

Panasonic

No. :C-SWS225H00C-00-GGS-0

APPROVAL SHEET SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

MODEL	C-SWS225H00C
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NO.	DATE	PAGE	REVISION DETAILS

REVISION RECORD

Panasonic Appliances Compressor (Dalian) Co., Ltd.

Section 1. General Specifications

Content		Unit	Specification
Compressor Model (Code)		—	C-SWS225H00C
Type		—	Hermetic Scroll Compressor
Application		—	High Back Pressure
Evap. Temp. Range		°C	-23~15
Compressor Cooling Type		—	Natural Cooling
Power Source	Phase	—	3
	Rated Voltage	V	380(Inverter Input)
Voltage Range		V	V-F CURVE
Frequency Range		Hz	30~100
Weight (Including Oil)		kg	45
Refrigerant		—	R407C
Oil Type		—	FV68S
Oil Charge		ml	1600
Displacement		cm ³ /rev	74.4
Motor	Motor Type	—	3PH Induction Inverter Motor
	Number of Poles	—	2
	Electrical Insulation	Class	E
	Nominal Revolution	min ⁻¹	5010(90Hz)
	Max. Current	A	22.5
	Winding Resistance [at 25°C (77°F)]	Ω	U-V
U-W			1.716
V-W			1.667
Connection Tube	Suction Line (O.D.)	mm (in)	22.2 (0.875)
	Discharge Line (O.D.)	mm (in)	12.7 (0.500)
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.

1.2 Voltage-Frequency:

V-F Characteristics

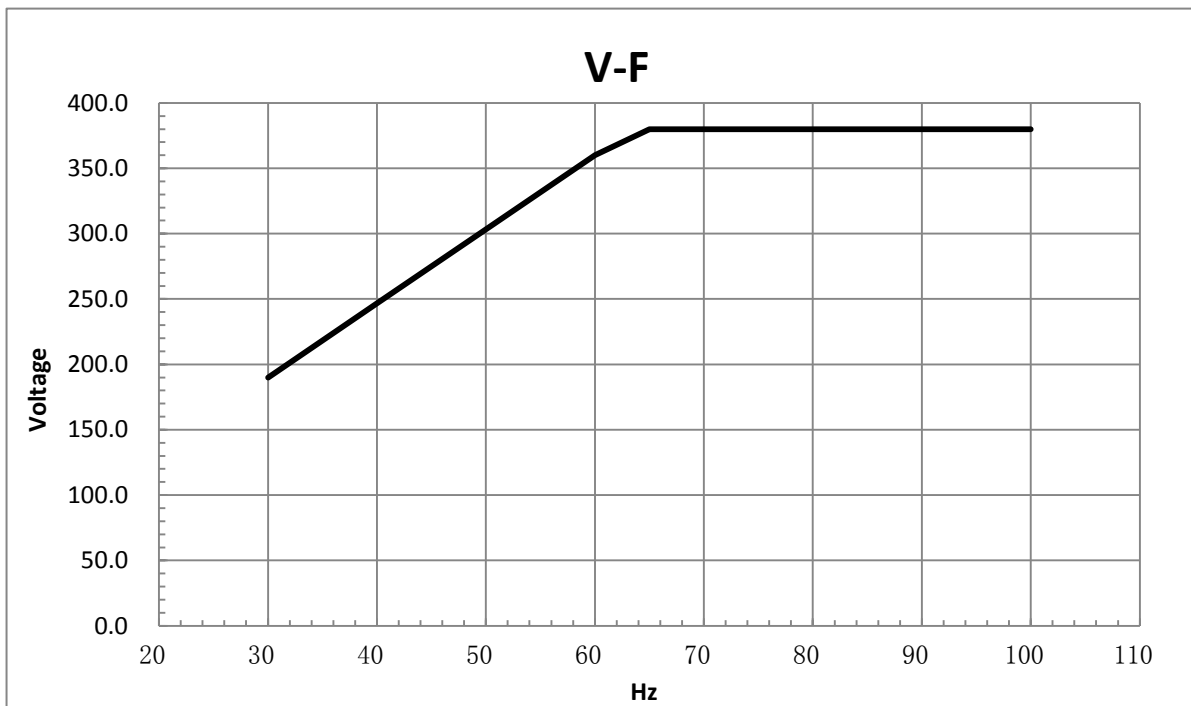
$$V=5.666 \cdot F+20(V) \quad 30 \leq F \leq 60(\text{Hz})$$

