Operating and maintenance instructions for
Air valve set for sewage water
Order No. 985-00 (from year of construction 01/2013)

1. Intended use

The Hawle air release valve set is used for aeration and ventilation of pressure lines with an operating pressure of 0 - 16 bar. Medium: municipal sewage water (according to EN 1085:2007).
Max. operating pressure PFA = 16 bar.

During installation and with maintenance work, in addition to the assembly instructions, the applicable standards and regulations, accident prevention regulations and the regulations of the employers‘ liability insurance associations must be observed.

Caution: Air release valves contain compressed air. Before any maintenance work, the air release valve must therefore be taken out of operation and depressurised!

2. Machine description

The air release valve set (ARV set) consists of a PE chamber with shut off mechanism and an air release valve (ARV). Thanks to its compact design, the ARV set replaces complex, maintenance-intensive chamber structures. All maintenance work can be carried out from the top of the site. This avoids the dangers that occur when walking through chambers. Installation in a coarse gravel drainage water absorber extending from the road surface to the pipeline is recommended. When installing in the ground water sector, the drain fitting at the outlet must be closed.

The integrated ARV with patented diaphragm technology is ideally suited for the ventilation of large volumes of air under operating pressure. The sealing seat does not come into contact with the media. The ARV operates in an infinitely variable manner from 0 to 16 bar and seals perfectly even in a depressurised condition. The diaphragm and spring mechanism also dampen pressure surges.

The ARV has two flush connections which are raised to the lower edge of the plastic cover. By connecting a flushing hose, light soiling can be flushed out of the ARV quickly and easily. With heavy soiling, the ARV can easily be removed for maintenance purposes using a bayonet lock.

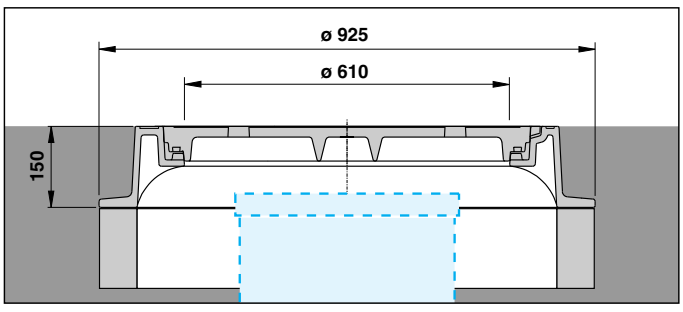
The ARV can be put into operation or taken out of operation via the integrated shut off mechanism of the ARV set (1/2 turn). An additional shut-off valve can therefore be omitted.
The outlet elbow allows the connection to a sufficiently large air release pipeline to be provided by the customer.

3. Assembly

The ARV set must be mounted on a vertical outlet, directly on the pressure pipeline. Caution: A laterally displaced arrangement of the ARV is to be avoided.

The ARV set is closed at the top by a chamber ring and chamber cover. When installing the set, please take into account that a sufficiently large drainage water absorber, e.g. of roll gravel, is required from the road surface to the pipeline so that rainwater can be drained off.
In addition, there is a drain fitting on the air release valve set which can either be connected to a PE pipe (e.g. discharge into a receiving water or drainage water absorber) or closed with an end fitting („pump sump solution“).
Further information on the installation and operation of air release valves can be found in the current DVGW data sheet W 334.

Installation recommendation: Chamber frames and cover made of GJS, bituminized, with inscription „Abwasser“ (sewage)
The air release valve set should be installed in such a way that the distance:
from the top edge of the road to the top edge of the air release valve set is 150 mm!
With BAIO®-spigot end DN 80 is between the spigot end and BAIO®-counter sleeve, use a dirt cover and locking ring.



4. Commissioning and pressure testing

The ARV shall be taken out of operation prior to a pressure test of the pipeline. The shut-off valve below the valve needs to be closed for this purpose.

