

No. : WWXS-001-GGSY-14

APPROVAL SHEET
SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

MODEL	C-SCP510H38B
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NO.	DATE	PAGE	REVISION DETAILS	SANYO SIGNED	CLIENT SIGNED

REVISION RECORD

USER:

MANUFACTURER:

DALIAN SANYO COMPRESSOR CO., LTD.

LEADER	PURCHASING MANAGER	TECHNICAL MANAGER	APPROVED	CHECKED	SUBMITTED

Section 1. General Specifications

Content		Unit	Specification
Compressor Model		—	C-SCP510H38B
Type		—	Hermetic Scroll Compressor
Application		—	High Back Pressure
Evap. Temp. Range		°C (°F)	-15~12 (5~54)
Compressor Cooling Type		—	Natural Cooling
Power Source	Phase	—	3
	Rated Voltage	V	380-415/440-460
	Rated Frequency	Hz	50/60
Voltage Range		V	342~456/396~506
Weight (Including Oil)		kg (lb)	76.5(168.6)
Refrigerant		—	R410A
Oil Type		—	FV68S or Equivalent
Oil Charge		ml (fl oz)	3500 (118.3)
Displacement		cm ³ (in ³) /rev	171.2(10.45)
Motor	Motor Type	—	3-PH Induction Motor
	Number of Poles	—	2
	Electrical Insulation	Class	E
	Nominal Revolution	min ⁻¹	—
	Locked Rotor Ampere	A	159
	Winding Resistance [at 25°C (77°F)]	Ω	U-V
U-W			0.732
V-W			0.722
Connection Tube	Suction Line (O.D.)	mm (in)	34.93 (1.375)
	Discharge Line (O.D.)	mm (in)	22.22 (0.875)
Compressor Surface Paint		—	Black Paint

Notes

- 1 Voltage range is applied at standard rating conditions.
- 2 Motor specifications in the table are the average values for your reference.
- 3 (): All units with parentheses are reference values.

Expiration of Specification

Expiration of this specification shall be effected until issuing a notice with indication of the expiration date from the issued date . In case of improvement or elimination of this specification , it shall be handled by the revision record based on agreement between both sides.

Section 2. Performance Warranty

2.1 Performance

Power Source (3PH)	Hz	50	60	Remark
	V	380	440	
Capacity	W	43,900	53,500	±5%
	(BTU/hr)	149,787	182,542	reference
Input Power	W	13,800	16,700	±5%
Current	A	24.40	25.10	±5%

Standard Rating Conditions

Condensing Temp.	°C (°F)	54.4(130)
Evaporating Temp.	°C (°F)	7.2(45)
Suction Gas Temp.	°C (°F)	18.3(65)
Liquid Temp.	°C (°F)	46.1(111)
Ambient Temp.	°C (°F)	35.0(95)

2.2 Sound Level

Power Source (3PH)	Hz	50	60
	V	380	440
Sound Level	dB(A)	71.0Max.	76.0Max.

Notes

- 1 The operating conditions are the same as 2.1.
- 2 MIC location is the distance of 1m (3.28feet) from the compressor.
- 3 Sound Level is an average sound pressure level in four directions.

2.3 Minimum Starting Voltage

Power Source (3PH)	Hz	50	60
Minimum Starting Voltage	V	304	352

Conditions

Compressor Temp.	°C (°F)	10~60(50~140)
Ambient Temp.	°C (°F)	10~40(50~105)
High Pressure	MPa(G)/psig	3.25(471)
Low Pressure	MPa(G)/psig	0.9(130.5)

2.4 Others

Content		Unit	Specification
Design Pressure	L.P. S.	MPa(G)/psig	2.21(320)
	H. P. S.	MPa(G)/psig	4.15(602)
Insulation Resistance		MΩ	100 (without refrigerant)
Dielectric Strength		V	2400 (1 second)
Residual Moisture		mg	400

Note:

1. The insulation resistance be measured with a DC500V megohm tester.

Section 3. Standard Accessories

3.1 Accessories List

Parts Name	Qty	Parts code	Revision No.	Note
Terminal Box Cover	1	A-0101-DSB	0	Installed on Compressor
Terminal Box Clip	1	A-0201-DSB	0	Installed on Compressor
Insulating Grommet	1	A-0301-DSB	0	Installed on Compressor
Mounting Grommet	4	M-0101-DSC	0	Included with Compressor
Mounting Sleeve	4	M-0202-DSC	0	Included with Compressor

3.2 The Drawing for Reference

Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0110-DSC	0
Mounting Parts Listing	M-5102-DSC	0
Packing Dimensions	D-0202-DSC	0
Wiring Diagram	E-0910-DSC	0

3.3 Internal Motor Protector (in compressor)

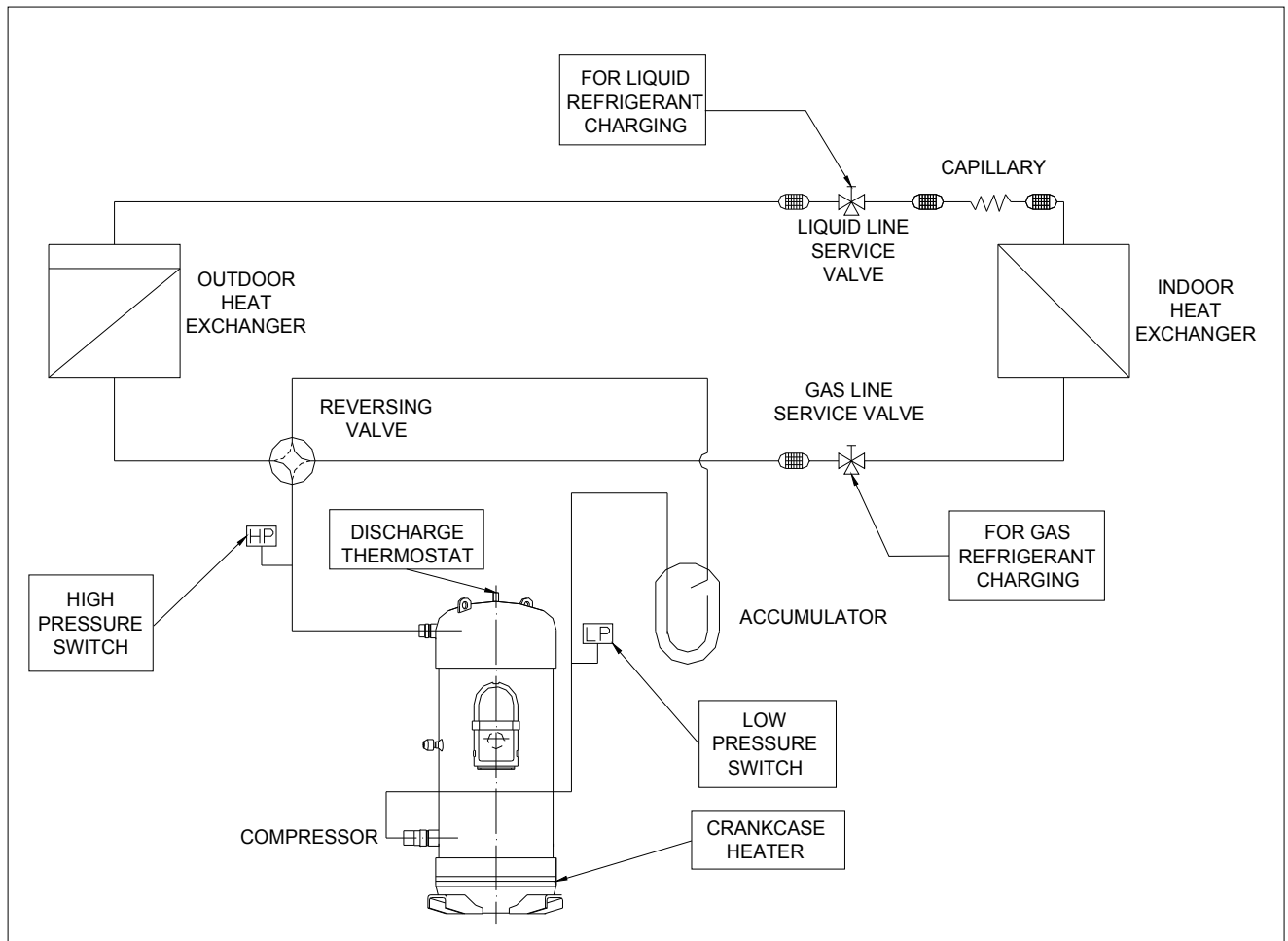
Parts Name	Specification	
Internal Motor Protector	Trip Temperature	160±5℃
	Reset Temperature	70±10℃
	Trip Current	98A / 3~10s