$$V=4 \cdot F+120(V) \quad 60 < F < 65(\text{Hz})$$

$$V=380(V) \quad 65 \leq F \leq 100(\text{Hz})$$

Frequency	30	31	32	33	34	35	36	37
Voltage	190.0	195.6	201.3	207.0	212.6	218.3	224.0	229.6
Frequency	38	39	40	41	42	43	44	45
Voltage	235.3	241.0	246.6	252.3	258.0	263.6	269.3	275.0
Frequency	46	47	48	49	50	51	52	53
Voltage	280.6	286.3	292.0	297.6	303.3	309.0	314.6	320.3
Frequency	54	55	56	57	58	59	60	61
Voltage	326.0	331.6	337.3	343.0	348.6	354.3	360.0	364.0
Frequency	62	63	64	65	66	67	68	69
Voltage	368.0	372.0	376.0	380.0	380.0	380.0	380.0	380.0
Frequency	70	71	72	73	74	75	76	77
Voltage	380.0	380.0	380.0	380.0	380.0	380.0	380.0	380.0
Frequency	78	79	80	81	82	83	84	85
Voltage	380.0	380.0	380.0	380.0	380.0	380.0	380.0	380.0
Frequency	86	87	88	89	90	91	92	93
Voltage	380.0	380.0	380.0	380.0	380.0	380.0	380.0	380.0
Frequency	94	95	96	97	98	99	100	
Voltage	380.0	380.0	380.0	380.0	380.0	380.0	380.0	

V-F Curves



Section 2. Performance Warranty

2.1 Performance

Power Source (3PH)	Hz	60	Remark
	V	360	
Capacity	W	16,500	±7%
	(BTU/hr)	56,298	reference
Input Power	W	5,400	±7%
Current	A	9.21	±7%

Standard Rating Conditions (R407C MID POINT)

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)	43.8(111)
Ambient Temp.	°C (°F)	35(95)

2.2 Sound Level

Power Source (3PH)	Hz	60
	V	360
Sound Level	dB(A)	63Max.

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 Requirements For Inverter Controller

Starting Frequency	Hz	0.5
Accelerating Rate	Hz/sec	2~3
Minimum Starting Voltage	V	10
Starting Pressure	MPa	1.26
Maximum Current	A	22.5
On/Off Period	Times/h	6 Max.

2.4 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 Min. (without refrigerant)
Dielectric Strength (The leakage current is less than 10mA)		V	1800 (1 minute)
Residual Moisture		mg	300 Max.

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-DSW	0	Installed on Compressor
Screw	4	A-0201-DSW	0	Installed on Compressor
Seal	1	A-0301-DSW	0	Installed on Compressor
Cabel Gland	1	A-0401-DSW	0	As required
Screw Special	1	B-0101-DSB	0	Installed on Compressor
Screw	4	4-A-0645-0RC	0	Installed on Compressor
Connector Block	1	3-E-1999-000	0	Installed on Compressor

