

Panasonic

No.:

APPROVAL SHEET
SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR
 (Reference)

MODEL	C-SDP205H02B
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NO.	DATE	PAGE	REVISION DETAILS	PAPCDL SIGNED	CLIENT SIGNED

REVISION RECORD

USER:

MANUFACTURER:

Panasonic Appliances Compressor(Dalian)Co., Ltd.

APPROVED	PURCHASING MANAGER	TECHNICAL MANAGER	LEADER	CHECKED	SUBMITTED

1. General Specifications

1.1 Specifications

Content		Unit	Specifications
Compressor Model		—	C-SDP205H02B
Type		—	Hermetic Scroll Compressor / BLDC
Application		—	High Back Pressure
Evap. Temp. Range		°C	-15~12
Compressor Cooling Type		—	Natural Cooling
Power Source		—	DC Inverter Circuit
Voltage Control method		—	Vector Control
Revolution Range		rps	30~90
Power Source for Inverter		—	380V-415V, 3Φ, 50Hz/60Hz
Weight (Including Oil)		kg (lb)	36 (79.4)
Refrigerant		—	R410A
Oil Type		—	FV68S or Equivalent
Oil Charge		ml (fl oz)	1700(57.5)
Displacement		cm ³ (in ³) /rev	42.3(2.58)
Motor	Motor Type	—	3 Phase DC Brushless Motor
	Number of Poles	—	4
	Electrical Insulation	—	E
	Nominal Revolution	min ⁻¹	Synchronous Speed
	Locked Rotor Ampere	A	—
	Winding Resistance [at 25°C (77°F)]	Ω	U-V
U-W			0.734
V-W			0.734
Connection Tube (※3)	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

(): All units with parentheses are reference values.

Expiration of Specification

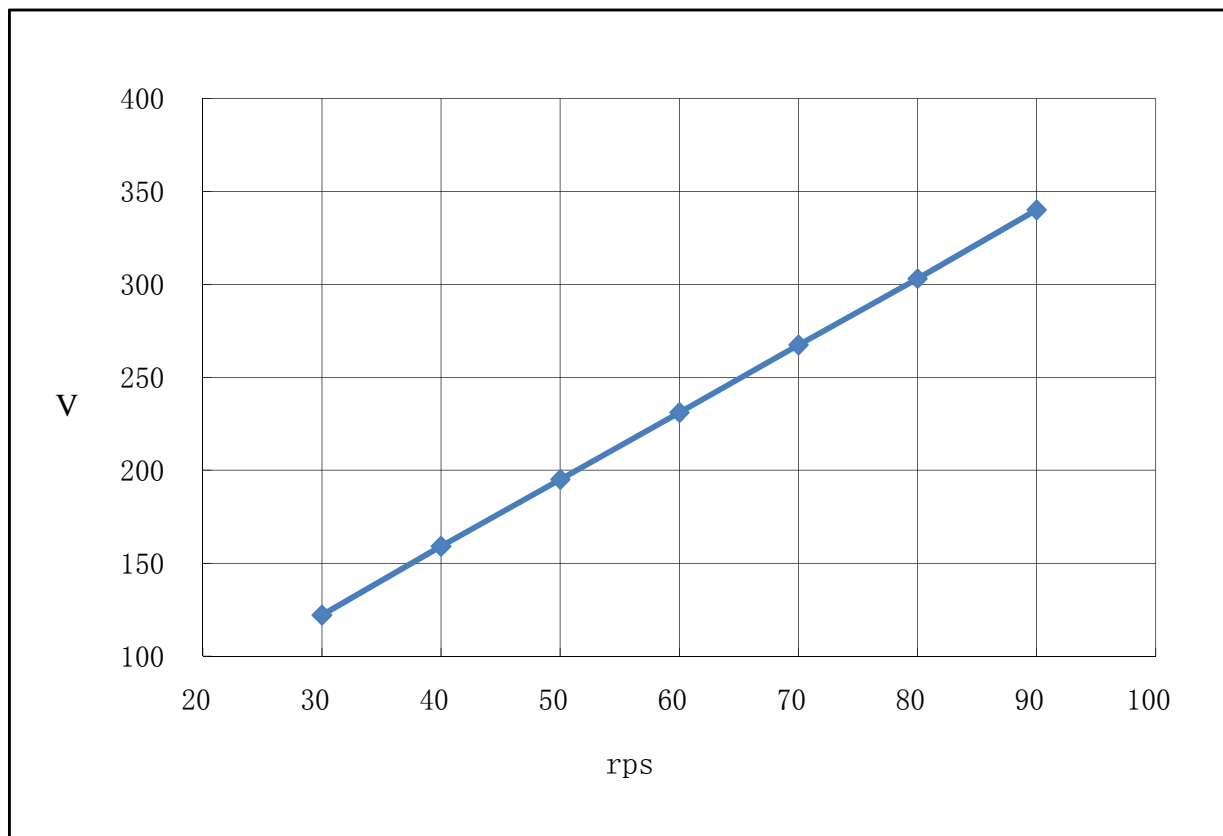
Expiration of this specification shall be effected until issuing a notice with indication of the expiration date from the issued date. In case of improvement or elimination of this specification, it shall be handled by the revision record based on agreement between both sides.

