

压缩机纳入仕様书
COMPRESSOR SPECIFICATION

1、压缩机型号及图样 Model Name & Drawings

型 号 Model Name: 4CC149NA04

压缩机规格书 Compressor Specification:

4CC149NA04-00-GGS-0

通用附属书 Common Appendix TYFSS-001E

安全要望书 Safety Request AQYWS-001E

2、法规满足 Conformity of laws and regulations

取得认证 Certificates obtained CE、UKCA、cULus

该机型允许销售地: 欧洲、英国、美国、加拿大

若需销往其他国家或地区需取得我司许可。

Permitted Sales Regions: Europe、UK、US、Canada

for other countries and regions, need to be approved by our company in advance.

3、压缩机及标准附件一览 List of Compressor & Accessory Parts

名称 Name	部品编号 Part No.	数量 Qty	备注 Remarks
压缩机 Compressor	4CC149NA04	1	已注油 Oil in
部品 PA PTS	接线盒盖 Terminal Box Cover	A-0101-DSB	1 安装在压缩机上 Installed on Compressor
	卡子 Terminal Box Clip	A-0201-DSB	1 安装在压缩机上 Installed on Compressor
	盲孔塞 Eyelet Rub Lead Wire	A-0301-DSB	1 安装在压缩机上 Installed on Compressor
	减震橡胶垫 Mounting Grommet	M-0101-DSC	4 -
	套管 Mounting Sleeve	M-0201-DSC	4 -
	排气温度保护器 Discharge Thermostat	E-0101-DSC	1 -
	接地螺钉 Screw Special	B-0101-DSB	1 安装在压缩机上 Installed on Compressor

4、参考图面 Reference Drawings

关联图面 Reference Drawings: D-0119-DSC、M-5102-DSC、D-0202-DSC、E-0921-DSS

客户 USER:

Area Cooling Solutions, SAU

制造 MANUFACTURER:

冰山松洋压缩机（大连）有限公司

Sonyo Compressor (Dalian) Co., Ltd.

APPROVED 承认	PURCHASING MANAGER 审核	TECHNICAL MANAGER 审查	LEADER 批准	CHECKED 校阅	SUBMITTED 作成
			贤明 船越 '23.12.6	李 '23.12.6	忠刘 方焦 '23.12.6

此纳入仕様书一式两份，一份由客户保存，一份返回我司进行存档。

This specification is made out in two originals, please return one original with your approval signature.

No. : 4CC149NA04-00-GGS-0

APPROVAL SHEET
SPECIFICATIONS OF HERMETIC SCROLL COMPRESSOR

MODEL	4CC149NA04
-------	------------

△				
△				
△				
NO.	PAGE	REVISION DETAILS	SIGNATURE	APPROVED

REVISION RECORD

Sonyo Compressor (Dalian) Co., Ltd.

Section 1. General Specifications

Content		Unit	Specification
Compressor Model		—	4CC149NA04
Type		—	Hermetic Scroll Compressor
Application		—	High Back Pressure
Compressor Cooling Type		—	Natural Cooling
Power Source	Phase	—	3
	Rated Voltage	V	AC Inverter Circuit
	Rated Frequency	Hz	20-75
Voltage Range		V	1.2 Voltage-Frequency
Weight (Including Oil)		kg	70
Refrigerant		—	R407C
Oil Type		—	FV68S
Oil Charge		mL	2800
Displacement		cm ³ /rev.	148.8
Maximum Continuous Current (MCC)		A	-
Motor	Motor Type	—	3-PH Induction Motor
	Number of Poles	—	2
	Electrical Insulation	—	E
	Winding Resistance [at 25°C (77°F)]	Ω	W-U 0.984
			W-V 1.000
			U-V 0.952
Connection Tube (※1)	Suction Line (O.D.)	mm (in)	34.93 (1.375)
	Discharge Line (O.D.)	mm (in)	22.23 (0.875)
Compressor Surface Paint		—	Black Paint

Notes

(※1) All units with parentheses are reference values.

