ENG

INSTRUCTION MANUAL

CHILLY

COMPACT WATER-CHILLER

Chilly 45-M Nr. **16 05 0150 - 16 05 0163**

INSTRUCTION MANUAL CHILLY

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OPERATING INSTRUCTIONS

CE

These operating instructions have to be read carefully before putting the chiller into operation.

Please observe these instructions, otherwise the manufacturers liability for subsequent damage will be cancelled. All rights required for further technical development and modification, are reserved.

IMPORTANT!

Proper use of the chiller

This chiller is designed for the cooling of water only. For the use of other agents (e.g. deionised water) please contact the manufacturer. Limits indicated in the technical data must be adhered to strictly, otherwise the manufacturers liability for subsequent damage will be cancelled. Chilling of flammable or explosive substances is prohibited.

IMPORTANT!

Please keep these operating instructions for further use!

1 SAFETY / PREVENTION OF ACCIDENTS

General information

These operating instructions contain valuable information which has to be observed during initial start-up, operation and maintenance. Therefore these instructions are to be read by the installer and operating personnel in charge, before putting the chiller into operation.

All general safety instructions mentioned in this chapter and special security instructions given in other sections of this manual have to be observed.

Personnel qualification and training

Operating, maintenance, inspection and installation personnel must be qualified. Responsibility and supervision must be clearly explained to the operator.

Danger due to non-observance of safety instructions

Non-observance of safety instructions may cause injuries, endanger the environment or damage the chiller. Non-observance of safety instructions will cancel the manufacturers liability for subsequent damage.

Safety conscious operation

The safety instructions given in these operating instructions, including national regulations on accident prevention as well as any specific chiller safety instructions must be observed.

Safety instructions for user / operator

Protective guards that have been installed to prevent contact with moving parts may not be removed when the unit is being operated. Danger resulting from the use of electrical power is excluded (for detailed information, refer to the VDE regulations and the regulations of the local power supply authorities).

Safety instructions on maintenance, inspection, and installation work

Basically none of the cleaning or maintenance tasks may be performed until the unit has come to a complete standstill. As soon as this work has been completed, all the safety devices and protective equipment must be mounted or installed according to their proper function.

Arbitrary modification and production of spare parts

The unit may be converted only if an agreement has been reached with the manufacturer. Original spare parts and accessories accepted by the manufacturer serve as safety guarantee. Use of other parts may cancel the manufacturer‘s liability for subsequent damages

1 SAFETY / PREVENTION OF ACCIDENTS

Non-permissible operating methods

The operational safety of the delivered unit is guaranteed only if the unit is properly used as intended.

Limits indicated in the technical data must not be exceed

Health hazards with the refrigerant

The refrigerant has only a very low acute health hazard. It has narcotic effects only at extremely high concentrations. After acute exposure to extremely high concentrations the substance is eliminated over the lungs very quikkly. The refrigerant has a certain irritating effect on skin and mucous membranes. Exposure of the skin to liquid refrigerant can cause frost bite. In the presence of open flames or hot surfaces refrigerant can decompose and form toxic decomposition products (e.g. hydrogyn chloride, phosgene). The refrigerant evaporates when exposed to air . Intentional exposure of refrigerant is not permissible. The chiller must be handled with great care to prevent any damage occuring through transport operations.

Safety symbols

Warning!

This symbol is to be found next to all the safety instructions involving work that may result in serious injuries. Observe these instructions and proceed with extreme caution in such instances. Inform all other users as well. In addition to the instructions included in this manual, the applicable general safety and accident prevention regulations must also be taken into account.

Attention!

This symbol is to be found next to the items in this manual that must be strictly observed to ensure proper application of the guidelines, regulations, instructions and procedure of tasks and to make sure that the machine or other parts are not damaged or destroyed.

Note!

This symbol explains that chiller is designed according to state-of-the-art technology and is safe to operate. Dangerous situations may, however, be the result if the unit is used by personnel without adequate qualification or if it is not used correctly according to its intended purpose. Accordingly, this may affect efficient operation of the unit.

2 TRANSPORT

The chiller may only be transported in original packaging to the site of initial operation. In case of damage the manufacturer must be informed immediately. If the unit is moved to another location in a factory, all connections must be disconnected from the unit. Moving the unit to another location must be carried out without causing damages. If damage occurs despite these instructions, the unit must be checked by an expert and repaired as required before it is put into operation again.

Note:

The Manufacturers Liability excludes any Damage to the Chiller subsequent to Transportation.

When transporting the unit, consider the weight limits indicated in the technical data.
Use a fork-lift, truck or a crane with the corresponding load-capacity.

The fully-hermetic compressor is mounted on rubber. Avoid vibrations during transport.
Failure to observe can result in compressor damage.

3 INSTALLATION AND INITIAL OPERATION

Installation

Prior to installation and commissioning of the chiller, please observe the following points strictly:

- ***The fresh air intake temperature may not exceed the max.ambient temperature (refer to name plate)***
- Assure that the required quantity of air is available at air cooled chillers.
- **Assure that the chiller hot air outlet does not warm up the environment or room excessivly**.
- Min.distance of fresh air intake: at least 0,5 m (air cooled version)
- Min.distance of hot air outlet: at least 1,0 m (air cooled version)
- Connection of an air supply and exhaust duct is not admitted.
- **The fresh air intake of the unit (condensor) may not be situated infront of a heat rejecting device like a pump or electric motor.**
- The unit must be set up on level, solid surfaces only, in order to ensure the required stability. For outside erected chillers, the minimum outdoor temperature should be considered from the technical data.

According to EN 60204-1 the chiller must be positioned in a way that its power switch is located at a height between 0.6m-1.9m above the access level (floor).

Floor space

A minimum space must be left open around the installation, so that there is access to the various components and to the control cabinet.

The distance from any constructions blocking the air supply must be at a minimum distance of 0,5 meter.

