "Hawlo-mat" – see the operating instructions for the tapping machine "Hawlo-mat" Order No. 830-00, 830-01

Preparation / Assembly / Tapping Process

	- Assembly tool (see Accessories) Order No. 993-02 - Flushing and sampling assembly (see Accessories) Order No. 993-05 - Valve key (see Accessories) Order No. 341-00 - Depending on pipe type: motor drive for tapping machine "Hawlo-mat". See the overview table for drilling tool and accessories Order No. 831-01 - Suitable sealant
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See also the operating instructions for the Tapping Machine "Hawlo-mat" Order No. 830-00, 830-01, and the Flushing and Sampling Assembly Order No. 993-05.

1.	Unscrew the elbow, ball valve, and C coupling from the flushing and sampling assembly Order No. 993-05, and seal the thread with a suitable sealant.
2.	Assemble per the separate operating instructions for the flushing and sampling assembly Order No. 993-05, and remove the replacement valve assembly (6) from the ARVS.
3.	Before installing the flushing and sampling assembly, check the shut-off unit (10) for proper function and bring it to the closed position using the key rod (8) and valve key Order No. 341-00, turning it a half turn (180°) clockwise. Remove the key rod (8), fit the flushing and sampling assembly Order No. 993-05, and lock it onto the shut-off unit (10) by turning clockwise.

4.	Then bring the shut-off unit (10) to the open position using the key rod (8) and valve key Order No. 341-00, turning it a half turn (180°) counterclockwise.
5.	If possible, fill the fitted flushing and sampling assembly with potable water. This cools the drilling tool at the start of tapping and increases its service life (not necessary for PE pipes).
6.	Prepare the tapping machine "Hawlomat" Order No. 830-00, 830-01 per its operating instructions. However, a tapping adapter is not needed here.
7.	Insert the drill spindle with the extension (1000 mm) fitted from below through the tapping machine "Hawlomat".
8.	Fit a suitable drilling tool with accessories per the operating instructions for the tapping machine "Hawlomat" Order No. 830-00, 830-01.  CAUTION: tapping diameter max. 45 mm.
9.	Fully retract the drill spindle with the fitted drilling tool into the tapping machine "Hawlomat" and secure it with the clamping screw (to prevent it falling out unintentionally).
10.	Screw the tapping machine "Hawlomat" onto the thread of the flushing and sampling assembly.
11.	Carry out the tapping process per the operating instructions for the tapping machine "Hawlomat" Order No. 830-00, 830-01, item 4.4.
12.	Close the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) clockwise.
13.	Relieve the pressure by opening the ball valve on the tapping machine "Hawlomat".
14.	Unscrew the tapping machine "Hawlomat" from the flushing and sampling assembly.
15.	Disassemble per the separate operating instructions for the flushing and sampling assembly Order No. 993-05, fit the replacement valve assembly (6), and commission it.
16.	After tapping, the drilling tool must be removed from the tapping machine, and, if a hole cutter or hole saw was used, the core must be removed.
17.	Clean and dry the tapping adapter and drilling tool, and check for wear or damage.



4. Commissioning and Pressure Test

	Assembly tool (see Accessories) Order No. 993-02 Valve key (see Accessories) Order No. 341-00
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Image 1: Shut-off unit (10) open:



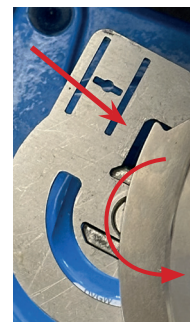
Image 2: Shut-off unit (10) closed:



Image 3: Replacement valve assembly (6) locked:



Image 4: Replacement valve assembly (6) unlocked:



4.1 Commissioning

For commissioning, the line must be filled and pressurized.

 **CAUTION:** To avoid pressure surges, the maximum filling speed must be limited to 0.25 m/s per DVGW W334.

Note: During start-up venting, a small amount of splash water is expelled through the valve.