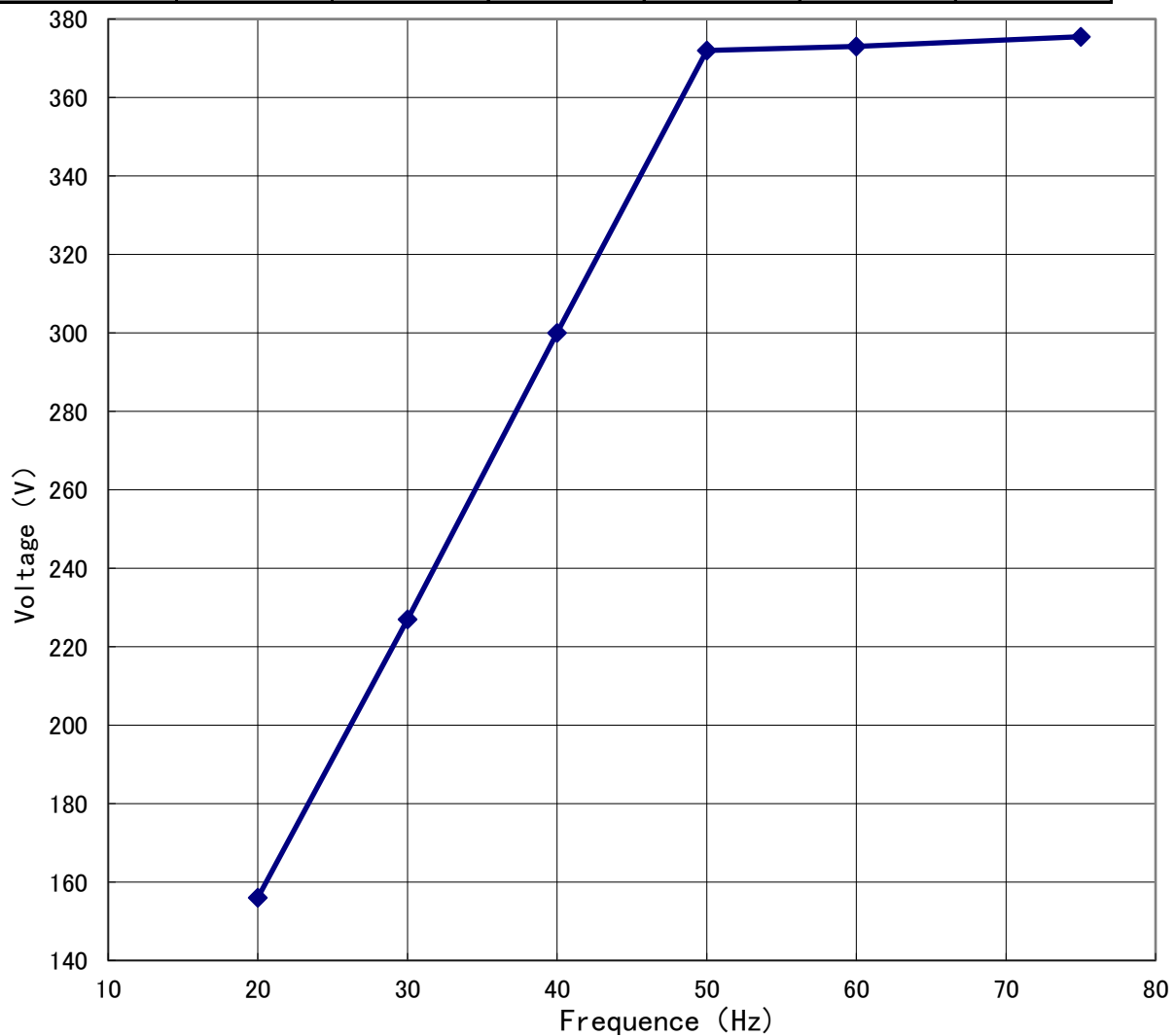
Expiration of Specification

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

Medium Temperature Conditions		
Condensing Temp.	°C	54.4
Evaporating Temp.	°C	7.2
Suction Gas Temp.	°C	18.3
Sub Cooling	K	8.3
Compressor Cooling	—	Natural Cooling
Refrigerant	—	R407C

