reld SACIFIA
REFRIGERACION - AIRE ACONDICIONADO

SANYO

No. : WWXS-002-GGSY-14

APPROVAL SHEET

SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

MODEL	C-SCP435H38B

NO.	DATE	PAGE	REVISION DETAILS	SANYO SIGNED	CLIENT SIGNED
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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-SCP435H38B
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)	74.0(163.1)
Refrigerant		—	R410A
Oil Type		—	FV68S or Equivalent
Oil Charge		ml (fl oz)	2800 (94.7)
Displacement		cm^3 (in^3) /rev	148.8(9.08)
Motor	Motor Type	—	3-PH Induction Motor
	Number of Poles	—	2
	Electrical Insulation	Class	E
	Nominal Revolution	min^{-1}	—
	Locked Rotor Ampere	A	130
	Winding Resistance [at 25°C (77°F)]	Ω	U-V 0.820
			U-W 0.859
			V-W 0.846
Connection Tube	Suction Line (O.D.)	mm (in)	25.4(1.000)
	Discharge Line (O.D.)	mm (in)	19.05 (0.750)
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	37,600	45,100	±5%
	(BTU/hr)	128,291	153,881	reference
Input Power	W	12,100	14,600	±5%
Current	A	21.40	21.90	±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)	72.0Max.	74.0Max.
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-0104-DSC	0
Mounting Parts Listing	M-5102-DSC	0
Packing Dimensions	D-0201-DSC	0
Wiring Diagram	E-0910-DSC	0

3. 3 Inernal Motor Protector (in compressor)

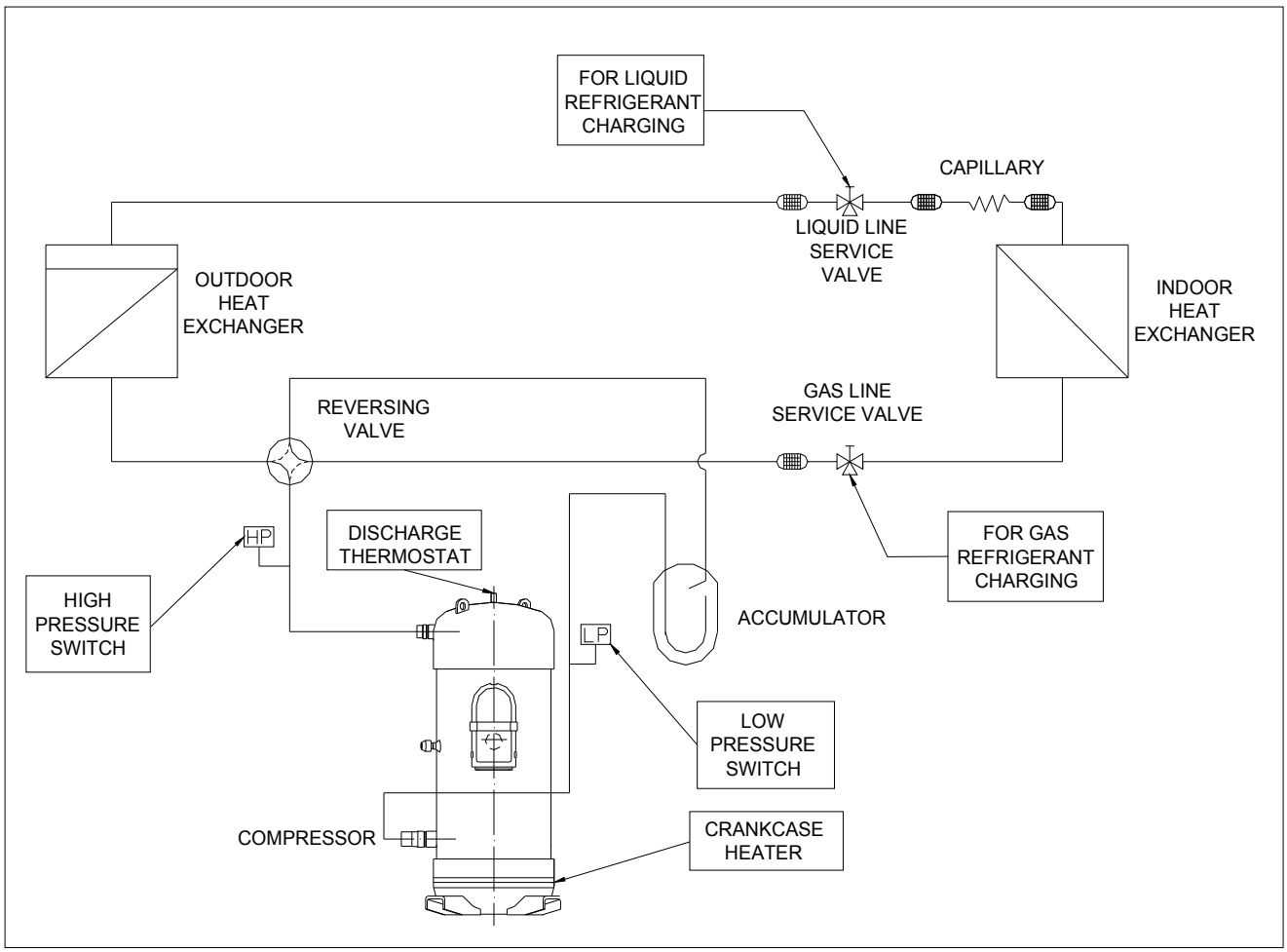
Parts Name	Specification	
Inernal Motor Protector	Trip Temprature	170±5℃
	Reset Temprature	70±10℃
	Trip Current	66A / 3~10s