Section 4. Compressor Protection

4.1 Protection Required but not Included with compressor

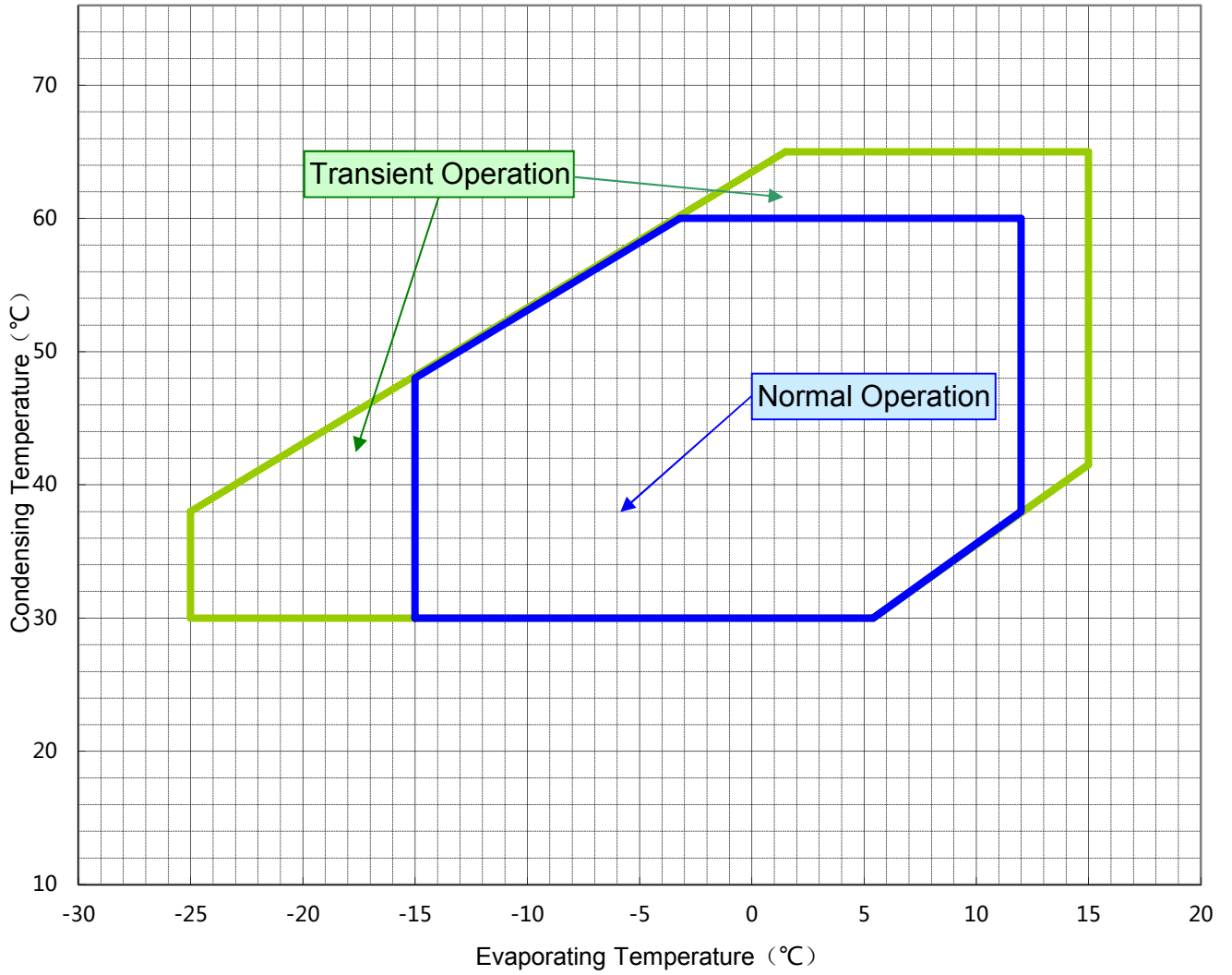
Protection Device	Items	Specifications
Reversal Defensible Relay	Features	To protect the compressor from reverse rotation
	Rated Voltage	AC380V
Crankcase Heater	Rated Power	88 Watts
Discharge Thermostat	Mounting Position	Located in the well pipe of top shell
	Trip Temperature	135±5°C(275 ±10 °F)
	Reset Temperature	86±15°C (187 ± 27 °F)
High Pressure Switch	Setting	Cut-out seting no higher than 4.15MPa(G)
Low Pressure Switch	Setting	Cut-out seting no lower than 0.15MPa(G)

4.2 Position of the Protection and Refrigerant Charging



Section 5. Operating Envelope

Suction Gas Superheating : 11.1K.
Refrigerant : R410A.



Section 6. Application Standard & Limit

The following requirements apply to vertical type hermetic scroll compressors:

Standard: Applicable to ordinary conditions in Japan JIS B8616 or standards relative to JIS B8616, such as standard rating conditions, maximum operating conditions, low temperature conditions, etc.

Limit: Applicable to transitional brief period of time, such as start-up and beginning of defrost mode.

No.	Item	Standard	Limit	Note
1	Refrigerant	R410A		
2	Evaporating Temp.	-15~12°C(5~54 ° F) 0.38~1.06MPa(G)(55~154psig)	-25~15°C(-13~59 ° F) 0.23~1.16MPa(G)(33~168psig)	
3	Condensing Temp.	30~60°C(86~140 ° F) 1.80~3.75MPa(G)(261~544psig)	65°C(149 ° F) 4.18MPa(G)(606psig)	
4	Compression Ratio	2 ~ 6	8	
5	Winding Temp.	115°C(240 °F) Max.	125°C(257 °F)	
6	Shell Bottom Temp.	90°C(194 °F) Max.		
		Evaporating Temp.+12°C(21 °F) Min.		
		Ambient Temp.+11°C(20 °F) Min.		
7	Discharge Gas Temp.	115°C(240 °F) Max.	C-SB:130°C(266°F) Max.	
			C-SC:135°C(275°F) Max.	
8	Suction Gas Temp.	Superheat: 5K(10 °F)Min.	No excessive noise	It should meet the requirement of item 5, 6, 7 and 14 within 30cm of the suction fitting.
9	Running Voltage	Within ±10% of the rated voltage		Voltage at compressor terminals.
10	Starting Voltage	Three Phase Models: 85% of the rated voltage min.		Voltage at compressor terminals.
		Single Phase Models: 90% of the rated voltage min.		
11	On/Off Cycling	On Period: Until the oil level returns to the center of the lower bearing Off Period: Until balance of high and low pressure is obtained		For at least 7 minutes - on/3 minutes-off is recommendable.
12	Refrigerant Charge	oil/refrigerant(wt.)≥0.35		Specific gravity of the Oil:0.94
13	Life Time	200,000 cycle		
14	Minimum Oil Level	C-SB: Center of the lower bearing C-SB:Bottom of the lower bearing		
		C-SC:No less than 70% of the initial oil charge		
15	Abnormal Pressure Rise/Drop	Pressure Rise: 4.15MPa(G) (602psig) Max.		By high pressure switch
		Pressure Drop: 0.15MPa(G) (22psig) Min.		By low pressure switch
16	System Moisture Level	200ppm Max.		
17	System Uncondensable Gas Level	1 Vol.% Max. Residual Oxygen 0.1 Vol.% Max.		24 hrs. after vacuuming: 1.01kPa Max.
18	Tilt	5° Deg.Max.		

Operation beyond the above limits must be approved by Dalian SANYO Compressor Co., Ltd.

(G): Gauge Pressure

Notes

- 1 Installation should be completed within 15 minutes after removing the rubber plugs.
- 2 Do not use the compressor to compress air.
- 3 Do not energize the compressor under vacuumed condition.
- 4 Evacuation and Refrigerant charge : Evacuate internal section in the refrigeration system from high and low pressure sides and charge liquid refrigerant from condenser outlet side. Additional charge shall be done with gas condition from low side.
- 5 Do not tilt over the compressor while carrying it.
- 6 Do not remove the paint.
- 7 Crankcase heater is required when the oil sump temperature is too low to meet the requirement of item 6 on page 7.
- 8 Voltage fluctuation between compressor terminals, during operation, shall be within 2% of the rated voltage.
- 9 Do not operate compressor in reverse rotational direction.
- 10 Suction strainers are recommended for all applications.
- 11 Copper Piping Stress

Start/Shutdown	34.32 N/mm ² Max.
Run	12.26 N/mm ² Max.

