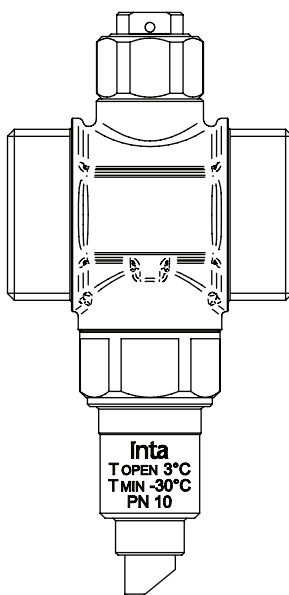




Zero Anti-Freeze Valve

Installation and Maintenance Instructions



Intatec Ltd
Airfield Industrial Estate
Hixon
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ST18 0PF

In this procedure document we have endeavoured to make the information as accurate as possible.

We cannot accept any responsibility should it be found that in any respect the information is inaccurate or incomplete or becomes so as a result of further developments or otherwise.

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Introduction

The patented Inta Zero Anti-Freeze Valves have been specifically designed to quickly and accurately react to the water temperature in the heat pump circuit and do not need the influence of the ambient temperature to operate.

Designed to discharge when the system water temperature goes down to 3 °C preventing ice from forming in the heat pump circuit that could cause breakdown or costly damage to the system.

The Inta Zero has been designed and engineered to avoid negative influences from low ambient temperatures by directly positioning the element in the system water flow, permitting accurate system discharge only when its truly needed.

A protective ring has been included in the construction to prevent system debris clogging the operation of the valve.

Double O-rings and reduced surface friction treatment on the operating member also ensure correct operation and reliability time after time.

The ZERO002 and ZERO212 have two discharge cartridges to allow liquid to escape more quickly on larger systems.

These instructions cover the installation, operation and maintenance. Please read the enclosed instructions before commencing the installation of this product, please note;

We recommend that the installation of any Inta product is carried out by an approved installer.

It is recommended a magnetic filter like the Intaklean HP or Intaklean HP XL is fitted to collect any debris within the system.

Insulating

Building regulations Part L states that all external fittings on an Air Source Heat Pump System must be fully insulated to reduce heat loss and maintain system efficiency. Inta Zero Anti-Freeze Valves will still maintain correct operation and discharge the water at the same temperature even when a system is correctly insulated.

The Inta Zero Anti-Freeze valves have been Independently tested using a controlled ambient temperature between -1 °C to 1 °C and starting water temperature 10 °C to demonstrate the possibility of insulating the Inta Zero Valve without affecting the performance.

Performance

Without insulation

Water discharge temperature:	2.49 °C
Time taken to begin discharge:	1 hour 4 minutes

With insulation

Water discharge temperature:	2.03 °C
Time taken to begin discharge:	4 hour 3 minutes

Insulating Continued

Warning!

If the Inta Zero valves are insulated, then due care must be taken to ensure that all external pipework and fittings are fully and appropriately insulated and sealed. Failure to do so could prevent the proper operation of the Zero valve resulting in colder areas of a system being damaged by freezing.

The Anti-vacuum valve must be kept clear at all times (inspected on annual service).

An anti-freeze valve guard (vacuum breaker cover) ZEROGUARD is available.

If you chose to insulate it is your responsibility to ensure all external fitting are fully insulated, bonded and sealed to prevent any exposure, cold spots and poor joints.

Inta have available an specially designed insulation and bond seal set.

You must also ensure that the insulation is inspected, retreated with all joints resealed annually and recorded with a service log.

Intatec **do not** accept any responsibility for the failure of Zero Antifreeze valves **if a system has NOT been insulated correctly.**