3 INSTALLATION AND INITIAL OPERATION

Electrical connection

- The chiller is ready for connection and is connected to a one or three phase current network (mains voltage refer to technical data).
- The power supply has to be connected in a ***right handed rotatory field***. In order to confirm the correct connection the direction of rotation of the fan motor must turn in the same direction as the arrow.
- All electrical connections in the switch board are to be tightened prior to commissioning.

Incorrect connection of power supply and incorrect power supply will cancel the manufacturers liability for subsequent damage.

Hydraulic connection

After completing the electrical connection it is necessary to connect the Chiller to the consumer VIA flexible or fixed pipes.

- Selection of materials of pipes. PVC, Plastic, Stainless Steel, Copper and Brass are permissible.
  Note: Mild Steel and Galvanized Steel is not permissible.
- Selection of cross – section of pipes (for advise please refer to manufacturer).
- Insulated pipes are to be used if the distance between the chiller and the consumer is greater than 5 m.
- Refer to technical data (pump diagram) for flow rate and pressure available from the chiller.
- Before starting up it is always necessary to prime the pump with the medium to be transported. (refer to BLEEDING OF PUMP in this chapter).
- If the consumer is placed on a higher level than the chiller unit, a non-return valve has to be recommend in the water outlet as well as an solenoid valve has to be installed in the water inlet.
- Connect water inlet port to consumer return line.
- Connect water outlet port to consumer inlet line.
- Connect water supply port (if available) to city water net.
- Please test float valve adjustment (option). Float valve is factory adjusted at 3 bar water pressure.

Incorrect hydraulic installation will cancel the manufacturers liability for subsequent damag

Refilling of the tank

Automatic refill

Tap/fresh water feed connected to water supply port guarantees constant level in the tank, so that evaporator always remains submerged.

Manual refill

Filling of water manually through water inlet port or directly into tank.

The waterlevel can be observed by the water sightglass which can be seen from the outside of the housing. Ensure that the evaporator is submerged.

3 INSTALLATION AND INITIAL OPERATION

Important:
Prior to filling of the tank it is esessential to test the water quality and if required carry out watertreatment (refer to chapter 7).

To avoid corrosion at the stainless steel evaporator, we recommend to use water with a low salt content (chloride content < 20 mg/l). To avoid thickening of the tank water, we recommend to replace the system content every 1 to 3 months.

- an increasing evaporation of the tank water means an increasing chloride content (➔please refer to chapter 6).
- For chillers running at temperatures lower than freezing point, a water/glycol mixture at the appropriate ratio should be filled.
  30% Glycol up to –10°C, at lower temperatures ➔please refer to the manufacturer.
- The tank should be filled to the max. level of the water level tube.
- Prior to start up it is always necessary to prime the pump with the medium to be transported.
- Prior to start up the pump must be bled in order to remove air from the pump.

Bleeding of the pump

- Remove bleeding screw P (option)
- Reinstall bleeding screw and tighten as soon as medium exits from filler fitting.

Important: Ventilation of the pump

before start the process,following steps are to relize for ventilate the pump:

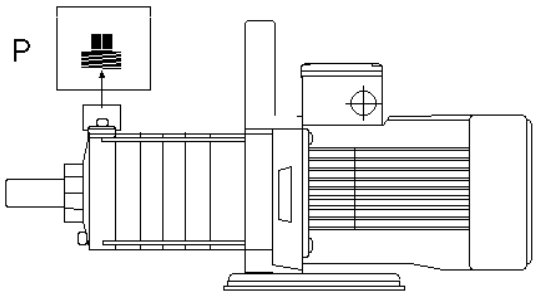
- check the waterlevel in the tank and refill it, if necessary
- open the outlet of the pump, or
- connect only the outlet of the pump, let the inlet free flow out

If there is still some air in the system, you have to repeat the steps as described before.
After open the outlet start the pump for a short time.

Attention

before start the operation of the pump, the function of this pump must be absolutly check.
In case that the pump after a longer standstill and ventilation stopp , you have to introduce a screwdriver through the airgrille into the shaft and turn it clockwise (1-2 turns min.), until a easiness is produced.

CM-pump



3 INSTALLATION AND INITIAL OPERATION

Start–up of chiller

■ After successful completion of all instructions given in this chapter, the refrigerating plant is switched on by means of the main switch or master switch (if installed). The **OPERATION** light will light up during normal operation.

Master switch position: **O = Off** **1 = Operation**

■ In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the control switch (please contact the manufacturer).

■ Confirm the correct power supply connection.The direction of rotation of the fan motor must turn in the same direction as the arrow.

4 CARE AND MAINTENANCE

General

In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the main switch or if missing over the power supply.

Fluid (water)

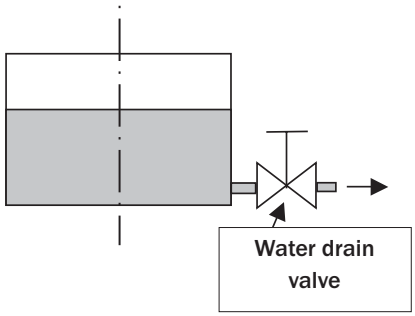
Cleanliness of the water/fluid should be tested daily. If required, the water/fluid has to be drained and the evaporator, tank and pump has to be rinsed or cleaned.

Drain water from the tank as follows:

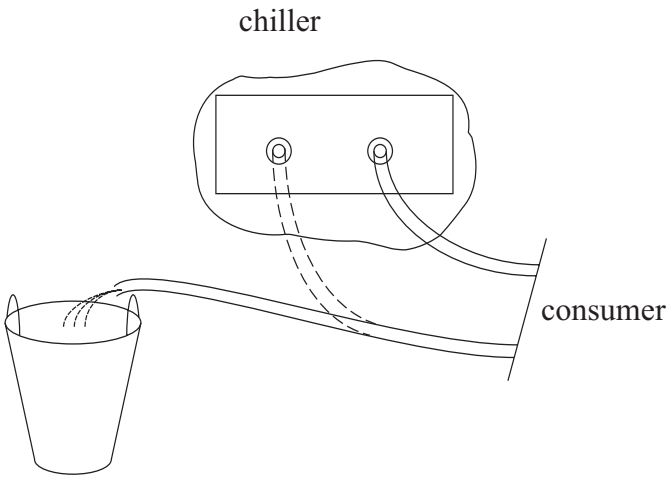
- Option - drain water through water drain valve (A) Special equipment available on request
- By disconnecting the connection medium on the water inlet side while the pump is running

  Attenion: use a buchet (B).

