

Panasonic

No. : C-SCP435H38B-00-GGS-0

APPROVAL SHEET SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

MODEL	C-SCP435H38B
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NO.	DATE	PAGE	REVISION DETAILS	PAPCDL SIGNED	CLIENT SIGNED

REVISION RECORD

USER:

MANUFACTURER:

Panasonic Appliances Compressor (Dalian) Co., Ltd.

LEADER	PURCHASING MANAGER	TECHNICAL MANAGER	APPROVED	CHECKED	SUBMITTED

Model: C-SCP435H38B

File No: C-SCP435H38B-00-GGS-0

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
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.

Model: C-SCP435H38B
File No: C-SCP435H38B-00-GGS-0

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	2000 (1 minute)
Residual Moisture	mg	400

Note:

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

Model: C-SCP435H38B

File No: C-SCP435H38B-00-GGS-0

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	Included with Compressor
Mounting Sleeve	4	M-0202-DSC	1	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 Internal Motor Protector (in compressor)

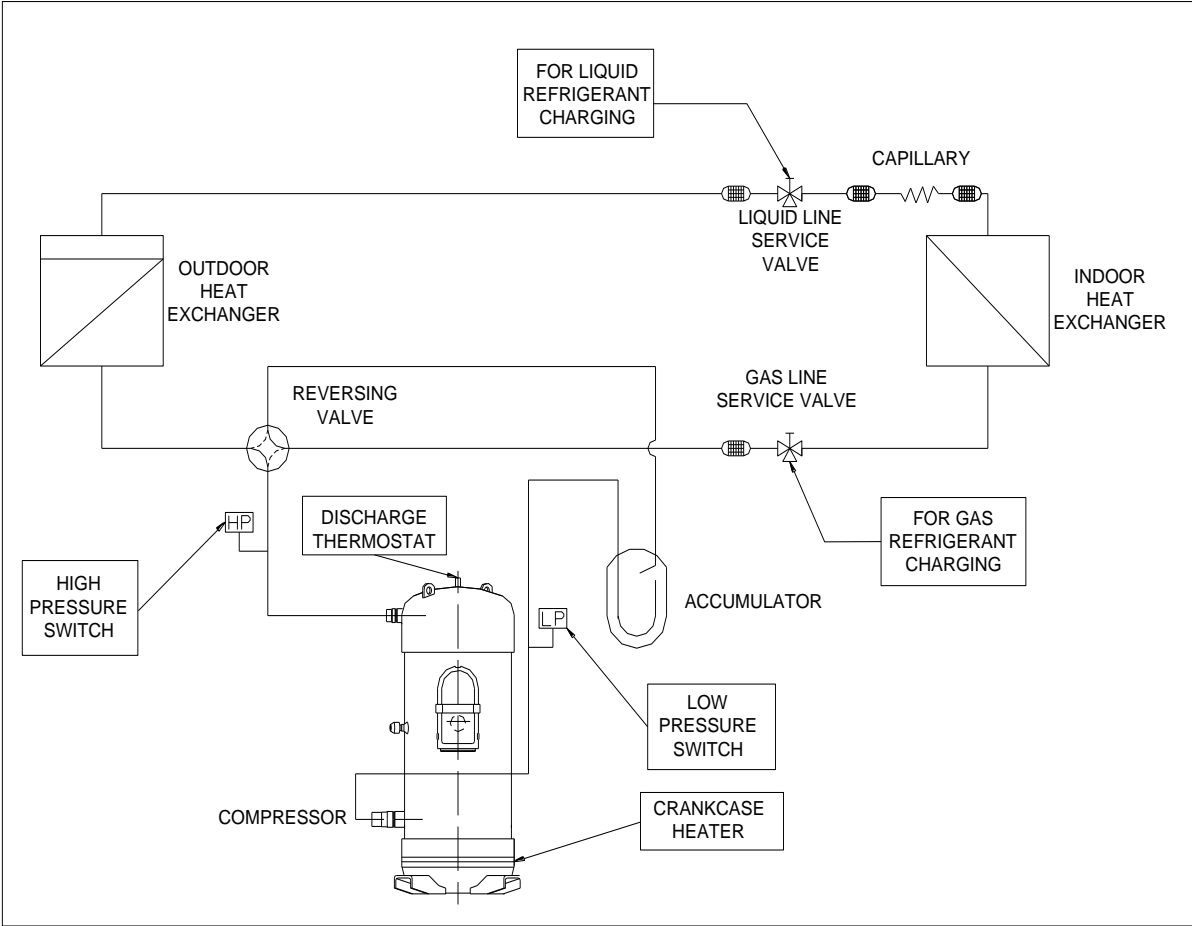
Parts Name	Specification	
Internal Motor Protector	Trip Temperature	170±5°C
	Reset Temperature	70±10°C
	Trip Current	66A / 3~10s

