Panasonic

No. : C-SBN453L8A-00-GGS-0

APPROVAL SHEET

SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

CODE	809 960 68
MODEL	C-SBN453L8A

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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

Section 1. General Specifications

Content		Unit	Specification
Compressor Model (Code)		—	C-SBN453L8A (809 960 68)
Type		—	Hermetic Scroll Compressor
Application		—	Low Back Pressure
Evap. Temp. Range		°C (°F)	-45 ~ -5 (-49~23)
Compressor Cooling Type		—	Liquid Injection Cooling
Power Source	Phase	—	3
	Rated Voltage	V	380～415
	Rated Frequency	Hz	50
Voltage Range		V	342～456
Weight (Including Oil)		kg (lb)	39.5(87.1)
Refrigerant		—	R404A
Oil Type		—	FV32S
Oil Charge		ml (fl oz)	2000 (67.6)
Displacement		cm^3 (in^3) /rev	96.2(5.87)
Motor	Motor Type	—	3-PH Induction Motor
	Number of Poles	—	2
	Electrical Insulation	Class	E
	Nominal Revolution	min^{-1}	—
	Locked Rotor Ampere	A	73
	Winding Resistance [at 25°C (77°F)]	Ω	U-V 1.711
			U-W 1.732
			V-W 1.683
Connection Tube	Suction Line (O.D.)	mm (in)	22.2 (0.875)
	Discharge Line (O.D.)	mm (in)	12.7 (0.500)
	Liquid Injection Line (O.D.)	mm (in)	6.35 (0.250)
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

Content	Unit	**Condition 1**	**Condition 2**
Power Source (3PH)	Hz	50	50
	V	380	380
Capacity	W	7,750	3,150
	(BTU/hr)	26,443	10,748
Input Power	W	5,250	4,050
Current	A	9.55	7.93

*Remark: The discharge temperature controlled with TEV under above conditions is 90±2℃.

Standard Rating Conditions

Refrigerant		R404A	
Condition No.		Condition 1	Condition 2
Condensing Temp.	°C (°F)	50(122)	40(104)
Evaporating Temp.	°C (°F)	-15(5)	-40(-40)
Suction Gas Temp.	°C (°F)	18.3(65)	18.3(65)
Liquid Temp.	°C (°F)	50(122)	40(104)
Ambient Temp.	°C (°F)	32.2(90)	32.2(90)
NOTES: The above nominal performance values (± 7%) shall be determined in compliance with measured Panasonic Appliances Compressor (Dalian) Co., Ltd. calorimeter apparatus under above conditions at the rated voltage.			

2.2 Sound Level

Power Source (3PH)	Hz	50
	V	380
Sound Level	dB(A)	64.0Max.
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
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	2.42(351)
Low Pressure	MPa(G)/psig	0.21~0.31(30~45)

2.4 Others

Content		Unit	Specification
Design Pressure	L.P. S.	MPa(G)/psig	1.7(247)
	H. P. S.	MPa(G)/psig	3.0(435)
Insulation Resistance		MΩ	100 (without refrigerant)
Dielectric Strength (The leakage current is less than 10mA)		V	1900 (1 minute)
Residual Moisture		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
Insulating Grommet	1	A-0301-DSB	0	Installed on Compressor
Gasket Terminal	4	M-0101-DSB	0	Installed on Compressor
Mounting Grommet	4	M-0201-DSB	0	Included with Compressor
Mounting Sleeve	1	B-0101-DSB	0	Included with Compressor

3.2 The Drawing for Reference

Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0125-DSB	0
Mounting Parts Listing	M-5101-DSB	0
Packing Dimensions	D-0203-DSB	0
Wiring Diagram	E-0931-DSB	0

3. 3 Inernal Motor Thermostat (in compressor)

Parts Name	Specification	
Inernal Thermostat	Trip Temprature	130±5℃
	Reset Temprature	108±11℃