(B)



(C)



Refilling of fluid

Automatic refill (option)

Automatic water feed guarantees constant level in the tank, ensure that the evaporator always remains submerged. Float valve function has to be tested regularly.

Manual refill

Ensure that the evaporator is always submerged.

Water supply

Larger volumes of fresh water supply may disturb the equilibrium of mixture or reduce concentration of antifreezing agent. The content of concentration should be checked and determined at required intervals of time.

Standstill for prolonged period

Longer standstill of chiller requires draining of tank and complete water circuit. For renewed start-up of the chiller the same steps as for the initial start-up must be considered.

Cleaning of condenser (air-cooled chillers)

Make sure that the cooling fins of the condenser remain clean in order to guarantee the required heat exchange.

The condensor must be cleaned in monthly intervals or if required at shorter time intervals.

Dust and dirt clogging up the cooling fins should be removed by means of compressed air.

5 FAULT DIAGNOSIS

By means of the following instructions a quick failure analysis can be made. The user can repair some failures without any assistance. Please do not hesitate in phoning the manufacturers after sale service department if assistance is required.

Corrective maintenance of the refrigeration cycle must be performed by competent refrigeration specialists only. In case of any problems concerning the refrigeration cycle, please contact the manufacturer

Note:

Please ensure to switch »0« the main switch, before any maintenance or repairment work has to be performed on the chiller.

5 FAULT DIAGNOSIS

Fault Refrigeration cycle	Possible cause	Repairement
A. Compressor and fan motor running, but chiller has no cooling capacity	Refrigerant leakage - refrigerant level to low	Repairement by qualified refrigeration technician only
	Dirty condensor	Clean condensor
	Ambient temp. to high	Refer to technical specifications
	Consumer capacity to high	Refer to technical specifications
B. Compressor and fan motor is not running	Temperature controller setting incorrect	Re-adjustment of temp. controller
	Temperatur controller defect	Replacement by qualified technician only
	Fan Motor defect	Switch off the chiller and restart after 3 hours only. If compressor does not start, replacement by qualified refrigeration technician only. If compressor starts, refer to D.
C. Compressor does not run, but fan motor is running	Compressor Bimetal/Clixon switches compressor of due to overheating	Switch off the chiller and restart chiller after 3 hours only. If compressor does not start, replacement by qualified refrigeration technician only.
	If compressor starts after 3 hours	1. Refrigerant leakage - refrigerant level to low 2. Dirty condensor 3. Ambient temp. to high 4. Consumer capacity to high
D. Compressor is running, but fan motor does not run	Fan Motor defect	Replacement by qualified technician only.

5 FAULT DIAGNOSIS

Fault Water cycle	Possible cause	Repairement
Pump is not pumping any water	Air in the water cycle	Refer to air bleeding instructions in Documentation
	Pump fuse defect	Replace fuse
	Pump defect	Replacement by qualified technician only

6 IMPORTANT INFORMATION ON WATER QUALITY

In order to achieve a correct and trouble-free operation on your water chiller it is necessary to examine the water quality and, when necessary, carry out water treatment. Corrosion, furring and biological problems can occur in the water system.

The following information is important for the assessment of a half-open system:

- water quality
- all materials having contact with the cooling water
- max. and min. system water temperature
- requirements for water quality

1. Deionized / Demineralized / Destilled / Return Osmosis water

When using deionized, demineralized, destilled or return osmosis water it is required to add a corrosion inhibitor or glycol to the water system.

2. Fresh water/ City water / Tap water

When using fresh water, city water or tap water it is recommended to analyse the water by a specialist to minimize the risk of any chiller damage through a high chloride content. A high chloride content (>20mg/l) in the system water can cause corrosion on the stainless steel evaporator.

It is required to make use of a corrosion inhibitor as additive to the system water. We recommend the use of ***Nalco 77382 at a concentration of 5g/l in the complete water system***, unless an Inhibitor with similar characteristics is prescribed from the manufacturer.

Organic sediments and algae in the water cycle can be controlled by analysing the number of organic germs. If the number of organic germs exceeds 1000 KBE/ml, we recommend to use ***Biozid Nalco 77352 at a concentration of 100mg/l***. After 3 to 4 days it is recommended to exchange the complete system water. The chiller can operate during this period.

Evaporation leads to a concentration of minerals and chloride in the system water, especially at the surface level. The water parameters which are initially below the guide values, can increase to exceed the guideline value as a result of the evaporation. An excessive chloride content in the system water will cause corrosion on the stainless steel evaporators and stainless steel tank. We therefore recommend to regularly monitor the water quality and if necessary drain the concentrated water from the system in order to rematch the water values to the parameters as per guideline. It is recommended to exchange the water at least once or more times per year and to inspect the evaporators on regular intervals.

Water quality parameters:

ph-value:	7-9	alkality (°dH):	<1
conductivity:	<300 µS/cm	chloride content:	<20 mg/L
hardness (°dH):	7,5-8,5	organic germs:	<1000 KBE/ml

For any further questions please contact the water specialist (S. 16)

Ignorance of the above information cancels the Manufacturers liability for subsequent damage.

