



Circulator pump APH

AFRISO Sp. z o.o.
Szalsza, ul. Kościelna 7
42-677 Czekanów
www.afriso.pl

Customer service
phone 32 330 33 55
fax 32 330 33 51
zok@afriso.pl

APH 160, APH 360

APPLICATION

Used in heating installations. Installed between the heat source and the receiving installation. Pumps the heating medium (water or mixtures of water and glycol) from the source to the heat emitters.

Life-threatening magnetic field!



People with a pacemaker are advised to keep a safe distance from the device, due to the magnet built into the pump.

Do not remove the rotor.

The pump is not suitable for pumping oils, oil-containing water emulsions and flammable liquids such as diesel and petrol.

DESCRIPTION OF THE PRODUCT

The APH circulator pump consists of a single-phase magnet motor and a cast-iron casing with connections. The rotating parts of the motor include the bearings which are washed by the pumped liquid. An electronic controlling system is mounted on the motor. The control enables the hydraulic characteristics of the pump to be changed. The APH pump does not require additional external motor overload protection.

Available pump operating characteristics

Nine operating characteristics are programmed in the APH circulation pump: 3 proportional, 3 constant pressure and 3 constant speed.

Proportional characteristics



Recommended for systems where the pressure loss is higher in the medium distributing pipes than in the heat emitters. Used, for example, in double-pipe radiator systems.

Constant pressure characteristics



Recommended for installations where the greatest losses occur in the heat emitters. Such installations are, for example, surface heating systems. These characteristics will also work well in retrofitted installations without design documentation.

Constant speed characteristics



Recommended for installations where there are no regulating elements and constant fluid flow is required. With these characteristics should operate pump used to charge a D.H.W. tank or heat buffer.

Check valve

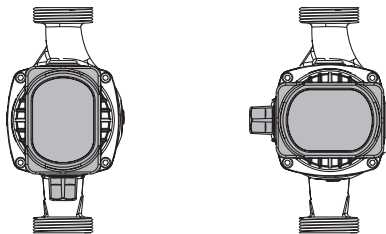
If a check valve is installed on the pipeline, the APH circulating pump should be set in such way that the minimum discharge pressure is always higher than the closing pressure of the check valve. This should especially be borne in mind when the pump is operating with proportional characteristics (reduced lift height at low flows).

Changing position of the engine

WARNING!



When installing the pump on a vertical section of the pipeline with the direction of flow from top to bottom, the motor must be repositioned so that the socket of the electrical cable faces downwards or sideways.



Change the position of the pump motor before installing the pump or filling the installation. If the installation is already filled, to change the position of the motor you must:

- switch off the pump and disconnect its power supply,
- ensure that the installation has cooled down,
- close the shut-off valves upstream and downstream of the pump,
- unscrew the four screws which are connecting the pump body to the motor,
- turn the pump motor to the desired position,
- screw in the screws (alternately - crosswise) connecting the body to the motor,
- open the shut-off valves, upstream and downstream of the pump,
- vent the pump (procedure described in subsection „Venting the pump”),
- check the installation pressure and top up the medium if necessary.

Electrical connection

Risk of fatal electric shock! There is an imminent danger to life if conductive parts are touched.



Before any work is carried out, the appliance must be disconnected from the electrical supply and protected against being switched on again.

Never open the control module.

The unit should be connected to the mains by a suitably qualified and authorised person.

MONTAGE

The APH circulation pump is designed for installation inside a building. The pump should be in a dry and well-ventilated room protected from frost on a straight section of pipeline. Upstream and downstream of the pump it is recommended to install shut-off valves to facilitate maintenance work. During installation, make sure that the direction of flow of the medium in the system is in line with the arrow on the pump casing. A mesh strainer should be fitted in front of the pump to protect it from impurities that may damage the pump impeller or lead to blockages. For even better protection of the pump against impurities and blockages, we recommend the use of an ADS magnetic separator (e.g. Art.-Nr: 77 160 00) and a corrosion inhibitor (Art.-Nr: 90 700 00). The permissible installation positions of the pump are shown in the diagram below (Fig.1).