3. 4 Electrical Component Required but not Included with compressor

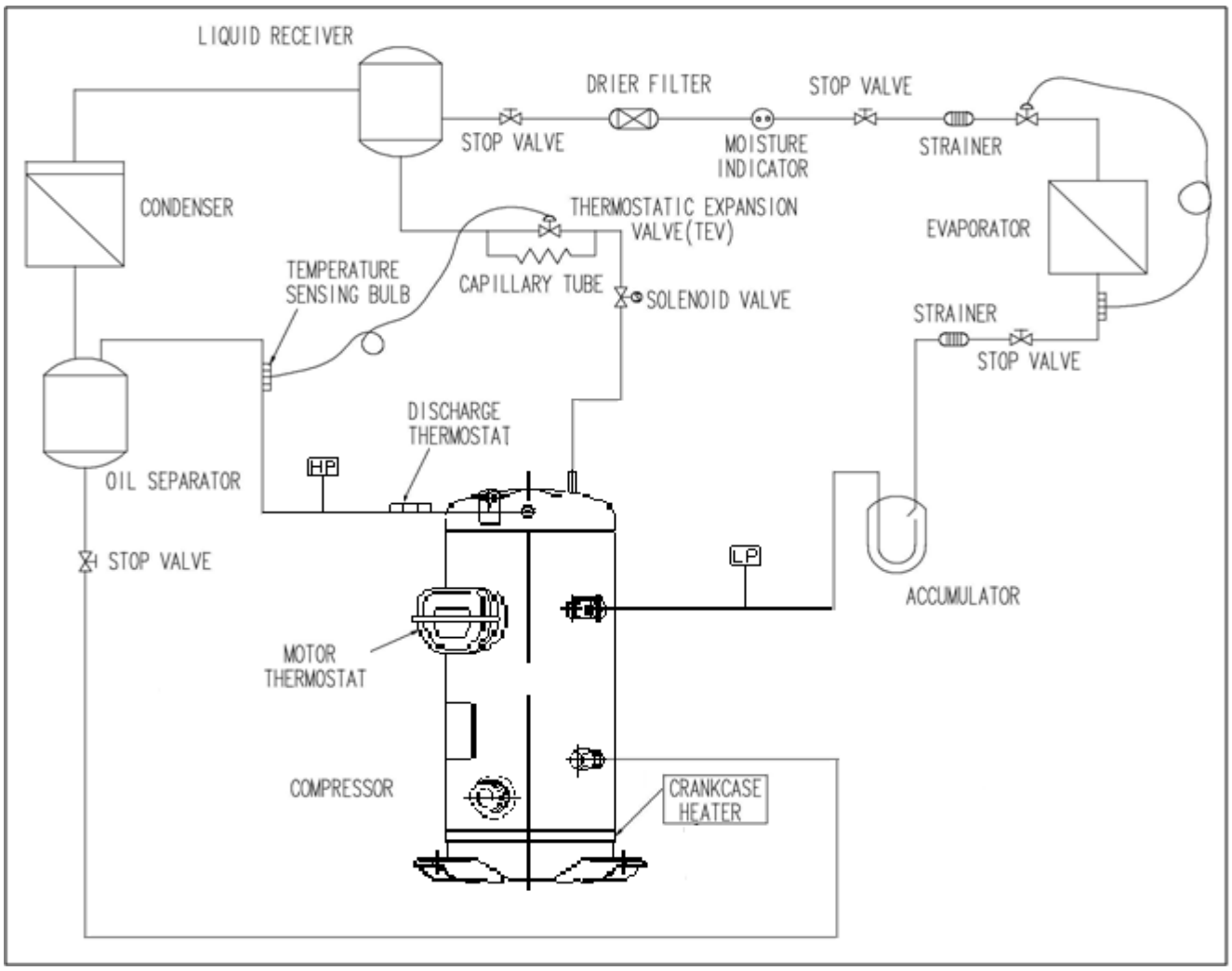
Parts Name	Specification	
Thermal Overload Relay	Setting Current	15.0A

