Scroll compressor
CH485

R410A, 50 Hz

Product identification

### Name Plate

Figure 2: Name Plate
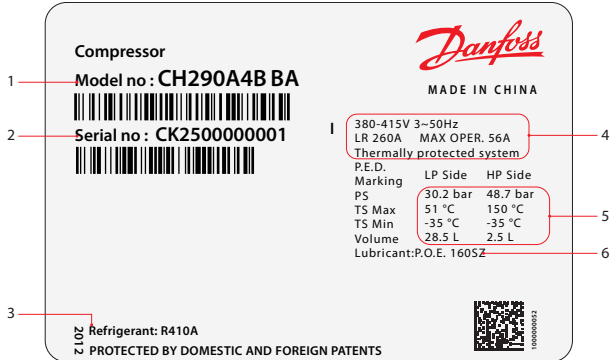
1	Model number
2	Serial number
3	Refrigerant
4	Supply voltage, Starting current & Maximum operating current
5	Housing service pressure
6	Factory charged lubricant

Nomenclature

Danfoss CH290 & CH485 scroll compressor for R410A are available as single compressor. The example below presents the compressor nomenclature which equals the technical reference as shown on the compressor nameplate. Code numbers for ordering are listed section "Ordering information and packaging".
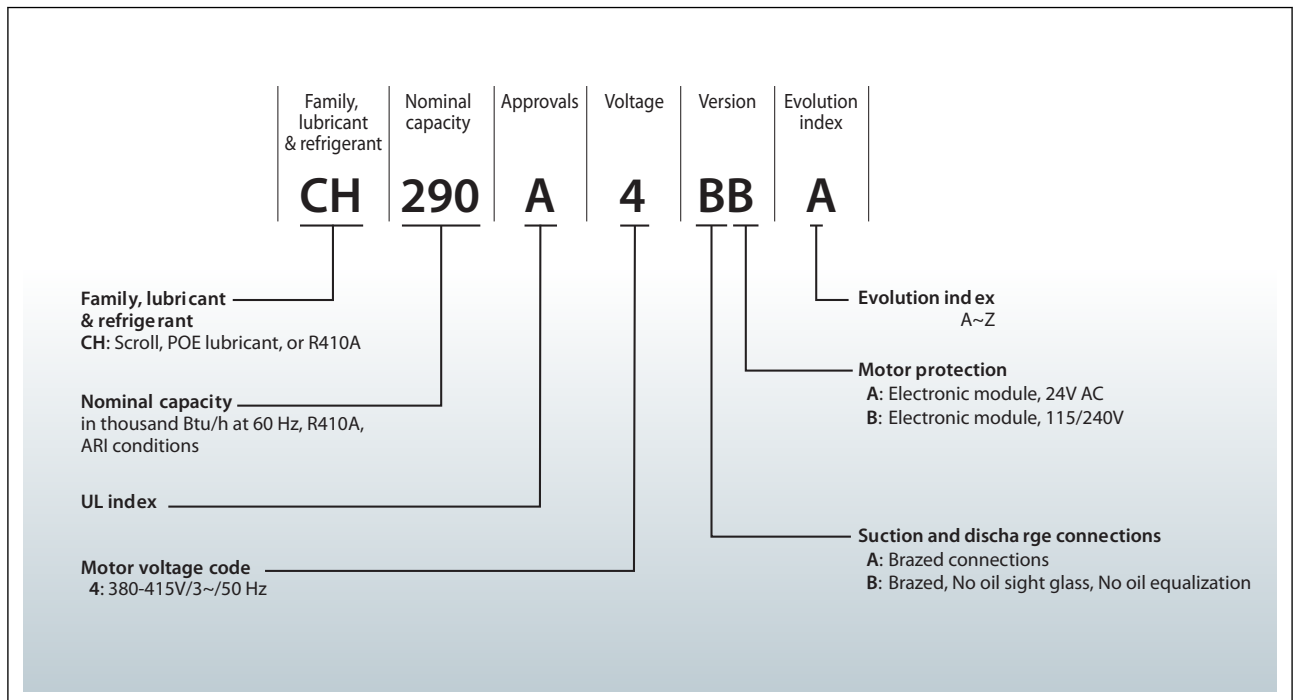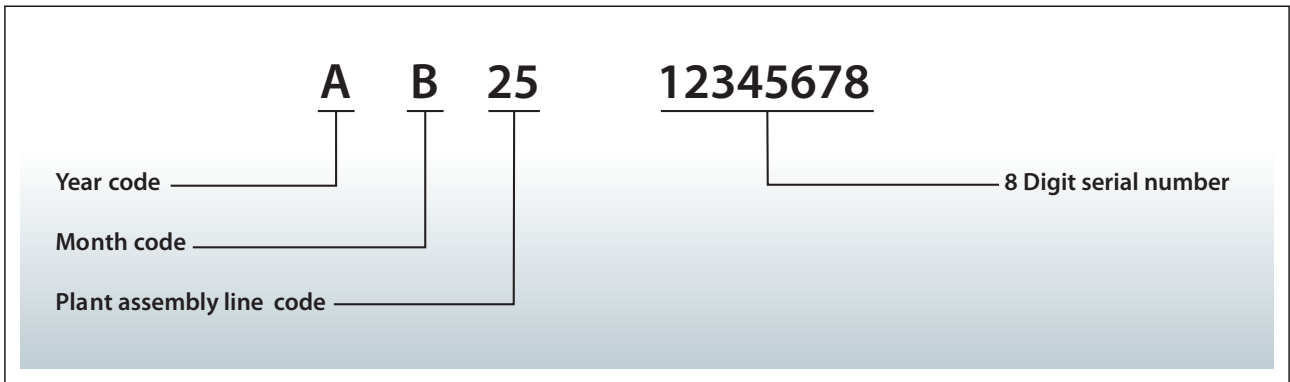
Compressors serial number