Section 4. Compressor Protection

4.1 Protection Required but not Included with compressor

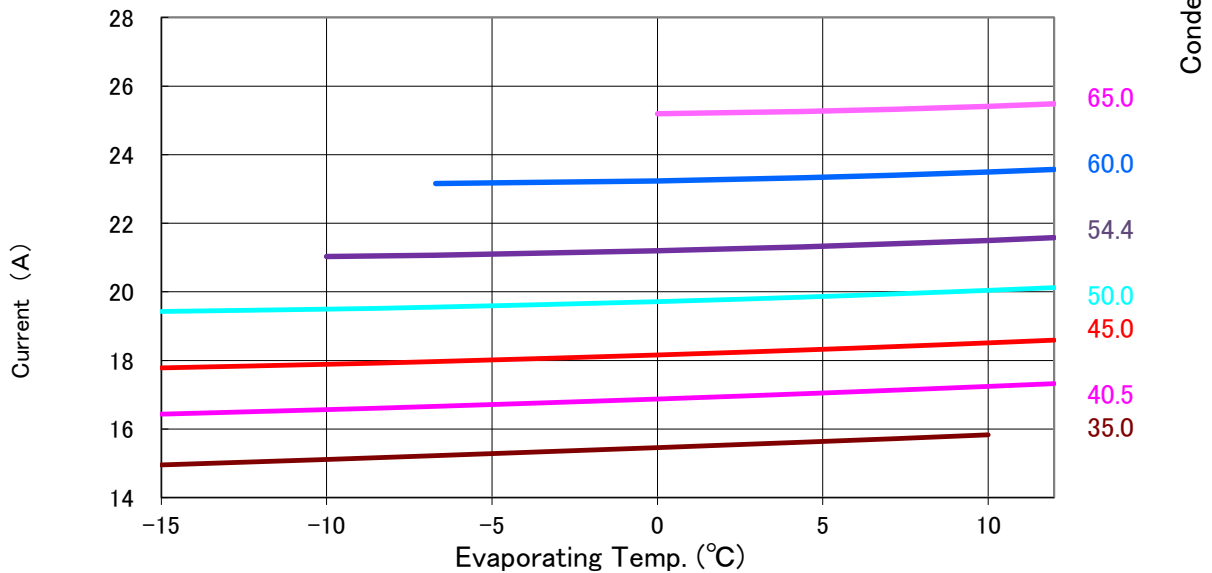
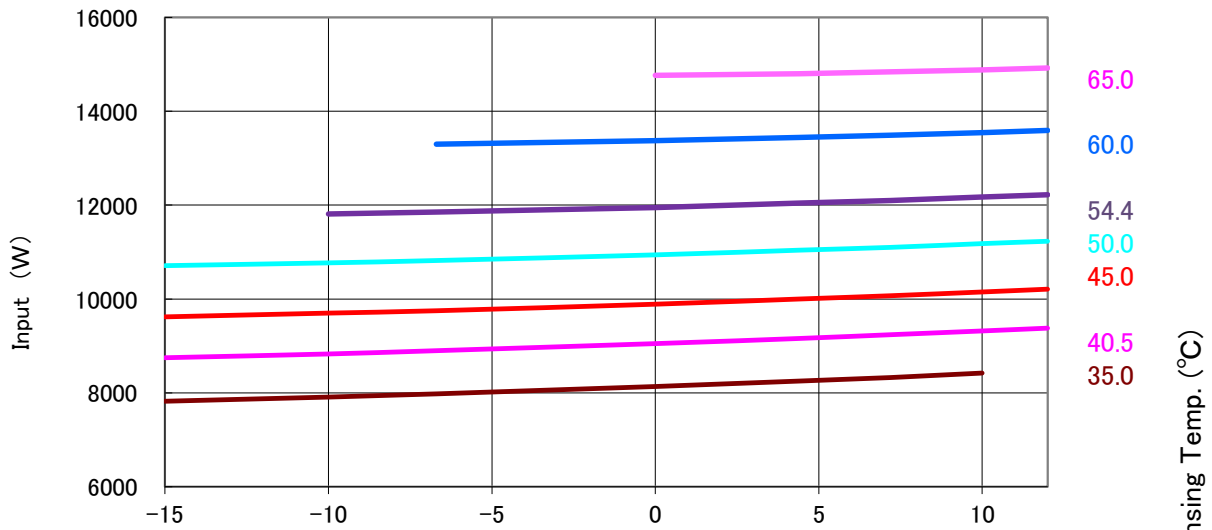
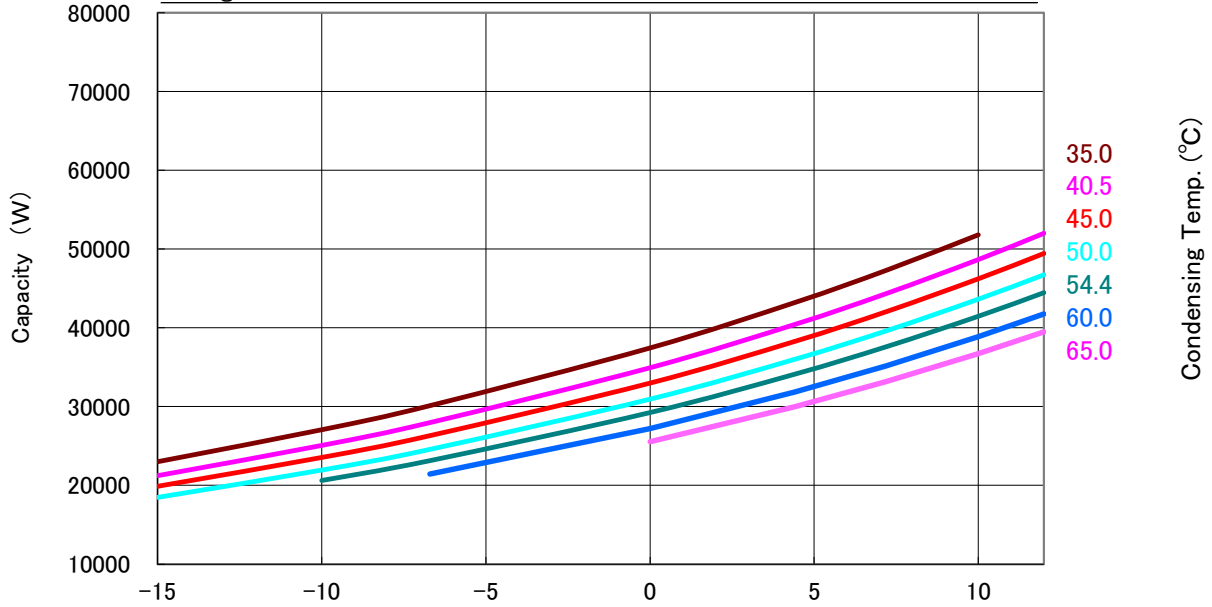
Protection Device	Items	Specifications
Reversal Defensible Relay	Features	To protect the compressor from reverse rotation
	Rated Voltage	AC380V
Crankcase Heater	Rated Power	88 Watts
Discharge Thermostat	Mounting Position	Located in the well pipe of top shell
	Trip Temperature	135±5°C(275 ±10 °F)
	Reset 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. Performance Data

Code No.	C-SCP435H38B
Power Source	3-PH 50Hz 380V
Condensing Temp.(°C)	35、40.5、45、50、54.4、60、65
Super Heating (K)	11.1
Sub Cooled(K)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R410A



Code No.	C-SCP435H38B
Power Source	3-PH 50Hz 380V
Condensing Temp.(°C)	35、40.5、45、50、54.4、60、65
Super Heating (K)	11.1
Sub Cooled(K)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R410A

Capacity (W)

		Evaporating Temp. (°C)							
		-15	-10	-6.7	0	4.4	7.2	10	12
Condensing Temp. (°C)	35.0	23,000	27,060	30,120	37,440	43,190	47,300	51,800	
	40.5	21,230	25,070	27,970	34,930	40,410	44,350	48,660	52,000
	45.0	19,880	23,540	26,310	32,980	38,260	42,050	46,220	49,440
	50.0	18,470	21,940	24,570	30,940	35,990	39,620	43,630	46,730
	54.4		20,620	23,140	29,240	34,100	37,600	41,460	44,460
	60.0			21,440	27,220	31,840	35,180	38,870	41,740
	65.0				25,550	29,970	33,170	36,710	39,470

Input (W)

