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Heat pump service assembly AHS 500/560

NOTE!

The product may only be used if you have fully read and understood these operating instructions. The manual is also available on the AFRISO websites in the Internet.

WARNING!

Heat pump service assembly may only be installed, commissioned, and dismantled by trained personnel.

Changes and modifications carried out by unauthorised persons may cause danger and are prohibited for safety reasons.

Risk of scalding by hot medium - see the MAINTENANCE section.

APPLICATION

The AHS heat pump service assembly is installed in heating and cooling systems. It is used for manually draining the system, filling, flushing, and venting it after connecting to the water supply or a flushing pump. Additionally, it removes solid impurities that could damage system components. The service fitting is equipped with a rotameter, allowing real-time measurement and regulation of the flow rate between 5 and 42 l/min. The unit is suitable for systems using water or a mix of water and glycol with a maximum concentration of 30%.

OPERATING

The AHS heat pump service assembly is used for maintenance work and ensures that the medium in the system remains clean during normal operation. For maintenance, the special connections supplied with the assembly must be installed (Fig. 1). To perform maintenance tasks, the shut-off valves integrated into the main AHS brass housing (Fig. 2) must be adjusted by turning them 30°. Any modifications to the design of the heat pump service assembly must always be carried out with the shut-off valves closed and the system cooled down.

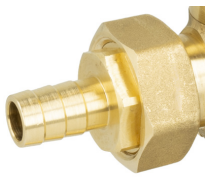

Fig. 1. Screwed brass connection for maintenance

Fig. 2. Shut-off valves in the main AHS housing

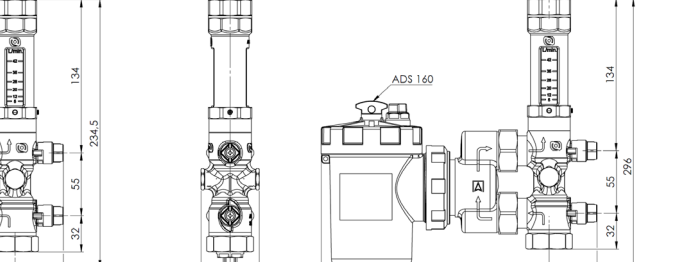

Fig. 6. Dirt separation in the AHS 560

CONSTRUCTION AND COMPONENTS

Fig. 7. Construction of the AHS 500 and AHS 560 heat pump service assemblies (viewed from the left side)

DIMENSIONS [mm]

Fig. 8. Dimensions of the AHS 500 and AHS 560 heat pump service assemblies (viewed from the left side)

Filling the system

When filling the system, shut-off valve number 2 in the brass housing with the rotameter must be closed (turned a maximum of 30° to the right). Then, connect the medium source from the water distribution network or pump station to connection number 1 and proceed with the filling process (Fig. 3, 4).

Draining the system

When draining the medium from the system, the shut-off valves before and after the heat pump service assembly, as well as the two shut-off valves in the housing with rotameters, must be open. This will allow the medium to drain completely from the system, provided that the valve is installed at the lowest point of the system (Fig. 3, 4).

Flushing/venting

To flush or vent the entire system, both shut-off valves in the brass housing with the rotameter must be open. Then, connect the medium source to connection number 1. Air and liquid carrying washed-out dirt will escape through connection number 2. The system is fully vented when only liquid flows out of the connection (Fig. 3, 4).

