

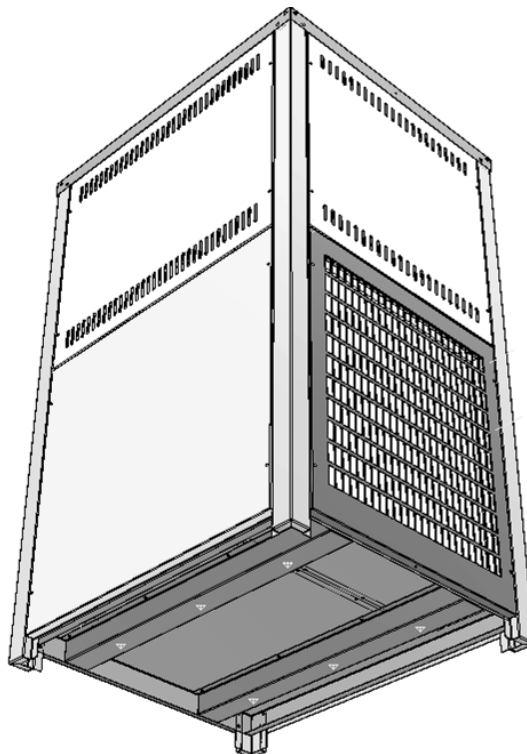
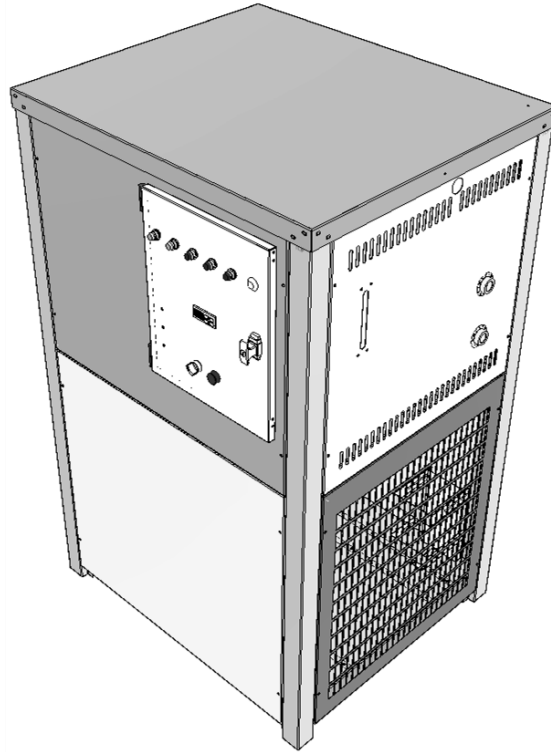


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Installation, Operation & Service Manual W-Series

DOCUMENT DETAILS

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W-Series

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CHANGE LOG

Date	Revision	Page ref	Change
14/JUN/2022	1	ALL	First release



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PRODUCT SPECIFICATIONS

	W08	W16	W24	W32	W40
Enclosure no.	MA323	MA420	MA378	MA407	MA407
Width	W980mm	W985mm	W1180mm	W1180mm	W1180mm
Depth	D680mm	D895mm	D1000mm	D1000mm	D1000mm
Height	H1480mm	H1580mm	H1733mm	H1733mm	H1733mm
Dry weight	199kg	254kg	325kg	385kg	420kg
Wet weight	269kg	344kg	505kg	585kg	620kg
Noise level	74dBA@1m	74dBA@1m	70dBA@1m	67dBA@1m	67dBA@1m
Acceptable environment	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor
Components IP rating	IP54 (or better)	IP54 (or better)	IP54 (or better)	IP54 (or better)	IP54 (or better)
Toolless access	No	No	No	No	No
Cooling technology	Vapour compression	Vapour compression	Vapour compression	Vapour compression	Vapour compression
Evaporator technology	Brazed Plate HE	Brazed Plate HE	Brazed Plate HE	Brazed Plate HE	Brazed Plate HE
Cooling capacity at +30°C ambient	8kW	16kW	24kW	32kW	40kW
Refrigerant	R407C	R407C	R407C	R407C	R407C
Setpoint standard range	+5 to +25°C	+5 to +25°C	+5 to +25°C	+5 to +25°C	+5 to +25°C
Control method	Compressor on/off	Compressor on/off	Compressor on/off	Compressor on/off	Compressor on/off
Temperature stability	±1°C	±1°C	±1°C	±1°C	±1°C
Setpoint resolution	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C
Total Heat Rejection (THR)	13.5kW	22kW	31kW	41kW	52kW
Ambient temperature range	+10 to +40°C	+10 to +40°C	+10 to +40°C	+10 to +40°C	+10 to +40°C
Cold start support	N/A	N/A	Crankcase heater	Crankcase heater	Crankcase heater
Fluid tank volume	70L	90L	180L	200L	200L
Sight tube level gauge	Yes	Yes	Yes	Yes	Yes
Tank drain facility	Yes	Yes	Yes	Yes	Yes
Fluid connections	1" BSPPF	1" BSPPF	1" BSPPF	1.5" BSPPF	1.5" BSPPF
Pump options (*nominal)	P10, P17, P25*	P17, P25, P40*	P25, P40*	P40, P80*	P80*, P120
Chemical compatibility	Water / Water-glycol	Water / Water-glycol	Water / Water-glycol	Water / Water-glycol	Water / Water-glycol
Temperature out of range DRO	Standard	Standard	Standard	Standard	Standard
Compressor HP switch	Standard	Standard	Standard	Standard	Standard
Hydraulic magnetic overloads	Standard	Standard	Standard	Standard	Standard
Supply on indicator lamp	Standard	Standard	Standard	Standard	Standard
System running indicator lamp	Standard	Standard	Standard	Standard	Standard
Water low indicator lamp	Standard	Standard	Standard	Standard	Standard
Pump fault indicator lamp	Standard	Standard	Standard	Standard	Standard
Refrigeration fault indicator lamp	Standard	Standard	Standard	Standard	Standard
Over/under pressure cut-outs.	Standard	Standard	Standard	Standard	Standard
Coolant under temperature switch	Standard	Standard	Standard	Standard	Standard
Low Pump flow switch	Standard	Standard	Standard	Standard	Standard
Low coolant level switch	Standard	Standard	Standard	Standard	Standard
1 st party approvals	UKCA, CE	UKCA, CE	UKCA, CE	UKCA, CE	UKCA, CE
3 rd party approvals	None	None	None	None	None



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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 6 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 mains fusing. Never bypass this component.



Warning; 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.



Warning; Any temporary electrical supply to the chiller should be correctly earthed and connected through an earth leakage trip.



Warning; In case of unexpected coolant leakage, safety glasses should always be worn when the chiller is operated with the covers removed.



Warning; Under no circumstances leave the cooler unattended with the side panels removed.



Warning; Never alter settings of pressure switches, overloads, circuit breakers or any safety device without first consulting Applied Thermal Control.



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Installation, Operation & Service Manual W-Series

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INCLUDED ANNEXES

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

- Annex A-3 201105 Shipping & Unpacking - Crane or forklift required
- Annex B-15 220614 Site & Environmental Requirements for W-Series
- Annex C-5 220309 Installation - Generic air-cooled with 1.5inch fittings
- Annex C-6 220309 Installation - Generic air-cooled with 0.5inch fittings
- Annex C-8 220309 Installation - Generic air-cooled with 1.0inch fittings
- Annex D-7 211129 Fluid Handling & Startup Procedures - W-Series
- Annex E-15 210301 KR1 - how to use
- Annex E-15G 220328 KR1 Program W-Series
- Annex F-6 220311 Centrif or turbine pump using throttling valve
- Annex G-15 220614 Troubleshooting - Initial help for air-cooled W-Series
- Annex H-1 191121 End-user maintenance - air-cooled units with water as fluid
- Annex I-1 210830 Maintenance for technicians - Generic refrigerated units
- 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-9 220406 EU DoC W-Series
- Annex J-10 201111 EU Compliance Statement RoHS
- Annex J-14 211124 UKCA DoC W-Series
- Annex K-1 200623 Standard warranty terms of ATC
- Annex L-12 220610 Volt Free Contacts
- Annex L-23 220614 On-off fan control
- Annex L-51 220614 Remote Stop-Start
- Annex M-10 220614 Recommended spares, W-Series
- Annex R-2 120701 SDS Refrigerant HFC-R407C
- Annex R-3 200203 SDS Hexid A4 v6.4



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Operating Manual; Shipping & Unpacking

Annex A-3

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SHIPPING & UNPACKING – CRANE OR FORKLIFT REQUIRED

Please check that both the packaging and the unit are undamaged. If there is any doubt, it is vital that you inform both ATC and the carrier. If possible, unpack the unit before signing. Once you have signed for the goods, ATC cannot be held responsible for any transit damage subsequently found.