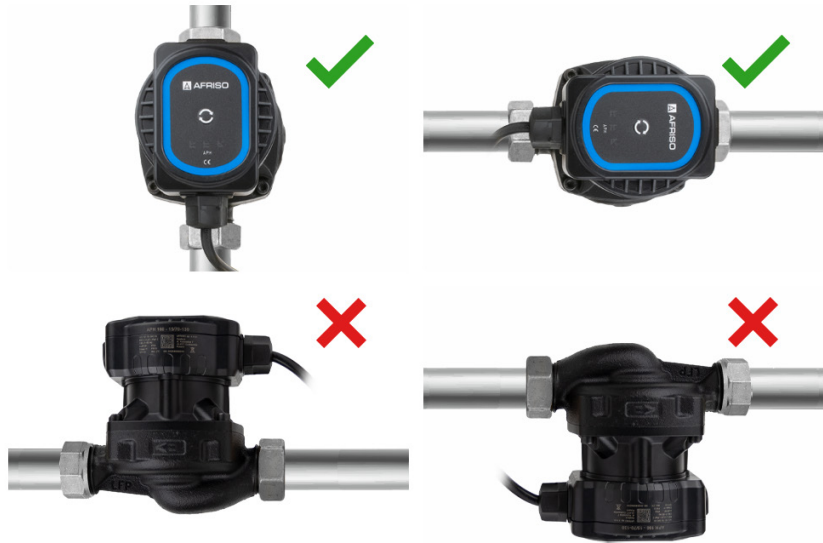


Fig. 1 Acceptable installation positions of the pump

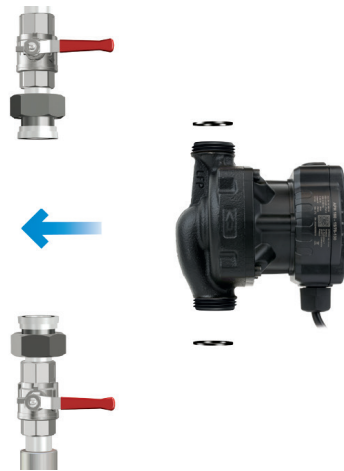



Fig. 2. Location of the shut-off valves in relation to the APH pump

WARNING!



The APH circulation pump must be connected to an external main switch, in which the disconnection gap is not less than 3 mm in each gear - no. The pump must be earthed. A fuse and main circuit breaker must be installed on the supply - a residual current selective circuit breaker for deformed currents is recommended.

Before connecting the pump, verify that the mains parameters correspond to the requirements on the pump's name plate. For the electrical connection of the pump a 3 x 0.75 mm² power cable is used. The electrical cable must be laid with a slight slope (this is to prevent any condensation water running down the cable) and connected in accordance with the markings on the terminals.

N neutral wire (blue) L phase wire (brown/black)  protective wire (yellow-green)

PUMP EXPLOATION

Initial start-up of the pump

The pump must not be started up in an unfilled installation. Before starting the pump for the first time, the system must be filled with heating medium and vented. The pump has dry-running protection.

Venting the pump

Before starting up the system for the first time, after filling and venting the system, make sure that the circulation pump is not airlocked. To do this, switch on the pump and set the constat speed characteristic to maximum performance for approximately 10 minutes. The pump will vent itself during operation. Accumulated air in the pump can cause noisy operation. A reduction in the noise level of the pump will indicate that it has been vented.

The air which is removed from the circulation pump body may find its way to the heat emitters (radiators, surface heating loops, etc.) which will reduce their heat transfer efficiency. In order to prevent this phenomenon, it is recommended to install an automatic air vent (e.g. Art.-No. 77 735 10) on the pipe between the circulation pump and the heat emitter.

Setting the selected characteristic

To select the desired characteristic, use the button in the centre of the pump panel:



Fig. 3 Function button of the pump

The currently selected characteristic is indicated by a blue illuminated LED. Each characteristic has 3 possible operating efficiencies: minimum, intermediate and maximum. The currently selected performance is indicated by the way the LED lights up:

- minimum efficiency - the LED flashes once,
- Intermediate performance - the LED flashes rapidly twice
- maximum performance - the LED lights up continuously.

In order to select the correct efficiency with which pump will operate in an installation, it is necessary to know the the required flow through the heat emitters and the required lift height. These parameters are determined by design. If the installation has no design documentation, then these two parameters can be determined by a simplified method using the building’s specific heat demand coefficients.