6 IMPORTANT INFORMATION ON WATER QUALITY

For assistance regarding watertreatment please contact:

GERMANY
Nalco Deutschland GmbH
Ludwig-Landmann-Strasse 405
D-60486 Frankfurt am Main
Phone: 069-793-40
Fax: 069-793-4295

FRANCE
Nalco
N°5 rue Rosa Bonheur
F-59290 Wasquehal
Phone: 03 20 11 70 00
Fax: 03 20 11 70 70

EUROPE
Nalco European Operations
2342 BV Oegstgeest
P.O. Box 627, NL-2300 Leiden, The Netherlands
Phone: 31-71-524-1100
Fax: 31-71-524-1197

USA
Nalco Company
Nalco Center
1601 W. Diehl Road
Naperville, IL 60563-1198 U.S.A.
Phone: 630-305-1000
Fax: 630-305-2900

SOUTH AMERICA
Nalco Latin America Operations
Av. Das Nacoes Unidas
17.891, 11o, Andar
Santo Amaro 04795-100
Sao Paulo, Brazil
Phone: 55-11-5644-6500
Fax: 55-11-5641-7687

ASIA
2 International Business
2-20 The Stategy Tower 2
Singapore 609930
Phone: 0065 (0) 68 61 40 11
Fax: 0065 (0) 68 61 40 11

7 PLATE HEAT EXCHANGER (OPTION)

Cleaning of plate exchanger

Soldered heat exchanger: For the removal of lime- and rust deposits, purifying agent SWEPcip AS, RS, CS or S (according to material) is suitable. Cleaning may be performed by means of SWEP cleaning device C.I.P 90 (circulation method) or a stationary pump.

Screwed heat-exchanger: In this case the heat exchanger can also be disassembled for cleaning.

Steel	Lime	Rust	Lime + Rust
	SWEPcip AS	SWEPcip RS	SWEPcip S
Max. Temp:	80 °C	80 °C	50 °C
Max. time:	8 h	8 h	8 h
Mixture ratio:	1:10	1:5	1:5

Stainless steel	Lime	Rust	Lime + Rust
	SWEPcip AS	SWEPcip CS	SWEPcip AS
Max. Temp:	80 °C	80 °C	80 °C
Max. time:	8 h	8 h	8 h
Mixture ratio:	1:10	1:5	1:10

See attached concept for further technical data

8 Waste disposal

The refrigerant cycle of the chiller contains an enviroment friendly refrigeration fluid. Only registered and qualified refrigeration companies are permissible to carry out work on the chiller. Before attending any repairments or maintanance work on the refrigeration cycle the refrigerant must be recovered by means of a recovery unit. Any intention blowing off the refrigerant is prohibited. Disposal of the refrigerant and any other parts like compressor oil or waste water must be completed according to local regulations only.

Specification subject to change.

FOR YOUR NOTICE

Konformitätserklärung
Declaration of Conformity
Declaration de Conformite

Hersteller: Manufacturer: Fabricant:	WTG-QUANTOR GmbH Europa-Allee 53 D-54343 Föhren	
Produktbezeichnung: Product description: Descriptions produits	Chilly 45-M	- Kühlanlage zur Rückkühlung von Flüssigkeiten - Chiller - Refroidisseur
Seriennummer: Serial number: Numéro de série:	16 05 0150 - 16 05 0163	

Hiermit erklären wir, dass nachfolgend genannte Produkte aufgrund ihrer Konzeption, Konstruktion und Bauart in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheitsanforderungen der nachstehend genannten Richtlinien einschließlich der zum Zeitpunkt der Erklärung geltenden Änderungen entsprechen.

Einschlägige EG-Richtlinien:
- EG-Maschinenrichtlinie 2006/42/EG
- EG-EMV Richtlinie 2014/30/EU

Angewandte harmonisierte Normen:
- DIN EN ISO 12100:2011-03; Sicherheit von Maschinen, Allgemeine Anforderungen
- DIN EN 60204-1:2007-06; Sicherheit von Maschinen, elektrische Ausrüstung von Maschinen
- DIN EN 378-1 bis -4:2012-08, Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umweltrelevante Anforderungen

We herewith confirm that the following products based upon their construction as well as their distributed version meets the relevant basic security and health requirements of the EC directives below referenced, including any alterations made at the time of the declaration.

Applied machine Directives:
- EC- Machine Directive 2006/42/EG
- EC- EMV Directive 2014/30/EU

Applied harmonized Standard:
- DIN EN ISO 12100:2011-03: Safety of machines, General requirements.
- DIN EN 60204-1:2007-06;Safety of machines, Electrical Equipment of machines
- DIN EN 378-1 to -4:2012-08, Refrigeration and Heat pump systems – safety and environmental requirements. Requirements

Par la présente nous déclarons que les produits suivants de part leur fabrication et de part leur distribution sont conformes aux exigences essentielles de sécurité et de santé des directives CE ci-dessous référencés, incluant leurs avenants publiés à ce jour.

Directives CE Appliquées:
- EC- Directive Machine 2006/42/EG
- EC- Directive CEM 2014/30/EU

Standards Harmonisés Appliqués:
- DIN EN ISO 12100:2011-03; Sécurité des machines, exigences générales.
- DIN EN 60204-1:2007-06; Sécurité machines, équipements électriques des machines
- DIN EN 378-1 à -4:2012-08, Systèmes de Réfrigération et Pompes à Chaleur – Sécurité et exigences environnementales

Föhren, 01.02.2016

Markus Milz

Managing Director

(Bevollmächtigte Person zur Zusammenstellung der technischen Unterlagen und zur Ausstellung dieser Erklärung)
(Authorized person for technical documentation and for issuing this clarification)
(Personne autorisée pour la documentation technique et pour publier le présent declaration)

T E C H N I C A L D A T A S H E E T (118771)

Kühlwasser-Rückkühler
Typ Chilly 45-M/USA-230/1/60-M

1. GENERAL DATA

Refrigerant gas:		R404A	
Specifications:			
Nominal ambient air:	°C	32	
Coolant temperature:	°C	-8 0 15	
Cooling Capacity:	W	450 1500 4000	
Min ambient air:	°C	10	
Max ambient air:	°C	42	
Min coolant temperature:	°C	-10	
Max coolant temperature:	°C	25	
Evaporator material:		Copper	
Temperature control:		electronic, direct	
Temperature display:		digital	
Control voltage:		230V AC	
Main Power supply:		1/N/PE/60Hz 230V/+-10%	
Total absorbed power:	kW		max: 2.8
Full load current:	A		max: 14.1
Safety fuse protection:	A	16.00	
Sound-pressure-levels in 1m Distance:	dB(A)	70.00	
Paint:		Abdeckhaube Edelstahl;Bodenblech RAL3000	