3.2 The Drawing for Reference

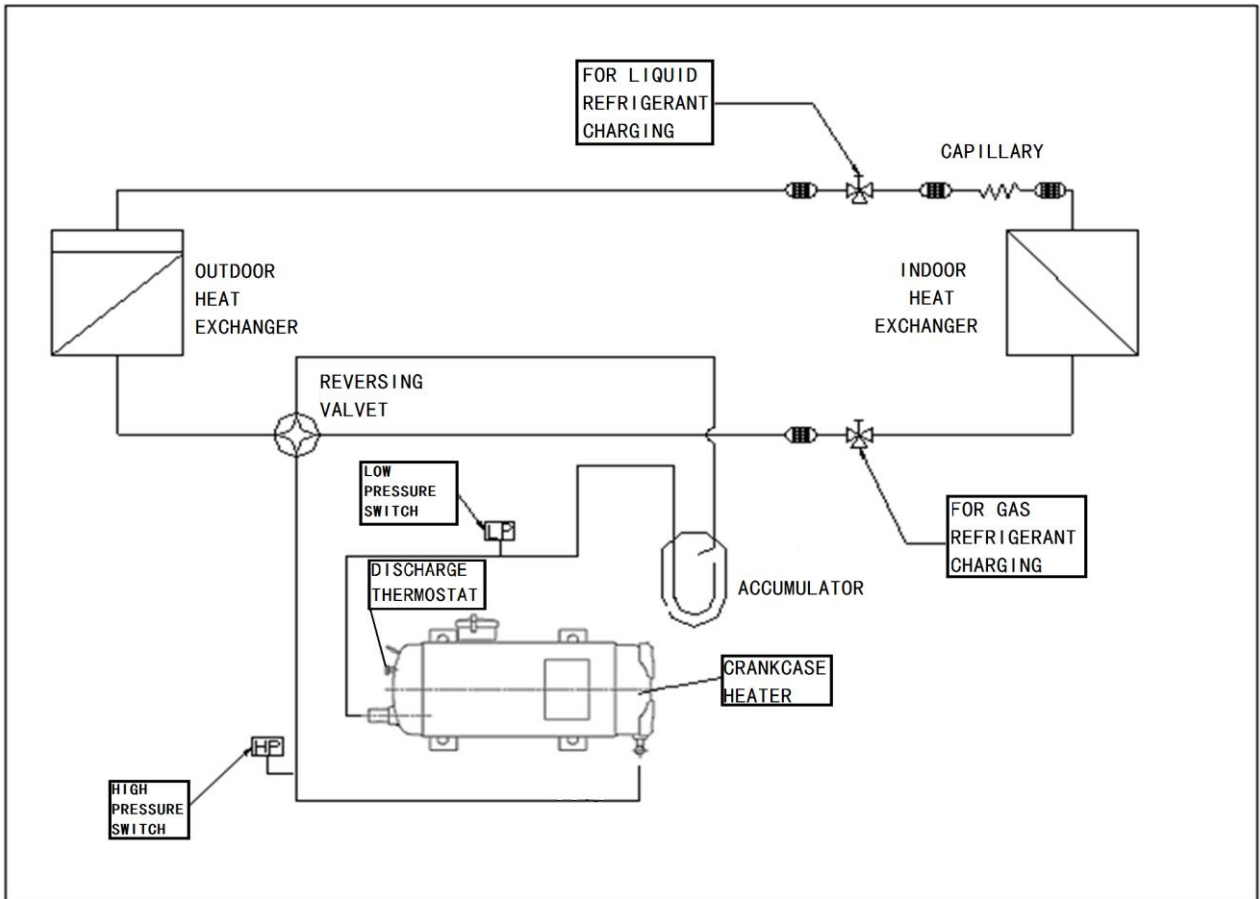
Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0103-DSW	0
Packing Dimensions	D-0203-DSD	0
Wiring Diagram	E-0910-DSW	0