TECHNICAL DATA

Parameter	Value
Flow rate	max 3,7 m³/h
Lift height	max 7 m
Power supply	230 V, 50 Hz
Power consumption	4-45 W
Degree of protection	IP44
Insulation class	H
Pressure	max 10 bar
Temperature	max 110°C
Glycol concentration	max 50%
Temperature class	TF110
EEL indicator	≤ 0,20 – part 2
Connections	APH 160: G1" APH 360: G1½"
Diameter	APH 160: DN15 APH 360: DN25
Mounting length	APH 160: 130 mm APH 360: 180 mm
Weight	APH 160: 1,5 kg APH 360: 1,8 kg

APPROVALS AND CERTIFICATES







AFRISO Sp. z o.o. hereby declares that the APH circulating pump complies with:

- Low Voltage Directive (2014/35/EU)
- Electromagnetic Compatibility Directive (2014/30/EU)
- Machinery Directive (2006/42/EC)
- Ecodesign Directive (2009/125/EC)
- EC Commission Regulation for circulators No 641/2009 + No 622/2012

The full text of the EU Declaration of Conformity is available at the following web address: www.afriso.pl

PUMP ERRORS

Operating errors of the APH pump are indicated by the different ways in which the characteristic LEDs are illuminated. The table below shows all the errors that can occur and how they are signalled by the LEDs.

Failure	Cause	Recommendation
The pump is not running. None of the LEDs on the control panel are lit.	Blown fuse.	Replace fuse in the electrical installation.
	No power supply.	Check power supply lines.
	Incorrect connection.	Correct the electrical connection.
Three LEDs flash. 	Motor current too high.	Switch off the power supply. Disconnect the pump from the installation, unscrew the 4 bolts holding the motor to the casing pump. Remove debris from rotor chamber, check that rotor rotates.
The three LEDs flash twice in rapid succession. 	Blocked pump.	Switch off the power supply. Disconnect the pump from the installation, unscrew the 4 bolts holding the motor to the casing pump. Remove debris from rotor chamber, check that rotor rotates.
The three LEDs flash three times in rapid succession. 	Controller failure.	Hand over pump to the service department.
Two LEDs flash. 	Voltage too high or too low.	Switch off the power supply, check that the supply voltage is within the recommended range.
Two LEDs flash. 	The pump operates without water or with a very light load.	Vent the system. Open the shut-off valves, fill the system with water, clean the mesh filter before the pump.
Two LEDs flash. 	One motor phase missing.	Controller failure. Hand over pump to the service department.
Noise in the installation.	Air in the system.	Vent the system.
	Too high flow rate.	Reduce lift height by switching to constant pressure.
	Discharge pressure too high.	Reduce lift height by switching to proportional pressure.

MAINTENANCE

WARNING!



Only carry out maintenance work after the system has cooled down completely. Otherwise, burns may occur: due to skin contact with the hot medium or heated surfaces.

APH circulation pumps are maintenance-free.


The mesh filter located in front of the pump should be cleaned at least once a year. Before cleaning the filter, make sure that the system is not working and has cooled down To clean the filter, close the isolation valves before and after the filter and then unscrew the filter cartridge.

After cleaning and flushing the cartridge, place it back in the filter, screw the cartridge on and open the shut-off valves and bleed the system. When the cleaning process is complete, check the pressure in the system and top up the medium in the system if necessary.

During periods when the pump is not running, in order to protect it from stagnation and blockage, it is necessary to provide the pump with cyclic operation, i.e. so-called out-of-season runs. To do this, the circulation or heat source controller should be programmed accordingly, if it has this capability. If the pump is not controllable in any way or the controller does not have this option, the pump should be operated for at least 10 minutes once a week. This can be achieved, for example, with a timer. Another way is to leave the pump running at minimum capacity all the time for periods when heating is not required. The maximum electricity consumption of the pump should be approximately 14.5 kWh. At the start of the heating season, remember to switch the pump to the correct characteristic and capacity.

If the impeller is blocked (error signalled by two rapid flashes of all LEDs), the pump must be dismantled and the impeller carefully unblocked manually. To do this, switch off the pump, disconnect its power supply and wait for the system to cool down. Then close the shut-off valves upstream and downstream of the pump and remove the pump motor from the pump casing by unscrewing the 4 screws. Manually make a few rotations of the impeller, remove any potential debris that may be blocking it. When finished, bolt the pump motor back onto the casing, unscrew the shut-off valves, start and bleed the pump (see section „Installation”). Finally, check the pressure of the medium in the system and top up the medium if necessary.

DECOMMISSIONING, DISPOSAL

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1. Disconnect the power supply of the product.
 2. Dismount the product.
 3. To protect the environment, this product must not be disposed of together with normal household waste. Dispose of the product in accordance with the local directives and guidelines.
- The APH circulator pump is constructed from recyclable materials.

GUARANTEE

Product warranty in accordance with the general conditions of sale and delivery. The warranty becomes invalid as a result of unauthorized modifications or installation that is inconsistent with these operating instructions.

CUSTOMER SATISFACTION

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

PUMP CONTROL MODES GRAPH

