







STULZ the natural choice

Instructions

WLA Compact

Air cooled water chiller 230/1/50, 230/1/60 400/3/50, 460/3/60 Index 04 Revision 09.2015



Translated instructions

Dear Customer,

Thank you for having purchased a STULZ/Cosmotec chiller.

It is the result of decades of research and design studies, with a fine search of materials and technologies to obtain an high quality chiller.

The CE mark guarantees that the STULZ/Cosmotec products satisfy the requirements of the European Machinery Directive for safety.

The level of quality is constantly checked at every stage, from design to production, making the STULZ/Cosmotec products synonymous of SAFETY, QUALITY and RELIABILITY.

STULZ/Cosmotec Staff

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1. Introduction

1.1. General information

The units described in this manual belong to the vapour compression refrigerator system family that use chillers of group 2, intended for water cooling. This manual contains safety operating instructions to be complied with during installation, use, and maintenance. Therefore, read and comply with the instructions contained herein.

This manual is intended for the following professionals, who are considered authorised personnel:

The INSTALLER must check that the handling and installation of the chiller is performed according to the occupational standards and instructions contained in this manual.

The OPERATOR must know and comply with the occupational standards and instructions contained in this manual in order to use and adjust the chiller correctly.

MAINTENANCE TECHNICIANS (or service technicians) are authorised by the chiller manufacturer to commission the unit, provide technical assistance, perform routine and special maintenance, and repairs.

Qualified personnel are those who, thanks to their training, education, experience and specific knowledge regarding occupational standards, are authorised by the safety manager to perform the above mentioned activities.

The manufacturer declines any liability for improper use of the chiller, for any unauthorised modifications applied, and for failure to comply with the instructions contained in this manual. The occurrence of any of the above-mentioned conditions will make the product warranty immediately void and null.

The customer must store this manual and make it available to the personnel in charge of installing, running, and performing maintenance on the chiller.

1.2. Symbols used in the manual

\bigcirc	Danger	Danger of death or injury for the operator
	Attention	Danger of damage to the equipment
i	Information	Important information, usage note

1.3. Annexes

The following annexes are an integral part of this manual.

- Manual part 2: consisting of water-refrigeration diagram, electrical diagram, and CE declaration of conformity;
- electronic control manual (user version).
- accessory (if available) manuals



2. Safety

2.1. Introduction

This chiller is intended for professional use according to reference directives listed in the CE declaration of conformity attached.

The chiller must be installed in compliance with the following directives:

- 2006/42/EC Machinery Directive
- 97/23/EC PED Pressure equipment directive
- 2006/95/EC Low voltage directive
- 89/336/EC Electromagnetic compatibility directive

Moreover, the standards in force in the country where the product is installed must be respected.

2.2. General rules

The chillers contain a pressure refrigerant circuit, a hydraulic circuit, and a control electrical panel, which can be dangerous for persons or objects nearby.

- It is prohibited for unauthorised personnel to access the internal and external danger area.
- It is prohibited to climb onto the chiller.
- It is prohibited to access the chiller.
- It is prohibited to remove the protection panels before disconnecting the power supply.
- It is prohibited to remove, disconnect, tamper with, or alter safety, protection, and emergency devices.
 The external danger area corresponds to the installation area shown in the drawings in paragraph
- 5.3. • Interventions on the electric, hydraulic, and refrigerant equipment must be carried out by qualified
- Interventions on the electric, hydraulic, and retrigerant equipment must be carried out by qualified personnel.
- Disconnect the unit power supply before working on it. For this purpose, the owner of the unit must install a protection device upstream the electrical line of the chiller. This protection device consists of a 0.3 A In differential switch sized according to the maximum consumption (see technical data sheets).
- The covering panels of the electrical panel are hinged. Once opened, they must be fastened with specific retainers to prevent sudden movements due to the wind.
- Comply with the instructions indicated in the chapters regarding transport, handling, installation, commissioning, use, maintenance, and disposal of the product.
- Set the pressure inside the entire refrigerant circuit to the atmospheric pressure before intervening on any component of the circuit.
- For transport, handling, installation, and maintenance operations, the installers and maintenance technicians must use PPE according to the safety manager instructions and standards in force (PPE=personal protective equipment: gloves, helmet, goggles, accident-prevention shows, etc.)
- Comply with the accident-prevention standards.
- Wear suitable clothing to prevent you from being entangled in moving components.

2.3. Residual risk

During transport and installation

Area	Danger	Risk	Preventive measures
Under the unit	Defective lifting system of the unit, which causes the fall.	Bruises, shocks.	Stay outside the danger area while the unit is being handled.
Close to the unit	Accidental shock with damage to the refrigerant circuit and leak of high pressure refrigerant.	Burns, formation of acid vapours.	Stay outside the danger area while the unit is being handled. Wear PPE.
Close to the unit	Unstable or unsuitable unit support that causes it to overturn.	Bruises, shocks.	Make sure that the unit support is suitable for its weight, stable and level. Wear PPE.
Electrical panel	Live power supply cables.	Electrocution.	Make sure to disconnect the power supply from the distribution panel. Remain electrically isolated from earth. Wear PPE.

During start up and operation

Area	Danger	Risk	Preventive measures
Close to the unit	Projection (launch) of various tools and small parts (screws, nuts, washers, etc.) that may fall accidentally on the fan impellers.	Bruises, shocks.	During installation, make sure to remove the tools and other installation materials. Wear PPE.
Close to the unit	Suction and subsequent removal of objects, dust, and substances in the installation site from the fans.	Bruises, shocks.	Clean the installation area. Wear PPE.
In contact with the unit	Non-compliant electrical connection and earth connection missing.	Electrocution.	Remain electrically isolated from earth. Wear PPE.
Close to the water pipes.	Closed shut-off valves; leaks from the hydraulic pipes. Consequent water and additive leaks.	Irritation of skin and eyes due to contact with ethylene glycol. Irritation of the skin and breathing system due to glycol vapours. Electrocution. Slipping.	Open the shut-off valves of the hydraulic circuit. Wear PPE.
Close to the water pipes.	Formation of condensate in the presence of the dew point with leaks of the non- insulated pipes.	Electrocution. Slipping.	Wear PPE.



Area	Danger	Risk	Preventive measures
Close to the unit	With unit ON: leaks in the refrigerant circuit; defective safety valve or high pressure switch; fire; shut- off valves in the refrigerant circuit closed after maintenance intervention; defect in the gas charge line. Consequent explosive breakage of the refrigerant circuit.	Burns, formation of acid vapours in the presence of flames.	For installation inside buildings: convey the safety valve discharge towards specific outdoor areas. Open the shut-off valves of the refrigerant circuit. Wear PPE. In case of fire, wear fire-fighting masks.
Close to the unit (electrical panel, power supply cables)	Short-circuit; incorrect sizing of the cables or main switch.	Electrocution, fire, formation of acid vapours.	Check the fixing of the terminal cables; select the power supply cables and main switch. Wear PPE. In case of fire, wear fire-fighting masks.
Close to the unit	Noise emission.	Injury of the hearing system.	Wear PPE.

During maintenance

Area	Danger	Risk	Preventive measures
Close to the unit	Leaks in the refrigerant circuit; defective safety valve and high pressure switch; fire; defect on the gas charge line. Consequent explosive breakage of the refrigerant circuit.	Burns, formation of acid vapours in the presence of flames.	Wear PPE. In case of fire, wear fire-fighting masks.
Unit components: compressor, compressor delivery pipes, condenser.	Contact with hot surfaces.	Burns.	Avoid contact Wear PPE.
Condenser	Contact with sharp surfaces (fins)	Cuts, bruises.	Wear PPE.
Electrical panel	Live power supply line even if the switch on board the unit is OFF.	Electrocution.	Make sure to disconnect the power supply from the distribution panel. Make sure that the main switch is not reactivated during maintenance.

During dismantling operations

Area	Danger	Risk	Preventive measures
Close to the unit	Leaks in the refrigerant circuit; defective refrigerant recovery system. Consequent explosive breakage of the refrigerant circuit.	Burns, formation of acid vapours in the presence of flames.	Wear PPE.
Close to the unit	Oil leaks during recovery.	Contact between skin or eyes and oil	Wear PPE.

Area	Danger	Risk	Preventive measures
Close to the water pipes.	Disconnection of the water pipes still under pressure.	Irritation of skin and eyes due to contact with ethylene glycol. Electrocution. Slipping.	De-pressurise the hydraulic circuit before disconnection. Wear PPE.
Electrical panel	Live power supply line even if the switch on board the unit is OFF.	Electrocution.	Make sure to disconnect the power supply from the distribution panel. Make sure that the main switch is not reactivated during maintenance.

2.4. Safety data

REFRIGERANT SAFETY	(DATA	
1. IDENTIFICATION OF THE SUBSTANCE/	Identification of the preparation	STAR COLD 134a
PREPARATION	Recommended uses	Refrigerant
2. COMPOSITION / INFORMATION ON THE INGREDIENTS	tetrafluoroethane (C2H2F4)	N° CAS: 811-97-2 N° CE: 212-377-0 Concentration: 100%
3. IDENTIFICATION OF THE HAZARDS	Possible Hazards	Consequences on the environment: not readily biodegradable. Physical and chemical hazards: thermal decomposition in toxic and corrosive products.
	Additional indications	Not dangerous according to Directive 1999/45/EC.
4. FIRST AID MEASURES	Inhalation	Move the victim to a non-contaminated area wearing breathing equipment. Keep the patient warm and at rest. Call a doctor. Apply artificial respiration if breathing has stopped.
	Contact with skin	In case of frostbite, spray with water for at least 15 minutes. Apply a sterile gauze. And obtain medical assistance.
	Contact with eyes	Immediately wash the eyes with water for at least 15 minutes.
	Ingestion	Ingestion is not considered a potential route of exposure.
	Protection for first- aiders	Wear suitable respiratory equipment in case of interventions in saturated atmosphere.
	Most important symptoms and effects, both acute and delayed	In high concentrations, it may cause asphyxiation. Symptoms may include loss of consciousness. Victims may not be aware of asphyxiation. In low concentrations, it may cause narcotic effects. Symptoms may include headache, nausea and loss of coordination.
	Notes for the doctor	None.