1.2 Voltage-Speed

ARI Conditions		
Condensing Temp.	°C	54.4
Evaporating Temp.	°C	7.2
Suction Gas Superheat	K	11.1
Sub Cooling	K	8.3
Compressor Cooling	—	Natural Cooling
Refrigerant	—	R410A

Vector control voltage vs Rotation speed

Voltage (V)	122	159	195	231	267	303	340
Rotation (rps)	30	40	50	60	70	80	90



Note: This curve is based on the test with a specified inverter. The curve will be different according to the operation with different inverter.

2. Performance Warranty

2.1 Performance

Rotation Speed	rps	60	Remarks
Capacity	W	13,600	±5%
	(BTU/hr)	46,403	reference
Input Power (except inverter)	W	4,180	±5%
Current (except inverter)	A	10.70	±5%

Standard Rating Conditions

Refrigerant	—	R410A
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 (115)
Ambient Temp.	°C (°F)	35 (95)

2.2 Requirement for Inverter

Starting Speed	rps	5 Min.
Accelerating Rate	rps/sec	1~3
Starting Pressure	MPa	Suction Pressure below 2.1MPa (Pressure Difference below 0.2MPa)
Maximum Current	A	33.0
On/Off Period	Times/h	6 Max.

2.3 Sound Level and Vibration

Vibration	μm	50.0 Max.
Sound Level	dB(A)	61.0 Max.
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.		

2.4 Others

Content		Unit	Specification
Design Pressure	L.P.S.	MPa(G)/psig	-
	H.P.S.	MPa(G)/psig	4.15(602)
Insulation Resistance		MΩ	100 Min. (without refrigerant)
Dielectric Strength		V	2300 (1 second)
Residual Moisture		mg	200 Max.

Note:

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

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			
Mounting Grommet	4	M-0101-DSB	0	Included with Compressor
Mounting Sleeve	4	M-0201-DSD	0	Included with Compressor
Screw Special	1	B-0101-DSB	0	Installed on Compressor

3.2 The Drawing for Reference

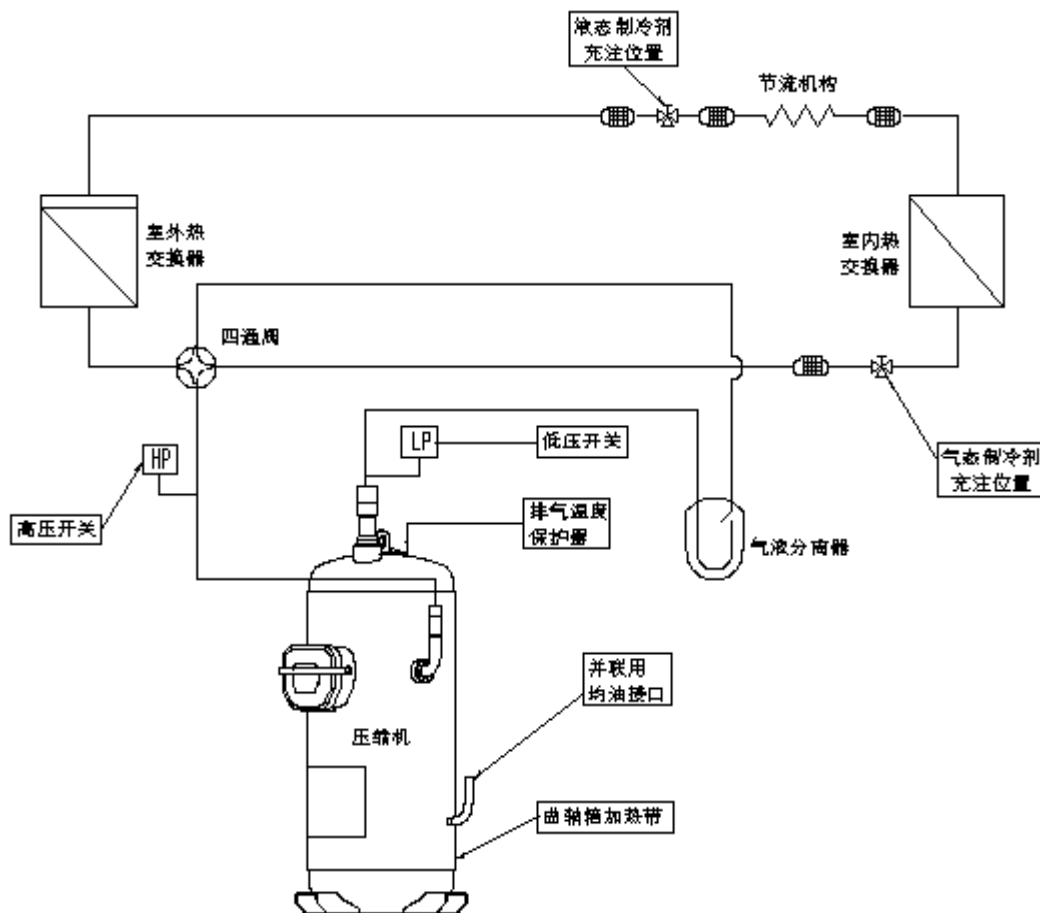
Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0101-DSD	0
Mounting Parts Listing	M-5101-DSD	0
Packing Dimensions	D-0201-DSD	0
Wiring Diagram	4-E-1295-0SD	0