After successful pressure testing is completed, open the shut-off valve slowly and subject the ARV to a functional and visual inspection under operating pressure.

The maximum filling speed must be complied with when filling the line (DVGW Merkblatt W 334). Before filling the pipeline, it must be ensured that the venting devices of the chambers are able to dissipate the air volumes produced.

Caution: If pressure lines are operated with an additional compressed air purge, the ARV must be closed for this operating mode or alternatively equipped with a venting stop Order No. 986-01, which performs this function automatically. The retrofitting of already installed ARV with an air release stop is possible.

5. Maintenance - servicing of the air release valve set Order No. 985-00

According to DVGW W 392, ARV/ARV set must be maintained at least once a year and more frequently, especially in sewage pressure pipes with a high degree of contamination.

Work on ARV/ARV set may only be carried out by suitably trained personnel. We recommend carrying out the first maintenance after a period of about 4 to 8 weeks and defining future maintenance intervals based on the results of this initial maintenance.

Regular inspections improve the operational reliability of the ARV.
Before conducting any maintenance work, ARVs need to be disconnected from the pipe network by closing the shut-off valve. The overpressure in the ARVs needs to be released by briefly opening the ball valve.
General safety precautions must always be complied with when entering service shafts. When working in service chambers, we recommend forced ventilation of the structure and only performing maintenance work when pumps are switched off.
After maintenance work is completed, perform a proper pressure test in accordance with the applicable rules and regulations.

5.1. „Minor“ maintenance

The Hawle air release valve is equipped with a side flushing outlet and a flushing connection on the 3/2-way ball valve for easy maintenance. During maintenance, clean water is pressed into the air release valve via the flushing connection on the 3/2-way ball valve and any dirt particles are flushed out via the lower flushing outlet.

Process:
5.1.1. Close the shut-off valve with a half turn (clockwise) via the angled operating pipe - the operating pipe must first be turned through 180°!

5.1.2. Caution: The ARV is under pressure even after the shut-off valve has been shut off. Therefore, only open the ball valve on the lateral flushing pipe carefully after the assembly of a hose on the flushing connection provided for this purpose and drain off any escaping media safely.

5.1.3. If the escaping media is relatively clean, further maintenance steps may not be necessary.

5.1.4. Connect the flushing connection of the 3/2-way ball valve to a flushing line and open the ball valve by turning it a quarter of a turn in the direction of the chamber bottom (red actuating lever is vertical to the bottom).

5.1.5. Rinse until only clean water emerges. (As a rule, rinsing is carried out with „clean“ water, possibly with cleaning additives, pressure not greater than 2 bar).

5.1.6. Remove the flushing lines and close the two ball valves (Caution: the 3/2-way ball valve must be turned so that the handle is horizontal towards the outside of the chamber - note the inscription on the handle)!

5.1.7. Slowly open the shut-off valve below the ARV (counterclockwise). After opening, reposition the operating pipe by 180° (to prevent automatic unlocking of the air release valve)!

5.1.8. Visual inspection of all connections and flushing outlets.

5.2 „Major Maintenance“

If there are foreign bodies in the valve which are so large that they cannot be flushed out via the lower flushing outlet, the valve should be removed, opened and the foreign bodies removed. Please proceed as follows:

5.2.1. Close the shut-off valve with a half turn (clockwise) via the angled operating pipe - the operating pipe must first be turned through 180°!

5.2.2. Caution: The ARV is under pressure even after the shut-off valve has been shut off, therefore, only open the ball valve on the lateral flushing pipe carefully after the assembly of a hose on the flushing connection provided for this purpose and drain off any escaping media safely.

