

PANASONIC SCROLL COMPRESSORS

Code : 809 940 88

Model : C-SBN303H8A

Aproved for R407C, R448A, R449A, R134a, R513A, R404A



Panasonic Appliances Compressor (Dalian) Co.,Ltd.

Section 1. General Specifications

Model	<u>C-SBN303H8A</u>
Refrigerant	<u>R407C</u>

Electrical	<u>380-415 Volts 3 Phase 50Hz</u>
	<u>440-460 Volts 3 Phase 60Hz</u>

Nominal Performance at ARI

Power Source	<u>50Hz-380V</u>	<u>60Hz-440V</u>
Capacity (W)	<u>11600</u>	<u>14600</u>
Power (W)	<u>3800</u>	<u>4600</u>
Current (A)	<u>6.77</u>	<u>6.93</u>
COP (W/W)	<u>3.05</u>	<u>3.17</u>
Mass Flow (kg/h)	<u>278</u>	<u>351</u>

Rating Conditions (MID Point)

Condensing Temperature(°C)	<u>54.4</u>
Evaporating Temperature(°C)	<u>7.2</u>
Return Gas temperature(°C)	<u>18.3</u>
Liquid Temperature(°C)	<u>43.8</u>
Ambient Temperature(°C)	<u>35</u>

Motor

	50Hz	60Hz
Voltage Range(V)	<u>342-456</u>	<u>396-506</u>
RLA (A)	<u>7.9</u>	
MCC (A)	<u>11.1</u>	
LRA (A)	<u>56</u>	<u>56</u>
RPM (min ⁻¹)	<u>2900</u>	<u>3450</u>

Compressor

Maximum Discharge Temp(°C)	<u>130</u>
Displacement (cm ³ /rev)	<u>66.8</u>
Weight (with oil kg)	<u>37.5</u>
VDE File Number	<u>40010537</u>

Oil

Oil Type	<u>FV68S</u>
Initial Charge (ml)	<u>1700</u>
Re-charge (ml)	<u>1600</u>

Electrical Components

Motor Protector Type	<u>Internal</u>
Run Capacitor Rating (MFD/Volts)	<u>n/a</u>

Winding Resistance at 25°C

	<u>3.177</u>
U-V	<u>3.177</u>
U-W	
V-W	<u>2.966</u>

Sound level

	50Hz/380V	60Hz/440V
(db)	<u>62Max</u>	<u>65Max</u>

Nominal performance values +/-5% with 1 hr run-in.

Ratings with air over compressor.

Sound level is an average sound pressure level in four directions. MIC location is the distance of 1m from the compressor Specifications subject to change without notice.

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	2(290)
Low Pressure	MPa(G)/psig	0.5(72)

Inernal Motor Protector (in compressor)

Parts Name	Specification	
Inernal Motor Protector	TripTemp.	155±5°C
	Reset Temp.	61±9°C
	Trip Current	43A / 2~10s

Others

Content		Unit	Specification
Design Pressure	L.P. S.	MPa(G)/psig	1.6(232)
	H. P. S.	MPa(G)/psig	3.3(479)
Insulation Resistance		MΩ	100 (without refrigerant)
Dielectric Strength		V	2400 (1 second)
Residual Moisture		mg	300
Note:			
1. The insulation resistance be measured with a DC500V megohm test			

Accessories List

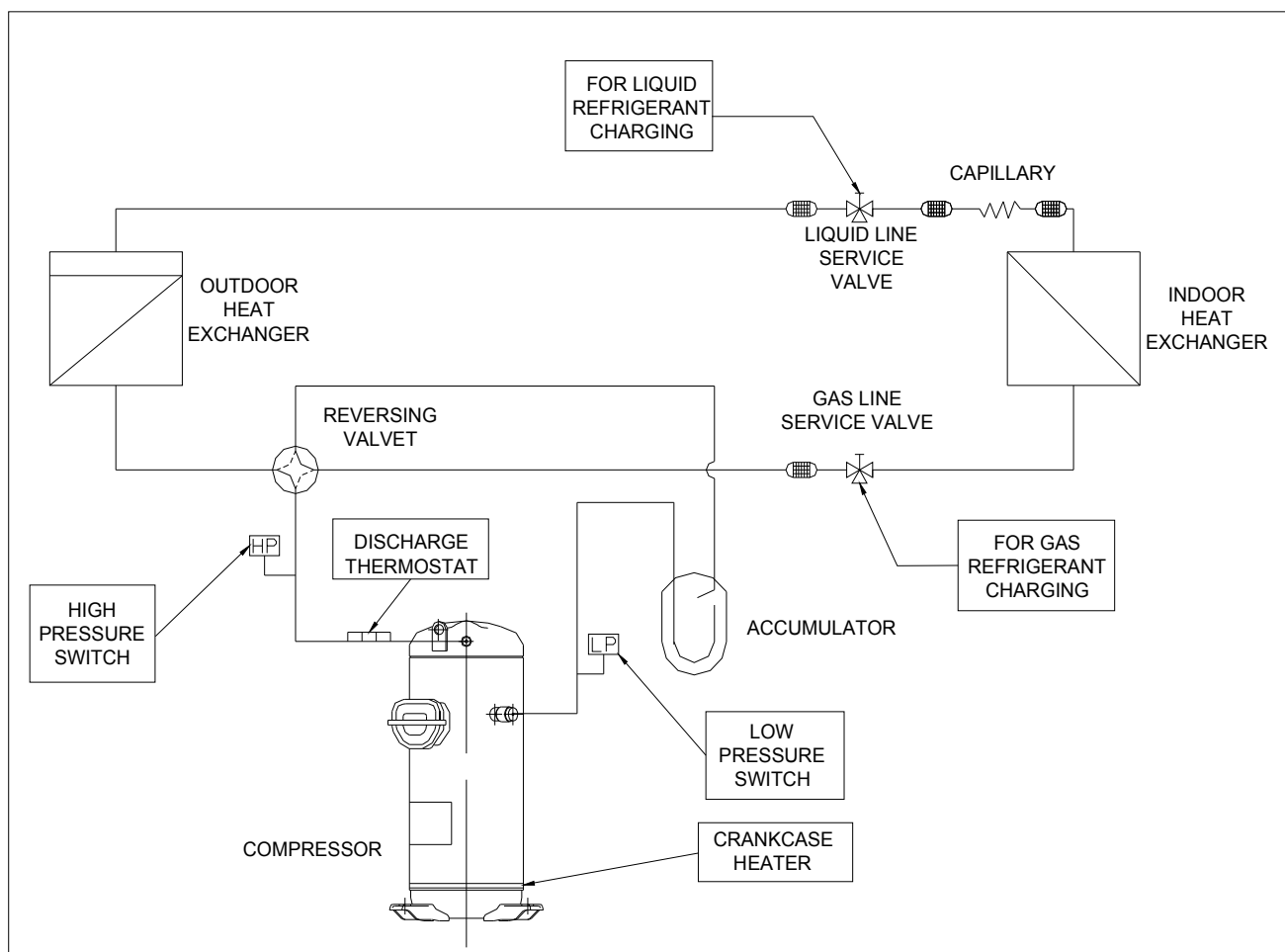
Parts Name	Qty	Parts code	Revision No.	Note
Terminal Box Cover	1	A-0101-DSB	0	Installed on Compressor
Terminal Box Clip	1	A-0201-DSB	0	Installed on Compressor
Insulating Grommet	1	A-0301-DSB	0	Installed on Compressor
Mounting Grommet	4	M-0101-DSB	0	Included with Compressor
Mounting Sleeve	4	M-0201-DSB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