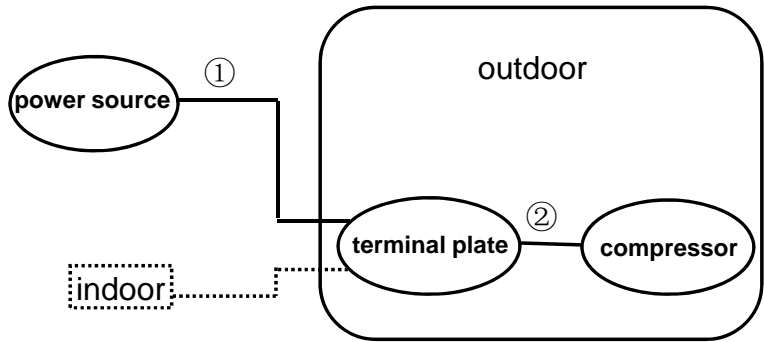
Section 7. Selection of Electrical Wire

Voltage drop may occur due to the large current draw during compressor starting.

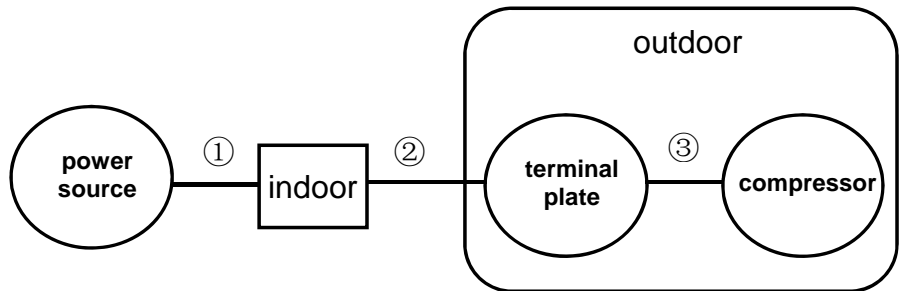
We recommend selecting the wire size from the table below.

7.1 Type of Unit

7.1.1 Window & Commercial Type Unit



7.1.2 Split Type(Separate Type)



7.2 Size Table of Electrical Wire

Starting current (A)	Size of electrical wire (mm ²)							
	Remark ① or Remark ①+② (heat-resistance Temperature: 60°C(140°F) min.)							Remark③ (heat-resistance Temperature: 120°C(248°F) min.)
	5m max.	10m max.	15m max.	20m max.	30m max.	50m max.	1m max.	
20max.	2.0	2.0	2.0	3.5	5.5	8.0	2.0	
30max.	↑	↑	3.5	5.5	↑	14.0	↑	
40max.	↑	3.5	5.5	↑	8.0	↑	↑	
50max.	↑	↑	↑	8.0	14.0	22.0	↑	
60max.	↑	5.5	↑	↑	↑	↑	↑	
70max.	3.5	↑	8.0	14.0	↑	↑	3.5	
80max.	↑	↑	↑	↑	22.0	30.0	↑	
90max.	↑	↑	14.0	↑	↑	↑	↑	
100max.	↑	8.0	↑	↑	↑	38.0	↑	
110max.	↑	↑	↑	↑	↑	↑	↑	
120max.	5.5	↑	↑	22.0	30.0	↑	↑	
140max.	↑	14.0	↑	↑	↑	50.0	5.5	
160max.	↑	↑	22.0	↑	↑	↑	↑	
180max.	↑	↑	↑	↑	38.0	60.0	8.0	
200max.	8.0	↑	↑	30.0	↑	↑	↑	
220max.	↑	↑	↑	↑	50.0	80.0	↑	
240max.	↑	↑	↑	↑	↑	↑	14.0	

7.3 Caution of Ground

The internal motor protector does not protect the compressor against all possible conditions.

Please be sure that the system utilizes the ground connection when installed in the field.



SPECIFICATIONS OF COMPRESSOR

Model No: C-SCP510H38B

Output : 15HP

DALIAN SANYO COMPRESSOR Co.,Ltd.

01-Mar-11

GENERAL SPECIFICATIONS

Model No:	C-SCP510H38B	
Application		
Evaporating Temp Range	(°C)	-15.0 ~ 12.0
Refrigerant	R410A	
Compressor Cooling	Natural Cooling	
Rated Performance		
Capacity	(W)	43900
Input	(W)	13800
Current	(A)	24.4
Revolution	(min ⁻¹)	2870
Sound Level	(dB(A))	71
Rating Conditions		
Power Source	3-PH 50Hz 380V	
Evaporating Temp	(°C)	7.2
Condensing Temp	(°C)	54.4
Suction Gas Temp	(°C)	18.3
Liquid Temp	(°C)	46.1
Ambient Temp	(°C)	35.0
Measuring Point of Sound Level		
Distance from the Compressor	(m)	1.0
Compressor		
Design	Hermetic Scroll	
Displacement	(cm ³)	171.2
Suction Line Connection	(Φ mm OD)	34.9
Discharge Line Connection	(Φ mm OD)	22.3
Oil	(ml)	3500 (FV68S)
Mass(Incl.Oil)	(kg)	76
Motor		
Type	3-PH Induction Motor (3 I R)	
Pole	2	
Rated Power Source	3-PH 50Hz 380-415V	
Voltage Range	(V)	380-415
Starting Current	(A)	158.73
Running Capacitor	(μ F)	-

DALIAN SANYO COMPRESSOR Co.,Ltd.

PERFORMANCE DATA

Compressor Model	C-SCP510H38B
Power Source	3PH 50Hz 380-415V
Suction Gas Superheat(°C)	11.1
Sub Cooling(°C)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R410A

CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	29,650	34,230	38,030	47,640	55,320	60,790	66,690	71,180
40.5	25,380	30,130	33,910	43,180	50,420	55,500	60,960	65,080
45.0	22,240	27,080	30,830	39,800	46,680	51,470	56,580	60,430
50.0	19,140	24,010	27,690	36,310	42,820	47,300	52,060	55,620
54.4		21,580	25,180	33,490	39,670	43,900	48,360	51,690
60.0			22,350	30,220	36,000	39,930	44,060	47,120
65.0				27,620	33,050	36,730	40,580	43,440

POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	9,120	9,210	9,270	9,380	9,440	9,480	9,510	9,540
40.5	10,040	10,170	10,240	10,380	10,460	10,510	10,560	10,590
45.0	10,890	11,040	11,140	11,310	11,410	11,470	11,530	11,560
50.0	11,920	12,110	12,240	12,460	12,580	12,660	12,720	12,770
54.4		13,150	13,290	13,560	13,710	13,800	13,880	13,930
60.0			14,760	15,090	15,290	15,390	15,500	15,560
65.0				16,590	16,820	16,950	17,070	17,150

CURRENT(A)