2. AIR CONDENSER:

air cooled, axial

Nominal Air Flow:	m³/h	2390.00	
Number of fan:	Unit	1	
Nom Absorbed power:	kW	0.18	
Starting current:	A	0.81	

3. COMPRESSOR:

reciprocating

Number:	Unit	1	
Technology:		direct	
Total absorbed power:	kW		max: 1.80
Full load current:	A		max: 9.43

4. PUMP:

First PUMP:		horizontal centrifugal pump	
Type:		CM1-3	
Number:	Unit	1	

Total absorbed power:	kW	0.60
Full load current:	A	3.60
Nominal flow rate:	m³/h	0.80
Nominal pressure rate:	bar	3.50

5. LIQUID TANK: plastic

Volume:	l	26.00
Outlet / inlet connections:	Inch	1/2

6. WEIGHT AND PHYSICAL SIZE:

Length:	mm	760
Width:	mm	610
Height:	mm	500
Weight :	kg	81

Description of the controller Eliwell ‚ST120‚

operation indicator

1. Switch On/Off: (Option)

   Push the button ⏻ long (>5 seconds) to switch from operation mode „Off“ to „On“ and converse.

   In the mode „Off“ the display will show **Off.**

2. Normal display:
   The actual **medium temperature** is displayed.

3. Adjusting the setpoint:

   a. Fixed value regulation (absolute control)

push set 1x short	⇒	**SEt** is displayed
push set 1x short	⇒	the setpoint appears in the display, you can adjust it by pressing ⌄ or ⌃
		It will be saved in the controller by pressing set The display will switch back to **Set.**
push ⏻ 1x short	⇒	The actual mediumtemperature is displayed

4. Fault:

As soon as one or more faults appear this will be displayed by this symbol 
To get the list of the existing faults displayed proceed as follows:

push set 1x short	⇒	 is displayed
push set 1x short	⇒	**AL** is displayed
push set 1x short	⇒	List of fitting mistakes, those can be shown with the following button:  and 
push ⏻ 1x short	⇒	**AL** is displayed
push ⏻ 1x short	⇒	The controler will be shown as standard indication.

5. Alarm indications

Number	Desciption
E1	Sensor 1 fault
E2	Sensor 2 fault
E3	Sensor 3 fault
AH1	Alarm high temperature
AL1	Alarm low ttemperature
Opd	Digital input disconnected