A   B   25   12345678

Year code

Month code

Plant assembly line code

8 Digit serial number

Table 1: Serial number code legend table

Year code		Month code		Plant assembly line code	
Year	Code	Month	Code	Plant	Code
1990, 2010	A	January	A	Trévoux, France	11
1991, 2011	B	February	B		
1992, 2012	C	March	C		
1993, 2013	D	April	D	Wuqing ,China	25
1994, 2014	E	May	E		
1995, 2015	F	June	F		
1996, 2016	G	July	G		
1997, 2017	H	August	H		
1998, 2018	J	September	J		
1999, 2019	K	October	K		
2000, 2020	L	November	L		
2001, 2021	M	December	M		
2002, 2022	N				
2003, 2023	P				
2004, 2024	Q				
2005, 2025	R				
2006, 2026	S				
2007, 2027	T				
2008, 2028	U				
2009, 2029	V				

Technical specifications

Technical specifications 50 Hz

Table 5: Technical specifications data 50 Hz

Model	Nominal tons 60 Hz	Nominal cooling capacity		Power input	COP	E.E.R.	Swept volume	Displacement [1]	Oil charge	Net weight [2]
	TR	W	Btu/h	kW	W/W	Btu/h/W	cm³/rev	m³/h	dm³	kg
CH290	25	73200	249800	22.50	3.25	11.10	276.2	48.10	6.7	111.0
CH485	40	117543	401068	35.58	3.30	11.27	442.60	77.0	6.7	175.0

[1] Displacement at nominal speed: 2900rpm at 50 Hz
[2] Net weight with oil charge

ℹ **NOTE:**

TR: Ton of Refrigeration,

COP: Coefficient Of Performance

EER: Energy Efficiency Ratio

Standard rating conditions : ARI, Standard Refrigerant: R410A

Evaporating temperature: 7.2°C (45°F), Condensing temperature: 54.4°C (130°F), Superheat: 11.1K (20°F), Subcooling: 8.3K (15°F)

Subject to modification without prior notification.

Operating enevlope data

The operating envelopes for CH scroll compressors is given in the figure below, where the condensing and evaporating temperatures represent the range for steady-state operation. Under transient conditions, such as start-up and defrost, the compressor may operate outside this envelope for short periods. The operating limits serve to define the envelope within which reliable operations of the compressor are guaranteed:

• Maximum discharge gas temperature: +135°C,
• Due to the risk of liquid flood back the minimum suction superheat allowed is 5 K
• Maximum superheat of 30 K,
• Minimum and maximum evaporating and condensing temperatures as per the operating envelopes.