Voltage(V)	156	227	300	372	373	375
Frequency (Hz)	20	30	40	50	60	75



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

Section 2. Performance Warranty

2.1 Performance

Power Source (3PH)	Hz	50	70	Remark
	V	(372)	(375)	
Capacity	W	27,000	36,300	-
	(BTU/hr)	92,124	123,856	reference
Input Power	W	8,550	12,400	-
Current	A	16.4	20.7	-

Standard Rating Conditions

Refrigerant	-	R407C
Condensing Temp.	°C	54.4
Evaporating Temp.	°C	7.2
Suction Gas Temp.	°C	18.3
Liquid Temp.	°C	43.8
Ambient Temp.	°C	35.0

2.2 Sound Level

Power Source (3PH)	Hz	50	70
	V	(372)	(375)
Sound Level	dB(A)	76Max.	79Max.
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 Others

Content		Unit	Specification (reference)
Design Pressure	L.P. S.	MPa(G)	1.60
	H. P. S.	MPa(G)	3.20
Insulation Resistance		MΩ	100Min. (without refrigerant)
Dielectric Strength (The leakage current is less than		V	1800(1 minute)
Residual Moisture		mg	400Max.
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-0201-DSC	0	-
Discharge Thermostat	1	E-0101-DSC	0	-
Screw Special	1	B-0101-DSB	0	Installed on Compressor