Elektrodokumentation
Electrical documentation

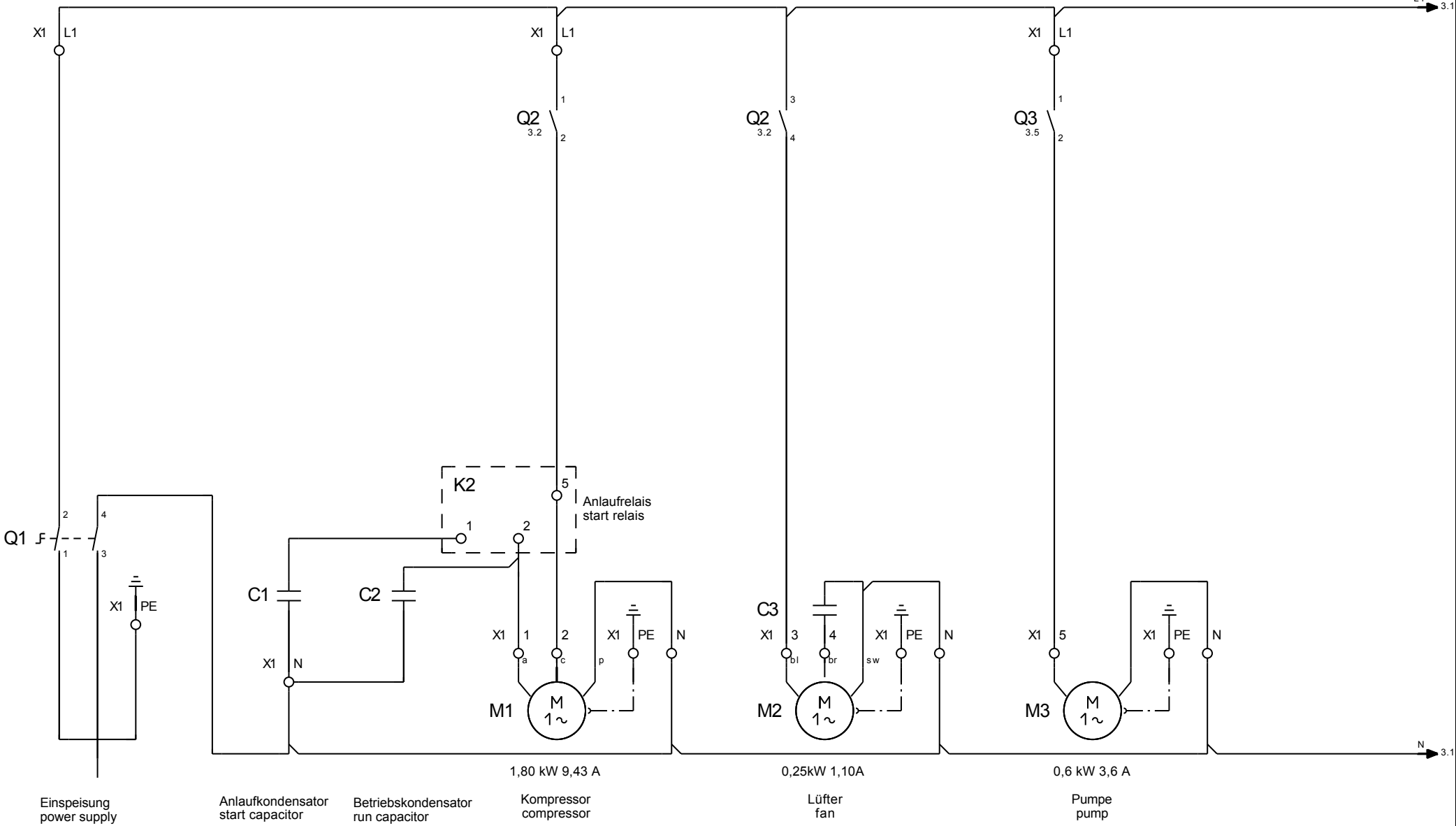
Anschlußdaten
Technical data

Maschinentyp : Chilly 45-M/USA-230/1/60
Type

Anschlußspannung Voltage	:	230 V
Frequenz frequency	:	60 Hz
Steuerspannung 1 control voltage 1	:	230 V
Steuerspannung 2 control voltage 2	:	---
Anschlußleistung Total absorb power	:	2,9 kW
Max. Betriebsstrom Full load Current	:	14,4 A
Max. Vorsicherung Safety Fuse	:	16 A

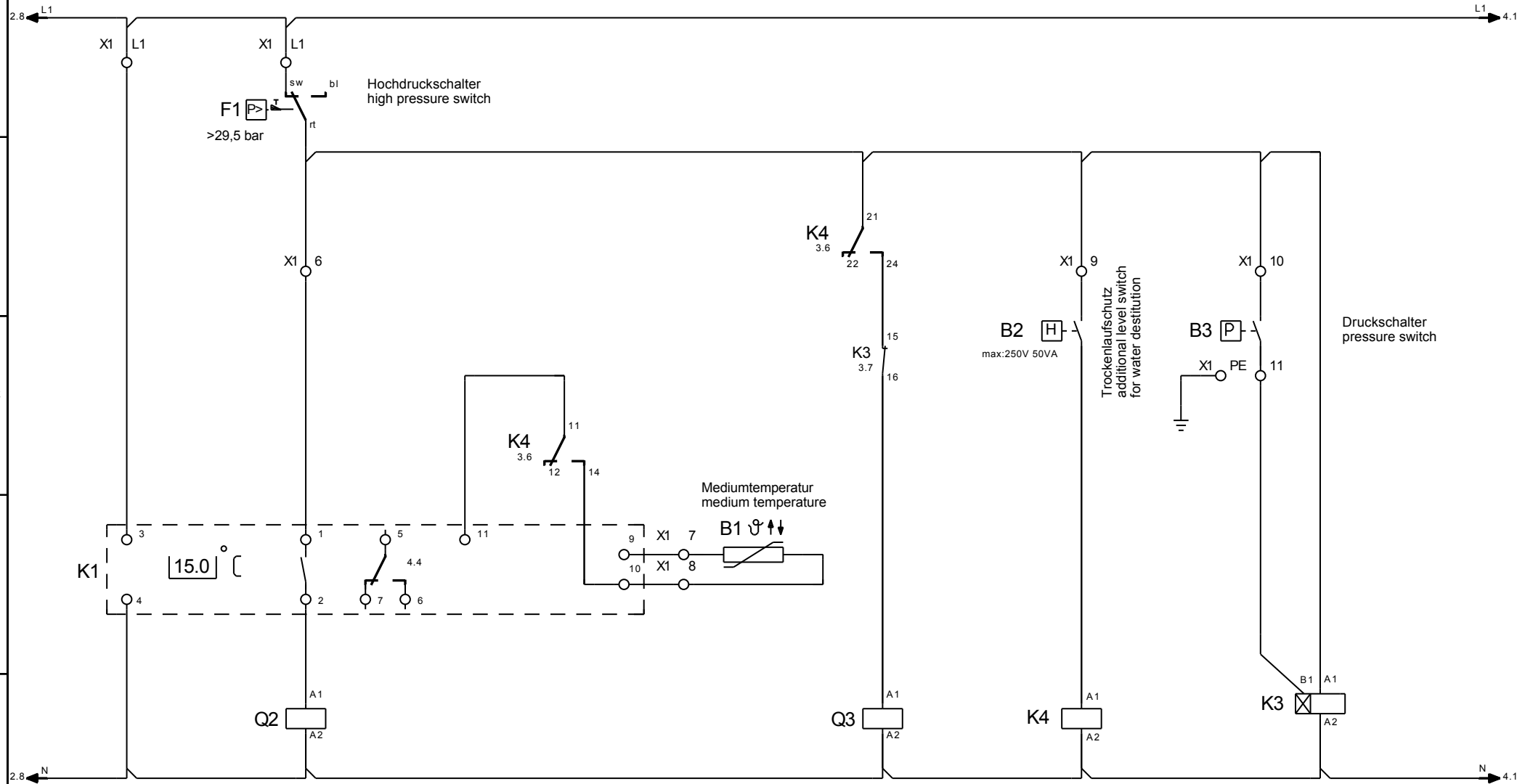
				Datum	28.04.2015			Anschlußdaten Technical data	Zeichng. Nr.	E0012482	=
				Bearb.	Bruchhof						+
				Gepr.	Wiebe				Typ	Chilly 45-M/USA-230/1/60	Blatt 1
Zust.	Änderung	Datum	Name	Norm		Ursp.	Ers. f.	Ers. d.			von 5 Blatt

Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H07V-K 2,5mm ²
all cables without numbers are H07V-K 2,5mm ²