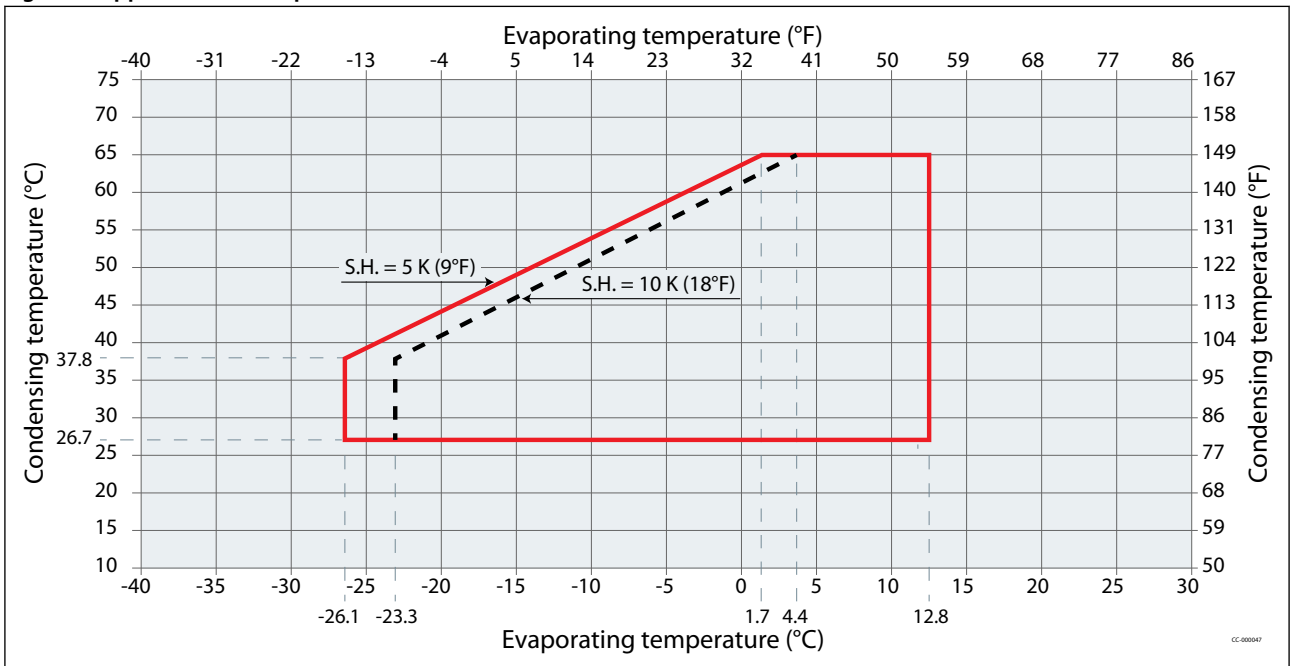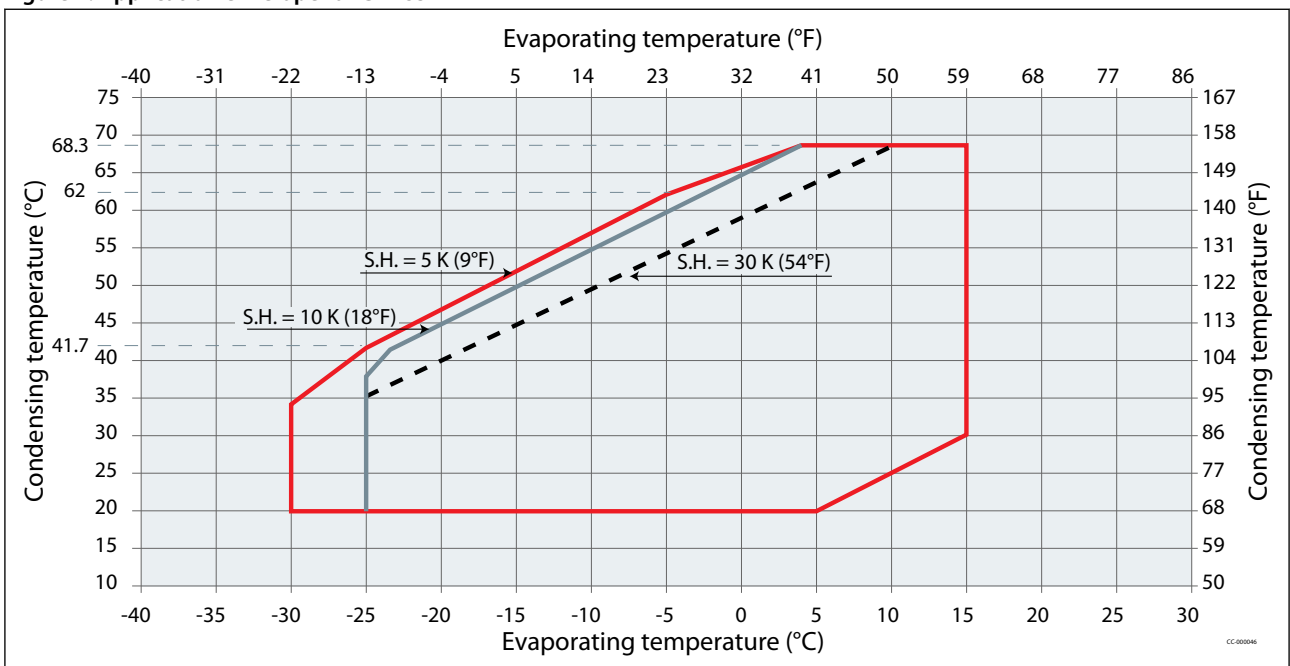