

# Chiller COOL DX version G

## Installation and Maintenance Instructions

### SILVER, size 008-080

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COOL DX



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## **1. OVERVIEW**

### **1.1. General**

#### **COOL DX Chiller**

Chiller COOL DX is a complete chiller for comfort cooling in the air handling system. All the components refrigeration engineering-wise and electrically pre-wired and collected inside a common casing. The outer skin is made of galvanized sheet steel, pre-painted in Swegon's grey metallic colour (closest comparable: RAL, 9007). The inner skin material is aluminium-zinc coated sheet steel. Environmental class C4. Panel thickness of 52 mm with intervening insulation consisting of mineral wool.

The cooling coil and condenser are fabricated of copper tubing and profiled aluminium fins; the casing is made of galvanized sheet steel.

The chillers are test run prior to delivery.

The COOL DX is available in 19 capacity variants spread on nine physical sizes, designed for use with the size 008 - 080 SILVER air handling units.

#### **Compressors**

The compressor in the COOL DX chiller is of scroll compressor type and/or rotary compressors.

#### **Completely direct-acting system**

The COOL DX has a completely direct-acting system. It has an evaporation coil for direct-evaporating refrigerant on the cold side and a condenser coil on the hot side.

#### **Refrigerant**

The COOL DX has double refrigerant circuits, which are separate from each other. Type R410A refrigerant is used. The refrigerant circuits are charged with refrigerant on delivery. At present, this refrigerant has no known influence on the ozone layer and no known future restrictions are anticipated.

#### **Refrigerant volume**

See section 10. General technical data.

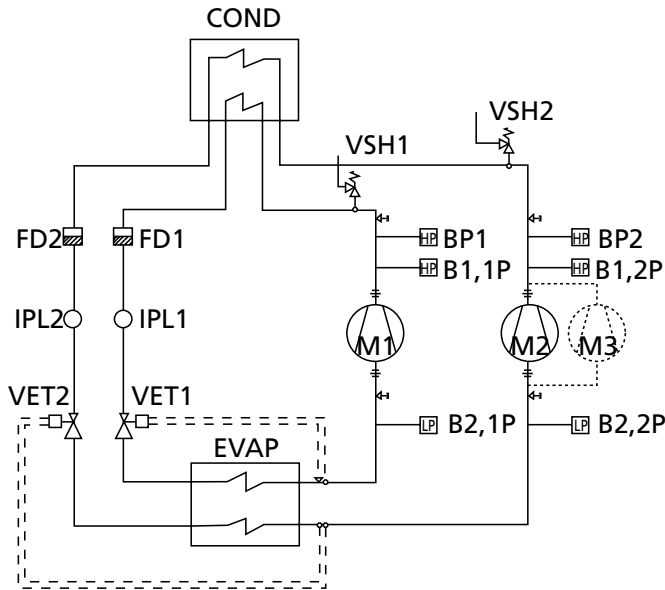
#### **Installation check/Obligation to report/ Leakage tracing interval**

Must be carried out according to the F-Gas Regulation EU/517/2014 and associated local legislation. See also Section 3.1.

#### **Quality System to ISO 9001 and Environmental Management System to ISO 14001**

Swegon AB works to a certified quality system that conforms to ISO 9001 standard and a certified Environmental Management System that conforms to ISO 14001.

## 1.2 Basic function diagram



COND	Condenser
VSH1	Overpressure protection
VSH2	Overpressure protection
B1,1P	High pressure sensor
B2,1P	Low pressure switch
B1,2P	High pressure sensor
B2,2P	Low pressure switch
BP1	High pressure switch, alarming
BP2	High pressure switch, alarming
M1	Compressor
M2	Compressor
M3	Compressor (size 80, cap. var. 3)
EVAP	Evaporator
VET1	Expansion valve with thermostat
VET2	Expansion valve with thermostat
IPL1	Sight glass, cooling medium circuit 1
IPL2	Sight glass, cooling medium circuit 2
FD1	Filter dryer
FD2	Filter dryer

### Function

There are two refrigerant circuits in the chiller. The circuits are separated from one another.

Each circuit is equipped with its own finned condenser, finned evaporator and compressor.

The two compressors are of different capacity, which makes it possible to regulate the capacity in 3 steps.

The gaseous refrigerant is compressed by cooling compressors M1 and M2 and from there flows to condenser COND, where it is cooled by the extract air and is condensed to liquid form.

The gaseous refrigerant flows through expansion valve VET1 and VET2, where the pressure and the temperature decrease.

From the expansion valves, the refrigerant advances to evaporator EVAP, where the refrigerant evaporates and cools down the outdoor air.

The evaporated refrigerant flows from evaporator EVAP further to the suction side by the compressors to once again be compressed.

### Regulation

The cooling capacity is regulated in three binary steps by having one or two compressors in operation.

COOL DX is controlled via a signal, 0 – 10 V.

**Step 1:** When cooling is needed, Compressor M1 is started.

**Step 2:** If more cooling is needed, Compressor M2 starts and at the same time Compressor M1 stops. An adjustable time delay (a step duration of 250 seconds) ensures that Compressor M2 will not start until Compressor M1 is operating at full capacity.

**Step 3:** If even more cooling is needed, Compressor M1 is restarted and is run at the same time as Compressor M2. This third cooling step is also delayed by a preset time delay setting. In addition, the restarting time (300 seconds) for Compressor M1 shall have expired.

If less cooling is needed and the compressors are subsequently switched out step-by-step, there will be no delay between compressors. The restarting time (300 seconds) for Compressor M1 shall have expired to enable it to start again in Step 1 after it has been operated in Step 3.

If any compressor is stopped, the restarting time must expire before a restart can take place. The restart time is calculated from one start to the next start.

If the pressure in the cooling circuit becomes too low, or if the pressure in the condenser circuit becomes too high, the compressor is stopped.

When the restart time has expired, the compressors will try to restart.

If the pressure continues to increase, the high-pressure switches BP1 and BP2 will trip and stop the cooling unit COOL DX.

Alarms are shown on the hand-held terminal, see separate instructions for IC208CX control.

The pressure switches BP1 and BP2 can be manually reset by pressing a button on top of the pressure switch. .

## 2 SAFETY INSTRUCTIONS

### 2.1 Safety Isolating Switch/Main Switch

The safety isolating switch is positioned on the inspection side of the chiller.


The safety switch should not be used for start or stop of the chiller.


Ensure that COOL DX is shut-off by turning off the chiller via the display.

When this has been carried out, the current can be isolated with the safety switch. The safety switch must be switched off in order to make it possible to open the inspection door.

<b>Important:</b>
Always switch off the safety isolating switch before servicing the unit if not otherwise specified in the pertinent instructions.

### 2.2 Risks

 <b>Warning</b>
Before carrying out any work, make sure that the power supply to the air handling unit has been switched off.


 <b>Warning</b>
Under no circumstances may the refrigerant circuit be opened by unauthorised personnel, since it contains gas under high pressure.

#### Risk areas with refrigerant

Risk area for refrigerant is in principal inside the entire chiller.

For handling when leakage, see section 7.2.

Refrigerant used is R 410A.

 <b>Warning</b>
The unit's inspection door must not be opened when the SILVER air handling unit is operational. The door can open and injure personnel. (The safety switch on the COOL DX must be switched off in order to make it possible to open the inspection door of the chiller.)