Section 4. Compressor Protection

4.1 Protection Required but not Included with compressor

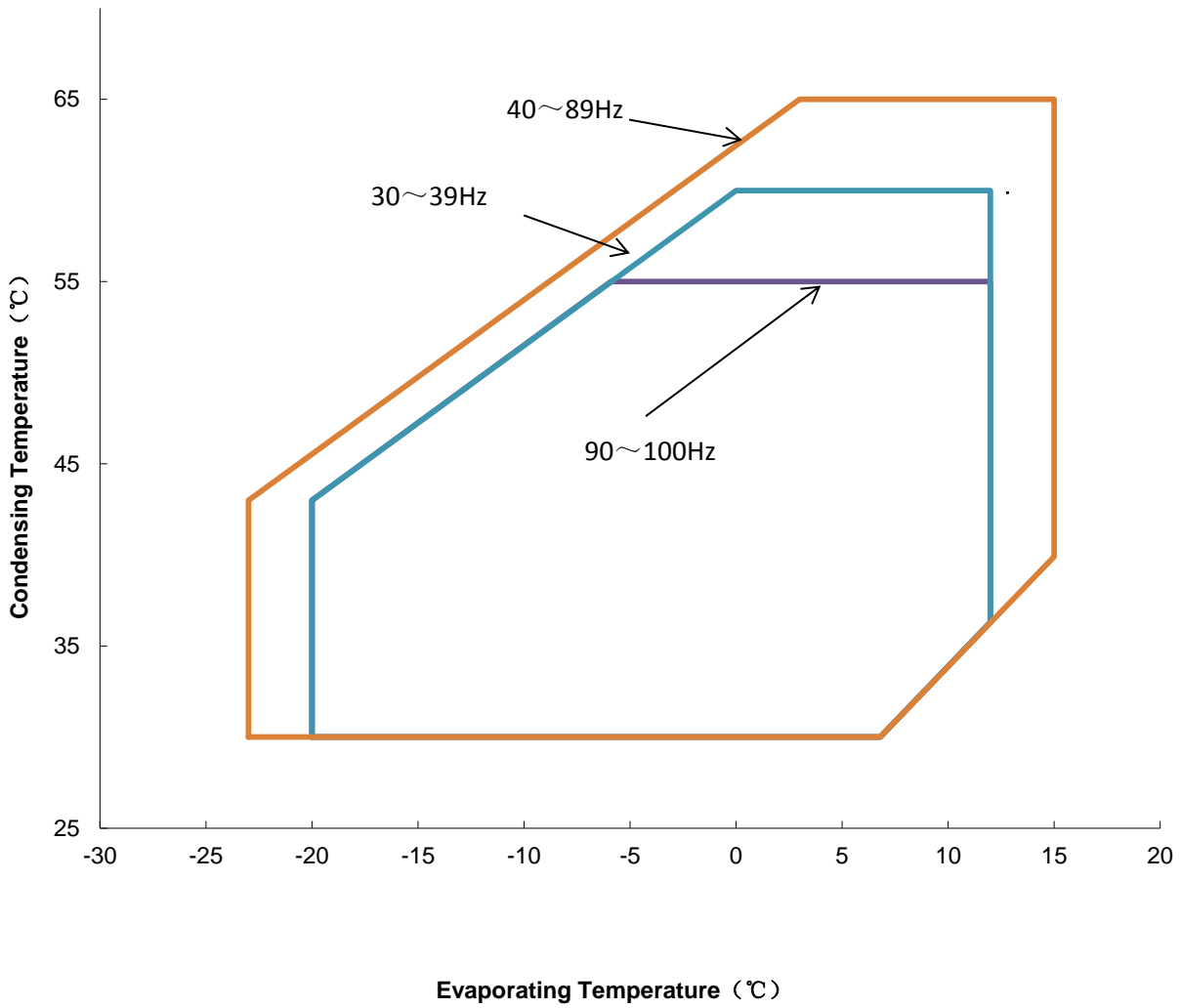
Protection Device	Items	Specifications
Reversal Defensible Relay	Features	To protect the compressor from reverse rotation
	Rated Voltage	AC380V
Crankcase Heater	Rated Power	35 Watts
Discharge Thermostat	Mounting Position	Inside of the copper pipe on the end cap of compressor
	Trip Temperature	115±5°C
	Reset Temperature	95±11°C
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)

4.2 Position of the Protection and Refrigerant Charging



5. Envelope

Suction Gas Superheat: 9K
Refrigerant: R407C



Section 6. Application Standard & Limit

The following requirements apply to Horizontal 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	Limit	Remark
1	Refrigerant	R407C(Refrigerant must meet a criterion)	
2	Average Evap. Temp.	-23~15℃ 0.12~0.73MPa(G)	Average temp. of evaporator Inlet and outlet.
3	Average Cond.Temp.	30~65℃ 1.17~2.88MPa(G)	Average temp. of condenser Inlet and outlet.
4	Compression Ratio	2 ~ 10	
5	Winding Temp.	120℃ Max.	
6	Shell Bottom Temp.	110℃ Max.	
7	Discharge Gas Temp.	115℃ Max.	Temp. inside of the copper pipe on the end cap of compressor
8	Suction Gas Temp.	Superheat: 5K Min.	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.
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	Minimum Oil Level	30mm above the end of oil pickup tube	
14	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
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	10Deg.Max.	