4. Compressor Protection

4.1 Protection Required(not Included with compressor)

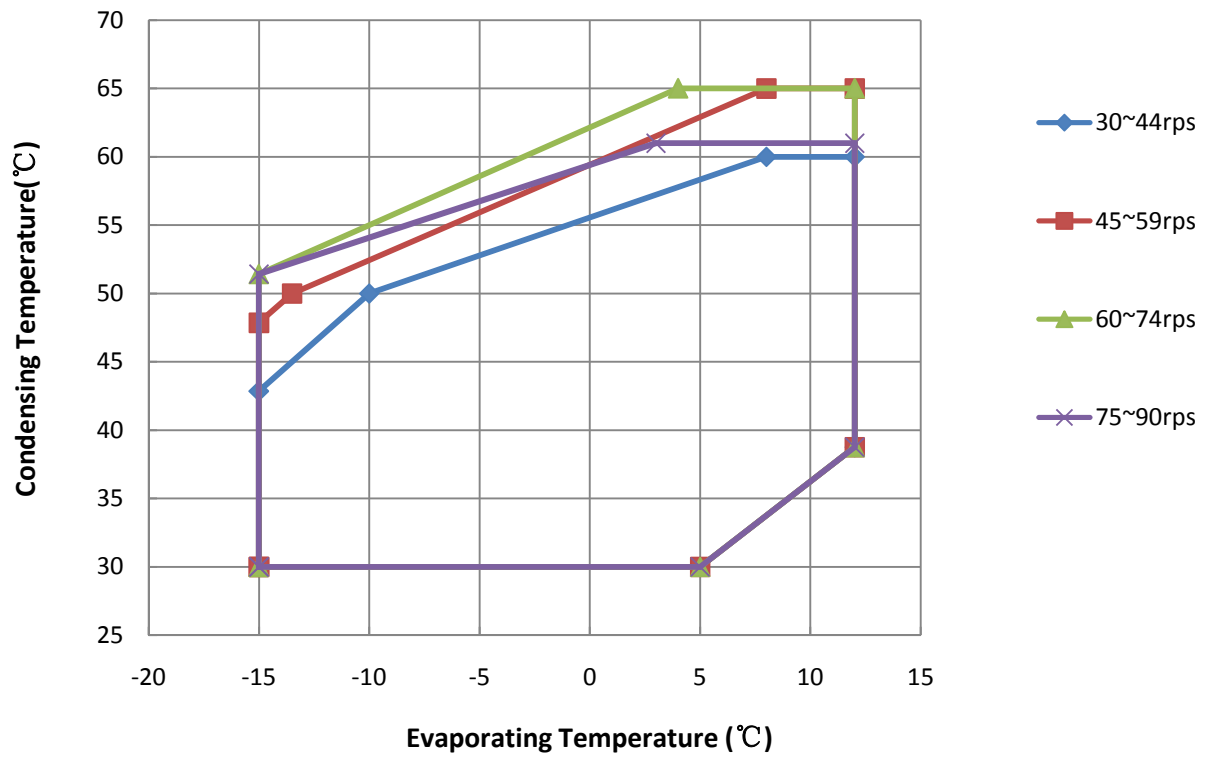
Protection Device	Items	Specifications
Crankcase Heater	Rated Power	35 Watts
Discharge Thermostat	Mounting Position	10cm within discharge port
	Trip Temperature	115±5°C
	Reset Temperature	95±10°C
High Pressure Switch	Setting	Cut-out setting no higher than 4.15Mpa(G)
Low Pressure Switch	Setting	Cut-out setting no lower than 0.15Mpa(G)

4.2 Position of the Protection and Refrigerant Charging



5. Operation Envelope

Suction Gas Superheating : 11.1K
Refrigerant : R410A.



6. Performance Curves (30rps)

Power Source:	3φ 60Hz 122V
Rotation Speed:	30 rps
Refrigerant:	R410A
Cooling Type	Natural Cooling
Suction Gas Superheat	11.1K
Sub Cooling	8.3K

CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	3,140	4,220	4,890	6,170	6,950	7,410	7,860	8,160
40.5	2,910	3,890	4,520	5,780	6,570	7,060	7,550	7,890
45.0	2,690	3,580	4,180	5,400	6,210	6,730	7,260	7,630
50.0	2,490	3,300	3,860	5,050	5,870	6,420	6,970	7,380
54.4		3,070	3,590	4,760	5,590	6,150	6,730	7,160
60.0			3,280	4,410	5,250	5,830	6,440	6,890

POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	1,400	1,300	1,260	1,200	1,190	1,190	1,200	1,210
40.5	1,580	1,500	1,460	1,400	1,380	1,370	1,380	1,380
45.0	1,810	1,750	1,710	1,660	1,630	1,610	1,600	1,590
50.0	2,070	2,050	2,030	1,980	1,930	1,900	1,870	1,840
54.4		2,350	2,350	2,310	2,250	2,200	2,140	2,090
60.0			2,830	2,800	2,720	2,640	2,540	2,460

CURRENT(A)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	6.5	6.0	5.8	5.6	5.5	5.5	5.6	5.6
40.5	7.4	7.0	6.8	6.5	6.4	6.4	6.4	6.5
45.0	8.6	8.3	8.1	7.8	7.6	7.5	7.5	7.5
50.0	10.1	9.8	9.7	9.4	9.1	8.9	8.8	8.6
54.4		11.5	11.4	11.0	10.7	10.4	10.1	9.9
60.0			13.9	13.5	13.0	12.5	12.0	11.6

NOTE:

- * The performance values subject to change without notice.
- * The performance values are varied by Driver characteristics.

