

UPDATED GUIDANCE USE OF TAP WATER IN ATC CHILLERS

Date 12/06/2024

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Earlier documentation may have indicated that the use of tap water in ATC chillers was permissible under certain conditions. Based on further evaluation and our ongoing commitment to system reliability, we now advise against the use of tap water in any ATC chiller models. This updated recommendation reflects a more comprehensive understanding of global water quality variation.

WHY THIS MATTERS

Water quality can vary widely by region and application. Tap water may contain:

- High mineral content (e.g. calcium, magnesium)
- pH imbalance
- Biological matter (e.g. algae, bacteria)
- Chemical additives (e.g. chlorine, fluoride)

These factors can contribute to:

- Internal corrosion
- Degradation of seals and materials
- Biological fouling
- Reduced heat transfer performance

As such, continued use of unapproved fluids, including untreated tap water, may affect long-term performance in some instances.

CURRENT RECOMMENDATION

To support the ongoing reliability and efficiency of ATC chillers, we recommend using only ATC-approved fluids.

PREFERRED FLUID

Hexid - Providing corrosion protection, freeze protection, algae inhibition, and effective thermal performance.

If Hexid is not available in your region, please contact ATC for guidance.

SUPPORT

For questions regarding coolant compatibility or fluid selection for your specific system, please contact ATC Technical Support.

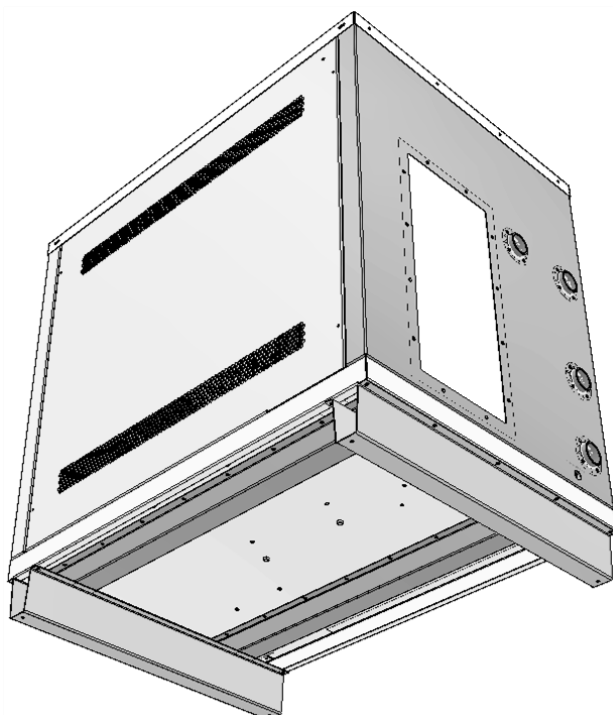
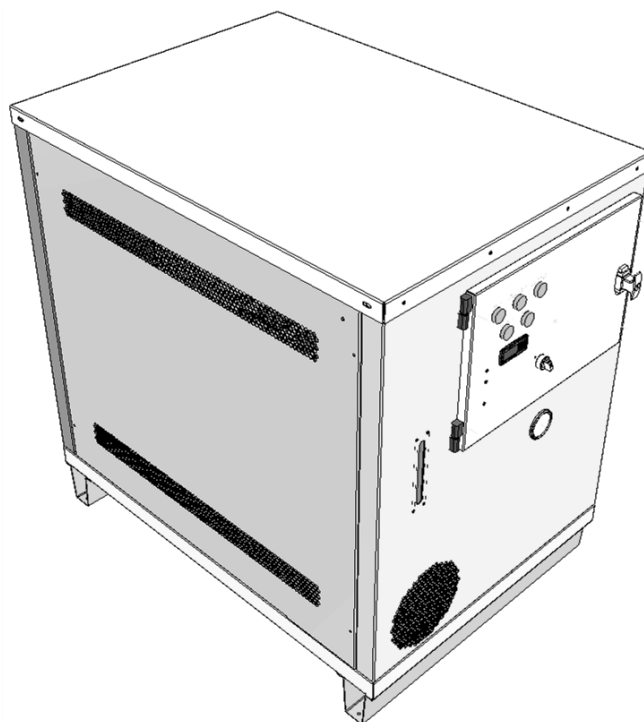


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Installation, Operation & Service Manual XF050 / XF085 / XF120

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CHANGE LOG

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10/JUN/2022	1	ALL	First release



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PRODUCT SPECIFICATIONS – OVERVIEW

ADMINISTRATIVE DATA

CAD assembly dwg no.	MA503	MA503	MA503
Standard model numbers	XF050	XF085	XF120

PHYSICAL ATTRIBUTES

Physical dimensions	W750 x D1100 x H1060mm	W750 x D1100 x H1060mm	W750 x D1100 x H1060mm
Construction	Sheet steel gauge 1.5mm Epoxy polyester powder coat	Sheet steel gauge 1.5mm Epoxy polyester powder coat	Sheet steel gauge 1.5mm Epoxy polyester powder coat
Mounting type	Skids, transverse mounting	Skids, transverse mounting	Skids, transverse mounting
Acceptable environment	Indoors or outdoors sheltered	Indoors or outdoors sheltered	Indoors or outdoors sheltered
Dry weight	TBC	TBC	TBC
Wet weight	TBC + 45kg	TBC + 80kg	TBC + 80kg
Noise level	≤50dB(A) @ 1m	≤50dB(A) @ 1m	≤50dB(A) @ 1m
Toolless access	No	No	No

TEMPERATURE CONTROL ATTRIBUTES

Technology	Water-to-water heat exchanger	Water-to-water heat exchanger	Water-to-water heat exchanger
Control method	Modulating valve	Modulating valve	Modulating valve
Temperature stability	±0.5°C	±0.5°C	±0.5°C
Cooling capacity condition 1	25kW (5°K rise over supply)	42kW (5°K rise over supply)	60kW (5°K rise over supply)
Cooling capacity condition 2	50kW (10°K rise over supply)	85kW (10°K rise over supply)	120kW (10°K rise over supply)
Cooling capacity condition 3	100kW (20°K rise over supply)	170kW (20°K rise over supply)	240kW (20°K rise over supply)
Maximum ambient	+40°C	+40°C	+40°C
Design flowrate	80L/min	120L/min	150L/min
Temperature range (standard)	+4°C to 50°C	+4°C to 50°C	+4°C to 50°C
Temperature resolution	0.1°C	0.1°C	0.1°C
Maximum Total Heat Rejection	Applied load, plus power in	Applied load, plus power in	Applied load, plus power in

WATER CIRCUIT ATTRIBUTES

System volume	60L	110L	110L
Pump options	P40, P80, P120	P80, P120, P150	P120, P150
Pressure relief control	Optional gate valve	Optional gate valve	Optional gate valve
Standard fittings	1-1/2" BSPPF (ISO G)	1-1/2" BSPPF (ISO G)	1-1/2" BSPPF (ISO G)
Standard chemical compatibility	Hexid, Water, Glycol mix	Hexid, Water, Glycol mix	Hexid, Water, Glycol mix

ELECTRICAL ATTRIBUTES

Standard power supply	400Vac 3~ 50Hz	400Vac 3~ 50Hz	400Vac 3~ 50Hz
Current at 400V 3~	7A (4A/phase)	8A (4.6A/phase)	8A (4.6A/phase)
Standard supply configuration	L1 / L2 / L3 / N / E	L1 / L2 / L3 / N / E	L1 / L2 / L3 / N / E
Standard overcurrent restart mode	Manual	Manual	Manual

SAFETY INTERLOCKS, STANDARDS & INDICATORS

1st party approvals	CE, UKCA	CE, UKCA	CE, UKCA
3rd party approvals	UL/CSA-ready	UL/CSA-ready	UL/CSA-ready
Empty fluid reservoir alarm	Process stop interlock	Process stop interlock	Process stop interlock
Low fluid flow alarm	Available option	Available option	Available option
House water pressure alarm	Available option	Available option	Available option
Process water pressure alarm	Available option	Available option	Available option
Temperature out of range alarm	Standard	Standard	Standard
DC power supply lamp	Standard	Standard	Standard
Fluid tank level alarm	Standard	Standard	Standard
Emergency off	Via overload handle	Via overload handle	Via overload handle
Interlock restored restart mode	Manual (automatic option)	Manual (automatic option)	Manual (automatic option)



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SAFETY NOTICES

For your safety, we draw your attention to the following warning and caution marks throughout the manual. Warning symbols can be found on the unit. Ensure you have read through all warnings before starting the unit. The safe operation of ATC products always remains the responsibility of the operator. This equipment is intended to be used as a liquid temperature conditioning device – it requires no external pump, nor any further manipulation of temperature. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. Failure to comply with a 'warning' may result in personal injury or death. ATC does not accept any liability for injury caused through use of this equipment.