REFRIGERANT SAFETY DATA			
5. FIRE-FIGHTING	Specific hazards	Exposure to flames may cause the container to break or explode.	
MEASURES	Hazardous Combustion Products	Due to thermal decomposition, the following products may originate: - Carbon monoxide Hydrogen fluoride - Carbonyl Fluoride	
	Specific methods	If possible, stop the product from leaking. Coordinate fire-fighting measures according to the surrounding fire. Exposure to flames and heat may cause the container to break. Cool down the containers exposed to this risk with water jets from a protected position. If possible, use vaporised or sprayed water to remove the fumes.	
	Special protection equipment for fire- fighters	Use respiratory equipment. Standard protection clothes and protection devices (respiratory equipment) for fire-fighters. Standard EN 137, EN 469, EN 659	
6. ACCIDENTAL RELEASE MEASURES	Individual measures	Try to stop the leakage. Evacuate the area. Ensure suitable ventilation. Use the respiratory equipment to access the involved area unless atmosphere is proved to be unbreathable. Avoid accessing sewers, basements, or any place where its accumulation could be dangerous.	
	Environmental precautions.	Try to stop the leakage.	
	Methods and materials for containment and recovery	Ventilate the area.	

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REFRIGERANT SAFETY DATA				
7. HANDLING AND STORAGE	Handling Measures and technical precautions	Only experienced and trained personnel can handle gas under pressure The product must be handled according to the good practices of safety and industrial hygiene. Use only specific equipment, suitable for the product, pressure and operating temperature. In case of doubts, contact the manufacturer. Do not smoke while you handle gas. Make sure that the entire gas distribution system has been (or is regularly) checked against leaks before use. Consider the safety valves in gas installations.		
	Handling the gas container safely.	Refer to the manufacturer's instructions to handle the container. Avoid water suction in the container. Do not allow gas reflux in the container. Protect the cylinders against physical damage. Do not drag, roll, slide or make it fall. Use suitable handling devices (forklifts, hand trolleys, etc.) to move the cylinders, even if for short distance. Leave the protection caps of the valves in their position until the container is fixed to the wall or to a workbench, or is placed on a suitable support ready for use. Should the operator have problems during valve operation, stop its use and contact the supplier. Never repair or modify the valves of the containers or of the safety devices. Damaged valves must be signalled to the supplier immediately. Keep the container valves clean and free from contaminants, in particular oil and water. Remount the plugs and/ or caps of the valves and container, if supplied, as soon as the container is disconnected from the equipment. Close the container valve after every use and when it is empty, even if it is still connected to the equipment. Never transfer gas from one cylinder/container to another. Do not use direct flames or electric heating to increase the internal pressure of the container. Do not remove or make the supplier's cylinder identification labels illegible. Keep the container below 5000 in a ventilated area. Comply with the standards and local laws in force relative to the storage of containers. Containers must be stored in vertical position and secured in order to prevent them from overturning. The general condition of stored containers must be checked periodically in order to detect the presence of leaks. The caps and/ or plugs must be mounted. Store the containers in areas away from the risk of fire, heat and ignition sources. The containers must not be stored in a way to favour corrosive phenomena. Keep away from combustible substances.		
	Special labelling	Contains fluorinated greenhouse gases covered by the Kyoto Protocol: difluoromethane; pentafluorethane.		



REFRIGERANT SAFETY	DATA	
8. EXPOSURE/ PERSONAL PROTECTION CHECKS	Suitable technical checks	The systems under pressure must be checked periodically to verify the absence of leaks. Use oxygen detectors if there asphyxiating gases are likely to be released. Make sure that the exposure is far below the occupational exposure limits. Provide suitable ventilation in the discharges at a general and local level. Consider the use of a work permission system, e.g. for maintenance activities.
	Personal protection measures	A risk analysis should be made and documented to evaluate the risk related to the use of the product and to identify the PPE suitable for the risks identified. Comply with the following recommendations. You must use PPE in compliance with standards EN/ISO
	Eyes/face protection device	Protect the eyes, face, and skin from liquid sprays. Wear safety glasses with side protection. Wear safety glasses with side protection or goggles during top up operations or sleeve disconnection. Standard EN 166 - Personal eye protection
	Skin protection	Wear work gloves to handle gas containers. Standard EN 388 - Protection gloves against mechanical risks. Wear safety shoes to handle containers. Standard EN ISO 20345 - Personal Protective Equipment - Safety footwear.
	Protection for respiratory tracts	In environments with poor oxygen, use a breathing apparatus (SC BA) or an air line slightly overlapping the mask. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
	Head protection	Protective helmet.
	Thermal hazards	None required.
	Work hygiene	Emergency eye wash stations should be available in the vicinity of any potential exposure source. Do not eat, drink, or smoke during use.
	Environment exposure checks	Refer to the local standards for atmosphere emission restrictions.

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REFRIGERANT SAFETY DATA						
9. PHYSICAL	Physical state at 20°0	C I 101 .3kPa	Gas			
	Colour		Colourless			
FNOFENTIES	Odour		Ethereal			
	Odour Threshold		The odour threshold is subjective and inadequate to detect overexposure.			
	рН		Not applicable			
	Molecular mass [g/m	ol]	102			
	Melting point [°C]		-101			
	Boiling point [°C]		-26.5			
	Critical temperature [°C]	101			
	Flash point [°C]		Not applicable for gas and gas mixtures			
	Evaporation rate (eth	erl)	Not applicable for gas and gas mixtures			
	Flammability Limits [vol % in air]	Not flammable			
	Vapour pressure [20°	°C]	41 bar			
	Relative density, gas	(air=1)	3.6			
	Solubility in water [mg	g/l]	1930			
	n-octanol/water partition coefficient [log Kow]		0.94			
	Auto-ignition tempera	ture [°C]	Not applicable			
	Viscosity 20°C [mPa.	s]	Not applicable			
	Explosive properties		Not applicable			
	Oxidizing properties		None			
	Other data	Gas/Vapour heavier to especially at ground le	han air It may accumulate in closed spaces, evel or below it.			
10. STABILITY AND REACTIVITY	Reactivity	There are no other re the paragraphs below	activity hazards besides those described in			
	Chemical stability	Stable under normal of	conditions			
	Dangerous reactions					
	Conditions to be avoided	None of the storage conditions and recommended use.				
	Incompatible materials	Humidity Refer to star material compatibility	ndard ISO 11114 for further information on			
	e and use conditions, no hazardous cts should be generated.					

REFRIGERANT SAFETY	DATA				
11. TOXICOLOGICAL	Acute toxicity		This product has no known toxicological effects		
INFORMATION	Skin corrosion/irritation		No effects are known in relation to this product		
	Serious eve damage/irritation		No effects are known in relation to this product		
	Respiratory or skin se	nsitization	No effects are known in relation to this product		
	Carcinogenicity		No effects are kno	own in rela	tion to this product
	Mutagenicity		No effects are kno	own in rela	tion to this product
	Toxicity for reproduction	on	No effects are kno	own in rela	tion to this product
	Specific target orga (STOT) - single expos	in toxicity sure	No effects are kno	own in rela	tion to this product
	Specific target orga (STOT) - repeated ex	in toxicity posure	No effects are kno	own in rela	tion to this product
	Aspiration hazard		Not applicable for	gas and g	as mixtures
12. ECOLOGICAL	Toxicity	EC50 48	h - Daphnia magna	a [mg/l]	930
		EC50 72	h - Algae [mg/l]		Data not available
		CL50 96	h - Fish [mg/l]		450
	Persistence and degradability	Not readily	y biodegradable		
	Potential for bioaccumulation	Considered to be not bioaccumulative due to a low log Kow (log Kow < 4)			due to a low log Kow (log
	Mobility in soil	Due to its high volatility, the product is not expected to pollute the soil and water tables			not expected to pollute the
	Results of the PBT and vPvB evaluation	Not classified as PBT or vPvB			
	Other adverse effects	Effect on ozone layer None			
		Global V (GWP) [C	Varming Potential C02=1]	1300	
		Effects on global warming If discharged in large amounts it can contribute to the greenhouse effect Contains fluorinated greenhouse gases covered by the Kyoto Protocol			arged in large it can contribute preenhouse effect fluorinated use gases covered roto Protocol
13. CONSIDERATIONS ON DISPOSAL	Waste disposal methods	Avoid dire Do not dis For furthe EIGA Cod Doc. 30/10 Refer to th Make sure indicated in the auth List of haz HFC.	rect discharge in the atmosphere. ischarge where the accumulation can be dangerous. ler information on suitable disposal methods, refer to the ode of Practice 10 "Disposal of gases", available on http://www.eiga.org the manufacturer's gas recovery program. Ire that the emission limits stated in local standards or d ithorisations have not been exceeded. azardous waste: 14 06 01: chlorofluorocarbons, HCFC,		
	Additional information	None			

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REFRIGERANT SAFETY						
14. INFORMATION ON	Number UN	3159				
TRANSPORT	S					
	Class	2 (ADR, ADNR, RID); 2.2 (IA	TA, IMDG)			
	Classification code	2A (ADR, ADNR, RID)				
	Hazard identification number	20 (ADR, ADNR, RID)				
	Label	2.2				
	EmS Number (IMDG)	F-C, S-V				
	Marine Pollutant (IMDG)	No				
15. REGULATORY	Specific laws	EU Legislation				
	concerning	Use restrictions	None			
	safety, health and environment for the		Not included			
	substance or mixture	National Legislation				
		National Legislation	Comply with all national and regional standards			
	a Chemical safety assessment					

2.5. Labels





Label recalling the instruction manual. Position: on the side of the electrical panel.





Tank filling Position: close to the filling valves of the storage tank

(where available).

Tank discharge Position: close to the draining valves of the evaporators and storage tank (where available).



Chiller hydraulic circuit inlet (chiller water return) Position: close to the hydraulic circuit inlet connection.



Chiller hydraulic circuit outlet (chiller water supply) Position: close to the hydraulic circuit outlet connection.



Hot components

Position: close to condenser inlet/outlet pipes (under the protection guard) and on the compressor support. With antifreeze option, they can be found close to the heaters around the evaporator, at the pump volute, steel hydraulic pipes and in the storage tank.