5.2.3. Remove the 3/2-way ball valve. To do this, loosen the screw connection.

5.2.4. Pull the operating pipe upwards out of the ARV set.

5.2.5. Turn the valve counterclockwise until the bayonet coupling is released.

5.2.6. Use a suitable lifting tool to pull the valve upwards out of the air release valve set using the two eyebolts.

5.2.7 Open the housing screws.

5.2.8 Pull the flange with the complete valve mechanism upwards out of the body and place it upright on a firm surface.

5.2.9 Unlock the fixing ring on the top of the flange with a suitable tool and pull the flange upwards.

Potable water version: blue coated

5.2.10 Unlock the screen disc by pressing in the safety hook, loosen it from the „ARV head“ by turning it to the left and pull it upwards.

5.2.11 Clean and flush the slots of the valve basket.

5.2.12 Pull the diaphragm out of the rubber nipple and check for sedimentary deposition and mechanical damage. Remove sedimentary deposition by wiping with a damp cloth. If it is necessary to replace the diaphragm, separate the diaphragm from the retaining groove and replace it with a new diaphragm.

Assembly the diaphragm:

5.2.13 Pull the diaphragm over the cup.

5.2.14 Check that the diaphragm is correctly seated in the groove.

5.2.15 Diaphragm mounting in the head:
Pass the rubber nipple through the bore of the valve head and pull it through the hole from above until you hear and feel a distinct snap of the thickening on the rubber nipple.

(Valve head shown cut.)

5.2.16 Further assembly is carried out in reverse order to dismantling.

5.2.17 Pressure testing.

5.3 Pressure test

After maintenance work is completed, perform a proper pressure test in accordance with the applicable rules and regulations.

If you have any other questions or if you need more information please contact:

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1. Intended use

The Hawle air release valve set Order No. 985-00 is used for venting pressure lines for a pressure range of 0 - 16 bar. Medium: domestic sewage (industrial waste water, waste water with high acid or alkali content only after consultation).
Please note that valves in accordance with DVGW W 392 must be serviced at least once a year and, in particular, more frequently in sewage pressure pipes with a high degree of contamination or a tendency to saponification. Please also observe the applicable standards and regulations (e.g. ATV), accident prevention regulations and the regulations of the employers' liability insurance associations.
The benefit of the air release valve set is that the risks normally associated with chambers are eliminated with this product, as the necessary maintenance work can usually be carried out from the road surface.
The air release valves contain compressed air. The valve must therefore be depressurised via the ball valve before any maintenance work is carried out!

2. Machine description

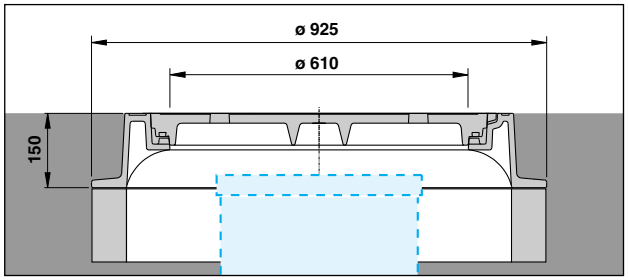
The Hawle air release valve set Order No. 985-00 is a combination of a chamber and air release valve, which can ventilate pipes as well as vent air from the pipe in the pipeline. The valve operates automatically, and its design reduces pressure surges. The sealing seat of this air release valve is not in contact with the medium. The air release valve is designed for a maximum operating pressure PFA = 16 bar.