Flushing before commissioning is recommended to remove any possible dirt accumulation at the high point of the pipeline (left column).

Alternatively, commissioning can also be carried out without flushing (right column).

Commissioning with Flushing and Sampling Assembly		Commissioning without Flushing CAUTION: malfunction due to dirt ingress is possible!	
1.	Remove the cover (1) using the assembly tool Order No. 993-02. To do so, place the assembly tool onto the hexagon of the cover and, using the tool's knurled cap, screw it clockwise onto the threaded piece (2) as far as it will go. Pull the cover (1) upward with the assembly tool. This releases the cover's snap-fit connections.	1.	Remove the cover (1) using the assembly tool Order No. 993-02. To do so, place the assembly tool onto the hexagon of the cover and, using the tool's knurled cap, screw it clockwise onto the threaded piece (2) as far as it will go. Pull the cover (1) upward with the assembly tool. This releases the cover's snap-fit connections.
2.	Shut-off unit(10) with the valve key Order No. 341-00 by turning it a half turn (180°) clockwise (Image 2), and remove the key rod (8) (Image 3). Place the assembly tool onto the end cap (7) of the replacement valve assembly (6) and screw it on clockwise using the knurled cap. Unlock the replacement valve assembly by turning it counterclockwise (Image 4).		
3.	Remove the complete replacement valve assembly (6) and set it aside protected from dirt.		
4.	Fit the flushing and sampling assembly Order No. 993-05 and lock it onto the shut-off unit (10) by turning clockwise. If necessary, connect a hose to the C coupling of the flushing and sampling assembly.		
5.	Insert the key rod (8) and open the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) counterclockwise. Slowly open the ball valve on the flushing and sampling assembly.		
6.	Fill the line (filling speed per DVGW W334, max. 0.25 m/s!).	2.	Fill the line (filling speed per DVGW W334, max. 0.25 m/s!).
7.	Air, or an air/water mixture with possible contamination, will emerge. Continue flushing until only clear water emerges.	3.	Air, or an air/water mixture, is expelled.
8.	Close the ball valve on the flushing and sampling assembly very slowly (risk of water hammer!). Shut-off unit(10) with the valve key Order No. 341-00 by turning it a half turn (180°) clockwise (Image 2).	4.	Once filling is complete, the ARV closes automatically.  CAUTION: If the ARV does not close, suspended solids from the line may have collected in the ARV. Carry out servicing (item 5).
9.	Carry out the pressure test as described below: - Item 4.2.1 (4 and 6-8): pressure test of the pipeline with the flushing and sampling assembly fitted and the shut-off unit open. - Item 4.2.2: pressure test of the fitted ARV.	5.	Carry out the pressure test per item 4.2

4.2 Pressure Test

4.2.1 Pressure Test of the Pipeline

The pressure test of the pipeline with the ARVS fitted in the open pipe trench must be carried out per the current standards/codes of practice.



CAUTION: The pressure test must be carried out with the replacement valve assembly (6) taken out of service!

It is recommended to carry out the pressure test with the flushing and sampling assembly fitted and the shut-off unit open (left column). Test pressure observing the maximum operating pressures per the DVGW code of practice.

If a pressure test is carried out against a closed shut-off unit, the procedure is described in the right column. Test pressure observing the maximum operating pressures per the DVGW code of practice.