Section 4. Compressor Protection

4.1 Protection Required but not Included with compressor

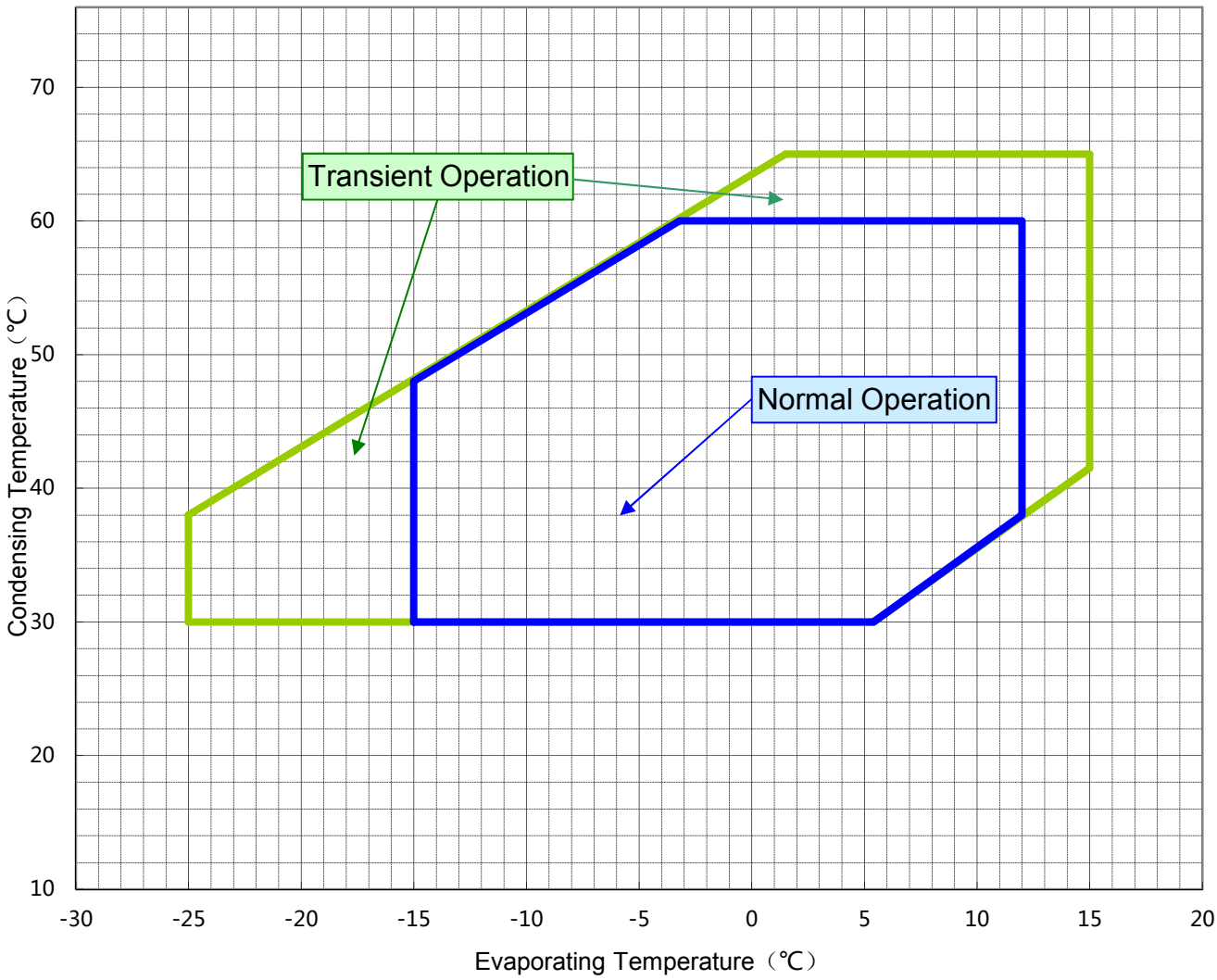
Protection Device	Items	Specifications
Reversal Defensible Relay	Features	To protect the compressor from reverse rotation
	Rated Voltage	AC380V
Crankcase Heater	Rated Power	88 Watts
Discharge Thermostat	Mounting Position	Located in the well pipe of top shell
	Trip Temperature	135±5℃(275 ±10 °F)
	Reset Temperature	86±15℃ (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 Superhea : 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℃(5～54 ° F) 0.38~1.06MPa(G)(55～154psig)	-25~15℃(-13～59 ° F) 0.23~1.16MPa(G)(33～168psig)	
3	Condensing Temp.	30~60℃(86～140 ° F) 1.80~3.75MPa(G)(261～544psig)	65℃(149 ° F) 4.18MPa(G)(606psig)	
4	Compression Ratio	2 ~ 6	8	
5	Winding Temp.	115℃(240 °F) Max.	125℃(257 °F)	
6	Shell Bottom Temp.	90℃(194 °F) Max.		
		Evaporating Temp.+12℃(21 °F) Min.		
		Ambient Temp.+11℃(20 °F) Min.		
7	Discharge Gas Temp.	115℃(240 °F) Max.	C-SB:130℃(266°F) Max.	
			C-SC:135℃(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 conditon.

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 page7.

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.

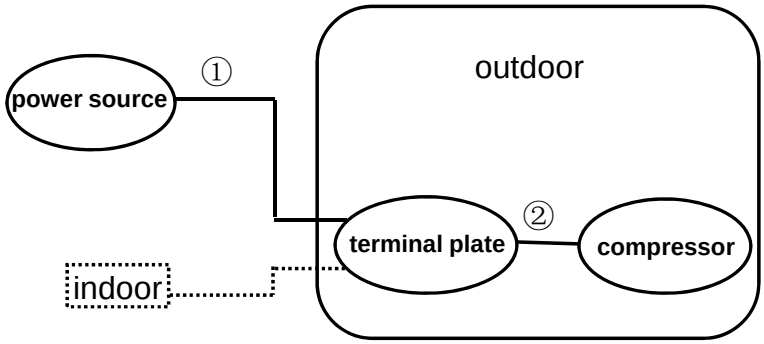
Section 7. Selection of Electrical Wire

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

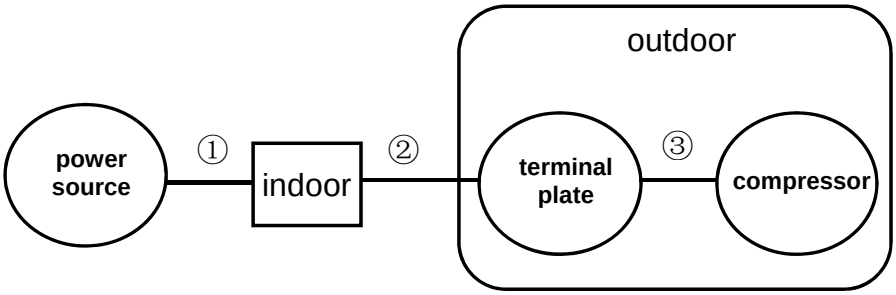
We recommend selecting the wire size from the table below.

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

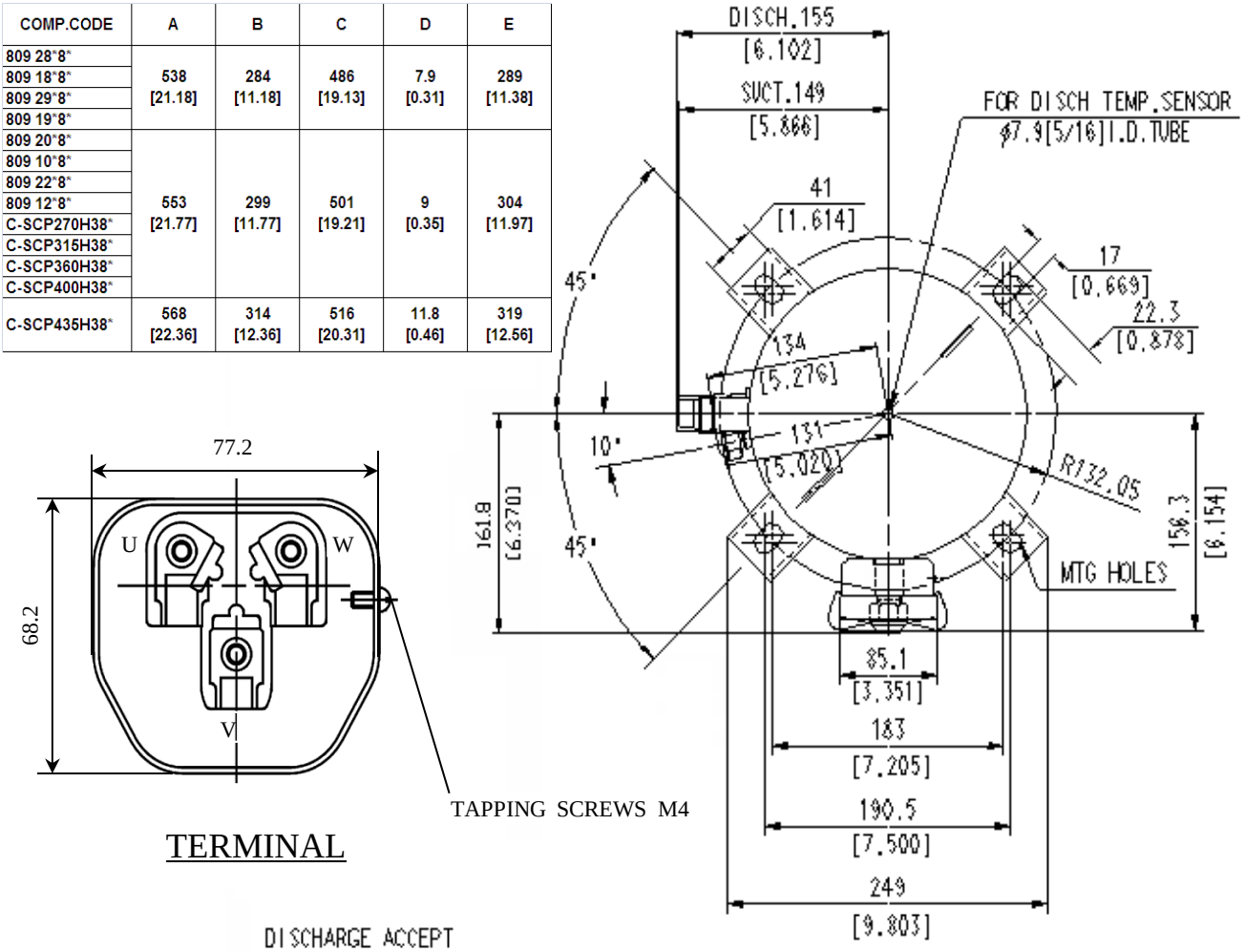
Starting current (A)	Size of electrical wire (mm^2)						
	Remark ① or Remark ①+② (heat-resistance Temperature: 60°C(140°F) min.)						Remark③ (heat-resistance Temperature: 120°C(248°F) min.)
	5m max.	10m max.	15m max.	20m max.	30m max.	50m max.	1m max.
20max.	2.0	2.0	2.0	3.5	5.5	8.0	2.0
30max.	↑	↑	3.5	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