Section 2. Compressor Protection

2.1 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	35 Watts
Discharge Thermostat	Mounting Position	Located within 100mm(4 in)from the compressor shell
	Trip Temperature	$130\pm 5^{\circ}\text{C}$ ($266\pm 10^{\circ}\text{F}$)
	Reset Temperature	$95\pm 11^{\circ}\text{C}$ ($205\pm 20^{\circ}\text{F}$)
High Pressure Switch	Setting	Cut-out seting no higher than 3.2MPa(G)
Low Pressure Switch	Setting	Cut-out seting no lower than 0.05MPa(G)

2.2 Position of the Protection and Refrigerant Charging



Section 3. Performance data

PERFORMANCE DATA

Compressor Model(Code)	C-SBN303H8A (809 940 88)
Power Source	3PH 50Hz 380-415V
Suction Gas Superheat(K)	9
Sub Cooling(K)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R407C

CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	6,350	7,760	8,860	11,590	13,830	15,470	17,300	18,750
40.5	5,790	7,090	8,110	10,650	12,730	14,270	15,990	17,350
45.0	5,350	6,580	7,530	9,930	11,900	13,350	14,980	16,260
50.0	4,910	6,050	6,940	9,180	11,020	12,390	13,920	15,130
54.4		5,620	6,460	8,560	10,310	11,600	13,050	14,200
60.0			5,890	7,840	9,470	10,670	12,030	13,100
65.0				7,260	8,780	9,910	11,190	12,200

POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	2,450	2,460	2,460	2,450	2,430	2,420	2,410	2,400
40.5	2,760	2,770	2,770	2,760	2,750	2,740	2,730	2,710
45.0	3,060	3,070	3,070	3,070	3,050	3,040	3,030	3,020
50.0	3,430	3,450	3,450	3,450	3,430	3,420	3,410	3,400
54.4		3,820	3,820	3,820	3,810	3,800	3,790	3,780
60.0			4,350	4,350	4,340	4,330	4,320	4,310
65.0				4,880	4,870	4,860	4,850	4,840

CURRENT(A)

@380V

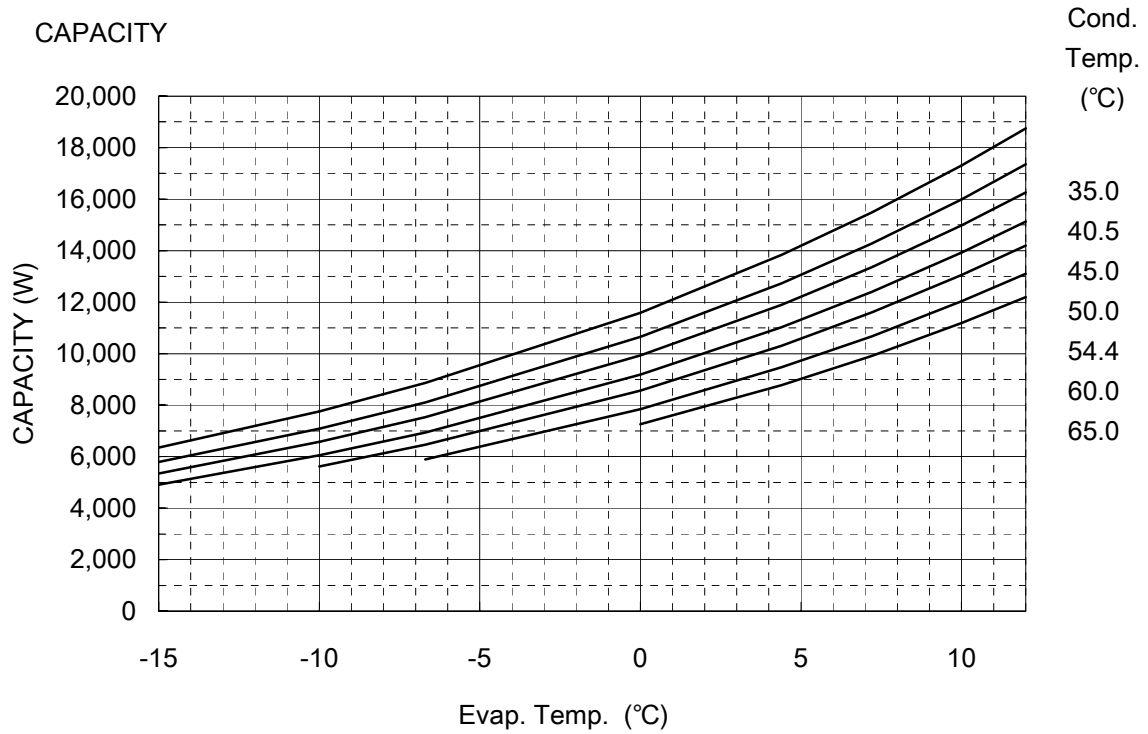
Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.7
40.5	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2
45.0	5.7	5.7	5.7	5.7	5.7	5.7	5.6	5.6
50.0	6.4	6.3	6.3	6.3	6.2	6.2	6.2	6.2
54.4		7.0	6.9	6.8	6.8	6.8	6.8	6.7
60.0			7.7	7.6	7.6	7.5	7.5	7.5
65.0				8.4	8.3	8.3	8.3	8.3

