SPECIFICATIONS OF COMPRESSOR

Model No: 5CB091SA04

Output : 8 HP

Temporary

Panasonic Appliances Compressor (Dalian) Co., Ltd.

Section 1. General Specifications

Content		Unit	Specification
Compressor Model (Code)		—	5CB091SA04
Type		—	Hermetic Scroll Compressor
Application		—	High Back Pressure
Evap. Temp. Range		°C (°F)	-15~+12 （5~53.6）
Compressor Cooling Type		—	Natural Cooling
Power Source	Phase	—	3
	Rated Voltage	V	380~415
	Rated Frequency	Hz	50
Voltage Range		V	342~456
Weight (Including Oil)		kg	44.6
Refrigerant		—	R410A
Oil Type		—	FV68S
Oil Charge		ml	2500
Displacement		cm^3 /rev	91
MCC		A	19.6
Motor	Motor Type	—	3-PH Induction Motor
	Number of Poles	—	2
	Electrical Insulation	Class	E
	Nominal Revolution	min^{-1}	——
	Locked Rotor Ampere	A	99
	Winding Resistance [at 25°C (77°F)]	Ω	U-V 1.361
			U-W 1.382
			V-W 1.339
Connection Tube	Suction Line (O.D.)	mm (in)	25.4（1.0）
	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
	V	380
Capacity	W	23, 200
	（BTU/hr）	79, 158
Input Power	W	7, 600
Current	A	13. 8

Standard Rating Conditions

Refrigerant	——	R410A
Condensing Temp.	°C（°F）	54. 5（130. 1）
Evaporating Temp.	°C（°F）	7（44. 6）
Suction Gas Temp.	°C（°F）	18. 5（65. 3）
Liquid Temp.	°C（°F）	46. 0（114. 8）
Ambient Temp.	°C（°F）	35（95）

2.2 Sound Level

Power Source (3PH)	Hz	50
	V	380
Sound Level	dB(A)	68Max.

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
Minimum Starting Voltage	V	323

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. 4）
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. 5）
	H. P. S.	MPa(G)（psig）	4. 15（601. 9）
Insulation Resistance		MΩ	100（without refrigerant）
Dielectric Strength (The leakage current is less than 10mA)		V	1900（1 minute）
Residual Moisture （MAX）		mg	300

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
Eyelet Rub Lead Wire	1	A-0301-DSB	0	Installed on Compressor
Mounting Grommet	4	M-0101-DSC	0	
Mounting Sleeve	4	M-0202-DSC	0	
Screw Special	1	B-0101-DSB	0	Installed on Compressor

3.2 The Drawing for Reference

Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0105-DSB	0
Mounting Parts Listing	M-5102-DSC	0
Packing Dimensions	D-0203-DSB	0
Wiring Diagram	E-0910-DSB	0

3. 3 Inernal Motor Protector (in compressor)

Parts Name	Specification	
Inernal Motor Protector	Type of protector	UP28QA12B-720
	Trip Temprature	150±5℃
	Reset Temprature	70±10℃
	Trip Current	70A 3~10s

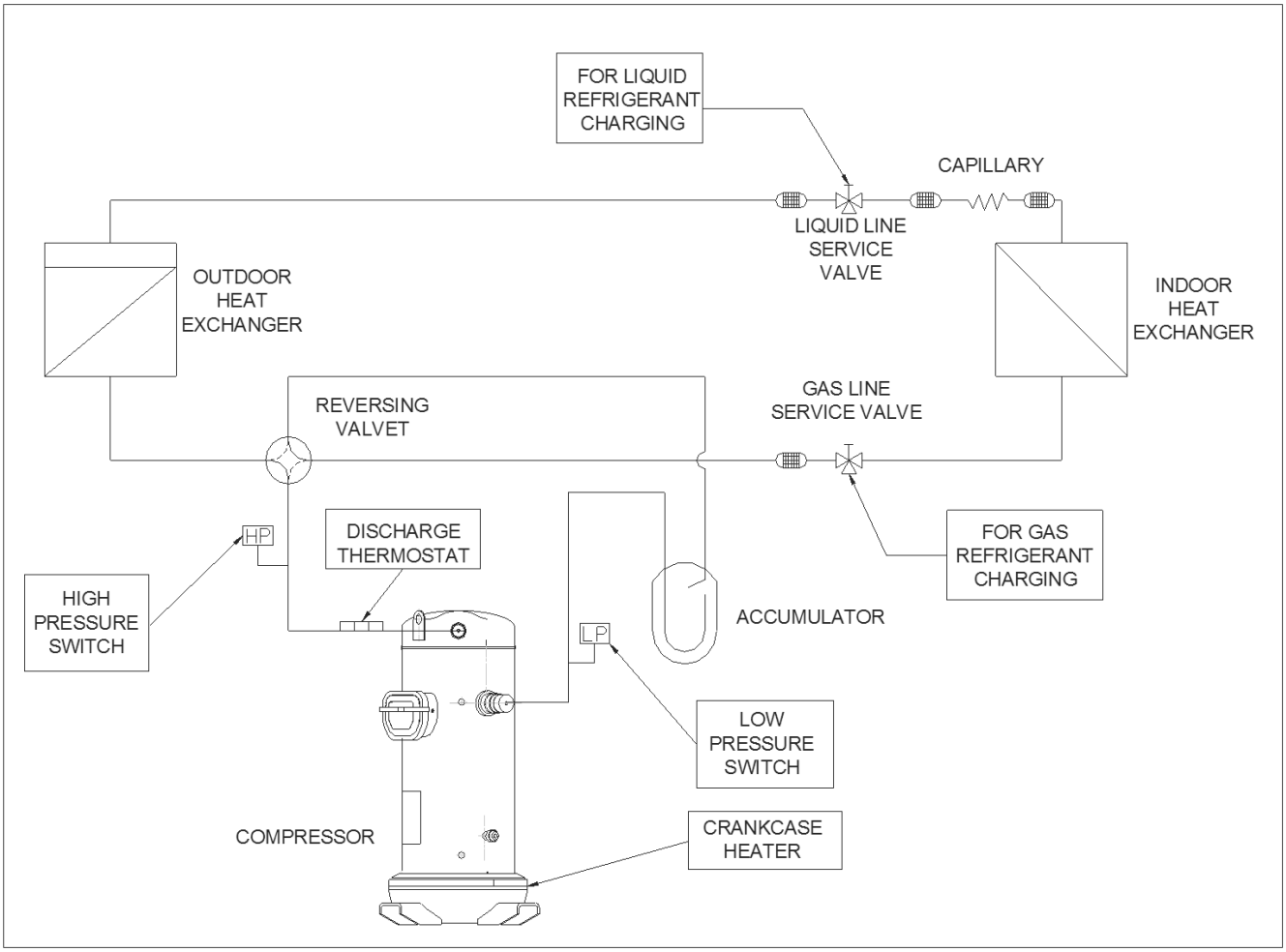
1. When the protector is not on current, the ambient temperature of the protector rises to the temperature of protector which is for touching current and off, this is operating temperature. Then, the ambient temperature of the protector goes down the moment it touches current and closes, at this moment, the temperature of the protector is recovery temperature.
2. When the current of compressor is overloaded, under the ambient temperature 25℃, the protector can guarantee the motion in the limited current within the first operating circles 3-10seconds.