@380V

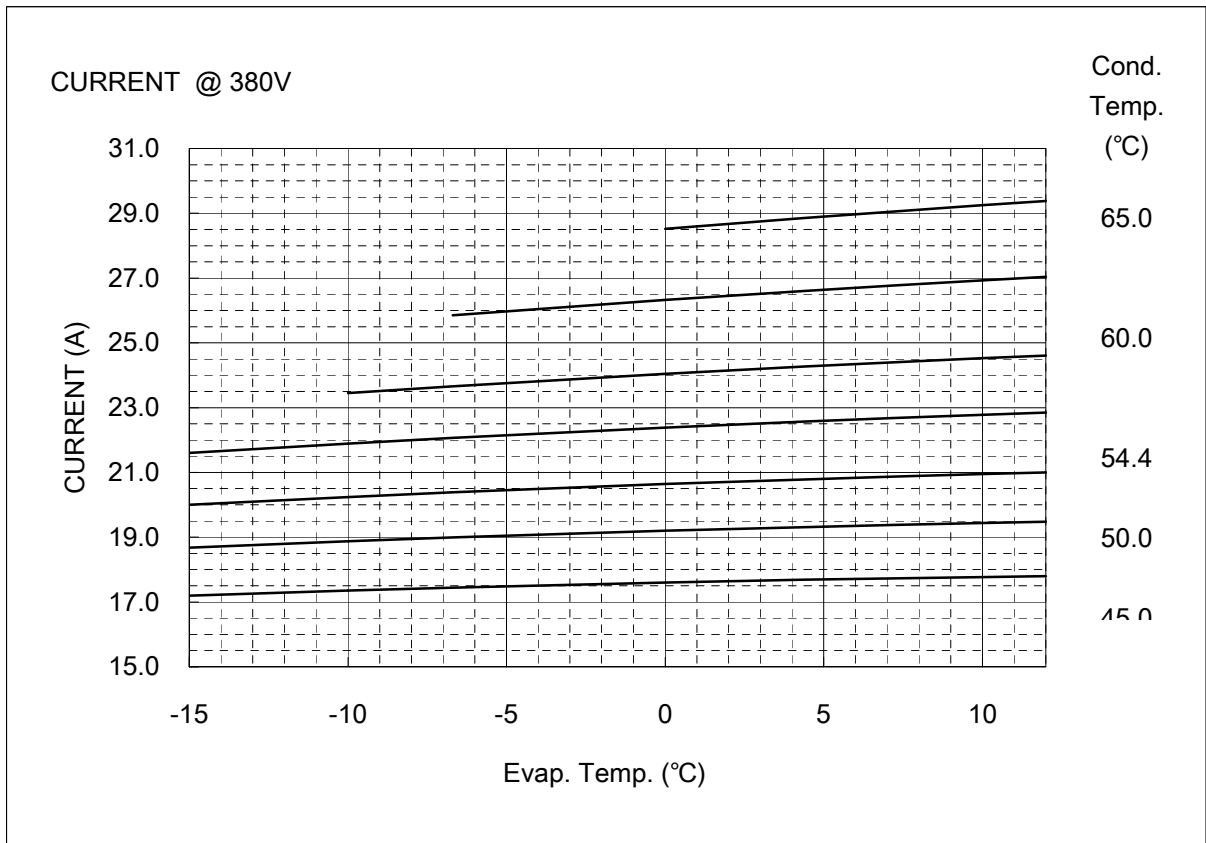
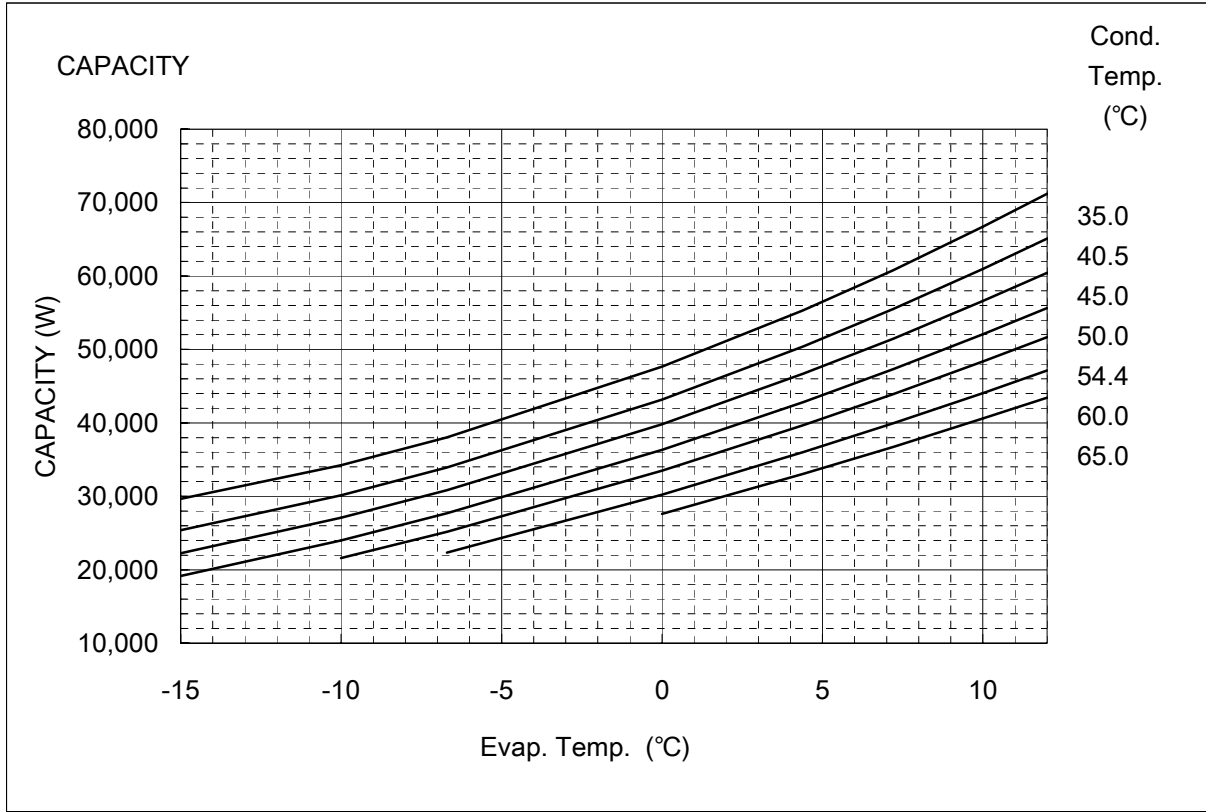
Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	17.2	17.4	17.4	17.6	17.7	17.7	17.8	17.8
40.5	18.7	18.9	19.0	19.2	19.3	19.4	19.4	19.5
45.0	20.0	20.2	20.4	20.6	20.8	20.9	20.9	21.0
50.0	21.6	21.9	22.1	22.4	22.6	22.7	22.8	22.8
54.4		23.5	23.7	24.0	24.3	24.4	24.5	24.6
60.0			25.9	26.3	26.6	26.8	26.9	27.0
65.0				28.5	28.9	29.1	29.2	29.4

NOTE:

- * The performance values are based on MID point method.
- * The performance values subject to change without notice.