		Evaporating Temp. (°C)							
		-15	-10	-6.7	0	4.4	7.2	10	12
Condensing Temp. (°C)	35.0	7,820	7,910	7,980	8,140	8,250	8,330	8,420	
	40.5	8,750	8,830	8,900	9,050	9,160	9,240	9,320	9,380
	45.0	9,620	9,700	9,750	9,890	10,000	10,070	10,150	10,210
	50.0	10,710	10,770	10,820	10,940	11,040	11,100	11,180	11,230
	54.4		11,810	11,850	11,950	12,040	12,100	12,170	12,220
	60.0			13,300	13,370	13,440	13,490	13,540	13,590
	65.0				14,760	14,800	14,840	14,880	14,920

Current (A)

		Evaporating Temp. (°C)							
		-15	-10	-6.7	0	4.4	7.2	10	12
Condensing Temp. (°C)	35.0	15.0	15.1	15.2	15.5	15.6	15.7	15.8	
	40.5	16.4	16.6	16.7	16.9	17.0	17.1	17.2	17.3
	45.0	17.8	17.9	18.0	18.2	18.3	18.4	18.5	18.6
	50.0	19.4	19.5	19.6	19.7	19.8	19.9	20.0	20.1
	54.4		21.0	21.1	21.2	21.3	21.4	21.5	21.6
	60.0			23.2	23.2	23.3	23.4	23.5	23.6
	65.0				25.2	25.3	25.3	25.4	25.5

Coefficients of Polynomial Formula

	Capacity (W)	Input (W)	Current (A)
C1	5.693875E+04	5.546778E+03	1.029612E+01
C2	1.631378E+03	9.284011E+00	2.695806E-02
C3	-6.440833E+02	-4.945140E+00	5.205227E-02
C4	2.353096E+01	1.106823E-01	-8.332299E-04
C5	-1.299406E+01	1.000388E+00	8.330037E-04
C6	2.478399E+00	2.255952E+00	2.725664E-03
C7	2.053252E-01	-1.186844E-04	1.497083E-06
C8	-9.922367E-02	4.551231E-03	2.832590E-05
C9	3.280983E-02	-1.554063E-02	-1.652246E-05
C10	1.336511E-08	-1.082980E-09	-1.393921E-11

Note: The polynomial coefficients subject to change without notice.

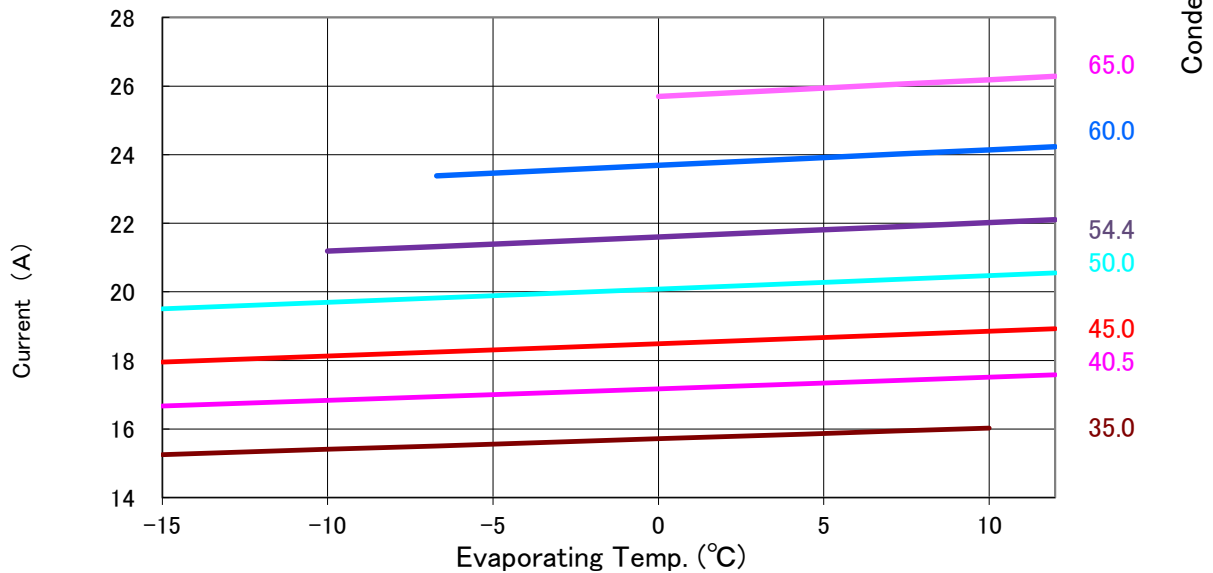
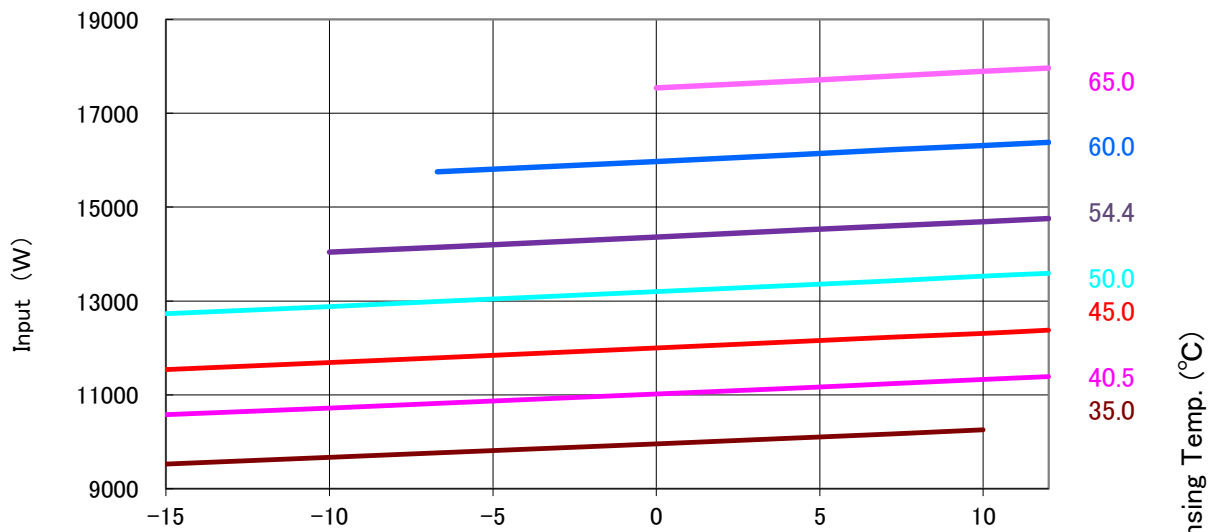
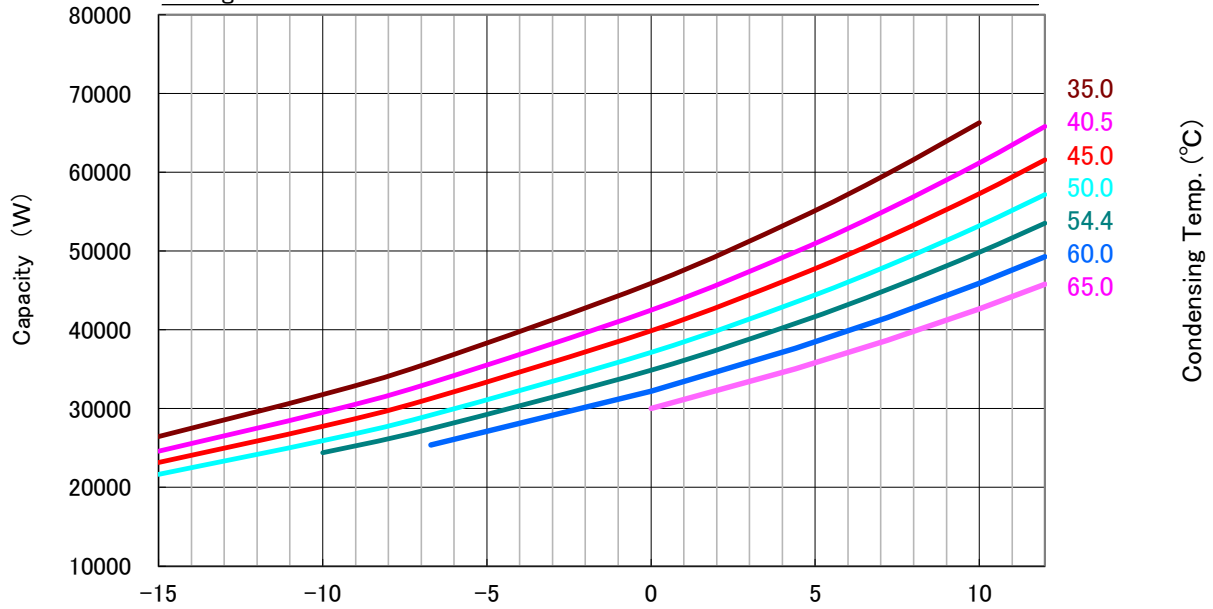
$$X=C1+C2*(S)+C3*D+C4*(S^2)+C5*(S*D)+C6*(D^2)+C7*(S^3)+C8*(D*S^2)+C9*(S*D^2)+C10*(D^3)$$