Pressure test with flushing and sampling assembly fitted and shut-off unit (10) open		Pressure test against closed shut-off unit (10)	
1.	Remove the cover (1) using the assembly tool Order No. 993-02. To do so, place the assembly tool onto the hexagon of the cover and, using the tool's knurled cap, screw it clockwise onto the threaded piece (2) as far as it will go. Pull the cover (1) upward with the assembly tool. This releases the cover's snap-fit connections.	1.	Remove the cover (1) using the assembly tool Order No. 993-02. To do so, place the assembly tool onto the hexagon of the cover and, using the tool's knurled cap, screw it clockwise onto the threaded piece (2) as far as it will go. Pull the cover (1) upward with the assembly tool. This releases the cover's snap-fit connections.
2.	Close the shut-off unit (10) with the valve key Order No. 341-00 by turning it a half turn (180°) clockwise (Image 2), and remove the key rod (8) (Image 3). Place the assembly tool onto the end cap (7) of the replacement valve assembly (6) and screw it on clockwise using the knurled cap. Unlock the replacement valve assembly by turning it counterclockwise (Image 4).	2.	Close the shut-off unit (10) with the valve key Order No. 341-00 by turning it a half turn (180°) clockwise (Image 2), and remove the key rod (8) (Image 3). Place the assembly tool onto the end cap (7) of the replacement valve assembly (6) and screw it on clockwise using the knurled cap. Unlock the replacement valve assembly by turning it counterclockwise (Image 4).
3.	Remove the complete replacement valve assembly (6) and set it aside protected from dirt.	3.	Remove the complete replacement valve assembly (6) and set it aside protected from dirt.
4.	Unscrew the elbow, ball valve, and C coupling from the flushing and sampling assembly Order No. 993-05, seal the thread with a suitable sealant, and screw on a blanking cap (to be provided by the customer).		
5.	Fit the flushing and sampling assembly Order No. 993-05 and lock it onto the shut-off unit (10) by turning clockwise.		
6.	Carry out the pressure test per the current standards/codes of practice. CAUTION: Test pressure observing the maximum operating pressures per the DVGW code of practice.	4.	Carry out the pressure test per the current standards/codes of practice. CAUTION: Test pressure observing the maximum operating pressures per the DVGW code of practice
7.	After a successful pressure test, unlock the flushing and sampling assembly by turning it counterclockwise and remove it. Refit the replacement valve assembly (6) and lock it by turning clockwise. Insert the key rod (8) and open the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) counterclockwise. A brief "venting spurt" may be noticeable here.	5.	After a successful pressure test, refit the replacement valve assembly (6), which was taken out of service, and lock it by turning clockwise. Insert the key rod (8) and open the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) counterclockwise. A brief "venting spurt" may be noticeable here.
8.	Carry out the pressure test of the fitted ARV per item 4.2.2.	6.	Carry out the pressure test of the fitted ARV per item 4.2.2.



CAUTION: In the event of persistent water leakage, servicing must be carried out, see item 5 .

4.2.2 Pressure Test of the Fitted ARV

After the pressure test of the pipeline (item 4.2.1) or after successful servicing, an additional pressure test of the ARV must also be carried out, observing the maximum operating pressures per the DVGW code of practice.

If a flushing and sampling assembly was used for commissioning:
Remove the key rod (8), unlock the flushing and sampling assembly by turning counterclockwise, and remove it. Refit the replacement valve assembly (6) and lock it by turning clockwise. Insert the key rod (8) and open the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) counterclockwise. A brief “venting spurt” may be noticeable here.

After the pressure test, fit the cover (1). The snap-fit connection must engage.

Close the lid of the street box.

5. Maintenance and Servicing

	Hex key SW6 Open-end wrench SW6 Socket wrench SW13, SW30 Flat-blade screwdriver, blade width e.g. 3 mm Spindle grease, e.g. Order No. 600 000 0015 Cordless screwdriver Suction device for residual water Disinfectant approved for use with potable water
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ARVS must be serviced at least once a year, per DVGW code of practice W400-3. Depending on water composition, it may be necessary to shorten the service intervals. Regular inspections increase the operational reliability of the ARVS.

