

## INSTALLATION AND OPERATING INSTRUCTIONS

### AGEplus SERIES

This installation guide gives basic instructions which are to be observed during installation, operation and maintenance of the circulator. It is therefore imperative that this manual is read by the responsible operator prior to the installation and should always be kept available at the site.

It is not only the general safety instructions under the "Safety" section that are to be observed but also the specific information provided throughout this guide.

#### APPLICATION

The AGEplus SERIES circulators are used in all types of heating systems. By use of the advanced internal speed control, the electronic automatic adjustment the circulator performance according to system needs. This feature gives both great electrical and thermal savings together with reduced noise level in the installation.

#### CIRCULATOR MEDIUM

Clean, non aggressive and non explosive fluids without any solids or fibres.

Kinematic viscosity: Max. 10mm<sup>2</sup>/s. Higher viscosity will cause circulator to regulate improperly. Capacities shown on the data sheets are measured with water  $\nu = 1\text{mm}^2/\text{s}$  at 20°C.

Suitable for water impurity up to 5mg/dm<sup>3</sup>.

**Please note:** If any liquid other than water is being circulated, we recommend that you contact our representative as the circulator characteristics may change.

#### SAFETY

Technical data	
Electrical data:	See nameplate
Serial no:	See nameplate
Max. working pressure:	10 bar
Min. static head at 80°C:	0,5 bar (65-120 & 80-120 - 0,8 bar)
Min. static head at 95°C	1,5 bar
Sound pressure level	
30-120 up to 40-140:	Max. 35 dB(A)
50-140 up to 80-120:	Max. 50 dB(A)
According to EN 12639	

AGEplus Series	Water temp. max. [C°]	Ambient temp. max. [C°]
32-120, 40-100,	110	30
40-140 & 50-140	90	40
65-120 & 80-120	90	30
	70	40



- The surface temperature might be hot.
- When venting the circulator (Fig. 6), it could result in a slight escape of hot water or steam!
- Circulator should be wired according to the existing regulations
- The circulator must always be earthed..
- All the wires must be disconnected before any work is carried out on the circulator.



#### Personnel qualification and training

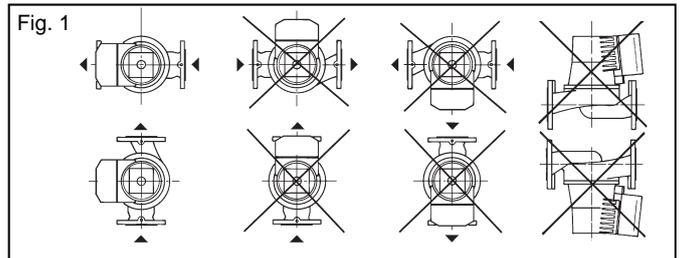
Personnel responsible for operation, maintenance, inspection and installation of the circulator must be adequately qualified.

The person responsible for the complete installation must ensure that the contents of this manual are fully understood by any personnel working on the system.

#### INSTALLATION

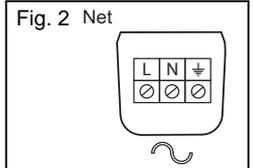
1. The circulator should always be installed with the circulator shaft horizontal (See Fig. 1). Direction of flow through the circulator casing is indicated by an arrow located on the casing.
2. If terminal box is to be repositioned by rotating the motor, care must be taken to ensure the casing 0-ring is correctly positioned.
3. Ensure pipework alignment and adequately supported to both the circulator and pipework. Sharp bends should be avoided nearby by the circulator.

4. If the circulator is mounted in vertical pipework, flow should be upwards. If flow is downwards, an air-vent must be fitted at the highest point before circulator suction.
5. Circulator should never be allowed to operate against a closed valve for more than a few minutes at the time.
6. To avoid accumulation of impurities in the circulator, make sure that it is not mounted at the lowest point in a system.
7. It is recommended that isolating valves be fitted either side of the circulator.
8. Before installing a new pump the system should be thoroughly flushed to clear any foreign objects that may be in the pipework.

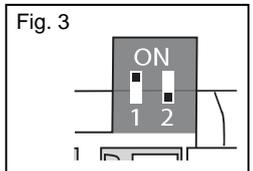


#### ELECTRICAL CONNECTION

Electrical data is shown on the nameplate. The circulator needs no external protection but must be earthed. How to connect the wires can be seen on the terminals of the circulator.

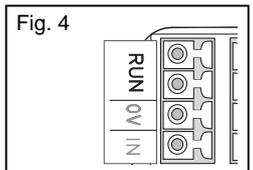


By using the red dip switch on the print board, you can either choose to control the pump manually or remotely. In the manual mode you control the speeds by the rotating button. When the pump is controlled remotely, its controlled analogical. The dip switch has the following functions: ON = Remote Control, OFF = Manual Steering. Contact 2 is without function.



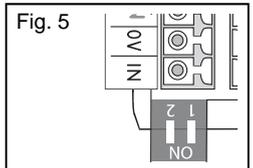
#### Remote Start-Stop

AGEplus pump has a remote start-stop function. A cable must be connected to the RUN contact. If a cable should be disconnected, the pump will shut down and the red light will flash rapidly.