### 2.3 Electrical equipment

The machine's electrical equipment is housed in a separate cabinet inside one of the inspection doors.

### 2.4 Authorisation

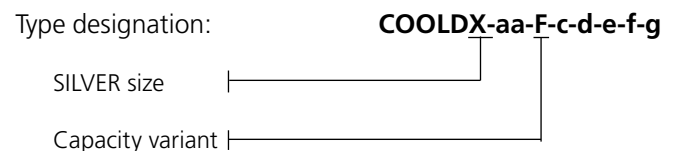
Only authorized electricians shall be permitted to install electrical wiring in the unit.

Only an accredited refrigeration company shall be permitted to modify or repair the refrigeration circuit.

Other service work in the unit should only be performed by service personnel trained by Swegon.

### 2.5 Decals

The type number mark with type designation, serial number, refrigerant volume and more is affixed on the chiller's door.



### 3. INSTALLATION

#### 3.1 Legal requirements

This product relies on the fluorinated gas R410A as the refrigerant. It is known as a greenhouse gas because it contributes to the global warming if released to the atmosphere.

The European Union is committed to reducing emissions of such gases and Regulation 517/2014 (F-Gas) must be complied with.

Ensure that you are fully aware of your local regulations and that they are complied with.

The global warming potential (GWP) of greenhouse gases is expressed in equivalent mass of CO<sub>2</sub>. R410A has a GWP of 2088 as per IPCC AR4.

The F-Gas regulation requires that all steps are taken to eliminate the release of greenhouse gases to the atmosphere. In accordance with Regulation 517/2014, this product is designed and manufactured so that all parts containing the refrigerant gas are made tight by welding, brazing or a similar permanent connection including capped valves and capped service ports that allow proper repair or disposal. The product is leak tested in the factory in accordance with EN 378-2.

If the installation in which this product shall be installed will have a total quantity of green house gas with a total GWP equivalent to 14 tonnes then it must be reported to the relevant authority. This is the responsibility of the operator and must be done prior to the installation.

Regulation 517/2014 requires that this product is leak tested periodically. Details are given in the table below. The product shall be leak tested after installation and prior to start-up.

Leak testing and any other service work on the refrigerant circuit must be carried out by an authorised person with the necessary training and certification in accordance with Regulation 517/2014.

Note that the Regulations governing refrigerants and their use are subject to change and it is important to follow the latest editions.

#### COOL DX

Air handling unit	Circuit	Refrigerant (kg)	CO <sub>2</sub> e
COOL DX 008-1/2	1	1.2	2.51
	2	1.3	2.71
COOL DX 012-1/2	1	1.5	3.13
	2	1.7	3.55
COOL DX 020-1	1	1.2	2.51
	2	1.5	3.13
COOL DX 020-2	1	2.5	5.22
	2	2.8	5.85
COOL DX 020-3	1	2.1	4.38
	2	2.4	5.01
COOL DX 030-1	1	1.8	3.76
	2	2.0	4.18
COOL DX 030-2	1	3.0	6.26
	2	3.2	6.68
COOL DX 030-3	1	2.9	6.06
	2	3.3	6.89
COOL DX 040-1	1	3.3	6.89
	2	4.0	8.35
COOL DX 040-2	1	3.3	6.89
	2	4.5	9.40
COOL DX 040-3	1	5.5	11.48
	2	4.5	9.40
COOL DX 060-1	1	4.5	9.40
	2	5.5	11.48
COOL DX 060-2	1	5.0	10.44
	2	5.2	10.86
COOL DX 060-3	1	6.0	12.53
	2	7.5	15.66
COOL DX 080-1	1	6.6	13.78
	2	7.3	15.24
COOL DX 080-2	1	6.5	13.57
	2	9.0	18.79
COOL DX 080-3	1	9.0	18.79
	2	11.5	24.01

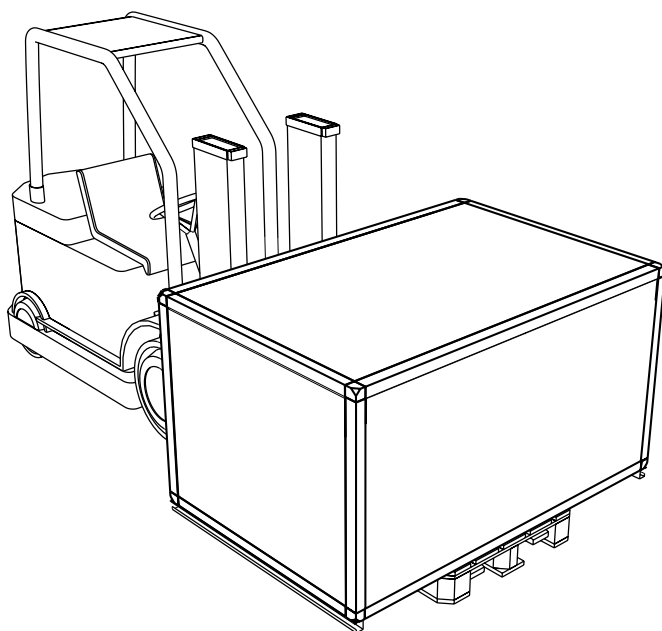
*Leakage warning system not installed*

## 3.2 Unloading/site transport

### **Important:**

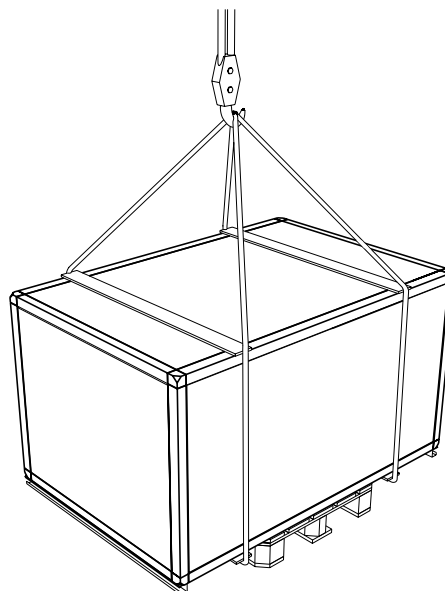
All transport should take place with the chiller in horizontal position.

### 3.2.1 Handling with truck



### 3.2.2 Handling with crane

Place two line spreaders on top of the chiller and two on the underside of the pallet or below the chiller and lift in the pallet (or the chiller if the pallet is not to be included). See the illustration.



## 3.3 Arrangement

Place the COOL DX at a suitable location.

Safety isolating switch/main switch must have the requisite space to serve according to applicable electrical regulations.

The unit can stand with the back against the wall, but to facilitate any service of the rear compressor, a distance of about 1 metre is recommended.

### **Warning**

High centre of gravity! Lift the chiller carefully.

**3.4 Basic Installation Diagram COOL DX**

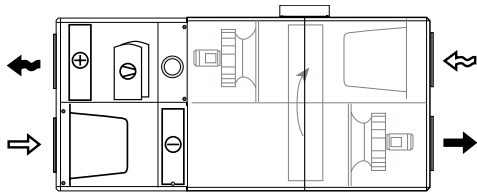
Locate the COOL DX chiller against the outdoor air and exhaust air side of the SILVER air handling unit. COOL DX can also be installed as a stand-alone unit, if you order a stand-alone COOL DX, select the variant with end connection panels.

The dimensions and capacity of the chiller COOL DX is matched for connection to the SILVER air handling unit in sizes 008-080.

