PANASONIC SCROLL COMPRESSORS

Code : 809 950 88

Model : C-SBN373H8A

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

Panasonic Appliances Compressor (Dalian) Co.,Ltd.

Section 1. General Specifications

Model	C-SBN373H8A
Refrigerant	R407C
Electrical	380-415 Volts 3 Phase 50Hz
	440-460 Volts 3 Phase 60Hz

Nominal Performance at ARI

		50Hz-380V	60Hz-440V
Power Source			
Capacity	(W)	14500	17800
Power	(W)	4950	5960
Current	(A)	8.5	8.8
COP	(W/W)	2.93	2.99
Mass Flow	(kg/h)	350	429

Rating Conditions (MID Point)

Condensing Temperature(℃)	54.4
Evaporating Temperature(℃)	7.2
Return Gas temperature(℃)	18.3
Liquid Temperature(℃)	43.8
Ambient Temperature(℃)	35

Motor

	50Hz	60Hz
Voltage Range(V)	342-456	396-506
RLA (A)	10.1	
MCC (A)	14.1	
LRA (A)	48	52
RPM (min^{-1})	2900	3450

Compressor

Maximum Discharge Temp(℃)	130
Displacement (cm^3/rev)	83.2
Weight (with oil kg)	38
VDE File Number	40010537

Oil

Oil Type	FV68S
Initial Charge (ml)	1700
Re-charge (ml)	1600

Electrical Components

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

Winding Resistance at 25ºC

U-V	2.806
U-W	2.806
V-W	2.651

Sound level

	50Hz/380V	60Hz/440V
(db)	62Max	67Max

Nominal performance values +/-5% with 1 hr run-in.
Ratings with air over compressor.
Sound level is an average sound pressure level in fou 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.	145±5℃
	Reset Temp.	61±9℃
	Trip Current	47A / 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

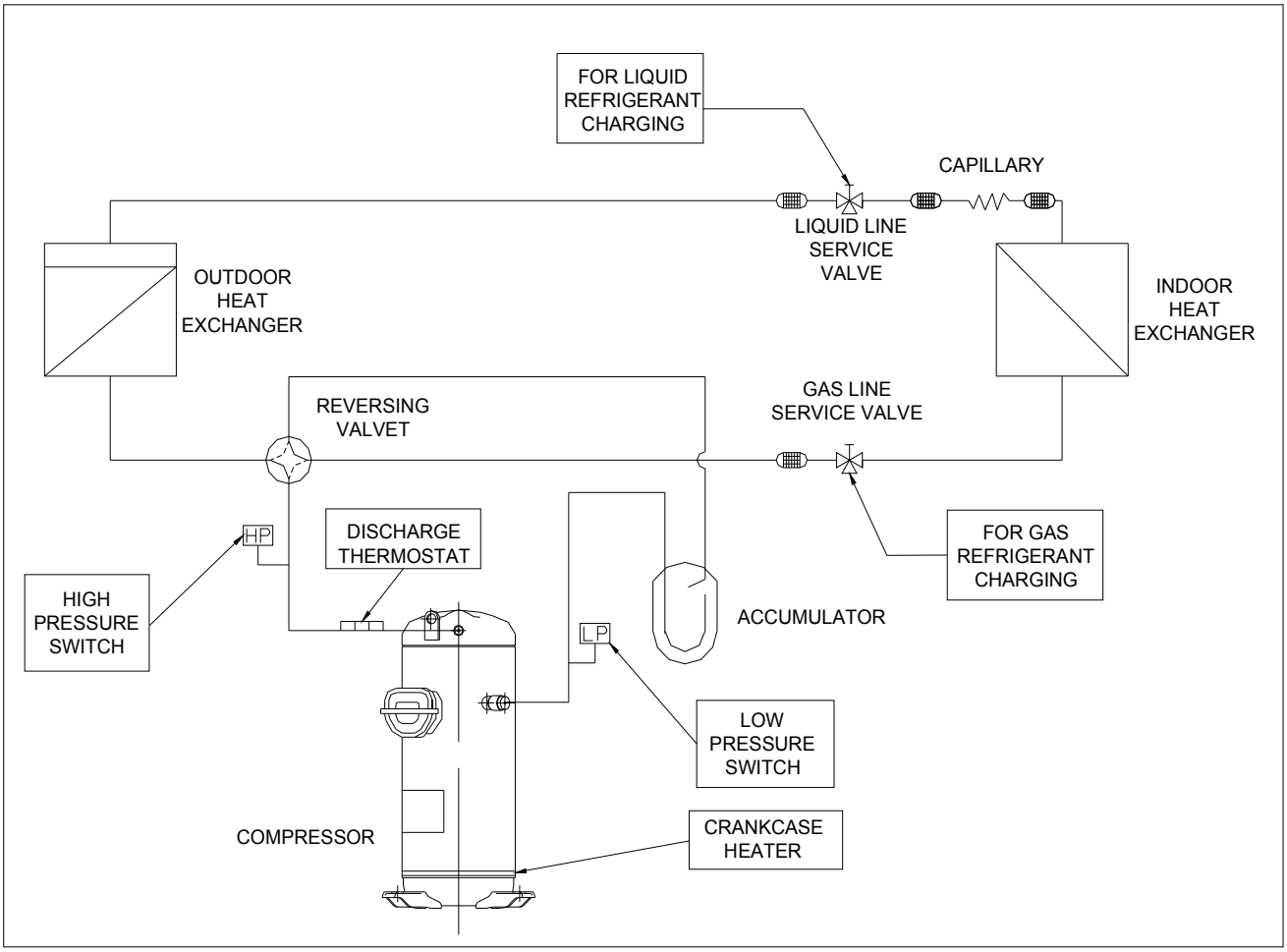
Parts Name	Qty	Parts code	Revision No.	Note
Terminal Box Cover	1	A-0101-DSB	0	Installed on Compressor
Terminal Box Clip	1	A-0201-DSB	0	Installed on Compressor
Insulating Grommet	1	A-0301-DSB	0	Installed on Compressor
Mounting Grommet	4	M-0101-DSB	0	Included with Compressor
Mounting Sleeve	4	M-0201-DSB	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±5℃(266 ±10 °F)
	Reset Temperature	95±11℃ (205 ± 20 °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-SBN373H8A (809 950 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(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	8,030	9,790	11,150	14,530	17,300	19,320	21,580	23,360
40.5	7,330	8,960	10,220	13,370	15,940	17,830	19,940	21,600
45.0	6,800	8,330	9,510	12,470	14,900	16,680	18,680	20,250
50.0	6,260	7,670	8,780	11,540	13,810	15,480	17,360	18,840
54.4		7,140	8,180	10,780	12,920	14,500	16,270	17,670
60.0			7,480	9,880	11,870	13,340	14,990	16,290
65.0				9,160	11,020	12,400	13,950	15,170