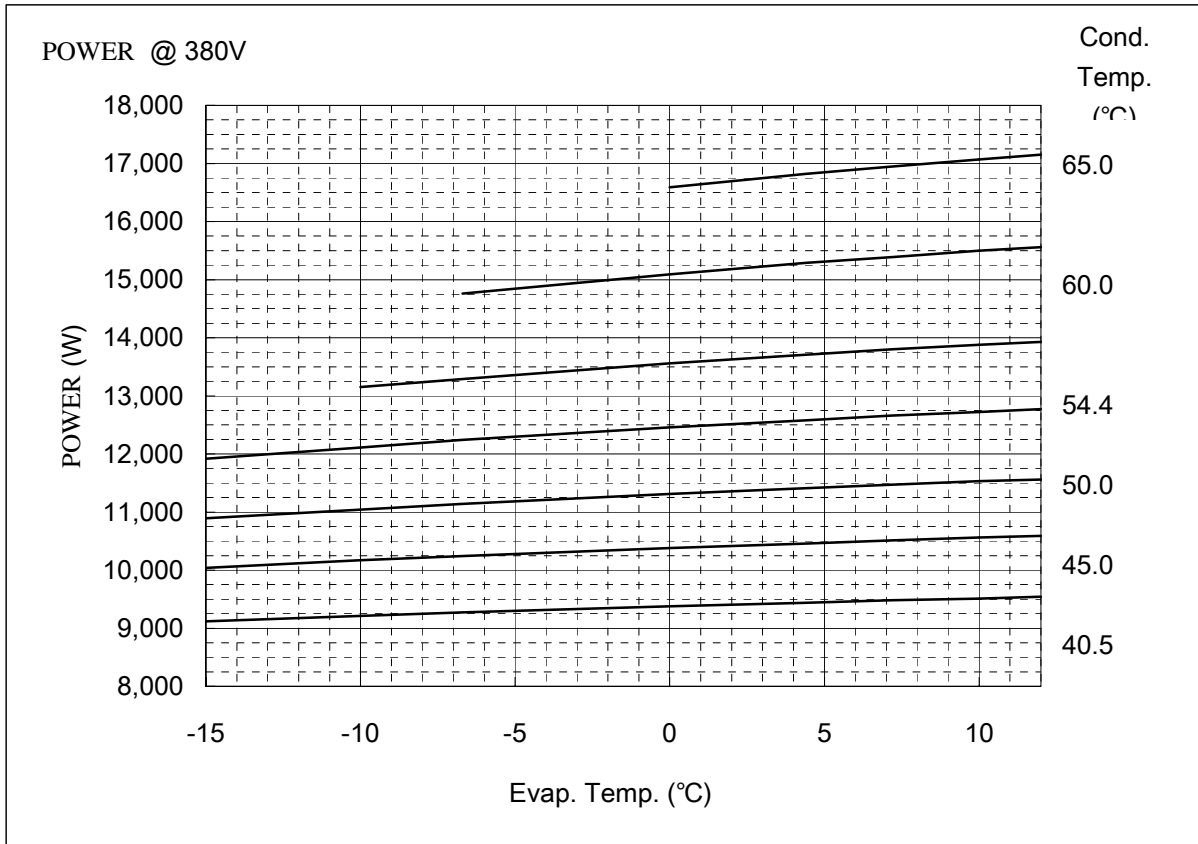
Compressor Model(Code)
Power Source

C-SCP510H38B
3PH 50Hz 380-415V



Compressor Model(Code)
Power Source

C-SCP510H38B
3PH 50Hz 380-415V



COEFFICIENTS OF PERFORMANCE CURVES

Compressor Model **C-SCP510H38B**
 Power Source **3PH 50Hz 380-415V**
 Suction Gas Superheat(K) **11.1**
 Sub Cooling(K) **8.3**
 Compressor Cooling **Natural Cooling**
 Refrigerant **R410A**

$$X=C1+C2*(S)+C3*D+C4*(S^2)+C5*(S*D)+C6*(D^2)+C7*(S^3)+C8*(D*S^2)+C9*(S*D^2) +C10*(D^3)$$

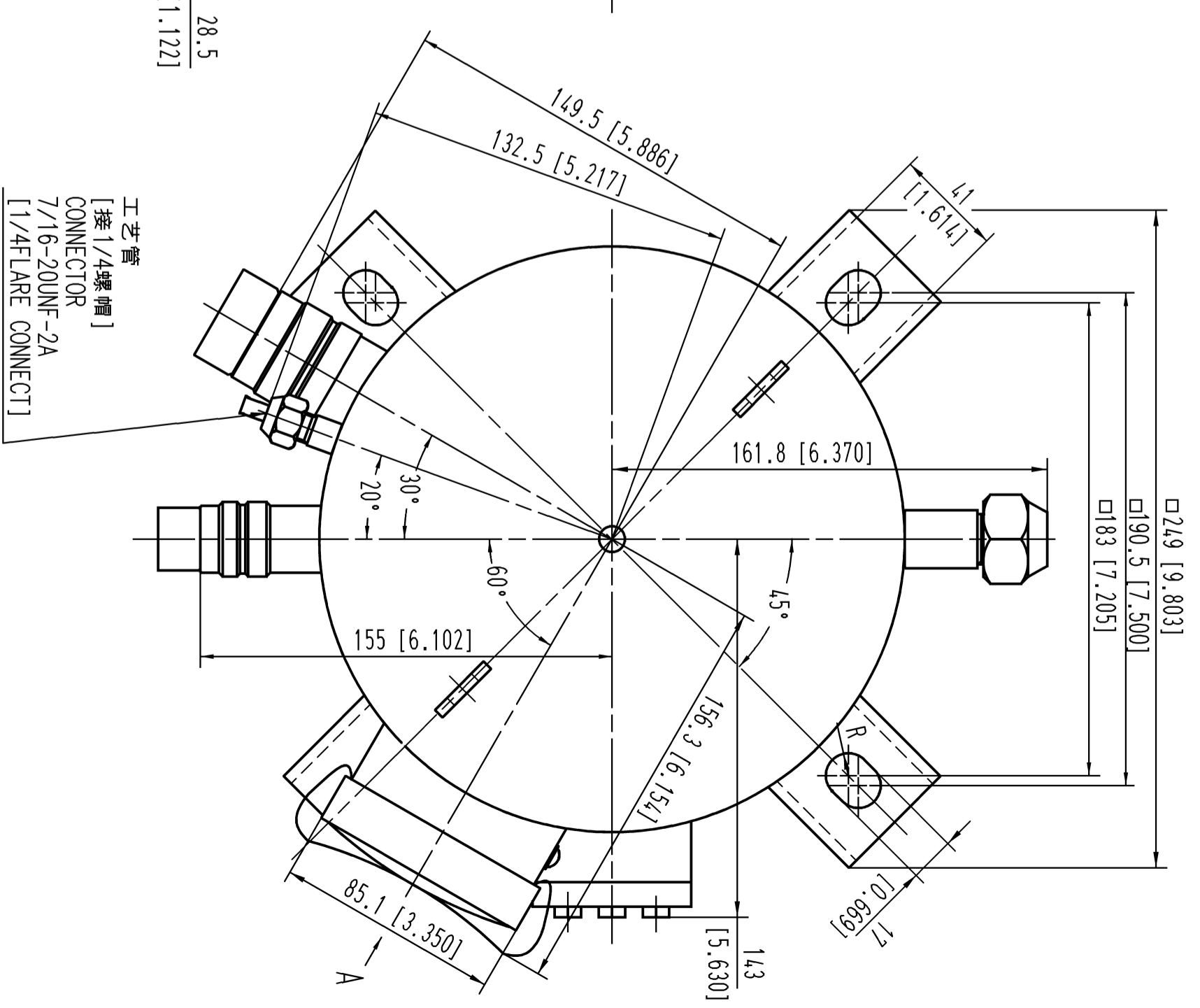
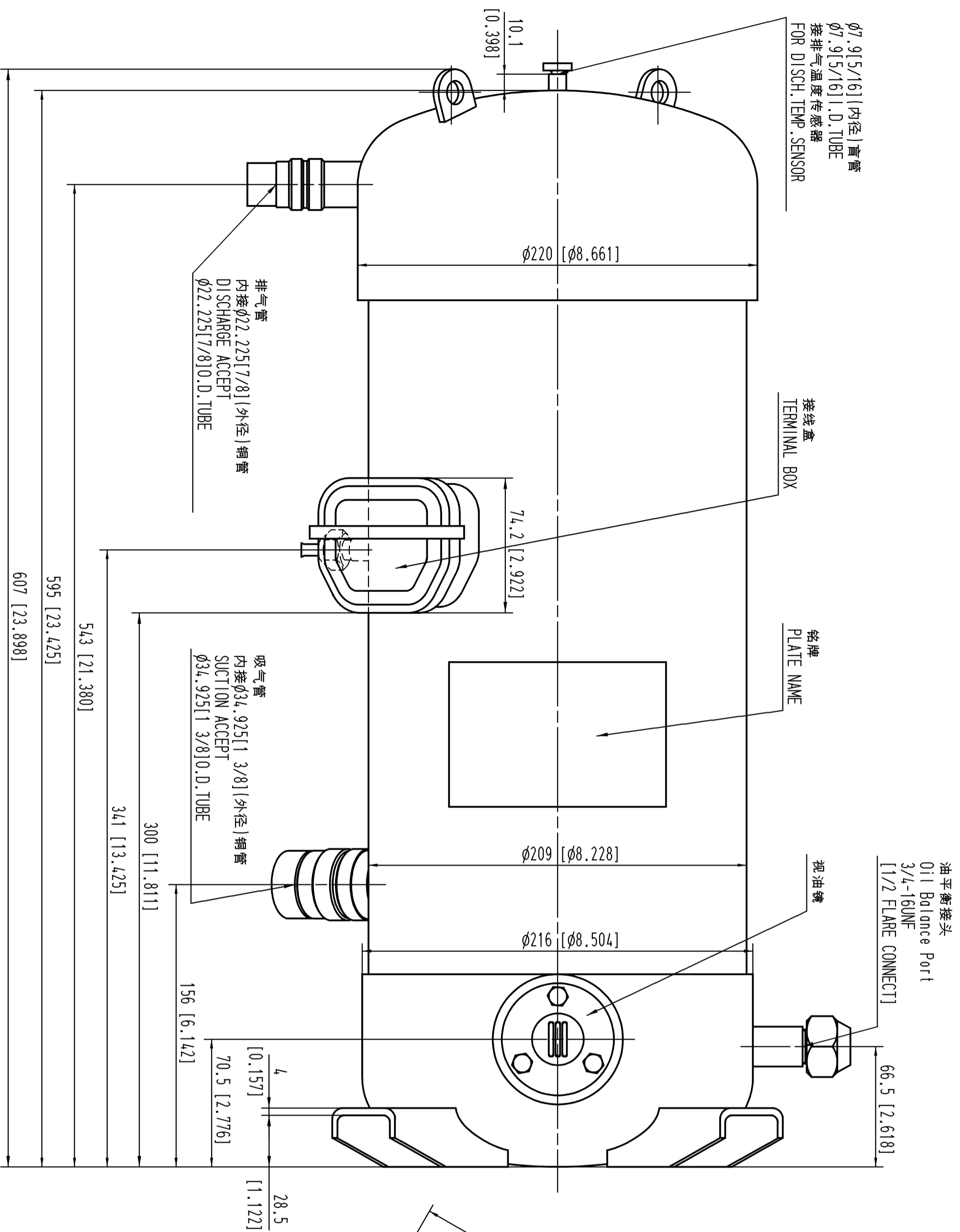
X—CAPACITY(W) OR POWER(W) OR CURRENT(A) OR FLOW(kg/h)