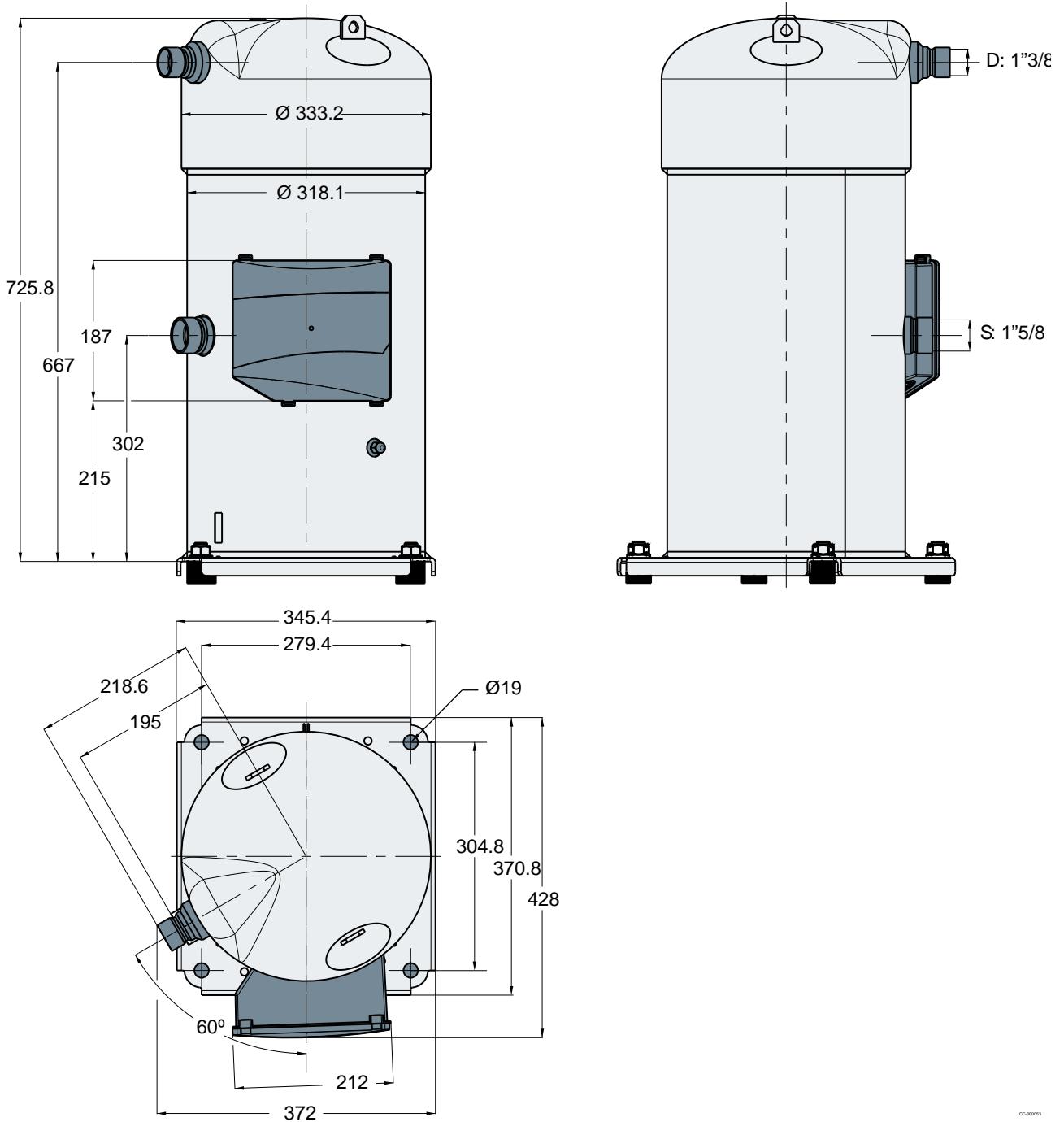**Figure 3: Application envelope for CH290**