(G): Gauge Pressure

Notes

1. Compressor should be kept in horizontal position for at least 3 hours before the installation.
2. The suction tube rubber plug should be removed first before pulling discharge plug, and attention to the oil splash.
3. Discharge thermostat is recommended to be mounted in the copper pipe in the end cap of compressor, the setting temperature is 115°C.
4. Installation should be completed within 15 minutes after removing the rubber plugs.
5. Do not use the compressor to compress air.
6. Do not energize the compressor under vacuum condition.
7. 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.
8. Do not tilt over the compressor while carrying it.
9. Do not remove the paint.
10. Voltage fluctuation between compressor terminals, during operation, shall be within 2% of the rated voltage.
11. Do not operate compressor in reverse rotational direction.
12. Suction strainers and gas-liquid separator are recommended for all applications.
13. Copper Piping Stress

Start/Shutdown	34.32 N/mm ² Max.
Run	12.26 N/mm ² Max.
14. Frequency control:
 - 1) Operating frequency must be permitted.
 - 2) When the compressor started, it should operate under 60Hz at least 1 minute, for oil circulation.

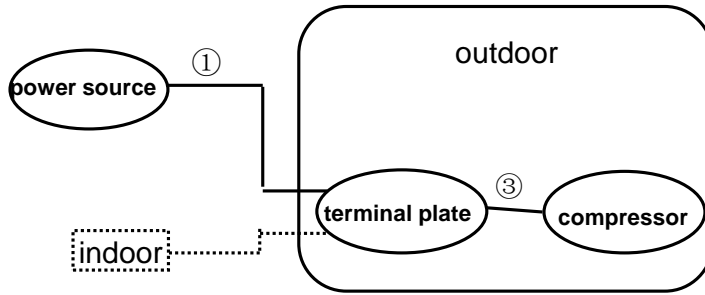
Section 7. Selection of Electrical Wire

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

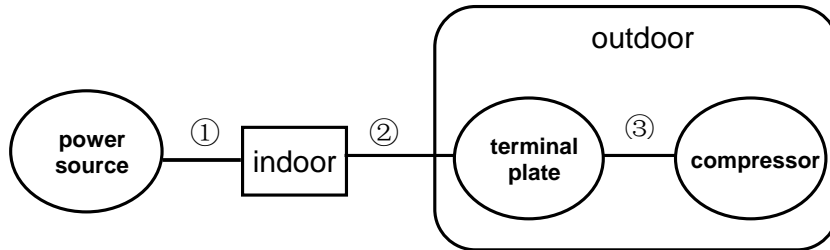
We recommend selecting the wire size from the table below.