S—EVAPORATING TEMP, °C

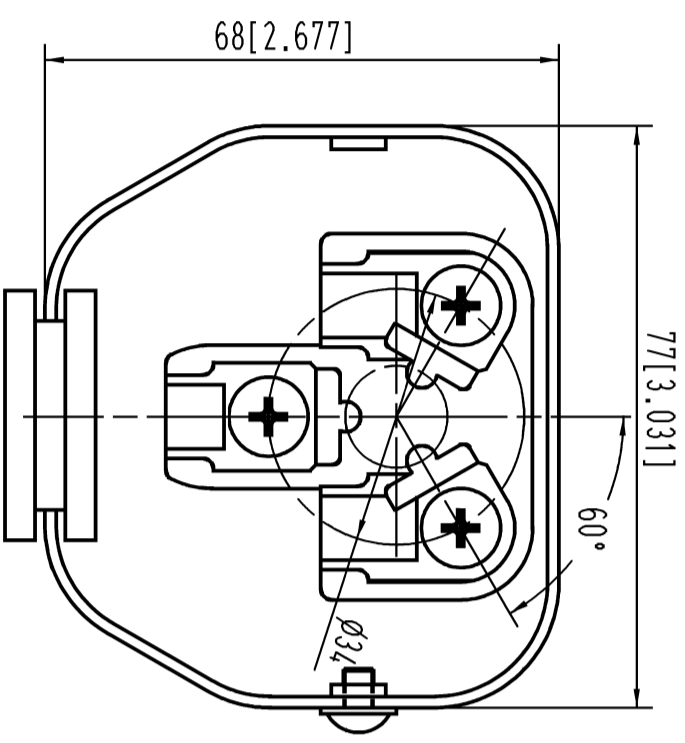
D—CONDENSING TEMP, °C

380V-50Hz	CAPACITY (W)	POWER (W)	CURRENT (A)
C1	8.543251E+04	6.264453E+03	1.166631E+01
C2	2.209375E+03	1.600072E+01	1.181247E-02
C3	-1.299962E+03	7.232038E+00	6.479076E-02
C4	5.030378E+01	5.003542E-01	-8.832781E-05
C5	-1.851165E+01	-7.458890E-01	-6.457245E-04
C6	6.333724E+00	2.332098E+00	2.991409E-03
C7	3.232164E-02	-7.287552E-04	-1.392311E-07
C8	-6.507441E-01	-1.751960E-02	-8.469108E-06
C9	4.640627E-02	2.067642E-02	2.594574E-05
C10	-1.621833E-07	-1.065587E-09	1.981788E-12

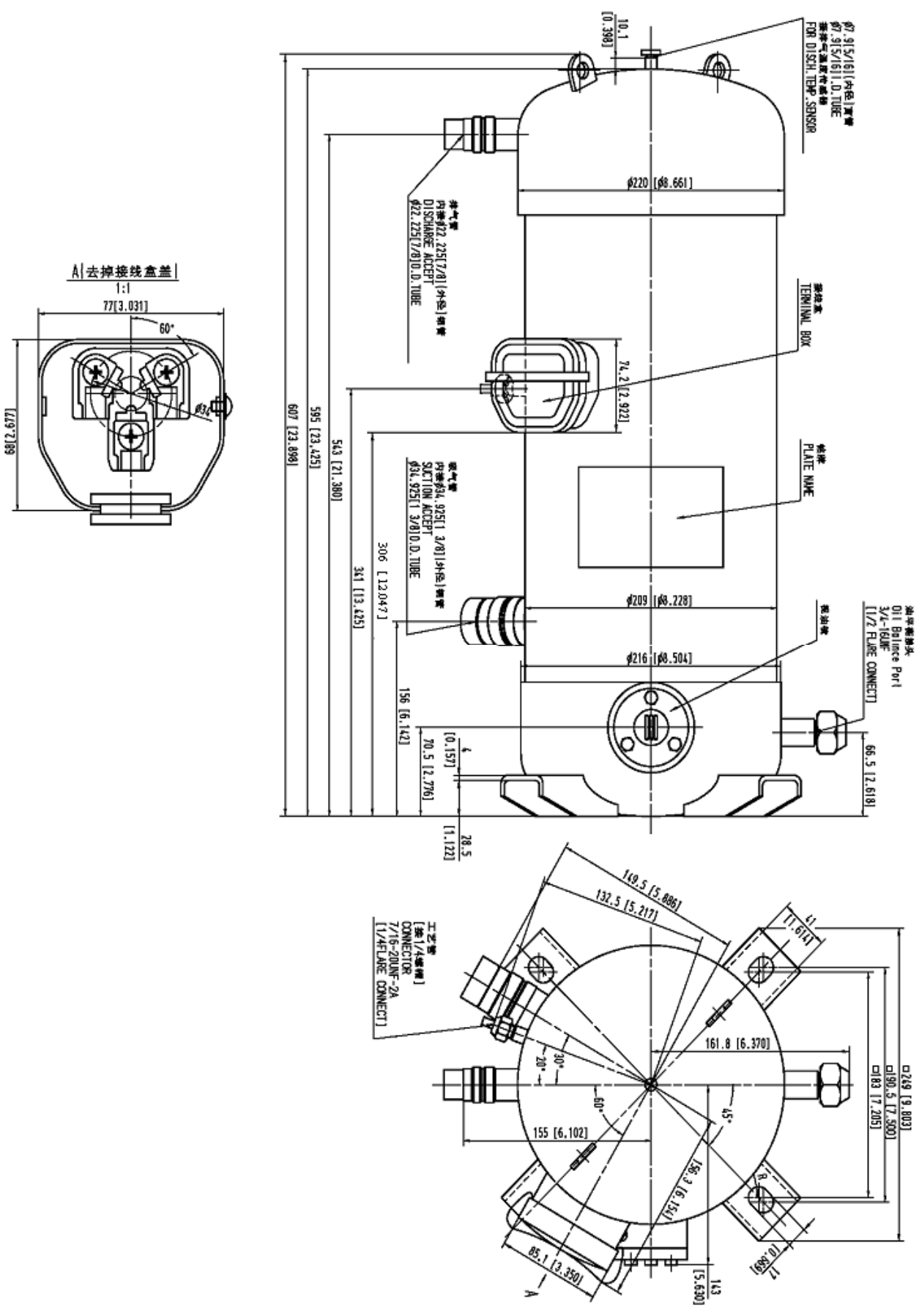
Note:The polynomial coefficients subject to change without notice.