NOTE:

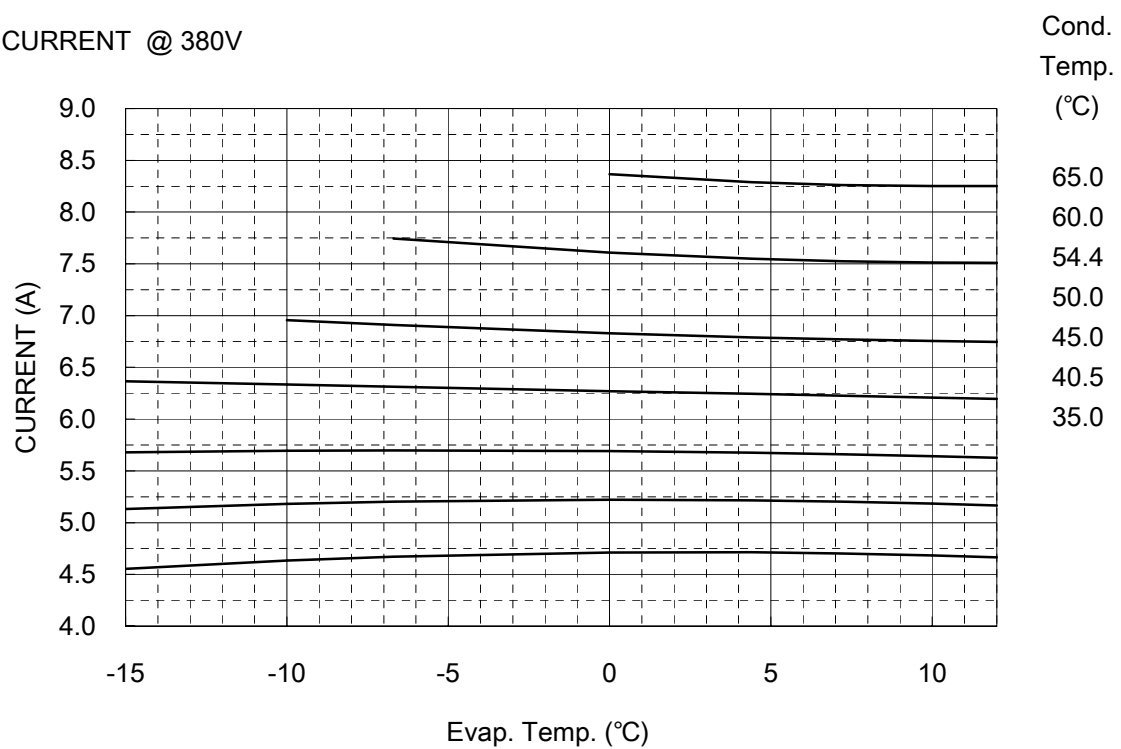
- * The performance values are based on MID point method.
- * The performance values subject to change without notice.

Compressor Model(Code)
Power Source

C-SBN303H8A (809 940 88)
3PH 50Hz 380-415V



CURRENT @ 380V



COEFFICIENTS OF PERFORMANCE CURVES

Compressor Model **C-SBN303H8A (809 940 88)**
 Power Source **3PH 50Hz 380-415V**
 Suction Gas Superheat (K) **9**
 Sub Cooling (K) **8.3**
 Compressor Cooling **Natural Cooling**
 Refrigerant **R407C**

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

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	1.916163E+04	1.808081E+03	3.290266E+00
C2	7.202814E+02	-3.193687E+00	7.648197E-04
C3	-2.553445E+02	-1.550027E+01	-2.871118E-03
C4	1.258140E+01	-6.540259E-02	-2.184296E-03
C5	-8.419394E+00	-7.825852E-03	4.618564E-04
C6	1.111233E+00	9.648189E-01	1.247811E-03
C7	1.114984E-01	1.988501E-03	3.360060E-06
C8	-8.815895E-02	-1.969905E-03	4.496256E-05
C9	3.321622E-02	6.293578E-04	-1.216166E-05
C10	1.905245E-09	3.412306E-09	-1.577383E-11

Note: The polynomial coefficients subject to change without notice.

PERFORMANCE DATA

Compressor Model(Code)	C-SBN303H8A (809 940 88)
Power Source	3PH 60Hz 440-460V
Suction Gas Superheat(K)	9
Sub Cooling(K)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R407C

CAPACITY(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	8,020	9,750	11,090	14,420	17,130	19,110	21,320	23,060
40.5	7,330	8,940	10,200	13,310	15,850	17,720	19,810	21,450
45.0	6,800	8,320	9,510	12,460	14,870	16,650	18,640	20,200
50.0	6,260	7,680	8,790	11,570	13,850	15,530	17,410	18,890
54.4		7,160	8,210	10,840	13,000	14,600	16,400	17,810
60.0			7,520	9,970	12,000	13,500	15,190	16,530
65.0				9,270	11,190	12,610	14,210	15,470

POWER(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	3,050	3,050	3,050	3,040	3,030	3,020	3,010	3,010
40.5	3,390	3,400	3,400	3,400	3,400	3,390	3,380	3,380
45.0	3,690	3,720	3,730	3,740	3,740	3,740	3,730	3,720
50.0	4,070	4,120	4,150	4,170	4,180	4,170	4,170	4,160
54.4		4,510	4,550	4,590	4,600	4,600	4,590	4,580
60.0			5,110	5,180	5,200	5,200	5,190	5,180
65.0				5,760	5,790	5,790	5,780	5,770

CURRENT(A)