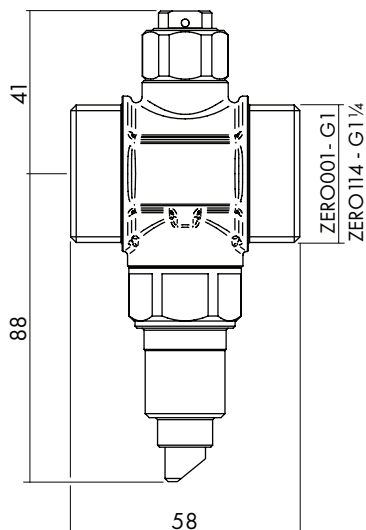
Products

Zero anti-freeze valve 1" M x M connections	ZERO001
Zero anti-freeze valve 1 ¼" M x M connections	ZERO114
Zero anti-freeze valve 28mm	ZERO28
Zero anti-freeze valve 35mm	ZERO35
Zero anti-freeze valve 1" F swivel x M connections	ZERO1SW
Zero anti-freeze valve 1 ¼" F swivel x M connections	ZERO14SW
Zero anti-freeze valve 1 ½" M x M connections	ZERO112
Zero anti-freeze valve 2" M x M connections	ZERO002
Zero anti-freeze valve 2 ½" M x M connections	ZERO212
Insulation for 28mm / 1" Zero - Anti-freeze valve	INSULZERO28
Insulation for 35mm / 1 ¼" Zero - Anti-freeze valve	INSULZERO35
Insulation for 1" / 1" Swivel Zero - Anti-freeze valve	INSULZERO28SW
Insulation for 1 ¼" / 1 ¼" Swivel Zero - Anti-freeze valve	INSULZERO35SW
290ml Bond & Seal	INSULBOND
Anti-freeze valve guard	ZEROGUARD

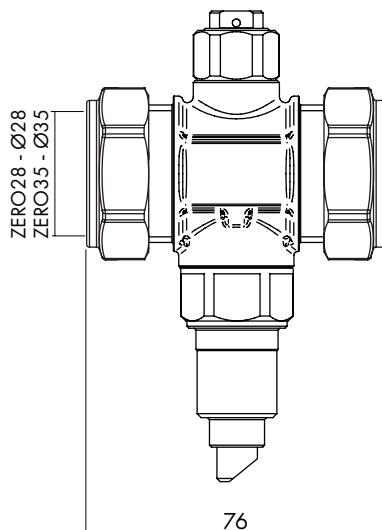
Technical Specification

Max. inlet pressure - static:	10 bar
Opening temperature:	3 °C
Minimum Temperature:	-30 °C
Min. inlet pressure:	0.5 bar
Max. temperature:	80 °C
Medium:	Water
Sensitivity:	±1 °C
Closing temperature:	4 °C
Threaded connections:	BS EN ISO 228
Compression connections:	BS EN 1254-2

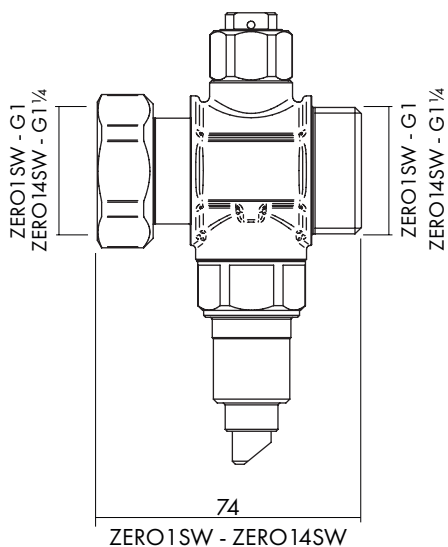
Dimensions



ZERO001 - ZERO114

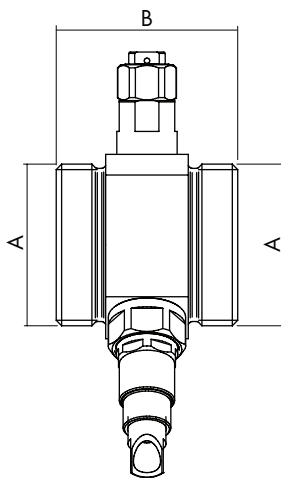
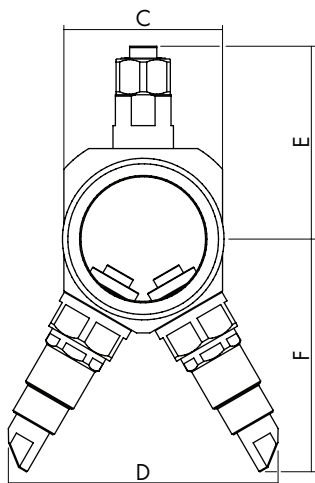
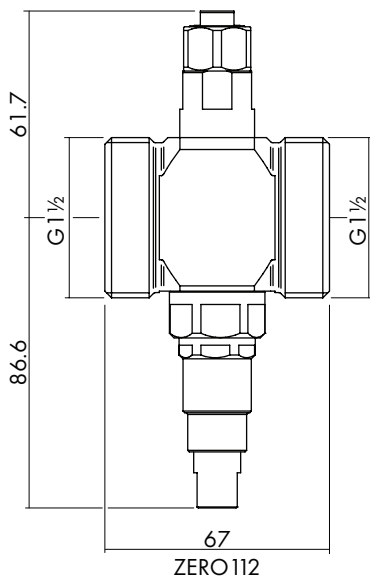