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	44 Watts
Discharge Thermostat	Mounting Position	Located within 100mm(4 in)from the compressor shell
	Trip Temperature	130±5℃
	Reset Temperature	95±11℃
High Pressure Switch	Setting	Cut-out seting no higher than 4.15MPa（G）（601.9 psig）
Low Pressure Switch	Setting	Cut-out seting no lower than 0.15MPa（G）（21.8 psig）

4.2 Position of the Protection and Refrigerant Charging



Section 5. Performance Data

PERFORMANCE DATA

Compressor Model	**5CB091SA04**
Power Source	**3PH 50Hz 380~415V**
Suction Gas Superheat(℃)	**11.1**
Sub Cooling(℃)	**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	13,950	16,790	18,970	24,310	28,610	31,740	35,200	37,910
40.5	12,820	15,410	17,410	22,290	26,220	29,070	32,230	34,700
45.0	11,950	14,360	16,220	20,750	24,390	27,040	29,970	32,250
50.0	11,050	13,270	14,980	19,150	22,490	24,920	27,620	29,720
54.4		12,380	13,960	17,840	20,940	23,200	25,700	27,650
60.0			12,780	16,300	19,130	21,180	23,450	25,220
65.0				15,060	17,660	19,550	21,640	23,270

POWER(W)

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	5,090	5,010	4,970	4,930	4,930	4,940	4,950	4,970
40.5	5,660	5,610	5,590	5,560	5,550	5,550	5,560	5,570
45.0	6,200	6,180	6,170	6,150	6,140	6,140	6,140	6,140
50.0	6,860	6,880	6,890	6,900	6,890	6,880	6,860	6,850
54.4		7,570	7,610	7,630	7,620	7,600	7,570	7,550
60.0			8,610	8,670	8,650	8,620	8,570	8,520
65.0				9,690	9,670	9,620	9,550	9,490