Remove the unit from its original packaging and ensure that there is no packaging left around the cooling ducts. There is no internal product packaging that requires the product to be opened.

When moving the unit, ensure pallet truck or forklift are rated appropriately for weight. Moving the unit off the pallet should be done with either a forklift (using forklift guide channels if present on your product) or slings and a crane (unless lifting eyebolts (craning points) are present on your product). Positioning the unit on the shopfloor can be achieved by moving on castors (if present) or using a pallet truck – if your unit has rigid feet, once positioned, screw down the four adjustable floor pads until the weight is taken off the castors. Tighten the locking nuts when adjusted.

Please retain all packaging in the unlikely event that the chiller needs to be returned to our local representatives.



Annex B-15

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SITE & ENVIRONMENTAL REQUIREMENTS FOR W-SERIES

This guide may apply to your product if it is a standard model from the W-Series. It describes the requirements for all services and conditions necessary for years of trouble-free running. If you require more detail, please contact ATC for support using the 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, -20°C to +40°C.
- 4 **Operating humidity range.** 80%RH for ambient temperatures up to +31°C (+88°F), decreasing linearly to 50%RH 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 W-Series units are three phase chillers. Mains supply via an earth leakage detecting residual current device (RCD) is recommended. Current consumption quoted is based on nominal pump sizes described in product specification table. 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	W08	W16	W24	W32	W40
Supply suffix	-3	-3	-3	-3	-3
Nominal voltage	400Vac	400Vac	400Vac	400Vac	400Vac
Voltage tolerance	±5%	±5%	±5%	±5%	±5%
Frequency	50Hz	50Hz	50Hz	50Hz	50Hz
Supply mode	3P+N+E	3P+N+E	3P+N+E	3P+N+E	3P+N+E
Current (L-L)	15A	22A	28A	TBC	TBC
Current (L-N)	8.5A	12.5A	16A	TBC	TBC
Fan overload	Fuse, T4A	Fuse, T4A	TBC	TBC	TBC
Compressor overload	GV2, 6-10A	GV2, 6-10A	TBC	TBC	TBC
Pump overload	GV2, 4-6.3A	GV2, 4-6.3A	TBC	TBC	TBC
PSU overload	Fuse, T0.5A	Fuse, T0.5A	Fuse, T0.5A	Fuse, T0.5A	Fuse, T0.5A
- 7 **Cooling airflow supply.** Standard W-series chillers are engineered for nominal duty in ambient temperature of +30°C. The chiller will run up to ambient temperatures of +40°C without modification. Depending on heatload and ambient temperatures, the built-in cooling fan runs in an on-off control strategy.
- 8 **Clearance.** Clearance is required to achieve the following;
 - a) Ensure the electrical door can be opened fully and a human can always access the E-Stop button.
 - b) Fitting of hoses to the water-connections panel with appropriate hose/pipe bend radius.
 - c) Fitting of electrical supply cable gland with appropriate cable bend radius.
 - d) Access to maintenance side panels when they need to be removed.
 - e) Air-on and air-off faces require at least 0.5m, preferably 1m. Any ducting or blocked vent faces will lead to reduced performance and possibly shortened product life. The exact amount of clearance can be determined by the OEM or end user.
- 9 **Plumbing.** Tubing, piping or hose must be clean and compatible with the fluid to be used. The product is compatible with tap water and water-glycol mixtures such as Hexid A4 and A6. Ensure connected pipework does not apply undue load on the chiller's pump. Where tap water is used, ensure the chiller is specified with frost protection option if ambient temperatures is expected to be lower than +8°C.
- 10 **Outdoor & Indoor use OK.** Altitude up to 2000m above sea level. Ensure the unit has adequate ventilation. Where possible, it is still recommended to shelter the chiller from the sun.



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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.



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 AIR-COOLED UNITS WITH 1-1/2" BSPPF FITTINGS

This guide applies to the following product groups;

- K-, G-, W-Series refrigerated units, where heatload is rejected to air.
- A-Series airblast units, where heatload is rejected to air.

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 have the following characteristics.

1	Short in length – this reduces friction-based pressure drop and minimizes exposure to ambient heat load.
2	Large diameter bore – we recommend hose internal diameter (ID) on 1-1/2" BSPPF 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. ATC can offer commercial-grade cleaning solutions – contact us for information.
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 to application contains the feed of 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	This document described the use of 1-1/2" British Standard Pipe Parallel Female (BSPPF) threads (also known as G threads (ISO228)) by default. 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 standard products, 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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BACKFILLING

- 1 In situations where the chiller 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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INSTALLATION FOR AIR-COOLED UNITS WITH 1/2" BSPPF FITTINGS

This guide applies to the following product groups;

- K-Series, R-Series and G-Series refrigerated units, where heatload is rejected to air.
- A-Series airblast units, where heatload is rejected to air.

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 have the following characteristics.

- | | |
|---|---|
| 1 | Short in length – this reduces friction-based pressure drop and addition ambient heat load. |
| 2 | Large diameter bore – at least 12mm (1/2”). |
| 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 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 to application contains the feed of 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 1/2” British Standard Pipe Parallel Female (BSPPF) threads (also known as G threads (ISO228)) by default. 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 outlet means fluid leaves the product and must be connected to the process inlet. |
| 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 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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INSTALLATION FOR AIR-COOLED UNITS WITH 1" BSPPF FITTINGS

This guide applies to the following product groups;

- K-, G-, W-Series refrigerated units, where heatload is rejected to air.
- A-Series airblast units, where heatload is rejected to air.

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 have the following characteristics.

- | | |
|---|--|
| 1 | Short in length – this reduces friction-based pressure drop and minimizes exposure to ambient heat load. |
| 2 | Large diameter bore – we recommend hose internal diameter (ID) on 1" BSPPF fittings is no smaller than 3/4" (19mm), and preferably larger than 1" (25.4mm). |
| 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. ATC can offer commercial-grade cleaning solutions – contact us for information. |
| 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 to application contains the feed of 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 | This document described the use of 1" British Standard Pipe Parallel Female (BSPPF) threads (also known as G threads (ISO228)) by default. 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 standard products, 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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BACKFILLING

- 1 In situations where the chiller 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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FILLING, STARTING & DRAINING OF W-SERIES UNITS