@440V

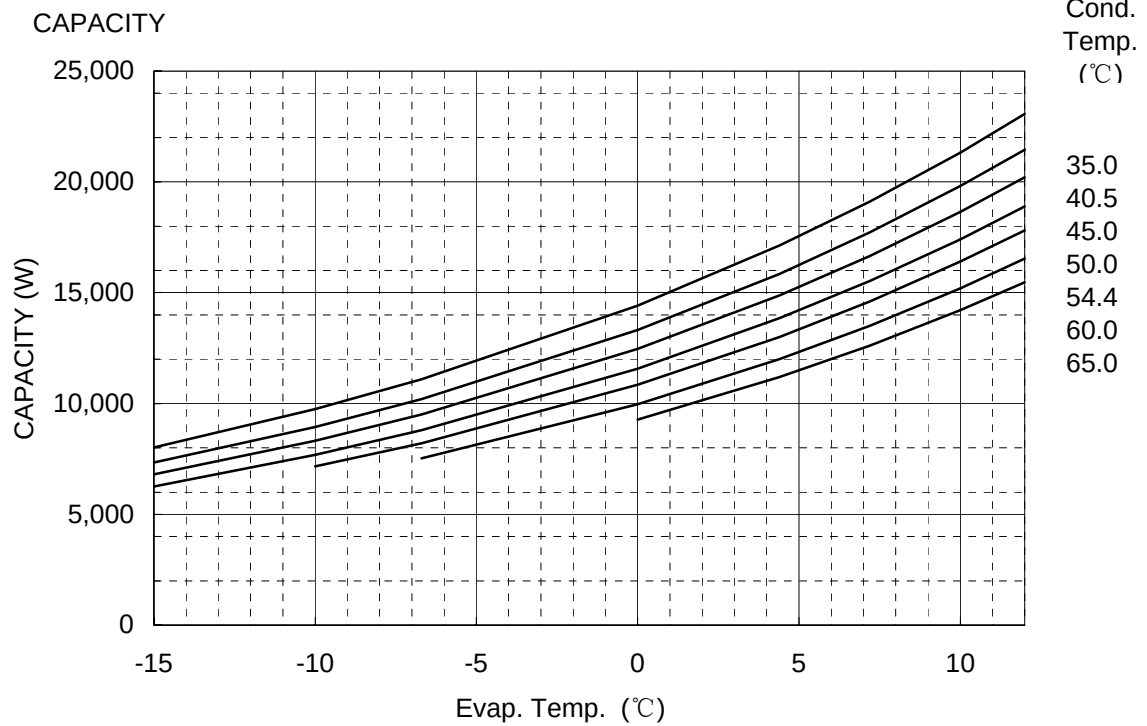
Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	4.9	4.9	4.9	4.9	4.9	4.9	4.8	4.8
40.5	5.3	5.4	5.4	5.4	5.4	5.4	5.3	5.3
45.0	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8
50.0	6.2	6.3	6.3	6.4	6.4	6.4	6.4	6.4
54.4		6.8	6.8	6.9	6.9	6.9	6.9	6.9
60.0			7.6	7.7	7.7	7.7	7.7	7.7
65.0				8.4	8.4	8.4	8.4	8.4

NOTE:

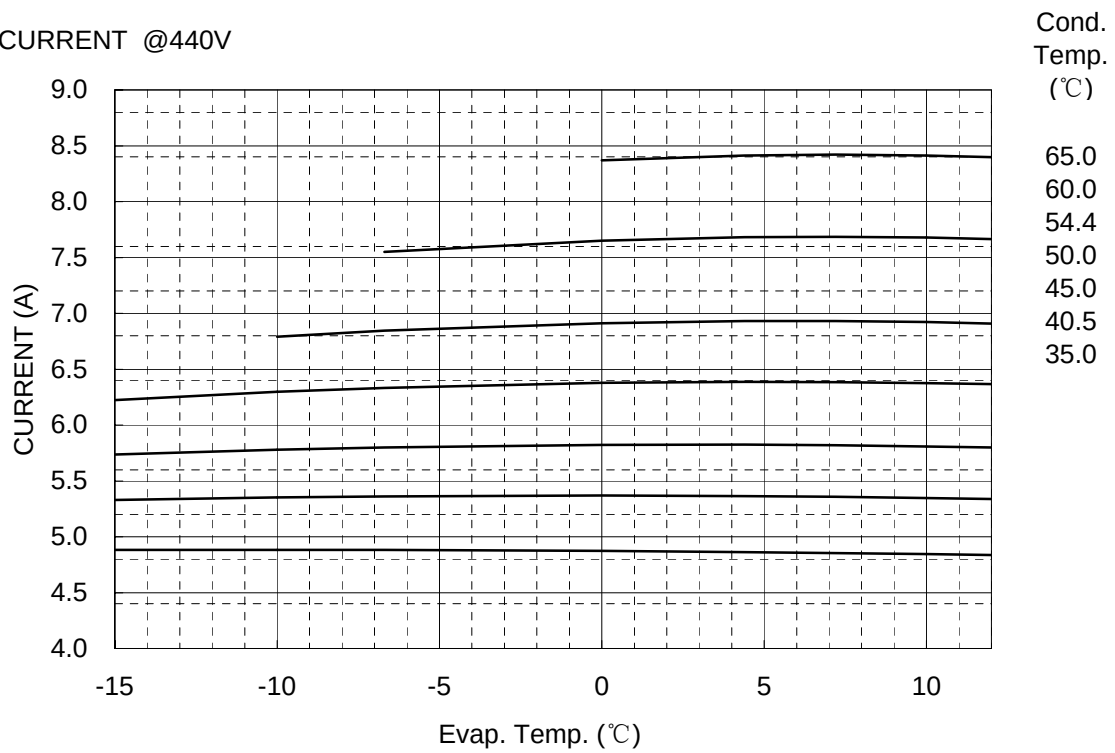
- * The performance values are based on MID point method.
- * The performance values subject to change without notice.