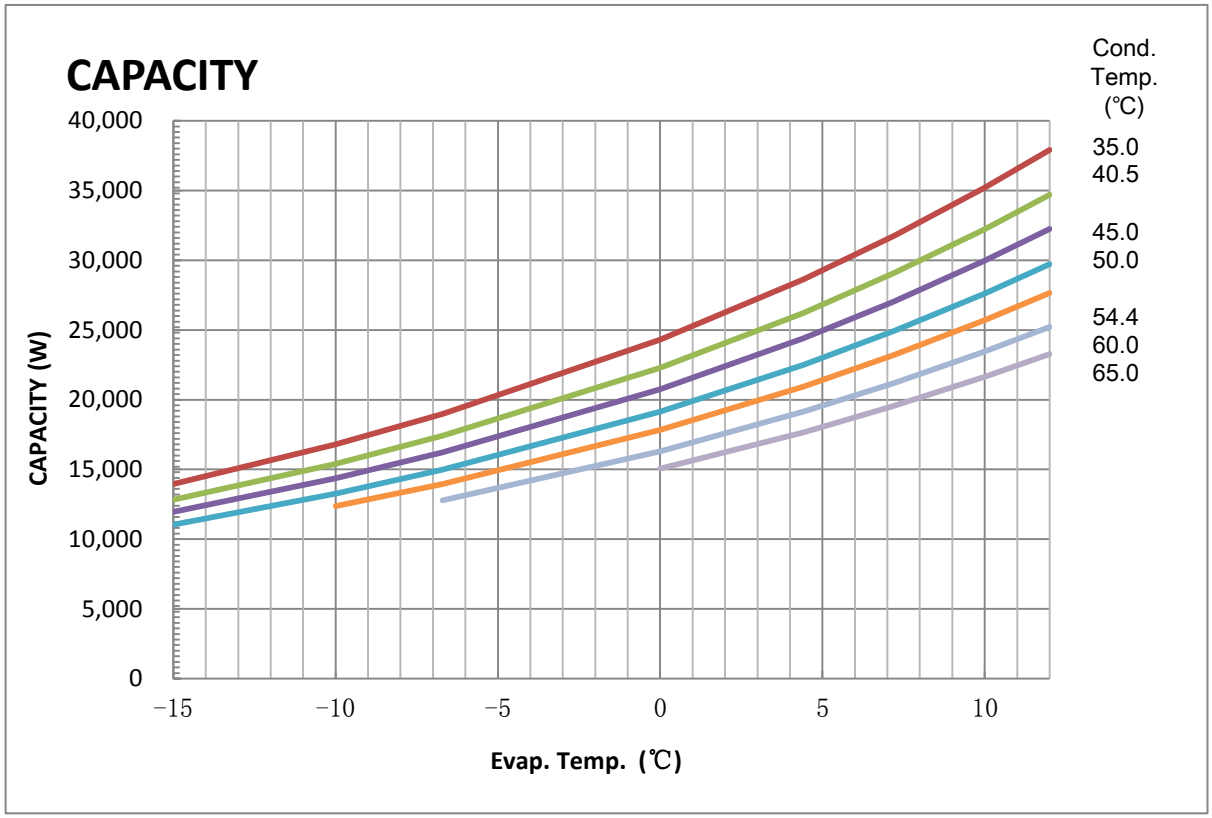
CURRENT(A) @380V

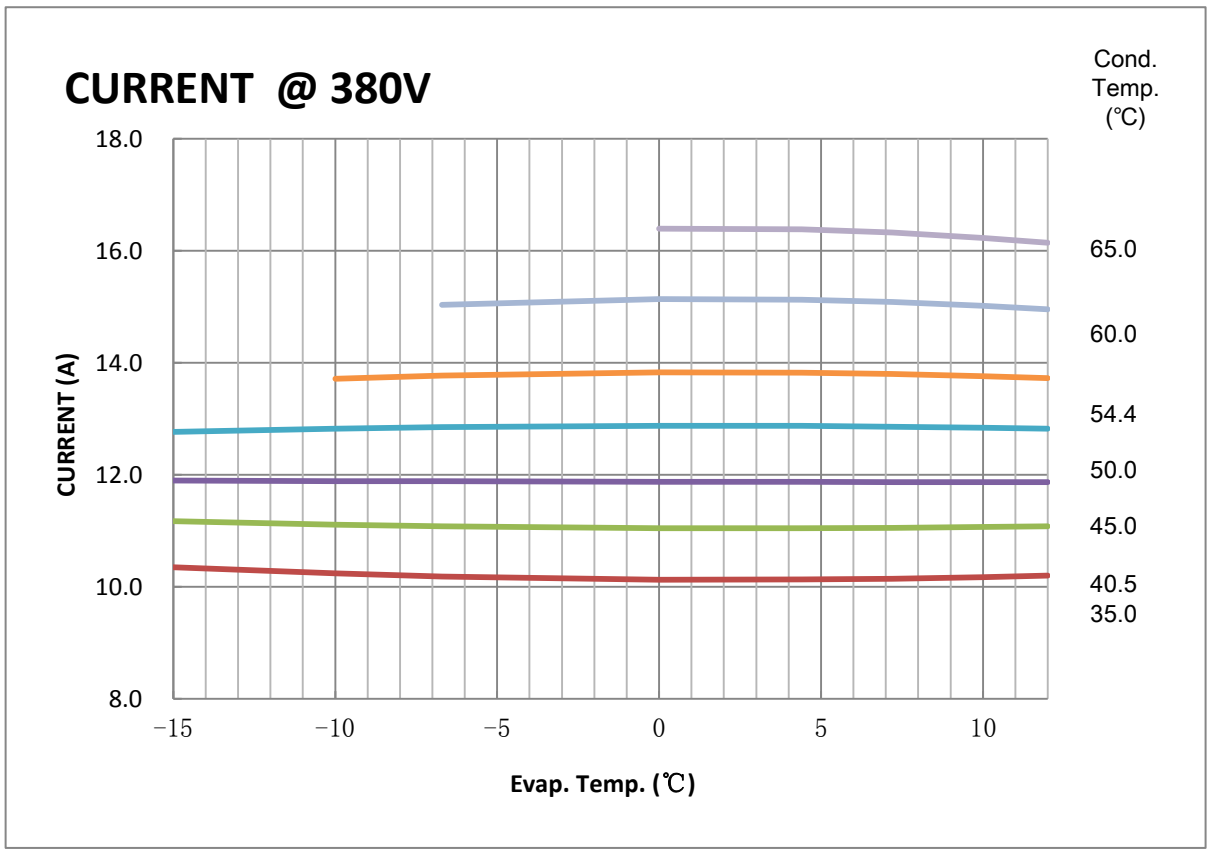
Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	10.4	10.2	10.2	10.1	10.1	10.1	10.2	10.2
40.5	11.2	11.1	11.1	11.0	11.0	11.1	11.1	11.1
45.0	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
50.0	12.8	12.8	12.9	12.9	12.9	12.9	12.8	12.8
54.4		13.7	13.8	13.8	13.8	13.8	13.8	13.7
60.0			15.0	15.1	15.1	15.1	15.0	15.0
65.0				16.4	16.4	16.3	16.2	16.1

FLOW (kg/h) @380V

Condensing Temperature(℃)	Evaporating Temperature(℃)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	310	343	373	457	528	580	637	681
40.5	277	320	356	445	516	567	621	663
45.0	252	303	342	435	506	556	608	648
50.0	227	285	328	425	495	544	594	631
54.4		271	316	415	486	533	582	618
60.0			302	404	474	520	567	601
65.0				394	463	508	554	586