This guide describes the filling, starting and draining processes common to all W-Series products, standard or non-standard. It assumes the unit is connected to mains and is live. Start with the e-stop and process start-stop switch 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 chiller 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.
- 2 **Remove the cap from the tank filler port** - this can be found on the water-bulkhead fitting panel on the side of the chiller – fill the tank to the maximum level as indicated by the sight tube. Filling past this point will cause the tank liquid to overflow via the marked overflow pipe, also on the same face of the chiller.
- 3 **Open the red-handled valve mounted on the outlet fitting, fully anti-clockwise** – this valve is used to either throttle the pump down in models where there is no other form of control (i.e. external bypass, inverters, etc) and most importantly for a centrifugal pump's health, to set a minimum head.
- 4 **Turn your attention to the electrical box door** – the process stop-start switch and e-stop button should both still be in the off position. The supply-OK lamp should be on, signifying the alarm circuit has 24Vdc available and that 3-phase power is available at the contactors. Ensure the filler port cap is still off – air will need to escape.
- 5 **Turn the stop/start switch** – the 'level OK' lamp should illuminate and pump should start. As the pump starts and flow increases, the 'pump OK' lamp should illuminate as the flow switch becomes satisfied. If the fridge system high- and low-pressure switches are satisfied, we should also see the 'refrigeration OK' lamp come on, but only if the preceding three lamps are on. Any unexpected noises should prompt you to turn the unit off at this point. The pump should now be running, and the pump pressure display should show the operating pressure in bar.
- 6 **As the chiller runs, observe the sight gauge on the front of the unit** – watch the water level drop as the air in the system is displaced. Allow the level to drop to the fill level marked on the gauge – turn the unit off on the stop/start switch. Fill through the filler port until the level is at full again.
- 7 **Repeat this process until the sight gauge no longer drops from full** – take care not to refill past the maximum mark. Allow the unit to run for at least 60mins to ensure air has left the system.
- 8 **Whilst the chiller runs, review internal and external hoses for signs of leaks** – when satisfied the unit is fully bled of air, review the fill level once more and replace the fill port lid.



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

DRAINING

- 1 **The drain is connected to one half of a tee fitted to the tank** – the other half leads to the sight tube. A 1/2" ID hose is used to connect to that tee. The drain hose is left vented and retained high to prevent accidental draining.
- 4 **Once the unit is drained, return the drain tube to the high position** – any fluid remaining in the tank will need to be siphoned manually – it is not possible to *fully* empty the tank.
- 5 **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.



DOCUMENT DETAILS

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BASIC PROGRAMMING GUIDE KR1 (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-15, i.e. Annex E-15A.

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-15G

DOCUMENT DETAILS

Date	6/APR/2022	Author(s)	MJH	Page	1 / 2	Revision	2
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W-SERIES PROGRAM PURPOSE

Internal part number	EA902 (24V) & EA894 (100-240Vac)
Manufacturer part number	Ascon Tecnologico KR1
Program purpose	<ol style="list-style-type: none"> 1) Set safe working limits 2) Set on-off control strategy, asymmetric (cont=On.FA), i.e. fridge pulls down to +20°C setpoint and switches off. Temperature rises to +22°C (HSEt=2), fridge turns on again and pulls down.

PROGRAM

Group inP		Group 'out'		Group 'AL1'		Group 'AL2'	
Setting	Value	Setting	Value	Setting	Value	Setting	Value
SEnS	Pt1	o1.F	nonE	AL1t	nonE	AL2t	nonE
dP	1	o1.AL	n/a	Ab1	n/a	Ab2	n/a
SSc	n/a	o1.Ac	n/a	AL1L	n/a	AL2L	n/a
FSc	n/a	o2F	c.rEG	AL1H	n/a	AL2H	n/a
Unit	°c	o2.AL	n/a	AL1	n/a	AL2	n/a
FiL	10	o2Ac	dir	HAL1	n/a	HAL2	n/a
inE	our	o4F	nonE	AL1d	n/a	AL2d	n/a
oPE	100	o4.AL	n/a	AL1o	n/a	AL2o	n/a
io4.F	out4	o4Ac	n/a				
diF1	oFF						
diF2	n/a						
di.A	0						
Group 'AL3'		Group 'LbA'		Group 'rEG'		Group 'SP'	
Setting	Value	Setting	Value	Setting	Value	Setting	Value
AL3t	nonE	LbAt	oFF	cont	On.FA	nSP	1
Ab3	n/a	LbSt	n/a	Auto	n/a	SPLL	10.0
AL3L	n/a	LbAS	n/a	tunE	n/a	SPHL	35.0
AL3H	n/a	LbcA	n/a	Aut.r	n/a	SP	20.0
AL3	n/a			SELF	n/a	SP2	n/a
HAL3	n/a			HSEt	2	SP3	n/a
AL3d	n/a			cPdt	n/a	SP4	n/a
AL3o	n/a			Pb	n/a	A.SP	SP1
				ti	n/a	SP.rt	trin
				td	n/a	SPLr	Loc
				Fuoc	n/a	SP.u	inF
				tch	n/a	SP.d	inF
				rcG	n/a		
				tcc	n/a		
				rS	n/a		
				Str.t	n/a		
				db.S	n/a		
				od	n/a		
				St.P	0		
				SSt	oFF		
				SS.tH	999.9		



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Annex E-15G

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	tunE		
tr.St	n/a	Pr.S1	n/a	diSP	SPF		
		Pr.G1	n/a	di.CL	0		
		Pr.t1	n/a	AdE	5		
		Pr.b1	n/a	diS.t	oFF		
		Pr.E1	n/a	FiLd	0.5		
		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 'COOn'		Group 'CAL'					
Setting	Value	Setting	Value				
Co.tY	oFF	AL.P	0				
UoLt	n/a	AL.o	!TESTRIG!				
cur	n/a	AH.P	999.9				
h.Job	n/a	AH.o	!TESTRIG!				
t.Job	n/a						



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Operating Manual; Pressure & Flow Adjustment Annex F-6

DOCUMENT DETAILS

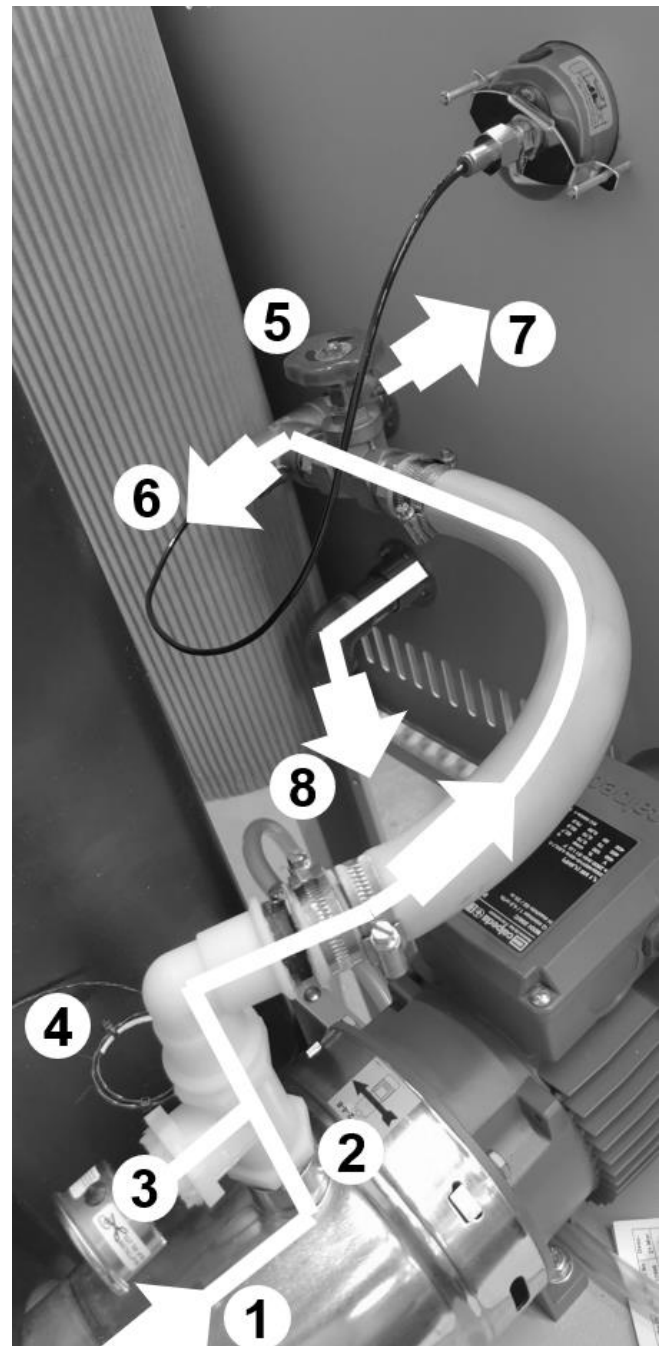
Date	11/MAR/2022	Author(s)	MJH	Page	1 / 2	Revision	2
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CENTRIFUGAL OR TURBINE PUMP USING THROTTLING VALVE

This arrangement comprises a centrifugal or turbine type pump with typically a gate, needle or ball valve downstream of the pump discharge to throttle the pump flowrate. Without any relief, it is critical to ensure the pump is not deadheaded (no flow, and no relief). From many years of experience, ATC have found this method of maintaining a high head pressure on the pump to extend the service life and all but eliminate pump leaks. The valve is closed slowly until the desired flowrate or maximum pressure is met for the application, read from the panel-mounted pressure gauge. This annex describes ATC's default settings and how to adjust the system.