Section 4. Compressor Protection

4.1 Protection Required but not Included with compressor

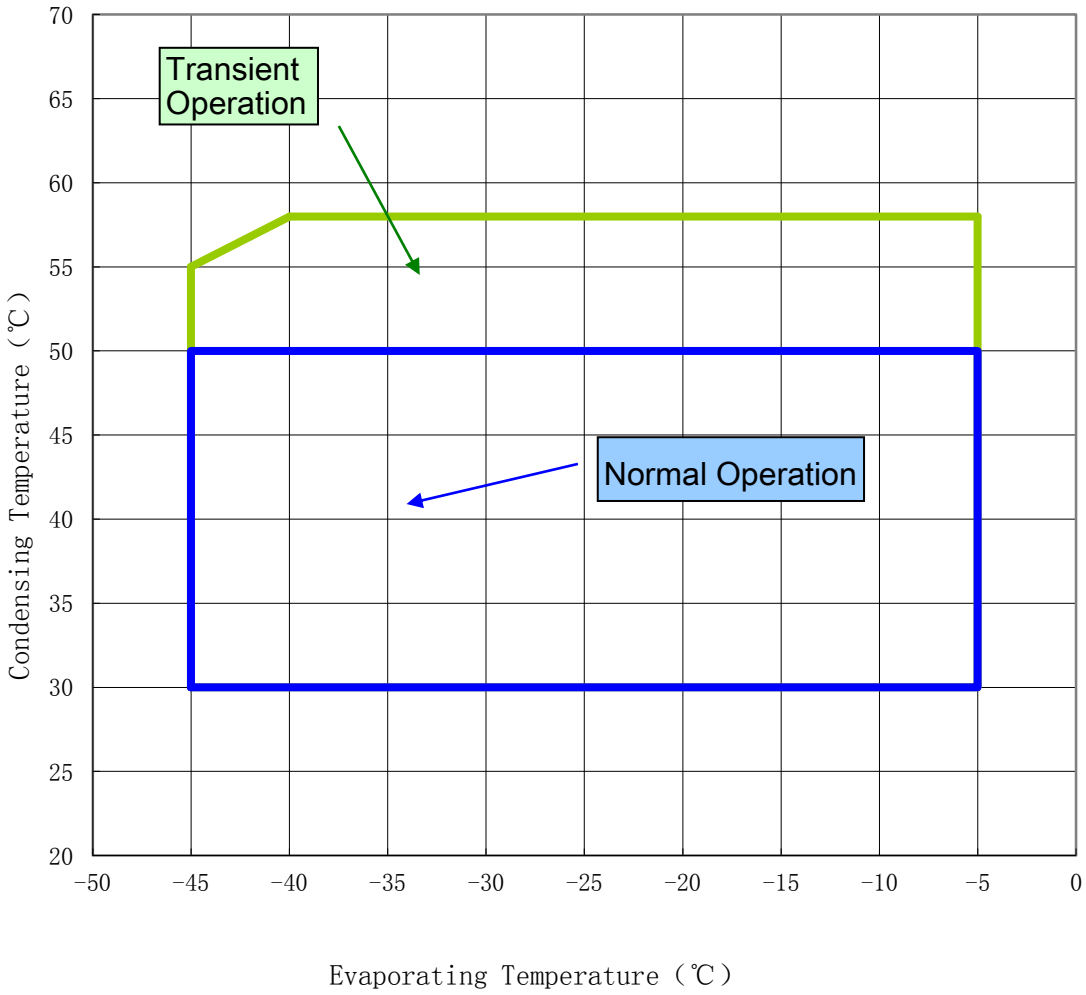
Protection Device	Items	Specifications
Reversal Defensible Relay	Features	To protect the compressor from reverse rotation
	Rated Voltage	AC380V
Crankcase Heater	Rated Power	35 Watts
Discharge Thermostat	Mounting Position	Located within 100mm(4 in)from the compressor shell
	Trip Temperature	125±5℃(257 ±10 °F)
High Pressure Switch	Setting	Cut-out seting no higher than 2.78MPa(G)
Low Pressure Switch	Setting	Cut-out seting no lower than 0.005MPa(G)

4.2 Recommended Refrigerant Flow Diagram



Section 5 Operating Envelope（C-SB L.B.P Series）

Suction Gas Temperature：18.3℃
Refrigerant： R404A
Compressor Cooling： Liqud Injection



Section 6 Compressor Standard Instruction(C-SB R404A)

The following requirements apply to Vertical type Hermetic Scroll Compressors:

- **Standard**:Applicable to ordinara 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 periods,such as start-up and beginning of defrost mode.