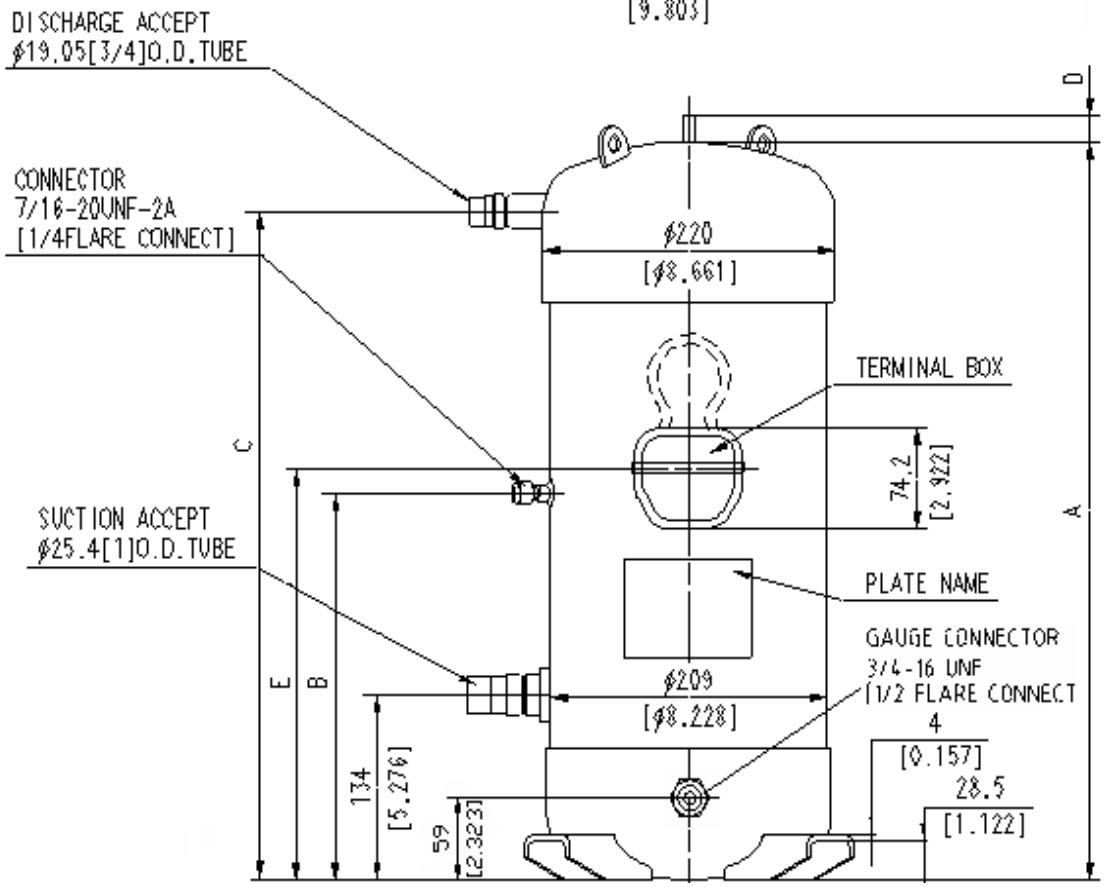
The internal motor protector does not protect the compressor against all possible conditions.

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

COMP.CODE	A	B	C	D	E
809 28°8"	538 [21.18]	284 [11.18]	486 [19.13]	7.9 [0.31]	289 [11.38]
809 18°8"					
809 29°8"					
809 19°8"					
809 20°8"	553 [21.77]	299 [11.77]	501 [19.21]	9 [0.35]	304 [11.97]
809 10°8"					
809 22°8"					
809 12°8"					
C-SCP270H38"					
C-SCP315H38"					
C-SCP360H38"					
C-SCP400H38"					
C-SCP435H38"	568 [22.36]	314 [12.36]	516 [20.31]	11.8 [0.46]	319 [12.56]



TERMINAL



Part Code
D-0104-DSC
Name
Compressor Outline Drawing

SANYO

SPECIFICATIONS OF COMPRESSOR

Model No: C-SCP435H38B

Output : 13HP

DALIAN SANYO COMPRESSOR Co.,Ltd.

18-Dec-13

GENERAL SPECIFICATIONS

Model No:		C-SCP435H38B
Application		
Evaporating Temp Range	(℃)	-15.0 ～ 12.0
Refrigerant		R410A
Compressor Cooling		Natural Cooling
Rated Performance		
Capacity	(W)	37920
Input	(W)	11836
Current	(A)	21.01
Revolution	(min^{-1})	2875
Sound Level	(dB(A))	
Rating Conditions		
Power Source		3-PH 50Hz 380V
Evaporating Temp	(℃)	7.2
Condensing Temp	(℃)	54.4
Suction Gas Temp	(℃)	18.3
Liquid Temp	(℃)	46.1
Ambient Temp	(℃)	35.0
Measuring Point of Sound Level		
Distance from the Compressor	(m)	1.0
Compressor		
Design		Hermetic Scroll
Displacement	(cm3)	148.8
Suction Line Connection	(Φmm 0D)	25.4
Discharge Line Connection	(Φmm 0D)	19.05
Oil	(ml)	2800 (FV68S)
Mass(Incl.Oil)	(kg)	75
Motor		
Type		3-PH Induction Motor(3IR)
Pole		2
Rated Power Source		3-PH 50/60Hz 380-415/440V
Voltage Range	(V)	342～456 / 396～484
Starting Current	(A)	

DALIAN SANYO COMPRESSOR Co.,Ltd.
SANYO Electric Co.,Ltd.

PERFORMANCE DATA

Compressor Model	**C-SCP435H38B**
Power Source	**3PH 50Hz 380V**
Suction Gas Superheat(K)	**11.1**
Sub Cooling(K)	**8.3**
Compressor Cooling	**Natural Cooling**
Refrigerant	**R410A**

CAPACITY(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	23,190	27,270	30,360	37,740	43,530	47,680	52,220	55,720
40.5	21,400	25,270	28,190	35,200	40,740	44,700	49,050	52,420
45.0	20,040	23,720	26,520	33,240	38,560	42,390	46,590	49,840
50.0	18,620	22,110	24,770	31,180	36,270	39,940	43,970	47,100
54.4		20,790	23,320	29,470	34,370	37,900	41,790	44,820
60.0			21,610	27,440	32,090	35,460	39,180	42,070
65.0				25,750	30,200	33,430	37,000	39,780

POWER(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	7,690	7,780	7,850	8,000	8,120	8,200	8,280	8,340
40.5	8,610	8,690	8,750	8,900	9,010	9,090	9,170	9,230
45.0	9,460	9,540	9,590	9,730	9,830	9,910	9,990	10,040
50.0	10,530	10,590	10,640	10,760	10,850	10,920	10,990	11,050
54.4		11,620	11,660	11,760	11,840	11,900	11,970	12,020
60.0			13,080	13,150	13,220	13,260	13,320	13,360
65.0				14,510	14,560	14,590	14,630	14,670