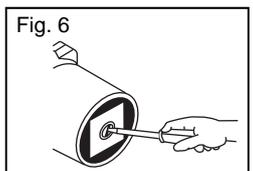
#### Analogue 0-10 Volt

The AGEplus can be controlled infinitely variable by analogue signal from 0-10 V. 0V = Min. speed; 10V = Max. speed



#### VENTING

Before start up of the circulator, fill the system and vent the circulator thoroughly. Venting can be achieved by loosening the plug positioned in centre of nameplate (See Fig. 6). This process should be repeated periodically until all air within the system has been removed. Venting is best done in manual speed 4.

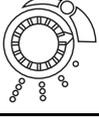


#### DUTY CONTROL

There are two modes for controlling the circulators.

- Controlled to follow a specific defined differential pressure at different flows (auto).

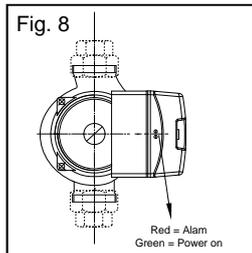
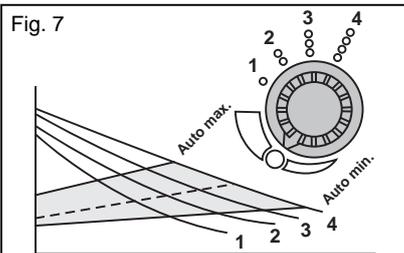
- Controlled to follow constant speed for systems with constant demand (1-4). Setting is done via the rotating button on the top of the terminal box.

Electronic controlled settings		
	Normal setting, to cover app. 90 % of all installations. Factory-setting	Auto controlled performance for power savings and extra comfort where flow demands are changing.
	Reduced differential pressure. For systems with little resistance.	
	Increased differential pressure. For systems with high resistance as radiant floor heating systems.	

Fixed speed settings		
	1-4 speeds <sup>1</sup> . For small systems and 4. for large systems or venting	Fixed speed for systems with constant resistance and radiant floor heating systems.

## GENERAL

In all AGEplus circulators, Pressure Loss Compensation (P.L.C.) is included in the control, which means that the circulator does not follow a constant differential pressure but takes into account the decreasing pressure needs at decreasing flow. This setting is in the auto controlling mode. See Fig. 7.



## SIGNALS

AGEplus circulators have two LED's on the terminal box for status indication. Power to the circulator is indicated with the green LED. The red LED will be on if the circulator detect a fault. Reset is carried out by switching the mains supply off for 5 sec. and then on again. See Fig. 8.

Signal LED	Description
No light	Main supply switched off
Green light	Normal operation – power on
Red light	Error detected by the electronics

## ERROR SIGNALS

The red light on the back of the terminal box will, in case of an error, indicate the type of error detected by the electronic. Approximately every minute the light will blink a number of times.

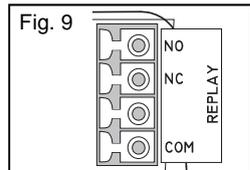
Number of blinks	Error
1	Overheating of the electronics
2	Motor overheated
3	Power overload
4	Current overload
5	Speed error
6	Under or over voltage

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## ERROR RELAY

The AGEplus has a fault relay. The relay has both a NC and a NO connecting. See Fig. 9.



## FAULT FINDING

Fault	Cause	Action
The circulator is not running.	See under heading "Signals"	Reset fault indication. Check main supply and fuses.
Circulator will not start / is running irregularly.	Impurities in the circulator.	See under heading "Service/ Maintenance".
The circulator is running but no flow.	Air in the system. Closed valve	Vent circulator and system. Open valve.
Circulator noisy.	Circulator speed too high. Static head too low. Air in system	Decrease set point of control. Increase inlet pressure. Vent circulator and system.

## SERVICE / MAINTENANCE

Armstrong's AGEplus Series range of glandless circulators is virtually maintenance free and in a well designed system should give many years of trouble free operation.

If motor shaft is seized as a result of a long period without use or due to accumulation of impurities, it should be freed. Insert a screwdriver through the venting plughole and into the slot in the end of the shaft and rotate. Please note: Any repairs required to the internal electrical parts of the circulator, are to be carried out by an Armstrong approved service organisation.

## Transport, Handling and Storage Instructions

### a. Transport.

- AGEplus circulators are despatched fully assembled. AGEplus circulators are packed for transport by mornal road, sea and air carriers.

### b. Handling



- Crushing Hazard.
- When lifting an AGEplus circulator above a weight of 25 kg, use lifting equipment having a safe working load rating suitable for the load specified. Use suitable slings for lifting any circulator..

### c. Storage

- Short term Storage (six weeks). If the AGEplus circulator is not to be installed immediately after unpacking, then it is to be stored in a cool dry dust free location.
- Long term storage. If the AGEplus circulator is not to be installed for period of longer than six weeks after receipt on site, then it is to be retained in its packing case. If the casing case is disposed of, then the inlet and outlet connections are to be blanked off with suitable clean covers to prevent ingress of damaging solids.

## DECLARATION OF CONFORMITY

Armstrong hereby declares that this unit complies with the following relevant provisions

- EC Machinery Directives 89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC
- Electromagnetic compatability standard 89/336/EEC, 02/31/EEC, 93/68/EEC
- Applied harmonisation of standards EN809, EN50 081-1, EN50 082-1, EN50-081-2, EN50-082-2.