(G)：GAUGE PRESSURE

No.	Item	Standard	Limit	Note
1	Refrigerant	R404A		
2	Evaporating Temp.	−45～−5℃ (0.004～0.411 MPa(G))		Comp. Suction Pressure
3	Condensing Temp.	＋30～＋50℃ (1.31～2.18 MPa(G))	＋58℃ (2.63 MPa(G))	Ensure the change of pressure thermal expansion valve be within 0.8MPa(G) Min.
4	Compression Ratio	24 Max.		
5	Winding Temp.	90℃ Max.	110℃	
6	Shell Bottom Temp.	Upper Limit:90℃ Max. Lower Limit:Evaporating Temp.＋12K Min.(When comp. Is running) Ambient Temp.＋11K Min.(When comp. shuts off)		Install crackcase heater
7	Discharge Gas Temp.	115℃ Max.	125℃	To detect the temperature inside of well pipe.
		Diischarge Thermostat Setting:128℃ON,75℃OFF.		
8	Suction Gas Temp.	18℃ Max. Superheat:10K Min.	No excessive noise	It should meet the requirement of item 5,6,7and 14 within 300mm of the suction fitting.
9	Running Voltage	Within ±10% of the rated voltage.		Voltage at comp. Terminals
10	Starting Voltage	85％ of the rated voltage min.		Dropped voltage at comp. Terminals.
11	On/Off Period	ON Period:Until the oil level retruns 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	To minimum the charged refrigerant. No FLASH GAS occurs before expansion valve		Use the cooling・temperature・pressure of goods to decide a reasonable quantity
13	Life Time	200,000 cycle Max.		
14	Oil Level	Keep the scale of oil level gauge above LOW level when compressor is running		
15	Abnormal Pressure Rise Abnormal Pressure Drop	Pressure Rise:2.78 MPa(G) Max. Pressure Drop:0.005MPa(G) Min.		By high pressure switch By low pressure switch
16	System Moisture Level	Balance moisture in Refrigerant circuit at the beginning:200ppm Max. Recommend the componet on the right when drier is needed.		Dry core:D-S type made by SANYO
17	System Uncondensable Ga	1 Vol.% Max. Residual Oxygen 0.1 Vol.% Max.		24 hrs. after vacuuming:1.01 kPa 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 15minutes after removing the rubber plugs.

2.Do not use the compressor to compress air.

3.Do not energize the compressor under vacuumed condition.

4.Install the compressors into the units, when it operates after charging refrigeration several seconds, supply oil to all bearings.

5.Do not tilt over the compressor while carrying it.

6.Do not remove the paint.

7.Use the compressor within 12 months from production date.

8.Crankcase heater is required when the oil sump temperature is too low to meet the requirement of item .

9.Voltage fluctuation between compressor terminals,during operation,shall be within 2% of the rated voltage.

10.Do not operate compressor in reverse rotational direction.

11.Set filters on each line as suction,oil supplying.

12.The stress of tubing(copper tube) should be below 34.32N/mm^2,when it starts or stops, and below 12.26 N/mm^2 when it operates.

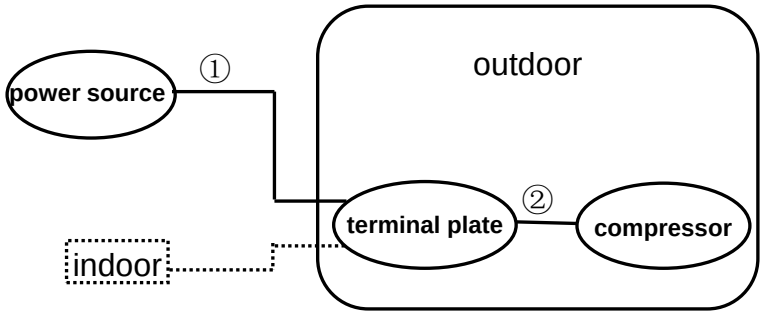
Section 7. Selection of Electrical Wire

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

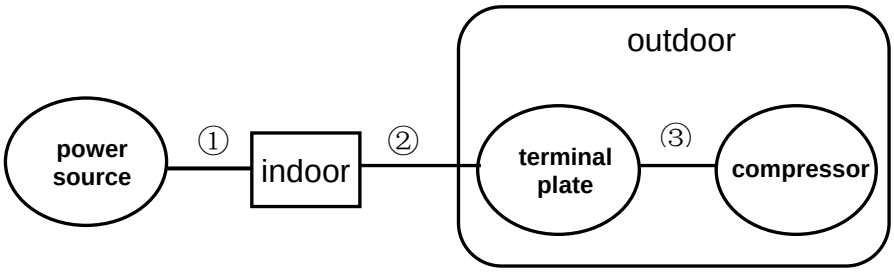
We recommend selecting the wire size from the table below.