Compressor Model(Code)
Power Source

C-SBN303H8A (809 940 88)
3PH 60Hz 440-460V



CURRENT @440V



COEFFICIENTS OF PERFORMANCE CURVES

Compressor Model **C-SBN303H8A (809 940 88)**
 Power Source **3PH 60Hz 440-460V**
 Suction Gas Superheat (K) **9**
 Sub Cooling (K) **8.3**
 Compressor Cooling **Natural Cooling**
 Refrigerant **R407C**

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

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

S——EVAPORATING TEMP, °C

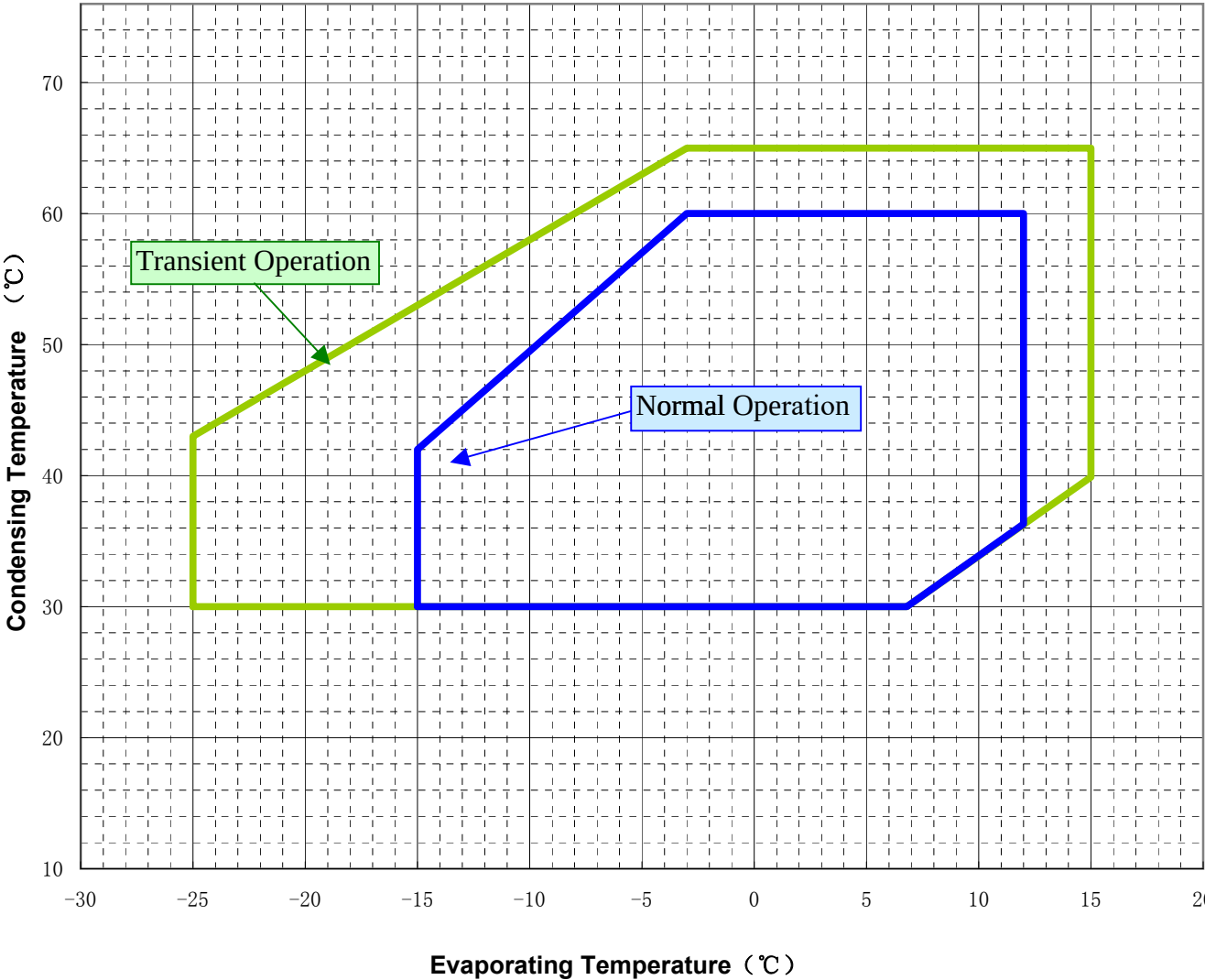
D——CONDENSING TEMP, °C

<u>440V-60Hz</u>	CAPACITY (W)	POWER (W)	CURRENT (A)
C1	2.324554E+04	2.101664E+03	3.193413E+00
C2	8.397243E+02	-1.061887E+00	-2.264466E-03
C3	-2.959260E+02	-7.797472E+00	1.097199E-02
C4	1.447189E+01	6.815236E-01	8.489583E-04
C5	-8.983816E+00	-2.230173E-01	-2.514906E-04
C6	1.244805E+00	9.851375E-01	1.055430E-03
C7	1.312189E-01	-1.894537E-04	-1.274008E-06
C8	-9.150226E-02	-2.001465E-02	-2.589241E-05
C9	3.304986E-02	5.768258E-03	7.556718E-06
C10	2.777160E-09	6.812635E-09	5.852858E-12

Note: The polynomial coefficients subject to change without notice.

Section 4. Operating Envelope

Suction Gas
Superheat :9K
Refrigerant : R407C



Section 5. 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	Remark
1	Refrigerant	R407C(Refrigerant must meet a criterion)		
2	Average Evap. Temp.	-15~12℃(5~54 ° F) 0.20~0.65MPa(G)(29~94psig)	-25~15℃(-13~59 ° F) 0.07~0.73MPa(G)(10~106psig)	Average temp. of evaperator Inlet and outlet.
3	Average Cond.Temp.	30~60℃(86~140 ° F) 1.17~2.56MPa(G)(170~371psig)	65℃(149 ° F) 2.88MPa(G)(418psig)	Average temp. of condensor Inlet and outlet.
4	Compression Ratio	2 ~ 6	10	
5	Winding Temp.	115℃(240 °F) Max.	125℃(257 °F)	
6	Shell Bottom Temp.	90℃(194 °F) Max.		
		Evaporating Temp.+12℃(21 °F) Min.		Operating
		Ambient Temp.+11℃(20 °F) Min.		Not Operating
7	Discharge Gas Temp.	115℃(240 °F) Max.	C-SB:130℃(266°F) Max.	Temp. within 10cm of the discharge fitting.
			C-SC:135℃(275°F) Max.	Temp. inside of the copper pipe on the top of compressor
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 recommended.
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: 3.20MPa(G) (464psig) Max.		By high pressure switch
		Pressure Drop: 0.05MPa(G) (7.3psig) Min.		By low pressure switch
16	System Moisture Level	200ppm Max.		
17	System Uncondensable Gas Level	1 Vol.% Max.		24 hrs. after vacuuming: 1.01kPa Max.
		Residual Oxygen 0.1 Vol.% Max.		
18	Tilt	5Deg.Max.		