- | | |
|--|---|
|  | Caution; Failure to comply with a caution will invalidate product warranty and absolve ATC from any liability, howsoever caused, and could result in permanent damage to equipment. |
|  | Caution; Filling/topping up of the tank should only be undertaken with the unit switched off, to prevent back-filling of the fluid. |
|  | Caution; This product contains no user-serviceable parts. Repair and service requires specialized knowledge and tools to be provided by ATC or its local agent. Any unauthorized tampering with the heat exchanger system automatically invalidates warranty. |
|  | Warning; Hot and cold surfaces are present during operation. Take caution and care when touching pump during operation. |
|  | Warning; Water pressures of up to 10 bar during operation. |
|  | Warning; Water and electricity near one another. Always ensure the unit is isolated before service. The product is protected from overcurrent by MCB (miniature circuit breaker). Never bypass this component. |
|  | During fault diagnostics and maintenance, it may be necessary to remove panels, which expose the operator to the dangers of pressurized systems, hot or cold pipes and electrical circuits. Only qualified personnel who are aware and equipped to deal with these systems should only carry out such work. |
|  | Any temporary electrical supply to the chiller should be correctly earthed and connected through an earth leakage trip. |
|  | In case of unexpected coolant leakage, safety glasses should always be worn when the chiller is operated with the covers removed. |
|  | Under no circumstances leave the cooler unattended with the side panels removed. |
|  | Never alter settings of pressure switches, overloads, circuit breakers or any safety device without first consulting Applied Thermal Control. |



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INCLUDED ANNEXES

Specific technical product information is provided in the following series of annexes.

Annex A-2 220609 Shipping & Unpacking - Crane or forklift with caveat
Annex B-14 220609 Site & Environmental Requirements for XF050 XF085 XF120
Annex C-9 220609 Installation - Generic water-cooled with 1.5inch fittings
Annex D-4 201124 Fluid Handling & Startup Procedures - Anti-backfill mechanism
Annex D-8 220610 Fluid Handling & Startup Procedures - XF050 085 120
Annex E-5 210301 KR3 - how to use
Annex E-5P 220527 KR3 Program XF050,085,120 standard
Annex F-5 220610 Centrif or turbine pump without relief
Annex G-5 200219 Troubleshooting - Diagnose PT100 failure
Annex G-11 220610 Troubleshooting - Initial help for XF050 085 120
Annex G-12 210326 Troubleshooting - X-Series modulating control valve functional explanation
Annex H-2 210326 End-user maintenance - water-cooled units with water as fluid
Annex I-5 210302 Maintenance for technicians - Generic non-refrigerated units
Annex J-3 220406 EU DoC X-series
Annex J-5 200706 EU Compliance Statement Conflict Minerals
Annex J-7 200715 EU Compliance Statement REACH
Annex J-8 200827 EU Compliance Statement POPs
Annex J-10 201111 EU Compliance Statement RoHS
Annex J-19 220610 UKCA DoC X-Series
Annex K-1 200623 Standard warranty terms of ATC
Annex L-12 220610 Volt Free Contacts
Annex M-2 220610 Recommended spares, XF050,085,120 & NSs



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Operating Manual; Shipping & Unpacking

Annex A-2

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CRANE OR FORKLIFT WITH CAVEAT (TYPICAL WEIGHT >60kg)

- 1 Upon receipt, please check that both the packaging and the unit are undamaged. If there is any doubt, it is vital that both ATC and the carrier are informed.
- 2 There are no hidden shipping bolts or other fixings.
- 3 Inspect the packaging for signs of transit damage before signing for the unit. If possible, unpack the unit before signing. Once the goods are signed for, ATC cannot be held responsible for any transit damage subsequently found.
- 4 Remove the unit from its original packaging and ensure that there is no packaging left around cooling ducts. There is no internal product packaging that requires the product to be opened.
- 5 As the unit weighs >60kg, it must be lifted with a forklift or a crane. ATC highly recommends that it is not manually lifted, and that safe slinging and lifting practices are adhered to.
- 6

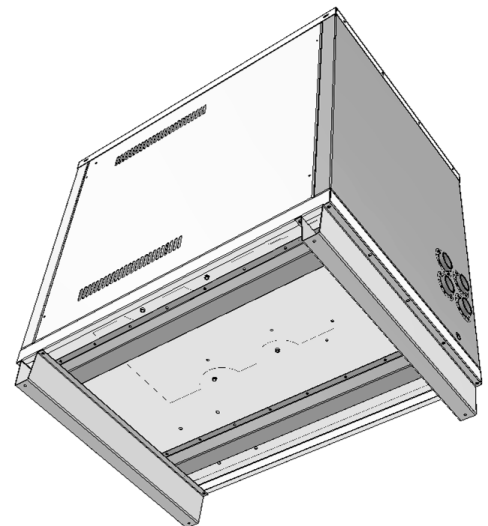
The unit sits on two flattened V-shape skids at the front and the rear.

There is an 850mm gap in between the skids at the narrowest point.

A forklift or pallet truck can be used to lift. Both the skids and the stiffeners can carry the weight of the unit.

If the unit is to be fitted into a small space where it may not be possible to maneuver a forklift or pallet truck, the unit can be lifted using an engine hoist or overhead crane.

If hoisting is preferred, it is recommended that slings rated for the appropriate weight are fed through the skids at the front and rear and lifted simultaneously from the top.
- 7 Please retain all packaging in the unlikely event the unit needs to be returned to our local representatives.
- 8 Always familiarize yourself with safe lifting practices and conduct risk assessments where necessary.





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SITE & ENVIRONMENTAL REQUIREMENTS FOR XF050 XF085 XF120

This guide applies to standard water-to-water heat exchangers with part numbers starting XF050, XF085 and XF120. It may also apply to a non-standard model if this annex has been selected for the operating manual. It describes the requirements for all services and conditions necessary for years of trouble-free running. If you require more detail, please contact ATC on sales@app-therm.com or use details in the header of this document.

GUIDANCE

- 1 **Storage temperature range.** Without process fluids, -20°C to +50°C.
- 2 **Storage humidity range.** Non-condensing, relative humidity 5% to 95%. Before starting product, allow product to acclimate for 24h in location of use when storing outside *operating* humidity range.
- 3 **Operating temperature range.** With appropriate process fluids and temperatures, -20°C to +40°C.
- 4 **Operating humidity range.** 80% for ambient temperatures up to +31°C (+88°F), decreasing linearly to 50% relative humidity at +40°C (+104°F) ambient temperature.
- 5 **Hard, level surface.** A level surface is important for ensuring proper filling and allowing air to escape.
- 6 **Electrical supply.** All standard XF050, XF085 and XF120 are three phase coolers. Mains supply via an earth leakage detecting residual current device (RCD) is recommended. Current consumption quoted is based on nominal pump sizes P80, P120, P150 respectively. ATC cannot make recommendations for power supply wire gauge nor supply capacity. Follow local regulations and consult trained electricians. The product rating label contains the necessary information.

Model	XF050			XF085			XF120		
Supply suffix	-3	-4	-8	-3	-4	-8	-3	-4	-8
Voltage range	400Vac	460Vac	208V	400Vac	460Vac	208V	400Vac	460Vac	208V
Voltage tolerance	±5%	±5%	±10%	±5%	±5%	±10%	±5%	±5%	±10%
Frequency	50Hz	60Hz	60Hz	50Hz	60Hz	60Hz	50Hz	60Hz	60Hz
Supply mode	3P+N+E	3P+E		3P+N+E	3P+E		3P+N+E	3P+E	
Current (L-L)	7A	TBC	TBC	TBC	TBC	TBC	9.7A	TBC	TBC
Current (L-N)	4A	TBC	TBC	TBC	TBC	TBC	5.6A	TBC	TBC
Overload rating	4-6.3A	TBC	TBC	TBC	TBC	TBC	6-10A	TBC	TBC
Internal PSU fuse	T0.5A	T0.5A	T0.5A	T0.5A	T0.5A	T0.5A	T0.5A	T0.5A	T0.5A
- 7 **House/Primary water supply.** House water supply can vary depending on the thermal performance requirement. As a starting point, ATC XF-series products are engineered to 10°K deltas with nominal flowrates. Take the XF050; nominal flow of 80L/min on both the house and process circuits will allow the unit to achieve 50kW capacity with temperatures of +10°C house inlet, +20°C process delivery and +30°C process return. House flowrates can be lowered only to the extent that house outlet temperature remains at least 2°K beneath the desired process delivery temperature. Halving flow on either side will yield a doubling of the return line temperatures. Doubling flow will yield a halving of nominal return line temperature.
- 8 **Clearance.** Clearance is required to achieve the following;
 - a) Ensure the isolator switch on the front face is unobstructed to allow access in case of emergency.
 - b) Fitting of hoses and electrical supply to the rear of the unit to allow recommended bending radii.
 - c) Maintenance access points require side panels to be removed.*The exact amount of clearance can be determined by the OEM or end user as process is not affected as it would be in an air-cooled product. Access for maintenance is the primary consideration.*
- 9 **Plumbing.** Tubing, piping or hose must be clean and compatible with the fluid to be used. The product is compatible with deionized water, tap water and water-glycol mixtures such as Hexid A4 and A6. Ensure the connected pipework is suitable for handling planned flowrates without overburdening the process pump.
- 10 **Indoor use only.** Altitude up to 2000m above sea level. Ensure the unit has adequate ventilation.
- 11 **Installation category.** Transient overvoltage category II; Pollution degree 2. Temporary overvoltages occurring on mains supply are acceptable within limits defined in the aforementioned categories.



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Caution: Always use ATC recommended fluids in your chiller – many sealing compounds and materials are present and unapproved fluids have the potential to corrode your application and damage seals.



Caution; Do not use inadequately rated wiring. Consult an electrician if you are unsure.



Caution: The safety of any system incorporating the equipment is the responsibility of the assembler of the system.



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INSTALLATION FOR WATER-COOLED UNITS WITH 1-1/2" BSPFF FITTINGS


This guide applies to the following product groups;

- K-Series, R-Series and G-Series refrigerated units, where heatload is carried away by water supply.
- XR- and XF-Series water-to-water heat exchangers, where heatload is carried away by water supply.