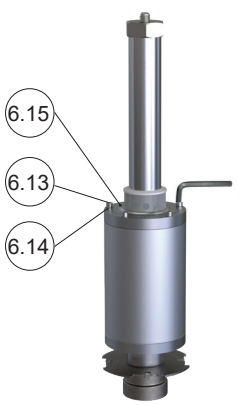
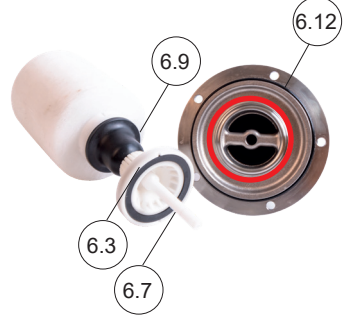
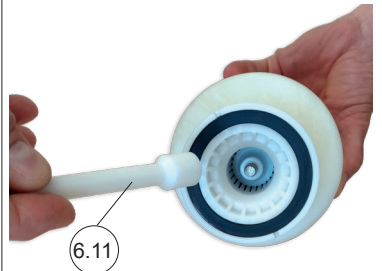
For cleaning, we recommend using lukewarm water. Before refitting, all components must be disinfected using a disinfectant approved for use with potable water. The manufacturer's instructions must be observed.

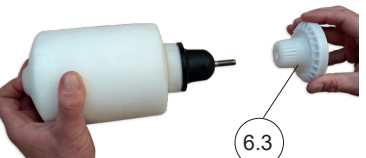
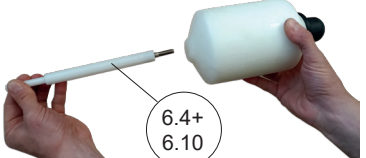
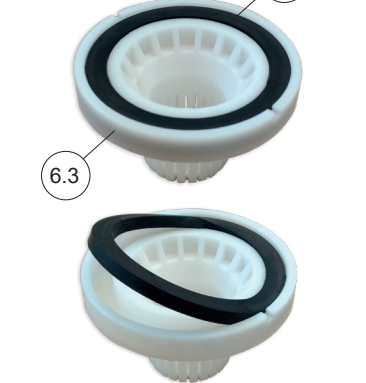
Foreign particles flushed into the valve housing (e.g. swarf from tapping) as well as deposits from iron- and manganese-containing or suspended-solids-containing water can impair the proper sealing function.

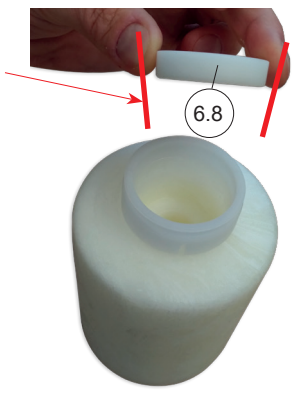
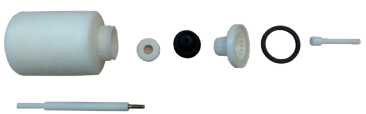
 **CAUTION:** ARVS must be taken out of service before servicing. Servicing must be carried out in a depressurized state.
For servicing and maintenance work, the complete replacement valve assembly must **always** be removed from the ARVS housing.

CAUTION: Note the direction of the arrow for the disassembly and reassembly sequence!

1.	Open the lid of the street box
2.	Remove the cover (1) using the assembly tool Order No. 993-02. To do so, place the assembly tool onto the hexagon of the cover and, using the tool's knurled cap, screw it clockwise onto the threaded piece (2) as far as it will go. Pull the cover (1) upward with the assembly tool. This releases the cover's snap-fit connections.
3.	If there is residual water inside the assembly, it must be removed using a suitable suction device.
4.	Close the shut-off unit (10) with the valve key Order No. 341-00 by turning it a half turn (180°) clockwise (Image 2), and remove the key rod (8) (Image 3). Place the assembly tool onto the end cap (7) of the replacement valve assembly (6) and screw it on clockwise using the knurled cap. Unlock the replacement valve assembly by turning it counterclockwise (Image 4).
5.	Remove the complete replacement valve assembly (6) and set it aside protected from dirt.