(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.

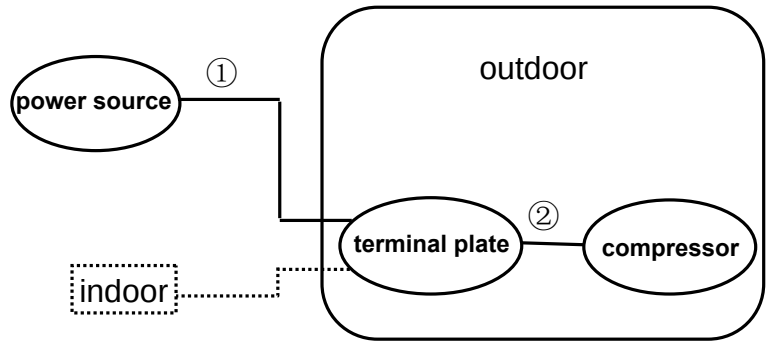
Section 6. Selection of Electrical Wire

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

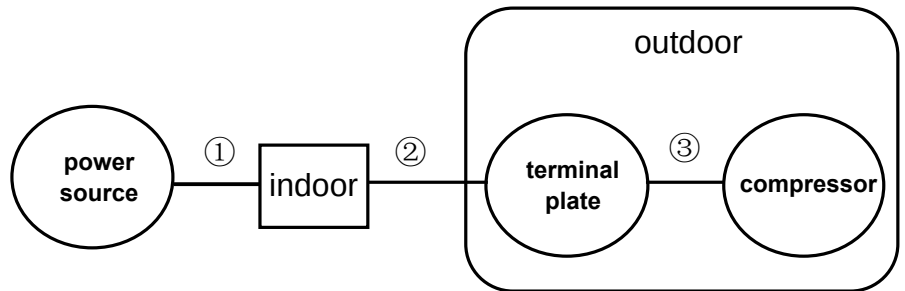
We recommend selecting the wire size from the table below.

6.1 Type of Unit

6.1.1 Window & Commercial Type Unit



6.1.2 Split Type(Separate Type)



6.2 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

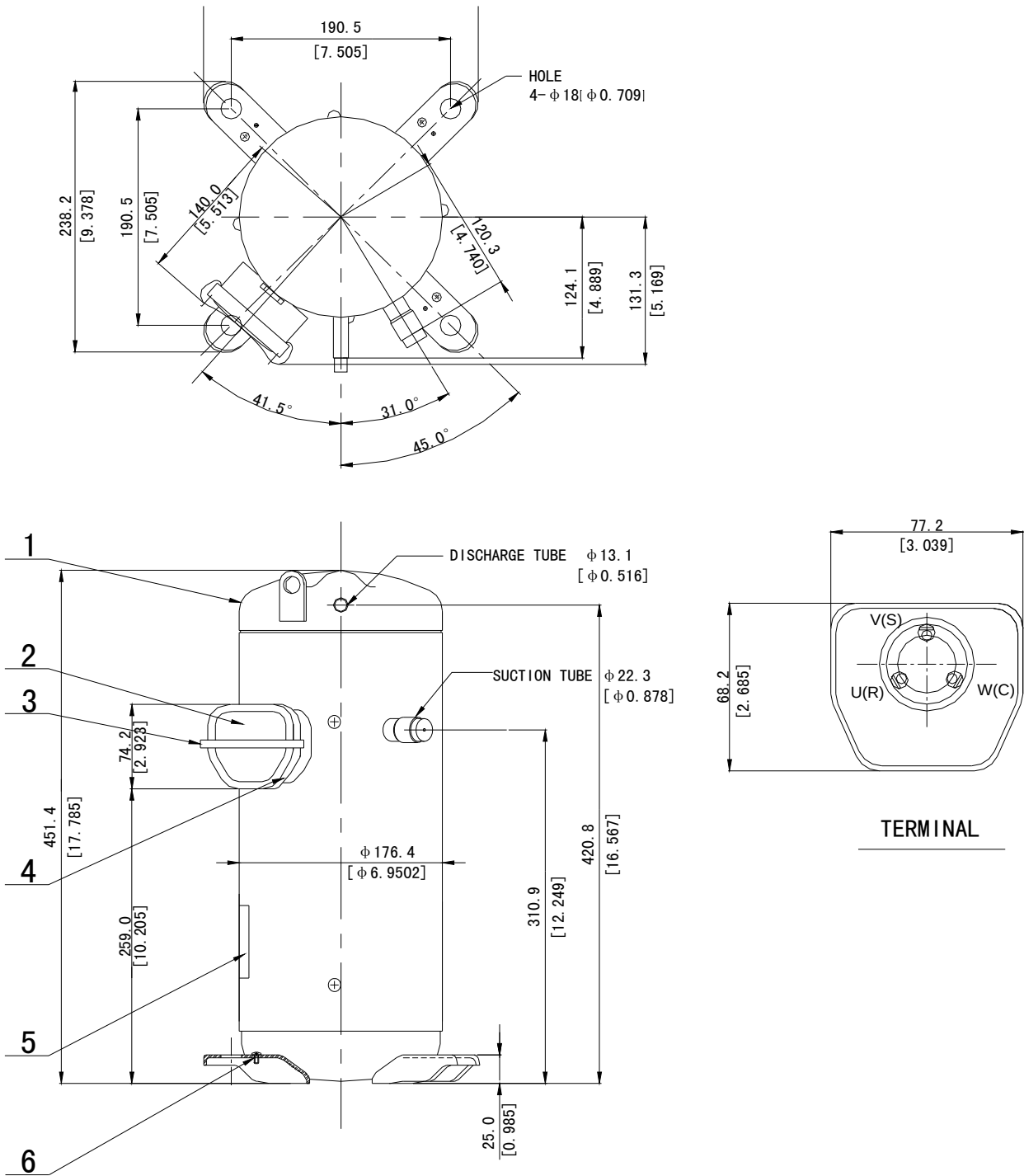
The internal motor protector does not protect the compressor against all possible conditions.