Compressor Model(Code)	**5CB091SA04**
Power Source	**3PH 50Hz 380~415V**





COEFFICIENTS OF PERFORMANCE CURVES

Compressor Model	**5CB091SA04**
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

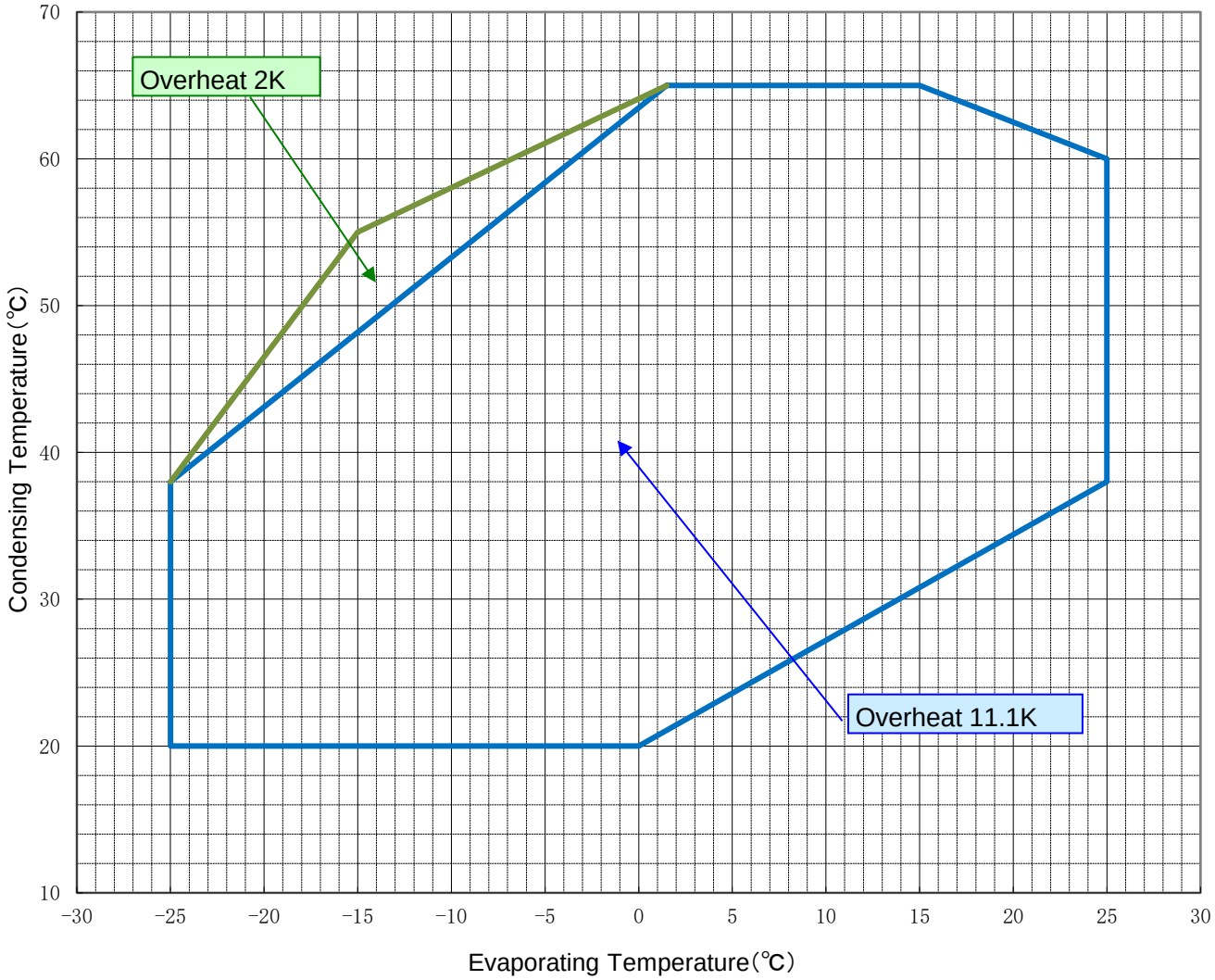
D——CONDENSING TEMP, °C

380V-50Hz	CAPACITY (W)	POWER (W)	CURRENT (A)	FLOW (kg/h)
C1	4.068582E+04	3.382921E+03	6.536421E+00	5.522037E+02
C2	1.572230E+03	-5.871232E+00	-1.081704E-02	1.211210E+01
C3	-5.541042E+02	-1.765663E+01	4.515814E-02	-3.027586E+00
C4	2.538078E+01	2.780276E+00	4.163512E-03	7.032486E-01
C5	-2.288754E+01	9.816544E-02	2.224067E-04	9.107398E-02
C6	2.462352E+00	1.761616E+00	1.636605E-03	9.266470E-03
C7	1.709823E-01	-4.112199E-03	-4.628555E-06	3.881264E-04
C8	-2.444950E-01	-6.209451E-02	-9.389228E-05	-1.090719E-02
C9	1.088040E-01	8.451579E-05	3.113773E-07	-5.063638E-04
C10	-3.489052E-08	1.610716E-08	1.444561E-11	-1.962131E-09

Note: The polynomial coefficients subject to change without notice.