X—CAPACITY(W) OR POWER(W) OR CURRENT(A)

S—EVAPORATING TEMP, °C

D—CONDENSING TEMP, °C

Code No.	C-SCP435H38B
Power Source	3-PH 60Hz 440V
Condensing Temp.(°C)	35、40.5、45、50、54.4、60、65
Super Heating (K)	11.1
Sub Cooled(K)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R410A



Code No.	C-SCP435H38B
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Condensing Temp.(°C)	35、40.5、45、50、54.4、60、65
Super Heating (K)	11.1
Sub Cooled(K)	8.3
Compressor Cooling	Natural Cooling
Refrigerant	R410A

Capacity (W)

		Evaporating Temp. (°C)							
		-15	-10	-6.7	0	4.4	7.2	10	12
Condensing Temp. (°C)	35.0	26,450	31,780	35,880	45,890	53,950	59,800	66,280	
	40.5	24,590	29,510	33,280	42,490	49,880	55,250	61,180	65,810
	45.0	23,160	27,750	31,280	39,870	46,760	51,750	57,270	61,570
	50.0	21,650	25,920	29,180	37,130	43,500	48,100	53,200	57,160
	54.4		24,400	27,450	34,870	40,810	45,100	49,840	53,530
	60.0			25,400	32,200	37,640	41,560	45,890	49,260
	65.0				30,020	35,040	38,660	42,660	45,760

Input (W)

		Evaporating Temp. (°C)							
		-15	-10	-6.7	0	4.4	7.2	10	12
Condensing Temp. (°C)	35.0	9,530	9,670	9,770	9,960	10,090	10,170	10,260	
	40.5	10,580	10,720	10,820	11,020	11,150	11,240	11,330	11,390
	45.0	11,540	11,690	11,790	12,000	12,140	12,230	12,310	12,380
	50.0	12,730	12,880	12,990	13,200	13,340	13,430	13,530	13,590
	54.4		14,040	14,140	14,360	14,510	14,600	14,690	14,760
	60.0			15,750	15,970	16,120	16,220	16,310	16,380
	65.0				17,540	17,690	17,790	17,890	17,960

Current (A)

		Evaporating Temp. (°C)							
		-15	-10	-6.7	0	4.4	7.2	10	12
Condensing Temp. (°C)	35.0	15.3	15.4	15.5	15.7	15.9	15.9	16.0	
	40.5	16.7	16.8	16.9	17.2	17.3	17.4	17.5	17.6
	45.0	18.0	18.1	18.2	18.5	18.6	18.7	18.9	18.9
	50.0	19.5	19.7	19.8	20.1	20.3	20.4	20.5	20.6
	54.4		21.2	21.3	21.6	21.8	21.9	22.0	22.1
	60.0			23.4	23.7	23.9	24.0	24.1	24.2
	65.0				25.7	25.9	26.0	26.2	26.3

Coefficients of Polynomial Formula

	Capacity(W)	Input (W)	Current (A)
C1	7.295563E+04	6.745489E+03	1.050436E+01
C2	2.868182E+03	2.597883E+01	2.606599E-02
C3	-9.052670E+02	5.494478E+00	5.031420E-02
C4	4.717038E+01	8.556638E-02	5.739140E-05
C5	-4.001986E+01	5.881141E-02	-8.246585E-05
C6	3.769949E+00	2.469291E+00	2.820648E-03
C7	3.113387E-01	-1.209713E-03	-1.321612E-06
C8	-4.531507E-01	-9.085775E-04	-5.322528E-07
C9	1.860126E-01	1.265191E-03	6.790876E-06
C10	-7.669543E-08	3.916228E-08	5.267031E-11

Note: The polynomial coefficients subject to change without notice.