7.1 Type of Unit

7.1.1 Window & Commercial Type Unit



7.1.2 Split Type(Separate Type)



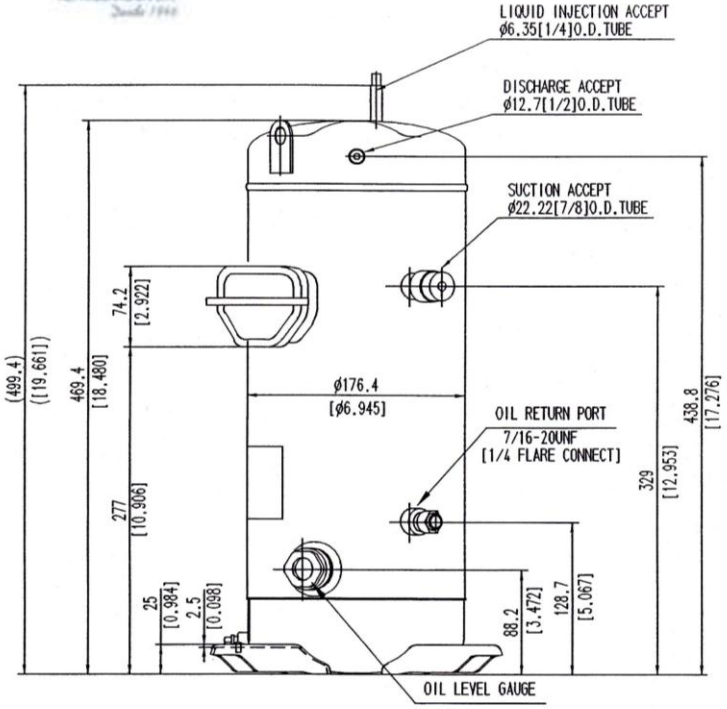
7.2 Size Table of Electrical Wire

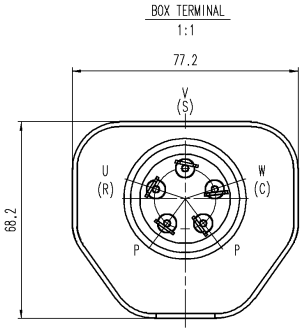
Starting current (A)	Size of electrical wire (mm^2)						
	Remark ① or Remark ①+② (heat-resistance Temperature: 60°C(140°F) min.)						Remark③ (heat-resistance Temperature: 120°C(248°F) min.)
	5m max.	10m max.	15m max.	20m max.	30m max.	50m max.	1m max.
20max.	2.0	2.0	2.0	3.5	5.5	8.0	2.0
30max.	↑	↑	3.5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

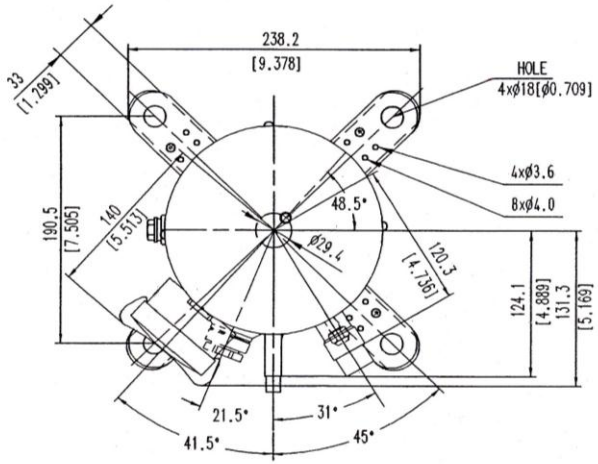
7.3 Caution of Ground

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.	Part Code	Qty	Name
1	809 960 68	1	Compressor
2	A-0101-DSB	1	Terminal Box Cover
3	A-0201-DSB	1	Terminal Box Clip
4	A-0301-DSB	1	Insulating Grommet
5		1	Nameplate
6	B-0101-DSB	1	Screw Special