7.1 Type of Unit

7.1.1 Window & Commercial Type Unit



7.1.2 Split Type (Separate Type)



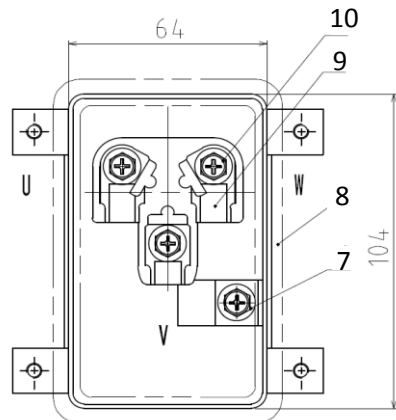
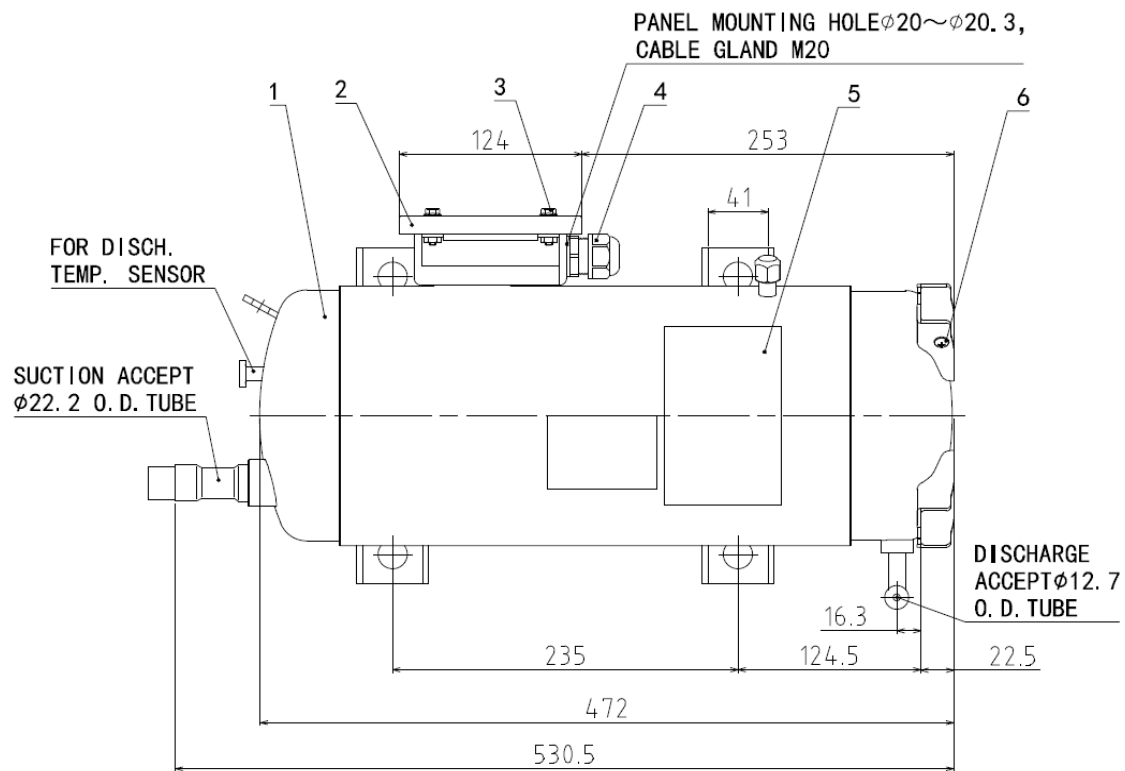
7.2 Size Table of Electrical Wire

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.

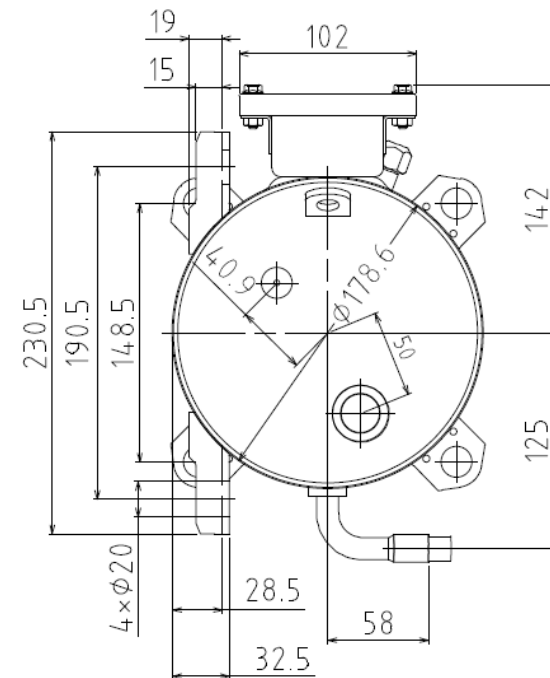
Please be sure that the system utilizes the ground connection when installed in the field.