	Disassembly		Reassembly	
6.	Remove the upper housing part (6.15) by loosening the five hex socket screws (6.13) using a 6 mm hex key.	25.	Tighten the hex socket screws (6.13) with shim washer (6.14) clockwise, hand-tight, until fully seated. Then continue with item 26!	
7.	Remove the upper housing part and take out the float with integrated valve mechanism/functional unit (6.3-6.11).	24.	Insert the functional unit (6.3 - 6.11) into the housing (6.1). Make sure the guide rod (6.4) is inserted into the locking sleeve (6.2) on the underside of the housing. Fit the upper housing part with O-ring (6.15+6.12) onto the housing (6.1). Make sure the valve cage guide (6.11) is inserted into the central bore of the upper housing part (6.15).	
8.	Remove any foreign particles present. If necessary, clean the following parts with lukewarm water: • Housing parts • Rolling diaphragm (6.9) • Valve cage slots (6.3) • Valve cage flat gasket (6.7) • Cover bead (red marking) Check the rolling diaphragm (6.9), flat gasket (6.7), and O-ring (6.12) for wear or damage. Replace the sealing elements if necessary (for disassembly, see items 9-16) Otherwise continue with item 23!	23.	Grease the O-ring (6.12) with a suitable valve grease.	
9.	Disassemble the valve cage guide (6.11) using an open-end wrench SW6, turning counterclockwise.	22.	Screw the valve cage guide (6.11) onto the guide rod by hand, turning clockwise, and tighten as far as it will go. If using an open-end wrench SW6, avoid over-tightening.	

10.	Disassemble the valve cage (6.3) by hand, turning counterclockwise.	21.	Fit the valve cage (6.3) by hand, turning clockwise. CAUTION: plastic internal thread. Avoid over-tightening.	
11.	Remove the guide rod (6.4) with grub screw (6.10) as one unit from the float.	20.	Push the guide rod (6.4) with grub screw (10) through the float and rolling diaphragm. Take care not to damage the rolling diaphragm.	
12.	If necessary: Pry the flat gasket (6.7) out of the valve cage (6.3) using a flat-blade screwdriver.	19.	If the flat gasket was removed for replacement: Press the conical flat gasket into the valve cage. Due to its conical shape, somewhat more force is required when pressing it in. Take care not to damage the flat gasket.	
13.	Pull the rolling diaphragm (6.9) off the float. The rolling diaphragm adapter (6.6) remains fitted on the float.	18.	Hook the bead of the rolling diaphragm into the groove of the rolling diaphragm adapter. - make sure it is seated evenly. - make sure the bead is correctly positioned.	    Installed state As delivered state

14.	Remove the spacer washer (6.8) and keep it ready for reinstallation.	17.	Reinsert the spacer washer. CAUTION: note the conical shape (see guide lines)	
15.	Illustration: Float with integrated valve mechanism (individual parts)			
16.	Reassemble the valve in reverse order (see blue notes under items 17-25)			



26.	We then recommend flushing with the flushing and sampling assembly Order No. 993-05 (see item 4.1 “Commissioning with Flushing and Sampling Assembly”).
27.	After successful servicing, refit the replacement valve assembly (6) and lock it by turning clockwise. Insert the key rod (8) and open the shut-off unit (10) with the valve key Order No. 341-00, turning it a half turn (180°) counterclockwise. A brief “venting spurt” may be noticeable here.
 After servicing, a visual check for leak-tightness and function must be carried out. CAUTION: If the ARV does not seal reliably, servicing must be repeated. For commissioning and pressure test, see item 4.	
28.	Cover(1). The snap-fit connection must engage.
29.	Close the lid of the street box

5.1 Spare Parts

		
As delivered! The diaphragm must be turned before installation – see “Maintenance and Servicing”		
 Rolling diaphragm for ARV HaVent® (987-00, 992-00) Order No. 009 878 1605 Order No. 009E00	 O-ring 66x6 (Pos. 6.23) Order No. 993 03 060 O-ring 116x4 (Pos. 6.12) Order No. 992 299 0033 Order No. 009E01	 Functional Unit HaVent® Order No. 987 800 0017 Order No. 987E00



Replacement valve assembly
HaVent® ARVS
Rd1.0/1.25/1.5/1.75
Order No. 993E00

Further spare parts available on request.