ZERO28 - ZERO35



ZERO1SW - ZERO14SW

Dimensions



Code	A	B	C	D	E	F
ZERO002	G2	67	58.5	99.5	71.2	85.8
ZERO212	G2 1/2	85.5	76.2	91.4	78.4	96.7

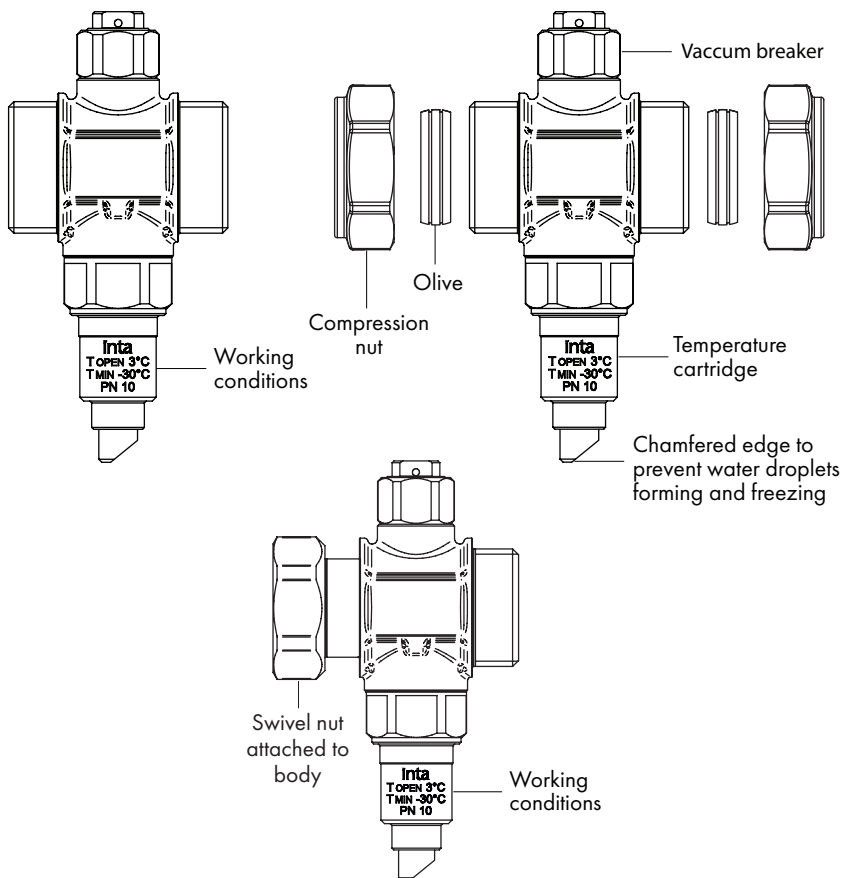
Materials

Valve body:	Brass	BS EN 12165 CW617N
Spring:	Stainless steel	
Temperature element:	Wax	
Internal seals:	EPDM peroxide	
Internal parts:	Brass	BS EN 12164 CW617N

Check Components

Before commencing remove all components from packaging and check each component with the contents list.

Ensure all parts are present, before discarding any packaging. If any parts are missing, do not attempt to install your Inta Zero anti-freeze valve until the missing parts have been obtained.



Preparation for installation

Flush the water supply pipes thoroughly prior to installation. Do not allow debris, PTFE tape or any metal particles to enter the system.

Important: Although supplied as a single valve Inta recommend that a pair of valves are installed as shown.

Important: All plumbing is to be installed in accordance with applicable codes and regulations.

Important: When fitting/installing a heat pump system or components it is essential that the correct insulation is used and properly sealed to reduce the heat loss from the system, maintaining the system efficiency.

