

1 ANTIFREEZE FUNCTION

1.1 ACTIVE ANTIFREEZE SELF-PROTECTION

The appliance is equipped with an active antifreeze self-protection system to prevent icing.

The antifreeze function (on by default) automatically starts the primary circulation pump (if controlled by the unit) and, if required, the burner as well (in heating mode), when the outdoor temperature or water temperature in the system gets close to zero.

Electrical and gas continuity

The active antifreeze self-protection is only effective if the power and gas supplies are assured. Otherwise, antifreeze liquid might be required.

Unit ACF 60-00 HR

The GA ACF units version HR are fitted with antifreeze function for the conditioning circuit, while the recovery

circuit has no antifreeze function.

The recovery circuit antifreeze protection must therefore be assured with alternative methods if not used (e.g. by adding antifreeze liquid or by starting up the circulation pump with timer or thermostat).

Unit AY00-120

The function is double, both for the water circuit inside the appliance, and for the system's water circuit.

The function concerning the internal circuit cannot be disabled as it is also used to protect the electronic components.

Secondary circuit

Arrange for appropriate measures to prevent water freezing in any secondary side circuits not used in winter (e.g. controlling, by timer or thermostat, the operation of the circulating pumps in that branch of the system).


2 ANTIFREEZE LIQUID

Precautions with glycol

- ▶ Always check product suitability and its expiry date with the glycol supplier. Periodically check the product's preservation state.
- ▶ Do not use car-grade antifreeze liquid (without inhibitors), nor zinc-coated piping and fittings (incompatible with glycol).
- ▶ Glycol modifies the physical properties of water (density, viscosity, specific heat...). Size the piping, circulation pump and thermal generators accordingly.
- ▶ Do not use zinc-plated piping or unions because they might be subject to corrosion if exposed to glycol.
- ▶ With automatic system water filling, a periodic check of the glycol content is required.

With high glycol percentage (> 20...30%)

If the glycol percentage is $\geq 30\%$ (for ethylene glycol) or $\geq 20\%$ (for propylene glycol) the TAC must be alerted before first start-up.

 When producing DHW by DHW buffer tank, use propylene glycol only.

Used with chilled water under 3°C

Glycol may still be required, if the chilled water flow temperature is equal to or less than 3°C.

2.1 TYPE OF ANTIFREEZE GLYCOL

Inhibited type glycol is recommended to prevent oxidation phenomena.

2.2 GLYCOL EFFECTS

The Table 2.1 *p. 1* shows, indicatively, the effects of using a glycol depending on its %.

Table 2.1 Technical data for filling the hydraulic circuit

GLYCOL %	WATER-GLYCOL MIXTURE FREEZING TEMPERATURE	PERCENTAGE OF INCREASE IN PRESSURE DROPS	LOSS OF EFFICIENCY OF UNIT
10	-3 °C	-	-
15	-5 °C	6,0%	0,5%
20	-8 °C	8,0%	1,0%
25	-12 °C	10,0%	2,0%
30	-15 °C	12,0%	2,5%
35	-20 °C	14,0%	3,0%
40	-25 °C	16,0%	4,0%