6. Performance Curves (60rps)

Power Source:	3φ 120Hz 231V
Rotation Speed:	60 rps
Refrigerant:	R410A
Cooling Type	Natural Cooling
Suction Gas Superheat	11.1K
Sub Cooling	8.3K

CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	7,990	9,520	10,690	13,530	15,780	17,410	19,210	20,600
40.5	7,410	8,840	9,940	12,590	14,710	16,240	17,930	19,250
45.0	6,960	8,320	9,360	11,870	13,890	15,340	16,950	18,190
50.0	6,500	7,770	8,750	11,120	13,020	14,390	15,910	17,090
54.4		7,320	8,240	10,490	12,290	13,600	15,040	16,170
60.0			7,640	9,750	11,440	12,660	14,020	15,070

POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	2,590	2,600	2,610	2,630	2,640	2,640	2,650	2,660
40.5	2,970	2,980	2,980	2,990	2,990	2,990	3,000	3,000
45.0	3,340	3,340	3,340	3,330	3,330	3,330	3,330	3,330
50.0	3,820	3,800	3,800	3,780	3,770	3,760	3,750	3,740
54.4		4,270	4,250	4,220	4,190	4,180	4,170	4,160
60.0			4,900	4,840	4,800	4,780	4,750	4,740

CURRENT(A)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	6.6	6.6	6.6	6.6	6.7	6.7	6.7	6.7
40.5	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
45.0	8.6	8.6	8.5	8.5	8.5	8.4	8.4	8.4
50.0	9.9	9.8	9.8	9.7	9.6	9.6	9.5	9.5
54.4		11.1	11.0	10.9	10.8	10.7	10.6	10.6
60.0			12.8	12.5	12.4	12.3	12.2	12.1

NOTE:

- * The performance values subject to change without notice.
- * The performance values are varied by Driver characteristics.

6. Performance Curves (90rps)

Power Source:	3φ 180Hz 340V
Rotation Speed:	90 rps
Refrigerant:	R410A
Cooling Type	Natural Cooling
Suction Gas Superheat	11.1K
Sub Cooling	8.3K

CAPACITY(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	12,240	14,620	16,430	20,830	24,340	26,870	29,670	31,850
40.5	11,450	13,660	15,360	19,470	22,750	25,120	27,740	29,780
45.0	10,830	12,930	14,530	18,420	21,520	23,770	26,240	28,170
50.0	10,180	12,150	13,660	17,310	20,230	22,340	24,660	26,470
54.4		11,510	12,930	16,390	19,150	21,150	23,350	25,070
60.0			12,070	15,290	17,870	19,730	21,790	23,390

POWER(W)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	4,260	4,300	4,320	4,360	4,390	4,410	4,430	4,450
40.5	4,810	4,840	4,850	4,890	4,910	4,930	4,940	4,950
45.0	5,330	5,340	5,360	5,380	5,400	5,410	5,420	5,430
50.0	5,980	5,980	5,990	6,000	6,010	6,010	6,020	6,020
54.4		6,610	6,610	6,600	6,600	6,600	6,600	6,600
60.0			7,480	7,450	7,430	7,420	7,410	7,400

CURRENT(A)

Condensing Temperature(°C)	Evaporating Temperature(°C)							
	-15	-10	-6.7	0	4.4	7.2	10	12
35.0	7.5	7.5	7.6	7.6	7.7	7.7	7.7	7.8
40.5	8.6	8.6	8.6	8.7	8.7	8.7	8.7	8.7
45.0	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.7
50.0	10.9	10.9	10.9	10.8	10.8	10.8	10.8	10.8
54.4		12.1	12.1	12.1	12.0	12.0	12.0	12.0
60.0			13.9	13.8	13.7	13.7	13.6	13.6

NOTE:

- * The performance values subject to change without notice.
- * The performance values are varied by Driver characteristics.

7. Application Standard & Limit (R410A DC Inverter)

The following requirements apply to DC Inverter driven vertical type hermetic scroll compressors:

No.	Item	Standard	Note
1	Refrigerant	R410A	
2	Evaporating Temp.	-15~+12℃ 0.38~1.05MPa (G)	(Comp. suction pressure)
3	Condensing Temp.	65℃ Max. (refer to Envelope) ~4.15MPa (G)	(Comp. discharge pressure)
4	Compression Ratio	2~8 (not apply to start, defrost conditions)	
5	Winding Temp.	120℃ Max.	
6	Shell Bottom Temp.	100℃ Max. Condensing Temp.+0.5K Min. (comp. running)	
7	Discharge Gas Temp.	115℃ Max.	10cm within discharge port
8	Suction Gas Temp.	Superheat: 5K Min.	within 30cm of the suction fitting.
9	Input Voltage to Inverter (running)	Rated Voltage±20%	Output Voltage of DC Inverter (running)
10	Input Voltage to Inverter (starting)	Three Phase Models: 85% of the rated voltage min.	Dropped voltage to inverter
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	Not lower than center of the lower bearing	
15	Abnormal Pressure Rise/Drop	Pressure Rise: 4.15MPa(G) Max. Pressure Drop: 0.15MPa(G) Min.	By high pressure switch 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 Dalian SANYO Compressor Co., Ltd.