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

Section 7. Drawings

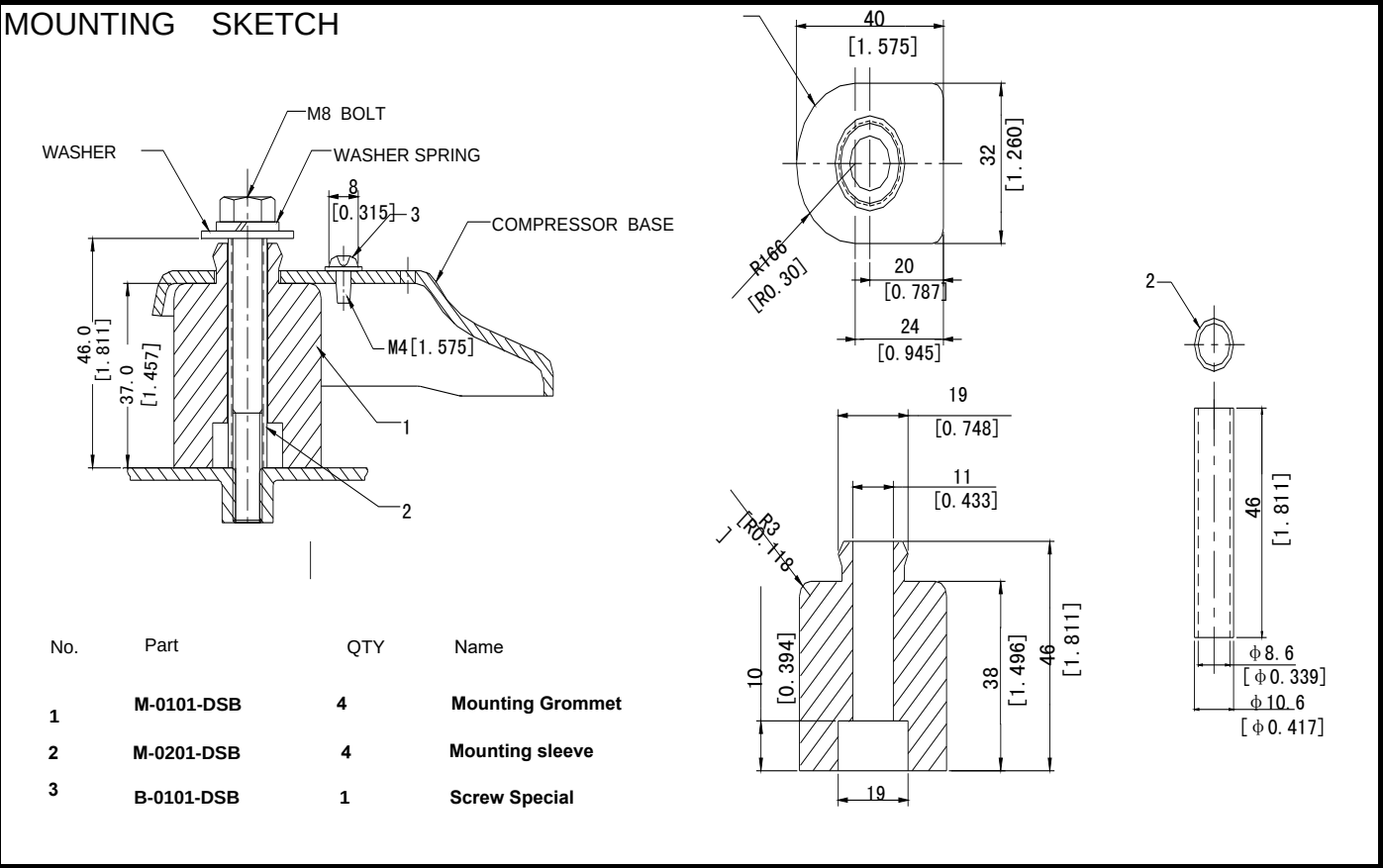
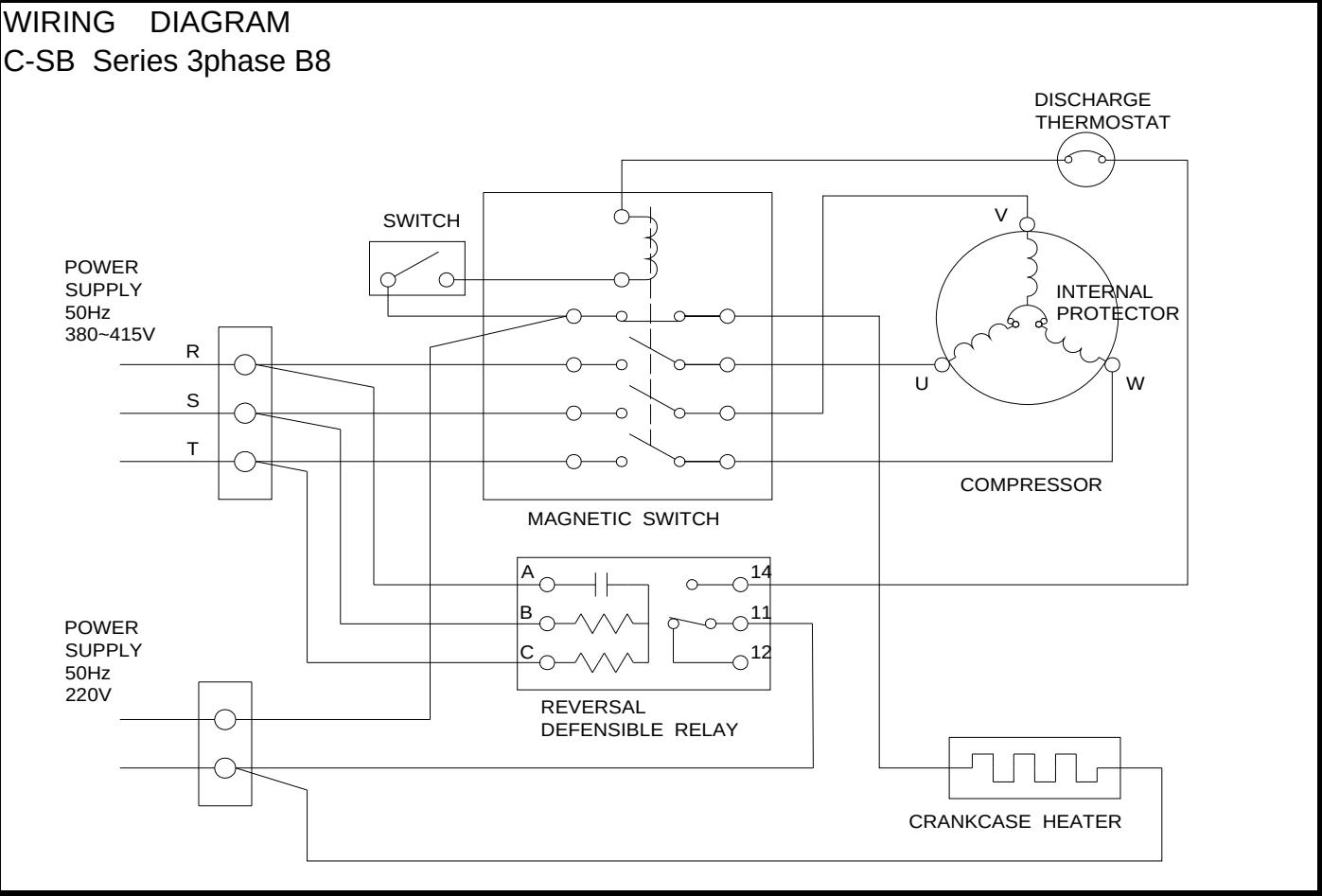
7.1. Dimensional Sketch