Envelope

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 equivalent conditions, 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) 0.38~1.05MPa(G) (55～152psig)	-25~+15℃ (-13～+59 °F) 0.23~1.15MPa(G) (33～167psig)	Compressor Suction Pressure
3	Condensing Temp.	+30~+60℃ (+86～+140 ° F) 1.78~3.75MPa(G) (258～544psig)	+65℃ (+149 ° F) 4.18MPa(G) (606psig)	Compressor Discharge Pressure
4	Compression Ratio	2 ~ 6	8	
5	Winding Temp.	115℃ (239 °F) Max.	125℃ (257 °F) Max.	
6	Shell Bottom Temp.	Upper Limit:90℃ (194 °F) Max.		When compressor is running
		Lower Limit:Evaporating Temp.+12K (Min).		
		Lower Limit:Ambient Temp.+11K (Min).		When compressor shuts off
7	Discharge Gas Temp.	115℃ (240 °F) Max.	C-SB:130℃ (266°F) Max.	Temp. within 100mm(4in) of the discharge fitting.
				Temp. inside of the well pipe on the top of compressor
8	Suction Gas Temp.	Superheat: 5K Min.	No excessive noise	It should meet the requirement of item 5, 6, 7 and 13 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.		Dropped voltage at compressor terminals.
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. 200,000 cycle Max.
12	Refrigerant Charge	oil/refrigerant(wt.)⩾0.35		Specific gravity of the Oil:0.94
13	Minimum Oil Level	No less than 72% of the initial oil charge		
14	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
15	System Moisture Level	200ppm Max.		
16	System Uncondensable Gas Level	1 Vol.% Max. Residual Oxygen 0.1 Vol.% Max.		24 hrs. after vacuuming: 1.01kPa Max.
17	Tilt	5° Deg.Max.		

Operation beyond the above limits must be approved by Panasonic Appliances Compressor (Dalian) 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

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.

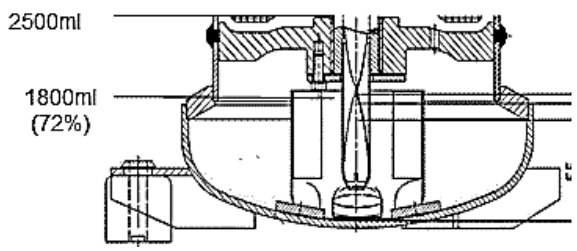
12 When The Compressor body and its packaging is abandoned,Please follow every sales environmental standards,

For packaging refrigerant oil ,solid recycle and dispose.

13 Panasonic Appliances Compressor (Dalian) Co,Ltd provide the 《Compressor Specification Common Appendix》and

《Safty Request on the use of Compressor》also fit this specification.

14 Minimum Oil Level



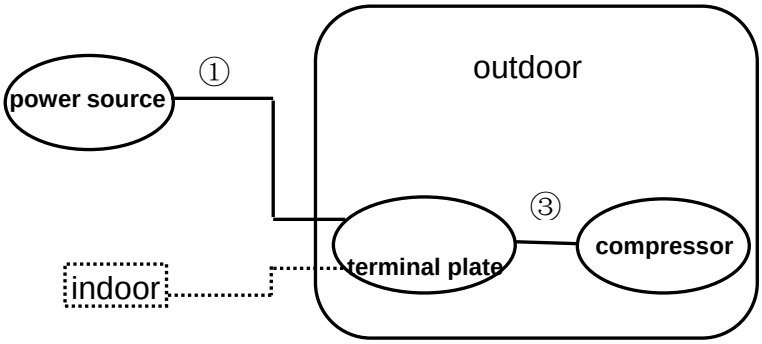
Section 7. Selection of Electrical Wire

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

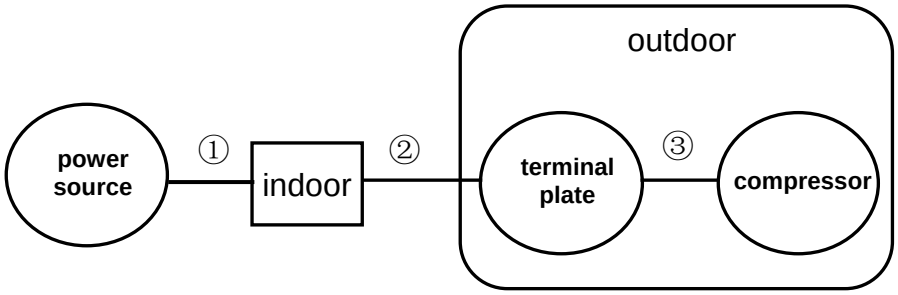
We recommend selecting the wire size from the table below.

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 ①Length or Remark ①+②Length (heat-resistance Temperature: 60°C(140°F) min.)						Remark③Length (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.	↑	↑	↑	↑	↑	↑	8.0*