POWER(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	3,100	3,130	3,140	3,160	3,170	3,170	3,170	3,160
40.5	3,530	3,550	3,560	3,580	3,580	3,580	3,580	3,570
45.0	3,940	3,960	3,970	3,980	3,970	3,970	3,960	3,960
50.0	4,470	4,480	4,480	4,480	4,470	4,460	4,460	4,450
54.4		4,990	4,980	4,970	4,960	4,950	4,940	4,930
60.0			5,700	5,670	5,650	5,640	5,620	5,610
65.0				6,370	6,340	6,320	6,300	6,290

CURRENT(A)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	5.6	5.7	5.7	5.8	5.8	5.8	5.8	5.8
40.5	6.3	6.4	6.4	6.4	6.5	6.4	6.4	6.4
45.0	7.0	7.0	7.0	7.1	7.1	7.0	7.0	7.0
50.0	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
54.4		8.6	8.6	8.5	8.5	8.5	8.5	8.5
60.0			9.6	9.5	9.5	9.5	9.5	9.5
65.0				10.5	10.5	10.5	10.5	10.4

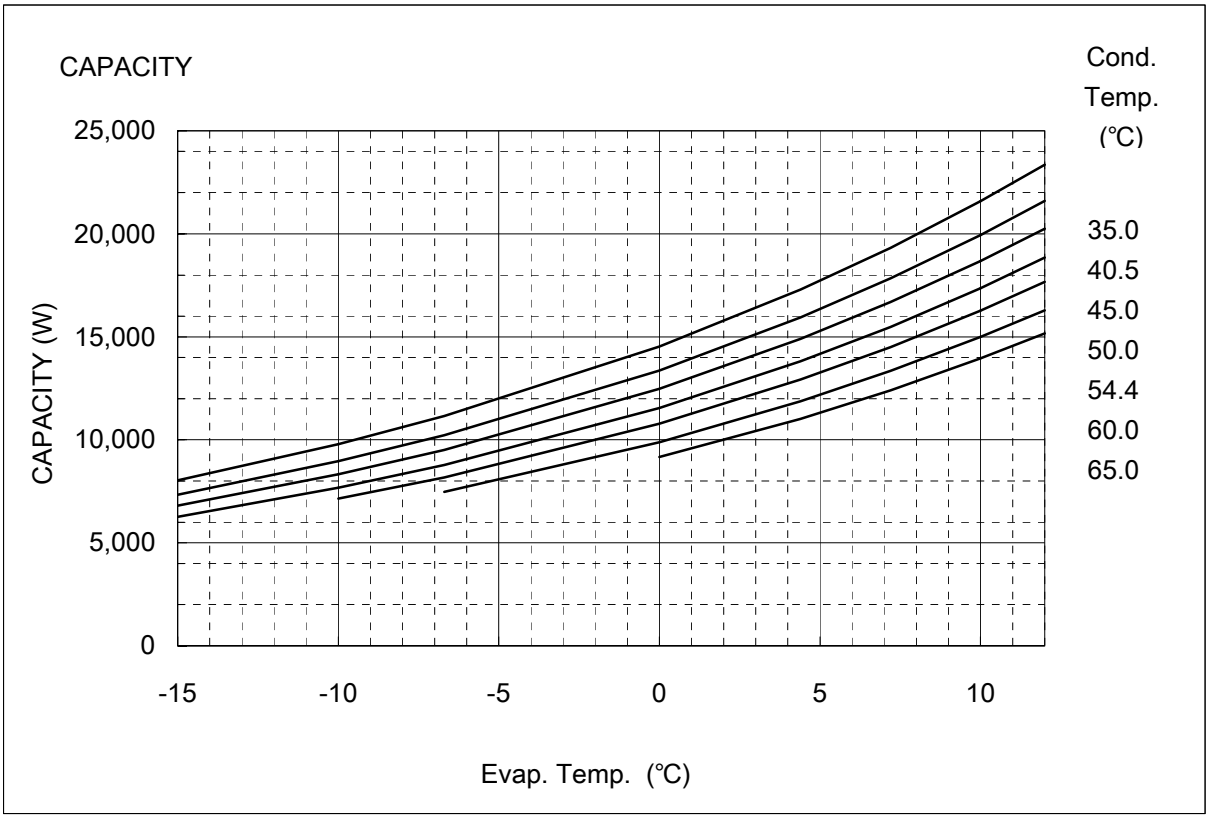
NOTE:

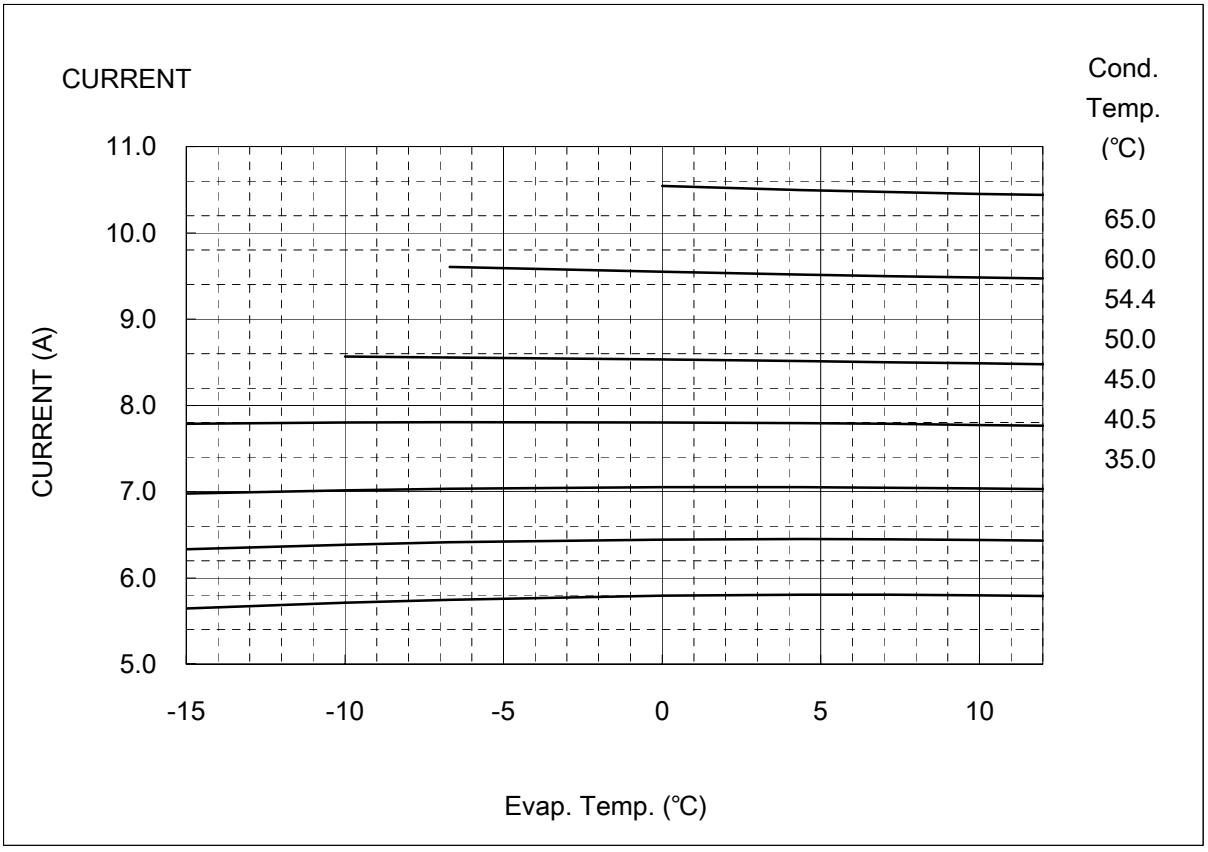
*** The performance values subject to change without notice.**

*** The performance values are based on MID point method.**

Compressor Model(Code) **C-SBN373H8A (809 950 88)**

Power Source **3PH 50Hz 380-415V**





COEFFICIENTS OF PERFORMANCE CURVES

Compressor Model	**C-SBN373H8A (809 950 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*(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)
C1	2.393620E+04	2.354472E+03	3.997399E+00
C2	8.977231E+02	-9.447593E-02	4.632066E-04
C3	-3.171122E+02	-2.194115E+01	-6.277482E-03
C4	1.555728E+01	-3.163111E-01	-1.025817E-03
C5	-1.063516E+01	2.429827E-01	4.325318E-04
C6	1.381446E+00	1.287573E+00	1.646924E-03
C7	1.326935E-01	-1.861264E-04	1.465522E-06
C8	-1.138737E-01	4.329727E-03	1.785544E-05
C9	4.196070E-02	-5.237536E-03	-9.419194E-06
C10	7.894790E-09	6.462307E-09	-1.038949E-11

Note:The polynomial coefficients subject to change without notice.

PERFORMANCE DATA

Compressor Model(Code)	**C-SBN373H8A (809 950 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	9,870	11,990	13,640	17,710	21,020	23,450	26,150	28,270
40.5	9,060	11,030	12,560	16,350	19,440	21,710	24,230	26,220
45.0	8,440	10,290	11,730	15,300	18,220	20,360	22,750	24,630
50.0	7,800	9,530	10,870	14,210	16,950	18,960	21,210	22,970
54.4		8,900	10,160	13,320	15,900	17,800	19,930	21,600
60.0			9,330	12,260	14,660	16,430	18,420	19,980
65.0				11,400	13,650	15,310	17,180	18,650

POWER(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	3,820	3,850	3,870	3,910	3,920	3,930	3,940	3,950
40.5	4,270	4,310	4,340	4,380	4,400	4,410	4,420	4,420
45.0	4,690	4,750	4,780	4,830	4,850	4,860	4,860	4,860
50.0	5,220	5,290	5,330	5,390	5,410	5,410	5,420	5,410
54.4		5,820	5,870	5,930	5,950	5,960	5,960	5,950
60.0			6,620	6,700	6,720	6,730	6,720	6,710
65.0				7,460	7,480	7,480	7,470	7,460