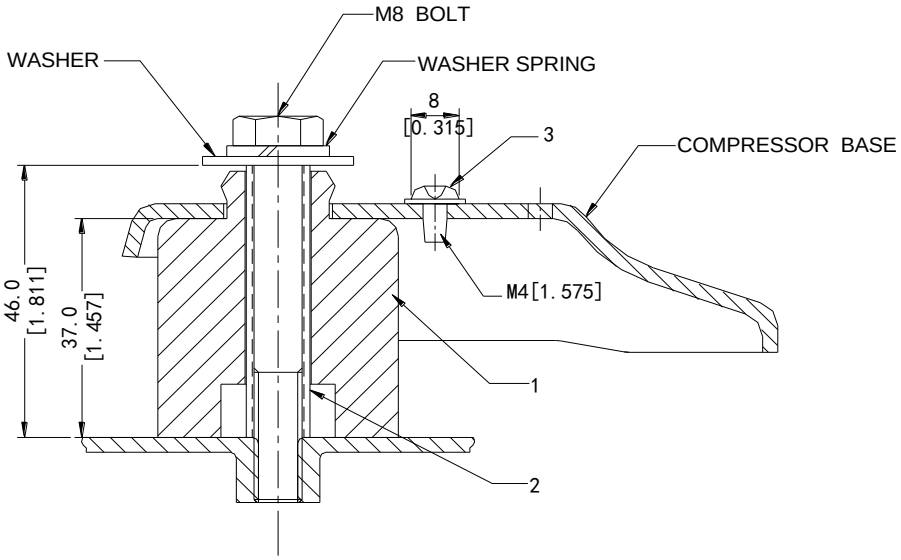
Part Code

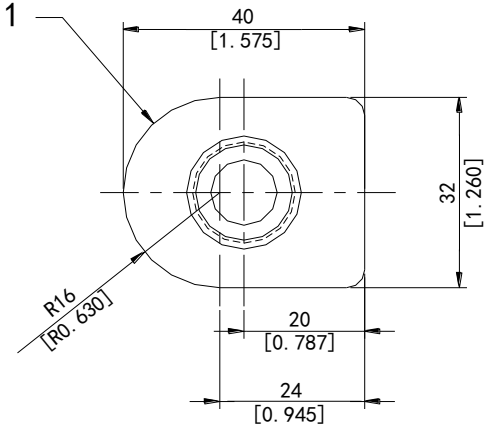
D-0125-DSB

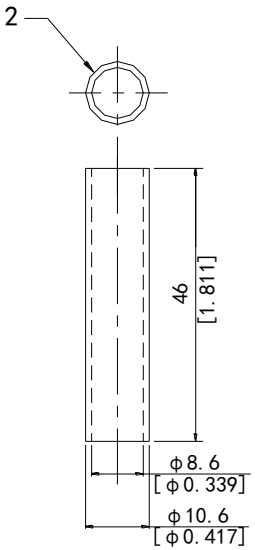
Name

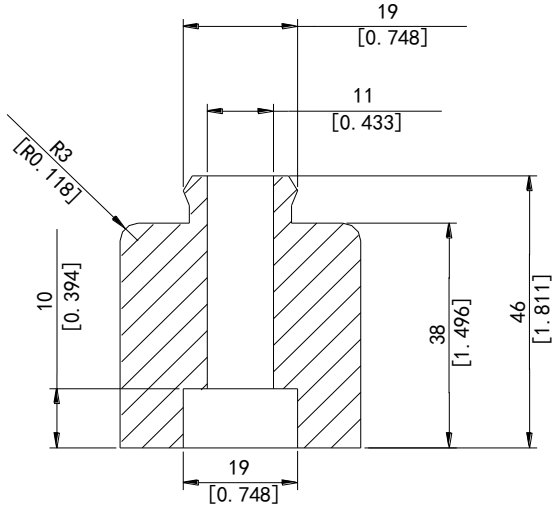
Compressor Outline Drawing