High voltage Position: close to electric components and in the electrical panel.



Motor rotation direction Position: close to the fan and pumps



Via E. Torricelli, 3 37067 Valeggio sul Mincio (VR) Phone 0039 (0)45 6331600 Fax 0039 (0)45 6331635		
REFRIGERATORE DI LIQUIDO - LIQUII KUHLANLAGE - REFROIDISSEUR DI MODELLO - MODEL - TYP - MODELE WLA2 SERIE - SERIES - SERIE - SERIE ORDINE - ORDER - ORDER - COMMANDER DATA - DATE - DATUM - DATE	D COOLER - E LIQUIDE 2240020000 7035 N°000000000 000000000 29/01/14	
Nennspannung - Tension nominale 4 Avviamento/marcia - Starting/run current - 4 Anlaufstrom/Nennstrom - Démarrage/marche 8 Resa nom Cooling cap Kalteleistung - 9 Puissance nominale 9 Potenza Assorbita - Input power - Leistungsaufnahme - 9 Puissance absorbée 6 Carica gas - Filling capacity - Fullmenge - Charge de gaz 6	00-460V/3/50-60Hz 60/20,9 A 2300 W (W15L32) 640 W (W15L32) 1,2 kg	
Refrigerante tipo - Refrigerant type - Kaltemittel - Refrigerant ty Peso - Weight - Gewicht - Poids TSS (Max temp. Di stoccaggio - Max Storage temp Max Lagertemperatur - Temp. Max d'emmagasinage) TS MAX (Refrigerante - Refrigerant - Kaltemittel - Refrigerant) TS MIN (Refrigerante - Refrigerant - Kaltemittel - Refrigerant) PS HP (Max pressione ammissibile HP - Max allowable pressu HP - Max zulässiger Druck HP - Pression maximum admise H PS LP (Max pressione ammissibile LP - Max allowable pressu LP - Max zulässiger Druck LP - Pression maximum admise LP CAT PED Modulo valutazione - Evaluation Module - Bewertungsverfahre Procédure d'évaluation	vpe R134a 82 kg 45 °C -10 °C P) 40,5 bar re 15 bar n - A1	The chiller is identified with a data plate shown on the side. The data plate also indicates the unit serial number, which is essential to obtain support or information on the unit described in this manual. Position: under the electrical panel.
Contiene gas fluorurati ad effetto serra disciplinati dal protocollo d containing HFC fluids causing greenhouse effect regulated by Kyo erhält wie vom Kyoto-Protokoll geregelte Fluorkohlenwasserstoffe Dispositif contenant fluides HFC à effet de serre disciplinés par le	li Kyoto - Device to protocol - Das Gerät Treibhausgasen - protocole de Kyoto	



2.6. Intended and unintended use

Intended use

The chillers described in this manual are intended to cool water or mixtures of water and glycol, generally used as refrigerant in production processes.

The operation safety of the system is guaranteed as long as it complies with its intended use. The storage and operation limit values indicated on the data plate and stated in paragraph 5.1 must NEVER be exceeded. STULZ is not liable for damage caused by improper use. The operator is fully responsible for this risk.

Unintended use

The use of the chiller must ALWAYS comply with the standards in force and instructions provided in this manual. Moreover, its use is prohibited in the event it is installed:

- incorrectly;
- on mobile parts or on oscillating, inclined (not levelled) supports or on supports that transmit vibrations;
- in areas with high heat radiation;
- in areas with strong magnetic fields;
- in areas with open flames;
- in areas featuring explosive atmospheres;
- in the presence of flammable products;
- in areas with risk of explosion;
- in areas with saline atmosphere;
- in areas with aggressive atmospheres;
- in areas excessively dusty;

• in the presence of materials that may obstruct the air circuit after being deposited or suctioned by the chiller. Moreover, its use is prohibited after any modification or transformation applied but not approved by STULZ, including the use of non-original spare parts.

3. Coding

The code indicates every variant of the chiller and it is indicated on the chiller data plate (see page 17). The following table summarises all the possible code digit values. Some combinations of these values are non-available codes.





4. Description

4.1. Layout of the components, principle and mode operation.

Only chiller

The chillers described in this manual consist of:

- hermetic refrigerant circuit, filled with R134a refrigerant. The refrigerant circuit includes a rotary vane compressor, condenser, an electronic thermostatic valve, and stainless steel evaporator as brazed plate heat exchanger;
- hydraulic circuit;
- condensation module consisting of a condenser and a fan.

The chiller is controlled from the Dixell XW05K electronic regulator (designed and produced according to STULZ specification) and from a main switch placed on the side of the electronic regulator on the chiller front panel. The electrical panel, with protection rate IP44, can be accessed from the upper part of the unit and contains all the electrical control components of the chiller already wired. The holes for the passage of power supply cables are located on the rear side of the unit and are provided with cable gland sheaths.

The compressor is fixed to the base and it is found in the left rear side of the chiller (accessible by removing the left side panel).

The condenser, with intake fan integrated, is located in the left side of the chiller and it can be accessed from the left panel and from the front side, prior removal of the specific panels.

The evaporator as brazed plate heat exchanger is placed at the centre of the unit and it can be accessed by removing the front panel.

The condenser cooling air is suctioned from the front side and discharged on the rear upwards by means of the specific grid in the closing panels.

The inlet and outlet water fittings are located on the rear right, whereas additional hydronic components (circulation pump and storage tank) are found on the chiller right side.

4.2. Refrigerant diagrams

Key

Name, symbol	Meaning	Name, symbol	Meaning
BC	Condenser	MT	Electric motor
СО	Compressor	PP	Capacity control pressure switch
EV	Evaporator	PV	Fan capacity control
FA	Condenser air filter	S	Temperature probe
FG	Refrigerant filter	SC1/SC2	Electronic controller
HP	High pressure switch	SG	Solenoid valve
LD	Gas injector	VT	Thermostatic valve











Standard circuit diagram Check on MANUAL PART II for any modification.





EN/0915/WLA Compact/24

4.3. Components of the refrigerant circuit

The compressor compresses the refrigerant gas and takes it at a higher temperature and pressure. By crossing the condenser, the hot gas is cooled and liquefied, thus releasing heat into the outdoor air. Pushed by the electronic thermostatic expansion valve, the liquid refrigerant loses pressure in order to start evaporating. This happens inside the evaporator, where the refrigerant absorbs the heat of the water or mixture to be treated, cooling it down.

Compressor

The compressor technology changes depending on the refrigerant power. The table indicating size-type relation is provided below.

The compressor is provided with thermal protection against overload.

Size	Compressor
WLA 12	Piston compressor
WLA 15	Piston compressor
WLA 22	rotary vane
WLA 23	rotary vane
WLA 30	rotary vane
WLA 34	scroll
WLA 44	scroll

Condenser

The copper-aluminium condensing coil has copper pipes and aluminium fins. The chiller is not suitable for use in environment featuring aggressive atmosphere.

Fan

Installed on the rear side of the condenser, this intake fan is not duct-type. The fan with metal blades is provided with metal protection grid.

Evaporator

The plate heat exchangers are made of AISI 316 stainless steel and AISI 304 brazed stainless steel.

The refrigerant liquid must comply with the provisions described in paragraph

Expansion valve

This mechanical expansion value adjusts the refrigerant flow rate to the evaporator according to the temperature and evaporator outlet pressure (compressor suction). Adjustments for correct operation are set by default and must never be modified.

4.4. Safety components of the refrigerant circuit

High pressure switch

A high pressure switch is installed on the refrigerant circuit and it triggers when the pressure inside the refrigerant circuit exceeds 40.5 barg. The circuit compressor is deactivated and an alarm signal appears on the electronic controller display. The alarm conditions stops when the pressure drops below 33 barg.

The pressure switch rearms automatically. To access the rearm button installed on the pressure switch, remove the chiller front panel. The pressure switch is located in the low left corner, behind the compressor.



4.5. Protection components of the refrigerant circuit

Refrigerant filter

A chiller filter is located in the liquid line of each refrigerant circuit. This filter holds the humidity particles in the chiller.

Evaporator antifreeze protection device.

The antifreeze protection device prevents the evaporator from freezing. An evaporator outlet probe placed on the water circuit measures the temperature of the cooled liquid. If this reaches values equal to or lower than the alarm threshold, the control disables the cooling mode.

4.6. Hydraulic diagrams

Key

Name, symbol	Meaning	Name, symbol	Meaning
EV	Evaporator	RE	Heater
LE	Electric level	RI	Filling cap
LV	Visual level	S	Temperature probe
MN	Pressure gauge	TS	Maximum thermostat
MT	Electric motor	VA	Tank
PW	Water pump	VS	Tank discharge
PD	Differential pressure switch		

See water-refrigeration diagram "Refrigerant diagrams" on page 20

4.7. Components of the hydraulic circuit

Chiller

The standard hydraulic circuit includes an **evaporator** (see paragraph 4.3), two water probes, one on the inlet and the other one on the outlet of the heat exchanger, a pressure gauge, a non-pressurised storage tank, and a pump. The refrigerated water pipes are made of polyurethane and are equipped with quick coupling connections. The chiller can be supplied in the following versions:

- evaporator + tank + standard head centrifugal pumps, standard version
- evaporator + standard head centrifugal pumps
- evaporator only

Moreover, the following options are available and can be installed inside the chiller:

- medium head centrifugal pumps.
- non-ferrous crankcase and anti-freeze heater

4.8. Air circuit

The air circuit includes the condenser and fan.

Fan

The units are equipped with intake axial fan with black metal blades. The single-phase motor has insulation class: F. the protection rate of the motor is IP44. The fan is provided with thermal protection against overload. The fan is always on when the compressor is on.

Specific options for the management of the chiller at low ambient temperatures allow you to adjust the speed fan as indicated below:

- on-off, to reach a maximum ambient temperature of -5 °C
- speed modulation via phase cut. Applied to reach a maximum ambient temperature of -10 °C

Condenser

Consisting of copper pipes and aluminium fins to maximise the thermal exchange yield between the overheated gas and the environment.

It is positioned in the left front side of the chiller. A washable polyurethane filter can be installed as accessory to protect the condenser.