CURRENT(A)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	6.0	6.0	6.0	6.0	6.1	6.1	6.1	6.1
40.5	6.6	6.6	6.7	6.7	6.7	6.7	6.7	6.7
45.0	7.1	7.2	7.2	7.3	7.3	7.3	7.3	7.3
50.0	7.8	7.9	8.0	8.0	8.1	8.1	8.1	8.1
54.4		8.6	8.7	8.8	8.8	8.8	8.8	8.8
60.0			9.6	9.8	9.8	9.8	9.8	9.8
65.0				10.7	10.8	10.8	10.8	10.7

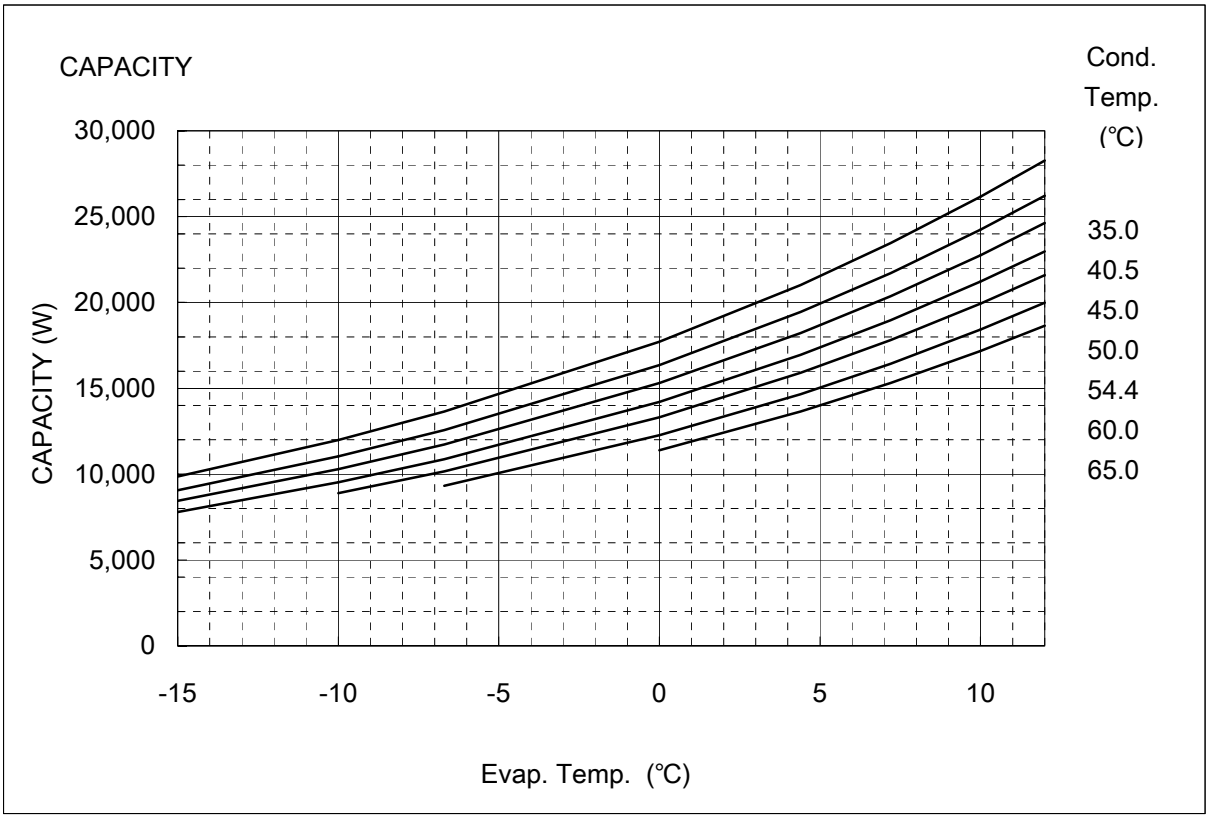
NOTE:

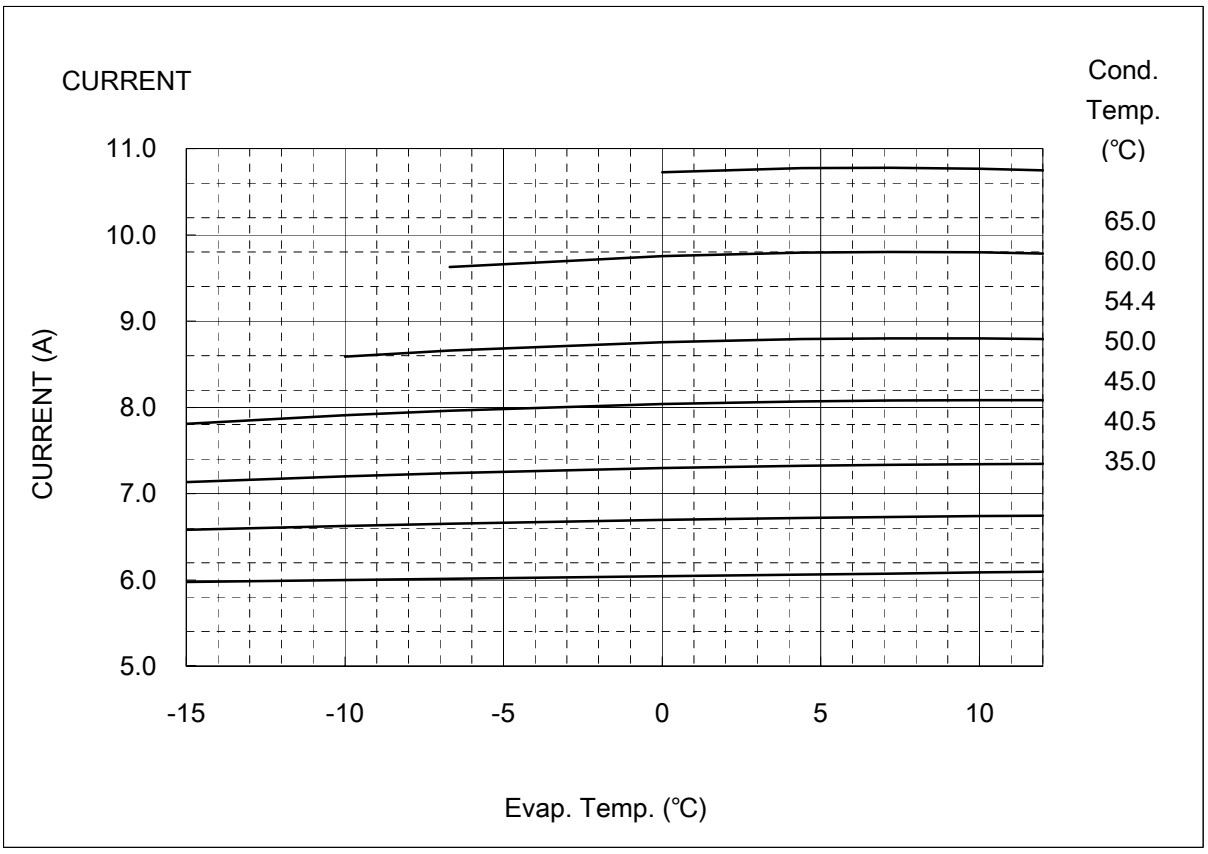
*** The performance values subject to change without notice.**