Installation

- Thoroughly flush the system to ensure the absence of any debris or impurities before installing the Zero anti-freeze valve.
- If chemical flushing of the system is done, isolate the anti-freeze valve. Once the chemical flushing is complete make sure that the system is thoroughly flushed to remove any chemical residue.
- In case it is necessary to make welds on the pipe, make them before installing the anti-freeze valve into the system.
- In case there are changes or maintenance to the system that may 'pollute' the water or that may introduce impurities into the system, isolate or remove the anti-freeze valve before carrying out the work. Before re-inserting the anti-freeze valve into the system wash it thoroughly to ensure the absence of any debris or impurities.

The Zero anti-freeze valves must only be installed in a vertical position, with the outlet facing downwards, to allow the draining water to flow out free from obstructions.

The Zero anti-freeze valves should be properly insulated and sealed to reduce heat loss. Only the vacuum breaker and discharge point should be exposed.

The valves must also not be placed close to heat sources which could interfere with their function.

When installed outdoors, the Zero antifreeze valves must be protected from rain, snow and direct sunlight.

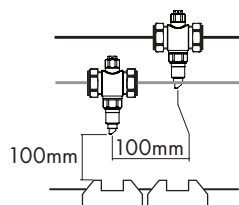
For the valves to work properly, keep the system under pressure at all times.

Inta recommend placing a small cover / hood with 1 open face over the vacuum break - Inta ZEROGUARD optionally available. This should prevent interference or debris whilst still permitting air flow.

100mm clearance between the valve and the ground is recommended as discharged water could freeze and hinder the operation of the valve.

If suitable drainage is available, the clearance can be reduced to suit the installation.

Recommended Installation

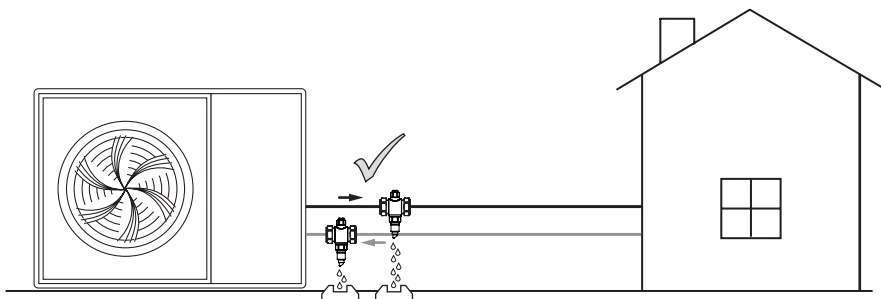


Installation Continued

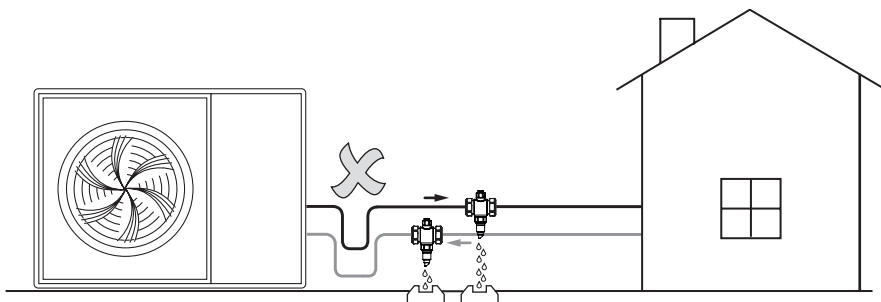
The discharge from anti-freeze valves must be routed to a suitable drain.

If a second valve is installed leaving at least 100mm between the valves is recommended to avoid water discharging onto the lower valve.

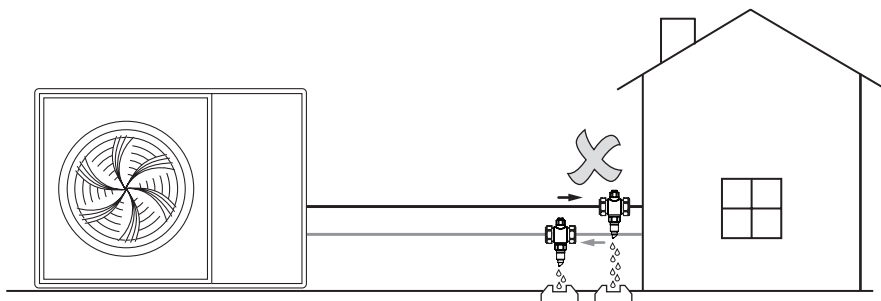
The distance can be adjusted if ZEROGUARDS are used, see page 8 for more information.