6. Special Functions

Item	Order No./ Art. No.		ex works	can be re- trofitted on site
5.1	993-01	Hand-tighten the flood guard	X	X
5.2	993 990 0900 - 993 990 0903	Ventilation Only	X	
5.3	009 878 1570	Closing Aid	X	X

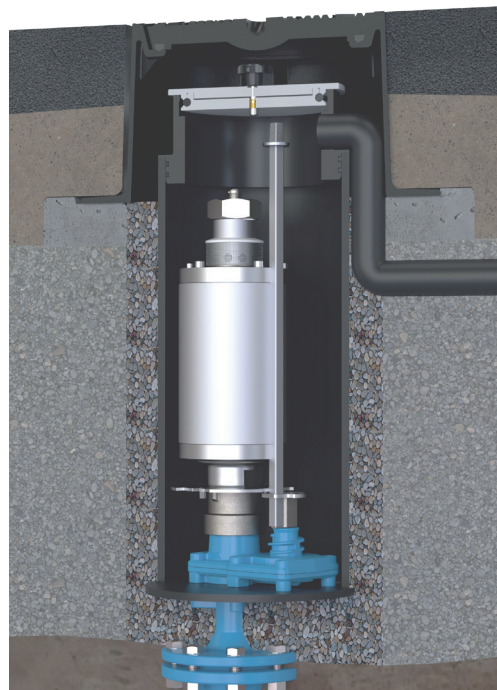
ARVS with special functions are serviced in the same way as described for the standard version (see item 5).

6.1 Special Function - Flood Guard Order No. 993-01

If the air release valve set is installed in areas where flooding is possible, the flood guard prevents the ingress of contaminated water via the air release valve and, in turn, into the potable water network.

CAUTION: When using the flood guard, the street box Order No. 206-02 (see Accessories) must be used.

See the operating instructions “Flood Guard for Air Release Valve Set”.



6.2 Special Function - Ventilation Only Order No. 993 990 0900 - 993 990 0903

e.g. upstream of control valves controlled by their own medium. No ingestion of contamination is possible.



CAUTION: Minimum operating pressure of 0.2 bar required!

The special function “ventilation only” can additionally be combined with the special function flood guard, see item



Product marking:

Ventilation only!

6.3 Special Function - with Closing Aid Order No. 009 878 1570

Closing aid for a more active closing action with large air volumes (e.g. for well pipelines between pump and water treatment, elevated or clear-water tanks, wellhead for venting the pressure line)

Note: a reduced venting capacity must be taken into account!

Retrofitting the closing aid:

1.	Illustration: closing aid	
2.	For disassembly, see item 5, Servicing, steps 1-7. Fit the closing aid (3), as shown, into the housing (6.1) onto the locking sleeve (6.2).	
3.	For assembly, see item 5, Servicing, steps 24 and 25. For commissioning and pressure test, see item 5, Servicing, steps 27-29 .	