3.2 The Drawing for Reference

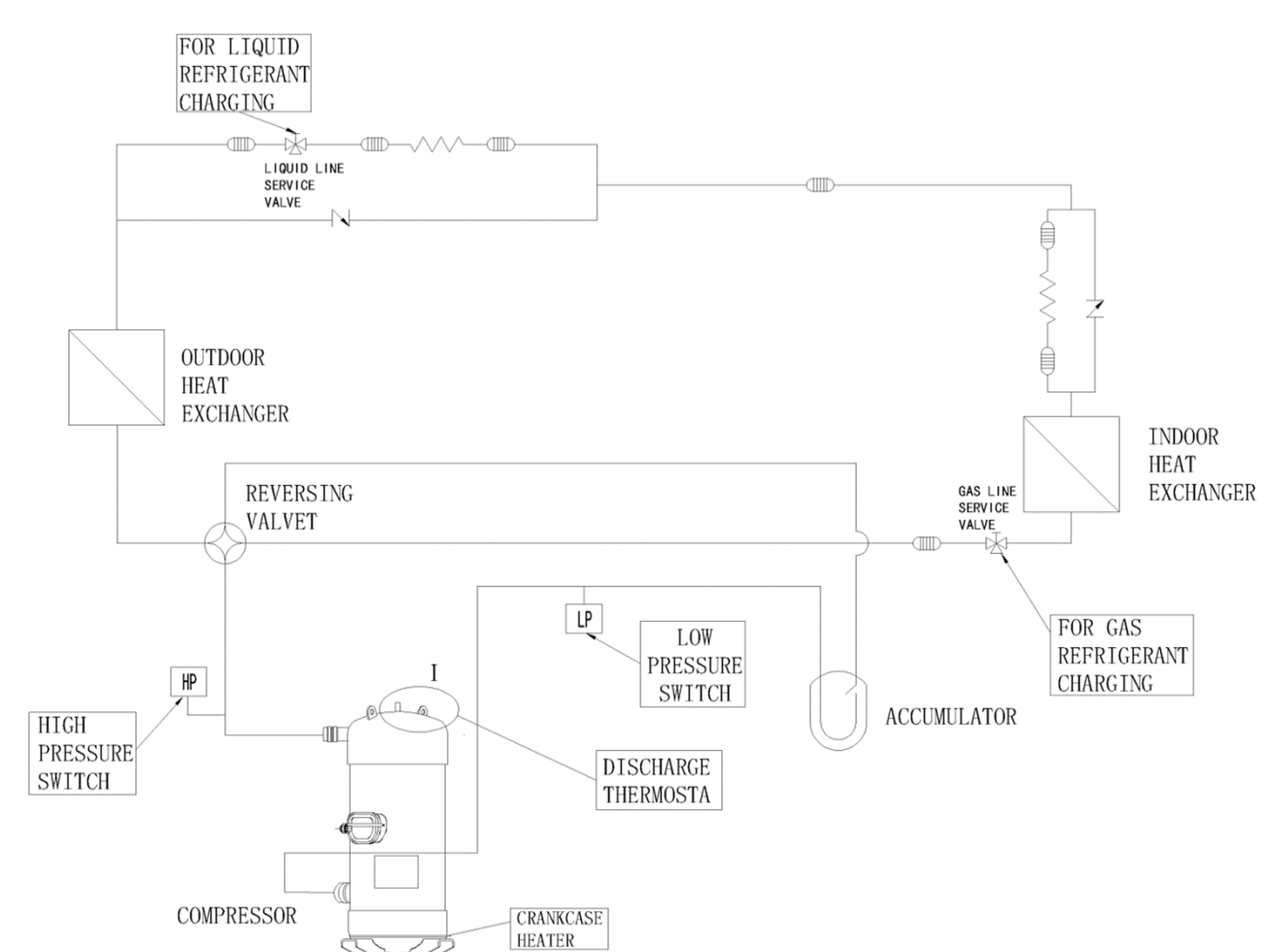
Parts Name	Parts Code	Revision No.
Compressor Outline Drawing	D-0119-DSC	0
Mounting Parts Listing	M-5102-DSC	0
Packing Dimensions	D-0202-DSC	0
Wiring Diagram	E-0921-DSS	0
Discharge Thermostat	E-0101-DSC	0