3. Assembly

The air release valve set Order No. 985-00 must be mounted on a vertical outlet of the pressure pipeline. The assembly should be carried out as close as possible to the pipeline so that the risk of freezing is reduced. Caution: The lateral arrangement of air release valve sets can significantly change the regulation behaviour of the valve. With heavy soiling, problems must also be expected in the piping area up to the air release valve set. The laterally displaced arrangement of the air release valve sets is to be avoided.
With large pipeline dimensions, it should be noted that the air must be directed to the air release valve (see also DVGW W 334). For this reason, it is recommended that the connection to the pipeline be as large as possible and then reduced to the valve with its nominal diameter by means of a reducing piece which can also serve as an aeration and venting dome for receiving larger amounts of air. (Example: DN 200 pipeline, the outlet on the pipeline has a nominal diameter of DN 150 or DN 200, the double flanged reducing piece is reduced to a nominal diameter of DN 80, the air release valve is DN 80).
The air release valve set is equipped with a shut off mechanism which can be opened or closed with half a turn. An additional shut-off valve can therefore be omitted.
The Hawle air release valve set can be connected to a pipeline at the air release outlet. Please note that the connection of an air release pipeline that is too long and too small may change the control behaviour of the air release valve. The same applies to any odour filters used. It is essential to ensure that suitably large parts are used which cannot lead to backpressure in the valve.
The air release valve set is closed at the top by a chamber ring and chamber cover. When installing the set, please consider that a sufficiently large drainage water absorber, e.g. of roll gravel, is required from the road surface to the pipeline so that rainwater can be drained off. In addition, there is a drain fitting on the air release valve set which can either be connected to a PE pipe (e.g. discharge into a receiving water or drainage water absorber) or closed with an end fitting („pump sump solution").

Installation recommendation: Chamber frames and cover made of GG, bituminized, with inscription „Abwasser" (sewage)

The air release valve set should be installed in such a way that the distance:
from the top edge of the road to the top edge of the air release valve set
is 150 mm!
With BAIO®-spigot end DN 80 is between the spigot end and BAIO®-counter sleeve, use a dirt cover and locking ring.



4. Commissioning and pressure testing

Air release valves should generally be taken out of operation during the pressure test of the pipeline. The shut-off valve below the valve needs to be closed for this purpose. The reason for this is that there is always residual air even in a well-ventilated pipeline. This residual air is led to the valve when the air release valve is correctly positioned and can cause the valve to discharge during the pressure test. Consequence: A leaky pipeline or a leaky air release valve is wrongly suspected.
Air release valves are factory tested so that they can be excluded from the pressure test. After successful pressure testing of the pipeline, the shut-off valve is slowly opened, and the air release valve and its flange connections are visually inspected at operating pressure.
Please observe the maximum filling speeds when filling pipelines. Before filling the pipelines, check whether the ventilation openings of the ventilation shafts concerned are actually free, possibly chamber cover should be opened.
Caution: When flushing with compressed air, the valve should be taken out of operation beforehand.

5. Maintenance - servicing of the air release valve 986

The functional reliability of the valve of the Hawle air release valve set can be considerably increased by regular checks for possible contamination. Please note that for all maintenance work, the air release valve must first be disconnected from the pipe network by closing the shut-off valve and any excess pressure still present in the valve must be specifically relieved by the ball valve of the flushing line.
General safety precautions must always be complied with when entering service shafts. When working in service chambers, we recommend forced ventilation of the structure and only performing maintenance work when pumps are switched off.
The Hawle air release valve is very well protected against sedimentary deposition due to its coating. Nevertheless, depending on the nature of the medium, the functionality of the valve should be checked at regular intervals and any contamination removed. This applies above all to large dirt particles which cannot be flushed out via the lateral flush connections.
All work on Hawle air release valves should only be carried out by suitably trained personnel! We recommend carrying out the first maintenance after a period of about 4 to 8 weeks and defining future maintenance intervals based on the results of this initial maintenance. To do this, open the valve as in the description below.
Please also check the ball valve and all other parts for tightness and dirt during all maintenance work.

5.1. „Minor“ maintenance

The Hawle air release valve is equipped with a side flushing outlet and a flushing connection on the 3/2-way ball valve for easy maintenance. During maintenance, clean water is pressed into the air release valve via the flushing connection on the 3/2-way ball valve and any dirt particles are flushed out via the lower flushing outlet.