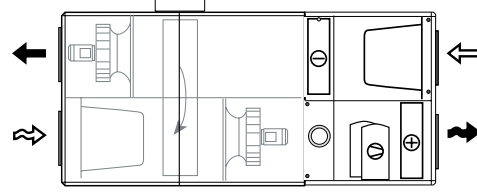
For a list of the capacity sizes of chillers matched to respective unit size, see section 10. General technical data.

**COOL DX 008**

**Right-hand version**

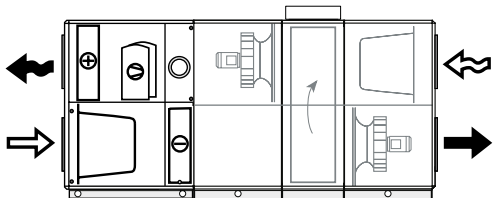


**Left-hand version**

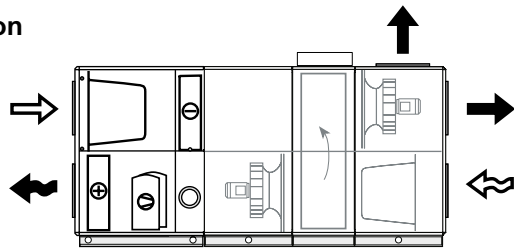


**COOL DX 012-080**

**Right-hand version**

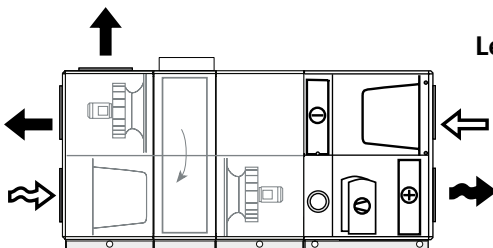


*Cooling coil in lower level/SILVER fan arrangement 1*

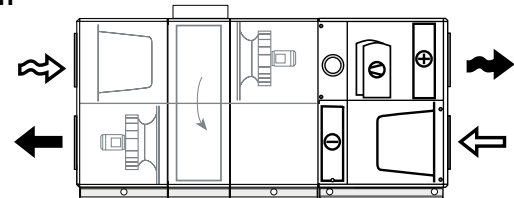


*Cooling coil in upper level/SILVER fan arrangement 2*

**Left-hand version**



*Cooling coil in upper level/SILVER fan arrangement 1*



*Cooling coil in lower level/SILVER fan arrangement 2*



### **3.4.1 Height adjustment to the height of the SILVER/water trap**

#### **COOL DX, size 008**

*In combination with the SILVER RX 08*

The SILVER air handling unit can be mounted on base beams, a stand or some other form of foundation. Base beams and stands are available as accessories.

Appropriate base beams and stands are also available as accessories for the COOL DX. The base beams/stands are matched to one another in terms of height. The stands also provide space for accommodating a possible water trap in the lower level (right-hand unit version).

*In combination with the SILVER PX 008*

The air handling unit is supplied with base beams. A set of legs (accessory) can be mounted in the base beams.

Appropriate base beams and set of legs are also available as accessories for the COOL DX. The base beams/sets of legs are matched to one another in terms of height. The sets of legs also provide space for accommodating a possible water trap in the lower level (right-hand unit version).

#### **COOL DX, sizes 012-080**

The SILVER air handling unit and the COOL DX cooling unit are supplied with a 100 mm high base beam.

*Applicable to a cooling coil in the lower level:*

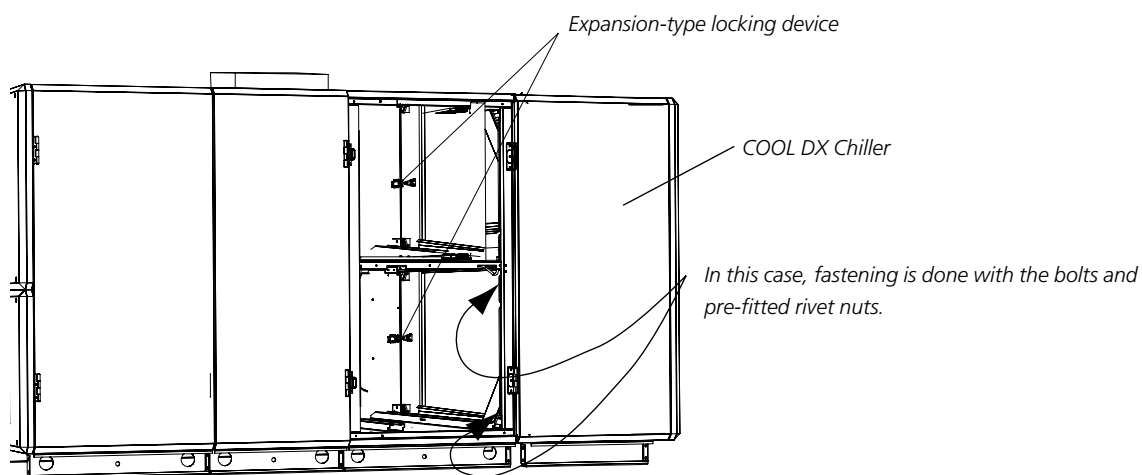
If a water trap (accessory) is fitted, the SILVER air handling unit and the cooling unit must be raised at least 50 mm to provide space for the water trap. Adjustable support feet (accessories) can be appropriately fitted to the base beams for this purpose.

### 3.4.2 Connection to SILVER air handling unit, COOL DX, sizes 008-012

The sealing strips are factory-fitted to the unit.

The chiller is connected directly to the air handling unit by means of the supplied bolts + pre-fitted rivets nut and 2 expansion locking devices, see the figure.

Secure the chiller to the air handling unit from inside the unit via the inspection door. It may be necessary to remove the fan assembly or filter cassettes in order to reach the expansion-type locking device.



### 3.4.3 Connection to SILVER air handling unit, COOL DX, sizes 020-040

The sealing strips are factory-fitted to the unit.

Dock the chiller directly to the SILVER air handling unit by means of the supplied bolts (4 bolts) + pre-fitted rivet nuts.

#### Option 1

If there is sufficient space for working from the rear of the air handling unit, the simplest way to secure the chiller at the rear edge of the SILVER air handling unit is by externally jointing it, see Illustration 1.

Secure the chiller to the front edge of the SILVER air handling unit within the unit via the inspection cover, see Illustration 3.

#### Option 2

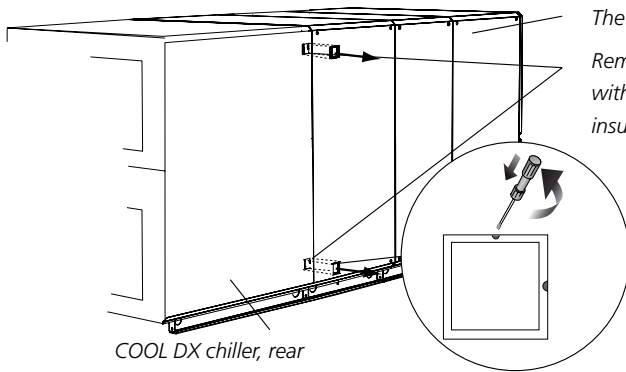
The chiller is secured to the back edge of the SILVER air handling unit within the casing, see Illustration 2. This requires removal of the fan assembly and filter cassettes.