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

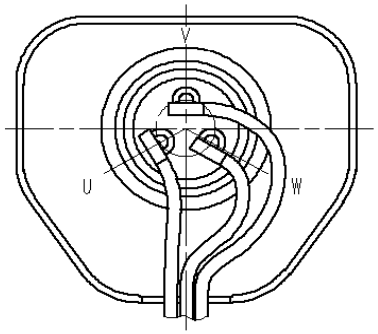


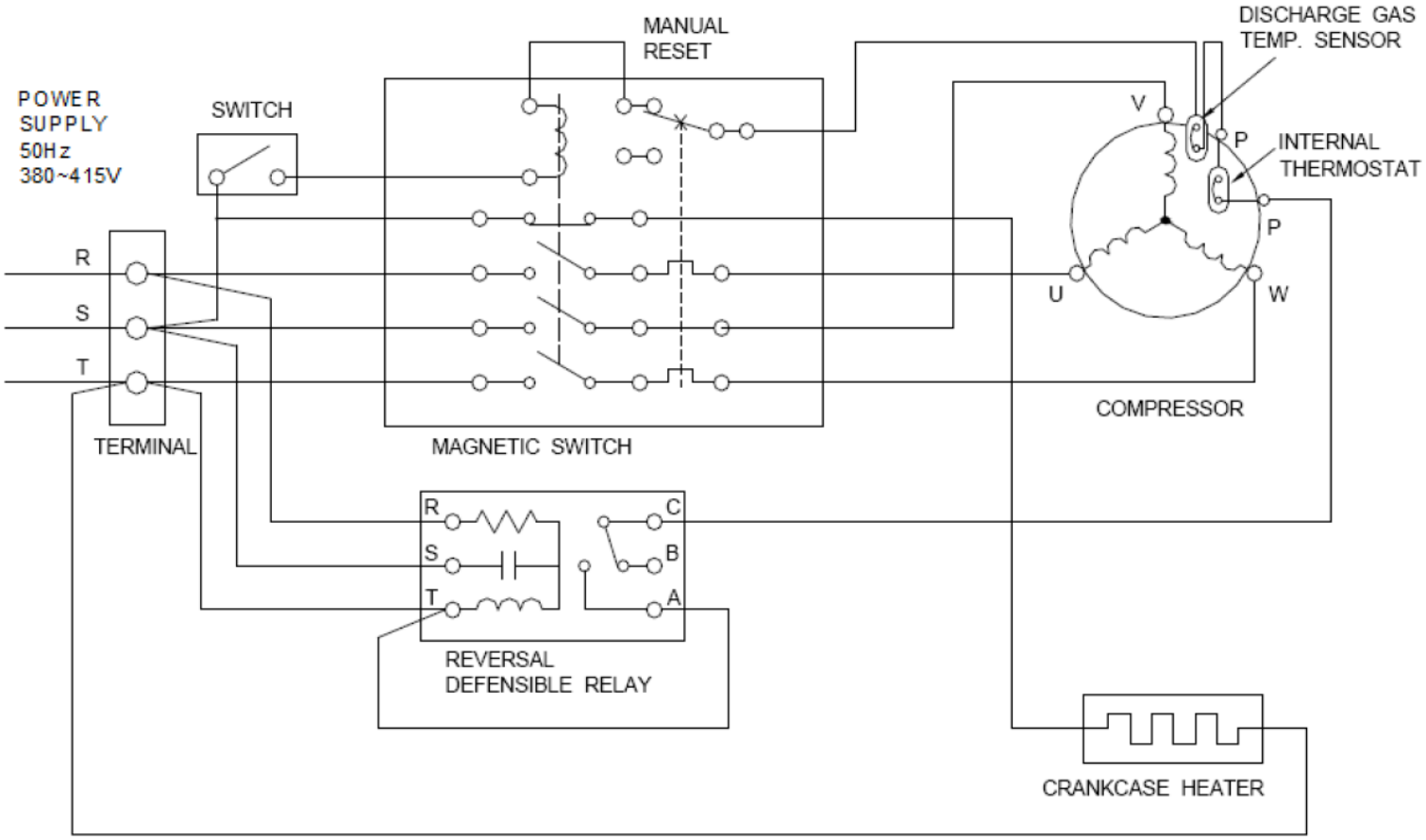






Part Code
M-5101-DSB
Name
Mounting Parts Listing





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Name
Wiring Diagram