REPRESENTATIVE COMPONENT LAYOUT & FUNCTIONS

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 suction – centrifugal and turbine pumps are not self-priming. The suction port/inlet must be flooded by a source of liquid. This is usually the tank with water line higher than pump suction.
2	Pump discharge – connection to the application – more restrictions downstream reduce flowrate.
3	Service pressure gauge – this displays the pressure between pump discharge and throttling valve. This is normally higher than the process pressure gauge. It should never be lower than 2bar.
4	Temperature sensor – on systems where temperature control hardware is fitted, the sensor is typically in the discharge line.
5	Fixed orifice throttling valve – if fully closed (fully CW) the pump is 'deadheaded' and will lead to damage in the short-term. If fully open (fully CCW), the pump is not restricted in any way – dependent on process pressure and flow requirements, the valve can be closed slowly until the desired conditions are reached.
6	Process pressure gauge – reads the pressure in the line that is created when the customer's application is connected.
7	Discharge to process – cooled/chilled water connection to the application.
8	Return from process – typically sent to either tank, airblast radiator or refrigeration heat exchanger.





Annex F-6

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ADJUSTING THE THROTTLING VALVE

- 1 Units with this type of pressure and flow control are typically shipped fully open to prevent deadheading. When the end user or commissioning engineer first runs the unit, the full force of the pump will be available without relief – if this is likely to cause damage, the valve can be closed partially, and the service pressure gauge monitored.
- 2 **Set the chiller/cooler running whilst connected to the application** – bleed air from the system as per instruction in Annex D.
- 3 **Using the service mounted process gauge, use pressure to determine flowrate** – centrifugal and turbine pump flowrates can be determined by reading the pump curve.
- 4 **Where pressure or flow is too high, the throttling valve can be closed down** – where pressure or flow is too low, it can be opened. Typically ATC size pumps to provide some excess pressure availability.
- 5 Ensure the service pressure gauge is always at a minimum of 2bar.



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Annex G-15

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Date	14/JUN/2022	Author(s)	MJH	Page	1 / 1	Revision	1
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TROUBLESHOOTING – INITIAL HELP FOR W-SERIES

SYMPTOM	POSSIBLE CAUSE
Unit will not start	Ensure mains power is provided and turned on.
	Ensure overload devices in chiller are switched on.
	Ensure fuses FS1 and FS2 are intact.
Supply OK lamp off	The DC PSU is not producing voltage. Is the supply within PSU required range?
	Ensure fuses FS1 and FS2 are intact.
	Ensure the supply is functioning OK. It should generate +24Vdc.
Level OK lamp off	Have the tank upper- and lower-level switches been covered with process fluid?
	Is the rotary switch in the start position? Is the e-stop button retracted?
	Where SA00051 remote stop-start option is fitted, has external control voltage been applied?
	Is the E-stop retracted?
Pump OK lamp off	Is there flow? No voltage reaches the pump lamp without flow. If not, check that voltage is reaching the pump.
	Ensure 24Vdc is getting to the lamp from the flow switch feed.
Refrigeration OK lamp off	Check for continuity across the pressure switch. From Common to OK terminals 1 and 4, a fridge with sufficient gas will have continuity across these terminals.
	Ensure 24Vdc is getting to the lamp from the pressure switch feed.
All lamps on, but chiller not cooling	Check the chain from controller cooling output through the flow/HP switch relay and onto the contactor controlling the compressor.
	Is the main condenser fan running?
Fan not running	Fan is designed to run 'on-off'; without heatload from refrigeration system, fan will not start.
	Ensure fuses feeding fan is intact.



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Operating Manual; Maintenance for End-Users

Annex H-1

DOCUMENT DETAILS

Date November 2019

Compiled by MJH

Revision 1

PERIODIC MAINTENANCE REQUIREMENTS BY END USER



Caution; Failure to carry out service at the specified intervals may permanently damage your equipment.

Print this sheet out and display close to the chiller to maximize the visibility of maintenance requirements.

Weekly	Week 1	Week 2	Week 3	Week 4
Check fluid level – top up as required.				

Monthly	J	F	M	A	M	J	J	A	S	O	N	D
Check the condenser is free from dust or accumulation of debris.												

Annually	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Drain process fluid and replace with fresh fluid.								
Check for fluid leaks throughout chiller and application.								
Clear any debris from inside the chiller.								

A vacuum cleaner is recommended for cleaning out the condenser, while 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.



Caution; Never blow out the condenser with compressed air.



Caution; If the mains lead is lost or damaged, contact ATC who will be able to supply a replacement of the correct specification.



Annex I-1

DOCUMENT DETAILS

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GENERIC MAINTENANCE FOR TECHNICIANS



Warning; Opening the refrigeration system may expose the operative to toxic and corrosive compounds (HF). Take protective measures including suitable eye protection.



Warning; Gases may exceed 300 psi (20 bar) during operation.



Warning; Refrigerants do not support combustion (A1-class), but do displace air (oxygen), presenting asphyxiation risk.



Warning; After switching off, the condenser cooling fan blades continue to rotate. Do not attempt servicing whilst the blades are rotating.



Warning; All chillers contain water and electricity in close proximity. Ensure the unit is isolated before service. This product is protected from overcurrent by fuses (or MCB) on the mains inlet. Never bypass the overcurrent protection.

Following service or repair by a trained technician;

- a) Ensure any electrical connections that may have been disturbed are given the 'tug-test'
- b) Ensure earth bonding conductors are re-attached.
- c) Ensure the correct fuses are in place.
- d) Ensure the mains cord being used is to specification, and is free from damage
- e) Subject the unit to a PAT test to ensure the unit is safe before running.
- f) Ensure there are no leaks inside or outside the unit.
- g) Using the wiring schematic for guidance, simulate faults to check each interlock's function.



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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



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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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Annex J-8

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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-9

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

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AUTHORISATION TO COMPILE THE TECHNICAL FILE

Mitchell Howard, address as above

DESCRIPTION & IDENTIFICATION OF MACHINERY

Generic denomination;	W-Series
Function;	Recirculating chiller
Model;	All with 'W' prefix.
Type;	Air-cooled or water-cooled vapour compression-based.
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-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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Date	24/NOV/2021	Author(s)	MJH	Page	1 / 1	Revision	1
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UKCA DECLARATION OF CONFORMITY (DoC)

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

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;	W-Series
Function;	Recirculating chiller
Model;	All with 'W' prefix.
Type;	Air-cooled or water-cooled vapour compression-based.
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 24/NOV/2021



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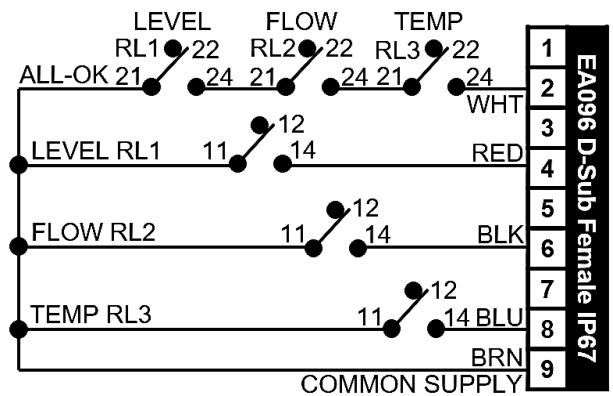
Date	10/JUN/2022	Author(s)	MJH	Page	1 / 1	Revision	2
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SA00012 VOLT FREE CONTACTS STANDARD OPTION

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 +/-10°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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SA00023 ON-OFF FAN SPEED CONTROL

This guide may apply to your product if you purchased standard option SA00023. Fans used in the cooling of condensers for air-cooled refrigerated products operate at pressures many times that of atmospheric pressure. Pressure increases with ambient temperature and with applied heatload from the compressor. When these loads are low, the capacity of the condenser must be reduced to ensure proper running.