7. Further Information

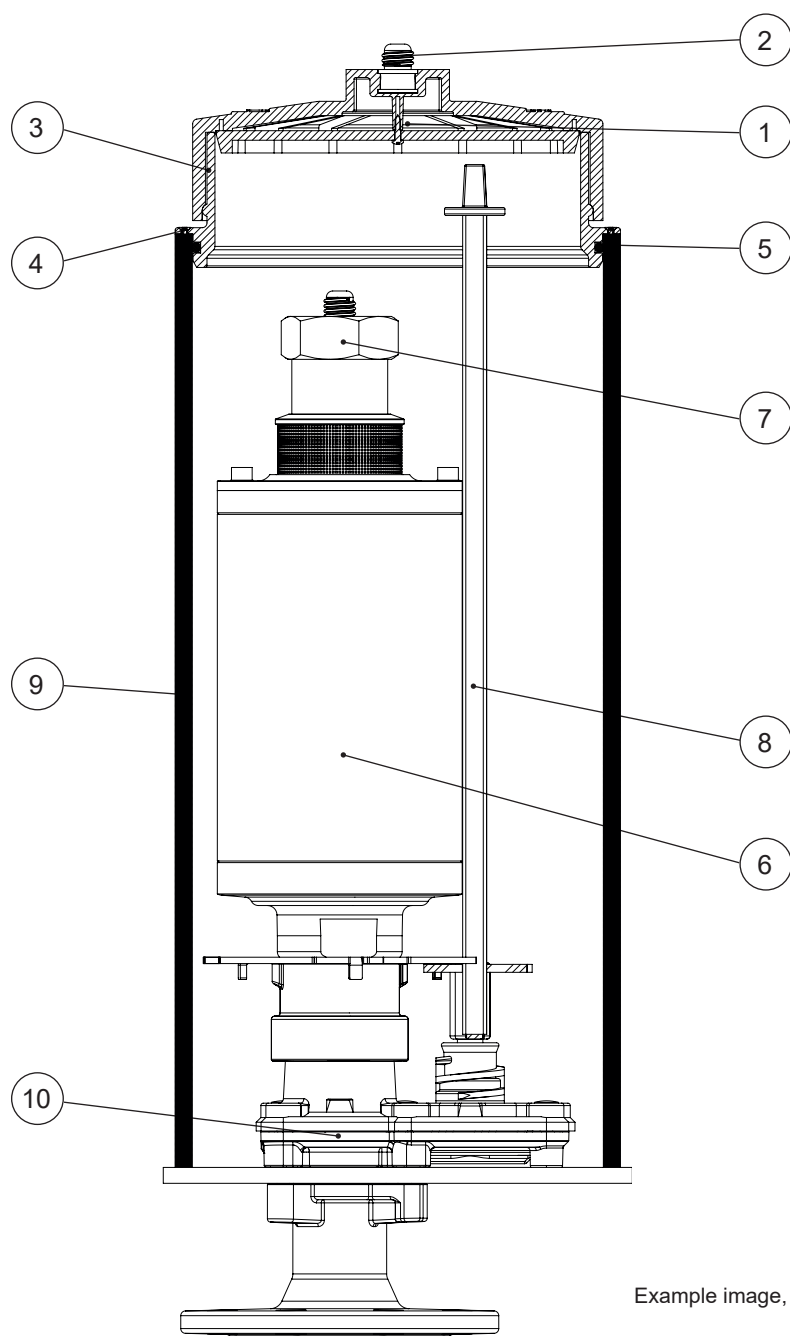
If required, please request our detailed technical information on air release valves.

If you have any questions or require further information, please contact:

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Air Release Valve Set HaVent® PN 16 Order No. 993-00