Section 4. Compressor Protection

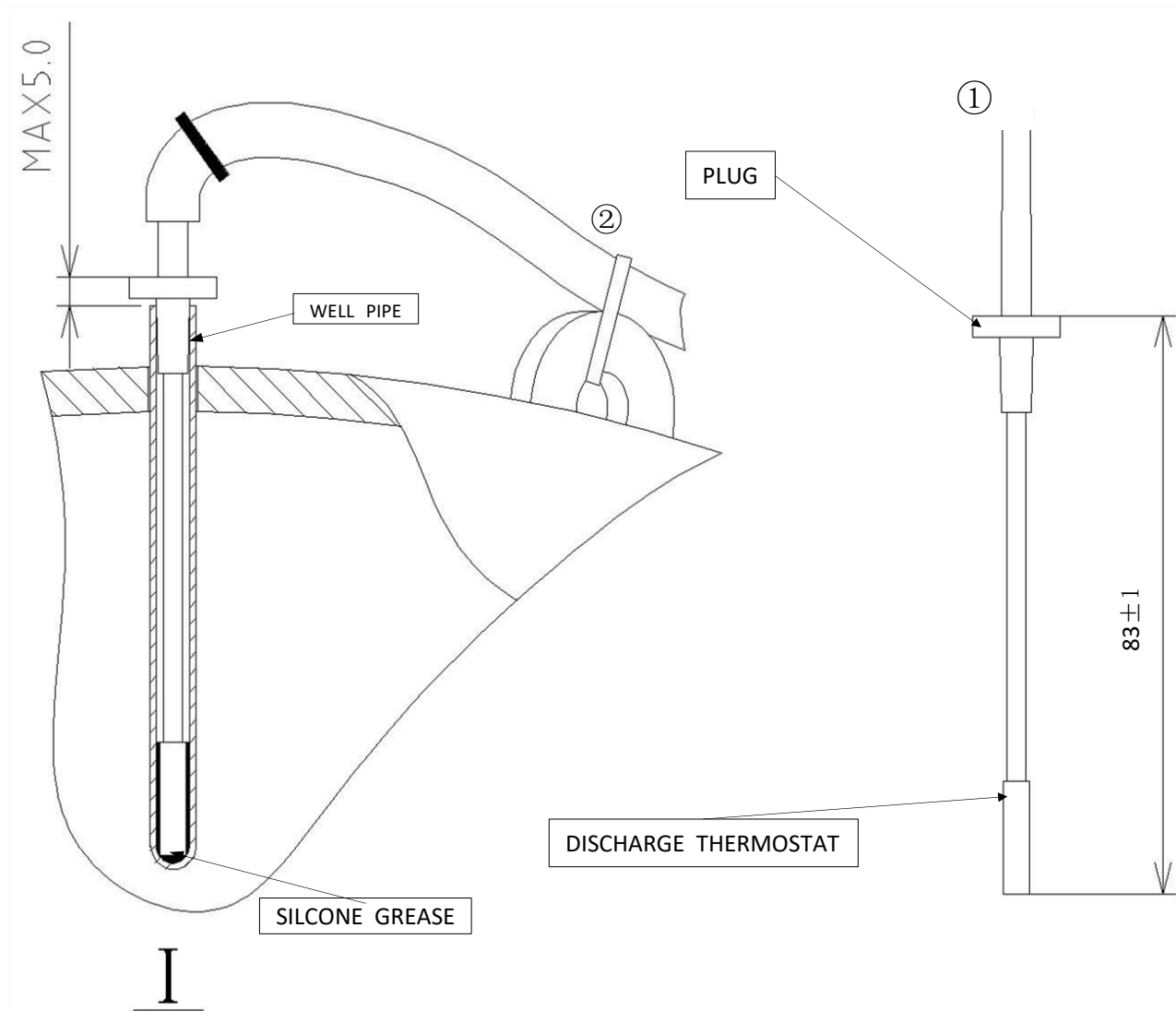
4.1 Protection Required but not Included with compressor

Protection Device	Items	Specifications
Crankcase Heater	Rated Power	88W at 240V
Discharge Thermostat	Mounting Position	Inside of the well pipe on the top of compressor
	Trip Temperature	135±5°C
	Reset Temperature	86±15°C
High Pressure Switch	Setting	Cut-out seting no higher than 3.2MPa(G)
Low Pressure Switch	Setting	Cut-out seting no lower than 0.15MPa(G)

4.2 Position of the Protection and Refrigerant Charging



4.3 Discharge Thermostat installation requirements



- (1) Inserting the Discharge Thermostat, please confirm that the Well Pipe has been filled with the Silcone Grease.
- (2) Combine Plug and Discharge Thermostat as shown in Figure ①, inserting the Discharge Thermostat into the bottom of the Well Pipe.
- (3) After inserting the Discharge Thermostat, please insert the Plug into the Well Pipe for sealing, the Plug should be exposed less than 5mm(edge included).
- (4) Discharge Thermostat fixed as shown in Figure ②, Wiring reference wiring diagram.