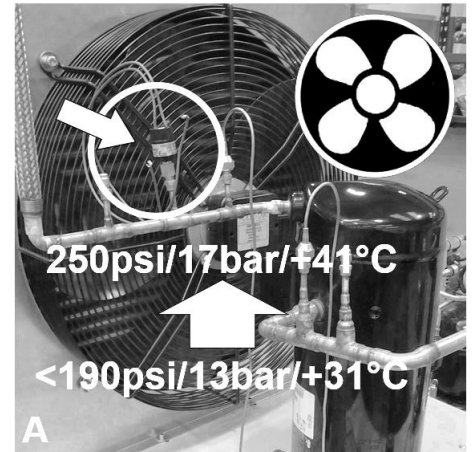
OVERVIEW

1

Pressure switch control (as opposed to a proportional pressure controller) works by fitting a pressure switch to the high side of the fridge system. The system is Normally Open, similar to a low pressure switch (that would be used to communicate a refrigerant leak), except the switching pressures are much higher.

In the graphic right, ATC's standard fan speed switch is disengaged below 190psi / 13bar / +31°C (in R407C-type refrigerants).

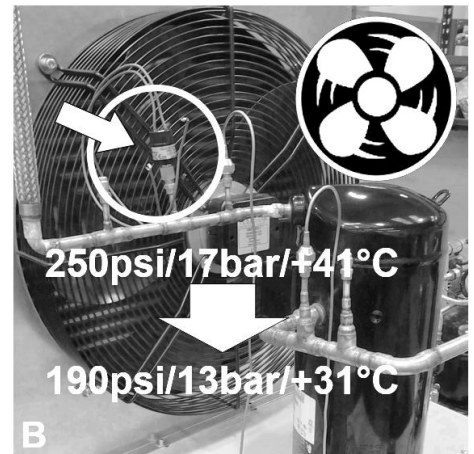
Upon raising the pressure (by starting the compressor or increasing ambient temperature) the high side pressure starts to climb. Unchecked, this leads to hitting an HP switch and the fridge stops.



2

Once the operating fridge has reached a pressure of 250psi / 17bar / +41°C (in R407C-type refrigerants), the switch goes from open to closed and the fan starts running (usually via relay (for single-phase fans) or via contactor (for three-phase fans)).

Energy is removed from the refrigerant passing through the condenser until the lower threshold of 190psi / 13bar / +31°C is reached. At this point the fan stops again.

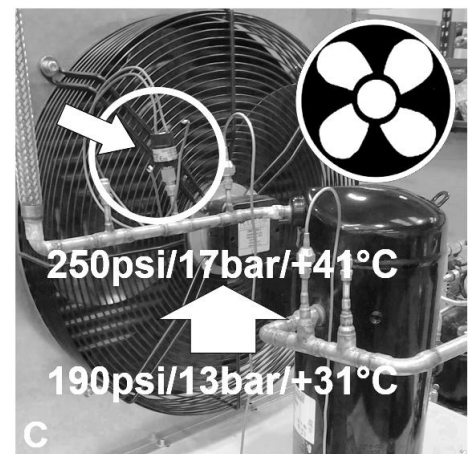


3

Pressure will start to rise in normal operation and the fan will re-engage at the high switching point.

This system is intended to deal with locations with low temperatures (perhaps summer requires fans and winter is cold enough to run without), winds may be high (increasing condenser capacity) or the customer does not plan to utilize the full cooling capacity of the chiller.

Without this form of control, chillers with large condensers and continuous fans stand the chance of overcondensing – that is the high side pressure may become too close to the low side pressure, and refrigeration cannot take place.





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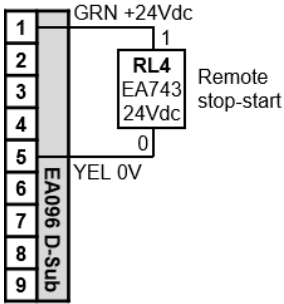

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SA00051 REMOTE STOP-START

This guide may apply to your product if you purchased standard option SA00051. Chillers/coolers with automatic restart interlock systems can be fitted with relay contacts in that allow a remote supply of 24Vdc to switch the relay coil, satisfy the interlock chain, and start process. Unless specifically requested, the end user/OEM must generate the 24Vdc supply. It may be the case that there is a 24Vdc PSU in the product already – the standard option ensures satisfactory operation by avoiding overloading the PSU.

OVERVIEW

<p>1</p>	<p>W-series and >XF050 units use terminal blocks to provide access for the end user to provide 24Vdc remote stop-start voltage.</p>		
<p>2</p>	<p>All other units use D connectors to apply voltage. The pin out to the right is only representative and your unit's pin numbers for voltage supply may differ. Consult the wiring schematic for details.</p>		



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Operating Manual; Recommended Spares

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RECOMMENDED SPARES FOR W-SERIES

Recommended spares include all rotating machinery (i.e. motors, fans), all sacrificial elements (i.e. fuses) some parts that users interact with (dials, fittings) and electro-mechanical parts (sensors, relays, overloads, contactors). Pricing is available from service@thermalexchange.co.uk.

COMMON TO ALL W-SERIES

PN	Description	QTY
60-725	Fuse T1A H250V UL-OK D5 x L20mm	2
EA848	Fuse T0.5A H250V UL-OK D5 x L20mm	1
61-308	SWITCH-flow, brass FF82, high flow	1
63-2007	PUMP-centrifugal P80, SS, IE3 MXH 406, 240-440/3/50	1
64-415	POWER SUPPLY-DIN mount 180-550V,24Vdc, 2.5A	1
91-619	ACTUATOR-solenoid 20 Watt T box, 24Vdc	2
93-403	HEATER-crankcase 30W, 200-600V	1
EA668	HEATER 2kW @240V	6
EA761	PT100 3mm x 80mm 3wire PTFE 1.5m lead resin-fill	1
EA781	Level Switch 1/2" BSPTM 300Vac 100VA max UL-OK	2
EA834	RELAY 8A, 24Vdc, DPCO	2
60-8111/C	LAMP-round, 22mm LED, 24Vac/dc, green	4
EA877	FAN/MOTOR – axial EC fan, 400V, 3~	1

W08-SPECIFIC

RA138	COMPRESSOR – K9 / W08	1
EA824	CONTACTOR - 5.5kW 12A Coil 24Vdc	2
EA643	OVERLOAD - 4-6.3A/phase GV2-type 3~	1
EA253	OVERLOAD – 6-10A/phase GV2-type 3~	1
63-210	PUMP – P25 400/3/50	1
EA903	FAN – 450mm 4pole	1

W16-SPECIFIC

RA256	COMPRESSOR – K12 / W16	1
EA824	CONTACTOR - 5.5kW 12A Coil 24Vdc	2
EA643	OVERLOAD - 4-6.3A/phase GV2-type 3~	1
EA253	OVERLOAD – 6-10A/phase GV2-type 3~	1
63-589	PUMP – P40 400/3/50	1
EA916	FAN – 550mm 4pole	1