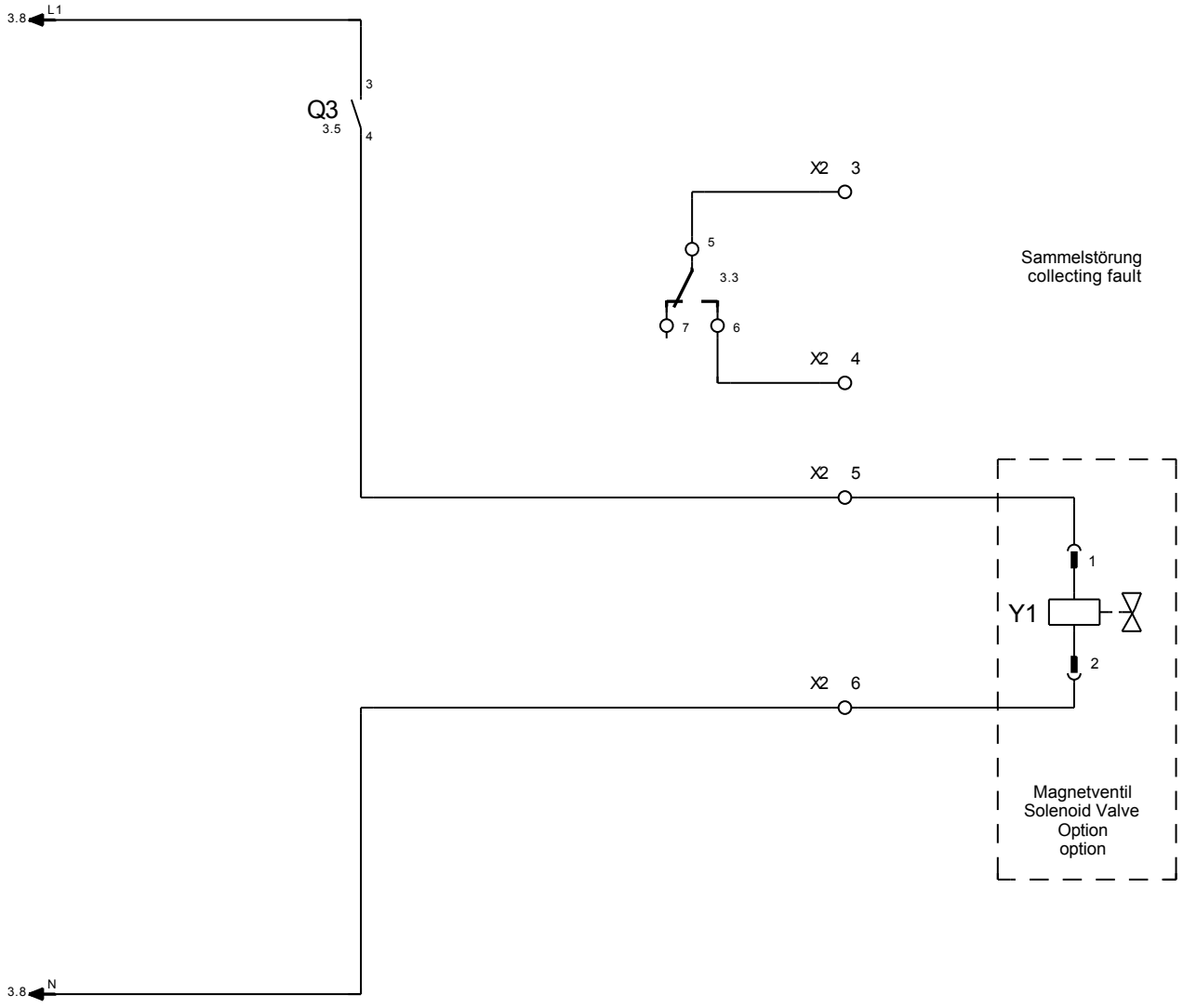


				Datum	28.04.2015			Hauptstromkreise Main circuit	Zeichng. Nr.	E0012482	=
				Bearb.	Bruchhof						+
				Gepr.	Wiebe				Typ	Chilly 45-M/USA-230/1/60	Blatt 2
Zust.	Änderung	Datum	Name	Norm		Ursp.	Ers. f.	Ers. d.			von 5 Blatt

Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H07V-K 2,5mm ²
all cables without numbers are H07V-K 2,5mm ²



				Datum	28.04.2015			Hauptstromkreise Main circuit	Zeichng. Nr.	E0012482	=
				Bearb.	Bruchhof						+
				Gepr.	Wiebe				Typ	Chilly 45-M/USA-230/1/60	Blatt 3
Zust.	Änderung	Datum	Name	Norm		Ursp.	Ers. f.	Ers. d.			von 5 Blatt



				Datum	28.04.2015			Hauptstromkreise Main circuit	Zeichng. Nr.	E0012482	=
				Bearb.	Bruchhof						+
				Gepr.	Wiebe				Typ	Chilly 45-M/USA-230/1/60	Blatt 4
Zust.	Änderung	Datum	Name	Norm		Ursp.	Ers. f.	Ers. d.			von 5 Blatt

Pos. pos.	Seite page	Bez. Label	Benennung designation	Typ type	Hersteller manufacturer	Artikelnummer Part number
1	3	B1	Fühler sensor	NTC-Fühler, NTC 6x40mm 1,5m Kabel, IP 68	Eliwell	56162
2	3	B2	Schwimmerschalter level switch	NIG-A-G.3/8"Viton, PP	Elobau	37206
3	3	B3	Druckschalter pressure switch	FF 115-S8 BAR, NEU PS1 A 8 R	ALCO	11042
4	2	C1	Kondensator Condenser	100µF	Tecumseh Europe- SA	-- --
5	2	C2	Kondensator Condenser	17,5µF	Tecumseh Europe- SA	--- -
6	2	C3	Kondensator Condenser	5µF	ebm-papst GmbH & Co.KG	-...-
7	3	F1	Hochdruckbegrenzer high pressure limiter	ACB 061F9248	Danfoss	28766
8	3	K1	Thermostat thermostat	ST120 230V AC	Eliwell	56135
9	2	K2	Schütz contactor	Anlaufrelais	Tecumseh Europe- SA	-------
10	3	K3	Zeitrelais Time delay	3RP1000-1AP30 , 3RP2005-1AP30	SIEMENS	12484
11	3	K4	Schütz contactor	LZX:RT424730 230V AC	SIEMENS	22034
12	3	K4	Schütz contactor	LZX:RT78625	SIEMENS	28343
13	2	M1	Kompressor compressor	CAJ 4517 Z	L'Unité	26383
14	2	M2	Lüfter fan	W4E350JN	ebm-papst GmbH & Co.KG	64297.
15	2	M3	Pumpe pump	CM 1-3 ,1x230 V, 60 Hz	GRUNDFOS GmbH	69869
16	2	Q1	Hauptschalter main-switch	H216-41300-2X062	Sälzer GmbH	18315
17	3	Q2	Schütz contactor	3TG10 10-OAL2	SIEMENS	17891
18	3	Q3	Schütz contactor	3TG10 10-OAL2	SIEMENS	17891
19	4	Y1	Magnetventil Solenoid Valve	21H12KOE120-UDA12230AS	SFS - Fluid Systeme GmbH	32490

Zust.	Änderung	Datum	Name					
				Datum	28.04.2015			
				Bearb.	Bruchhof			
				Gepr.	Wiebe			
				Norm		Ursp.	Ers. f.	Ers. d.