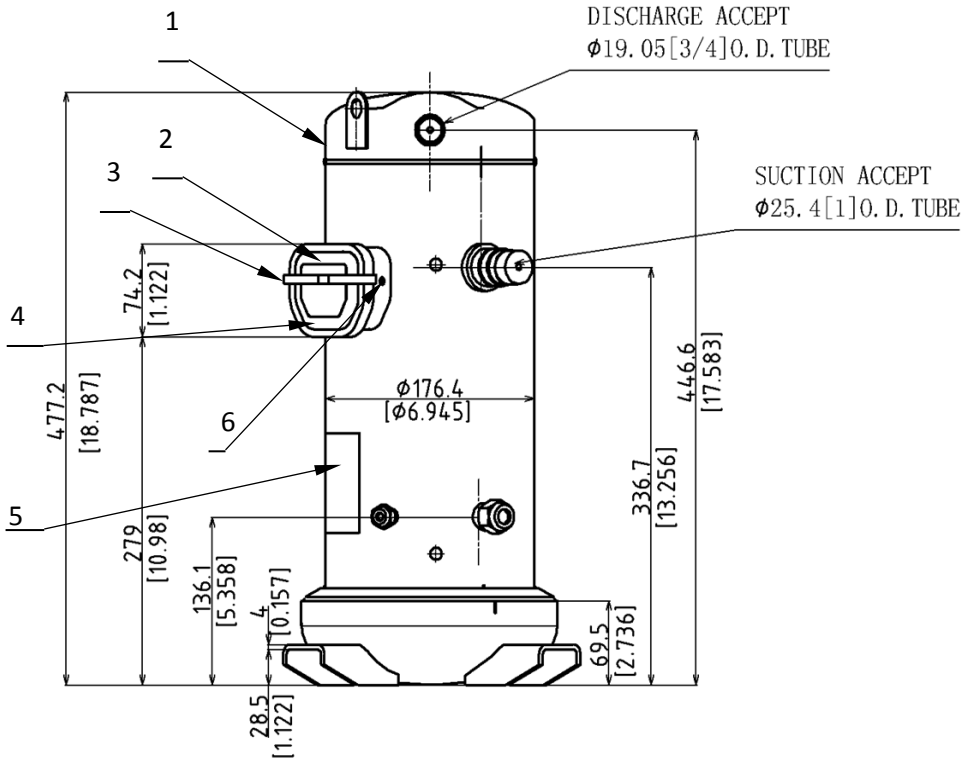
** 8.0 mm^2 wire can be used below 0.8m*

7.4 Caution of Ground

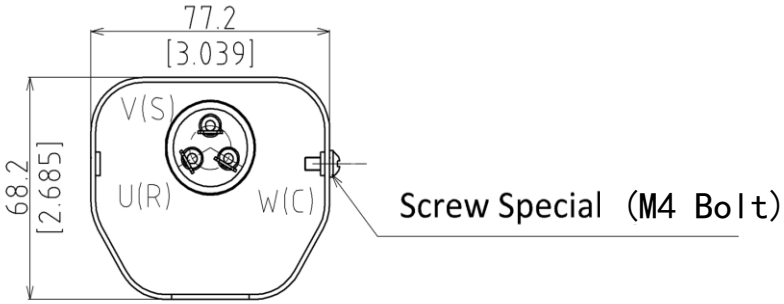
The internal motor protector does not protect the compressor against all possible conditions.

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

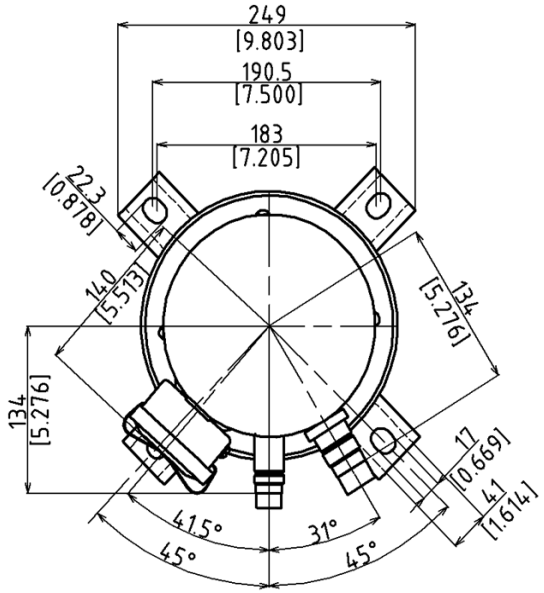
Earth leakage circuit breaker must be installed



No.	Part Code	Qty	Name
1	5CB091SA04	1	Compressor
2	A-0101-DSB	1	Terminal Box Cover
3	A-0201-DSB	1	Terminal Box Clip
4	A-0301-DSB	1	Eyelet Rub Lead Wire
5		1	Nameplate
6	B-0101-DSB	1	Screw Special