*** The performance values are based on MID point method.**

Compressor Model(Code) **C-SBN373H8A (809 950 88)**

Power Source **3PH 60Hz 440-460V**





COEFFICIENTS OF PERFORMANCE CURVES

Compressor Model	**C-SBN373H8A (809 950 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*(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

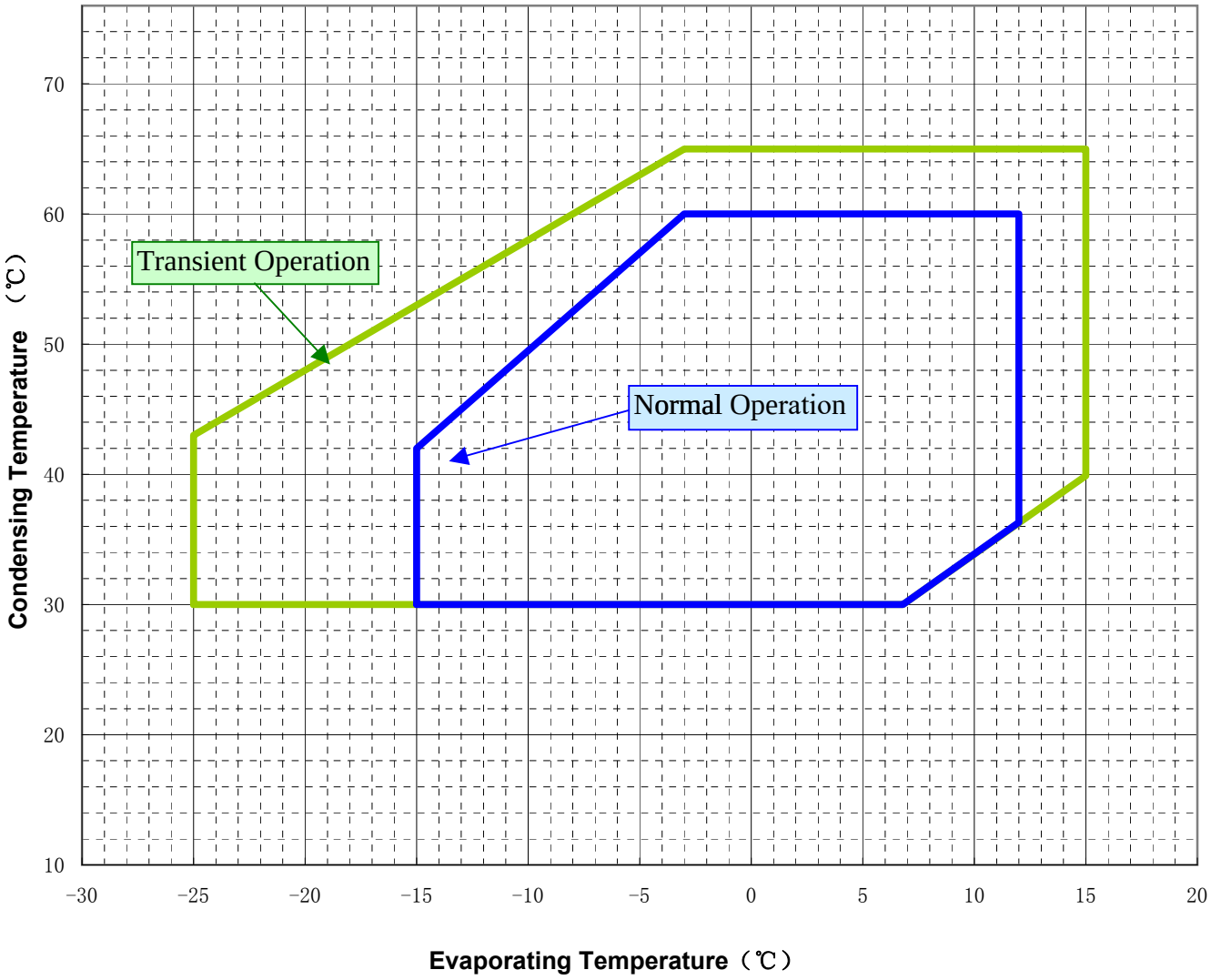
D——CONDENSING TEMP, °C

440V-60Hz	CAPACITY (W)	POWER (W)	CURRENT (A)
C1	2.854562E+04	2.697574E+03	3.991103E+00
C2	1.072308E+03	2.746123E+00	8.683915E-04
C3	-3.634029E+02	-1.069015E+01	5.975340E-03
C4	1.846543E+01	6.161379E-01	1.217319E-03
C5	-1.261062E+01	2.239853E-02	-1.277238E-05
C6	1.532031E+00	1.290073E+00	1.501011E-03
C7	1.541534E-01	-1.206156E-03	-1.929850E-06
C8	-1.361263E-01	-1.935476E-02	-3.378355E-05
C9	5.063741E-02	9.891219E-04	3.476208E-06
C10	3.372306E-09	1.131066E-08	9.506551E-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 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. Residual Oxygen 0.1 Vol.% Max.		24 hrs. after vacuuming: 1.01kPa 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 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.