4.9. Protection and control electric components

Main disconnection switch

A main disconnection switch is installed on the front panel next to the electronic generator. This is a safety device that allows the chiller to be disconnected from the power supply immediately.

Motor protection devices

Circuit breakers are installed on the power supply lines of the single electric utilities to protect against short-circuits and over-currents The ignition is adjusted by the manufacturer and it must never be modified.

Phase cut module to adjust the fan speed.

As optional, a phase cut module can be supplied to adjust the fan speed. The module receives a $0 \div 10$ V signal from the electronic controller to adjust the fan.



Electronic control

The electronic control consists of a XW07K microprocessor board and a CX40 keyboard to control the devices of the chiller (compressor, fan, adjustment and safety devices, etc.). The operation software and the file with the parameters are written in EEPROM so that they remain in the memory even in case of power failure.

The keyboard with 3-digit display is placed on the front side of the chiller. It allows you to display and set all the operating parameters of the chiller. Password-protected menus limit the access to the user's parameters.



The microprocessor board is installed inside the electrical panel. All the components of the chiller are electrically connected to the microprocessor board.

The electronic controller is equipped with a door for the sequencing with another regulator, to reduce or optimise the chiller operation.

Moreover, it is possible to connect the electronic controller to supervision and monitoring systems via TTL output.

As optional, the **power and signal connector** (male + female) can be installed on the rear side of the chiller in correspondence of the corrugated sheaths.

5. Technical data

5.1. Application limits

The STULZ WLA Compact chillers have been designed to store and operate within the limits described in this paragraph. The warranty becomes void and null immediately if these limits are not complied with. Contact the manufacturer if the temperature of the fluid to be cooled is required to be outside the defined limits.



Pure water values at 50Hz	WLA12	WLA15	WLA22	WLA23	WLA30	WLA34	WLA44
Water flow rate [l/min]	3.4	4.3	5.9	6.2	8.2	9.7	12.5
Load loss [kPa]	1.27	1.83	1.47	1.61	2.48	2.68	4.00

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The maximum and minimum flow rate values have been calculated considering a temperature difference between evaporator inlet and outlet equal to 3°C. The operation of the heat exchanger is guaranteed if these limits are respected.

Power supply: 230/1/50	Voltage: 230 V ± 5% (1)	Frequency: 50 Hz ± 1%
Power supply: 230/1/60	Voltage: 230 V ± 5% (1)	Frequency: 60 Hz ± 1%
Power supply: 400/3/50	Voltage: 400 V ± 5% (1)	Frequency: 50 Hz ± 1%
Power supply: 460/3/60	Voltage: 460 V ± 5% (1)	Frequency: 60 Hz ± 1%

Limit storage temperature: min -10°C / max + 60°C

 $^{(1)}$ Version with only heat exchanger: \pm 10%

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Characteristics of the primary liquid

Generally, the primary liquid allowed is pure water or mixtures of water and ethylene or propylene glycol. Maximum percentage by weight of glycol = 30%

		Case A	Case B	Case C
Colour		clear, free of contam- ination	clear, free of contam- ination	clear, free of contam- ination
рН		7 - 9	7 - 8.5	7 - 8.5
Conductivity	µS/cm	< 50	< 300	< 500
Hardness	°F	< 2.8	< 5.6	< 11.2
Alkalinity	°dH	< 1	< 10	< 15
Concentration of chlorides	mg/l	< 20	< 50	< 100
Number of germs ⁽¹⁾	CFU/ml	< 1000	< 1000	< 1000
Langerlier saturation index ⁽²⁾	LSI	0 <i>< LSI <</i> 0.4	0 <i>< LSI <</i> 0.4	0 < <i>LSI</i> < 0.4
Water treatment		not required	required	necessary

⁽¹⁾ CFU/mI: number of colony forming units per millilitre

⁽²⁾ With LSI > 0.4 water is saturated with calcium carbonate and has a high tendency to fouling

For the type of treatment to be used, contact Stulz Technical Department to evaluate the possible solutions.

The chiller cannot be used in conditions other than the limits indicated in the data plate.

(1) Nominal conditions

MODEL	STANDARD
Temperature of the fluid to be cooled at the evaporator inlet $\left[^{\circ}C\right]$	20
Temperature of the fluid to be cooled at the evaporator outlet $\left[{}^{\circ}C \right]$	15
Condenser outside air temperature [°C]	32
Refrigerant (composition referred to the weight)	Water 100%

(2) The sound pressure level is measured according to Standard EN-ISO 9614-1, and declared at the following conditions:

- in free field
- with unit positioned on a reflective base
- with unit running under nominal conditions.



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The sound pressure level declared considers the contribution of the standard circulation pump.

(3) Inrush current =compressor inrush current + fan maximum operating current + pump maximum operating current

If glycol is added to the liquid to be cooled, the technical data stated in this paragraph must be corrected according to the coefficients indicated in the following table

		Percenta	ge of ethyle	ene glycol	Percentage of propylene glycol			
		10%	20%	30%	10%	20%	30%	
Freezing temperature	[°C]	-3.9	-8.9	-15.6	-3.3	-7.8	-12.2	
Cooling capacity		0.997	0.990	0.984	0.993	0.985	0.974	
Power consumption	Corrective coefficients	0.999	0.997	0.996	0.999	0.996	0.993	
Flow rate of the fluid to be cooled	technical sheet data	1.014	1.033	1.068	0.989	1.009	1.017	
Load loss from the side of the fluid to be cooled.	Sheet Uala	1.07	1.16	1.30	1.04	1.14	1.23	

		WLA-V	VLL 12	WLA-V	VLL 15
Cooling capacity (1)	W	1200		1500	
Sound pressure level at 1 m (1) (2)	dB(A)	51 52		51	52
Refrigerant		R1:	34a	R134a	
N. of refrigerant circuits		-	1	-	1
Nominal power supply	V/-/Hz	230/1/50	230/1/60	230/1/50	230/1/60
Maximum power consumption with standard pump	W	1364	1316	1157	1512
Maximum current consumption with standard pump	A	7.4	6.5	6.6	7.1
Inrush current with standard pump (3)	A	22	23	22	23
Weight for transport	kg	6	1	6	2
Weight in operation	kg	6	6	6	7
Height	mm	48	33	48	33
Width	mm	60	00	60	00
Depth	mm	50	00	50	00
COMPRESSOR					
N°		1		1	
Type of compressor		Piston compressor		Piston compressor	
Maximum power consumption	kW	590	658	632	782
Maximum current consumption	A	3.86	3.68	4.16	3.97
Inrush current	A	19.7	19.7	19.7	19.7
AXIAL FAN		·			
N°		· ·	1		1
Fan diameter	mm	Øź	200	Ø 250	
Air flow rate with free inlet	m³/h	880	990	1820	1970
Power consumption	W	64	78	115	150
Current consumption	A	0.3	0.34	0.55	0.61
EVAPORATOR					
Flow rate of the fluid to be cooled (1)	l/min	3	.4	4	.3
Load loss from the side of the fluid to be cooled ⁽¹⁾	kPa	1.27		1.8	33
STORAGE TANK					
Tank capacity	1	4 4		4	
PUMP					
Maximum power consumption	W	410	580	410	580
Maximum current consumption	A	1.9	2.5	1.9	2.5
Maximum head	kPa	600	600	600	600

⁽¹⁾ Values referred to:

- return fluid temperature: 20°C
- supply fluid temperature: 15°C
- External air temperature: 32°C

⁽²⁾Sound pressure level measured according to EN-ISO 9414-1

⁽³⁾ Inrush current =compressor inrush current + fan maximum operating current + operating pump maximum current

 $^{\scriptscriptstyle (4)}$ standard circuit without accessories Fluid: pure water

COSMOTEC

		WLA-V	VLL 22	WLA-V	VLL 30
Cooling capacity (1)	W	2200		29	00
Sound pressure level at 1 m ⁽¹⁾⁽²⁾	dB(A)	53	54	56	57
Refrigerant		R1	34a	R1:	34a
N. of refrigerant circuits			1	-	1
Nominal power supply	V/-/Hz	230/1/50	230/1/60	230/1/50	230/1/60
Maximum power consumption with standard pump	W	1485	1830	2766	3625
Maximum current consumption with standard pump	A	10.1	10.9	14.5	16.0
Inrush current with standard pump (3)	Α	31	29	38	38
Weight for transport	kg	6	4	8	3
Weight in operation	kg	7	0	1(04
Height	mm	48	33	53	30
Width	mm	60	00	80	00
Depth	mm	50	00	615	
COMPRESSOR					
N°		1		1	
Type of compressor		rotary		rotary	
Maximum power consumption	kW	960	1100	1616	1975
Maximum current consumption	Α	7.6	7.8	8.4	8.4
Inrush current	Α	29	26	32	30
AXIAL FAN		·	``````````````````````````````````````		
N°			1		1
Fan diameter	mm	Øź	250	Ø 300	
Air flow rate with free inlet	m³/h	1820	1970	3410	3740
Power consumption	W	115	150	115	150
Current consumption	Α	0.55	0.61	1.1	1.55
EVAPORATOR					
Flow rate of the fluid to be cooled (1)	l/min	5	.9	8	.2
Load loss from the side of the fluid to be cooled $^{(1)}$	kPa	1.47		2.	48
STORAGE TANK					
Tank capacity	I		4	2	0
PUMP					
Maximum power consumption	W	410	580	920	1300
Maximum current consumption	A	1.9	2.5	5	6
Maximum head	kPa	600	600	600	600

⁽¹⁾ Values referred to:

- return fluid temperature: 20°C
- supply fluid temperature: 15°C
 External air temperature: 32°C

⁽²⁾Sound pressure level measured according to EN-ISO 9414-1

⁽³⁾ Inrush current = compressor inrush current + fan maximum operating current + operating pump maximum current