Secure the chiller to the front edge of the SILVER air handling unit within the unit via the inspection cover, see Illustration 3.

#### To secure accessories to the rear edge

##### Alternative 1, External installation

Illustration 1



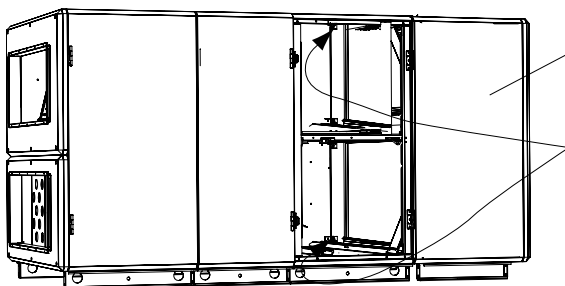
The SILVER air handling unit, rear

Remove the cover and insulation. Secure the chiller to the SILVER air handling unit with the bolts supplied and pre-fitted rivet nuts. Refit the blanking plate and the insulation.

COOL DX chiller, rear

##### Alternative 2, Internal installation

Illustration 2

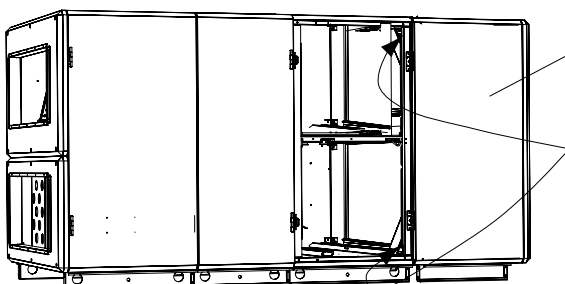


COOL DX Chiller

In this case, fastening is done with the bolts supplied and pre-fitted rivet nuts in predrilled holes.

#### To secure accessories to the front edge

Illustration 3



COOL DX Chiller

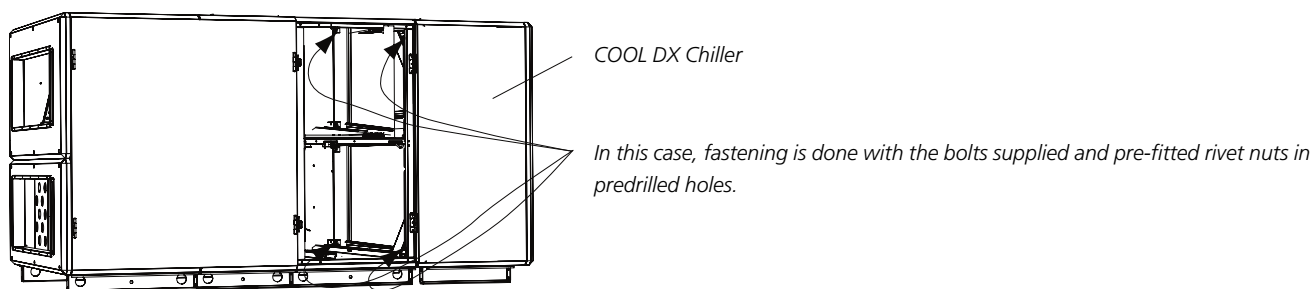
In this case, fastening is done with the bolts supplied and pre-fitted rivet nuts in predrilled holes.

### 3.4.4 Connection to SILVER air handling unit, COOL DX, sizes 060-080

The sealing strips are factory-fitted to the unit.

Dock the chiller directly to the SILVER air handling unit by means of the supplied bolts (4 bolts) + pre-fitted rivet nuts, see the illustration.

You may need to remove the filter cassettes.



### 3.4.5 Stand-alone COOL DX

The variant with end connection panel should be selected.

Ducts connect between the SILVER air handling unit and COOL DX chiller, see section 3.3 Basic Installation Diagram COOL DX.

### 3.4.6 Supply air filter

The supply air filter in the SILVER air handling unit should be dismantled and moved to the COOL DX unit.

## 4 POWER CONNECTION

The cross sectional dimension of the power supply cable should take into consideration the ambient temperature and way the cable is run.

**Important:**

Installation must be carried out by a authorised electrician.

### 4.1 Power connection

**Incoming power supply**

Sizes 008-020, all capacity variants, and size 030, capacity variant 1:

5-core system, 400 V ±10%.

Size 030, capacity variants 2 and 3 and size 040-080 all capacity variants:

4-core system, 400 V ±10%.

**COOL DX, sizes 008-040, 060-1/2**

Open the inspection door in front of the electrical equipment cubicle.

Open the inspection door of the electrical equipment cubicle.

Pull the incoming cable for power supply through pre-drilled hole in the cover panel of the chiller (supplied cable gland is mounted), through the space for compressors and through the cable gland of the electrical equipment cubicle. Locate the cable in a safe way. Make sure that the cable does not touch the compressors or other components, since surfaces could be hot or vibrate.

Connect the incoming power supply to the safety switch situated in the electrical equipment cubicle, see the illustration. The wiring terminal for incoming earth is situated right next to the safety switch.

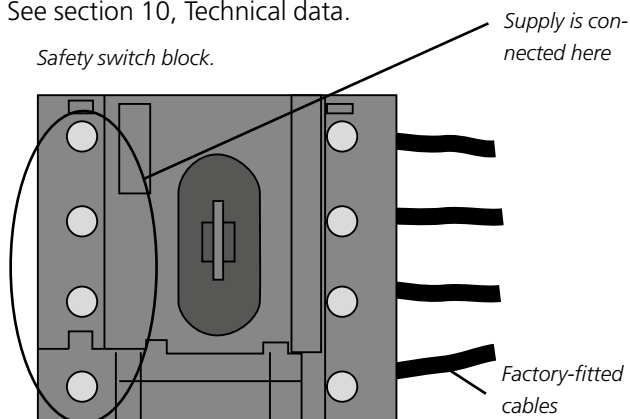
See section 10, Technical data.

**Sizes 060-3, 080**

Remove the cover on the external safety switch.

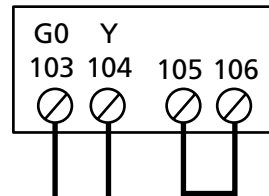
Connect the incoming power supply to the safety switch, see the illustration. The wiring terminal for incoming earth is situated right next to the safety switch.

See section 10, Technical data.



### 4.2 Connection signal 0-10 V

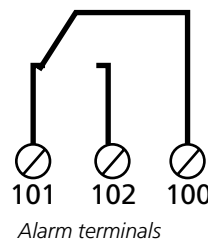
Terminals 103 and 104 are connected to give a signal, 0-10 V. Terminals 105 and 106 are to be provided with a jumper.



For more information, also see the electrical wiring diagram supplied separately.

### 4.3 Connection alarm

Terminals for general alarm.



## 5 COMMISSIONING

### 5.1 Preparations

#### 5.1.1 Before initial start up

- The power supply should be connected.
- Terminals 105 and 106 in COOL DX electrical cabinet must be connected (closed switch), otherwise the cooling machine will not start despite the signal 0 – 10 V, and no compressors are activated. (These terminals can be used to connect an external thermostat to activate/deactivate signal 0 – 10 V for a specific temperature).
- Terminals 103 and 104 shall be connected to give a signal, 0-10 V.

A free contact for a general alarm is located on terminals 100, 101 and 102.