Stückliste
Bill of Materials

Zeichng. Nr. E0012482

Typ Chilly 45-M/USA-230/1/60

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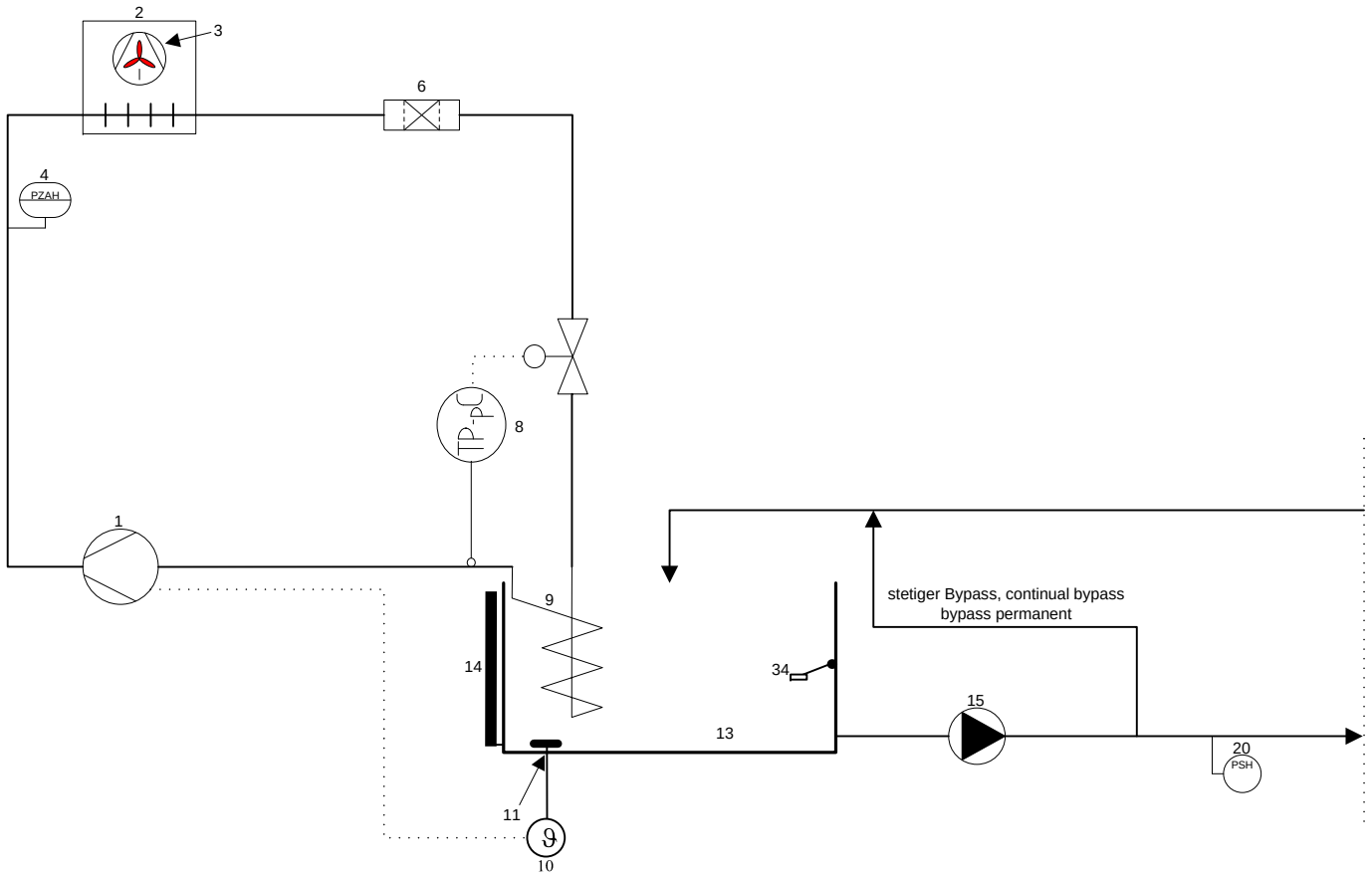
Blatt 5
von 5 Blatt



Nr.	dt.	engl.	franz.
1	Kompressor	compressor	compresseur
2	Verflüssiger	condenser	condenseur
3	Lüfter	fan	ventilateur
4	HD- Pressostat	hp- switch	pressostat HP
6	Trockner	drier	déshydrateur
8	Expansionsventil	expansion valve	détendeur
9	Verdampfer	evaporator	évaporateur
10	Thermostat	thermostat	thermostat
11	Fühler	sensor	sonde
13	Tank	tank	bac
14	Füllstandsanzeige	fluid level indicator	niveau visuel
15	Pumpe	pump	pompe
20	Druckschalter	hp- controller	pressostat hp
34	Schwimmerschalter	float switch	controleur niveau

Fließschema/ hydraulic schema/ schéma hydraulique

Type: Chilly 15-45-M

bearbeitet	geprüft		ZEICHN. NR.
D.Krieger	**D.Bruchhof**		**F4016**
DATUM	DATUM		Blatt
29.04.2015	**29.04.2015**		**1 von 1**

INSTRUCTION MANUAL CHILLY