Figure 4: Application envelope for CH485

CH485 - Single version
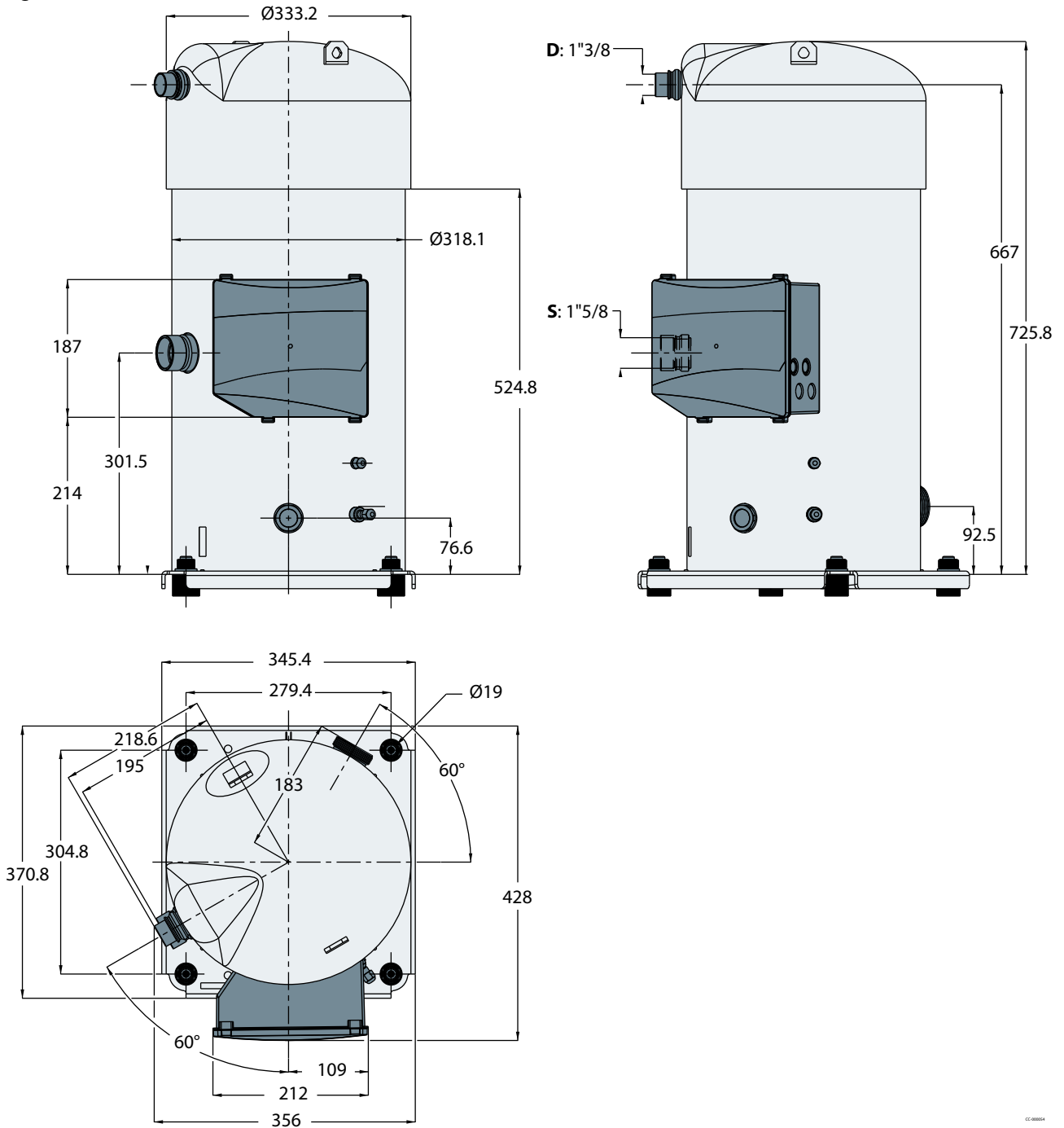
Figure 7: CH485 - Single version