#### 5.1.2 Control functions

SILVERool DX is equipped with two controls:

- IC208CX Dixell, hardware version 7.3 or 4.2
- Siemens (model: 12/24 RC 6ED1052-1MD08-0BA0)

Signal 0-10 V is received by the Siemens control which converts it to digital output signals (see below) and forwards these to control IC208CX.

Control IC208CX is set at the factory to moto-condenser mode and starts or stops the compressors via the digital output signals from the Siemens control. All control and safety functions for the refrigerant circuit are regulated by control IC208CX.

For conversion of the signal, 0 – 10 V to digital output signals, see below.

When the 0-10 V increases:

- Point 1: Q1 and Q2 = OFF
- Point 2: signal increases to above 1 V, then Q1= ON and Q2 = OFF
- Point 3: signal increases to above 4 V, then Q1= OFF and Q2 = ON
- Point 4: signal increases to above 7 V, then Q1= ON and Q2 = ON

When the 0-10 V decreases:

- Point 4: signal decreases to below 7 V, then Q1= OFF and Q2 = ON
- Point 3: signal decreases to below 4 V, then Q1= ON and Q2 = OFF
- Point 2: signal decreases to below 1 V, then Q1= ON and Q2 = OFF
- Point 1: Q1 stops when the signal reaches 0 V

Q1 and Q2 are the digital output signals that are sent to control IC208CX to activate compressor 1 and 2.

Q1= compressor with lower cooling capacity

Q2 = compressor with higher cooling capacity

For more information about control and safety functions, see separate instructions for IC208CX control.

#### 5.1.3 Pressure sensor

The chiller has two in-service pressure switches in each cooling circuit, one for low pressure and one for high pressure.

If the operating pressure, in any of the circuits, exceeds or drops below a limit value, the relevant compressor is switched off. See separate instructions for IC208CX control for further information.

The compressor is permitted to restart when the restart delay has expired.

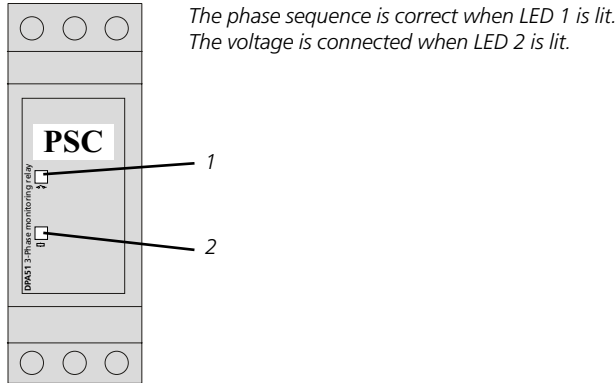
Pressure sensor settings:

Value	Setting range	Factory settings
<b>Compressors</b>		
Low pressure limitation	1-10 bar	4.5 bar
High pressure limitation	25-50 bar	39.0 bar
High pressure alarm limit	25-50 bar	42 bar

### 5.1.4 Phase sequence monitor

The COOL DX unit is equipped with phase sequence guard for compressors (not size 008 capacity variant 1). The phase sequence monitor is installed in the electrical cabinet.

Phase sequence monitor



## 6 ALARMS

For an alarm description, see the separate instructions for IC208CX control.

### 5.1.5 Measure whether the phase-sequence is wrong

#### **Warning**

May only be performed by authorised or trained service personnel.

- Stop the COOL DX by selecting SHUT OFF in the menu SETTINGS.
- Set the safety switch to position OFF on the COOL DX.
- Switch the power supply to COOL DX.

#### **Important:**

Check that the incoming power supply to the COOL DX is isolated by measuring.

- Transpose the two phase wires on the incoming power supply cable in order to obtain correct phase sequence (direction of rotation).
- Switch on the power supply to COOL DX.
- Set the safety switch to ON.
- Start COOL DX as described in the section dealing with starting up, see Section 5.1.2.

## 7 MAINTENANCE

### 7.1 Cleaning

If needed, clean the inside cleaning of the unit by vacuum cleaning and wiping surfaces with a damp cloth. Inspections should be performed twice a year.

### 7.2 Handling of refrigerant

The refrigerant used is R 410A.

The refrigerant circuit is completely charged when the unit is delivered.

#### **Warning**

Under no circumstances may the refrigerant circuit be opened by unauthorised personnel, since it contains gas under high pressure. Only an accredited refrigeration company shall be permitted to modify or repair the refrigeration circuit.

The COOL DX is equipped with a safety valve to prevent excessively high pressure in the system caused by e.g. a fire.

#### **Important:**

Contact Swegon Service in the event of leakage of refrigerant.

#### **Warning**

If refrigerant is exposed to fire or in some other way becomes superheated in the atmosphere, poisonous gases can form.

#### **Important:**

Filling of refrigerant must be performed in accordance with the recommendations of the refrigerant manufacturer.

Avoid direct skin contact with refrigerant and lubricant.

Use tightly sitting protective glasses, protective gloves and covering work clothes.

Arrange ventilation/point extraction.

#### **In the event of eye contact**

rinse the eyes using an eye-wash shower (or with lukewarm water) for 20 minutes. seek a doctor.

#### **In the event of contact with skin**

carefully wash with soap and lukewarm water.

#### **In the event of frostbite**

seek a doctor.

### 7.3 Leakage tracing interval/ Obligation to report

Must be carried out according to the F-Gas Regulation EU/517/2014 and associated local legislation.

### 7.4 Service

Only service personnel trained by Swegon should be permitted to modify the chiller.

## 8 TROUBLE SHOOTING AND LEAKAGE TRACING

### 8.1 Troubleshooting Schedule

Symptoms	Possible cause	Action
Compressor is not operating	The voltage has been isolated. Incorrect phase sequence. The compressor safety circuit has been broken. Defective compressor.	Check the operating/safety switch. Check the condition of the fuses. Check and change the phase sequence. Check, reset if needed. Replace the compressor.
Too low cooling capacity	The voltage has been isolated. Incorrect phase sequence. No air flow or too low air flow across the evaporator. Thermostat/control equipment incorrectly set or defective.	Check the operating/safety switch. Check the condition of the fuses. Check and change the phase sequence. Check the air flow. Adjust the setting or replace faulty components.
The compressor switches off because the low pressure sensor has measured an excessively low value.	Inadequate refrigerant. No air flow or too low air flow across the evaporator. The expansion valve is defective. The low pressure switch is defective.	The cooling system is leaking. Tighten the leak and charge with refrigerant. Check the air flow. Check, replace. Check, replace.
The compressor switches off because the high pressure sensor has measured an excessively high value.	No air flow or too low air flow across the condenser. Excessively high exhaust air temperature. The high pressure sensor is defective.	Check the air flow. Check the exhaust air temperature. Check, replace.
Significant freezing on the evaporator.	The expansion valve is defective or incorrectly set. No air flow or too low air flow across the evaporator.	Check. Replace or adjust setting. Check the air flow.

### 8.2 Leakage Tracing

Leakage tracing should be carried out at least once per year as a precaution. The leakage tracing inspection must be documented.

If the cooling system is leaking, this will become apparent firstly by impaired cooling performance, or if the leakage is substantial, when the chiller does not operate at all.

If you suspect that the cooling system is leaking refrigerant, check the level of refrigerant in the sight glass located on the liquid line of the chiller.