HOSE RECOMMENDATIONS

Having ensured that your installation meets all site requirements, it is best practice that the fluid lines between your application and the chiller/cooler have the following characteristics.

- 1 Short in length** – this reduces friction-based pressure drop and additional ambient heat load.
- 2 Large diameter bore** – we recommend hose internal diameter (ID) on 1-1/2" BSPFF fittings is no smaller than 1-1/4" (32mm), and preferably larger than 1-1/2" (38mm).
- 3 Free from 90° bends** – to limit the effects of water hammer. If this cannot be avoided, sharp changes of direction should be minimized so far as possible. Doing this correctly can yield higher pump performance and extend time between maintenance intervals. It will also reduce electrical energy consumption.
- 4 Clean** – If your installation is to existing pipe work, it is good practice to flush the system with either a commercially available central heating cleaner or 5% acetic acid solution. The system should be flushed clean with tap water to remove all traces of cleaner prior to filling the system. Failing this, it is recommended to use a domestic bleach in solution with tap water, diluted to the point where the bleach can no longer be smelled by human nose.
- 5 Opaque, ideally black** – to inhibit light passing through the tube and algae building up. Alternatively, solid ABS or copper pipe can be used where application chemistry allows.
- 6 Insulation, where low temperature process is planned** – the process line from chiller/cooler to application contains low temperature fluid. Insulation prevents heat from entering this line and can promote better stability. Uninsulated return lines are helpful where free cooling can be obtained by allowing heat to transfer to air – likewise, insulating the return line is helpful if the fluid temperature is below ambient.

 Caution; Never use transparent tubing. UV light will pass through, prompting growth of organic contamination.

CONNECTING ADAPTERS TO PRODUCT BULKHEAD FITTINGS

- 1** Standard units are supplied with 1-1/2" British Standard Pipe Parallel Female (BSPFF) threads (also known as G threads (ISO228)) by default, for both application/process and house/primary water supply. These fittings are not valved and will 'drop' the volume of the system if left open to atmosphere.
- 2** Ensure the appropriate thread sealants are used in the fitting of adapters to hose. For metallic mating parts, we recommend Loctite 577. For plastic adaptors such as those supplied with the product, we recommend using ~8-12mm wide PTFE tape, wrapped around the male thread before tightening.
- 3** Ensure that the system is correctly connected. The 'donut' labels around the ports are clearly marked with inlet and outlet symbols and function in both English and French language. Ports marked as outlets mean fluid leaves the product and must be connected to the process inlet or house water return line.
- 4** Check all joints are tight and leak free.
- 5** Where this product is incorporated into other equipment, it is the responsibility of the assembler to ensure safety.



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Operating Manual; Installation

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BACKFILLING

- 1 In situations where the chiller/cooler is situated physically lower than the application being cooled, fluid will apply pressure to the water circuit of the product.
- 2 The weakest seal is normally the tank lid, and this is typically where fluid will escape the unit.
- 3 Ideally, the product will be located higher or level with the product water-line. If this is not possible, a non-return solenoid valve kit can be installed as an optional standard assembly.
- 4 Please raise any questions with the sales team on sales@app-therm.com.



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LIMITATION OF SINGLE SWITCHING POINT

In a system with a single level switch, there is only one point the water level must be above in order to have the unit run. As the tank level drains through natural losses, connections/disconnections, etc., the level gets ever closer to the switching point. In a system where the application and hosing are more flexible, poorly bled of air, or a small elevation difference exists, it's not uncommon to see some liquid return to the tank after the unit is turned off (whether by hand or by interlock). This liquid return (sometimes called drainback) can be enough to re-satisfy the level switch and re-start the product, thus emptying the tank again and shutting down once more. The product then enters a cycle of stopping and starting, detrimental to pump health and the electrics that drive it.

ANTI-BACKFILL LEVEL SWITCH ARRANGEMENT

Products with an anti-backfill level switch system are designed to prevent the product from stopping and starting continuously. A pair of level switches are present in the tank. The first is in the same position as in a single switching point system. Upon filling, this first lower switch becomes satisfied. Upon continued filling, a second switch (the upper, or anti-backfill switch) becomes satisfied. As the unit runs, the level slowly reduces – the upper switch becomes dissatisfied, but the unit doesn't stop, it keeps going until the lower switch is dissatisfied also preventing the pump from running dry as it shuts down. As fluid reenters the tank from sources outside the product, the bottom level switch is re-made, but fluid volume is insufficient to satisfy the upper level switch. Electrically, the system requires the upper level switch to be re-made before starting again.

PRODUCTS WITH THREE LEVEL SWITCHES

Your product may have three or even four switches. In the event it has more than two, the top switch function is either an early warning, or an auto-refill point. If it has four switches, the higher one is for auto-refill. Check the electrical schematic to confirm.



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FILLING, STARTING & DRAINING OF XF050 / XF085 / XF120

This guide describes the filling, starting, and draining processes associated with standard XF050, XF085 and XF120 models. It assumes the unit is connected to mains and is live. Start with the isolator in the off position. Read this guide in its entirety before starting the process.

FILLING & STARTING

- 1** **Check all application valves are open, including solenoid valves and variable position valves** – the cooler will require an open water circuit to pump into - any obstructions can increase the time, or entirely prevent the bleeding of air from the system. Ensure the water circuit joints are properly sealed. You should have a white lamp on (standby) and a green lamp for DC supply voltage OK. You do not need to connect the house-water side at this point, but be aware there will be no temperature control, and you may see the temperature range lamp turn off. Be aware that with no active cooling of the primary/house side, the heat from the pump motor will slowly cause the temperature to rise on the process side.
- 2** **Remove right-hand side panel (viewed from front).** Remove the black plastic tank lid (pop-off lid) and place to the side. Begin filling the tank by pouring in directly. As the level rises, the front panel sight tube will show you where to stop filling. Both level switches will be covered (and electrically 'make') by the time the 'level full' marker is reached. If you overfill, the overflow line will flood, releasing fluid from the rear overflow outlet. Expect the level-full lamp to illuminate green on the front panel. Do not put the tank lid back on yet.
- 3** **Turn your attention to the red/yellow overload/isolator handle on the front of the cooler** – immediately after turning this handle to the 12o'clock position, the cooler pump will start and the pipework will begin to fill. As it fills, the tank level will reduce. The cooler can be allowed to run until it turns off on the level switch, at which point the green lamp will turn off.
- 4** **Refill the tank to bring the sight tube back to the full mark.** Start the cooler again by rotating the handle around to the 9o'clock position, then immediately back to the 12o'clock position. Continue this process of filling > running > auto shutdown > filling etc., until the level no longer drops.
- 5** **As the cooler runs, observe the sight gauge on the front of the unit** – allow the cooler to run and watch the water level drop as the air in the system is displaced. Top up as necessary to ensure the unit does not shut down again. Time to bleed air is highly dependent on system configuration. ATC recommend the cooler is run for at least 1 hour with the lid removed. Replace lid and side guard once satisfied air is bled.
- 6** **While the cooler runs, review internal and external hoses for signs of leaks.**



Caution; Do not run the pump dry. Do not deadhead the pump.

DRAINING

- 1** **Open the left-hand access panel** – you will have the pump and tank directly in front of you. The bottom left-hand corner of the tank has a tee fitting – one end goes to the sight-tube, the other end goes through a hose to a small service valve that upon rotating through 90° will start to drain the tank.
- 2** **Once the unit is drained, return the drain valve to the 'stop' position** – any fluid remaining in the tank will need to be siphoned manually – it is not possible to fully empty the tank.
- 3** **Some fluid will drain from connected hoses** – ATC can provide valved quick release connectors to prevent cooler draining further from the internal hoses. Without quick release connectors, fluid will leave the unit under gravity. There may still be a small amount of fluid in the system; ATC recommend re-fitting the red plastic blanking plugs to prevent fluid escaping during movement of the cooler.
- 4** **Local rules affect where fluid can be disposed of** – ensure hazardous products do not enter the water course and are reclaimed from the unit for professional disposal.



Annex E-5

DOCUMENT DETAILS

Date	1/MAR/2021	Author(s)	MJH	Page	1 / 1	Revision	1
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BASIC PROGRAMMING GUIDE KR3 (ALL MODELS)

This guide may apply to your product if you require general navigation advice and help accessing settings. If you are planning to change the settings in any way, you may need a copy of the existing settings which are model dependent, signified by a letter on the end of Annex E-5, i.e. Annex E-5A.