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

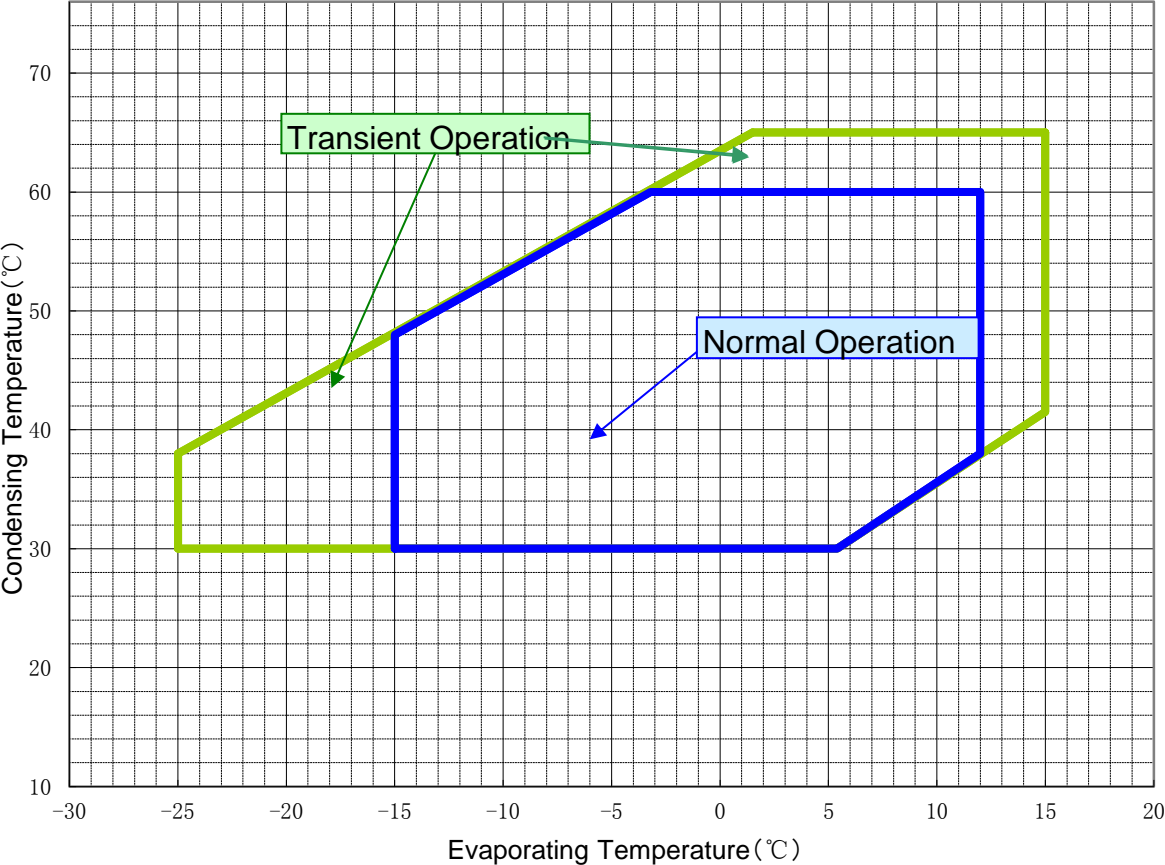
X—CAPACITY(W) OR POWER(W) OR CURRENT(A)

S—EVAPORATING TEMP, °C

D—CONDENSING TEMP, °C

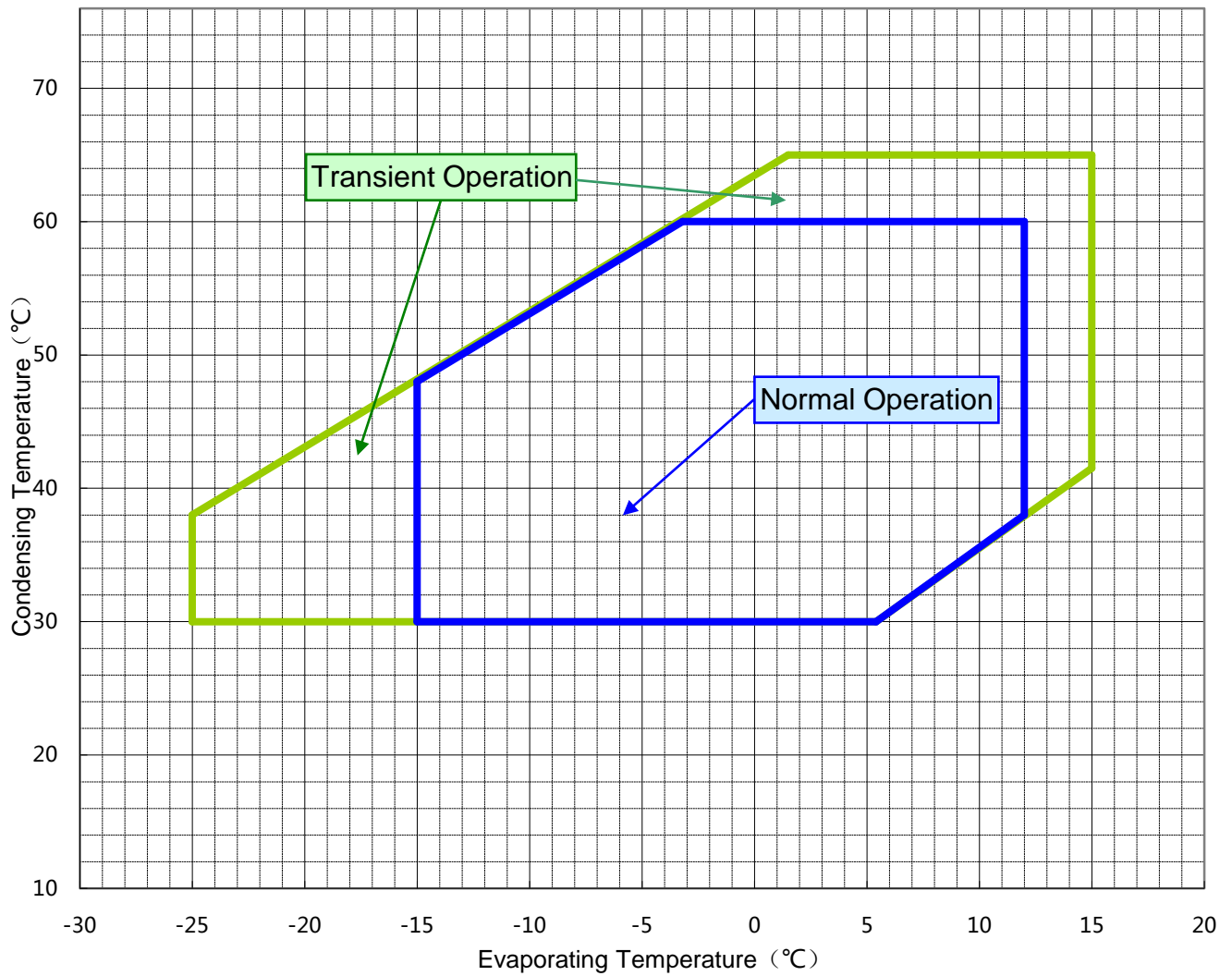
Suction Gas Superheat: 11.1K

Refrigerant:R410A



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°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 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 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.