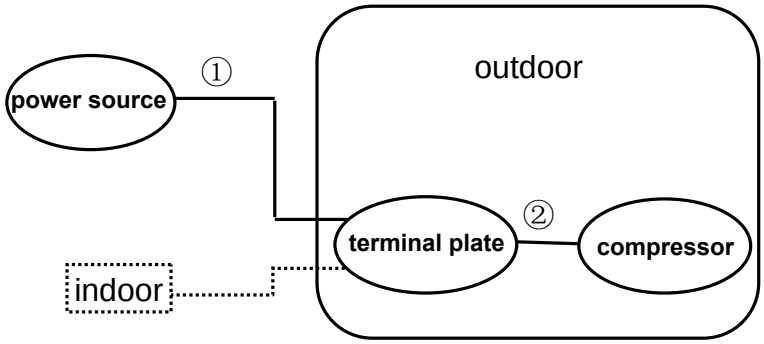
Section 6. Selection of Electrical Wire

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

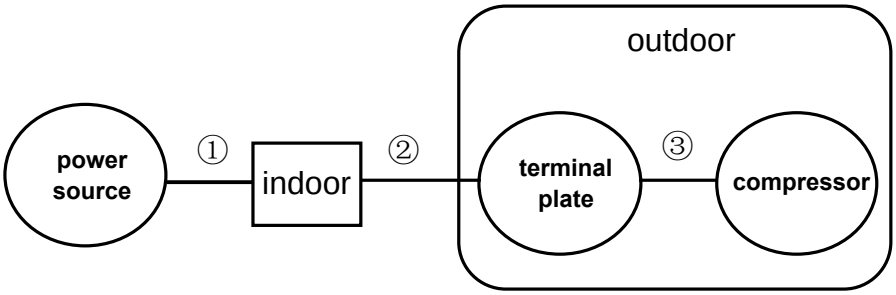
We recommend selecting the wire size from the table below.

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

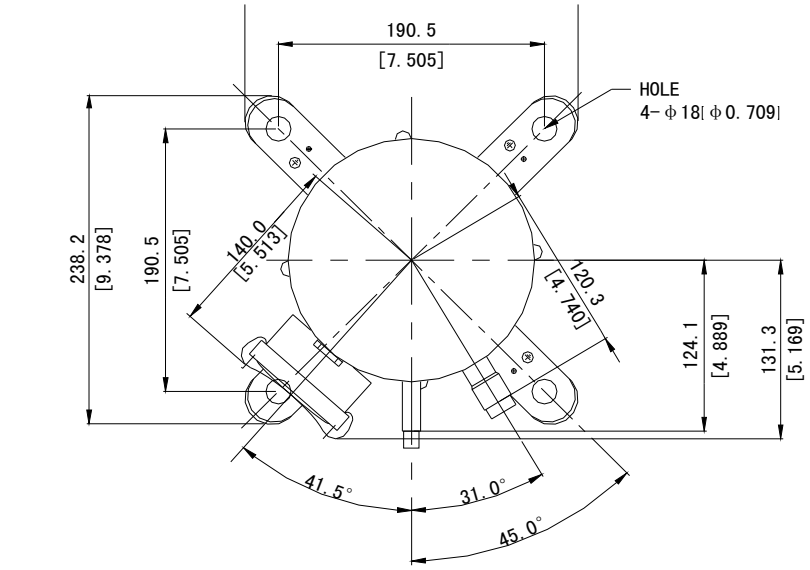
The internal motor protector does not protect the compressor against all possible conditions.

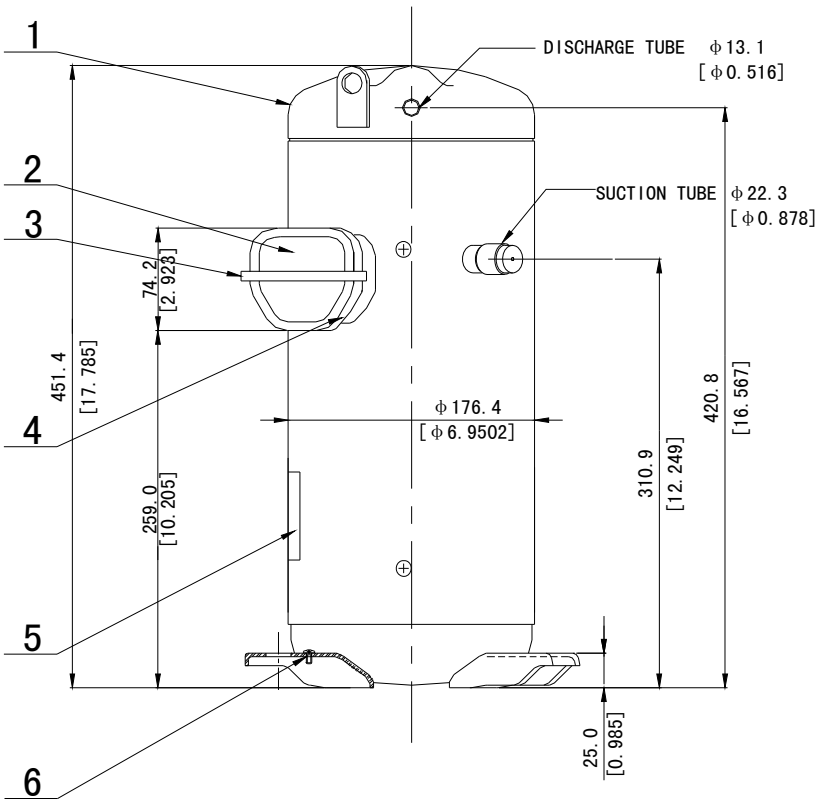
Please be sure that the system utilizes the ground connection when installed in the field.