⁽⁴⁾ standard circuit without accessories Fluid: pure water

STULZ

		WLA-WLL 34	WLA-WLL 44
Cooling capacity (1)	W	3400	4400
Sound pressure level at 1 m ^{(1) (2)}	dB(A)	55	55
Refrigerant		R134a	R134a
N. of refrigerant circuits		1	1
Nominal power supply	V/-/Hz	230/1/50	230/1/50
Maximum power consumption with standard pump	W	3600	4300
Maximum current consumption with standard pump	А	16.1	20.9
Inrush current with standard pump (3)	Α	53	67
Weight for transport	kg	92	99
Weight in operation	kg	113	120
Height	mm	530	530
Width	mm	800	800
Depth	mm	615	615
COMPRESSOR			
N°		1	1
Type of compressor		scroll	scroll
Maximum power consumption	kW	2450	3150
Maximum current consumption	А	10	14.8
Inrush current	А	47	61
AXIAL FAN			•
N°		1	1
Fan diameter	mm	Ø 300	Ø 300
Air flow rate with free inlet	m³/h	3410	3410
Power consumption	W	230	115
Current consumption	Α	1.1	1.1
EVAPORATOR			
Flow rate of the fluid to be cooled (1)	l/min	9.7	12.5
Load loss from the side of the fluid to be cooled ⁽¹⁾	kPa	2.68	4
STORAGE TANK			
Tank capacity	I	20	20
PUMP			
Maximum power consumption	W	920	920
Maximum current consumption	A	5	5
Maximum head	kPa	600	600

⁽¹⁾ Values referred to:

- return fluid temperature: 20°C
- supply fluid temperature: 15°C
 External air temperature: 32°C
- ⁽²⁾Sound pressure level measured according to EN-ISO 9414-1
- ⁽³⁾ Inrush current =compressor inrush current + fan maximum operating current + operating pump maximum current
- ⁽⁴⁾ standard circuit without accessories Fluid: pure water

COSMOTEC

		WLA-V	VLL 23	WLA-V	VLL 30
Cooling capacity ⁽¹⁾	W	2300		29	00
Sound pressure level at 1 m ⁽¹⁾⁽²⁾	dB(A)	55	56	56	57
Refrigerant		R1	34a	R1:	34a
N. of refrigerant circuits			1	-	1
Nominal power supply	V/-/Hz	400/3/50	460/3/60	400/3/50	460/3/60
Maximum power consumption with standard pump	W	2174	2351	2738	3535
Maximum current consumption with standard pump	A	7.8	7.9	9.8	11.4
Inrush current with standard pump (3)	A	19	20	22	24
Weight for transport	kg	8	2	8	3
Weight in operation	kg	1(03	1(04
Height	mm	53	30	53	30
Width	mm	80	00	80	00
Depth	mm	6	15	6	15
COMPRESSOR				1	
N°		1		1	
Type of compressor		rotary		rotary	
Maximum power consumption	kW	1234	1421	1616	1975
Maximum current consumption	A	3.5	3.8	8.4	8.4
Inrush current	A	15.7	16	32	30
AXIAL FAN					
N°			1		1
Fan diameter	mm	Øź	250	Ø 300	
Air flow rate with free inlet	m³/h	1820	1970	3410	3740
Power consumption	W	115	150	115	150
Current consumption	A	0.55	0.61	1.1	1.55
EVAPORATOR					
Flow rate of the fluid to be cooled (1)	l/min	6	.2	8	.2
Load loss from the side of the fluid to be cooled ⁽¹⁾	kPa	1.60		2.	48
STORAGE TANK					
Tank capacity	1	2	0	2	0
PUMP					
Maximum power consumption	W	410	580	920	1300
Maximum current consumption	A	1.9	2.5	5	6
Maximum head	kPa	600	600	600	600

⁽¹⁾ Values referred to:

- return fluid temperature: 20°C
- supply fluid temperature: 15°C
 External air temperature: 32°C

⁽²⁾Sound pressure level measured according to EN-ISO 9414-1

⁽³⁾ Inrush current = compressor inrush current + fan maximum operating current + operating pump maximum current

⁽⁴⁾ standard circuit without accessories Fluid: pure water

STULZ

		WLA-V	VLL 34	WLA-V	VLL 44
Cooling capacity (1)	W	3400		44	.00
Sound pressure level at 1 m ⁽¹⁾⁽²⁾	dB(A)	dB(A) 55		56	57
Refrigerant		R1:	34a	R134a	
N. of refrigerant circuits		-	1	-	1
Nominal power supply	V/-/Hz	400/3/50	460/3/60	400/3/50	460/3/60
Maximum power consumption with standard pump	W	3250	4160	3720	4730
Maximum current consumption with standard pump	A	10.3	11.8	11.2	12.7
Inrush current with standard pump (3)	A	30.1	30.0	38.1	38.6
Weight for transport	kg	9	2	8	3
Weight in operation	kg	11	13	1()4
Height	mm	53	30	53	30
Width	mm	80	00	80	00
Depth	mm	6	15	6	15
COMPRESSOR					
N°		1		1	
Type of compressor		scroll		scroll	
Maximum power consumption	kW	2100	2510	2570	3080
Maximum current consumption	A	4.2	4.2	5.1	5.1
Inrush current	A	24	22.4	32	31
AXIAL FAN		·			
N°		-	1	· ·	1
Fan diameter	mm	Ø2	250	Ø 300	
Air flow rate with free inlet	m³/h	3410	3740	3410	3740
Power consumption	W	230	350	230	350
Current consumption	A	1.1	1.55	1.1	1.55
EVAPORATOR					
Flow rate of the fluid to be cooled (1)	l/min	9	.7	12	2.5
Load loss from the side of the fluid to be cooled $^{\left(1\right) }$	kPa	2.68			4
STORAGE TANK				-	
Tank capacity	I	2	0	2	:0
PUMP					
Maximum power consumption	W	920	1300	920	1300
Maximum current consumption	A	5	6	5	6
Maximum head	kPa	600	600	600	600

⁽¹⁾ Values referred to:

- return fluid temperature: 20°C
- supply fluid temperature: 15°C
 External air temperature: 32°C
- ⁽²⁾Sound pressure level measured according to EN-ISO 9414-1
- ⁽³⁾ Inrush current =compressor inrush current + fan maximum operating current + operating pump maximum current
- ⁽⁴⁾ standard circuit without accessories Fluid: pure water



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Automatic by-pass

The automatic by-pass (BPA) is located on the right side of the chiller, and is accessible by removing the right panel.

The factory setting of the by-pass is for operation with pumps 50 Hz.

For the correct operation with a power supply frequency of 60 Hz it is necessary to change the calibration of the automatic by-pass according to the following table.





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To calibrate the bypass:

- remove the right side panel of the chiller
- close the valves on the external flow pipe
- activate the pump and on the pressure gauge display the working point
- remove the top cap of the valve by-pass
- with chiller operating and the pump turned on, act on the calibration screw until bringing the pump within the range of correct operation
 replace the top cap
- open the taps on the external flow pipe.

Below the setting values of the automatic by-pass recommended by the manufacturer:

	WLA-WLL 12		WLA-V	VLL 15	WLA-WLL 22	
	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
standard pump [bar]	2,6	3,3	2,5	3,2	2,3	3,0
middle pressure pump [bar]	4,2	5,8	4,1	5,8	4,0	5,5

	WLA-WLL 23		WLA-WLL 30		WLA-WLL 34		WLA-WLL 44	
	50 Hz	60 Hz						
standard pump [bar]	2,3	3,0	3,7	4,8	3,7	4,8	3,5	4,5
middle pressure pump [bar]	4,0	5,5	5,0	6,8	5,0	6,8	4,5	6,0



Size 2

Air flow





Dimensions



Minimum distance from obstacles or other chillers

Sizo	Distance in millimetres [mm]						
5120	S	F	D	R	H		
WLA 12-15-22	200	500	500	500	700		
WLA 23-30-34-44	200	500	500	500	700		



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6. Handling and storage

6.1. Reception

STULZ chillers are inspected one by one in all their parts and are accurately packaged before shipment. The standard packaging consists of:

- bubble wrap around the sides and roof of the unit;
- some plastic air bag strips around the unit.
- specific pallet for transporting the chiller

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Standard packaging is not suitable for sea or air freight

The packaging is equipped with an adhesive providing the following information:

- STULZ logo
- STULZ production order number
- unit code
- unit serial number
- TSS: maximum storage temperature

Other labels of this type can be positioned on the packaging to identify the accessories included in the unit packaging.



Upon reception of the goods, immediately inspect the unit.

- Make sure that the goods have been transported in the correct position. Write any unsuitable shipment on the transport document.
- Check the presence of all the items indicated in the transport document and also check the integrity of the conditioner upon reception.
- Make sure that there are no external damage and, if any, write them on the transport document in the presence of the carrier.

Hidden damage, to be verified after having removed the packaging, must be signalled to the carrier within the times and methods indicated in the transport document.

With goods delivered ex-works, the carrier is liable for any damage caused during transport.

If the goods are not delivered ex-works, in case of damage, follow the instructions indicated on the transport document.

This product must not be returned without prior authorisation of STULZ. Contact you local STULZ partner in case assistance service is required.

6.2. Handling

The chiller must be lifted safely, without inclining it or resting it on its sides, with suitable equipment. The capacity of the mean must be suitable for the weight of the chiller to be lifted.

The load must be balanced to prevent overturning.

Do not perform sudden and/or violent manoeuvres.

Do not overlap other objects on the chiller.



Storage

In the event the unit is stored before installation, comply with the following instructions:

- make sure that the hydraulic connections are provided with closing caps supplied in series with the unit;
- do not expose the unit to direct sunlight;
- store the unit in its original packaging.

The chillers are packaged in standard packaging (unless otherwise agreed). This packaging:

- does not protect the chiller from rain and bad weather;
- it is not suitable for sea transport;
- it is not suitable for air transport.

See paragraph 5.1 for the environmental storage conditions.



7. Installation

To install the air conditioner, comply with the Directives indicated at the beginning of chapter "2. Safety".

7.1. Positioning

Pay attention to the following factors to identify the chiller installation site.

- The unit should not be positioned downstream heat sources or dirt, in relation to the wind direction. Particles of grease and dust in the air would deposit on the condenser fins, reducing the heat transmission efficiency.
- Sites subject to heavy snow or sand accumulation, as well as flooding, are not suitable for installation. To prevent snow or sand accumulation, you can install protection devices provided that they do not obstruct free maintenance spaces.
- Moreover, make sure that the site does not favour air short-circuits between discharge and condenser recovery.
- If the unit is installed on the ground, the soil must not be soft or crumbly.
- According to the drawings shown in paragraph 5.3, check the compliance with the free spaces for maintenance and air circulation, by means of the condenser, suction, and expulsion. Moreover, check the minimum distance from obstacles or other chillers.