Parts List

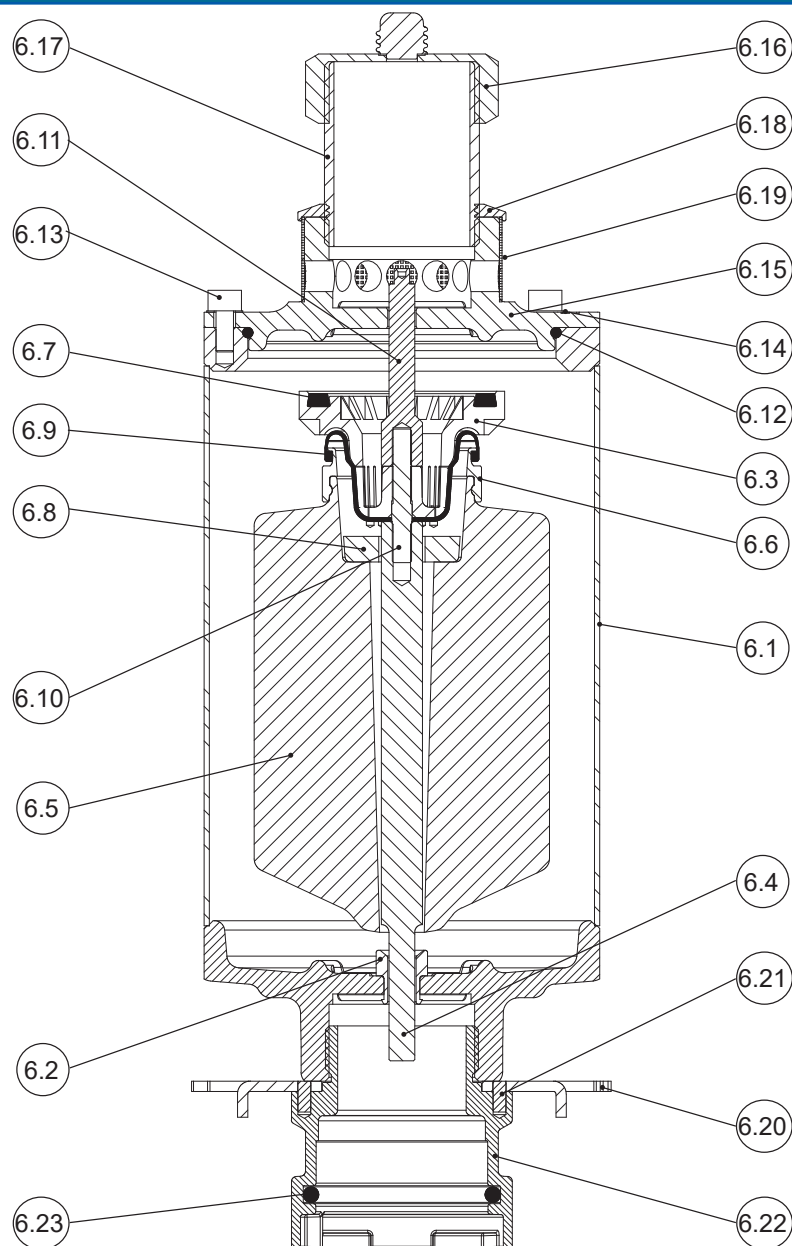


Example image, flange connection variant

No.	Qty.	Short Description	Material			
1	1	Cover for assembly with insect screen	PE	7	1	End cap
2	1	Threaded piece Rd20x1/8" DIN405	Stainless steel	8	1	Key rod
3	1	Transition ring Cover	PE	9	1	shaft pipe
4	4	Sheet metal screw 3.9x32	Stainless steel	10	1	Shut-off unit
5	1	O-ring 245x6	NBR			- Spigot end DN80
6	1	Replacement valve assembly see separate parts list				- Flange DN50
						- Flange DN80
						Housing: GJS-400, Hawle epoxy powder coating
						Spindle, plug-disc drive, plug disc: stainless steel
						Seals: EPDM

Replacement Valve Assembly HaVent® PN 16 for Air Release Valve Set Order No. 993-00

Parts List



No.	Qty.	Short Description	Material			
6.1	1	Housing	Stainless steel	6.12	1	O-ring 116x4 EPDM
6.2	1	Locking sleeve	POM	6.13	5	Hex socket screw M8x16 Stainless steel
6.3	1	Valve cage	POM	6.14	5	Shim washer Stainless steel
6.4	1	Guide rod	POM	6.15	1	Upper housing part Stainless steel
6.5	1	Float	PP	6.16	1	End cap Stainless steel
6.6	1	Rolling diaphragm adapter	POM	6.17	1	Pipe section Stainless steel
6.7	1	Flat gasket	EPDM	6.18	1	Screw ring, strainer POM
6.8	1	Spacer washer	POM	6.19	1	Strainer sleeve Stainless steel
6.9	1	Rolling diaphragm	EPDM	6.20	1	Cam disc Stainless steel
6.10	1	Grub screw M8x30	Stainless steel	6.21	1	Cylindrical pin Stainless steel
6.11	1	Valve cage guide	POM	6.22	1	Connection sleeve Stainless steel
				6.23	1	O-ring 66x6 EPDM