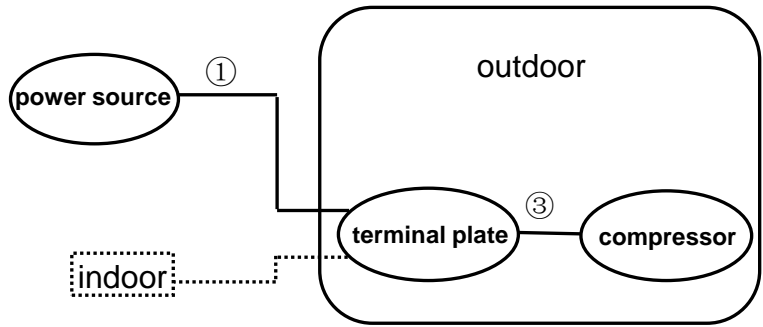
Section 7. Selection of Electrical Wire

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

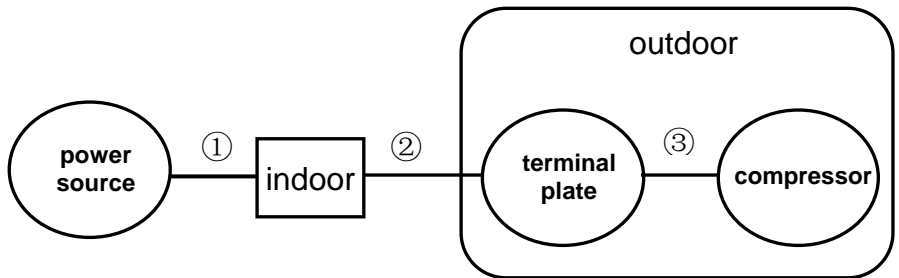
We recommend selecting the wire size from the table below.

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

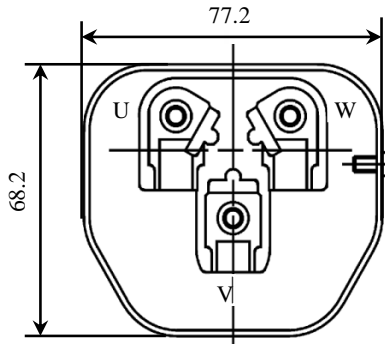
Starting current (A)	Size of electrical wire (mm ²)						
	Remark ① or Remark ①+② (heat-resistance Temperature: 60°C(140°F) min.)						Remark③ (heat-resistance Temperature: 120°C(248°F) min.)
	5m max.	10m max.	15m max.	20m max.	30m max.	50m max.	1m max.
20max.	2.0	2.0	2.0	3.5	5.5	8.0	2.0
30max.	↑	↑	3.5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

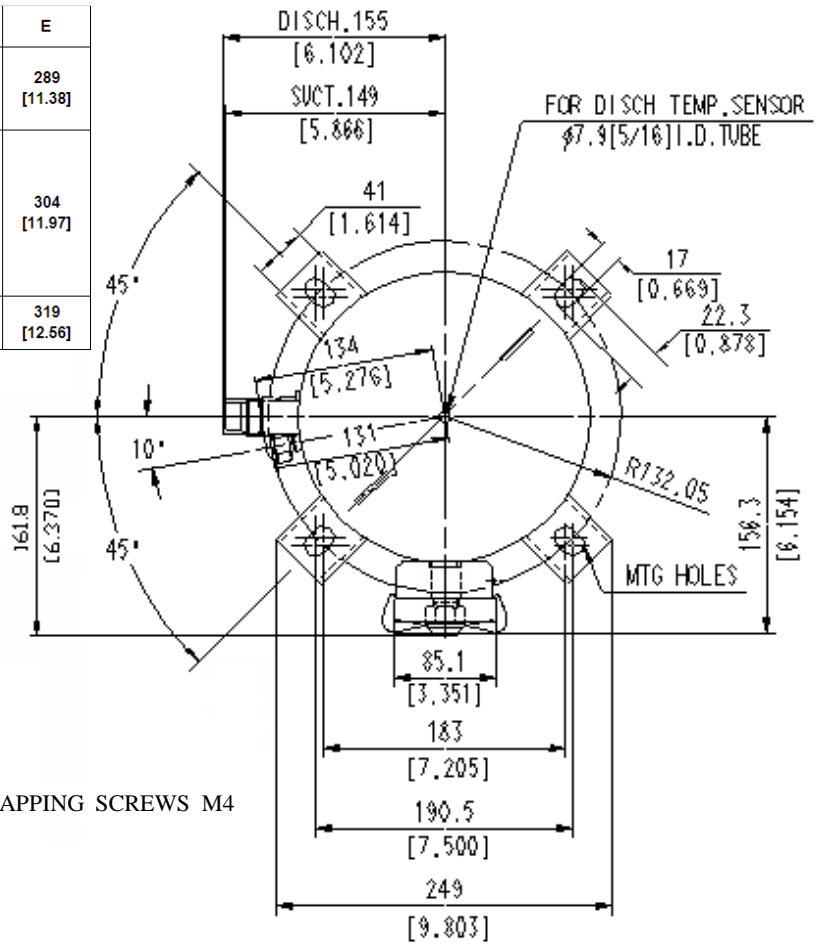
Please be sure that the system utilizes the ground connection when installed in the field.