DISPLAY CONTENTS DURING NORMAL OPERATION

- | | |
|---|---|
| 1 | Physical navigation buttons, up, down, return and enter. |
| 2 | 8888.8 is the actual read value on input sensor. |
| 3 | 888.8 is the setpoint value. |
| 4 | Rectangles bottom left 1-4 display when output is active. |
| 5 | MAN LED shows in manual mode (fixed output value). |
| 6 | °C or °F shows units as settable in the 'inP' group. |
| 7 | AL LED appears when output is beyond a set alarm point. |



ACCESS TO SETTINGS

- | | |
|----|--|
| 8 | Push the return button for more than 5 seconds. The upper display will show PASS while the lower display will show 0. |
| 9 | Using up and down buttons set the programmed password – full access is granted by entering '40'. ATC are not responsible for damage either to the chiller or the connected equipment as a result of changing parameters without ATC's oversight. |
| 10 | During parameter modification the instrument continues to perform process control. In certain conditions, when a configuration change can produce a significant change to the process, it is advisable to temporarily stop the controller from controlling during the programming procedure (control outputs will be OFF). A password equal to 2000 + the programmed value (i.e. 2000 + 40 = 2040). The control will restart automatically when the configuration procedure will be manually closed. |
| 11 | Push the return button. If the password is correct the display will show the acronym of the first parameter group 'inP'. Push button for more than 5 seconds, the instrument will come back to the "standard display". |
| 12 | The configuration parameters are collected in various groups. Every group defines all parameters related with a specific function (control, alarms, output functions). |
| 13 | Push return button for more than 5 seconds, the instrument will come back to the "standard display". For specific settings and guidance, review the controller datasheets provided by ATC. If you are not in receipt of these, please contact ATC using the information in the header of this document. |

GENERAL NAVIGATION

- | | |
|----|--|
| 14 | Return button; A short press allows to exit from the current parameter group and select a new parameter group. A long press allows you to close the configuration parameter procedure (the instrument will come back to the "standard display"). |
| 15 | Enter button; When the upper display is showing a group and the lower display is blank, this key allows to enter in the selected group. When the upper display is showing a parameter and the lower display is showing its value, this key allows to store the selected value for the current parameter and access the next parameter within the same group. |
| 16 | Up button; Allows to increase the value of the selected parameter. |
| 17 | Down button; Allows to decrease the value of the selected parameter. |
| 18 | Pushing both Return and Enter buttons moves back to the previous group. Press return first to start. The selection of the group is cyclic (on a carousel), so it is possible to move back around to the group you require. |



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Operating Manual; Controller Operation

Annex E-5P

DOCUMENT DETAILS

Date	27/MAY/2022	Author(s)	MJH	Page	1 / 2	Revision	2
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XF050 / XF085 / XF120 STANDARD PROGRAM PURPOSE

Internal part number	61-591
Manufacturer part number	Ascon Tecnologic KR3
Program purpose	1) Set o/p1 to drive Belimo 0-10Vdc analogue water valve for cooling duty. 2) Set output 2 for temperature out of range alarm. Where not used, these settings can remain. 3) Set remainder of parameters to safe working limits.

XF050 / XF085 / XF120 KR3 PROGRAM

Group inP		Group 'out'		Group 'AL1'		Group 'AL2'	
Setting	Value	Setting	Value	Setting	Value	Setting	Value
SEnS	PT1	o1.t	0.10	AL1t	LHdo	AL2t	nonE
dP	1	o1.F	c.rEG	Ab1	n/a	Ab2	n/a
SSc	n/a	A.o1L	n/a	AL1L	-10.0	AL2L	n/a
FSc	n/a	A.o1H	n/a	AL1H	10.0	AL2H	n/a
Unit	°C	o1.AL	n/a	AL1	n/a	AL2	n/a
FiL	oFF	o1.Ac	dir	HAL1	0.5	HAL2	n/a
inE	our	o2F	AL	AL1d	oFF	AL2d	n/a
oPE	100	o2.AL	1	AL1o	n/a	AL2o	n/a
io4.F	nonE	o2Ac	rEU				
diF1	oFF	o3F	nonE				
diF2	n/a	o3.AL	n/a				
di.A	0	o3Ac	n/a				
		o4F	nonE				
		o4.AL	n/a				
		o4Ac	n/a				
Group 'AL3'		Group 'LbA'		Group 'rEG'		Group 'SP'	
Setting	Value	Setting	Value	Setting	Value	Setting	Value
AL3t	nonE	LbAt	oFF	cont	PID	nSP	1
Ab3	n/a	LbSt	n/a	Auto	0	SPLL	10
AL3L	n/a	LbAS	n/a	Aut.r	oFF	SPHL	40
AL3H	n/a	LbcA	n/a	SELF	No	SP	20
AL3	n/a			HSEt	n/a	SP2	n/a
HAL3	n/a			cPdt	n/a	SP3	n/a
AL3d	n/a			Pb	5	SP4	n/a
AL3o	n/a			ti	50	A.SP	n/a
				td	1	SP.rt	trin
				Fuoc	0.50	SPLr	loc
				tcH	2	SP.u	inF
				rcG	1	SP.d	inF
				tcc	2		
				rS	n/a		
				Str.t	KM3 only		
				db.S	KM3 only		
				od	oFF		
				St.P	0		
				SSt	oFF		
				SS.tH	999.9		



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Operating Manual; Controller Operation

Annex E-5P

DOCUMENT DETAILS

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Group 'tin'		Group 'PrG'		Group 'PAn'		Group 'Ser'	
Setting	Value	Setting	Value	Setting	Value	Setting	Value
tr.F	nonE	Pr.F	nonE	PAS2	20	Add	1
tr.u	n/a	Pr.u	n/a	PAS3	40	bAud	9600
tr.t1	n/a	Pr.E	n/a	PAS4	300	trSP	nonE
tr.t2	n/a	Pr.Et	n/a	uSrb	nonE		
tr.St	n/a	Pr.S1	n/a	diSP	SPo		
		Pr.G1	n/a	di.CL	0		
		Pr.t1	n/a	AdE	2.0		
		Pr.b1	n/a	diS.t	oFF		
		Pr.E1	n/a	FiLd	oFF		
		Pr.S2	n/a	dSPu	AS.Pr		
		Pr.G2	n/a	oPr.E	ALL		
		Pr.t2	n/a	oPEr	Auto		
		Pr.b2	n/a				
		Pr.E2	n/a				
		Pr.S3	n/a				
		Pr.G3	n/a				
		Pr.t3	n/a				
		Pr.b3	n/a				
		Pr.E3	n/a				
		Pr.S4	n/a				
		Pr.G4	n/a				
		Pr.t4	n/a				
		Pr.b4	n/a				
		Pr.E4	n/a				
		Pr.St	n/a				
Group 'COn'		Group 'CAL'					
Setting	Value	Setting	Value				
Co.tY	oFF	AL.P	0				
UoLt	n/a	AL.o	!TEST RIG!				
cur	n/a	AH.P	999.9				
h.Job	n/a	AH.o	!TEST RIG!				
t.Job	0						

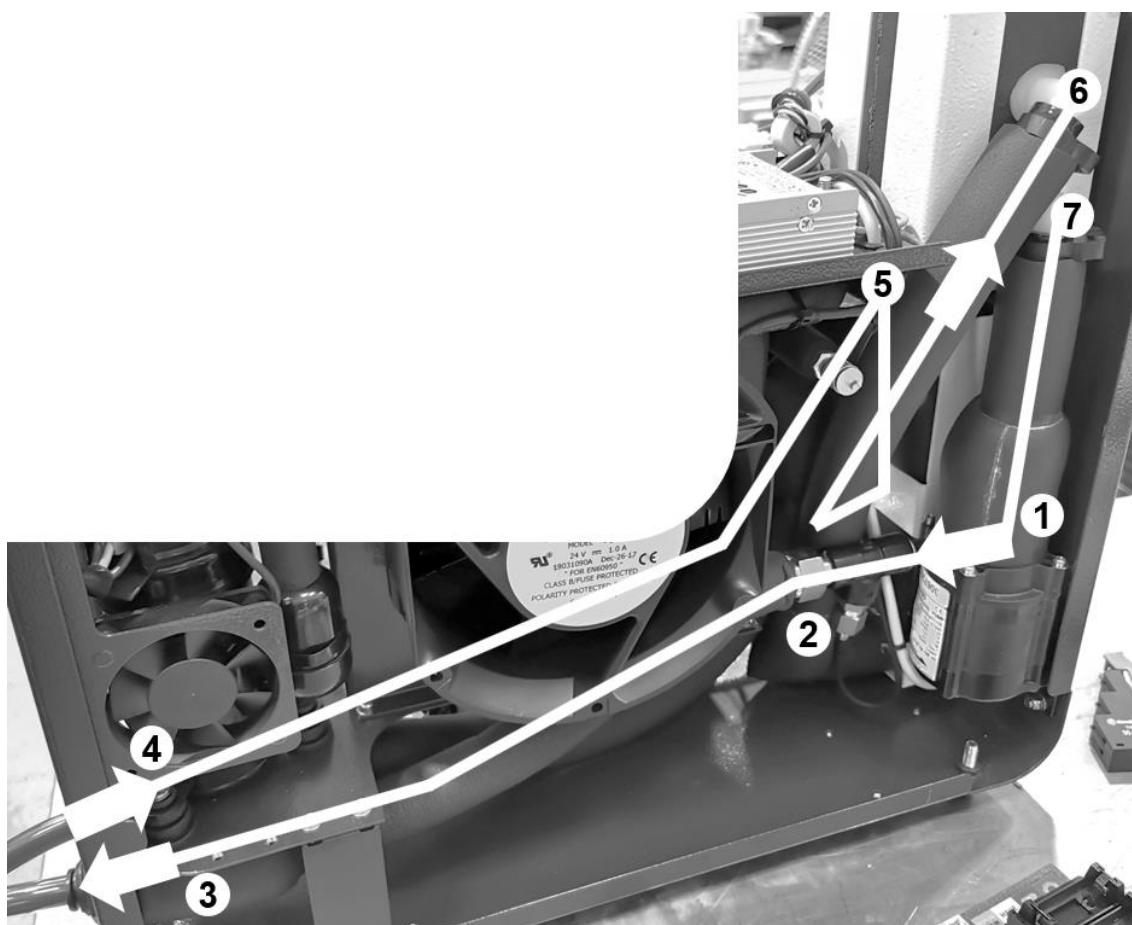
DOCUMENT DETAILS

Date	10/JUN/2022	Author(s)	MJH	Page	1 / 2	Revision	2
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CENTRIFUGAL OR TURBINE PUMP WITHOUT RELIEF

This arrangement comprises a centrifugal or turbine type pump without any form of flowrate control or pressure relief downstream of the pump discharge. Without any relief, it is critical to ensure the pump is not deadheaded. In systems with low-pressure pumps and no control valves in the connected application, this approach provides a simple and cost-effective water circuit, albeit one more prone to failure through lack of safety devices. This annex describes ATC's default settings and how to adjust the system.