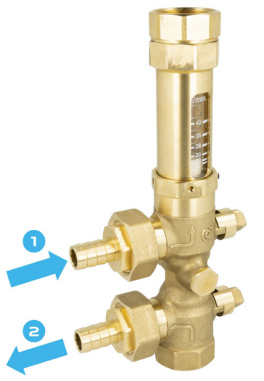

Fig. 3. Service connections in the AHS housing

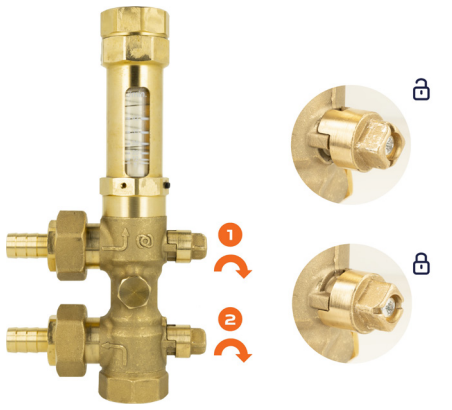

Fig. 4. Shut-off valves in the AHS housing

In the dirt separation section, the medium returning from the system flows directly through a mesh filter (AHS 500, Fig. 5) or is set into a magnetic vortex motion inside a magnetic dirt separator (AHS 560), depending on the model. In the AHS 560 heat pump service assembly, the medium is forced into a cyclone-like path by centrifugal force, facilitating the separation and accumulation of dirt in the lower part of the device. Metallic debris (e.g., rust particles, metal filings) is then attracted by a built-in magnet, while the remaining non-metallic particles are effectively captured by the filter mesh. The cleaned medium is subsequently directed to the heat source (Fig. 6).

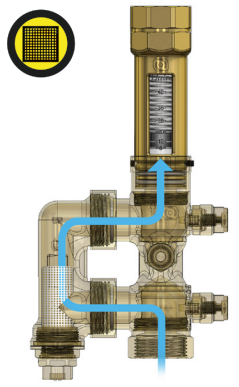

Fig. 5. Dirt separation in the AHS 500

1 2
page
3 4

MOUNTING

NOTE! At least 150 mm of free space must be maintained above and below the separator/mesh filter to allow for proper maintenance.

To provide additional protection against dirt and corrosion before the heat source and other components, it is recommended to use the AFRISO BCI corrosion inhibitor. The AHS heat pump service assembly should be installed in the return flow to the heat source to capture solid dirt that could damage the heat source and circulation pumps.

The AHS heat pump service assembly can be installed in vertical, horizontal, or diagonal pipes (Fig. 9). The drain valve of the ADS 160 dirt separator in the AHS 560 should always point downward. The arrows on the brass housing of the connection indicate the direction of flow from the system to the heat source. To change the position of the ADS 160 separator connection, use the wrench provided. The polyamide nut with the brass housing of the AHS unit can be unscrewed from the threaded connection to allow the separator to rotate 360° and be positioned freely in relation to the system (Fig. 10).

To facilitate maintenance, it is recommended to install shut-off valves before and after the heat pump service assembly.

After mounting and opening of the shut-off valves, open the manual vent with a flat screwdriver to release any trapped air (Fig. 11). The ADS 160 separator, fitted to the AHS 560 heat pump service assembly, is factory-equipped with a 500 μm mesh filter. This filter accuracy is recommended for new systems.

For modernized systems, two-stage filtration is recommended. The first stage is to filter the system with a 500 μm mesh for about one month. After this period, unscrew the lid (using the provided wrench) and replace the existing filter with the 800 μm mesh filter included in the kit.