A [去掉接线盒盖]
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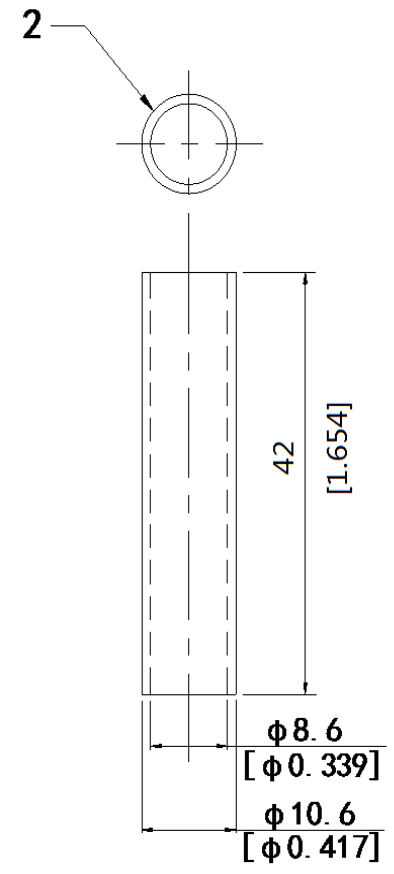
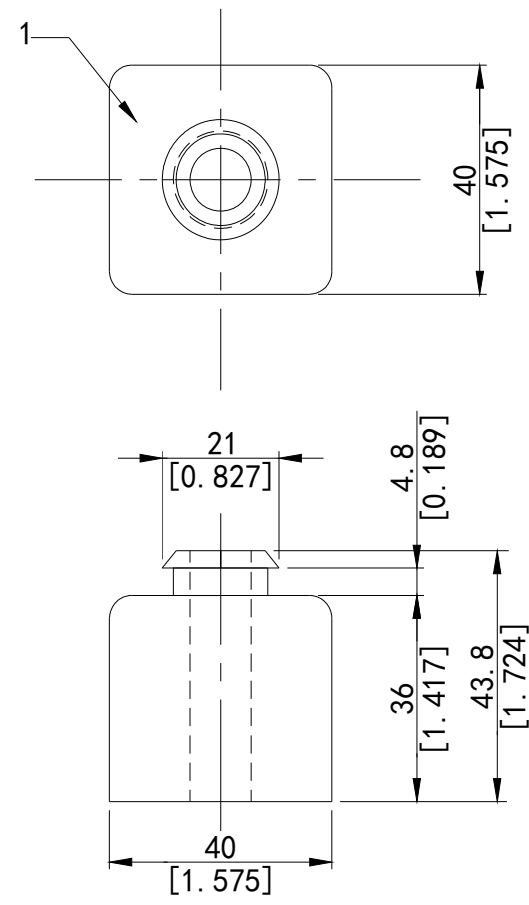
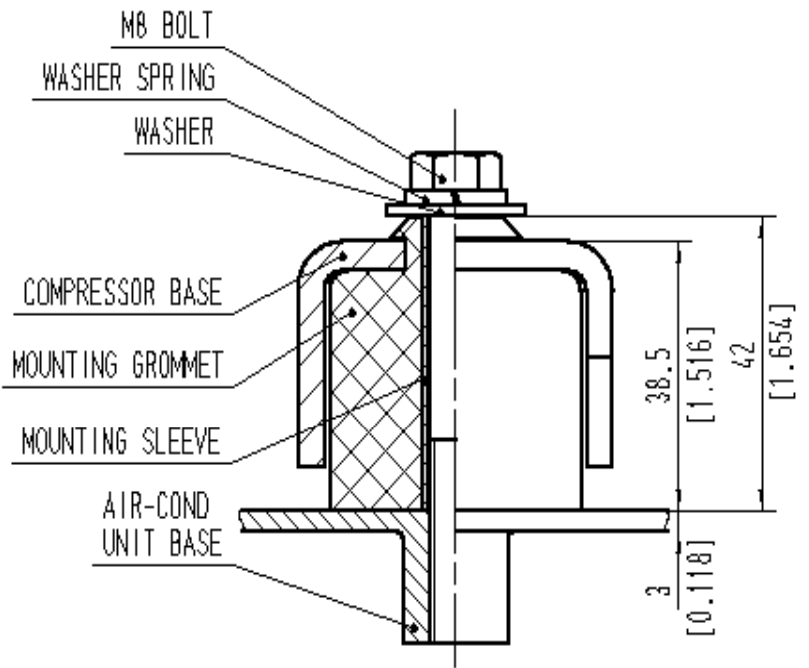


设计		校核		审核		工艺		批准		共 1 张 第 1 张	
标记	处数	分区	更改文件号	签名	年、月、日	图号审核	标准化				
外观图		COMP DIM SKETCH SCR		大连三洋压缩机有限公司		重量		比例		D01-0-0650-015-00-0	
S		A		B		76.5		1:2			

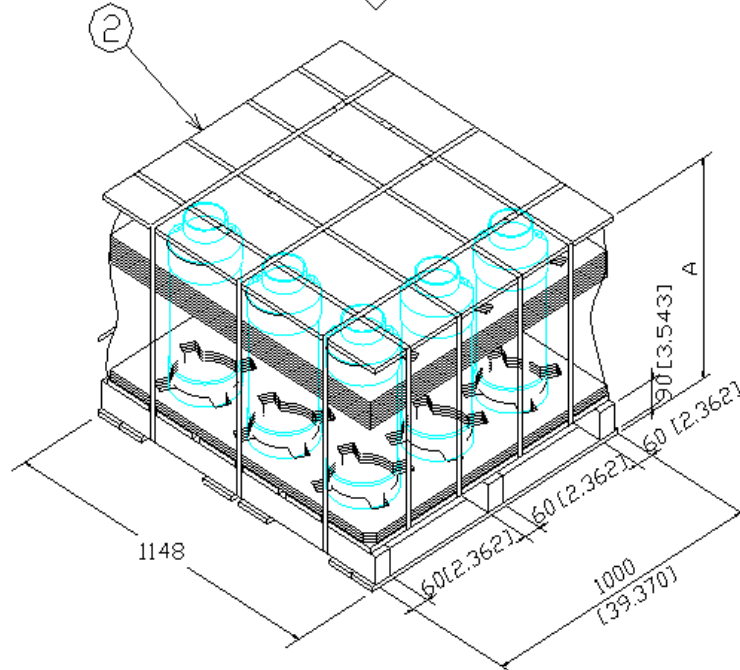
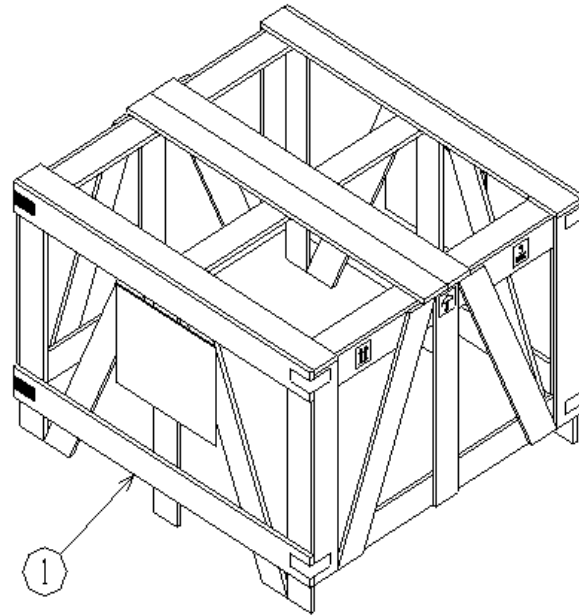
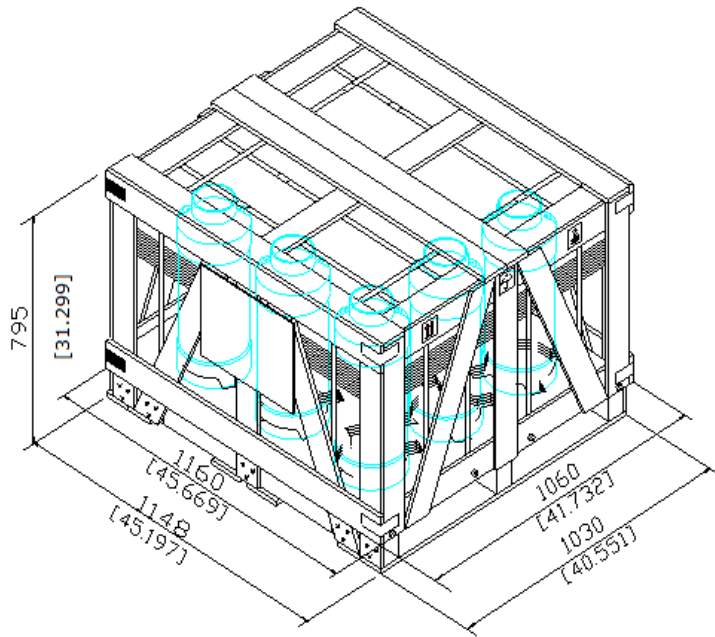