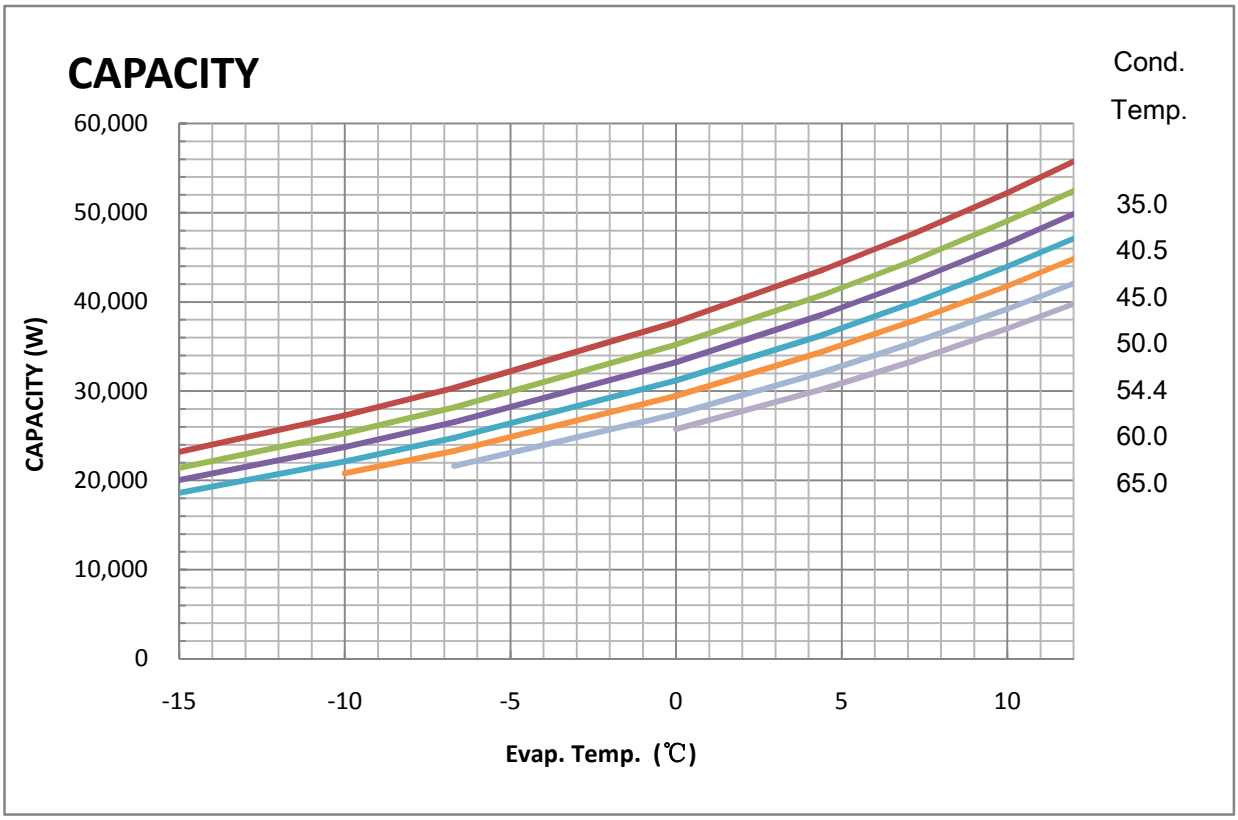
CURRENT(A)

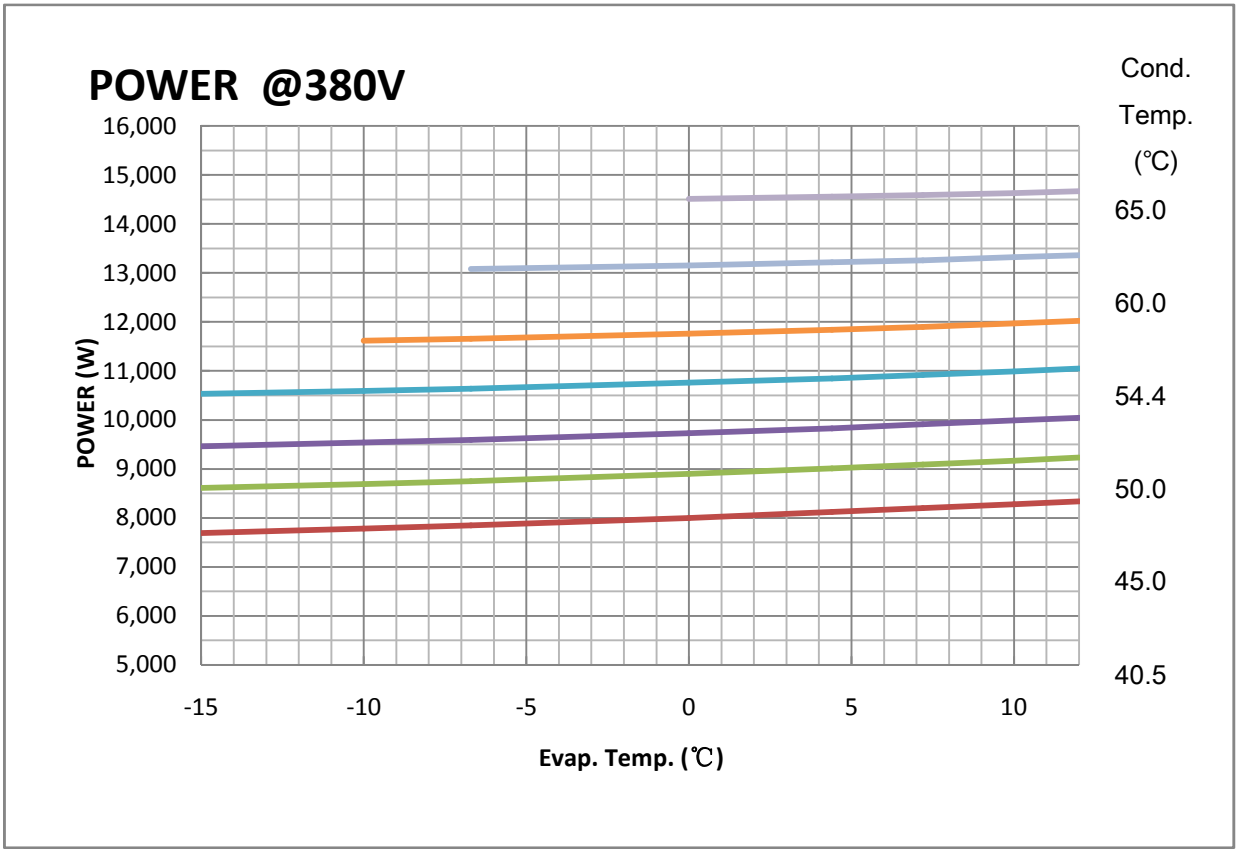
Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	14.7	14.8	14.9	15.2	15.3	15.4	15.5	15.6
40.5	16.1	16.3	16.4	16.6	16.7	16.8	16.9	17.0
45.0	17.5	17.6	17.6	17.8	18.0	18.1	18.2	18.2
50.0	19.1	19.1	19.2	19.3	19.5	19.6	19.7	19.7
54.4		20.6	20.7	20.8	20.9	21.0	21.1	21.2
60.0			22.7	22.8	22.9	23.0	23.1	23.1
65.0				24.7	24.8	24.9	24.9	25.0