* No.3,7,10
Bolt Tightening Torque 2.5~3.0 N·M.

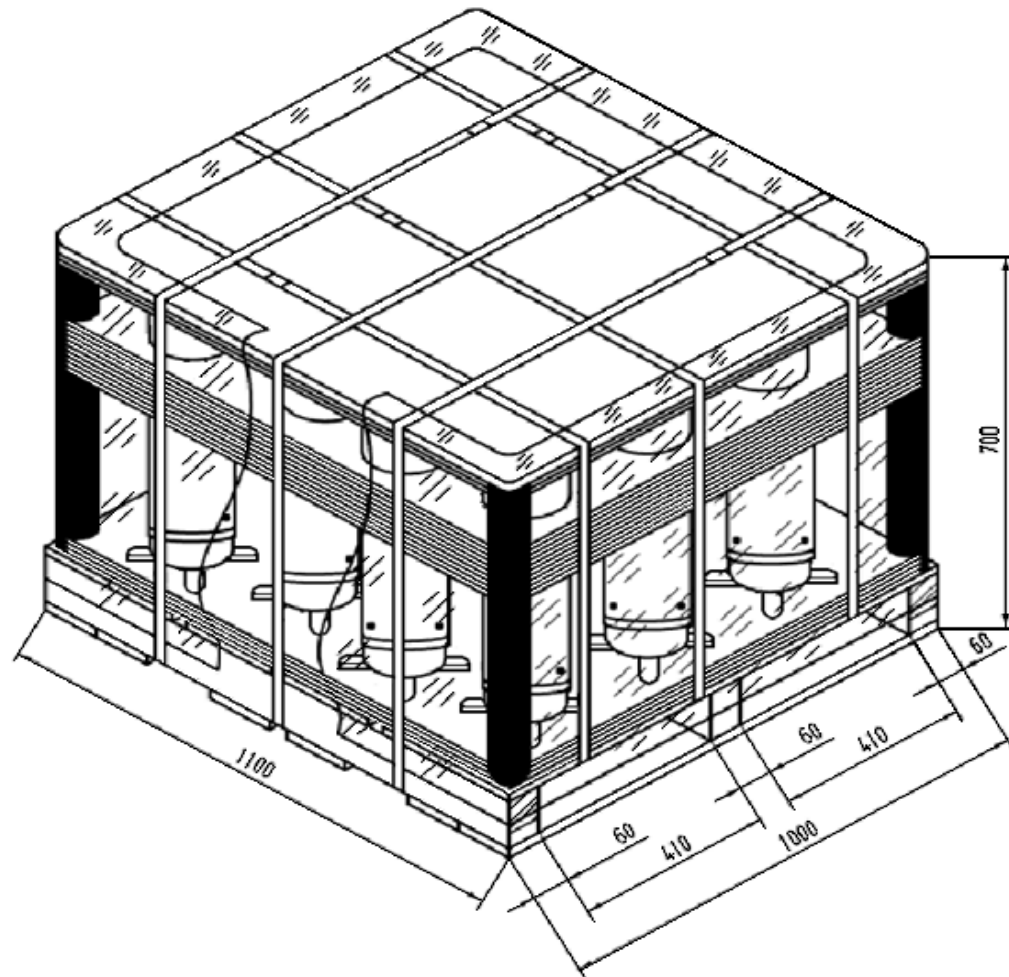
* No.6, No.7
Ground Connection(One of two options)

No.	Part Code	Qty	Name
1	C-SWS225H00C	1	Compressor
2	A-0101-DSW	1	Terminal Box Cover
3	A-0201-DSW	4	Screw
4	A-0401-DSW	1	Cable Gland (As required)
5		1	Nameplate
6	B-0101-DSB	1	Screw Special
7	4-A-0645-0RC	1	Screw
8	A-0301-DSW	1	Seal
9	3-E-1999-0RC	4	Connector Block
10	4-A-0645-0RC	3	Screw