Fig. 9. Permissible mounting positions of the AHS heat pump service assembly

Fig. 10. Unscrewing the separator with a wrench

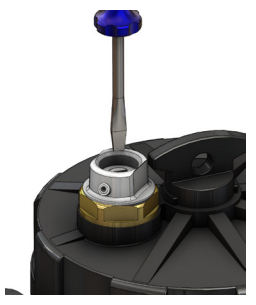

Fig. 11. Opening the manual vent

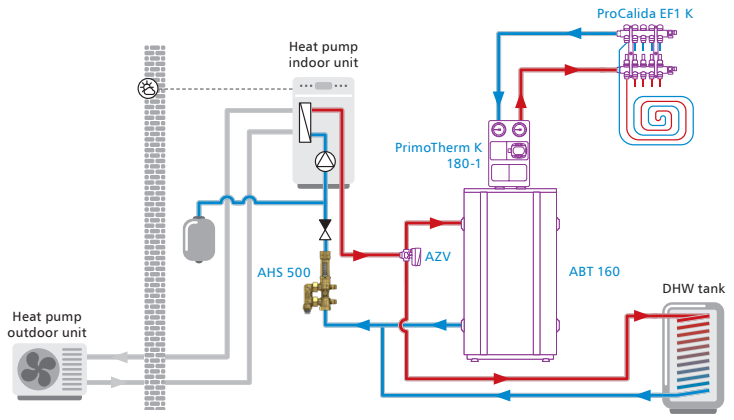

Fig. 12. Exemple of a system diagram with the AHS 500 heat pump service assembly

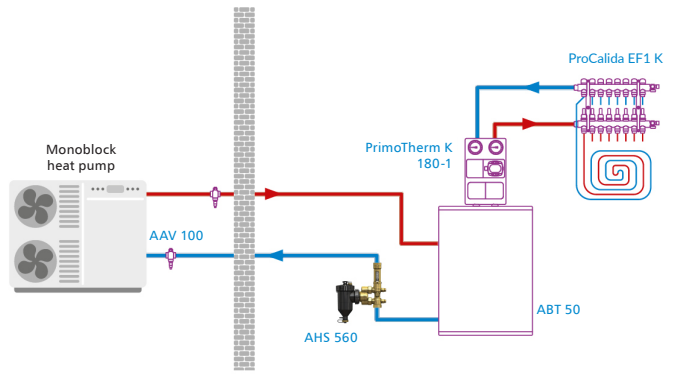

Fig. 12. Exemple of a system diagram with the AHS 560 heat pump service assembly

MAINTENANCE

NOTE! Maintenance work should only be carried out once the system has completely cooled down. Failure to do so may result in burns from the hot medium.

The frequency of routine dirt removal from the separator depends on the level of dirt in the medium. However, we recommend that the separator be thoroughly cleaned and the connections checked for leaks at least once a year.

To clean the mesh filter in the AHS 500 heat pump service assembly, first close all shut-off valves and unscrew the vent plug with a flat screwdriver (the medium will be partially drained in a controlled manner and the pressure will be equalised). Then, unscrew the valve and the nut to which it is screwed using the appropriate wrenches (size 22 and 25). The mesh filter should come out easily (Fig. 14).

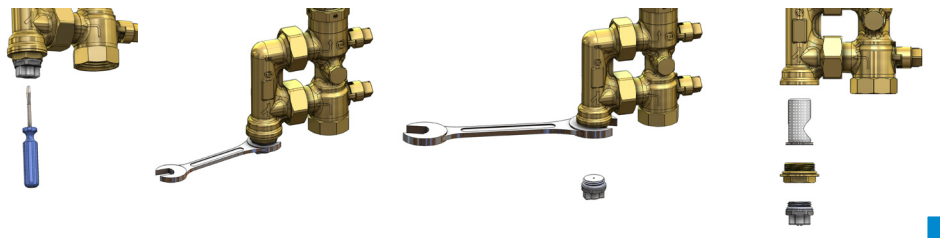

Fig. 17. Insulation for AHS 500 and AHS 560 (viewed from the left side)

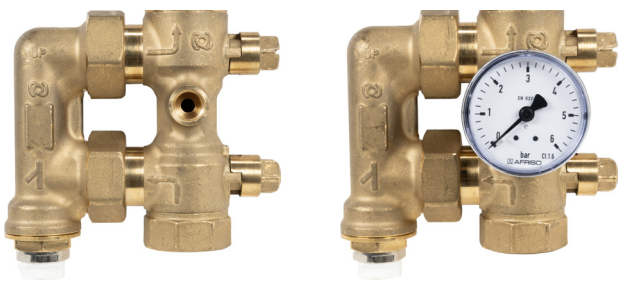

Fig. 18. Connection for pressure gauge in AHS housing

TECHNICAL DATA

Parameter	Value / material
Operating temperature	AHS 500: max. 120°C (temporarily 160°C) AHS 560: max. 90°C
Operating pressure	AHS 500: max. 10 bar AHS 560: max. 3 bar
Glycol concentration in the system	max. 30%
Kvs	AHS 500: 6,5 m³/h AHS 560: 6,9 m³/h
Recommended flow (depending on the selected version)	AHS 500: 2,0 m³/h AHS 560: 2,1 m³/h
Connections	G1" F
Housing material	AHS 500: CW 614N brass CW 614N brass AHS 560: polyamide PA66 CW 614N brass CW 614N brass
Filter mesh material	AISI 304 stainless steel
Mesh size of filter meshes	AHS 500: 500 μm AHS 560: 500 μm and 800 μm
Sealing material	EPDM
Magnet power (AHS 560)	1,4 T (14 000 Gs)

When assembling the separation components, make sure that the mesh filter is correctly positioned. The mesh filter should be pushed as far as possible into the brass housing and the opening should be facing concentrically towards the lower connection opening so that it does not block the flow at this point (Fig. 15).