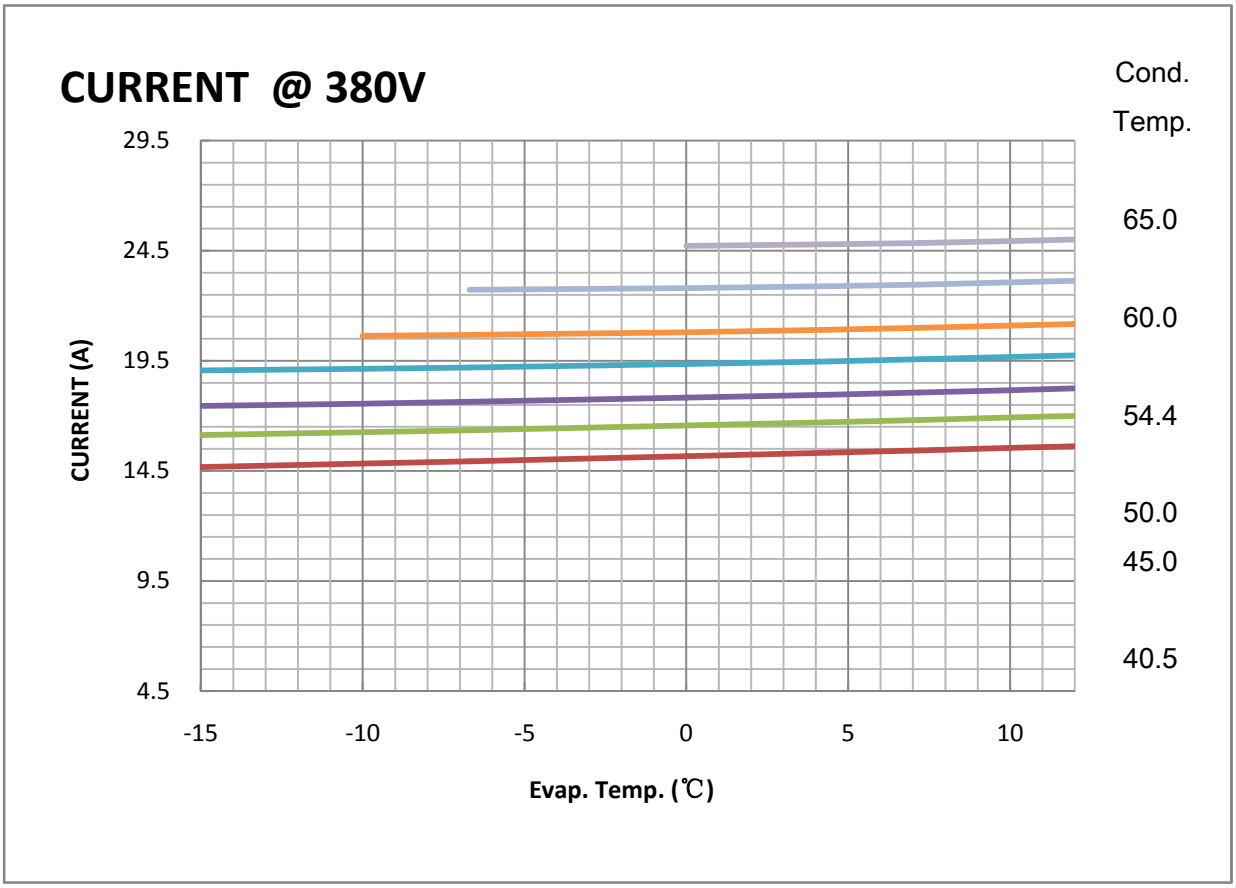
REFRIG FLOW(kg/h)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	418	465	520	693	850	969	1,101	1,204
40.5	416	467	522	685	831	940	1,060	1,154
45.0	414	468	523	679	816	917	1,028	1,115
50.0	412	470	524	673	799	892	994	1,072
54.4		471	524	667	785	871	964	1,036
60.0			525	660	768	845	928	991
65.0				653	752	822	897	953

Compressor Model(Code)	C-SCP435H38B
Power Source	3PH 50Hz 380V







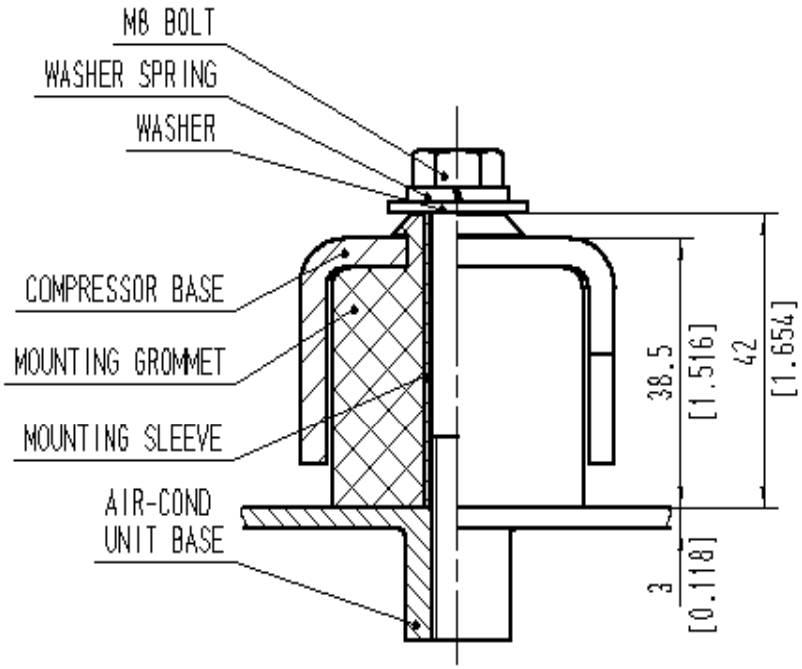
COEFFICIENTS OF PERFORMANCE CURVES

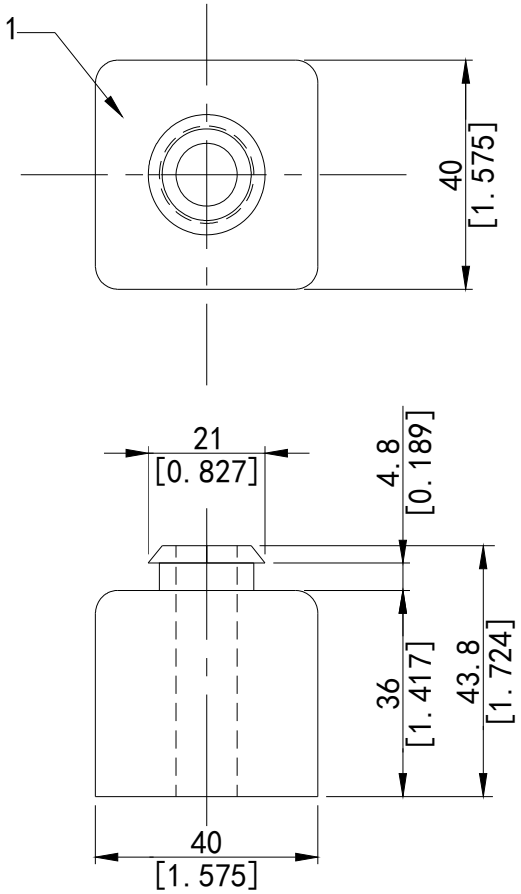
Compressor Model	**C-SCP435H38B**
Power Source	**3PH 50Hz 380V**
Suction Gas Superheat (K)	**11.1**
Sub Cooling (K)	**8.3**
Compressor Cooling	**Natural Cooling**
Refrigerant	**R410A**