The support surface must be perfectly horizontal and capable to withstand the weight of the chiller during operation (data indicated in the technical sheets, paragraph 5.2) safely. The dimensions of the support base must be larger compared to the plan dimensions of the chiller

Removing the packaging

Once the chiller is placed on the ground, remove the packaging without damaging the chiller. The packaging must be disposed of in compliance with the Standards in force.

7.2. Hydraulic connections

The minimum equipment required for the external hydraulic circuit are:

- Pipes with diameter equal to the diameter of the circuit connections, indicated in the hydraulic diagrams in paragraph 4.6.
- Two shut-off valves to isolate the chiller from the system in correspondence of the inlet and outlet hydraulic connections.
- System draining valves in its lowest points.
- Flexible couplings to join the chiller external hydraulic circuit.
- A filter on the chiller inlet return pipe, with metal mesh of $50 \div 80 \ \mu m$.
- Suitable insulation on the pipes to prevent condensation and reduce thermal on the circuit.

Before connecting the chiller to the utility, make sire that the pipes used do not contain dirt or processing residues; if in doubt, perform one or more washing cycles.

The position of the hydraulic connections is shown in the dimensional drawings in paragraph 5.3.

Remove the protective plugs from the connections and connect the pipes of the external hydraulic circuit complying with the inlet and outlet direction of the chiller. The inlet and outlet of the hydraulic circuit are marked with the labels shown on page 16.



7.3. Electrical connections

Before performing any operation on electrical parts, make sure that there is no voltage. Make sure that the earthing system of the unit is efficient.

- Make sure that the power supply matches with that indicated in the data plate of the chiller (voltage, phase number, frequency) and that the values are not out of the range indicated in paragraph 5.1.
- Moreover, the phase-to-phase unbalance rate should never exceed 2%. The phase-to-phase unbalance rate is determined by measuring the voltage differences between phases. The average value of the voltage differences should never exceed 8 V.
- Select the power cables according to the total inrush current of the unit, which is indicated in the technical sheets in paragraph 5.2.
- A disconnection switch with protection having the same tripping curve of the main disconnection switch on board the unit must be installed on the distribution panel upstream the power cables (refer to the electrical diagram attached to the documentation). The tripping value of this disconnection switch must be selected according to the length of the power supply lines and to the Standards in force in the country of installation.
- Identify the holes for the passage of power and signal cables placed on the rear of the unit.
- Set the main disconnection switch to position 0 After this operation, you will be able to open the covering panels of the electrical compartment to complete the connections.
- Connect the power cable, suitably sized, to the electrical panel, following the electrical diagram supplied together with the unit documentation.
- Connect the earth cable to the PE clamp on the chiller electrical panel.
- Some digital outputs of the electronic control are available to signal alarms and unit status. The assignment of the outputs to the various alarms and status can be configured. The factory configuration is shown in the connection diagram, which is part of the unit electrical diagram. Upon request, connect these signals according to the indications.
- Connect the external ON-OFF control, or other external devices (if provided), according to the electrical diagram.

To use the chiller with 460V/3/60Hz three-phase power supply, modify the electrical connection of the winding secondary transformer. See the electrical diagram shown in "MANUAL PART II" for the modifications to be applied.

As default setting, the digital inputs for any customer's device (e.g. remote ON-OFF control) are disabled. If installed, inform the person in charge of commissioning about the necessity to enable the corresponding digital inputs.

Check the sequence of the phases

This function is available only for chillers with three-phase power supply (400/3/50 or 460/3/60) and rotary compressor (WLA23, WLA30)

Once you have closed the protection panels of the electric compartment, close the main disconnecting switch by setting it to position I. If the sequence of the power supply phases is incorrect, a phase is missing or voltage is too low, the compressor doesn't starts.

The display doesn't shows any alarm.

If within 30 second the compressors doesn't start, check the sequence of the phases.

Check the phase voltage on all the power supply phases. If this is correct, the phase sequence must be modified. Therefore, switch the connection of two phases of the power supply on the unit terminals.

Once this operation is complete, make sure that the display shows the unit in OFF status and open the main switch.

7.4. Commissioning preliminary operations

The operations to be performed before commissioning must be carried out by the installers according to their field of expertise. The commissioning preliminary operations must be performed maximum two days before commissioning.

Check correct installation

Make sure that the unit has been installed as described in chapter "7. Installation".

- Make sure that the hydraulic connections are correct and comply with the indications of the circuit inlet and outlet positioned near the chiller connectors.
- Make sure that the refrigerant does not leak.
- With the main disconnection switch open (position 0), access the electrical panel by opening the covering panels.
- Make sure that the power supply and earthing cables are connected firmly to the respective terminals.
- Make sure that the power supply voltage falls within the values allowed for the unit and stated in paragraph 5.1.
- Close the protection panels of the electrical panel and take the main disconnection switch of the unit to I.

Low temperature operation

As indicated in paragraph 5.1, for chiller water supply temperatures lower than 10°C and external air temperatures lower than 2.5°C, it is necessary to add an antifreeze liquid (ethylene glycol) to the water to be cooled. The percentage of antifreeze liquid must be established according to the project values for the unit outlet water minimum temperature and for the external air minimum temperature, in compliance with the provisions supplied by the manufacturer of the antifreeze liquid.

In any case, the water supply and external temperature and minimum values must be complied with, as well as the maximum percentage of glycol. These values are stated in paragraph 5.1.

The corrective coefficients of the technical data according to the percentage of glycol used are indicated in page 31.

Filling the hydraulic circuit

• With machine powered, but in OFF mode, fill the circuit completely with the filling cap. You can use the point indicated with RI in the chiller hydraulic diagram as filling point (see "4.6. Hydraulic diagrams" on page 26). For the symbols, refer to "1.2. Symbols used in the manual" on page 5.



Before starting the chiller, check the complete priming of the pump. To access the pump, remove the chiller right panel



Do not run the pump without water to prevent damage.

The requirements of the liquid to be cooled are described in paragraph 5.1 Do not contaminate the filling liquid with liquids or additives other than those indicated. Do not mix products and/or additives of different brands.

To fill the pump correctly:

- Bleed the air from the pump body (where provided). With the unit off, open the specific cap on the top of the pump body and bleed the air.
- Before starting the pump, make sure that the impeller rotates freely. If not, use a screwdriver on the slot placed on the pump shaft on the fan side to rotate the impeller in both directions until it is released.
- The pump must never run dry to prevent the mechanical and hydraulic seal from permanent damage.
- The pump must not run with the supply inlet closed to prevent the pumped liquid and motor from the risk of overheating.
- To prime the pump correctly during start-up, fill the pump body, the tank intake pipe, and the supply pipe with water. Otherwise, performance will be poor and damage may occur on the hydraulic part.



Once the circuit is filled, the antifreeze function is essential. Therefore, make sure that the circulation pump is powered with disconnection switch in position ON. Moreover, make sure that the consent, signal from the chiller is correctly connected to the pump. Also make sure that the pump valve is open.

8. Commissioning

Only support centres authorised by the manufacturer are allowed to commission the unit. For information and quotations, contact the manufacturer technical support service (see "Contacts" at the end of this paragraph). The preliminary checks described in paragraph 7.4 are not included in the commissioning operations.

8.1. Start up



The chiller comes already adjusted and calibrated. The adjustments that can be modified during the start up phase are the user level access parameters.



The instructions to modify the user level access parameters are found in the electronic controller manual, in the user version, together with the product documentation.

- In the event antifreeze has been added in the water circuit, the water supply temperature can drop below the limit value set by the manufacturer. Therefore, reset some parameters of the electronic controller: minimum cooling set point limit, low temperature alarm threshold, and antifreeze function. Moreover, re-calibrate the alarm threshold on the electronic controller.
- Select the water temperature value required. As default setting, the electronic controller adjusts the supply temperature (chiller outlet)
- As default setting, the digital inputs for any customer's device (e.g. remote ON-OFF control) are disabled. Enable the corresponding digital inputs if installed.
- Press ON-OFF to change the unit status from OFF to ON.

If an external consent signal is provided, the electronic controller sets the unit in standby, until the consent signal is not provided.

ON-OFF button	
SET	



8.2. Checks to be performed after start up

- Make sure no alarms are displayed.
- Make sure that the fan runs correctly and guarantees correct air flow to the condenser without recirculation.
- Make sure that the power supply voltage remains within the limits allowed when the unit is running.
- Make sure that the water temperature is close to the value set on the electronic controller.
- After 30 minutes of compressor operation, check the presence of leaks and proceed refilling R134a refrigerant, according to the instructions provided in paragraph 9.3
- Make sure that the current consumed by the electrical components (compressor, fan, and pumps) falls within the maximum values indicated in the technical sheets.
- Make sure that the tank liquid level is beyond the "min" limit but not beyond the "max" limit indicated on the level indicator.
- Make sure that the work pressure detected on the pressure gauge matches with the characteristic curve of the pump installed at the power supply frequency ("Pump head" on page 37). If required, adjust it in order to take the pressure back to the pump operation field.
- In the presence of reduced load loss of the unit external hydraulic circuit, install a shutter on the supply pipe to take the pressure within the pump operation field. Lock the shutter until the required value is reached.

8.3. Deactivation

Deactivation for maintenance

To switch the unit off:

- press ON-OFF on the display to stop the chiller.
- Once the chiller is OFF, disconnect the power supply from the unit setting the main disconnection switch to 0 (OFF).

The ON-OFF button on the display keyboard is not a safety device to disconnect the power supply before start up or maintenance operations.

Emergency Plan

Disconnect the power supply from the unit using the main disconnection switch (0=OFF)

Stopping the system

In case of long periods of non-use during winter, we recommend checking the minimum ambient temperature that can be reached. If this is lower than the freezing point of the liquid introduced in the hydraulic circuit, discharge and drain the circuit completely.