Process:

1. Close the shut-off valve with a half turn (clockwise) via the angled operating pipe - the operating pipe must first be turned through 180°!
2. Caution: The air release valve is under pressure even after the shut-off valve has been shut off, therefore, only open the ball valve on the lateral flushing pipe carefully after the assembly of a hose on the flushing connection provided for this purpose and drain off any escaping medium safely.
3. If the escaping medium is relatively clean, further maintenance steps may not be necessary.
4. Connect the flushing connection of the 3/2-way ball valve to a flushing line and open the ball valve by turning it a quarter of a turn in the direction of the chamber bottom (red actuating lever is vertical to the bottom).
5. Rinse until only clean water emerges. (As a rule, rinsing is carried out with „clean“ water, possibly with cleaning additives, pressure not greater than 2 bar).
6. Remove the flushing lines and close the two ball valves (Caution: the 3/2-way ball valve must be turned so that the handle is horizontal towards the outside of the chamber - note the inscription on the handle)!
7. Closing the ball valve of the lower flushing outlet.
8. Slowly open the shut-off valve below the air release valve (counterclockwise). After opening, reposition the operating pipe by 180° (to prevent automatic unlocking of the air release valve)!
9. Visual inspection of all connections and flushing outlets

5.2. „Major“ Maintenance

If there are foreign bodies in the valve which are so large that they cannot be flushed out via the lower flushing outlet, the valve should be removed, opened and the foreign bodies removed. Please proceed as follows:

1. Close the shut-off valve with a half turn (clockwise) via the angled operating pipe - the operating pipe must first be turned through 180°!
2. Caution: The air release valve is under pressure even after the shut-off valve has been shut off, therefore, only open the ball valve on the lateral flushing pipe carefully after the assembly of a hose on the flushing connection provided for this purpose and drain off any escaping medium safely.
3. Remove the 3/2-way ball valve. To do this, loosen the screw connection.
4. Pull the operating pipe upwards out of the air release valve set.
5. Turn the valve counterclockwise until the bayonet coupling is released.
6. Use a suitable lifting tool to pull the valve upwards out of the air release valve set using the two eyebolts.

7. Open the housing screws.

8. Pull the flange with the complete valve mechanism upwards and place it upright on a firm surface.

9. Open the fixing ring on the top of the flange with a suitable tool and pull the flange upwards.

10. Remove the cap nut AF 13 in the air outlet using a socket wrench (the valve must be in the „closed“ position).

11. Unlock the screen disc by pressing in the both safety hooks, loosen it from the „ARV head“ by turning it to the left and pull it upwards.

12. Clean and flush the slots of the valve basket.

13. Pull the diaphragm on the screw out of the valve quiver and check for sedimentary deposition and mechanical damage. Remove sedimentary deposition by wiping with a damp cloth.

If it is necessary to replace the diaphragm, the plastic retaining ring must first be removed. For easier dismantling of the plastic ring, place the complete mechanism upside down for 3 minutes in warm water at approx. 50° C. Then pull the ring upwards and insert the diaphragm into the new one.

14. Turn the diaphragm over completely.

15. Pull the diaphragm over the cup.

16. Push on preheated ring (3 min. in approx. 50° C warm water).

17. Centre the diaphragm by pulling it back as far as the integrally formed bead and put it into the valve quiver.

18. Screw on the valve cover again, making sure that the sealing ring of the round cord is seated correctly.

19. Clean all sealing surfaces before installing the air release valve.

20. Place the valve on the bayonet locking device from above and lock clockwise.

21. Reinsert the 3/2-way ball valve and tighten the screw connections by hand until the connections are tight.

22. Mount the operating pipe.

23. Close the ball valve of the lower flushing outlet.

24. Slowly open the shut-off valve below the air release valve (counterclockwise). After opening, reposition the operating pipe by 180° (to prevent automatic unlocking of the air release valve)!

25. Visual inspection of all connections and flushing outlets.

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2. Machine description

The Hawle air release valve set Order No. 985-00 is a combination of a chamber and air release valve, which can ventilate pipes as well as vent air from the pipe in the pipeline. The valve operates automatically, and its design reduces pressure surges. The sealing seat of this air release valve is not in contact with the media. The air release valve is designed for a maximum operating pressure PFA = 16 bar.