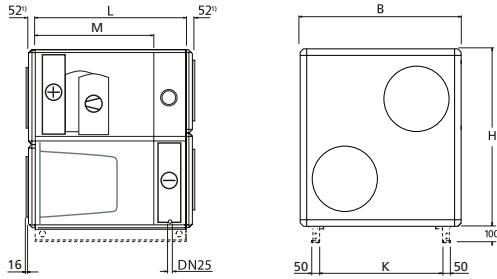
If you see continuous and a substantial amount of bubbling in the sight glass and the chiller operates at appreciably lower capacity than normal, the system is probably leaking. One or several bubbles appearing when the chiller is started up, operation at reduced capacity or normal operation need not necessarily indicate a refrigerant deficiency.

If it is bubbling in the sight glass and the chiller operates at appreciably lower capacity, call for qualified service help.

NOTE! Maintenance work in the refrigerant system is permitted to be carried out only by an accredited inspectorate (a company with requisite authorisation).

## 9 DIMENSIONS

### COOL DX 008



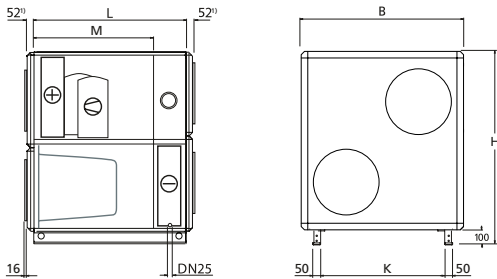
Size	L	B	H	K	M	Duct connection <sup>2)</sup>
<b>008</b>	900	995	1085	749	709	Ø 400

<sup>2)</sup> For the locations of the duct connections, see the corresponding SILVER air handling unit

Base beams are accessories.

<sup>1)</sup> End connection panel, optional.

### COOL DX 012

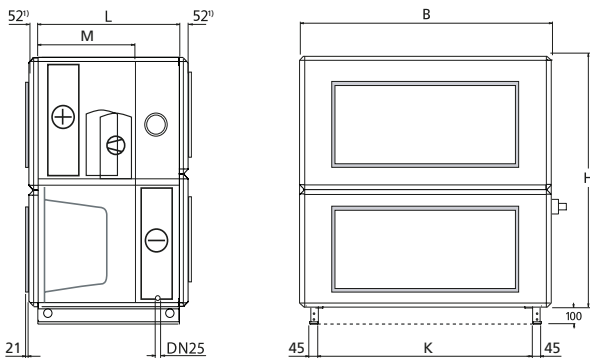


Size	L	B	H	K	M	Duct connection <sup>2)</sup>
<b>012</b>	900	1199	1395	953	709	Ø 500

<sup>2)</sup> For the locations of the duct connections, see the corresponding SILVER air handling unit

<sup>1)</sup> End connection panel, optional.

### COOL DX 020, 030, 040, 060, 080



Size	L	B	H	K	M	Duct connection <sup>2)</sup>
<b>020</b>	900	1400	1551	1154	709	1000 x 400
<b>030</b>	900	1600	1811	1354	709	1200 x 500
<b>040</b>	1100	1990	2159	1744	884	1400 x 600
<b>060</b>	1100	2318	2288	2072	884	1600 x 800
<b>080</b>	1100	2637	2640	2395	884	1800 x 1000

<sup>2)</sup> For the locations of the duct connections, see the corresponding SILVER air handling unit

<sup>1)</sup> End connection panel, optional.

## 10 GENERAL TECHNICAL DATA

### Cooling system COOL DX

COOL DX Size	Cap. variant	Nom. air flow (m <sup>3</sup> /s)	Min air flow (m <sup>3</sup> /s)	Nom. cooling cap. <sup>1)</sup> (kW)	Nom. Power required (kW)	Refrigerant (kg)		Power supply	Weight excl. end conn. panel (kg)	Weight of each end conn. panel, if required <sup>2)</sup> (kg)
						Circuit 1	Circuit 2			
008	1	0.55	0.22	9.8	2.39	1,20	1.30	3-phase+N, 400 V ±10%, 16 A	194	8
	2	0.70	0.3	13.9	4.33	1,20	1.30	3-phase+N, 400 V ±10%, 20 A	215	8
012	1	0.85	0.35	15.4	3.95	1,50	1.70	3-phase+N, 400 V ±10%, 20 A	260	10
	2	1.05	0.4	20.9	6.53	1,50	1.70	3-phase+N, 400 V ±10%, 25 A	287	10
020	1	1.1	0.45	15.4	4.06	1,20	1,50	3-phase+N, 400 V ±10%, 25 A	243	11
	2	1.3	0.5	23.3	5.73	2,50	2,80	3-phase+N, 400 V ±10%, 25 A	283	11
	3	1.6	0.6	31.0	9.15	2,10	2.40	3-phase+N, 400 V ±10%, 40 A	314	11
030	1	1.8	0.7	25,0	6.33	1,80	2.00	3-phase+N, 400 V ±10%, 32 A	322	17
	2	2.0	0.8	35.8	9.34	3.00	3,20	3-phase, 400 V ±10%, 25 A	374	17
	3	2.4	1.0	46.2	13.5	2.90	3.30	3-phase, 400 V ±10%, 40 A	414	17
040	1	2.9	1.1	38.6	8.40	3.30	4.00	3-phase, 400 V ±10%, 25 A	468	22
	2	3.1	1.3	48.4	12.3	3.30	4.50	3-phase, 400 V ±10%, 40 A	476	22
	3	3.6	1,5	67.0	17.5	5.50	4.50	3-phase, 400 V ±10%, 50 A	529	22
060	1	3.9	1,5	56.2	11.8	4.50	5.50	3-phase, 400 V ±10%, 40 A	708	31
	2	4.1	1.6	66.7	17.1	5,00	5.20	3-phase, 400 V ±10%, 50 A	779	31
	3	5,0	2.0	97.5	26.3	6.00	7,50	3-phase, 400 V ±10%, 80 A	852	31
080	1	5.2	2.0	67.0	13.3	6,60	7,30	3-phase, 400 V ±10%, 50 A	852	38
	2	6.0	2.4	96.5	24.8	6,50	9.00	3-phase, 400 V ±10%, 80 A	979	38
	3	7.0	2.8	134.0	36.4	9.00	11.50	3-phase, 400 V ±10%, 100 A	1035	38

<sup>1)</sup> For an outdoor temperature of 26°C, 50% RH (capacity variant 1), 27°C, 50% RH (capacity variant 2) or 28°C, 50% RH (capacity variant 3), and an extract air temperature of 26°C.

<sup>2)</sup> The first weight applies to a small end connection panel; the second weight applies to a large end connection panel. COOL DX can be supplied completely without end connection panels or with a maximum of 2 small and two large end connection panels depending on the variant selected.