TERMINAL



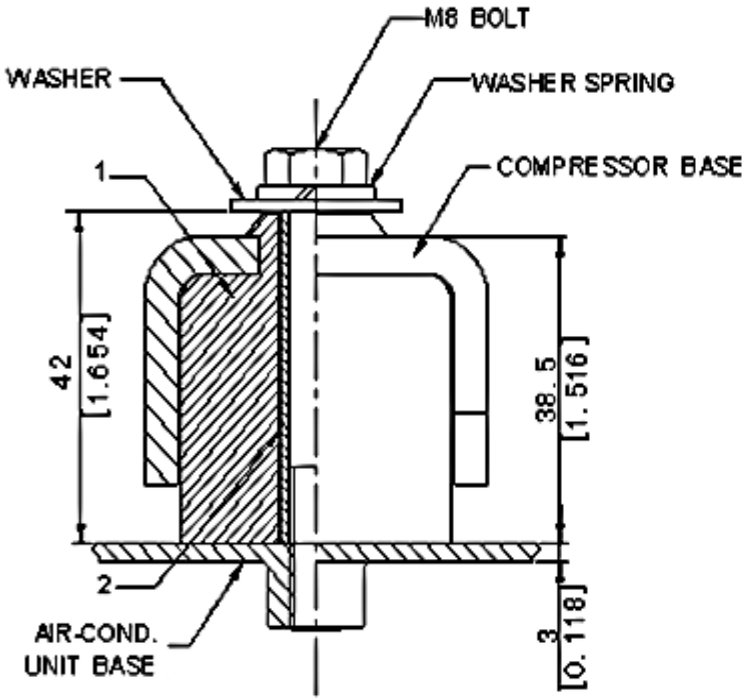
Part Code

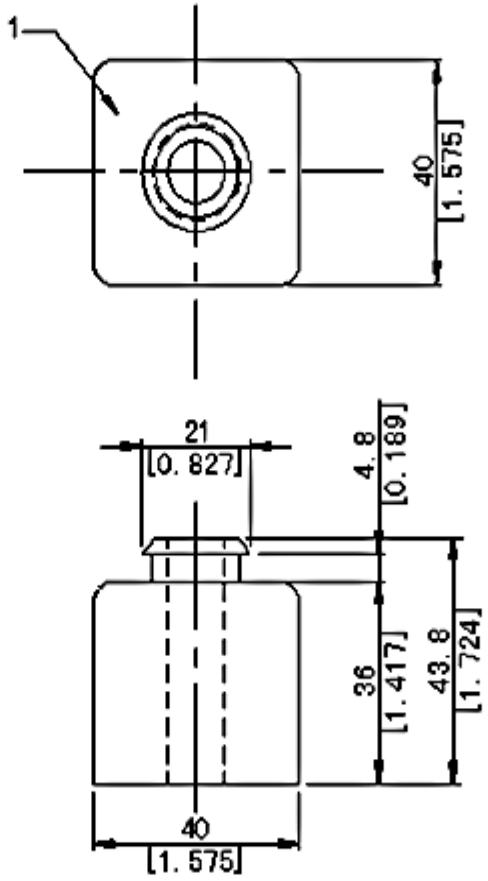
D-0105-DSB

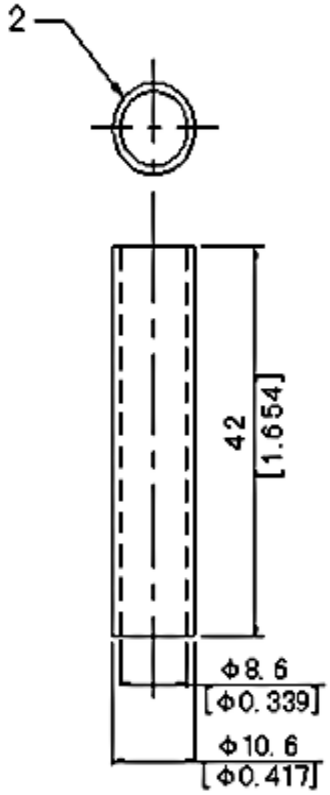
Name

Compressor Outline Drawing

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





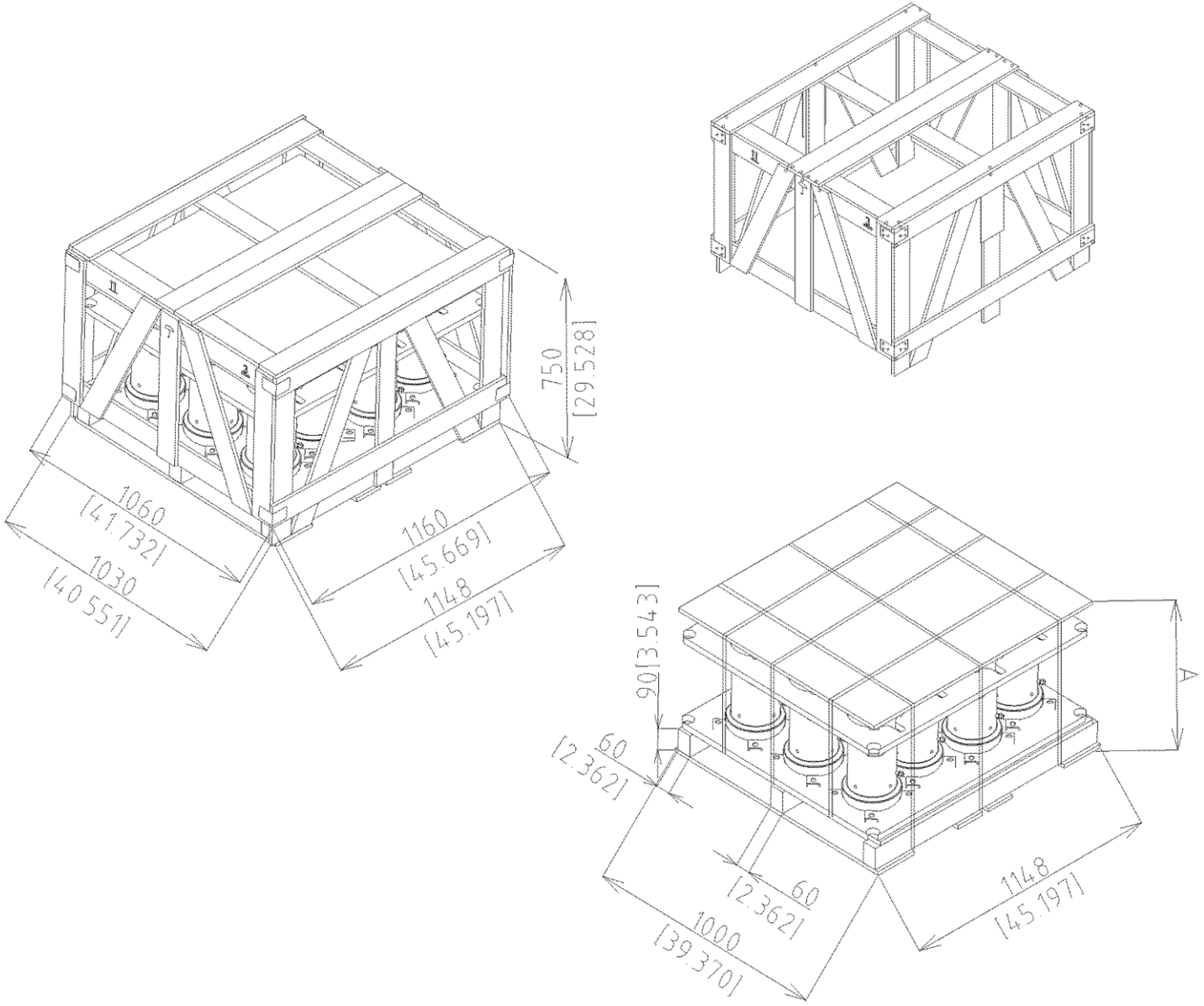