REPRESENTATIVE COMPONENT LAYOUT & FUNCTIONS (IMAGE BELOW FROM EM05)



A

It is important to understand the basic principle that all else being equal, higher flow results in a higher demand for pressure to overcome forces of friction and viscosity. The pump motor generates the motive force required to turn the pump head and create that pressure.

B

The more restrictive a water circuit is, the higher the pressure required to maintain flowrate. Centrifugal and turbine-type pumps are designed to generate lower pressure and higher flowrates. They are mechanically loose which usually leads to a longer lifetime in service.

1

Pump discharge – centrifugal is gravity fed and discharges at 90deg to the inlet.

2

Temperature sensor – may or may not be present on your unit, but temperature is governed at the outlet.

3

Front outlet bulkhead fitting – see Annex C for specific information about connecting to the unit.

4

Front inlet bulkhead fitting (hidden) – as above.

5

Return to Plate Heat Exchanger (hidden) – layouts vary, but in this unit, we return to the PHE. Other layouts may see a return to tank or return to airblast coil.

6

Tank return – the 'no relief' system pictured has returned to tank. Some systems will go straight to pump.

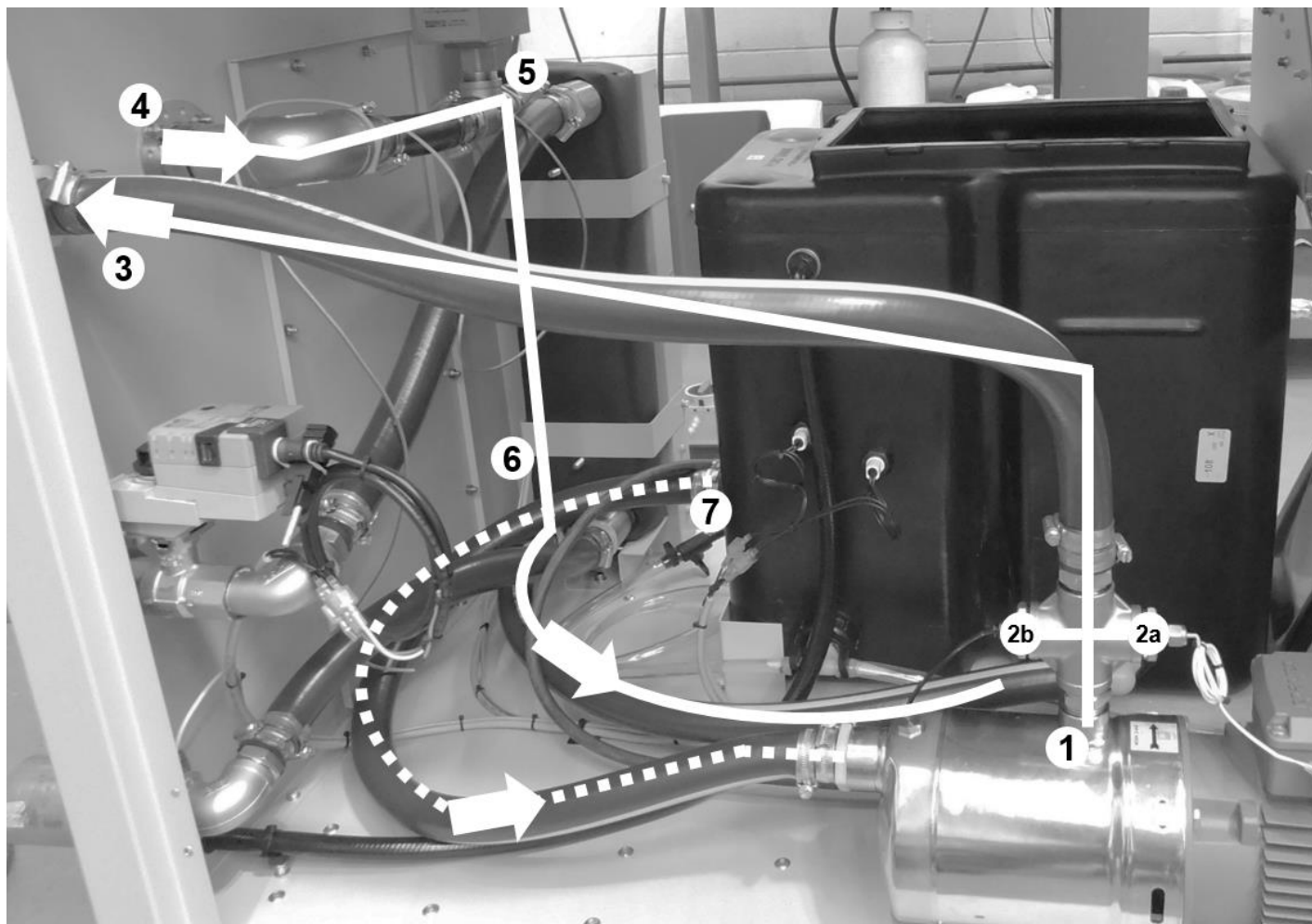
7

Tank suction – the feed to the pump to begin the path again.

DOCUMENT DETAILS

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ADDITIONAL REPRESENTATIVE LAYOUT (IMAGE BELOW FROM XF050)



With the following exceptions, the numbered descriptions apply as per page 1;

- | | |
|-----------|--|
| 2a | Temperature sensor – as per page 1. |
| 2b | Pressure gauge connection – normally routed to front panel. |

DOCUMENT DETAILS

Doc. Date	19/FEB/2020	Author(s)	MJH	Page	1 / 1	Revision	2
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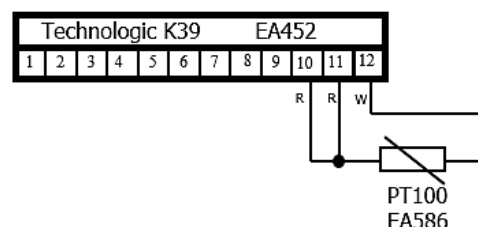
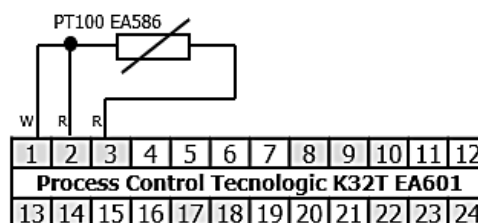
APPLICATION

This guide may apply to your issue if you have a chiller using an Ascon Tecnologic controller, and the display is currently showing dashes (- - -) instead of temperature values. Following this guide will provide enough information to determine if the controller is faulty, or if the PT100 is faulty.

INSTRUCTION

PT100 probes are platinum elements encased in the stainless sheath pictured right. To ascertain whether the PT100 is in good health;

- 1) Power down the chiller and isolate it.
- 2) Remove the cover(s) of the chiller to gain access to the probe.
- 3) Leaving the probe installed in the water circuit, identify the three small gauge wires (2x red, 1x white) connected to the controller.
 - a. The controller schematics pictured below right show where the wires are connected to on your chiller.
 - b. The controller model number will be visible on either the front of the controller, or the labels on the controller inside the chiller.
- 4) Ensure the wires are firmly in position and the controller's terminal block has a good grip.
 - a. If the wiring has loose strands outside, remove the wiring from the screw terminations, cut, strip and re-seat.
 - b. See if the reseating has cured the issue by powering the unit back up again.
- 5) Assuming the display still shows "- - -", power down the unit, isolate and remove the 3 wires from the controller.
- 6) Take a multimeter and set it to resistance mode. Place one probe on the single white wire, and the other probe on either of the red wires.
- 7) PT100s read 100Ω at 0°C, and around 107Ω at +20°C. If you have a reading in this order, then the PT100 is healthy, and the controller is faulty.
- 8) If your multimeter reads a value in the MΩ range, the high resistance indicates either the wire has been pulled from the platinum element, or the element itself has fractured, causing a break in continuity. Naturally, this requires a probe replacement.
- 9) It is always useful to have the probe returned to the us here to return to the manufacturer and ask for a failure analysis. Please consult with us to arrange return shipping.