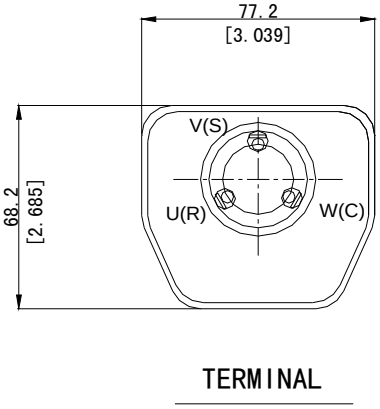
Section 7. Drawings

7.1. Dimensional Sketch

C-SB Series



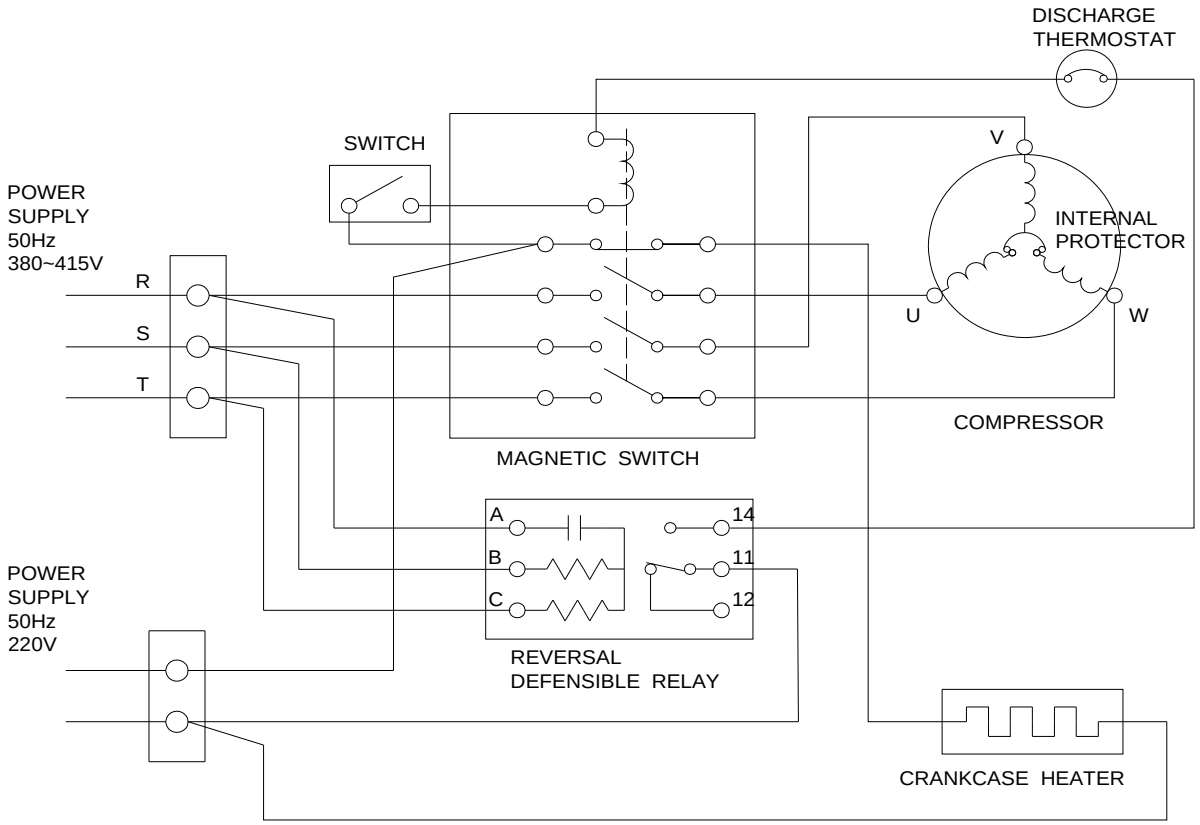




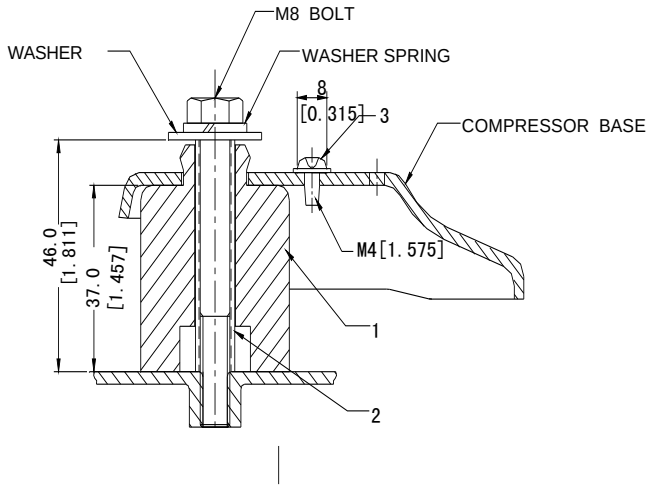
No.	Qty	Name
1	1	Compressor
2	1	Terminal Box Cover
3	1	Terminal Box Clip
4	1	Insulating Grommet
5	1	Nameplate
6	1	Screw Special