Part Code

M-5102-DSC

Name

Mounting Parts Listing



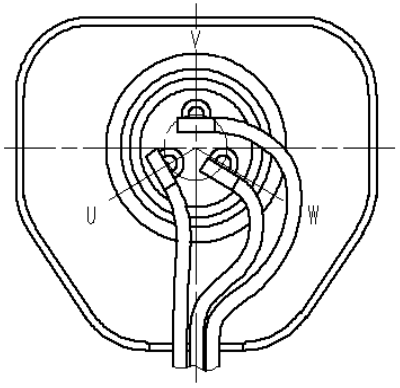
COMPRESSOR MODEL	A
5CB091SA04	613

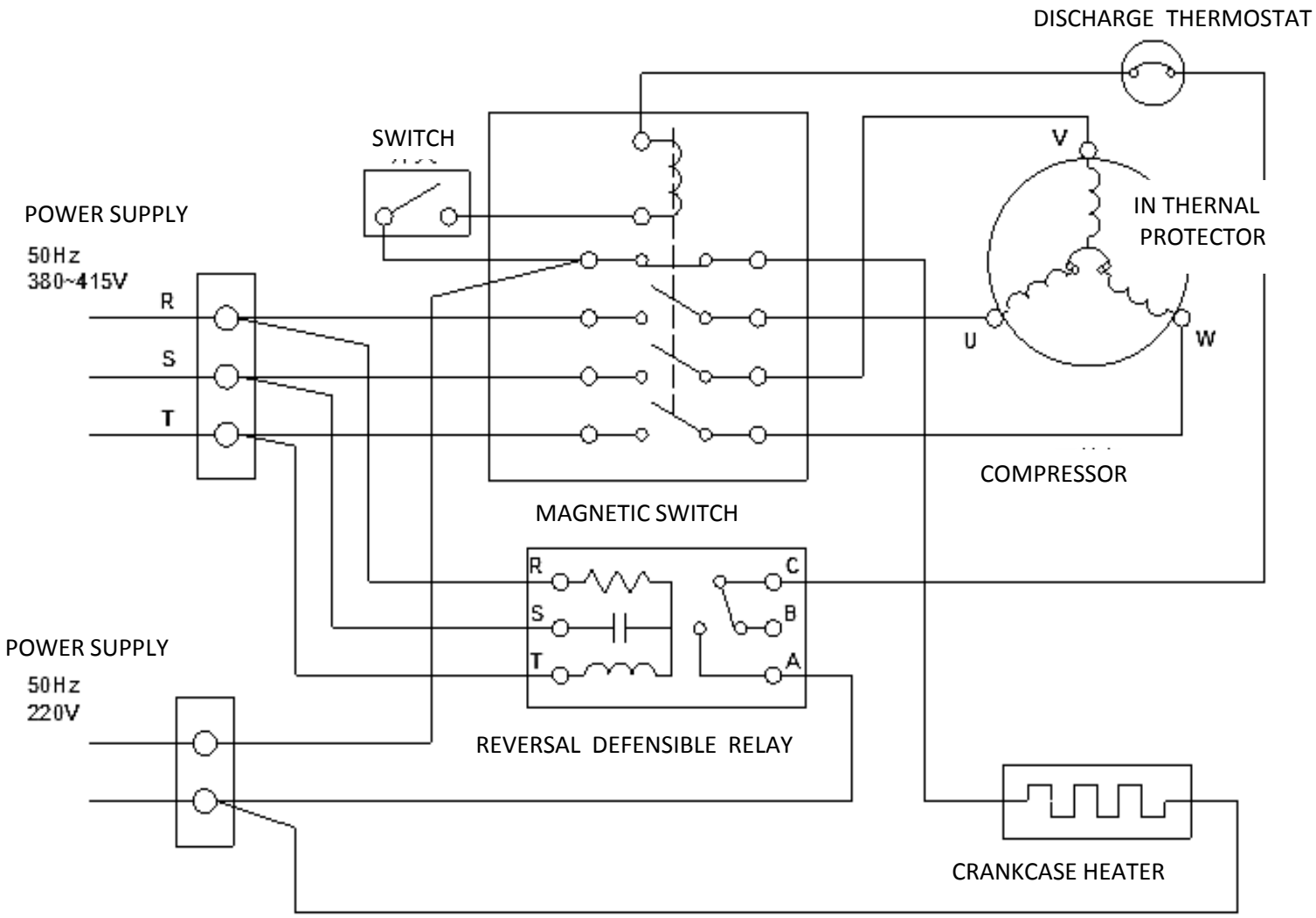
Part Code

D-0203-DSB

Name

Packing Dimensions





Part Code

E-0910-DSB

Name

Wiring Diagram