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



TERMINAL

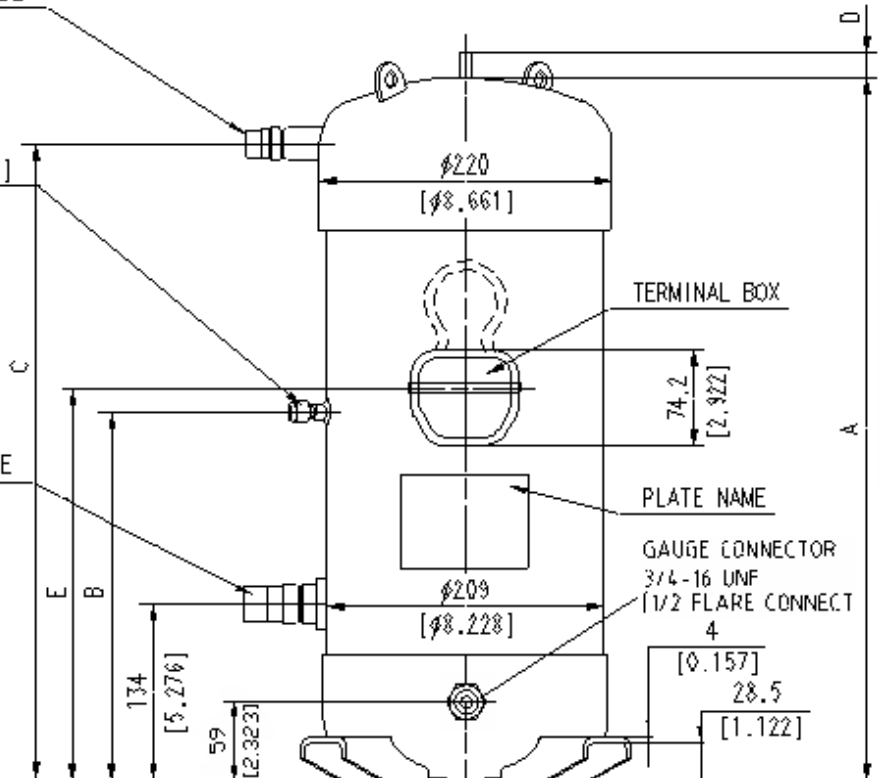
TAPPING SCREWS M4



DISCHARGE ACCEPT
ø19.05 [3/4] O.D. TUBE

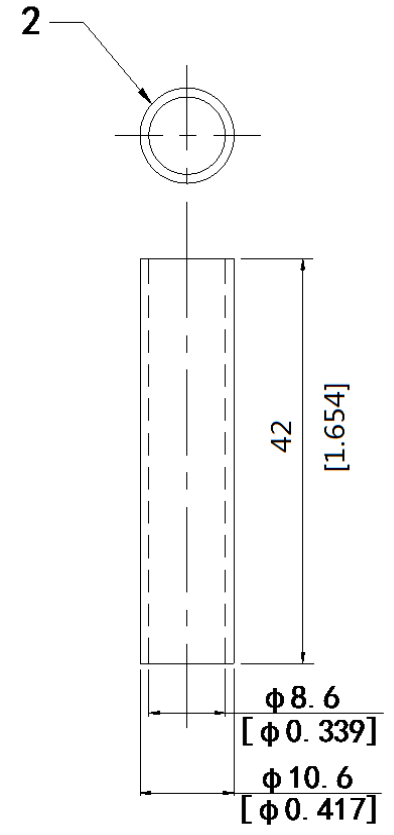
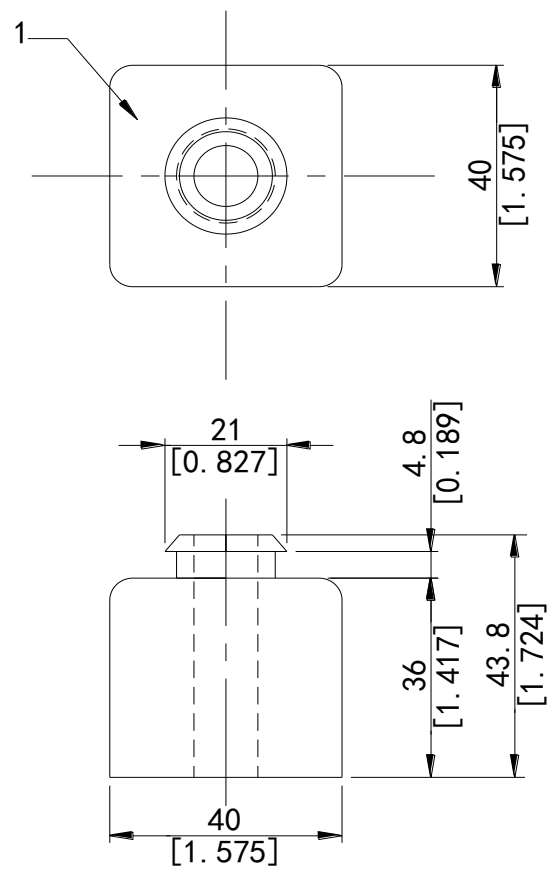
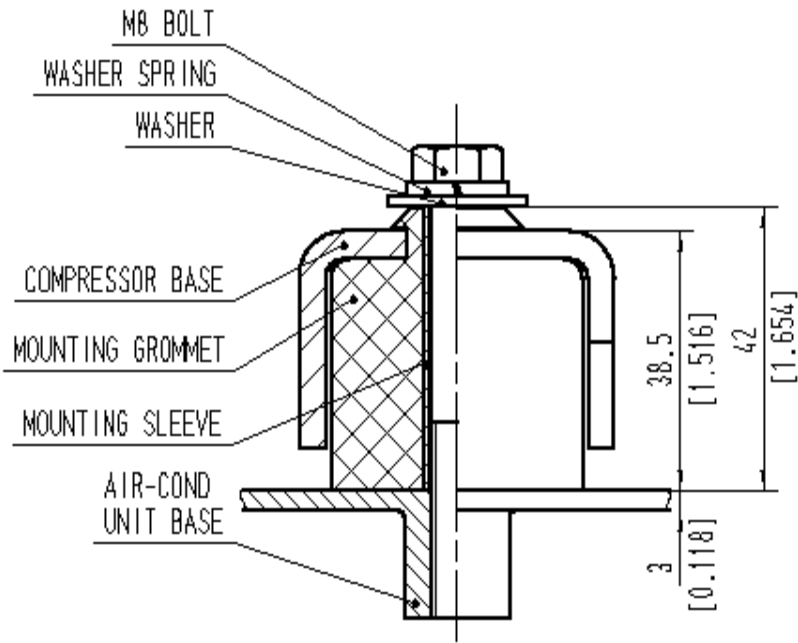
CONNECTOR
7/16-20UNF-2A
[1/4 FLARE CONNECT]