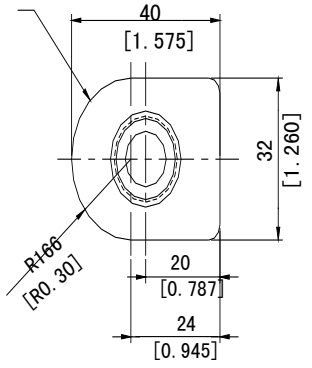
7.2. Wiring & mounting sketch

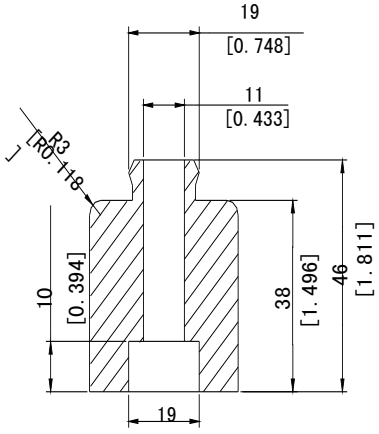
WIRING DIAGRAM
C-SB Series 3phase B8

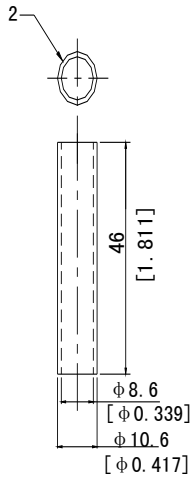


MOUNTING SKETCH



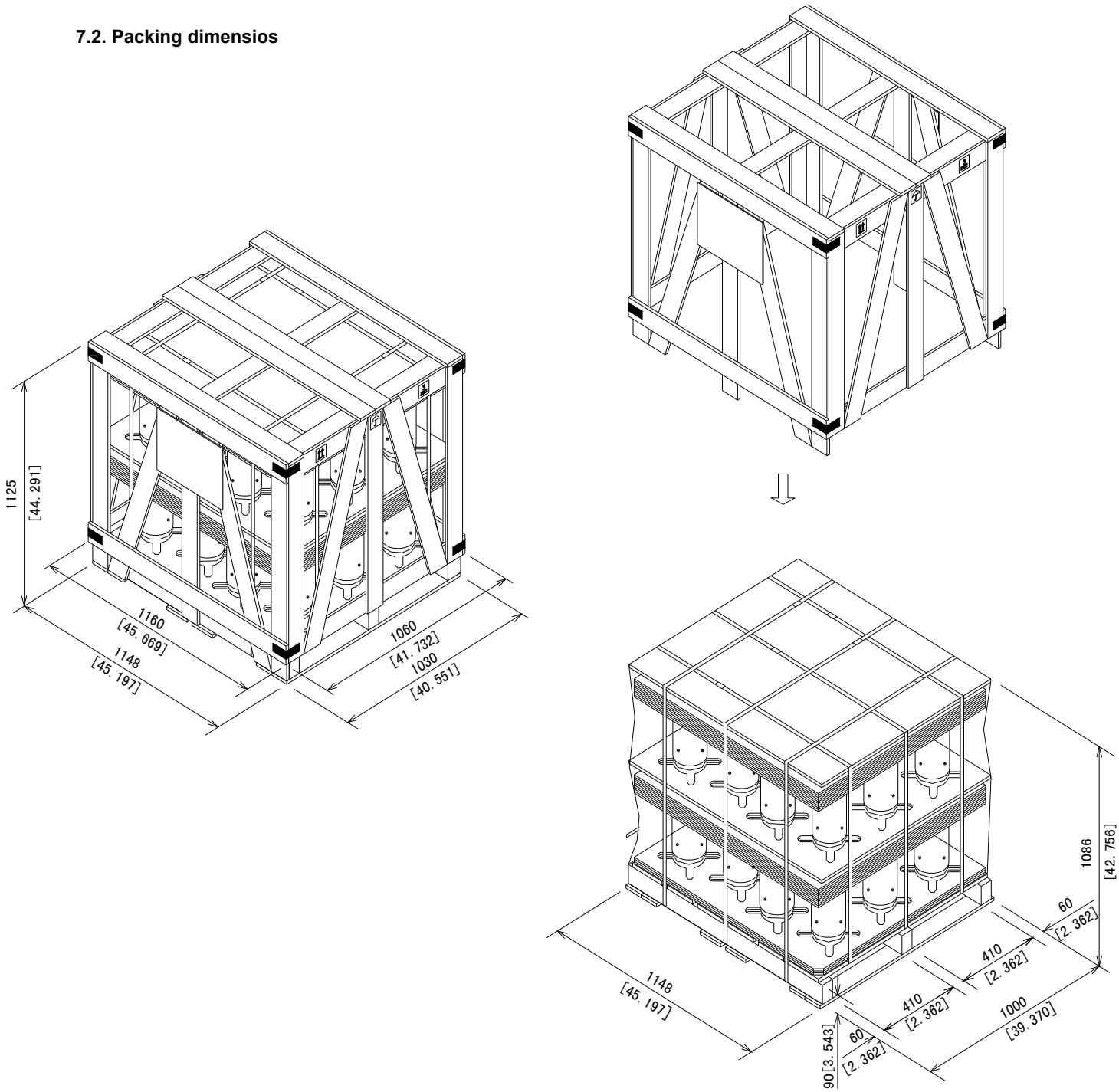






No.	Part	QTY	Name
1	**M-0101-DSB**	**4**	**Mounting Grommet**
2	**M-0201-DSB**	**4**	**Mounting sleeve**
3	**B-0101-DSB**	**1**	**Screw Special**

7.2. Packing dimensios



Part Code

D-0201-DSB

Name

Packing Dimensions