W24-SPECIFIC

EA872	CONTACTOR - 11kW 25A Coil 24Vdc	1
90-334	COMPRESSOR – MTZ80	1



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W32-SPECIFIC

	TBC	

W40-SPECIFIC

	TBC	

W32N408-SPECIFIC

EA882	Toshiba Inverter VFS15-4022PL-W	1
WA795	SENSOR - Flow to suit P80 1-1/4"M +90'C 0-10Vdc out	1
EA792	Flow Sensor 1" BSPPM 5-80l/min 90C	1
EA850	Pressure Transducer 0-10Bar Gauge	1
EA050	RELAY-SSR 25A, 3-30Vdc	1
EA651	SSR, 25A	3
EA849	KR1 PID Controller RS485 Analogue input, 100-240V	1
EA824	CONTACTOR - 5.5kW 12A Coil 24Vdc	2
EA870	CONTACTOR - 7.5kW 18A Coil 24Vdc	1
EA871	CONTROLLER - KR3T-LCIRRDS 24V 1*ana 1*SSR 2*RL RS48	1
EA663	OVERLOAD - 17-23A/phase GV2-type 3~	1
EA671	OVERLOAD - 24-32A/phase GV2-type 3~	1

HARP® R407C

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1. Identification of the substance / preparation and company / undertaking


Product name	R407C	
REACH registration numbers	1,1,1,2-Tetrafluoroethane Pentafluoroethane Difluoromethane	01-2119459374-33 01-2119485636-25 Deadline not yet expired
Company	Harp International Ltd Gellihirion Industrial Estate Pontypridd Rhondda Cynon Taff CF37 5SX Tel: +44 (0) 1443 842255 Fax: +44 (0) 1443 841805 Email: harp@harpintl.com	
Emergency phone number	+44 (0) 1270 502891 (24 hour)	
Use	Refrigeration	

2. Hazards identification

EC Classification

EC Directive 67/548/EEC or 1999/45/EC	Not classified as hazardous
Regulation (EC) No. 1272/2008 (CLP)	Gases under pressure – Liquefied gas

Label Elements

Name on label	
Hazardous components	1,1,1,2-Tetrafluoroethane (R134a) Pentafluoroethane (R125) Difluoromethane (R32)
Hazard statement(s)	H280: Contains gas under pressure; may explode if heated
Signal word(s)	Warning
Hazard pictogram(s)	
Precautionary statement(s)	
Storage	P410 + P403: Protect from sunlight. Store in a well-ventilated place.

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3. Composition / information on ingredients

Concentration

Substance name	CAS No.	EC No.	Concentration
1,1,1,2-Tetrafluoroethane (R134a)	811-97-2	212-377-0	ca. 52%
Pentafluoroethane (R125)	354-33-6	206-557-8	ca. 25%
Difluoromethane (R32)	75-10-5	200-839-4	ca. 23%

Hazardous components according to Regulation (EC) 1272/2008 as amended

Substance name	Hazard class	Hazard category	H Phrases
1,1,1,2-Tetrafluoroethane (R134a)	Gases under pressure	Liquefied gas	H280
Pentafluoroethane (R125)	Gases under pressure	Liquefied gas	H280
Difluoromethane (R32)	Flammable gases	Category 1	H220
	Gases under pressure	Liquefied gas	H280

Hazardous components according to European Directive 67/548/EEC or 1999/45/EC as amended

Substance name	Classification	Hazard category	R-phrase(s)
Difluoromethane (R32)	F+	Extremely flammable	R12

4. First aid measures

Inhalation Remove to fresh air. Oxygen or artificial respiration if needed. If symptoms persist, call a physician.

Skin contact Allow to evaporate. Wash off with warm water. If symptoms persist, call a physician.

Eye contact Immediately irrigate with eyewash solution or clean water, holding the eyelids apart for at least 10 minutes. Obtain immediate medical attention.

Ingestion Unlikely route of exposure.

Most important symptoms/effects, acute and delayed

Inhalation In case of higher concentrations: narcosis, asphyxia, may cause cardiac arrhythmia.

Skin contact Contact with liquid or refrigerated gas can cause cold burns and frostbite. Prolonged skin contact may defat the skin and produce dermatitis.

Eye contact Causes frostbite burns to eyes. Symptoms: Lachrymation, redness, swelling of tissue, frostbite, burn.

Ingestion Gas. Not applicable.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media As appropriate for surrounding fire. Keep fire exposed containers cool by spraying with water.

Unsuitable extinguishing media None.

SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006


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Specific hazards arising from the Chemical

The product is not flammable.
Hazardous decomposition products formed under fire conditions.

Special protective actions for Fire-Fighters

Wear self-contained breathing apparatus and protective suit
Wear chemical resistant oversuit
Special protective actions for fire-fighters
In case of fire, use water spray
Keep product and empty container away from heat and sources of ignition

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel

Prevent further leakage or spillage if safe to do so
Keep away from incompatible products

Advice for emergency responders

Immediately evacuate personnel to safe areas
Keep people away from and upwind of spill/leak
Wear self-contained breathing apparatus and protective suit
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing
Suppress (knock down) gases/vapours/mists with a water spray jet
Avoid spraying the leak source
Ventilate area

Environmental precautions

Discharge into the environment must be avoided
Inform the responsible authorities in case of gas leakage or of entry into waterways, soil or drains

Methods and materials for containment and cleaning up

Allow to evaporate
Prevent product from entering drains

Reference to other sections

Refer to protective measures listed in sections 7 and 8.

7. Handling and storage

Precautions for safe handling

Use only in well-ventilated areas
Use only clean and dry utensils
Keep away from water
Preferably transfer by pump or gravity
Keep away from incompatible products

Conditions for storage, including incompatibilities

Storage

Keep only in the original container
Store in a receptacle equipped with a vent
Keep containers tightly closed in a cool, well-ventilated place
Keep in properly labelled containers
Keep in a bonded area
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep away from incompatible products

Packing material

Suitable material – steel cylinder

Specific use(s)

For further information, please contact supplier.

SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006



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8. Exposure controls / personal protection

Control parameters

Exposure limit values

Substance	Harp acceptable exposure limit	EH40 workplace exposure limits
1,1,1,2-Tetrafluoroethane	TWA = 1000 ppm	TWA = 1000 ppm / 4240 mg/m ³
Pentafluoroethane	TWA = 1000 ppm	Not listed
Difluoromethane	TWA = 1000 ppm	Not listed

Exposure controls

Appropriate engineering controls	Ensure adequate ventilation Apply technical measures to comply with the occupational exposure limits
Respiratory protection	Self-contained breathing apparatus (EN 133) Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions Use only respiratory protection that conforms to international / national standards
Hand protection	Take note of the information given by the producer concerning permeability and break through times and of special workplace conditions (mechanical strain, duration of contact). Protective gloves Suitable material: Fluoroelastomer
Eye protection	Tightly fitted safety goggles
Skin and body protection	Wear suitable protective clothing If splashes are likely to occur, wear: apron, boots, Neoprene
Hygiene measures	Eye wash bottles or eye wash stations in compliance with applicable standards When using do not eat, drink or smoke Gloves, overalls and boots have to be double layered (protection against cold temperature). Handle in accordance with good industrial hygiene and safety practice
Environmental exposure controls	Dispose of rinse water in accordance with local and national regulations.