(G): Gauge Pressure

Other Application Considerations:

1. Operating Frequency:

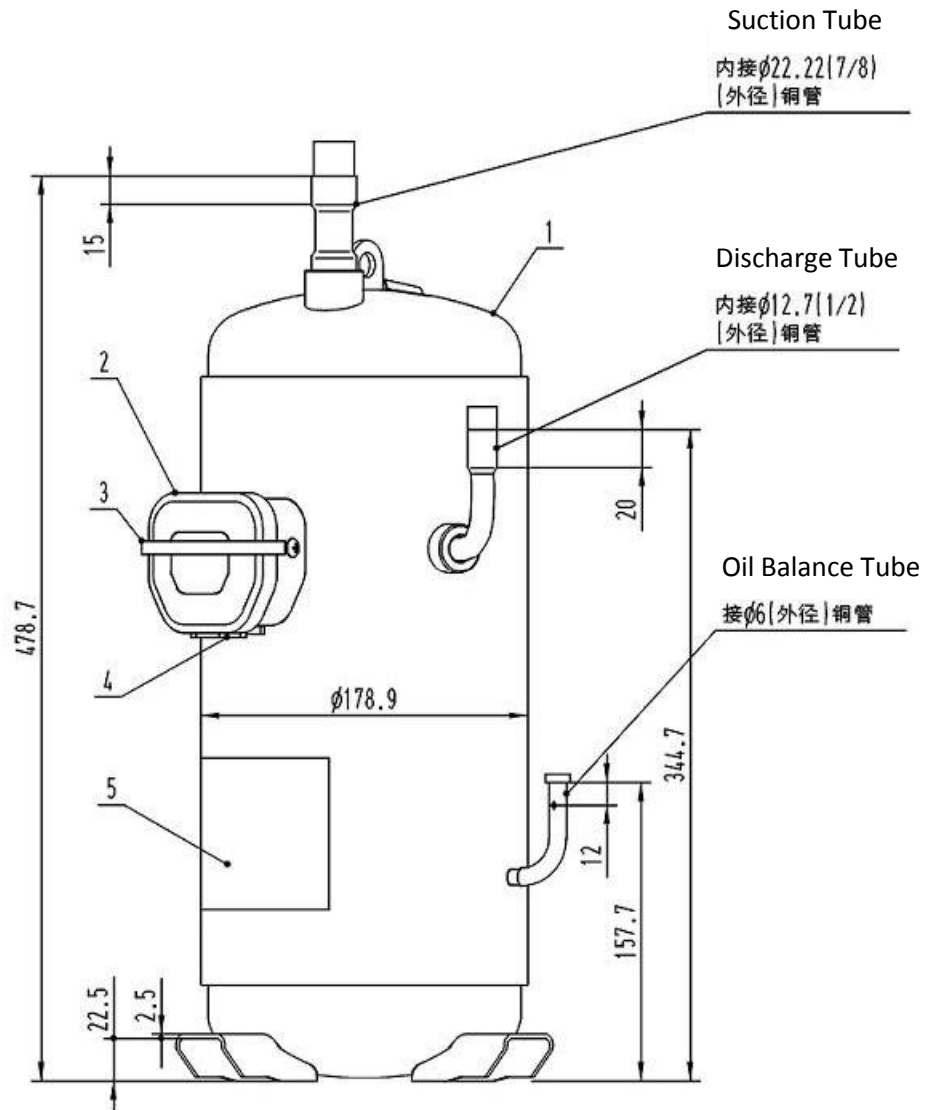
- 1) Frequency range in Approval Sheet shall be carefully followed ;
- 2) Operate for at least 30 seconds at a frequency between 50 and 75rpm to prevent oil leakage ;