Annex G-11

DOCUMENT DETAILS

Date	10/JUN/2022	Author(s)	MJH	Page	1 / 1	Revision	2
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GENERIC INITIAL TROUBLESHOOTING FOR XF050-, XF085-, XF120-BASED MODELS

SYMPTOM	POSSIBLE CAUSE
Unit not running	Check all three phases are delivering at least the rated minimum voltage. Check across L1-to-L2, L2-to-L3 and L3-to-L1. Where your product has a neutral, these checks can be made L1-to-N, L2-to-N, L3-to-N.
	Check the main incoming overload has not been tripped.
	Check the pilot light is present on the 24Vdc PSU. Without the PSU, the interlocks cannot start the pump or control.
	If the DC SUPPLY OK lamp is on, ensure the overload handle is turned to the on position.
	Check the tank is filled past the level switch to ensure it can run.
	Check the inverter screen (if fitted to your model) for any fault codes.
Noisy operation	Air in the system the has not purged. Bearing failure in rotating machinery causes noise – try to isolate specific components to identify the source of noise.
Fluid lines becoming fouled / containing biological matter	Not using opaque tubing can lead to UV light passing through the tubing, prompting growth of organisms.
	Not following maintenance schedule for cleaning/flushing.
Fluid seen leaking from system	Fluid may be incompatible with the materials used in chiller/cooler construction. Contact ATC to ensure the fluid is compatible.
	Rapid changes in system temperature can cause some materials to change shape at a different rate to others and open leak paths. Contact ATC to discuss alternative materials and parts in water circuit construction if your temperature range goes beyond the standard for this product range.
Poor cooling capacity (undercooling)	Excess application thermal heat load. See Annex G-2 for a description on how to calculate this.
	House/primary water temperature has increased from nominal requirement, or flow has reduced.
	Water regulating valve is not opening correctly or blocked by debris restricting water flow.
Excess cooling capacity (overcooling)	A reduction in flow of application water can lead to overcooling. Check for constrictions in the application lines. Review pressure gauge position for values typically seen in normal satisfactory operation.
	Check value that controller presents for outlet liquid temperature. A value reported that is higher than actual will force the controller to cool without need.
	Water regulating valve could be stuck open, allowing excess heat to be removed from the process water circuit.

DOCUMENT DETAILS

Date	26/MAR/2021	Author(s)	MJH	Page	1 / 1	Revision	1
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UNITS WITH MODULATING BALL VALVE FOR FLOW CONTROL

This guide may apply to your product if you have a house-water fed chiller that regulates process temperature by throttling the house water flowrate. This document explains how this works to aid troubleshooting and sales processes.

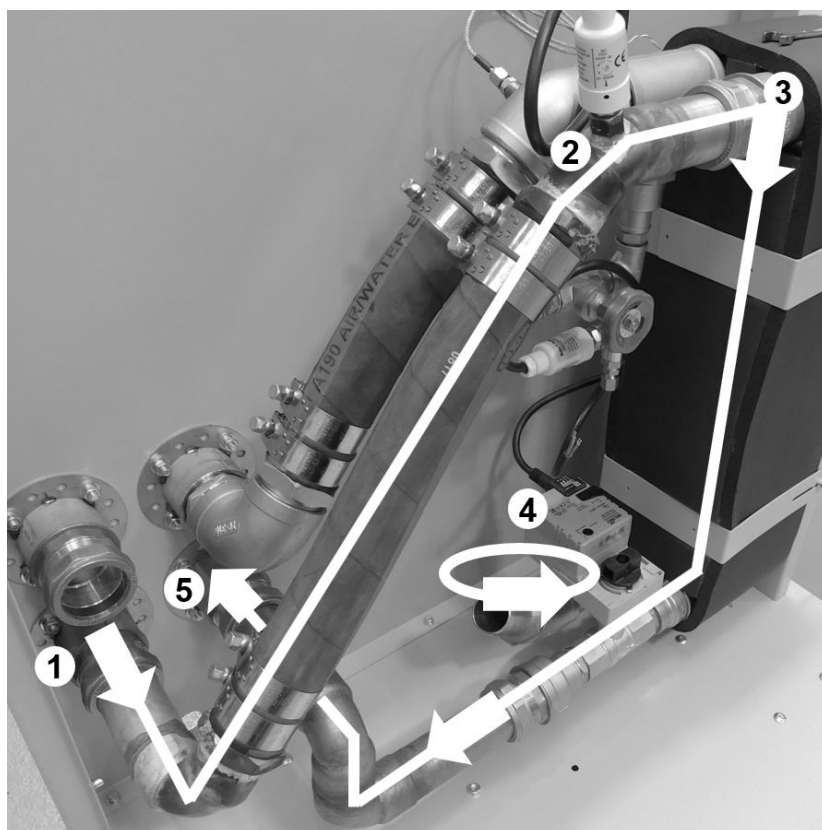
CONTROL HARDWARE

- 1 The modulating control valve assembly comprises a conventional ball valve with actuator to drive it. The actuator is driven by a standard modulating signal of 0-10Vdc and moves to the position defined by the signal from ATC's process control. Measuring voltage across terminal 'U' and ground provides a feedback signal for the actuator position. Mounting or removing the actuator is achieved by a single screw through the black plastic rotating assembly. The actuator can be fitted in 90° steps, where 0° must be the centerline of the valve body. To move from fully closed to fully open (90° rotation) or vice versa, should take 15s where signal is immediately applied to 0V or 10V. The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.



CONTROL STRATEGY

- 1 House water enters the product via a bulkhead fitting. This may be a different physical size or in a different location on your product, but it will always enter the enclosure first.
- 2 This unit shows an optional house water minimum pressure switch. Too low a pressure indicates fault. This switch is settable. It is upstream of the control valve (4) to ensure it does not show an error when the control valve is closed.
- 3 House water enters the plate heat exchanger. Through the other side, the process fluid is running at a constant flowrate and higher temperature. Design nominals are +10°K higher than house water provided for rated capacity.
- 4 The control valve downstream of the plate heat exchanger keeps the heat exchange full and pressurized to ensure that a partially open control valve doesn't spray/atomize incoming house water and render the system inefficient.
- 5 Heated house water now leaves at a similar temperature to the flow heading to the process. Outlet temperature depends on the inlet/supply temperature and thermal load on the unit.





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Operating Manual; Maintenance for End-Users

Annex H-2





DOCUMENT DETAILS

Date	26/MAR/2021	Author(s)	MJH	Page	1 / 1	Revision	3
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PERIODIC MAINTANENCE FOR WATER-COOLED PRODUCTS

This guide may apply to your unit if you have a water-condensed refrigerated unit, or a water-cooled water-to-water heat exchanger. These units do not rely on large/multiple cooling fans to reject heat to air, but instead reject heat into a house/primary/building/city water supply.

SCHEDULE & RECOMMENDED ACTIONS

	Caution: Failure to carry out service at the specified intervals may permanently damage your equipment.
	Caution: If the mains wiring becomes damaged, contact ATC or a qualified electrician who will be able to supply a replacement of the correct specification.
	Soft cloths and IPA are recommended for cleaning metallic surfaces. If any spillages have occurred, best practice is to allow the water to evaporate off and wipe up remaining glycol residue with a cloth. Always clean with power supply isolated.
	Print this sheet out and display close to the product to maximize the visibility of maintenance requirements.

Weekly	Check fluid level – top up as required.													
	1		2		3		4		5		6		7	
	8		9		10		11		12		13		14	
	15		16		17		18		19		20		21	
	22		23		24		25		26		27		28	
	29		30		31		32		33		34		35	
	36		37		38		39		40		41		42	
	43		44		45		46		47		48		49	
	50		51		52									

Annually	Drain process fluid and replace with fresh fluid.	
	Check for fluid leaks throughout product and application.	
	Check filters for accumulation of particulate matter.	
	Clear any dust and debris from inside the product.	
	Vacuum out electrical box	



Annex I-5

DOCUMENT DETAILS

Date	2/MAR/2021	Author(s)	MJH	Page	1 / 1	Revision	2
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MAINTENANCE FOR TECHNICIANS; GENERIC NON-REFRIGERATED UNITS

This guide may apply to your product if you have an X-Series (X, XF, XR) or A-Series product. The guidance below is designed to be non-specific and to raise awareness of potential dangers for a trained engineer carrying out service work.

GUIDANCE



Warning; during operation component temperatures can exceed +70°C, take care when opening unit.



Warning; After switching off, the cooling fan blades continue to rotate (A-Series only). Do not attempt servicing whilst the blades are rotating.



Warning; All products contain water and electricity in close proximity. Ensure the unit is isolated before service. Never bypass overcurrent protection on the mains supply. Never bypass fuses or circuit breakers.

1

Following service or repair by a trained technician, ensure any electrical connections that may have been disturbed are given the 'tug-test'.

2

Ensure earth bonding conductors are re-attached.

3

Ensure the correct fuses are in place.

4

Ensure the mains cord being used is to specification and is free from damage.

5

Subject the unit to a PAT test to ensure the unit is safe before running.

6

Ensure there are no leaks inside or outside the unit.

7

Using the wiring schematic for guidance, simulate faults to check each interlock's function.



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Operating Manual; Declarations & Approvals

Annex J-3

DOCUMENT DETAILS

Date	6/APR/2022	Author(s)	MJH	Page	1 / 1	Revision	1
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EU DECLARATION OF CONFORMITY

Document layout; Governed by Machinery Directive 2006/42/EC, Annex II.

REGISTERED BUSINESS ADDRESS

Applied Thermal Control Ltd, 39 Hayhill Industrial Estate, Barrow-upon-Soar, Loughborough, LE12 8LD, UK.

AUTHORISATION TO COMPILE THE TECHNICAL FILE

Mitchell Howard, address as above

DESCRIPTION & IDENTIFICATION OF MACHINERY

Generic denomination;	X-Series
Function;	Water Heat Exchanger
Model;	All with 'X', 'XR' and 'XF' prefix.
Type;	Water cooled heat exchanger.
Serial number;	
Commercial name;	As above.

NOTIFIED BODY

Not applicable

QUALITY ASSURANCE SYSTEM

QMS International Ltd, Muspole Court, Muspole Street, Norwich, NR3 1DJ, UK. ASCB Registered; 201409-2

DECLARATION

Applied Thermal Control declares that the machinery described above fulfils all the relevant provisions of the directives and standards below.