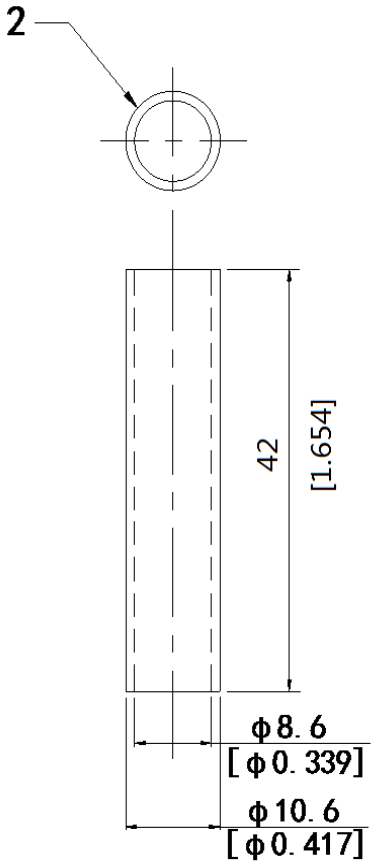
X=C1+C2*(S)+C3*D+C4*(S2)+C5*(S*D)+C6*(D2)+C7*(S3)+C8*(D*S2)+C9*(S*D2) +C10*(D3)
X——CAPACITY(W) OR POWER(W) OR CURRENT(A) OR FLOW(kg/h)
S——EVAPORATING TEMP, °C
D——CONDENSING TEMP, °C

380V-50Hz	CAPACITY (W)	POWER (W)	CURRENT (A)	FLOW (kg/h)
1	5.741384E+04	5.445070E+03	1.010546E+01	7.527770E+02
2	1.641207E+03	8.828822E+00	2.639947E-02	4.750463E+01
3	-6.501801E+02	-4.379105E+00	5.100420E-02	-1.907450E+00
4	2.370584E+01	1.488103E-01	-8.188571E-04	1.594430E+00
5	-1.293273E+01	1.004091E+00	8.200827E-04	-5.033597E-01
6	2.507490E+00	2.213471E+00	2.675474E-03	5.919687E-03
7	2.060342E-01	4.129588E-04	1.463657E-06	2.527953E-04
8	-9.907174E-02	3.682235E-03	2.782574E-05	-1.999473E-02
9	3.113302E-02	-1.558182E-02	-1.624455E-05	1.536644E-03
10	-3.860020E-10	1.297540E-11	-1.466692E-11	-1.508042E-09

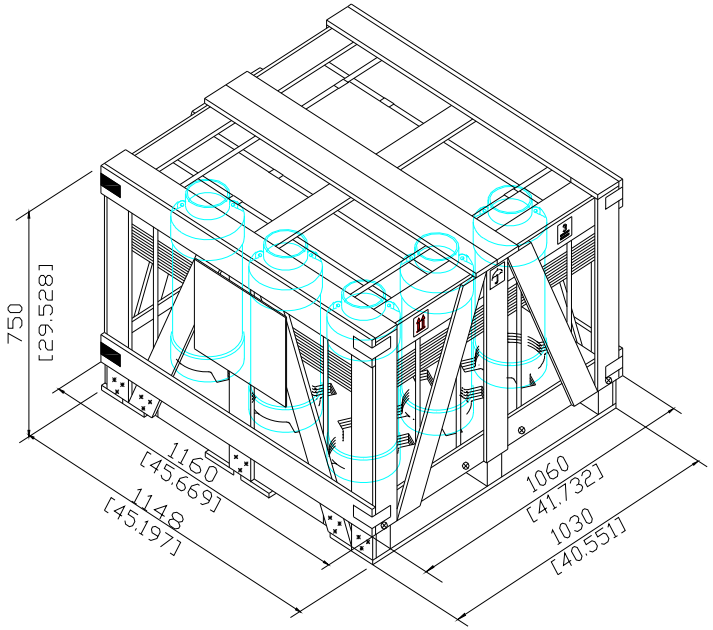
No.	Part	QTY	Name
1	M-0101-DSC	4	Mounting Grommet
2	M-0202-DSC	4	Mounting Sleeve