9. Physical and chemical properties

Form	Compressed liquefied gas
Colour	Colourless
Odour	Ether-like
pH	Neutral
pKa	Not applicable
Melting point/freezing point	-103°C (Pentafluoroethane)
Boiling point/boiling range	-44 to -37°C
Flash point	Not applicable
Evaporation rate	No data
Flammability (solid, gas)	The product is not flammable
Flammability	Not applicable

SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006


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Explosive properties	Not explosive
Vapour pressure	10.35 bar at 20°C 21.94 bar at 50°C (Pentafluoroethane)
Vapour density	3.45
Density	Not applicable
Relative density	1.17 at 20°C
Bulk density	Not applicable
Solubility	430 mg/l at 25°C, water (Pentafluoroethane)
Solubility/qualitative	No data available
Partition coefficient: n-octanol/water	log Pow: 1.48, 20°C (pentafluoroethane)
Auto-ignition temperature	No data available
Decomposition temperature	No data
Viscosity	Not applicable
Oxidizing properties	Non oxidizer

10. Stability and reactivity

Reactivity	Risk of violent reaction
Chemical stability	Stable under recommended storage conditions
Possibility of hazardous reactions	Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.
Conditions to avoid	Heat
Materials to avoid	Light and/or alkaline metals, powdered metals, alkaline earth metals, oxidising agents
Hazardous decomposition products	Gaseous hydrogen fluoride (HF), Fluorophosgene The release of other hazardous decomposition products is possible

11. Toxicological information

Acute toxicity	
Acute oral toxicity	Not applicable
Acute inhalation toxicity	LC50, 4 h, >2,080,000 mg/m ³ (1,1,1,2-Tetrafluoroethane)
Acute dermal toxicity	Not applicable
Skin corrosion/irritation	Not applicable
Serious eye damage/eye irritation	Not applicable
Respiratory or skin sensitization	Guinea pig, did not cause sensitization on laboratory animals
Mutagenicity	In vitro tests did not show mutagenic effects (Pentafluoroethane) In vivo tests did not show mutagenic effects (Pentafluoroethane)
Carcinogenicity	Negative (1,1,1,2-Tetrafluoroethane)
Toxicity for reproduction	Developmental toxicity, rat, no observed effect (1,1,1,2-Tetrafluoroethane)
Repeated dose toxicity	Inhalation, after a single exposure, dog, cardiac sensitization following adrenergic stimulation Inhalation, rat, >=50000ppm, NOAEL (1,1,1,2-Tetrafluoroethane) Inhalation, repeated exposure, rat, >=50000ppm, NOAEL (Pentafluoroethane) Inhalation, 90-day, rat, 108 mg/m ³ , NOAEL (Difluoromethane)
Other information	No data available

12. Ecological information

Toxicity

Fishes	Brachydanio rerio	LC50	96 h	>200 mg/l	1,1,1,3,3-pentafluorobutane
Fishes	Brachydanio rerio	LC50	96 h	Ca. 200 mg/l	1,1,1,3,3-pentafluorobutane
Crustaceans	Daphnia magna	EC50	48 h	>200 mg/l	1,1,1,3,3-pentafluorobutane
Crustaceans	Daphnia magna	NOEC	48 h	200 mg/l	1,1,1,3,3-pentafluorobutane
Algae	Selenastrum capricornutum	NOEC	72 h	13.2 mg/l	1,1,1,3,3-pentafluorobutane
Algae	Selenastrum capricornutum	EC50	72 h	>114 mg/l	1,1,1,3,3-pentafluorobutane
Terrestrial plants		NOEC	growth	>=6 g/m ³	

Persistence and degradability

Abiotic degradation

Air, indirect photo-oxidation. T ½ from 4.16 – 28.2 y

Conditions: sensitizer: OH radicals.

Degradation products: carbon dioxide (CO₂) / hydrofluoric acid / TFA

Biodegradation

Aerobic, tested according to closed bottle test, chemical degradation, 2-5% after 28 d. Result: not readily biodegradable

Aerobic, tested according to biodegradation by methane oxidation. Result: not readily biodegradable (1,1,1,2-Tetrafluoroethane)

Bioaccumulative potential

Bioaccumulative potential: log Pow 0.21-1.48. Result: does not bioaccumulate

Mobility

Soil/sediments, adsorption, log KOC: from 1.05 – 1.7. Conditions: calculated value

Air, Henry's law constant (H), from 19.7 – 150 hPa.m³/mol, 20°C. Conditions: calculated value, considerable volatility

Other adverse effects

Ozone depletion potential = 0

Result = no effect on stratospheric ozone

Ozone depletion potential; ODP; (R11 = 1)

Global Warming Potential = 0.25

Halocarbon global warming potential; HGWP; (R11 = 1) (1,1,1,2-Tetrafluoroethane)

13. Disposal considerations

Waste disposal methods

In accordance with local and national regulations

Refer to manufacturer/supplier for information on recovery/recycling

Contaminated packaging

To avoid treatments, as far as possible, use dedicated containers

Where possible recycling is preferred to disposal or incineration

14. Transport information

International transport regulations

IATA-DGR

UN number

UN 3340

Class

2.2

ICAO-Labels

2.2 - Non-flammable, non-toxic gas

Proper shipping name

REFRIGERANT GAS R407C

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IMDG

UN number UN 3340
Class 2.2
IMDG-Labels 2.2 - Non-flammable, non-toxic gas
HI/UN No. 3340
EmS F-C, S-V
Proper shipping name REFRIGERANT GAS R407C

ADR

UN number UN 3340
Class 2
ADR/RID Labels 2.2 - Non-flammable, non-toxic gas
HI/UN No. 20 / 3340
Proper shipping name REFRIGERANT GAS R407C

RID

UN number UN 3340
Class 2
ADR/RID Labels 2.2 - Non-flammable, non-toxic gas
HI/UN No. 20 / 3340
Proper shipping name REFRIGERANT GAS R407C

ADN

UN number UN 3340
Class 2
ADR/RID Labels 2.2 – Non-flammable, non-toxic gas
Proper shipping name REFRIGERANT GAS R407C

15. Regulatory information

Applicable Laws or Regulations

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as amended
- Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations, as amended
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste
- EH40/2005 Workplace Exposure Limits, as amended through 1, 10, 2007 (WEL's) published by the Health and Safety Executive (HSE). Issued under the Control of Substances Hazardous to Health Regulations, as amended

Notification status

Inventory information	Status
Australian Inventory of Chemical Substances (AICS)	In compliance with inventory
Canadian Domestic Substances List (DSL)	In compliance with inventory
Inventory of Existing Chemical Substances (China) (IECS)	In compliance with inventory
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	In compliance with inventory
New Zealand Inventory of Chemicals (NZIOC)	In compliance with inventory
Toxic Substance Control Act List (TSCA)	In compliance with inventory
EU List of Existing Chemical Substances (EINECS)	In compliance with inventory
Korean Existing Chemicals Inventory (KECI (KR))	In compliance with inventory
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	In compliance with inventory

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16. Other information

Full text of H-Statements referred to under section 3

H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated

This datasheet was prepared in accordance with Regulation (EC) No. 1907/2006.

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SAFETY DATA SHEET

HEXID A4 HEAT TRANSFER FLUID

Conforming to Directive 1907/2006/EC

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Name	Hexid A4
1.2. Supplier	Applied Thermal Control Limited 39 Hayhill Industrial Estate, Barrow upon Soar, Leicestershire, LE12 8LD. United Kingdom. www.app-therm.com
1.3. Telephone Number	+44(0)1530 839998
1.4. Email	sales@app-therm.com
1.5. Emergency Telephone Number	+44(0)1530 839998
1.6. Intended/Recommended Use	Heat Transfer Fluid

SECTION 2: HAZARDS IDENTIFICATION

- 2.1. Classification of the substance or mixture**
The product is not classified as dangerous according to Regulation (EC) No. 1272/2008.
This mixture is not classified as dangerous according to Directive 1999/45/EC.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

- 3.1. Chemical Nature** Water (CAS 7732-18-5), not classified.
Propylene glycol (CAS 57-55-6) (REACH 01-2119456809-23)
(EINECS 200-338-0) not classified.
Fluorescein (trace) and biocide (trace) not classified.
- 3.2. Food Grade**

SECTION 4: FIRST AID MEASURES

- General advise** No special precautions required. Treat symptomatically.
- 4.1. Eye Contact** Rinse thoroughly with plenty of water, also under the eyelids. Remove contact lenses after a few minutes and continue rinsing. If symptoms persist, call a physician.
- 4.2. Skin Contact** Wash off immediately with plenty of water. If skin irritation persists, call a physician.
- 4.3. Inhalation** Remove to fresh air. If symptoms persist, call a physician.
- 4.4. Ingestion** Rinse mouth with water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