3. Assembly

The air release valve set Order No. 985-00 must be mounted on a vertical outlet of the pressure pipeline. The assembly should be carried out as close as possible to the pipeline so that the risk of freezing is reduced. Caution: The lateral arrangement of air release valve sets can significantly change the regulation behaviour of the valve. With heavy soiling, problems must also be expected in the piping area up to the air release valve set. The laterally displaced arrangement of the air release valve sets is to be avoided.
With large pipeline dimensions, it should be noted that the air must be directed to the air release valve (see also DVGW W 334). For this reason, it is recommended that the connection to the pipeline be as large as possible and then reduced to the valve with its nominal diameter by means of a reducing piece which can also serve as an aeration and venting dome for receiving larger amounts of air (example: DN 200 pipeline, the outlet on the pipeline has a nominal diameter of DN 150 or DN 200, the double flanged reducing piece is reduced to a nominal diameter of DN 80, the air release valve is DN 80).
The air release valve set is equipped with a shut off mechanism which can be opened or closed with half a turn. An additional shut-off valve can therefore be omitted.
The Hawle air release valve set can be connected to a pipeline at the air release outlet. Please note that the connection of an air release pipeline that is too long and too small may change the control behaviour of the air release valve. The same applies to any odour filters used. It is essential to ensure that suitably large parts are used which cannot lead to backpressure in the valve.
The air release valve set is closed at the top by a chamber ring and chamber cover. When installing the set, please consider that a sufficiently large drainage water absorber, e.g. of roll gravel, is required from the road surface to the pipeline so that rainwater can be drained off. In addition, there is a drain fitting on the air release valve set which can either be connected to a PE pipe (e.g. discharge into a receiving water or drainage water absorber) or closed with an end fitting („pump sump solution").

Installation recommendation: Chamber frames and cover made of GJS, bituminized, with inscription „Abwasser" (sewage)

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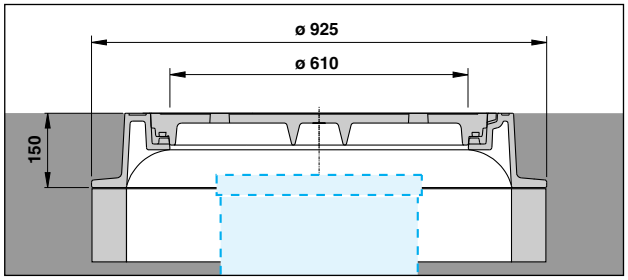

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Air release valves should generally be taken out of operation during the pressure test of the pipeline. The shut-off valve below the valve needs to be closed for this purpose. The reason for this is that there is always residual air even in a well-ventilated pipeline. This residual air is led to the valve when the air release valve is correctly positioned and can cause the valve to discharge during the pressure test. Consequence: A leaky pipeline or a leaky air release valve is wrongly suspected.
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Please observe the maximum filling speeds when filling pipelines. Before filling the pipelines, check whether the ventilation openings of the ventilation shafts concerned are actually free, possibly chamber covers should be opened.
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5. Maintenance - servicing of the air release valve 986

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All work on Hawle air release valves should only be carried out by suitably trained personnel! We recommend carrying out the first maintenance after a period of about 4 to 8 weeks and defining future maintenance intervals based on the results of this initial maintenance. To do this, open the valve as in the description below.
Please also check the ball valve and all other parts for tightness and dirt during all maintenance work.