4.4 Compressor Protection Current Setting

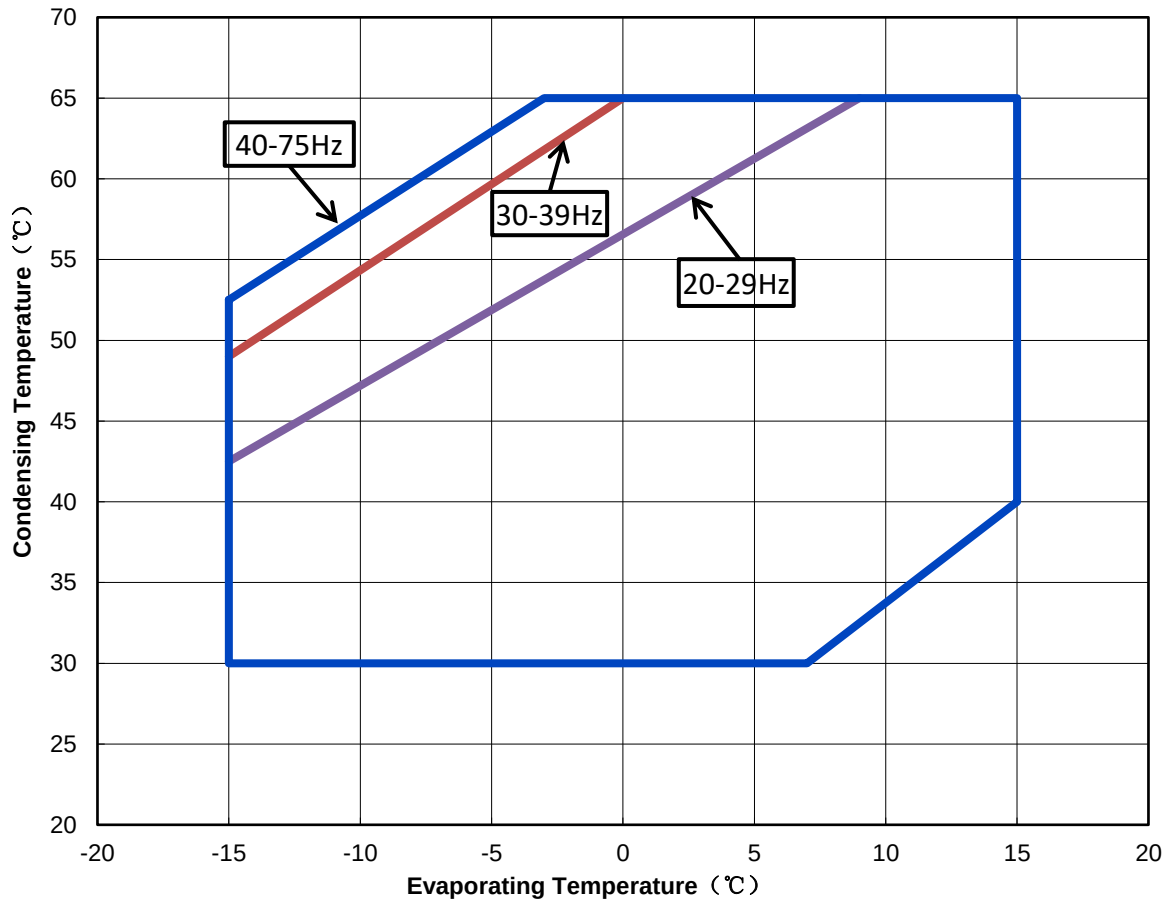
Overload Protection	31A
---------------------	-----

Recommended inverter model: YASKAWA CIMR-AB4A0044FBA

Except Overload Protection Current setting, suggested unit setting Frequency Drop Current and Prohibit Frequency Rise Current

Section 5 Operating Envelope

Suction Gas Superheat : 9K.
Refrigerant : R407C.