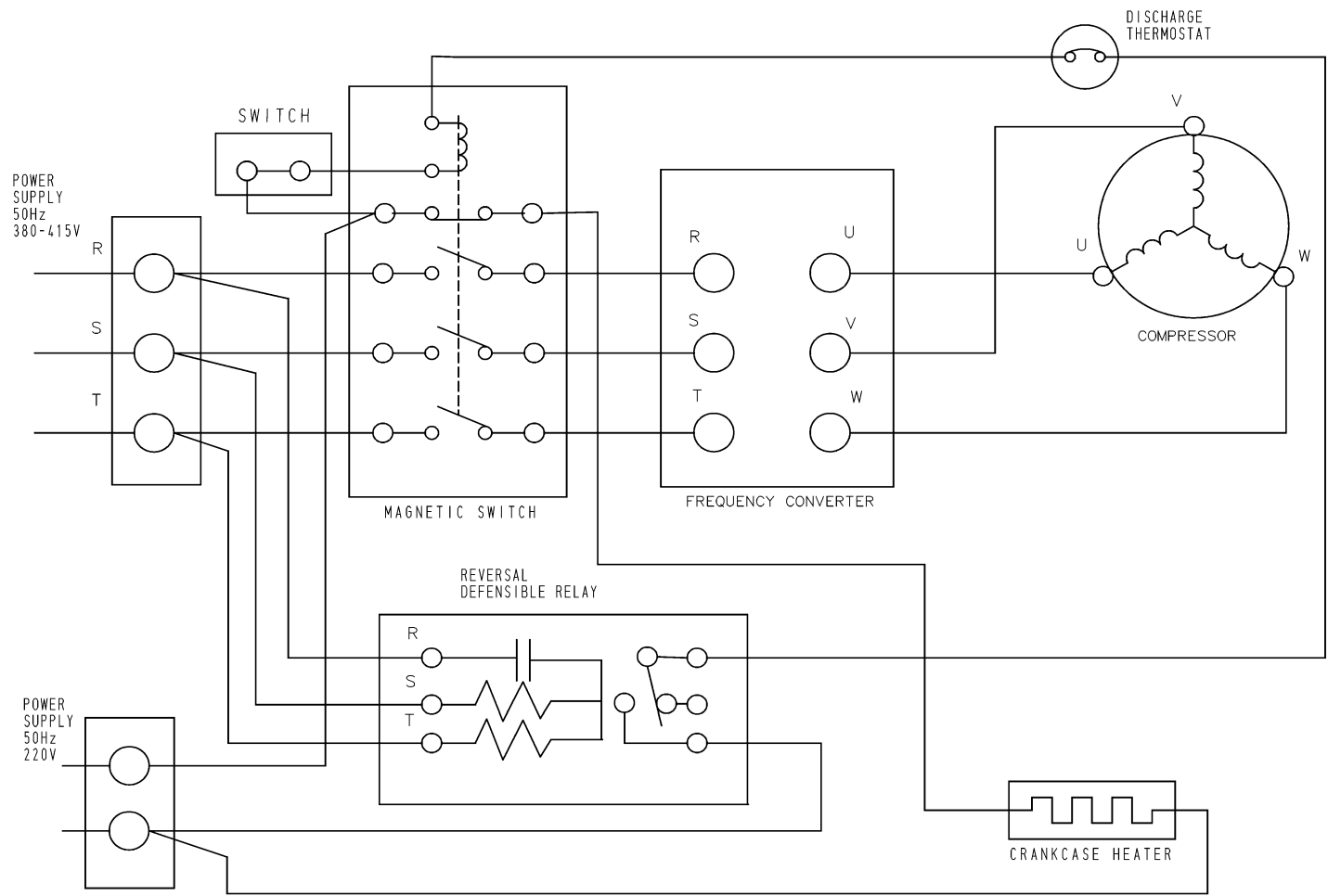


Part Code
D-0103-DSW

Name
Compressor Outline Drawing



Part Code
D-0203-DSD
Name
Packing Dimensions



Part Code
E-0910-DSW
Name
Packing Dimensions