> **NOTE:**
All dimensions in mm

D	Discharge
S	Suction

for details about Flexible rubber grommet refer to Figure 13: Rubber grommets

CH485 - Parallel version

Figure 8: CH485 - Parallel version

ⓘ NOTE:
All dimensions in mm

D	Discharge
S	Suction

for details about Rigid spacer refer to Figure 11: Rigid spacers

Mechanical connections

Connection Details

Figure 9: Brazed version

Table 8: Suction and Discharge connections

Model	Suction / Discharge	Brazed - Tube ODF
CH290	Suction	1"5/8
CH290	Discharge	1"1/8
CH485	Suction	1"5/8
CH485	Discharge	1"3/8

Three phase electrical characteristics

Table 9: Motor voltage code 4

Compressor model	LRA	MCC	Max. operating current	Winding resistance
	A	A	A	Ω
CH290	260	62	56	0.52
CH485	389	106	91	0.28

Electrical connections

Wiring connections

According to compressor model, electrical power is connected to the compressor terminals either by 4.8mm (10-32) screws or by M5 studs and nuts. In both cases the maximum tightening torque is 3 Nm.

⚠️Cable gland or similar protection component must be used on electrical box's knockouts to against accidental contact with electrical parts inside.

Terminal box temperature

The temperature inside the terminal box must not exceed 70°C (158°F). Consequently, if the compressor is installed in an enclosure, precautions must be taken to avoid that the temperature around the compressor and in the terminal box would rise too much. A ventilation installation on the enclosure panels may be necessary. If not, the electronic protection module may not operate properly. Any compressor damage related to this will not be covered by Danfoss warranty. In the same manner, cables must be selected in a way that ensures the terminal box temperature does not exceed 70°C (158°F).

Motor protection module

The motor protection modules come preinstalled within the terminal box. Phase sequence protection connections and thermistor connections are pre-wired and should not be removed.

The module must be connected to a power supply of the appropriate voltage. The module terminals are 6.3mm (0.25inch) size Faston type.

Figure 16: Motor protection module

1	Phase sequence input
2	Internal control contact
3	Safety circuit
4	Thermistor connection
5	Module power
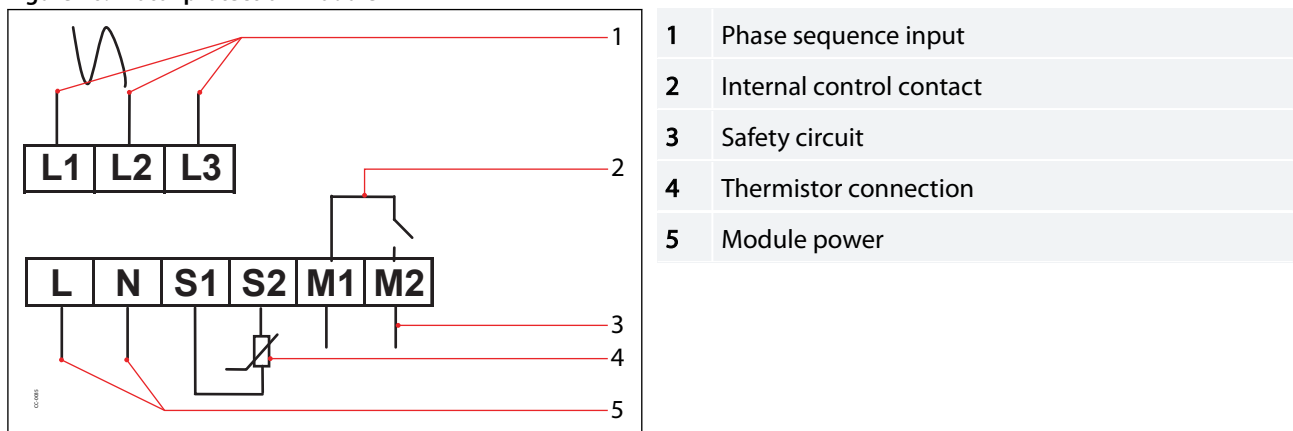
IP rating

The compressor terminal box according to IEC60529 is IP54 for all models when correctly sized IP54 rated cable glands are used.