SUCTION ACCEPT
ø25.4 [1] O.D. TUBE

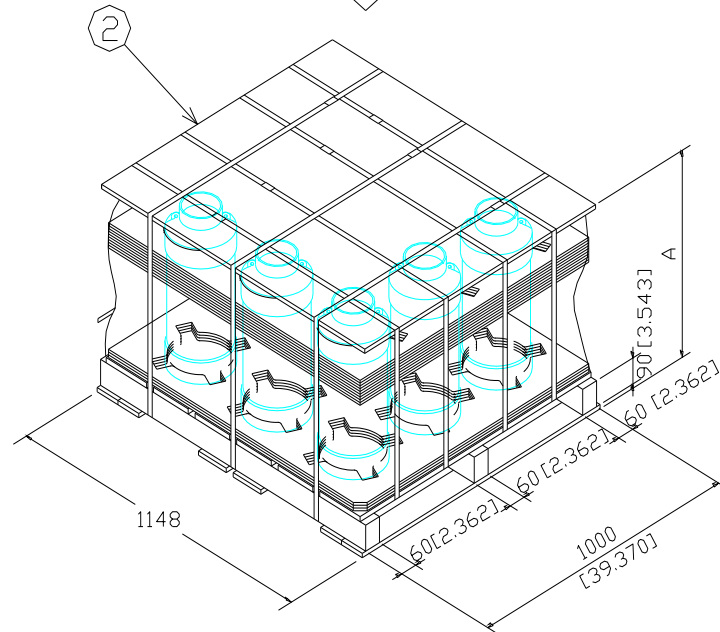
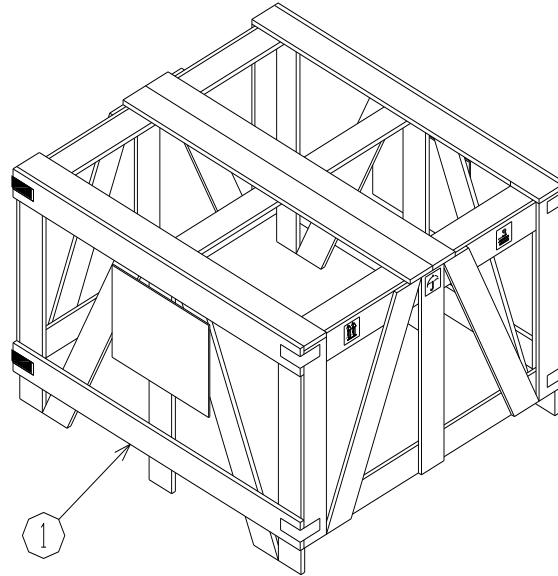
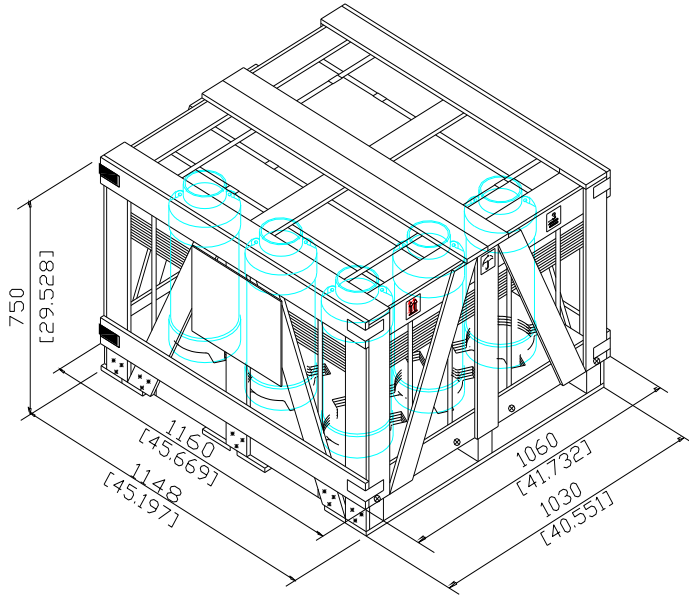


Part Code
D-0104-DSC
Name
Compressor Outline Drawing

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

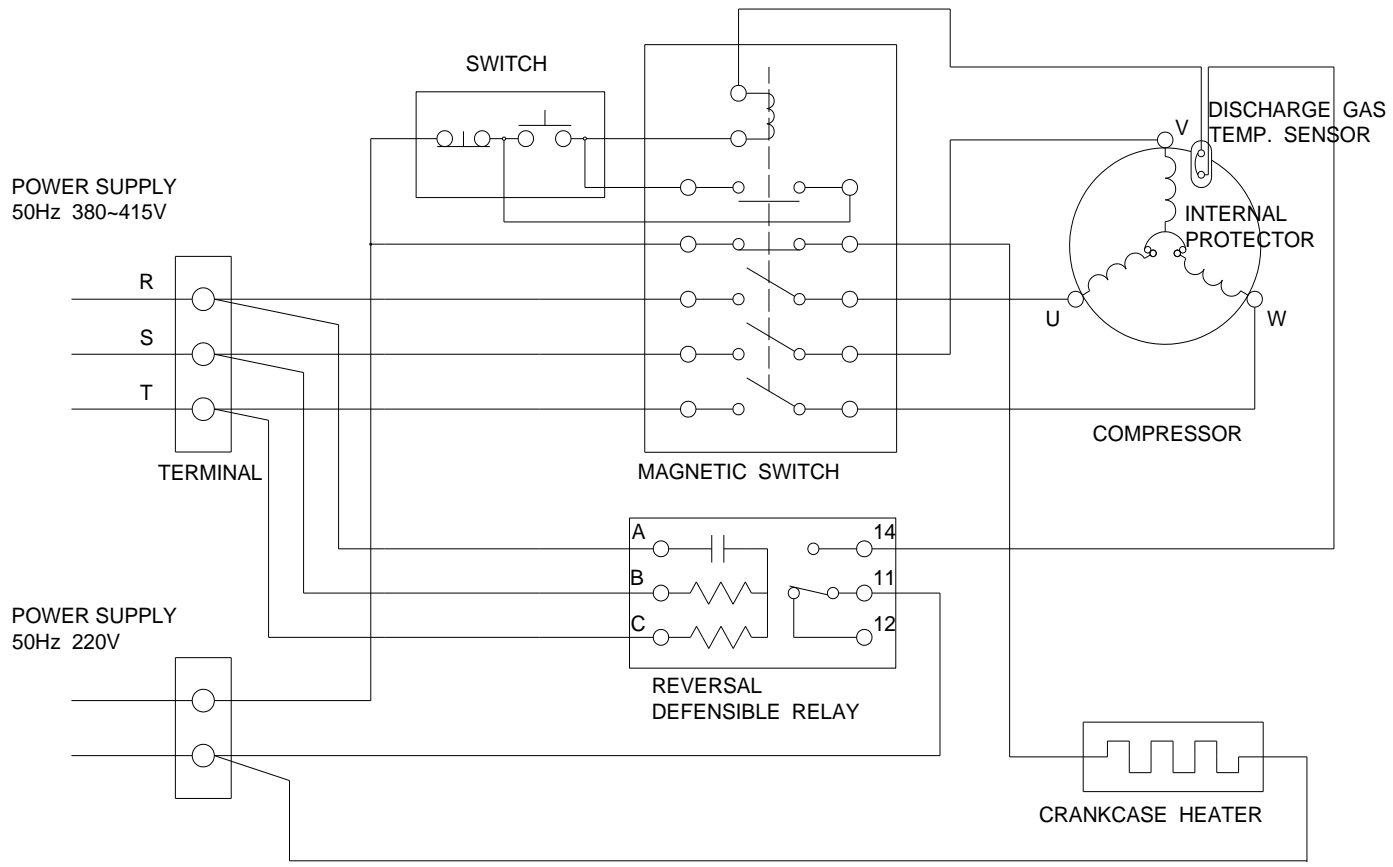


Part Code
 M-5102-DSC
 Name
 Mounting Parts Listing



Compressor Model	A
C-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