The Zero antifreeze valves must be installed outdoors, **closest to the heat pump**, where the lowest temperatures can be reached if the heat pump is not operating.

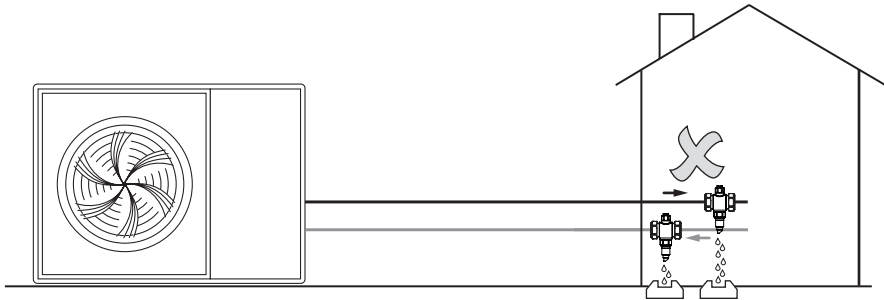


Avoid elbows upstream of the anti-freeze valves to prevent water stagnation at a point lower than the valves

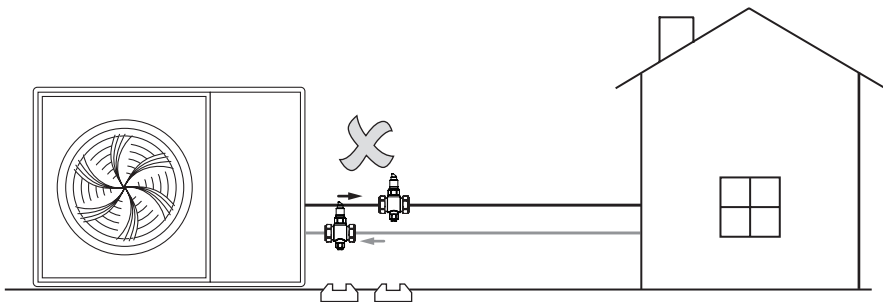


Avoid siting the anti-freeze valves near the building.

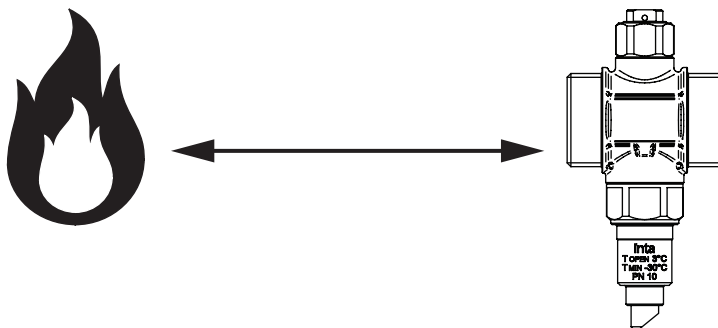
Installation Continued



Avoid sighting the anti-freeze valves inside the building.



Do not install the anti-freeze valves upside down, the outlet must always point vertically down.

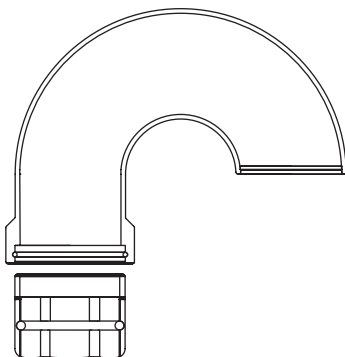


Install the anti-freeze valves away from a heat source.

Anti-freeze Valve Guard - ZEROGUARD

Available from Intatec as a recommended component.

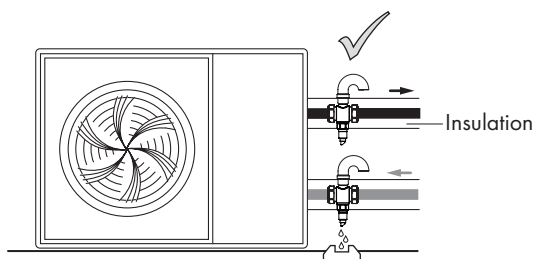
The patent pending Zeroguard has been designed to protect the anti-vacuum valve from debris and the elements.



The Zeroguard is supplied as two components, the lower sleeve and covered vent.