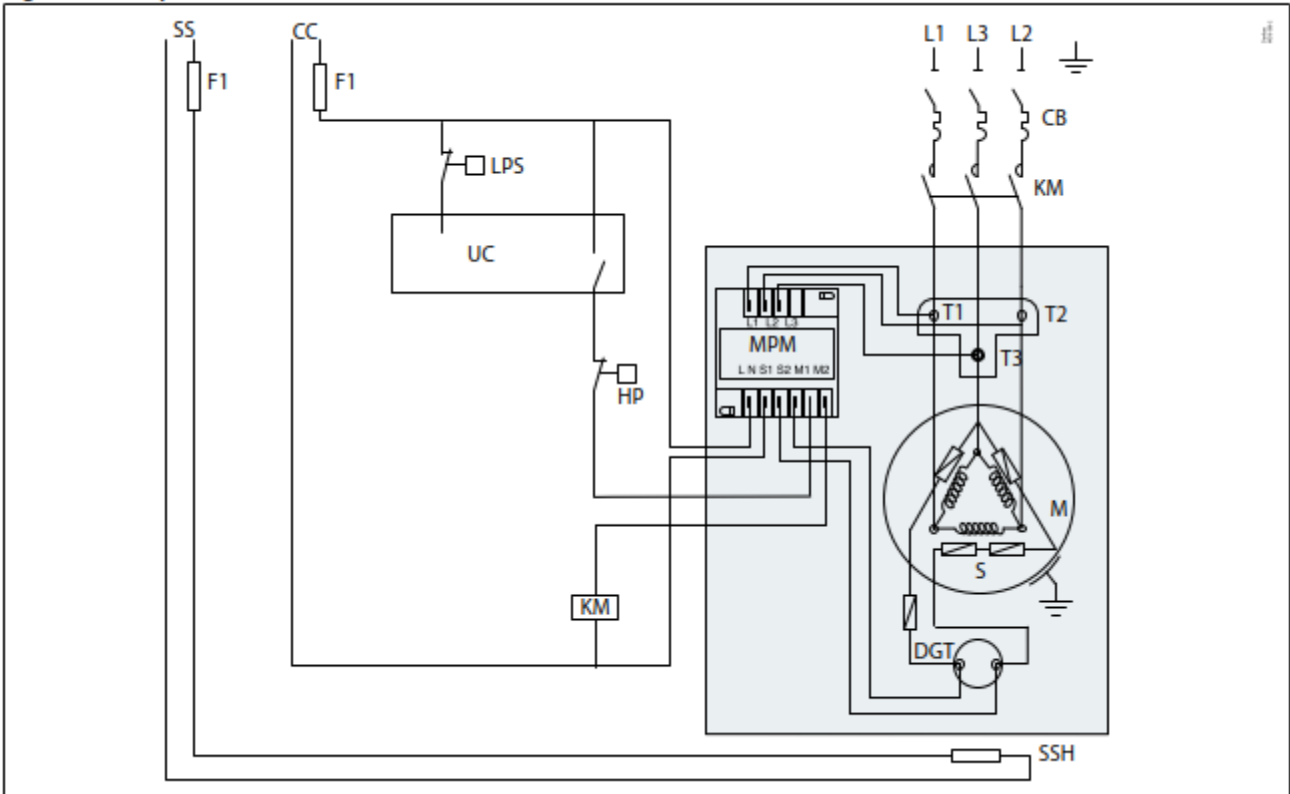First numeral, level of protection against contact and foreign objects

5 - Dust protected

Second numeral, level of protection against water

4 - Protection against water splashing

Suggested wiring diagrams logic

Figure 25: Compressor model CH485

F1	Fuses
KM	Compressor contactor
HP	High pressure safety switch
LPS	Safety pressure switch
DGT	Discharge gas thermistor (embedded in compressor)
M	Compressor motor
MPM	Motor Protection Module
S	Thermistor chain (motor and discharge temperature)
SSH	Surface sump heater
CB	Thermal magnetic motor circuit breaker