C-SB Series



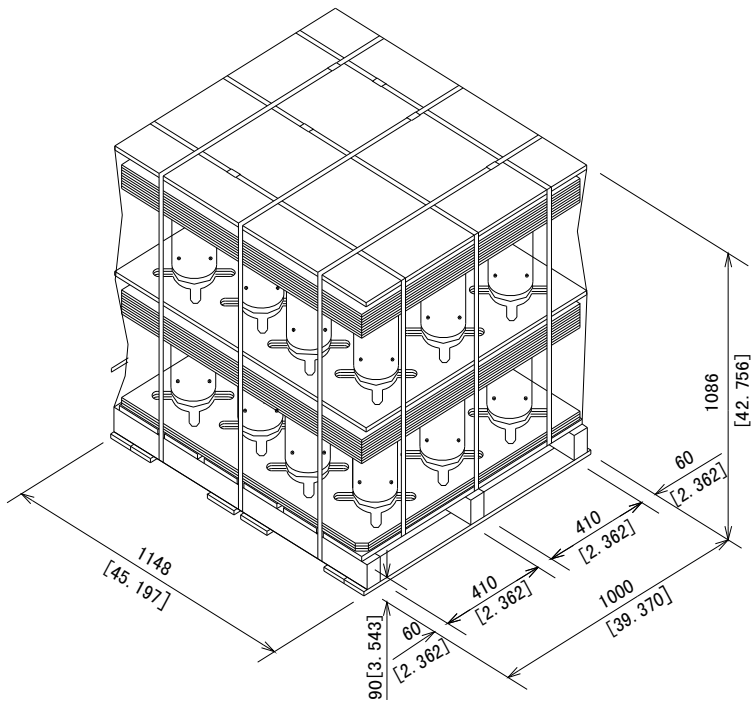
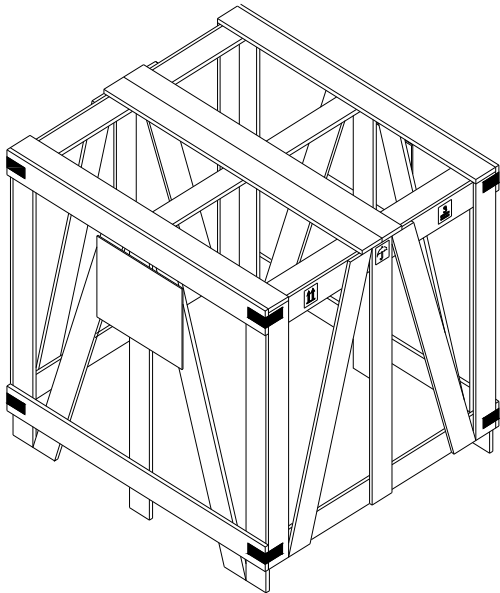
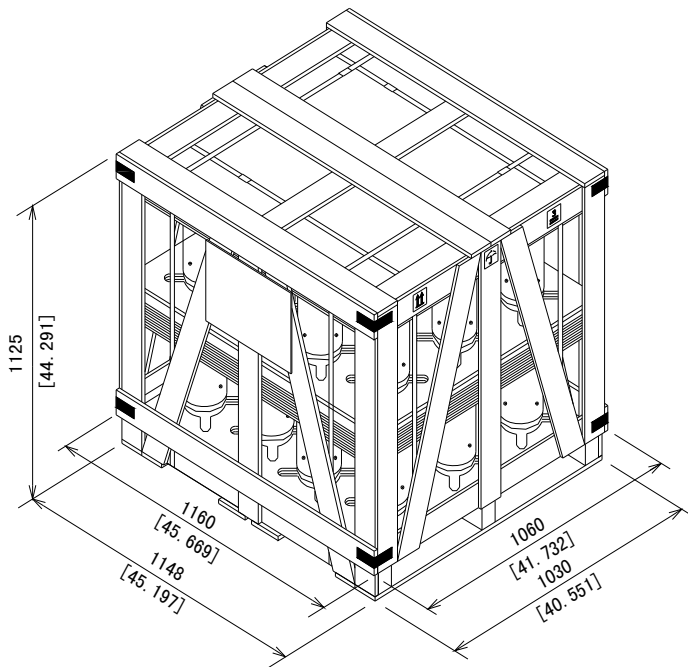
No.	Qty	Name
1	1	Compressor
2	1	Terminal Box Cover
3	1	Terminal Box Clip
4	1	Insulating Grommet
5	1	Nameplate
6	1	Screw Special

7.2. Wiring & mounting sketch



7.2. Packing dimensios

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Part Code
D-0201-DSB
Name
Packing Dimensions