Directive	Harmonised Standards applied
Machinery Directive 2006/42/EC (inclusive Low Voltage Directive 2014/35/EU)	EN ISO 12100:2010 (MD) BS EN 61010-1:2010+A1:2019 (LVD)
EMC Directive 2014/30/EU	IEC 61000-6-2:2005 IEC 61000-6-4:2006 +A1:2011
RoHS Directive 2011/65/EU (RoHS 2) RoHS Directive (EU) 2015/863 (RoHS 3)	EN IEC 63000:2018
Pressure Equipment Directive (2014/68/EC)	Out of Scope. Sound Engineering Practice (SEP) applied.

PERSON EMPOWERED TO DRAW UP DECLARATION

Robert Poniatowski, CEO
Signed in Barrow-upon-Soar, UK, date 6/APR/2022



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Operating Manual; Declarations & Approvals

Annex J-5

DOCUMENT DETAILS

Date	03/FEB/2021	Author(s)	MJH	Page	1 / 1	Revision	01
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CONFLICT MINERALS COMPLIANCE STATEMENT

Applied Thermal Control (ATC) adheres to and embraces the ethical values that support our everyday activities. As an expression of these principles and ethical values, ATC adheres to the principle of responsible sourcing of components containing precious and non-precious metals and metal salts in compliance with applicable laws and regulations.

The metals considered are Tantalum (Ta), Tungsten (W), Tin (Sn) and Gold (Au). ATC actively sources components from suppliers known to be reputable and could demonstrate compliance upon request with the Conflict Minerals acts and guidelines.

ATC uses Gold and Tin in electrical components, on PCBs and in rotating machinery, as governed by technical requirements of products. These metals could potentially originate from conflict mineral sites. As many of our suppliers do not purchase these metals direct from smelters, both they and ATC must rely heavily on information that will be provided by their suppliers to determine the source and chain of the metals in those products.

ATC is committed to working with its customers and supply chain to meet the customer's specification and requirements with regards to traceability, sourcing requirements and restrictions. ATC commits that, to the best of our knowledge, our suppliers are complying with the conflict minerals act as stated in their documentation. These statements are reviewed, and updates obtained as required.

Mitchell Howard, Technical Manager
Signed in Coalville, UK, date 6/JUL/2020



Annex J-7

DOCUMENT DETAILS

Date	03/FEB/2021	Author(s)	MJH	Page	1 / 1	Revision	01
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WHAT IS THE REACH REGULATION 1907/2006?

REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry. REACH places the burden of proof on companies. To comply with the regulation, companies must identify and manage the risks linked to the substances they manufacture and market in the EU. They have to demonstrate to ECHA how the substance can be safely used, and they must communicate the risk management measures to the users. If the risks cannot be managed, authorities can restrict the use of substances in different ways. In the long run, the most hazardous substances should be substituted with less dangerous ones. REACH stands for Registration, Evaluation, Authorization and Restriction of Chemicals. It entered into force on 1/JUN/2007.

REACH 'ARTICLE' COMPLIANCE CONSIDERATIONS

REACH ANNEX XVII COMPLIANCE

Substances under Annex XVII are restricted either in full (not to be used at all) or for specific uses (can be used in some uses but cannot be used in identified uses).

Applied Thermal Control has contacted all our suppliers and to the best of our knowledge, none of the articles that we sell intentionally contain any of the Annex XVII substances currently on the candidate list in concentrations of >0.1% by weight.

REACH ANNEX XIV COMPLIANCE

Substances under Annex XIV require authorization to use in the EU after sunset date, require communication to downstream recipients when over threshold (0.1% w/w at article level) and require notification to ECHA when SVHC over threshold and imported over 1000kg annually and use not already registered.

Applied Thermal Control has contacted all our suppliers and to the best of our knowledge, none of the articles that we sell intentionally contain any of the Annex XVII substances currently on the candidate list in concentrations of >0.1% by weight.

SVHC LIST COMPLIANCE

Substances of Very High Concern (SVHC) require communication to downstream recipients when over threshold (0.1% w/w at the article level), notification to the European Chemicals Agency (ECHA) when SVHC over threshold and when imported over 1000kg annually and use not already registered.

Applied Thermal Control has contacted all our suppliers and to the best of our knowledge, none of the articles that we sell intentionally contain any of the Annex XVII substances currently on the candidate list in concentrations of >0.1% by weight.

DECLARATION

Mitchell Howard, Technical Manager
Signed in Barrow-upon-Soar, UK, date 15/JUL/2020



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Operating Manual; Declarations & Approvals

Annex J-8

DOCUMENT DETAILS

Date	03/FEB/2021	Author(s)	MJH	Page	1 / 1	Revision	01
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WHAT IS THE POPs REGULATION 2019/1021?

POPs stands for persistent organic pollutants. In Europe, the global Stockholm Convention is implemented through POPs legislation. POPs are organic substances that persist in the environment, accumulate in living organisms and pose a risk to our health and the environment. They can be transported by air, water or migratory species across international borders, reaching regions where they have never been produced or used. International risk management is necessary as no region can manage the risks posed by these substances alone.

The European Parliament (and Council) issued regulation 2019/1021 on 20/JUN/2019, and further amended (regulation 2020/784) on 8/APR/2020.

POPs LISTED UNDER INITIAL REGULATION 2019/1021

Pesticides;

Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene.

Industrial Chemicals;

Hexachlorobenzene, Polychlorinated Biphenyls (PCBs).

Industrial Chemical Byproducts;

Hexachlorobenzene byproducts;

Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF), and PCBs.

POPs LISTED UNDER AMENDMENT 2020/784

Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds.

POPs COMPLIANCE STATEMENT

We certify that to the best of our knowledge, based upon up-to-date information from our suppliers, all products supplied by Applied Thermal Control are fully POPs compliant in accordance with regulations and amendments above mentioned.

DECLARATION

Mitchell Howard, Technical Manager
Signed in Barrow-upon-Soar, UK, date 27/AUG/2020



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Operating Manual; Declarations & Approvals

Annex J-10

DOCUMENT DETAILS

Date	03/FEB/2021	Author(s)	MJH	Page	1 / 1	Revision	02
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WHAT IS THE RoHS DIRECTIVE?

The RoHS Directive places restrictions on the use of certain hazardous substances in electrical and electronic equipment (EEE). RoHS compliance has been required for many years, however in 2014 it became a mandatory requirement under CE Marking. ATC products do not clearly fall within any of the existing categories of equipment, but as of 23/JUL/2019, all EEE not covered falls within scope of the directive. In contrast to RoHS 1, RoHS 2 is a CE marking Directive, and requires, for finished EEE, the use of the CE mark on the product to show compliance. The responsibility for affixing the CE mark resides with the manufacturer.

RoHS 1 2002/95/EC

Adopted in February 2003 by the EU and taking effect on 1/JUL/2006, RoHS 1 restricted the use of 6 hazardous materials;

- 1) Lead (Pb)
- 2) Mercury (Hg)
- 3) Cadmium (Cd)
- 4) Hexavalent Chromium (Cr6+)
- 5) Polybrominated Biphenyls (PBB)
- 6) Polybrominated Diphenyl Ether (PBDE)

We certify that to the best of our knowledge, based upon up-to-date information from our suppliers, all products supplied by Applied Thermal Control are fully RoHS 1 compliant.

RoHS 2 2011/65/EU

Adopted in July 2011 by the EU and taking effect on 2/JAN/2013, RoHS 2 expands the scope of RoHS 1 by adding new categories. RoHS 2 compliance is required to CE mark the product. Compliance with RoHS 2 is mandatory from 22/JUL/2019.

We certify that to the best of our knowledge, based upon up-to-date information from our suppliers, all products supplied by Applied Thermal Control are fully RoHS 2 compliant.

RoHS 3 2015/863/EU

Adopted in 2015 by the EU and taking effect from 22/JUL/2019, RoHS 3 adds four additional substances to RoHS 1's list.

- 1) Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm
- 2) Benzyl butyl phthalate (BBP): < 1000 ppm
- 3) Dibutyl phthalate (DBP): < 1000 ppm
- 4) Di-isobutyl phthalate (DIBP): < 1000 ppm

We certify that to the best of our knowledge, based upon up-to-date information from our suppliers, all products supplied by Applied Thermal Control are fully RoHS 3 compliant.

DECLARATION

Mitchell Howard, Technical Manager
Signed in Barrow-upon-Soar, UK, date 11/NOV/2020



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Operating Manual; Declarations & Approvals

Annex J-19

DOCUMENT DETAILS

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UKCA DECLARATION OF CONFORMITY (DoC)

Demand created by;	The Product Safety and Metrology etc. (Amendment etc.) (EU Exit) Regulations 2019
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REGISTERED BUSINESS ADDRESS

Applied Thermal Control Ltd, 39 Hayhill Industrial Estate, Barrow-upon-Soar, Loughborough, LE12 8LD, UK.

AUTHORISATION TO COMPILE THE TECHNICAL FILE

Mitchell Howard, Applied Thermal Control Ltd, 39 Hayhill Industrial Estate, Barrow-upon-Soar, Loughborough, LE12 8LD, UK.

DESCRIPTION & IDENTIFICATION OF MACHINERY

Generic denomination;	X-Series
Function;	Water Heat Exchanger
Model;	All with 'X', 'XR' and 'XF' prefix.
Type;	Water cooled heat exchanger.
Serial number;	
Commercial name;	As above.