2. Power Supply to Compressor

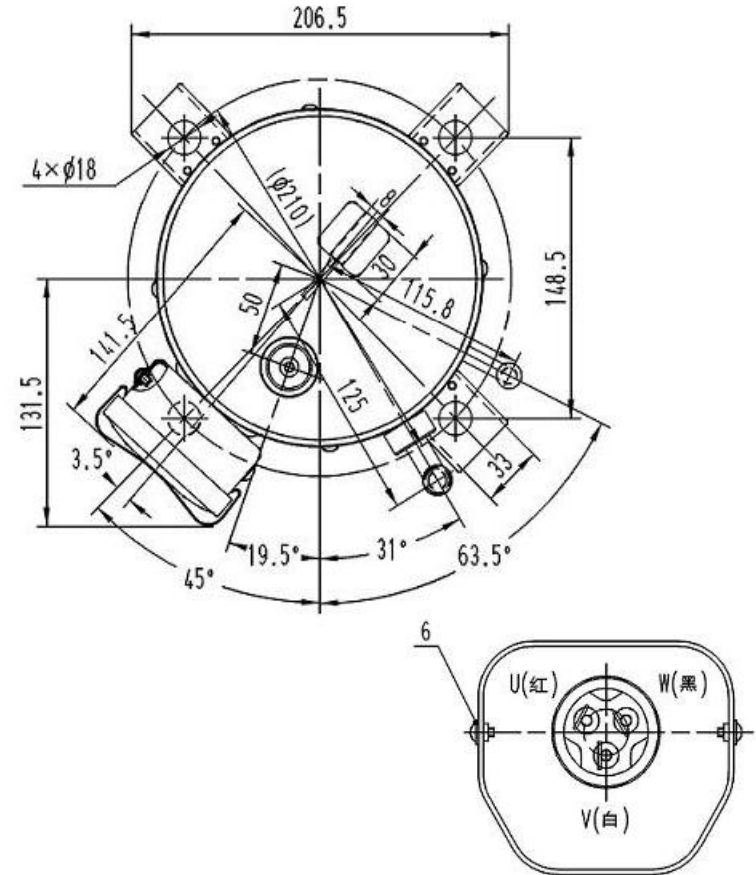
- 1) The DC inverter circuit shall always be used. (Do not connect AC power source to compressor directly)

3. Others

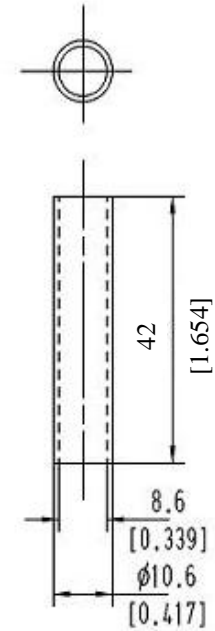
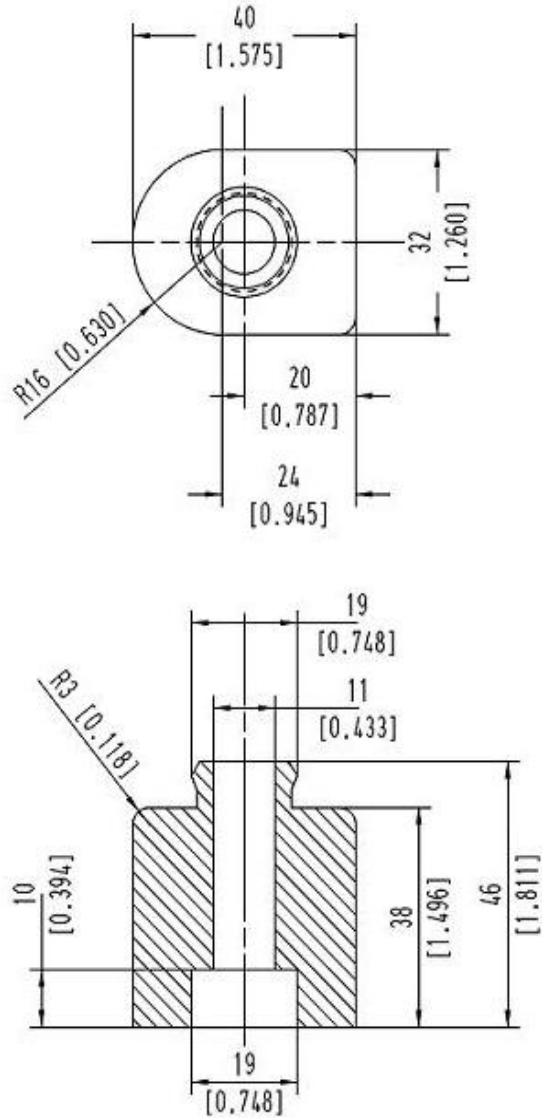
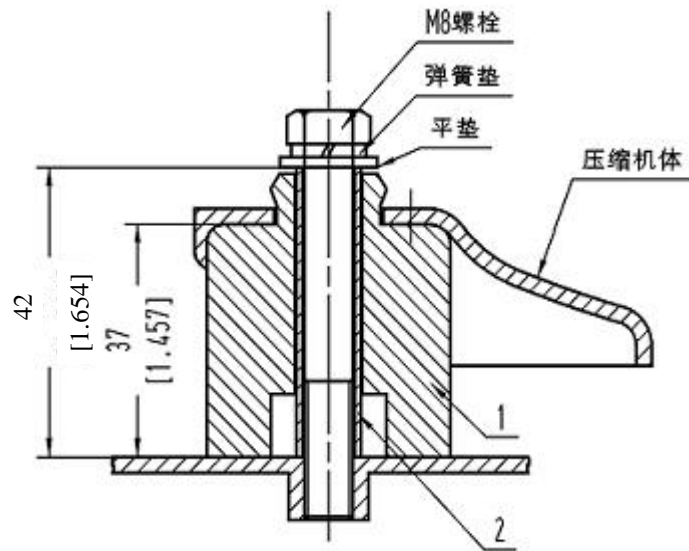
- 1) Installation should be completed within 15 minutes after removing the rubber plugs.
- 2) Do not compress air.
- 3) Evacuation and Refrigerant charge : Evacuate internal section in the refrigeration system from high and low pressure sides and charge liquid refrigerant from condenser outlet side.
- 4) Do not energize the compressor under vacuumed condition.
- 5) After refrigerant charge, operate for 2 to 3 seconds to lubricate moving parts with oil.
- 6) Additional charge shall be done with gas condition from low pressure side.
- 7) Do not add any other brand oils as initial charged oil is specially selected for R410A.
- 8) Installation shall be within 1 year, after the oil charge date.
- 9) Piping shall be designed properly to keep the stress less than below limits:
Start/Stop: 34.32N/mm² Max. Running: 12.26N/mm² Max.
- 10) Do not remove the paint.
- 11) Do not remove the mark on the top case.
- 12) Do not tilt over the compressor while carrying it.
- 13) Crankcase heater is required to keep the proper oil sump superheat.
- 14) Do not operate compressor in reverse rotational direction.
- 15) Suction strainers are recommended for all applications.