Part Code
D-0110-DSC
Name
Compressor Outline Drawing

No.	Part	QTY	Name
1	M-0101-DSC	4	Mounting Grommet
2	M-0202-DSC	4	Mounting Sleeve

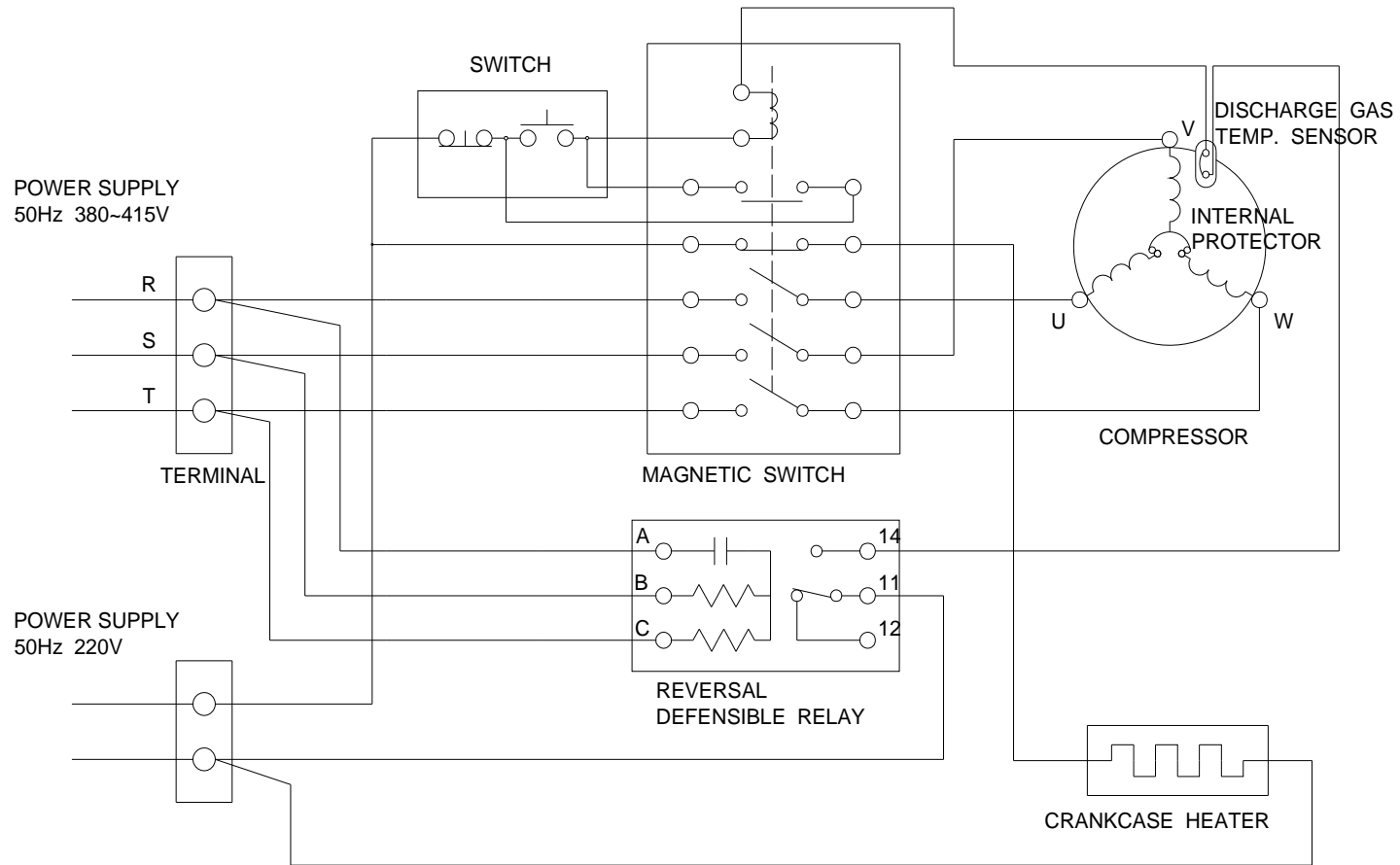


Part Code
M-5102-DSC
Name
Mounting Parts Listing

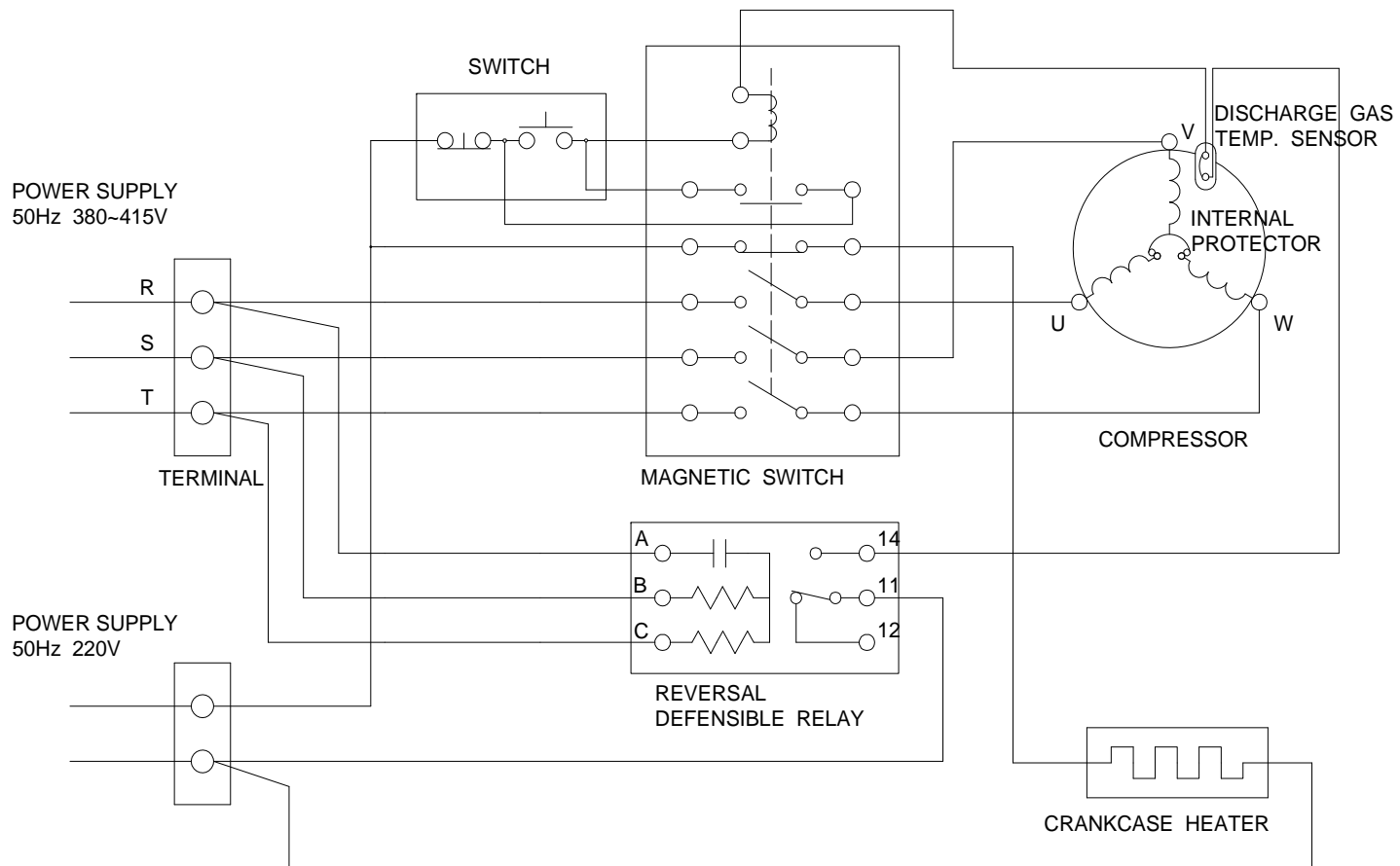


Compressor Model	A
C-SCP510H38B	739[29.094]

Part Code
D-0202-DSC
 Name
 Packing Dimensions



Part Code
E-0910-DSC
Name
Wiring Diagram



Part Code
 E-0910-DSC
 Name
 Wiring Diagram