9.1. Warnings

For maintenance operations, comply with the general safety rules described in paragraph 2.2. These operations can be carried out only by qualified personnel, as specified in paragraph 1.1. Remember that routine and special maintenance operations must be carried out by support centres authorised by the manufacturer.

RISK OF EXPLOSION: avoid open flames close to refrigerant pipes when the refrigerant circuit is under pressure, regardless of the operation described in this chapter.

Before performing any operation, disconnect the chiller using the main switch. To increase safety, padlock the main disconnection switch of the chiller to O (OFF) (when possible) or expose a warning sign, such as "DO NOT RESTORE POWER SUPPLY". When the main switch is closed in position I, the components are powered anyway, even if the unit is set to OFF.

Pay attention to high temperatures of the compressor head and supply pipe (that connects the compressor to the condenser), even with machine at standstill.

Pay attention to the finned heat exchanger, ad the aluminium fins are particularly sharp.

In the event some checks are performed while the unit is running (current, pressure, temperature measurements), restore the power supply via the main switch only after having closed or reinstalled all the protection panels. Once measurements are complete, immediately restore the power supply. At the end of the operations, close or reinstall the protection panels.

Use only original spare parts to replace the unit components.

9.2. Routine maintenance

Periodically check the chiller and its operation.

Routine maintenance must be performed according to the intervals indicated. Delays or omissions make the warranty void and null, besides reducing the efficiency of the unit.

If, according to your experience, the unit requires more frequent maintenance interventions, these must be performed according to the requirements.

Operation	Interval				
Air circuit: cleang the whole module.					
Hydraulic circuit: clean the filter on the chiller water return (if available)					
Hydraulic circuit: check the level of the liquid to be cooled and top up if required.					
Hydraulic circuit: check the presence of air and vent					
Hydraulic circuit: check and repair any leaks and pipe insulation.	WORTH				
Electric components: identify anomalous consumptions.					
Mechanical components: check the presence of anomalous noises and vibrations.					
Air circuit: check the fixing, operation, and balance of the fan					
Hydraulic circuit: check the efficiency of the flow switch (if available)					
Hydraulic circuit: check the cleanliness of the water side evaporator					
Electric circuit: make sure that the clamps on the electrical panel and compressor are tightened correctly.					
Electric circuit: check the cleanliness and integrity of the remote switch contacts.					
Electric circuit: check the pressure switch connections.					
Refrigerant circuit: check the presence of leaks	SIX MONTHS				
Refrigerant circuit: check the high pressure safety pressure switch	ONE YEAR				

Air circuit

Heat exchanger: heat exchangers can be exposed to external agents (mechanical and chemical stress) and to air pollution. Dirt particles may deposit on the fins and reduce the heat transmission power, besides increasing air flow resistance. As a consequence, the fan increases its current consumption.

The heat exchanger can be cleaned with pressurised air (maximum 2 bar) blown in the opposite direction compared to the normal air flow.

Do not bend the fins during this operation not to reduce the efficiency of the heat exchanger and increase the air side load losses.

Air filter (optional): the polyurethane filter with metal mesh can be cleaned with pressurised air, once it has been removed from its seat.

Fan: make sure that the fan is secured to the chiller structure and make sure that the protection grid is also secured correctly. Check the presence of anomalies on the consumed current, which may mean excessive obstruction of the condenser or problems on the fan electric motor. Replace the fan in the event problems are detected on the fan electric motor. The automatic control (optional) provides fan variable speed.

Refrigerator circuit



See paragraph "9.3. Special maintenance" to replace parts, recharge or perform operations on the refrigerant circuit.

Lubricant oil: the compressor contains an amount of oil, which must not be renewed under normal operating conditions, and it lasts for the entire life span of the unit. However, as the oil has a hygroscopic reaction, it is possible that it has absorbed air humidity, which comes into contact with the oil after leaks in the refrigerant circuit, replacement of components, or faults of the dehydrator filter. The interaction between oil and water forms an acid that may cause corrosive processes inside the compressor. In these situations, the lubricant oil must be fully replaced.

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specific register containing the various checks performed.

High pressure safety pressure switch: the pressure switch is a safety device; therefore, check its operation regularly. Simulate an increase in pressure to perform this verification. If the pressure switch is triggered at a pressure higher than 40.5 bar, it must be replaced immediately with a new one with the same intervention point.



Hydraulic circuit

Water filter on chiller return: if available, check its cleanliness and wash it with water, if required.

Hydraulic circuit seal: check the presence of leaks and the seal of the fittings

Liquid to be cooled: top up if the level of liquid is low. Switch the unit off and follow the instructions provided in paragraph 7.4.



If required, the hydraulic circuit of the evaporator must be cleaned chemically (special maintenance).

Flow switch: if available, check the intervention by simulating the lack of flow rate in the hydraulic circuit.

Electric circuit

Check the presence of motor current consumption anomalies.

Mechanical components

Clean inside the unit with a vacuum cleaner. Clean the pipes to facilitate the identification of leaks. Check the presence of loose hardware that cause noise and vibrations.

9.3. Special maintenance

For information and quotations, contact the manufacturer technical support service (see "Contacts" at the end of this paragraph).

Special maintenance operations include:

- repair or replacement of any unit component activated with electric motor;
- any intervention on the refrigerant circuit that requires the charge to be restored, e.g. repair or replacement of components, such as dehydrator filter, thermostatic valve, evaporator, condenser, and compressor.

Refrigerant refill

Every time a leak is detected or the refrigerant circuit must be opened to replace a components, refill the refrigerant circuit.

Perform the following operations if a leak is detected or if the circuit must be opened to replace a component.

- 1. Collect the refrigerant in a collection device with pressure lower than 1 bar-a.
- 2. Connect a vacuum pump via pressure gauge to the high and low pressure side.
- 3. Remove the refrigerant from the vacuum pump (not from the compressor!) up to about 0 bar-a.
- 4. Dispose of the refrigerant according to national standards.
- 5. Fill the circuit with nitrogen at 1 bar-a.
- 6. Repair the leak.
- 7. Eliminate the humidity from the circuit with at least 3 filling and nitrogen extractions. When required, replace the dehydrator filter.
- 8. Once the circuit is closed, make sure to create the vacuum with a specific pump for a sufficient period of time. On this purpose, check that the absolute pressure has reached at least 0.1 bar-a with the pressure gauge. Make sure that upon switching the vacuum pump off, this pressure does not increase (its increase may indicate that the welding has not been made correctly)
- 9. Refill with R134a liquid using the compressor intake connection. The amount of refrigerant to be refilled is equal to that indicated on the chiller data plate.



To prevent the compressor from suctioning great amounts of liquid, we recommend opening the chiller cylinder valve for 10 s, close it and wait 1 minute before opening it again.

Compressor oil top up

For replacement or top up operations, use the top up inlet on the compressor, which consists of a Schrader valve.



The type of oil to be used must have equal characteristics to those indicated on the compressor data place or contact the Service.

10. Troubleshooting

Refer to the general safety rules indicated in paragraph 2.2. All the operations described in this chapter must be performed only by qualified personnel according to that specified in paragraph 1.1.

Problem	Possible cause	Recommended intervention
	MAIN	
	no external consents	check the presence of external consents.
1. The chiller fails to start	incorrect external consent connection	check the external consent connections
	the anti-circulation timer is on	wait 5 minutes
2. the compressor fails to	defective compressor	Use the testers to check the winding phases if they are in short circuit and the correct impedance. Repair/replace the motor.
start	The power circuit is open.	Check the power circuit
	the compressor protection device is open	check the compressor work conditions
	defective compressor	check and/or replace it
	minimum pressure switch intervention	see point v
3. compressor repeated	defective compressor remote switch	check and/or replace it
start ups and stops	incorrect thermostat configuration	check and restore the original configuration, see point vii
	no refrigerant	check and/or replace it
	defective pressure switch	clean the filters and/or condenser
	clogged air filter and/or condenser	see point vi
4. high pressure switch	failed fan(s)	make sure that the liquid indicator indicates the presence of humidity in the system or of bubbles in the liquid indicator during normal operation. Replace the gas filter.
intervention	clogged refrigerant filter	remove the refrigerant in excess. If the condensation pressure is too high and if there are no additional anomalies in the system, pay attention because zeotropic blends, as r407c, allow you to discharge the circuit partially.
	excessive refrigerant gas charge	check and/or replace it
	defective pressure switch	see point vii
	no refrigerant gas	check and open the valves completely
	valves closed partially on liquid line	check and/or replace it, see point iv
5. minimum pressure switch intervention	clogged refrigerant filter	check if the machine does not cool down and if the low pressure side has a too low pressure. Replace it if required
	Blocked thermostatic valve	check if fluid circulates in the evaporator.
	no thermal load	add liquid
	insufficient tank liquid level	check and/or replace it
	defective fan remote switch	check the fan motor insulation
6 the fan fails to start	fan circuit breaker intervention	check and/or replace it, see point ii
	defective fan motor	pressurise the circuit at 10 bar. Identify the leak with a leak detector.
7. no refrigerant	leak from the refrigerant circuit	Fill, repair, make the vacuum and refill.
8 Frost thermostat	Blocked thermostatic valve	check and/or replace it
0. TOST MEMOSIAL	no refrigerant gas	see point vii



Problem	Possible cause	Recommended intervention		
9. the chiller runs continuously	no refrigerant gas	see point vii		
	incorrect thermostat configuration	check and restore the original configuration		
	excessive thermal load	reduce thermal load		
	no refrigerant gas	see point vii		
10. the chiller runs but does not cool down	presence of humidity in the refrigerant circuit	discharge, dry the circuit, replace the filter, make vacuum and recharge.		
	open hot gas bypass valve	check and/or replace it		
11. the chiller produces	noisy compressor	scroll compressor with incorrect rotation. Check the correspondence between the motor winding connection and the electrical diagram on the motor. Invert the phases in order to comply with the correct rotation.		
	noisy thermostatic valve	check and/or replace it		
	vibrations coming from the pipes	check and/or bracket the pipes		
	noisy body	check the fixing of the hardware		

11. Decommissioning and disposal

The chillers must be decommissioned by specialised and qualified personnel.



RISK OF EXPLOSION: avoid open flames close to refrigerant pipes when the refrigerant circuit is under pressure, regardless of the operation described in this chapter. Do not approach open flames to damaged or perforated pipes, as the refrigerant gas vapours mixed with the compressor oil may catch fire and produce toxic gases.