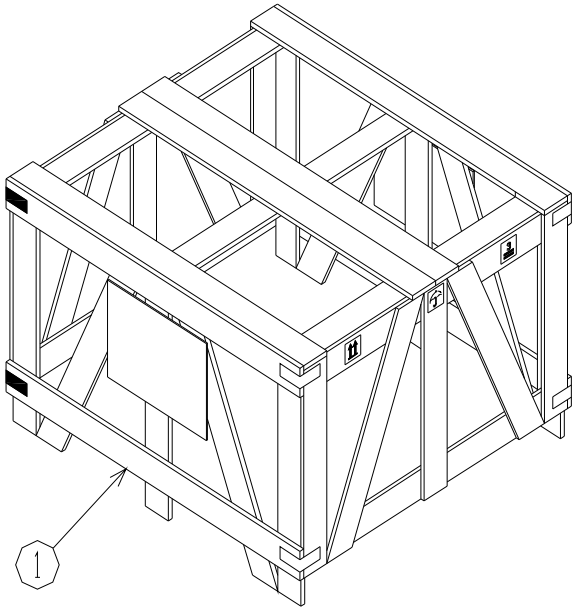


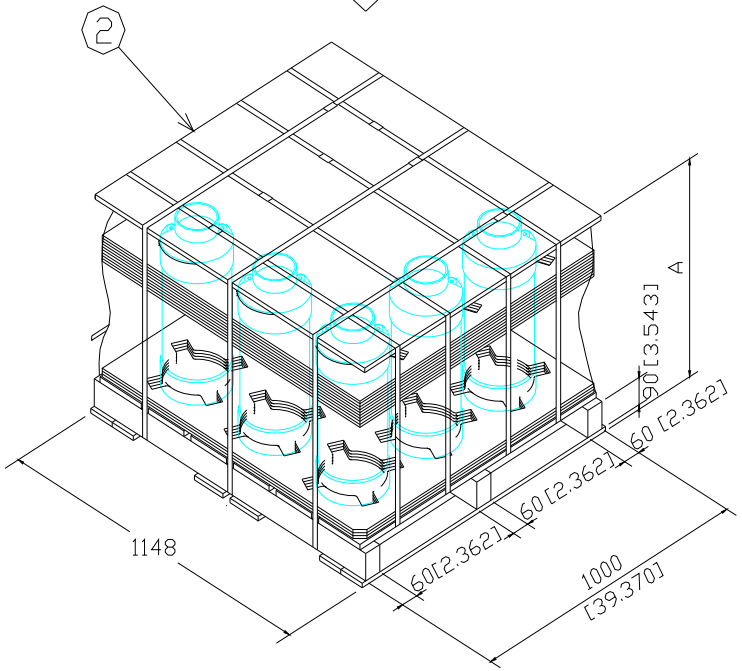




Part Code
M-5102-DSC
Name
Mounting Parts Listing







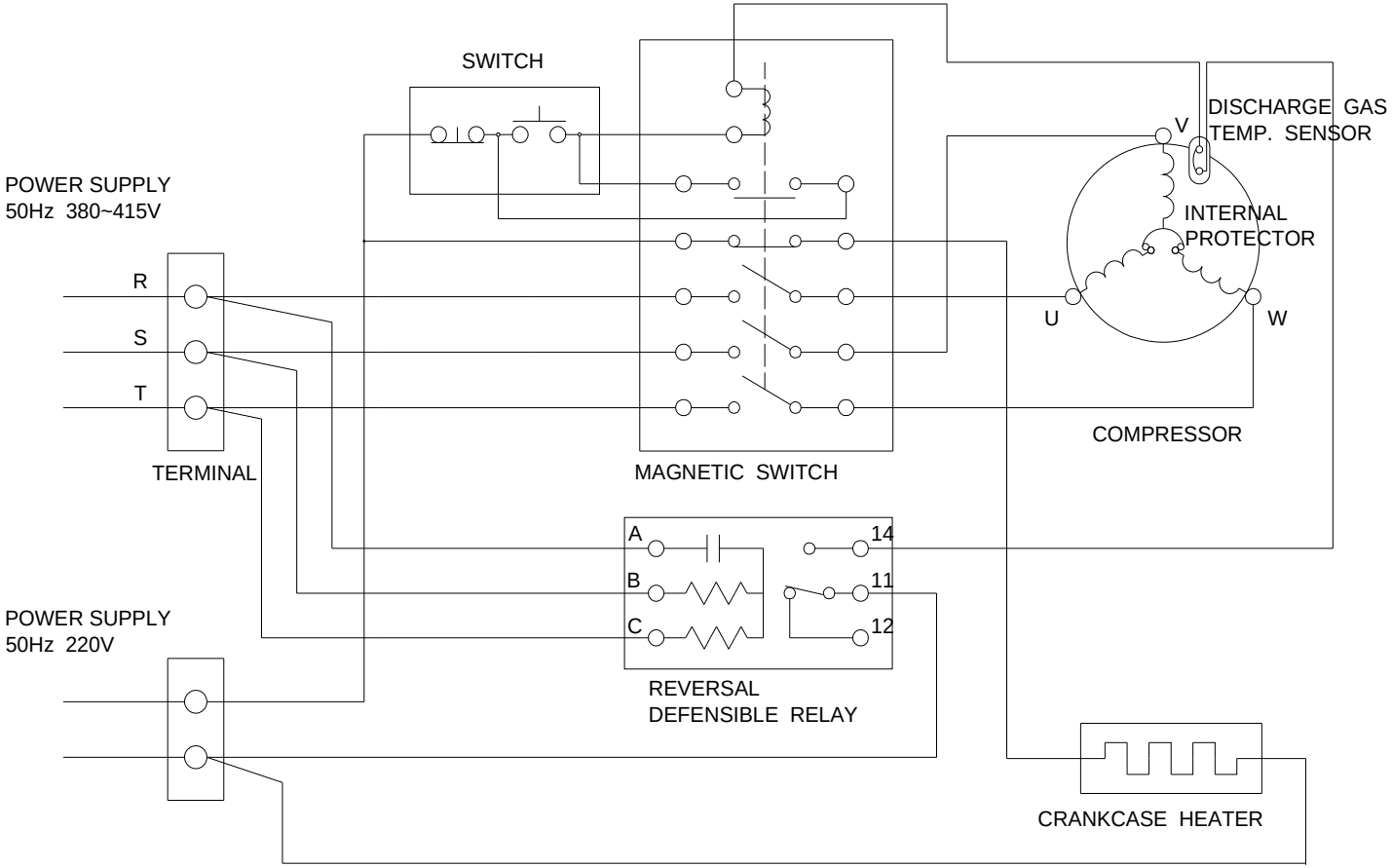
Compressor Model	A
C-SCP270H38*	697 [27.441]
C-SCP315H38*	
C-SCP360H38*	
C-SCP400H38*	
C-SCP435H38*	