### Sizing

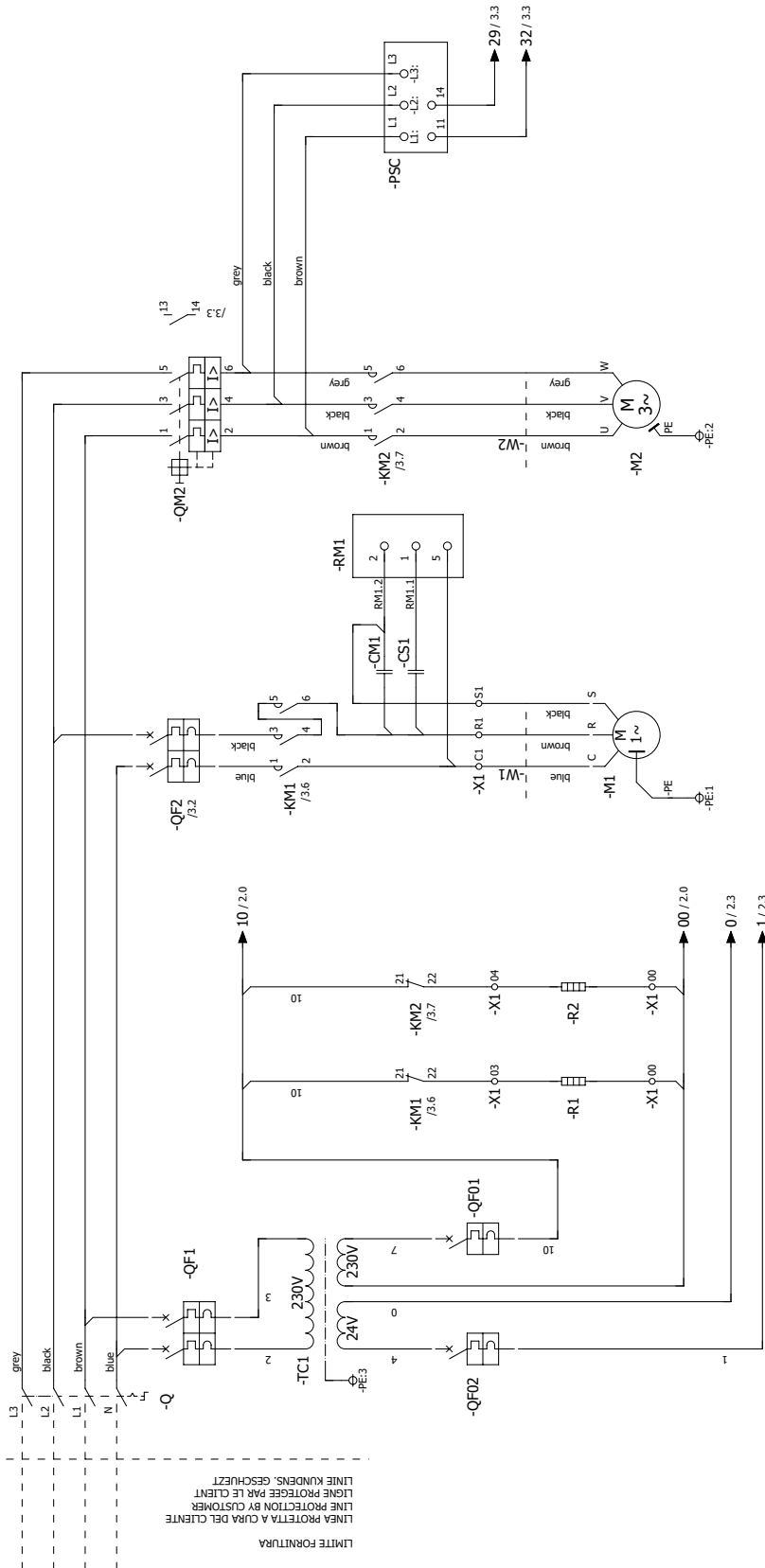
There are many factors that influence what size of chiller is required.

For correct sizing we refer to our ProUnit air handling unit selection program.

COOL DX is designed to handle very different prerequisites.