5.1. „Minor“ maintenance

The Hawle air release valve is equipped with a side flushing outlet and a flushing connection on the 3/2-way ball valve for easy maintenance. During maintenance, clean water is pressed into the air release valve via the flushing connection on the 3/2-way ball valve and any dirt particles are flushed out via the lower flushing outlet.
Process:

1. Close the shut-off valve with a half turn (clockwise) via the angled operating pipe - the operating pipe must first be turned through 180°!
2. Caution: The air release valve is under pressure even after the shut-off valve has been shut off, therefore, only open the ball valve on the lateral flushing pipe carefully after the assembly of a hose on the flushing connection provided for this purpose and drain off any escaping medium safely.
3. If the escaping medium is relatively clean, further maintenance steps may not be necessary.
4. Connect the flushing connection of the 3/2-way ball valve to a flushing line and open the ball valve by turning it a quarter of a turn in the direction of the chamber bottom (red actuating lever is vertical to the bottom).
5. Rinse until only clean water emerges. (As a rule, rinsing is carried out with „clean“ water, possibly with cleaning additives, pressure not greater than 2 bar).
6. Remove the flushing lines and close the two ball valves (Caution: the 3/2-way ball valve must be turned so that the handle is horizontal towards the outside of the chamber - note the inscription on the handle)!
7. Closing the ball valve of the lower flushing outlet.
8. Slowly open the shut-off valve below the air release valve (counterclockwise). After opening, reposition the operating pipe by 180° (to prevent automatic unlocking of the air release valve)!
9. Visual inspection of all connections and flushing outlets.

5.2. „Major“ Maintenance

If there are foreign bodies in the valve which are so large that they cannot be flushed out via the lower flushing outlet, the valve should be removed, opened and the foreign bodies removed. Please proceed as follows:

1. Close the shut-off valve with a half turn (clockwise) via the angled operating pipe - the operating pipe must first be turned through 180°!
2. Caution: The air release valve is under pressure even after the shut-off valve has been shut off, therefore, only open the ball valve on the lateral flushing pipe carefully after the assembly of a hose on the flushing connection provided for this purpose and drain off any escaping media safely.
3. Remove the 3/2-way ball valve. To do this, loosen the screw connection.
4. Pull the operating pipe upwards out of the air release valve set.
5. Turn the valve counterclockwise until the bayonet coupling is released.
6. Use a suitable lifting tool to pull the valve upwards out of the air release valve set using the two eyebolts.

7. Open the housing screws.

8. Pull the flange with the complete valve mechanism upwards and place it upright on a firm surface.
Remove the cap nut AF 13 in the air outlet using a socket wrench (the valve must be in the „closed“ position).

9. Pull up the flange and unscrew the retaining nut on the underside of the flange.
Disassemble the mechanism and pull the valve head out of the flange.

10. Clean and flush the slots of the valve basket. If necessary (particularly with heavy soiling or damage), the valve basket can be removed from the valve head after the screw ring has been opened using a Torx key.

11. Pull the diaphragm on the screw out of the valve quiver and check for sedimentary deposition and mechanical damage. Remove sedimentary deposition by wiping with a damp cloth. If it is necessary to replace the diaphragm, the plastic retaining ring must first be removed. For easier dismantling of the plastic ring, place the complete mechanism upside down for 3 minutes in warm water at approx. 50° C. Then pull the ring upwards, remove the diaphragm and insert the plastic screw from the old diaphragm into the new one.

12. Turn the diaphragm over completely.

13. Pull the diaphragm over the cup

14. Push on preheated ring (3 min. in approx. 50° C warm water).

15. Centre the diaphragm by pulling it back as far as the integrally formed bead and put it into the valve quiver.

16. Screw on the valve cover again, making sure that the sealing ring of the round cord is seated correctly.
17. Clean all sealing surfaces before installing the air release valve.
18. Place the valve on the bayonet locking device from above and lock clockwise.
19. Reinsert the 3/2-way ball valve and tighten the screw connections by hand until the connections are tight.
20. Mount the operating pipe.
21. Close the ball valve of the lower flushing outlet.
22. Slowly open the shut-off valve below the air release valve (counterclockwise).

After opening, reposition the operating pipe by 180° (to prevent automatic unlocking of the air release valve)!

23. Visual inspection of all connections and flushing outlets.

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