Part Code

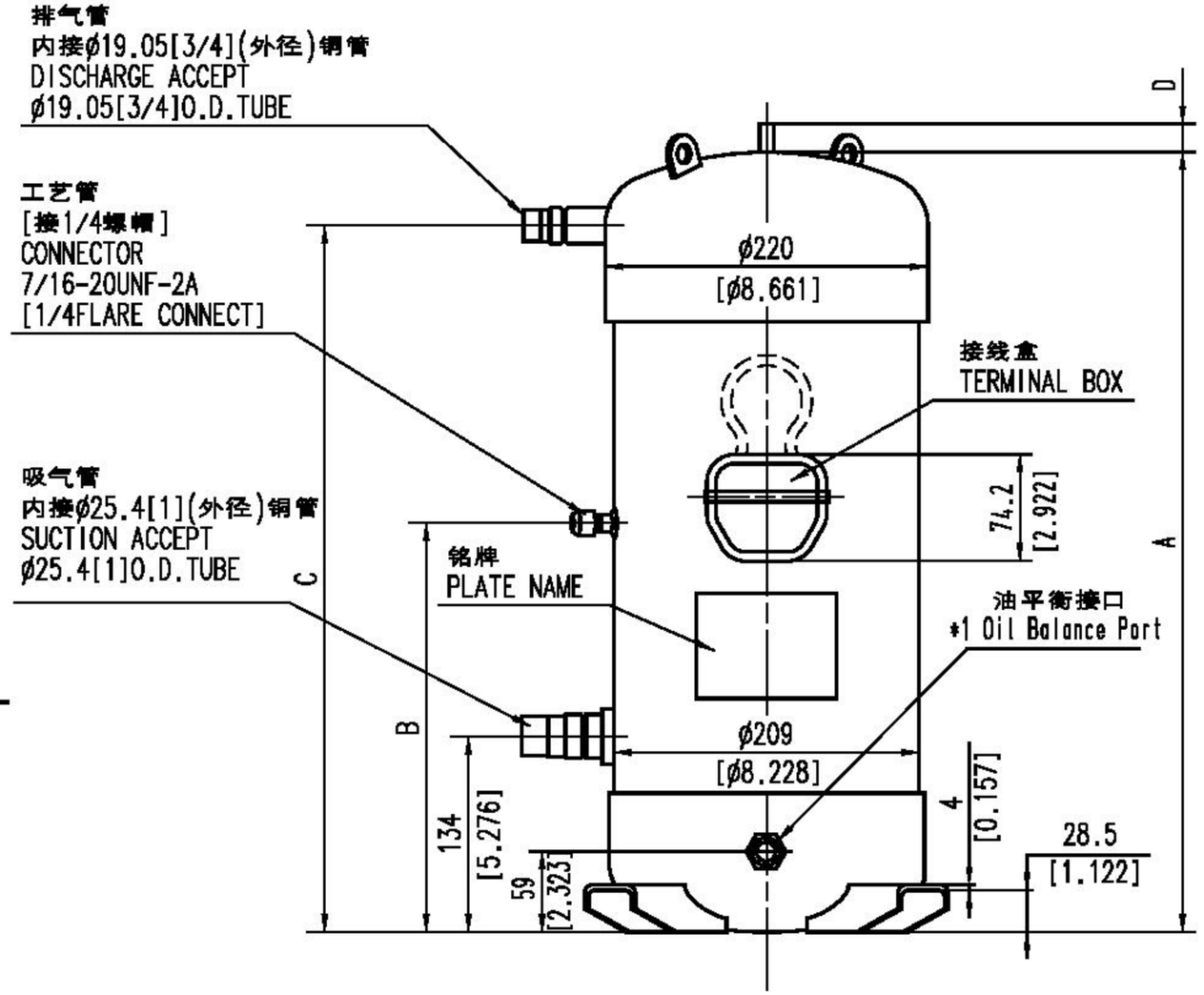
D-0201-DSC

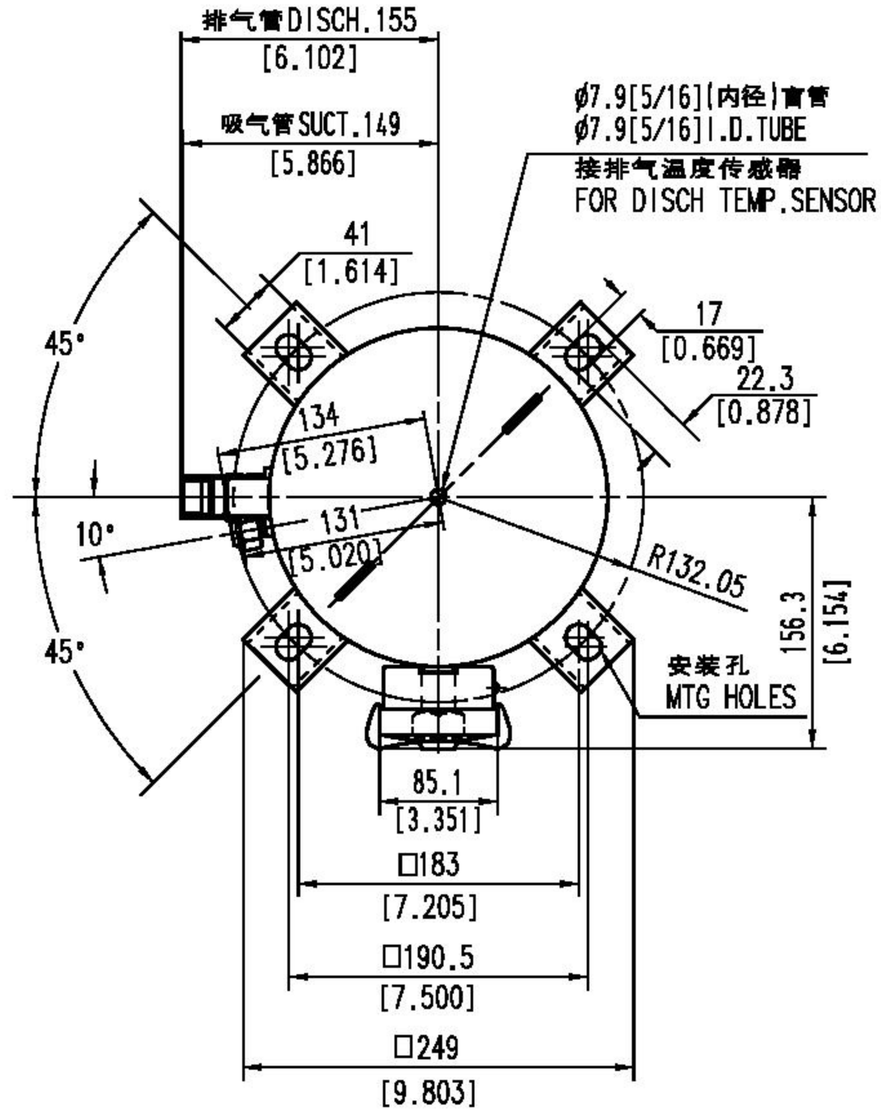
Name

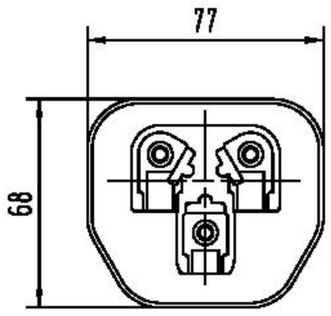
Packing Dimensions



Part Code
E-0910-DSC
Name
Wiring Diagram







代表机型	A	B	C	D
C-SCP435H38B	568 [22.36]	314 [12.36]	516 [20.31]	11.8 [0.46]

标记	处数	分区	更改文件号	签名	年、月、日
设计			图号审核		
校对			标准化		
审核					
工艺			批准		

阶段标记	重量	比例
S A B	72.2	1:4
共1张 第1张		

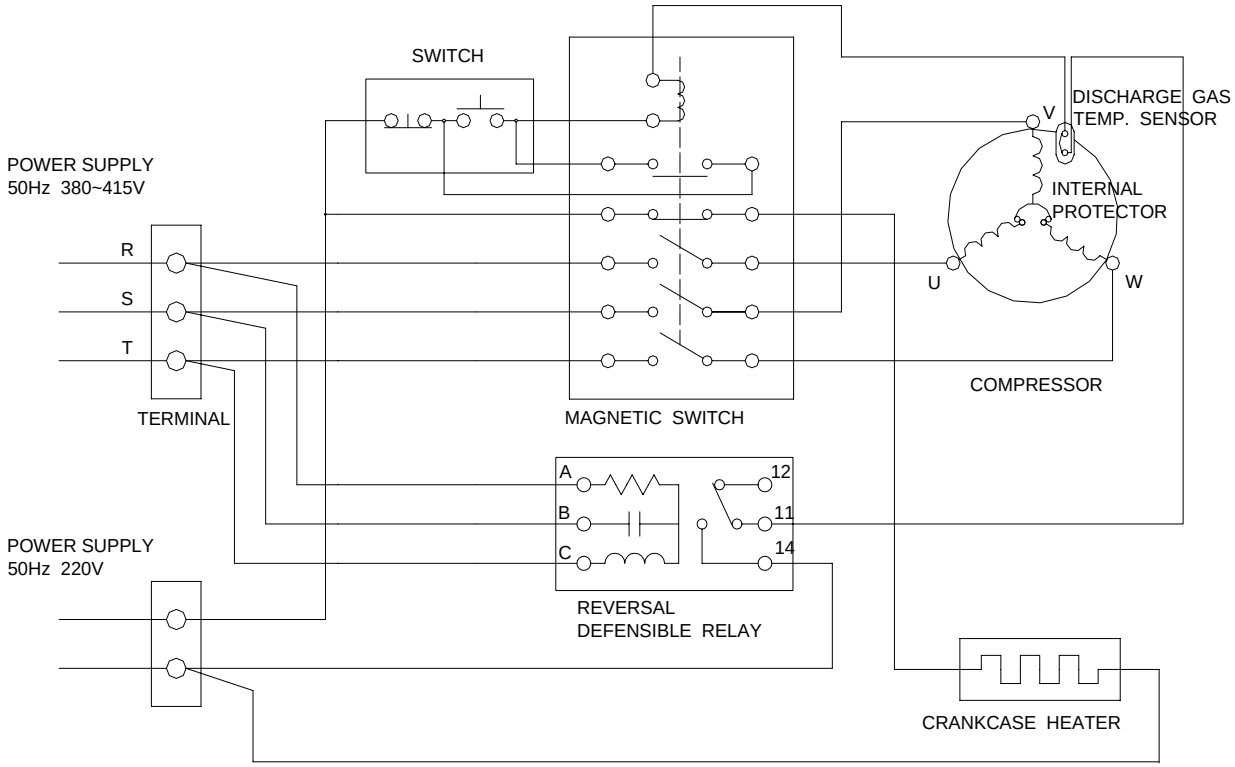
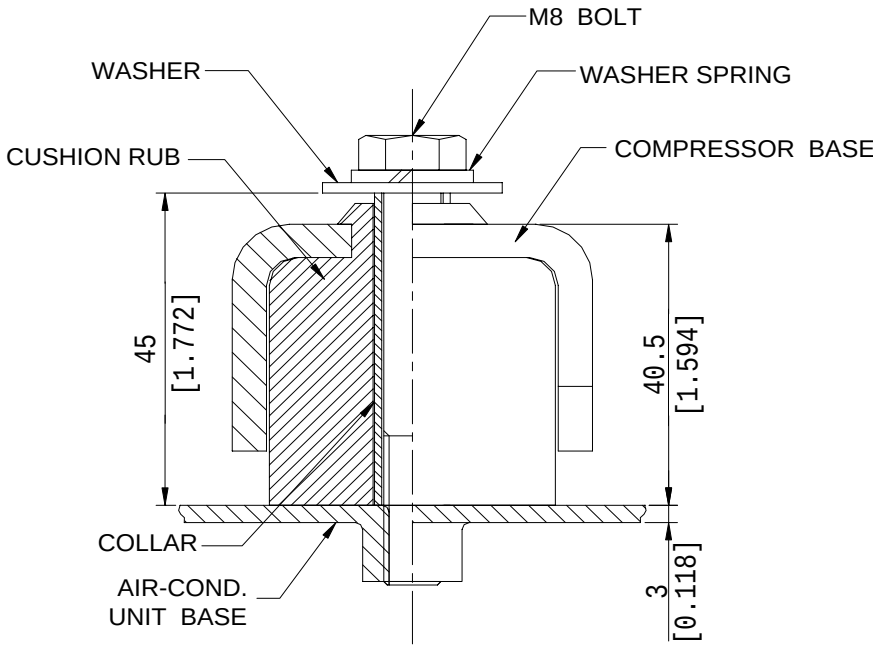
大连三洋压缩机有限公司

压缩机外观图
COMP DIM SKETCH SCR

D01-0-0650-024-00-0

WIRING & MOUNTING SKETCH

WIRING DIAGRAM
C-SC Series 3phase



MOUNTING SKETCH