NOTIFIED BODY

Not applicable

QUALITY ASSURANCE SYSTEM

QMS International Ltd, Muspole Court, Muspole Street, Norwich, NR3 1DJ, United Kingdom.
ASCB Registered; 201409-2

DECLARATION

The manufacturer declares that the machinery described above is in conformity with the relevant statutory requirements applicable to the specific product. The manufacturer takes full responsibility for the product's compliance.

- Supply of Machinery (Safety) Regulations 2008
- Electromagnetic Compatibility Regulations 2016
- Electrical Equipment (Safety) Regulations 2016
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

PERSON EMPOWERED TO DRAW UP DECLARATION

Robert Poniatowski, CEO
Signed in Barrow-upon-Soar, UK, date 10/JUN/2022



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Operating Manual; Warranty Terms

Annex K-1

DOCUMENT DETAILS

Date	03/FEB/2021	Author(s)	RW, MJH	Page	1 / 1	Revision	02
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WARRANTY TERMS

Please visit the website warranty registration page to ensure ATC can offer you the best possible support;

<https://www.app-therm.com/warranty-registration/>

a) For how long is my ATC product warrantied?

ATC provides a comprehensive return to base 2-year parts, 1-year labor warranty from delivery as standard on all new equipment, provided it has been installed and operated in accordance with the manual.

b) Where will ATC fulfill the product warranty?

ATC's standard warranty terms are Return to Base (RTB) – issues with chillers are often easily solvable over the phone or email, or by reviewing ATC's technical guidance on the web and in the product manual. On occasion, at the discretion of ATC, goods may be serviced on site FOC or a service loan unit may be supplied. Warranty cover excludes the cost of travel by engineers and loan unit rental charges. Obtaining onsite service for a product, even in full warranty, is a chargeable service.

c) Who is liable for shipping charges in the event of warranty failure?

During the **first year** of the warranty period, freight costs for shipping to ATC are for the customer's account. Freight costs for shipping from ATC are for ATC's account.

During the **second year** of the warranty, freight costs to and from ATC are for the customer's account.

d) I'm experiencing problems with my chiller. It's within warranty – what do I do next?

Contact ATC to discuss the issue you are having. The contact details in the header of this document are an ideal place to start. Be sure to have your model number and serial number on-hand to aid those attempting to solve remotely.

e) Telephone support couldn't fix my chiller – what do I do next?

An RMA form must be completed. This allows both the end-user and ATC to clarify your details, to set the party responsible for shipping costs, and to set a different return address if desired. Shipping advice is provided, and the end-user must sign a declaration that states the unit is safe to handle. Return the form by email for fastest response.

f) What happens if my chiller failed outside warranty or requires non-warranty repair work?

A purchase order will be requested to cover an initial inspection – this will only be invoiced if the inspection shows there is no fault. If packaging is required, i.e. a crate, a separate charge will be levied. If the end user prefers ATC to arrange a collection, a shipping charge may be levied.

g) Our process must continue running – can we have a loan unit whilst our chiller is in repair?

ATC hold several standard air-cooled chillers at the factory for the sole purpose of offering for loan – these are available on a first-come, first-serve basis. Models up-to 3kW capacity are available.



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Operating Manual; Standard Options

Annex L-12

DOCUMENT DETAILS

Date	10/JUN/2022	Author(s)	MJH	Page	1 / 1	Revision	2
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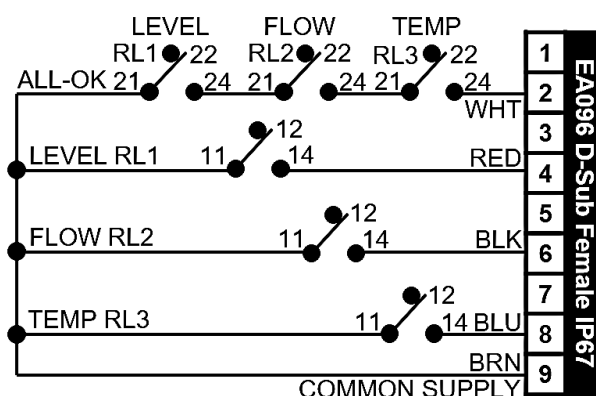
SA00012 VOLT FREE CONTACTS STANDARD OPTION

SA00012 provides access to switches to describe certain system conditions. The switches do not have voltage across them, they are 'volt-free' – the end-user or system builder can apply their own control system voltages. This approach is less complex than communications protocols such as RS485, but more limited in function.

WIRING

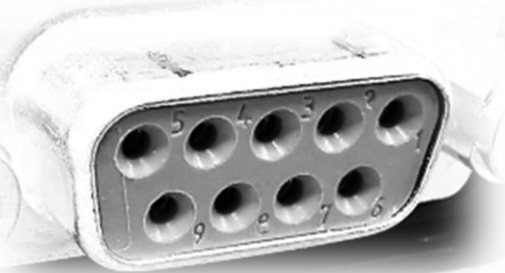
1

Volt-free contacts (sometimes called volt-free switches) are electrical circuits that open or close depending on the state of relays driven by hardware conditions elsewhere in the product. **Temperature** (pins 8&9) is captured from a controller output – this parameter can be easily adjusted, but factory setting is to go open-circuit within $\pm 10^{\circ}\text{C}$ of setpoint. **Flow** (pins 6&9) is captured from either a flow switch or a controller reading pulses from a flow meter. Flow switches may be fixed or adjustable but will always have hysteresis built-in. Flow sensors can have a single switching point. Circuit becomes unmade on low-flow. **Level** (pins 4&9) is captured from a reed switch in the tank. By default, this signal is open-circuit once the fluid level is too low and the pump has stopped. **All-OK** (pins 2&9) combines the three signals onto a single pin pairing, sharing the same open-circuit=not OK logic.



2

Dependent on your product type, signals will either be accessible via a standard two-row 9-pin D subminiature connector (see below left) OR direct connection to terminal blocks (see below right). Where a D connector is provided, the female gender (ATC PN EA096) is supplied in all cases. If male pins are required, we recommend using a male-to-male gender-changer connector (ATC PN EA853). Pin numbers are clearly marked on the molding. The connector is rated to IP67.



3

Relays used in this standard option pack have the following ratings;

AC-1 (AC resistive loads)
230Vac@8A (D-connector limited)

AC-15 (AC electromagnetic loads)
230Vac@3A (D-connector limited)

DC-13 (DC electromagnetic loads)
24Vdc@2A



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Operating Manual; Recommended Spares

Annex M-2

DOCUMENT DETAILS

Date	10/JUN/2022	Author(s)	MJH	Page	1 / 2	Revision	2
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RECOMMENDED SPARES FOR XF050 / XF085 / XF120 & THEIR NON-STANDARD VARIANTS

Recommended spares include all rotating machinery (i.e. motors, fans), all sacrificial elements (i.e. fuses), all major electrical components (i.e. overloads), sensors (i.e. pressure switches, PT100s) and parts that users interact with (dials, fittings). Pricing is available from sales@app-therm.com.

XF050 / XF085 / XF120 COMMON PARTS

PN	Description	QTY
60-811	LAMP-round, 22mm LED, 24Vac/dc, green	varies
61-591	CONTROLLER-KR3T-LCIRRD 4-20mA, 2 x relay, SSR	1
EA379	SWITCH-level, external mt 22mm	2-3
EA761	SENSOR-temperature PT100-SS, 3x80mm	1
64-415	POWER SUPPLY-DIN mount 180-550V,24Vdc, 2.5A	1
WA308	GAUGE-pressure, 63mm 0-11bar	1
74-709	PROTECTION-plug 1-1/2" BSP x 11	4
85-932	HANDLE-tee caulking cam key	1
EA787	FAN/MOTOR 1W, 24VDC 60 x 60 x 15mm, 13cfm	1
EA834	RELAY 8A, 24Vdc, DPCO	3
EA848	FUSE – T0.5A H250V UL-OK	1
WA768	VALVE – 1/2" barb, 1/4" turn (for drain use)	1

XF050 SPECIFIC

WA862	TANK – 55L	1
74-460	ACTUATOR – Motorized, 0-10V	1
74-474	VALVE – Ball, driven	1
63-2007	PUMP – P80	1
EA643	OVERLOAD – 4-6.3A	1

XF085 SPECIFIC

TBC	TANK	1
TBC	ACTUATOR	1
TBC	VALVE	1
TBC	PUMP – P120	1
TBC	OVERLOAD	1

XF120 SPECIFIC

74-639	TANK – 91L	1
EA930	ACTUATOR - Motorized, 0-10V	1
WA889	VALVE - Ball, driven	1
WA884	PUMP – P150	1
EA253	OVERLOAD – 6-10A	1



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Operating Manual; Recommended Spares

Annex M-2

DOCUMENT DETAILS

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X120N389 SPECIFIC

PN	Description	QTY
WA501	PUMP H'zontal Multistage 304SS AQQE Seal	1
WA757	DPM Weighted Filter 1" Hose Barb	1
63-333	INVERTER-3ph - 3ph 400V, 4 kW	1
61-207	SWITCH-pressure, brass 0.7 to 5 bar, 1/8 BSP M	2
61-329	SWITCH-rotary, head 22mm 2 position stay put	1
70-150	VALVE-brass, gate 1/2" BSP	1
60-051	OVERLOAD-thermo mag 3 phase, 7-10A	1
60-813/C	LAMP-round, 22mm LED, 24Vac/dc, red	3
62-7174	CONNECTOR-plug, 4 pin 10A, 600V	1
62-7175	CONNECTOR-housing Latched	1