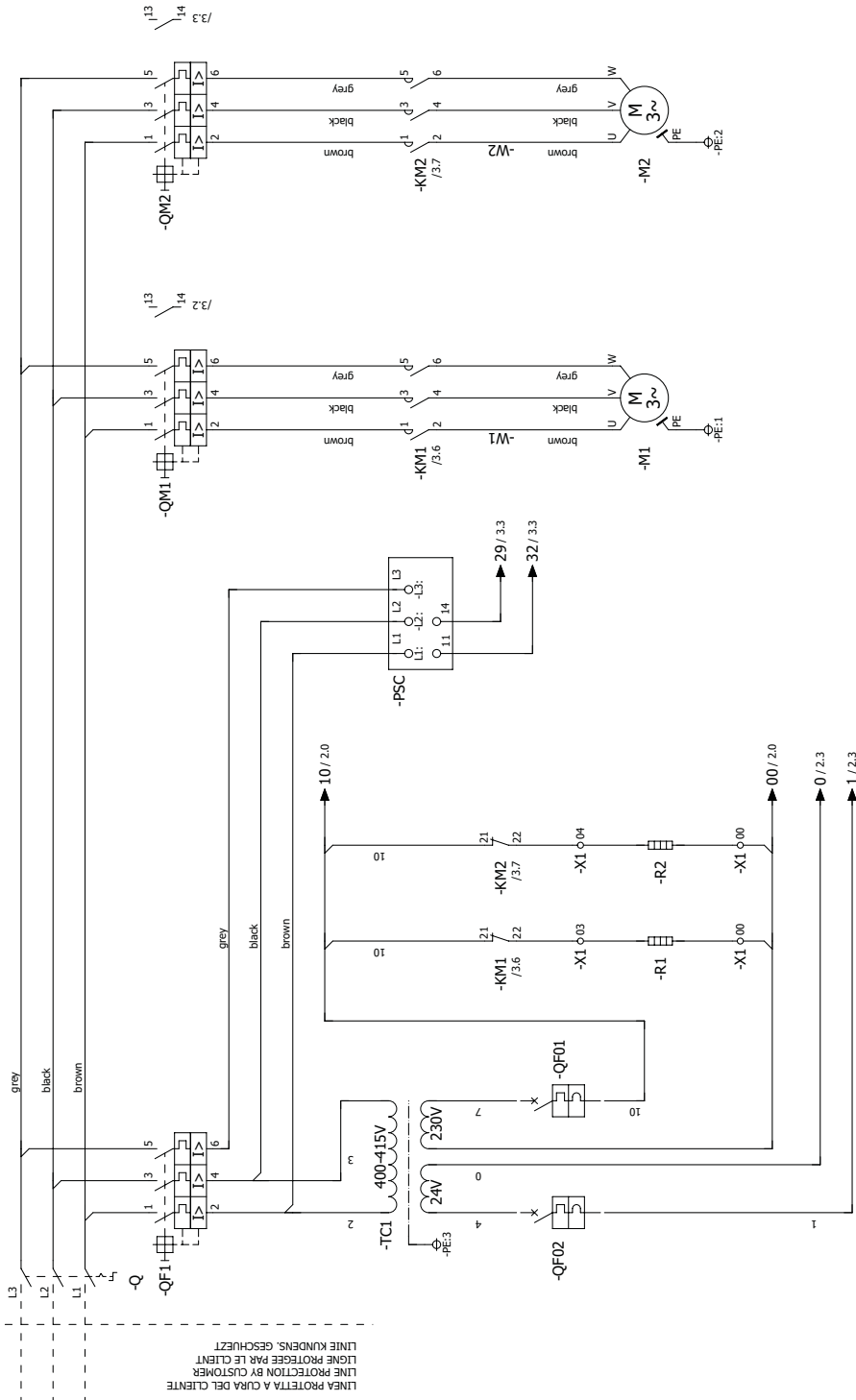


11.2 The COOL DX size 08, capacity variants 2, size 12 and 20, all capacity variants and size 30, capacity variant 1



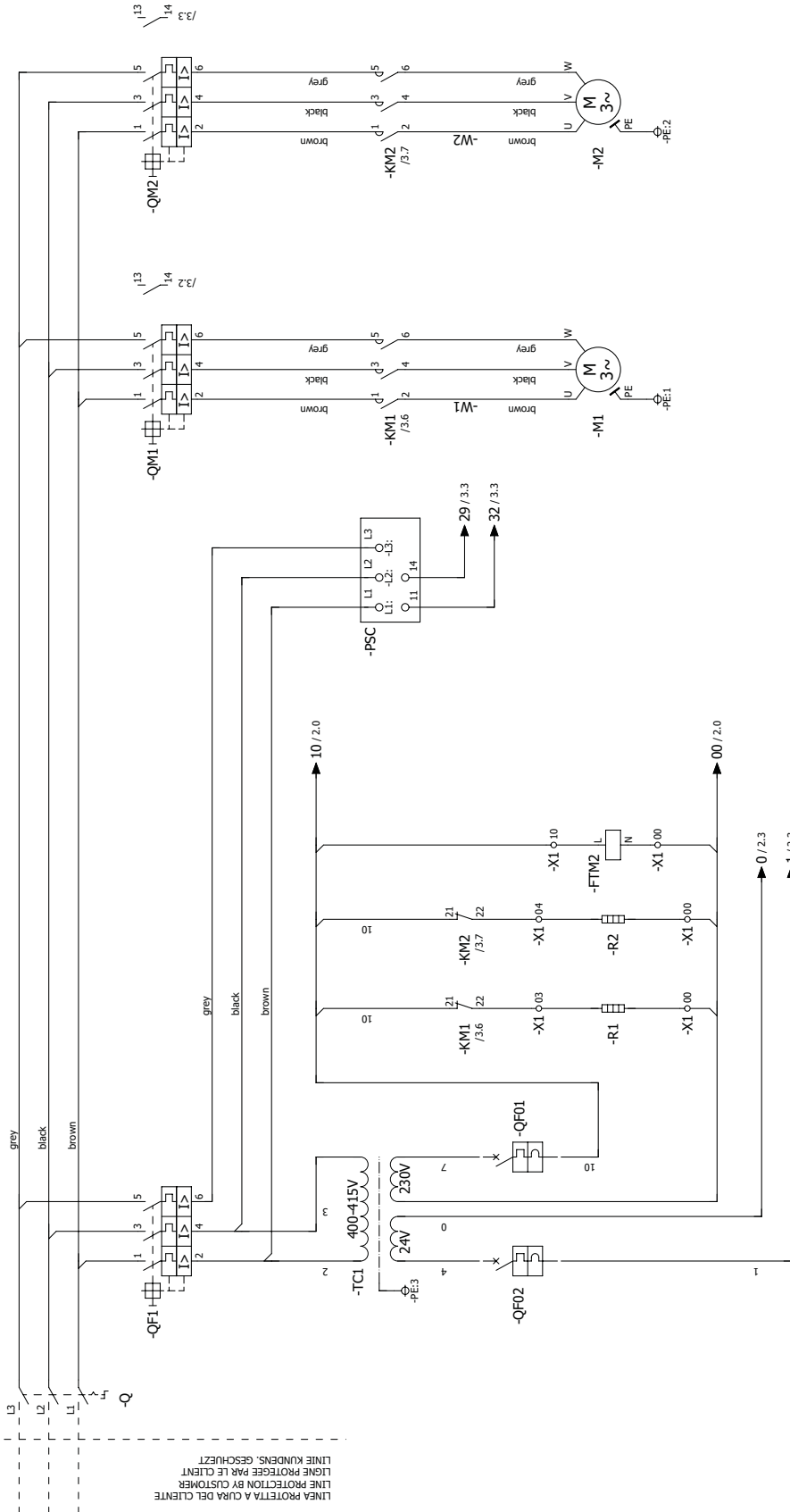
- Cx = Condenser
- QFx = Fuse
- KMx = Contactor
- PSC = Control system for phase sequence
- Qmx = Motor protection
- Q = Load separator
- Rx = Crankcase heater

**11.3 COOL DX, size 30, capacity variants 2 and 3, size 40, all capacity variants and size 60, capacity variants 1 and 2, size 80, capacity variant 1**



- Cx = Condenser
- QFx = Fuse
- KMx = Contactor
- PSC = Control system for phase sequence
- Qmx = Motor protection
- Q = Load separator
- Rx = Crankcase heater

11.4 COOL DX size 60, capacity variant 3 to size 80, capacity variant 2



- Cx = Condenser
- QFX = Fuse
- KMx = Contactor
- PSC = Control system for phase sequence
- Qmx = Motor protection
- Q = Load separator
- Rx = Crankcase heater

## 12 Commissioning Record

Company

Our reference

<b>Client</b>	<b>Date</b>	<b>SO No.</b>
<b>Plant</b>	<b>Project/Air handling unit</b>	<b>Subject no:</b>
<b>Plant address</b>	<b>Type/size</b>	

### Installation/connections

<b>Inspection measure</b>	<b>Appr./Exec.</b>	<b>Remarks</b>
Installation according to instructions	<input type="checkbox"/>	
Condensate drain correctly connected, water trap filled with water	<input type="checkbox"/>	
The supply air filter in the SILVER air handling unit has been moved to the COOL DX unit.	<input type="checkbox"/>	
Electrical connections installed according to instructions	<input type="checkbox"/>	
Control cable from COOL DX connected according to instructions	<input type="checkbox"/>	

Checks	COOL DX, size	Factory-preset value	Checked value
Safety switch, Compressor 1 Safety switch, compressor 2	<input type="checkbox"/> 08-1	D10	_____
		D13	_____
Safety switch, Compressor 1 Protective motor switch, Compr. 2	<input type="checkbox"/> 08-2	D10	_____
		8.5 A	_____
	<input type="checkbox"/> 12-1	D10	_____
		8.5 A	_____
	<input type="checkbox"/> 12-2	D16	_____
		14.4 A	_____
	<input type="checkbox"/> 20-1	D10	_____
13.0 A		_____	
<input type="checkbox"/> 20-2	D16	_____	
	14.4 A	_____	
<input type="checkbox"/> 20-3	D16	_____	
	18.0 A	_____	
<input type="checkbox"/> 30-1	D16	_____	
	14.4 A	_____	
Protective motor switch, Compressor 1	<input type="checkbox"/> 30-2	13.0 A	_____
		18.0 A	_____
Protective motor switch, compressor 2	<input type="checkbox"/> 30-3	14.4 A	_____
		21.0 A	_____
	<input type="checkbox"/> 40-1	13.0 A	_____
		18.0 A	_____
	<input type="checkbox"/> 40-2	14.4 A	_____
		21.0 A	_____
	<input type="checkbox"/> 40-3	18.0 A	_____
		27.0 A	_____
	<input type="checkbox"/> 60-1	14.4 A	_____
		21.0 A	_____
	<input type="checkbox"/> 60-2	18.0 A	_____
27.0 A		_____	
<input type="checkbox"/> 60-3	21.0 A	_____	
	45.0 A	_____	
<input type="checkbox"/> 80-1	14.4 A	_____	
	27.0 A	_____	
<input type="checkbox"/> 80-2	21.0 A	_____	
	45.0 A	_____	
Protective motor switch, Compr. 3	<input type="checkbox"/> 80-3	27.0 A	_____
		33.0 A	_____
		33.0 A	_____