SECTION 5: FIREFIGHTING MEASURES

- 5.1. Extinguishing media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray, foam, dry powder or CO₂. Alcohol-resistant foam
- 5.2. Unsuitable extinguishing Media**
High volume water jet. Do not use a solid water stream as it may scatter and spread fire.
- 5.3. Specific hazards during firefighting**
In fire conditions, toxic decomposition products may be formed (see also section 10). In combustion, emits fumes, smoke, carbon dioxide (CO₂) and carbon monoxide (CO). Heating will cause a pressure rise - with severe risk of bursting and explosion, Violent steam generation or eruption may occur upon application of direct water to hot liquids.
- 5.4. Advice for firefighters**
In the event of fire, wear self-contained breathing apparatus. Wear personal protective equipment. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Keep containers cool by spraying with water if exposed to fire. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Burning fluids may be extinguished by dilution with water

SAFETY DATA SHEET

HEXID A4 HEAT TRANSFER FLUID

Conforming to Directive 1907/2006/EC

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

Use personal protective equipment. Avoid contact with skin and eyes. Keep unnecessary and unprotected personnel from entering the area.

6.2. Precaution to protect the environment

Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

6.3. Clean-up procedures

Contain the spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal. Dike the area of spill to prevent spreading and pump liquid to salvage tank. Treat recovered material as described in section 13 Disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Keep container tightly closed. Handle in accordance with good industrial hygiene and safety practice. Spills of these organic materials on hot fibrous insulations may lead to lowering of the auto-ignition temperatures possibly resulting in spontaneous combustion.

7.2. Conditions for safe storage

Keep only in the original container.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Component: Propane-1,2-diol CAS-No. 57-55-6

Other Occupational Exposure Limit Values EH40 WEL, Time Weighted Average (TWA):, Total vapour and particulates.150 ppm, 474 mg/m³

EH40 WEL, Time Weighted Average (TWA):, Particulate.10 mg/m³

ELV (IE), Time Weighted Average (TWA):, Total vapour and particulates.150 ppm, 470 mg/m³

ELV (IE), Time Weighted Average (TWA):, Particulate.10 mg/m³

8.2. Exposure controls/Appropriate engineering controls

Local exhaust. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal protective equipment

Respiratory protection Suitable respiratory protective device Combination filter: A-P2

Filter Type Combined particulates and organic vapour type

Hand protection Category short time exposure Break through time > 10 min

Protective index Class 1 When prolonged exposure is expected: Break through time > 120 min

Protective index Class 4 Observe the information of the glove manufacturers on permeability.

Protective gloves should be chosen according to Workplace Safety Assessment.

Gloves recommended according to EN 374 (protection against chemicals).

Material Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1	Appearance at 20°C	Fluorescent green clear liquid
9.2	Odour	Almost odourless
9.3	Flash point	Boils without flashing
9.4	Ignition temperature	Not Available
9.5	Flammability Limit	Not Available
9.6	Oxidizing Properties	Not Available
9.7	Auto flammability	450°C
9.8	Density at 25°C	~1.036g/cm ³
9.9	pH (as is)	7
9.10	Boiling point	102°C
9.7	Auto flammability	450°C
9.8	Solubility in water	Miscible
9.9	Freezing point	-21°C

SAFETY DATA SHEET

HEXID A4 HEAT TRANSFER FLUID

Conforming to Directive 1907/2006/EC

9.10	Specific Heat Capacity	3.78kJ/kg °K
9.11	Viscosity, Kinetic, at 25°C	3.51mPa.s

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Stable under recommended storage conditions. No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

No decomposition if stored and applied as directed. Stable under recommended storage conditions. Hygroscopic.

10.3. Hazardous reactions

Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Generation of gas from decomposition causes pressure in closed systems. Keep away from direct sunlight. Avoid high temperatures. Avoid temperatures exceeding the decomposition temperature. Avoid UV light.

10.5. Materials to avoid

Strong acids, Strong bases, Strong oxidizing agents.

10.6. Hazardous decomposition products

Aldehydes, Alcohols, Ether, Organic acids.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Toxicity Oral

LD50 : > 20000 mg/kg (rat) This product can present a small hazard if large quantities are swallowed.

11.2. Inhalation

LC50 : 6.15 mg/l (rat; 4 h; vapour) At ambient temperature the exposure to vapours is minimal due to a low volatility rate. Inhalation may cause irritation to the nose, throat, upper respiratory tract and lungs. No deaths occurred

11.3. Dermal

LD50 : > 20000 mg/kg (rabbit) Prolonged skin contact is unlikely to result in absorption of harmful amounts. Skin irritation by prolonged exposure is unlikely. Repeated contact may cause flaking and softening of skin.

11.4. Eyes

Slight irritation is possible. Direct contact with eyes may cause temporary irritation. Corneal injury is unlikely.

11.5. Sensitisation

Patch test on human volunteers did not demonstrate sensitisation properties.

11.6. CMR Carcinogenicity

Animal testing did not show any carcinogenic effects. Information given is based on data obtained from similar substances.

11.7. Mutagenicity

No data available.

11.8. Reproductive toxicity

No data available.

11.9. Specific Target Organ Toxicity

Single exposure no data available. Repeated exposure no data available.

11.10. Other toxic properties

Repeated dose toxicity. In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects. Aspiration hazard Due to its physical properties, the substance does probably not pose any aspiration hazard.

11.11. Other relevant toxicity information

Handle in accordance with good industrial hygiene and safety practice.

11.12. Experience with human exposure

Health injuries are not known or expected under normal use.

SAFETY DATA SHEET

HEXID A4 HEAT TRANSFER FLUID

Conforming to Directive 1907/2006/EC

SECTION 12: ECOLOGICAL INFORMATION

12.1. Acute toxicity

Fish - LC50 : 40613 mg/l (Oncorhynchus mykiss; 96 h) (static test)

Daphnia and other aquatic invertebrates - LC50 : 18340 mg/l (Ceriodaphnia Dubia (water flea); 48 h) (static test)

Algae - ErC50 : 19000 mg/l (Pseudokirchneriella subcapitata (green algae); 96 h) (Growth inhibition)

Bacteria - NOEC : > 20000 mg/l (Pseudomonas putida; 18 h) Chronic toxicity

Aquatic invertebrates - NOEC : 13020 mg/l (Ceriodaphnia Dubia (water flea); 7 d) (semi-static test)

12.2. Persistence and degradability

Biodegradability 81 % (anaerobic; Exposure Time: 28 d)(OECD 301 F)

Readily biodegradable 96 % (anaerobic; Exposure Time: 64 d)(OECD 306.)

12.3. Bioaccumulative potential

BCF - 0.09 estimated Low bioaccumulative potential

12.4. Mobility

Estimated Koc < 1, indicating very high soil mobility.

12.5. PBT and vPvB assessment

Not a PBT or vPvB substance or mixture

12.6. Other adverse effects

Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

SECTION 13: DISPOSAL CONSIDERATION

13.1. Waste treatment methods

Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

13.2. Contaminated packaging

Empty contaminated packaging thoroughly. They can be recycled after thorough and proper cleaning. Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

13.3. European Waste Catalogue Number

No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

SECTION 14: TRANSPORT INFORMATION

Not dangerous goods for ADR, RID, IMDG and IATA.

14.1. EEC Regulations

UNNO None **Class** None **Packing Group** None

Road & Rail Transport (ADR & RID) None **IMDG** Not Applicable **ICOA** None

SECTION 15: REGULATORY INFORMATION

15.1 Classification Not classified as hazardous to users.

15.2 CAS No. 57556

15.3 Risk or Safety phrases None

15.4 Labelling None

SECTION 16: OTHER INFORMATION

Key literature references and sources for data taken from supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet. Other information - The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.

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