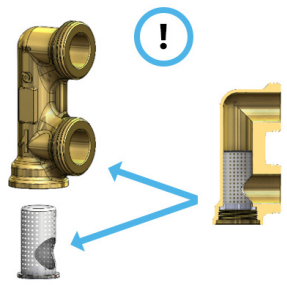

Fig. 15. Correct positioning of the mesh filter

To carry out routine maintenance on the AHS 560 heat pump service assembly, first close all shut-off valves and then pull out the magnet located in the upper polyamide part of the dirt separator housing. At this point, the dirt will settle in the lower part of the separator. Afterwards, prepare the tank for the medium flowing out and open the drain valve on the lower polyamide part of the dirt separator housing.

After the dirt separator has been emptied of the medium, slowly open the shut-off valve on the system side. This will flush the dirt separator. If no more dirt comes out of the separator, close the drain valve on the polyamide housing, insert the magnet, and open the shut-off valves before and after the AHS 560 (Fig. 16).

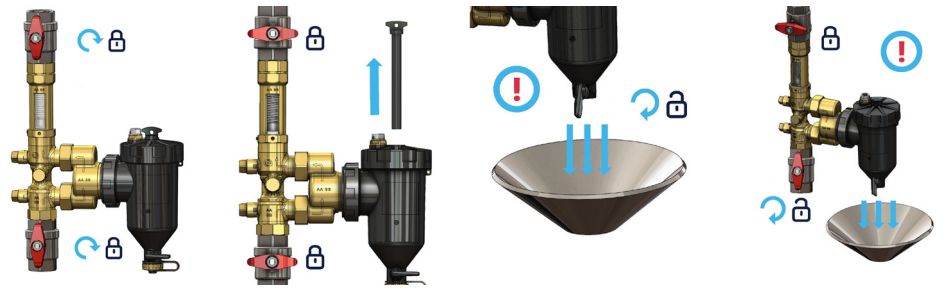

Fig. 16. AHS 560 maintenance diagram

For more information on how to clean the ADS 160 dirt separator, please refer to the „ADS 160 Magnetic Dirt Separator, Art. No. 77 160 00 INSTALLATION AND OPERATING MANUAL" included in the delivery.

ACCESSORIES

The AHS heat pump service assembly can be equipped with additional accessories that need to be ordered separately. Compatible accessories include insulation (Fig. 17) and a pressure gauge (Fig. 18), which is screwed into one of the two G¼" connections. When mounting the pressure gauge, make sure to close the shut-off valves in the housing and seal the thread. When removing the plug from the housing, some of the medium may leak out. Follow the warnings in the MAINTENANCE section.

Name of the accessory	Kod
Insulation for the AHS 500 heat pump service assembly	77 500 01
Insulation for the AHS 560 heat pump service assembly	77 560 01
Standard pressure gauge RF 50, D211, fi50 mm, 0÷6 bar, G¼", ax, cl. 1.6	63 127
Standard pressure gauge RF 50, D211, fi50 mm, 0÷10 bar, G¼", ax, cl. 1.6	63 128

5 6
page
7 8

APPROVALS AND CERTIFICATES

The AHS heat pump service assembly is subject to the Pressure Directive 2014/68/EU and is not CE marked in accordance with Article 4.3 (recognised engineering practice).

DECOMISSIONING, DISPOSAL

1. Dismount the product.
2. Dispose of the product according to local directives and guidelines.

The product is built from recyclable materials.

If you have any questions or problems with disposal, please contact the appropriate distributor or manufacturer's point.

WARRANTY

Product guarantee in accordance with the general conditions of sale and delivery.

CUSTOMER SATISFACTION

For AFRISO customer satisfaction is paramount. If you have any questions, suggestions or product problems, please contact us.