No.	Part Code	Qty	Name
1	C-SDP205H02B	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

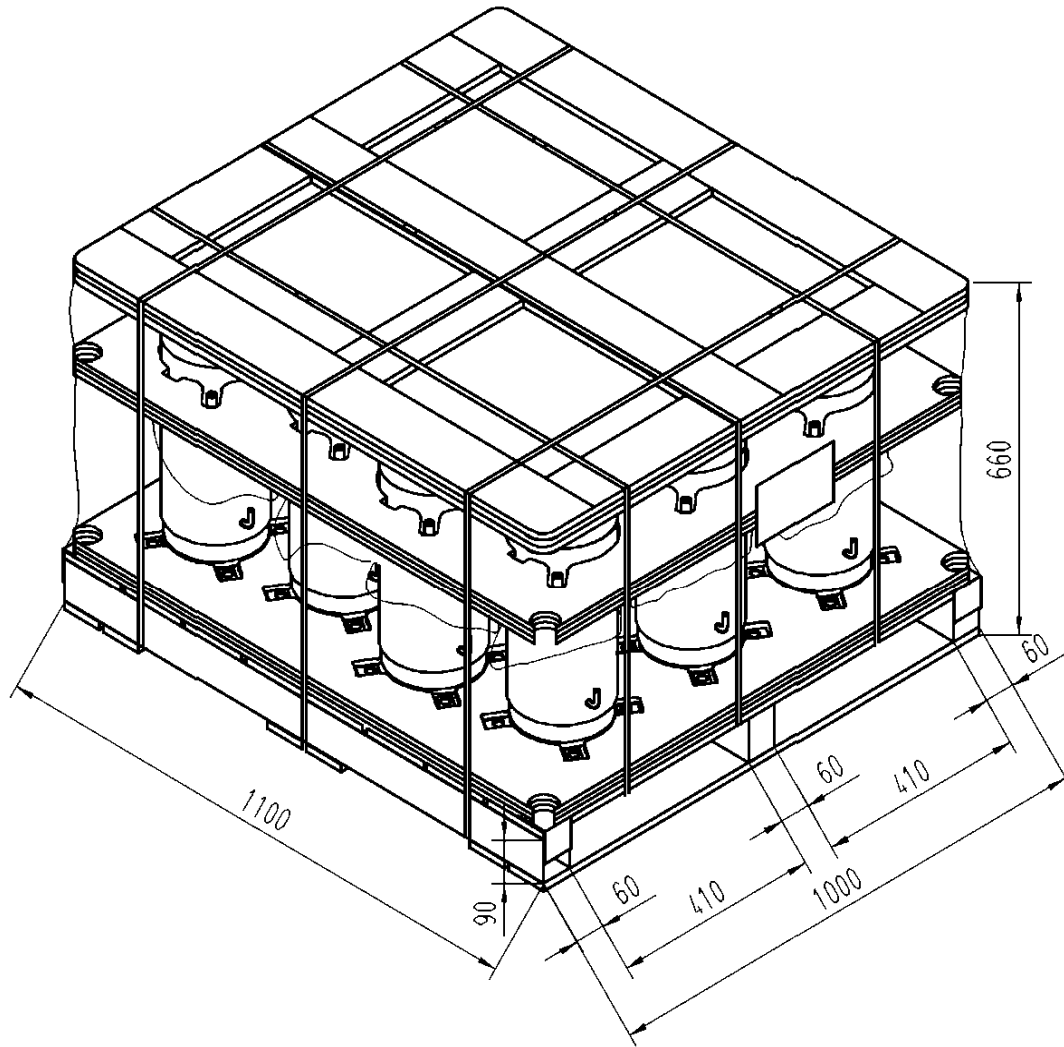


Part Code
D-0101-DSD
Name
Compressor Outline Drawing



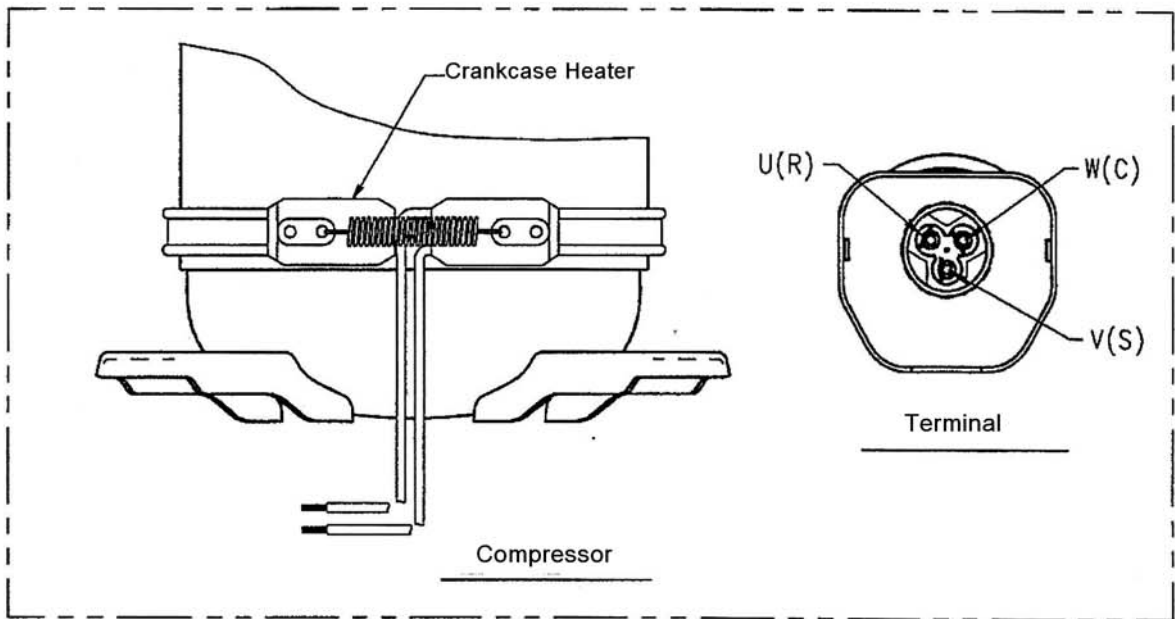
No.	Part	QTY	Name
1	M-0101-DSB	4	Mounting Grommet
2	M-0201-DSD	4	Mounting Sleeve

Part Code
M-5101-DSD
 Name
Mounting Parts Listing

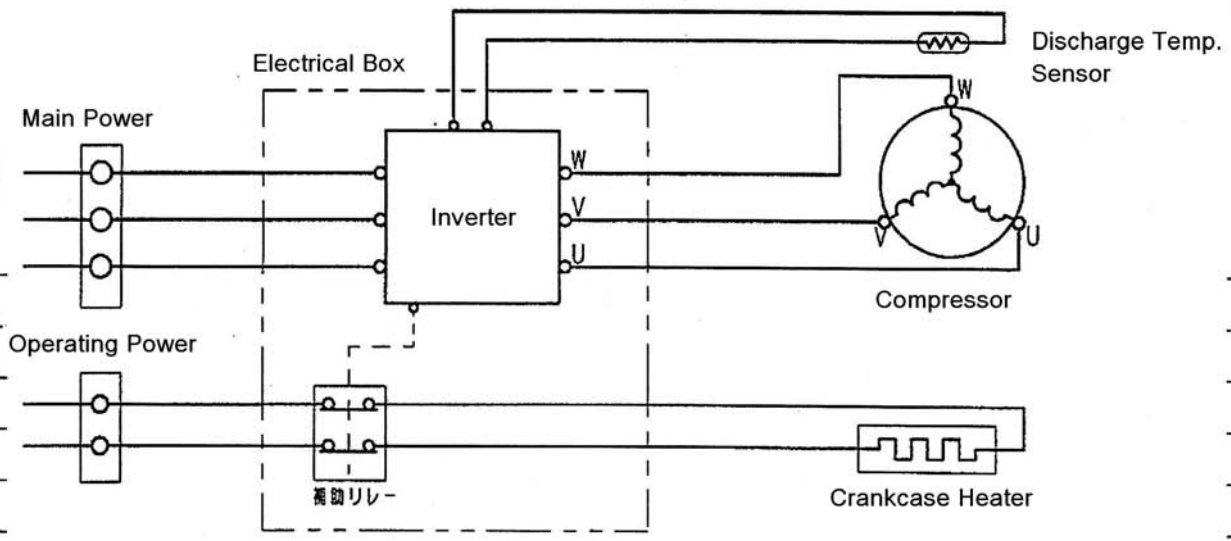


Part Code
D-0201-DSD
Name
Packing Dimensions

RMK	PART CODE	MATERIAL	QT.	NAME
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THIRD ANGLE SYSTEM



APPROVALS
T. Yamashita
 11.05.17
 CHECKED
M. Onodera
 11.05.17
 SIGN
 . Onodera
 11.05.17
 DRAWN
 . Onodera
 11.05.17

C-SD

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DATE	REVISIONS

TEST MADE FOR	TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL	PART CODE
ALLOWED TEMP	QT	FINISH	NAME
			4-E-11295-10SD
			WIRING DIAGRAM