The lower sleeve can be slotted directly over the anti-vacuum valve and then sealed into the insulation with Bond & Seal, preventing water ingress while making the insulation installation easier.

The covered vent is supplied with a push fit 'O'-ring seal so it can be securely pushed over the lower sleeve while still allowing easy access for servicing.



In situations where the space is limited, the Zeroguard protects the anti-vacuum valve allowing the valves to be stack one above the other.

Maintenance

Vacuum Breaker Replacement

In the event of a malfunction, the vacuum breaker can be removed.

Checking the Vacuum Breaker

In the event of a malfunction, or as part of a planned maintenance programme the vacuum breaker can be removed.

Using a 20mm A/F spanner remove the vacuum breaker from the anti-freeze valve body.

Using a suitable sized spanner remove the cover from the vacuum breaker body.

Remove the sealing washer.

Invert the vacuum breaker body and the plastic vacuum cap should fall out.

If it does not fall out it indicates that the vacuum breaker has not been operating correctly and the vacuum breaker needs to be replaced.

If the plastic vacuum cap does fall out check it and the sealing washer for damage and inside the body for debris, if present wash away with clean water.

Re-assemble and refit into the anti-freeze valve.

Thermostatic Cartridge Replacement

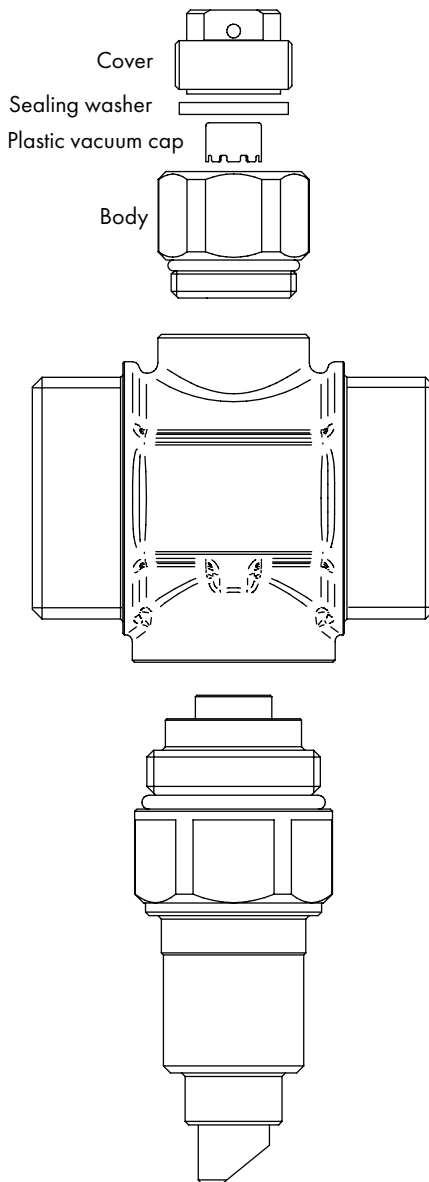
In the event of a malfunction, the thermostatic cartridge can be replaced.

Using a 26mm A/F spanner remove the cartridge from the body and replace with a new one.

Replacement Components

Replacement components are available from Inta.

Fit only genuine Inta replacement components.



Problem Solving

The following details are supplied for on site queries, should you require any further assistance our Technical Department can be contacted directly on 01889 272199.

Fault	Diagnosis
Vacuum breaker not sealing, leaking.	Minimum pressure requirement of 0.5 bar not achieved - check system pressure. Float has be assembled incorrectly - upside down. Dirt/debris in float chamber preventing closure.
Anti-freeze valve keeps discharging, will not isolate.	Vacuum breaker float has become stuck due to dirt/debris during discharging. Not insulated correctly exposing the valve to the elements - cold temperatures. Discharge valve not working correctly, replace valve
Discharge port frozen/blocked	Anti-freeze valve has not been installed in the correct orientation - discharge port should always point downwards Incorrect clearance between the discharge port and the drain/ground.
Anti-freeze valve not discharging when water temperature falls below 3 °C.	Anti-freeze valve has become frozen/blocked due to incorrect installation. Vacuum breaker is blocked causing a vacuum. Valve located too close to a heat source affecting the thermostatic element. The thermostatic element not working correctly - change the element.

inta

Please leave this Manual for the User

To activate your product warranty please visit
www.intatec.co.uk
and click on Product Registration

inta

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