- 1. Set the chiller to SYSTEM OFF by pressing the ON-OFF key on the display.
- 2. Position the main disconnection switch to 0.
- 3. Disconnect power supply from the power cables and prevent voltage from being restored.
- 4. Open the protection panels of the electrical panel and disconnect the power cables.
- 5. Empty the refrigerant circuit recovering the refrigerant and lubricant oil.



It is prohibited to disperse refrigerant gas in the atmosphere. The refrigerant gas must be recovered by a chiller technician. If not re-used, send it to an authorised collection centre. Also the compressor oil must be recovered and sent to an authorised collection centre. As the oil forms a mixture with the refrigerant, it cannot be disposed as common lubricant oil.

6. Disconnect the unit from the hydraulic circuit after having closed the shut-off valves and emptied the chiller hydraulic circuit from water.

If you use water additives (glycol), the water must be recovered and disposed of correctly. Do not disperse it in the environment or in sewerage.

- 7. Handle the unit as described in paragraph 6.2.
- 8. Dispose of the unit according to local disposal and safety standards in force in the site of installation. We recommend contacting a specialised recycling company. The unit contains the following raw materials, as per standard:aluminium (condenser), copper (refrigerant pipes and electric cables), galvanised steel and iron (evaporator, panels and metal frames), rubber (water pipes).

12. Optional

Optional are those components that must be installed by the manufacturer directly. These are:

- Multi-pole connectors, Stulz code OC10CC0 ÷ OC20CC0
- Liquid low temperature up to -5°C, Stulz code OC10TW0 ÷ OC20TW0
- Device for ambient low temperature up to -5°C, Stulz code OC10TM0 ÷ OC20TM0
- Device for ambient low temperature up to -10°C, Stulz code OC10TL0 ÷ OC20TL0
- Polypropylene air filter with metal mesh, Stulz code OC10FP0 ÷ OC20FP0
- Temperature tracking with differential thermostat, Stulz code OC10TD0 ÷ OC20TD0
- Tank electric level with pump stop function, Stulz code OC10EL0 ÷ OC20EL0
- 50/60 Hz medium pressure pump, Stulz code OC10PM0 ÷ OC20PM0
- Crankcase heater, Stulz code OC10HR0 ÷ OC20HR0

	Description	Chiller set up			
Code		Heat exchanger only	Pump	Pump + tank	Laser
0C10CC0 0C20CC0	Multipole connector	0	0	0	0
OC10TW0 OC20TW0	Low temperature fluid up to -5°C	0	0	0	×
OC10TM0 OC20TM0	Device for low ambient temperature up to -5°C	0	0	0	×
OC10TL0 OC20TL0	Device for low ambient temperature up to -10°C	0	0	0	\checkmark
OC10FP0 OC20FP0	Polyurethane air filter with metal mesh	0	0	0	0
OC10TD0 OC20TD0	Temperature tracking with differential thermostat	0	0	0	×
OC10EL0 OC20EL0	Tank electric level with pump stop function	×	×	0	0
0C10PM0 ÷ 0C20PM0	50/60 Hz medium pressure pump	×	0	0	0
OC10HR0 ÷ OC20HR0	Crankcase heater	×	×	0	0

as per standard 🔘 optional

× not available

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12.1. Multi-pole connector (code OC10CC0 ÷ OC20CC0)

Consisting of 1 male connector installed on the rear of the chiller and of 1 female connector to be installed on the customer's utility.

They allow the chiller to be quickly connected to the power supply (400V/3/50Hz, 400V/3/50Hz and 460V/3/60Hz) and signals (general alarm, chiller stop, remote on/off, etc.).

The male connector pins are wired directly by the manufacturer. The specific indication of the connection is indicated in the chiller electric diagram, attached to the **Manual**, **Part II**, specific for every chiller.

		Fixed connector	Mobile connector	
		Power supply and signals	Power supply and signals	
Туре		Female	Male	
Protection rate (IP)		IP 65		
Casing material		die-cast aluminium		
Input		2, cable gland PG21	1, cable gland PG21	
Size		4	4	
Dimensions (LxPxH)	тт	115.7x55.5x74	73x43x72	
Closing system		Low transversal hook		
Total pole number	N°	10	10	
Number of power supply poles	N°	4	4	
Number of signal poles	N°	6	6	
Rated voltage	V	500		
Rated current	Α	16		
Pole material		copper alloy, passivated silver coating		
Insulation material group		Illa		
Cable connection section	mm²	2.5		
Type of M3 screw		connection		
Operating temperature	°C	-40 ÷ + 125		

The code includes the components required to install the male connector on the chiller rear side.

12.2. Low temperature fluid up to -5°C (code OC10TW0 ÷ OC20TW0)

Insulation of the cold parts (pipes, evaporator, etc.) with chemically cross linked closed cell polyethylene, protected with black anti-scratch film.

It allows you to reach liquid supply temperature up to -5 °C. To know the refrigerant yield difference, contact Stulz Technical Department.

Thermal Conductivity	0.0344 W/mK	Density	30 kg/m ³
Maximum operating temperature	-80°C ÷ +100°C	Thickness	3 ÷ 6 mm

12.3. Device for low ambient temperature up to -5°C (code OC10TM0 ÷ OC20TM0)

Installation of a differential pressure switch to control the condensation fan in On-Off mode. The kit allows the extension of the ambient temperature limit of the chiller from +2.5 °C to -5 °C (with water and glycol in suitable amount).

12.4. Device for low ambient temperature up to -10°C (code OC10TL0 ÷ OC20TL0)

Installation of a differential pressure switch to control the condensation fan in modulation mode. Installed as per standard on models with precision +/-1K, "WLL - Laser unit"

The kit allows the extension of the ambient temperature limit of the chiller from +2.5 °C to -10°C (with water and glycol in suitable amount).

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12.5. Polypropylene air filter with metal mesh (code OC10FP0 ÷ OC20FP0)

Installation of condenser inlet air filter, consisting of:

- 1 black honeycomb polypropylene air filter with frame and nets made with galvanised welded sheets.
- 2 interlocking brackets of the condenser filter
- hardware for correct installation

The filter can be washed with compressed air.

To clean the chiller (in OFF mode) proceed as follows:

- 1. remove the front panel from the chiller
- 2. release the filter from the support bracket
- 3. clean the filter blowing in the opposite direction of the chiller flow. Do not clean the filter with detergents or water jets. Check the integrity of the filter and replace it, if required.
- 4. reposition the filter and check its stability.

0

25

45

5. reposition the chiller front panel.

CMt

LFi

LFs

12.6. Temperature tracking with differential thermostat (code OC10TD0 ÷ OC20TD0)

Installation of an external probe connected electrically to the chiller electronic controller. It allows you to track the temperature read by the external probe setting a minimum and maximum temperature limit. Once these limits are reached, the chiller will not change the temperature until it falls again in the tracking field.

0 ÷ 1

-40°C ÷ LFs

LFi ÷ +40[℃]

 Standard parameter on the electronic controller relative to temperature tracking:

 Parameter
 Standard value

 Description
 Range of adjustment

Lower operating limit

Upper operating limit

12.7. Tank electric level with pump stop function(code OC10EL0 ÷ OC20EL0)

Control mode Absolute (**0**) / External T° (**1**)

Installation of the electric level switch in the tank with intervention at 1/3 of the tank capacity. The intervention of the electric level serves as safety device, as it interrupts the operation of the pump and crankcase heater in the tank in order to prevent the chillers from damage.

An alarm appears on the chiller display. The tank filling resets the level switch automatically.

12.8. 50/60 Hz medium pressure pump (code OC10PM0 ÷ OC20PM0)

Installation of an oversized pressure pump. For its performance, see curves in "Technical data" a pagina 31

Material AISI 321 Connection G 1" 1/4

12.9. Crankcase heater (code OC10HR0 ÷ OC20HR0)

Installation of armoured heater immersed in the tank. This option requires the installation of the "electric level" to stop operation in the absence of water.

Power supply	230 V / ~1 / 50-60 Hz
Power	300 W

13. Accessories

"Accessories" are all those components that are supplied separately from the chiller and must be installed by the installer (see "1.1. General information" on page 5).

These are:

- External automatic by-pass, Stulz code AC10AB0 ÷ AC20AB0
- 100µm water filter for installation on supply, Stulz code AC10FW0 ÷ AC20FW0
- "Y" water filter for installation on return, Stulz code AC10FY0 ÷ AC20FY0
- Polypropylene air filter with metal mesh, Stulz code AC10FP0 ÷ AC20FP0
- Flow switch, Stulz code AC10FL0 ÷ AC20FL0
- Eye bolts to lift the chiller safely, Stulz code AC10EB0 ÷ AC20EB0
- Handling wheels, Stulz code AC10WH0 ÷ AC20WH0
- Wall-mounted brackets, Stulz code AC10WM0 ÷ AC20WM0
- Anti-vibration mounts, Stulz code AC10AV0 ÷ AC20AV0

Refer to the documentation attached to the material delivered for the accessories.

	Description	Chiller set up			
Code		Heat exchanger only	Pump	Pump + tank	Laser
AC10AB0 AC20AB0	External automatic by-pass	×	0	0	0
AC10FW0 AC20FW0	100µm water filter for installation on supply	0	0	0	0
AC10FY0 AC20FY0	"Y" water filter for installation on return	0	0	0	0
AC10FP0 AC20FP0	Polyurethane air filter with metal mesh	0	0	0	0
AC10FL0 AC20FL0	Flow switch	0	0	0	0
AC10EB0 AC20EB0	Eye bolts to lift the chiller safely	0	0	0	0
AC10WH0 AC20WH0	Handling wheels	0	0	0	0
AC10WM0 AC20WM0	Wall-mounting brackets	0	0	0	0
AC10AV0 AC20AV0	Anti-vibration mounts	0	0	0	0

as per standard O optional

🗴 not available

STULZ

EN//0915/WLA Compact/61



14. Contacts

STULZ SpA has a worldwide sales and technical support network. For any request or doubt regarding STULZ SpA products, contact the local partner or branch. The list is available on www.stulz.it

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