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	Remark
1	Refrigerant	R407C(Refrigerant must meet a criterion)		
2	Average Evap. Temp.	-15~15°C 0.20~0.73MPa(G)	15°C 0.73MPa(G)	Average temp. of evaporator Inlet and outlet.
3	Average Cond.Temp.	30~65°C 1.17~2.88MPa(G)	65°C 2.88MPa(G)	Average temp. of condensor Inlet and outlet.
4	Compression Ratio	2 ~ 10	10	
5	Winding Temp.	115°C Max.	125°C Max.	
6	Shell Bottom Temp.	Upper Limit:90°CMax.		When compressor is running
		Lower Limit: Evaporating Temp.+12KMin.		
		Lower Limit:Ambient Temp.+11K Min.		When compressor shuts off
7	Discharge Gas Temp.	115°CMax.	135°C Max.	Temp. inside of the copper pipe on the top of compressor
8	Suction Gas Temp.	Superheat: 5KMin.	No excessive noise.	It should meet the requirement of item 5, 6, 7 and 14 within 30cm of the suction fitting.200ppm Max.
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.
		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		Minimum 10 minutes for each ON/OFF cycle and 3 minutes for OFF time is recommended. The total ON/OFF cycle shall be less than 200.000 cycles.
12	Refrigerant Charge	Oil/Refrigerant(wt.)≥0.35.		Specific gravity of the Oil:0.94.
13	Minimum Oil Level	C-SC:No less than 70% of the initial oil charge		
14	Abnormal Pressure Rise/Drop	Pressure Rise: 3.20MPa(G)Max.		By high pressure switch
		Pressure Drop: 0.15MPa(G) 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 Sonyo 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.
- 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 Sonyo Compressor (Dalian) Co., Ltd provide the 《Compressor Specification Common Appendix》 and 《Safety Request on the use of Compressor》 also fit this specification.

14. Limitation of Liability:

- 1) Our responsibility for this compressor shall be limited to the following range.
 - ① The damage caused by a fault or defect of this compressor.
- 2) Warranty period:
 - ① Generally speaking, within 18 months after the compressor is delivered to the customer.
The specific warranty time shall be agreed with our business department.
- 3) Response in case of defect found:
 - ① During the warranty period, our company will investigate and judge the cause and responsibility of compressor damage, and notify the customer of the investigation results.
 - ② After investigation, if it is confirmed that the compressor produced by our company is damaged and the customer's product is defective, our company will bear the responsibility for the upper limit of the compressor cost.
- 4) Our company will not provide quality guarantee for the compressor under the following circumstances:
 - ① Damage caused by improper use when exceeding our compressor use specifications and compressor use safety requirements or other use standards formulated by the state.
 - ② Compressor damage caused by defects in customer product design or manufacturing.
 - ③ Compressor damage caused by improper transportation, storage, handling, operation of customers or end users.
 - ④ Compressor damage caused by inevitable accidents, such as natural disasters: earthquake, fire, flood, collapse, etc.
- 5) Others:
 - ① If the customer complains about the defects of our compressor in the end user or market, our company will cooperate with the investigation.
 - ② Our company will not bear any responsibility for any loss caused by customers' failure to use according to technical requirements.

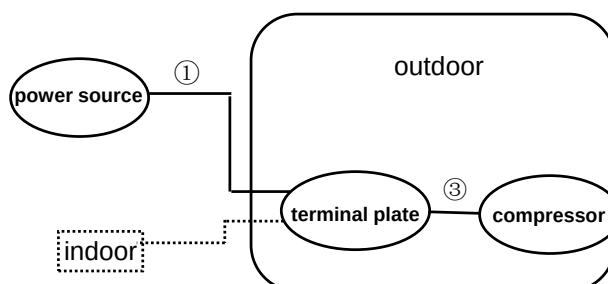
Section 7. Selection of Electrical Wire

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

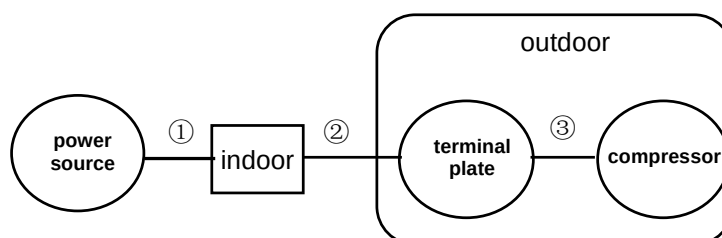
We recommend selecting the wire size from the table below.

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 min.)						Remark③ (heat-resistance Temperature: 120°C 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*

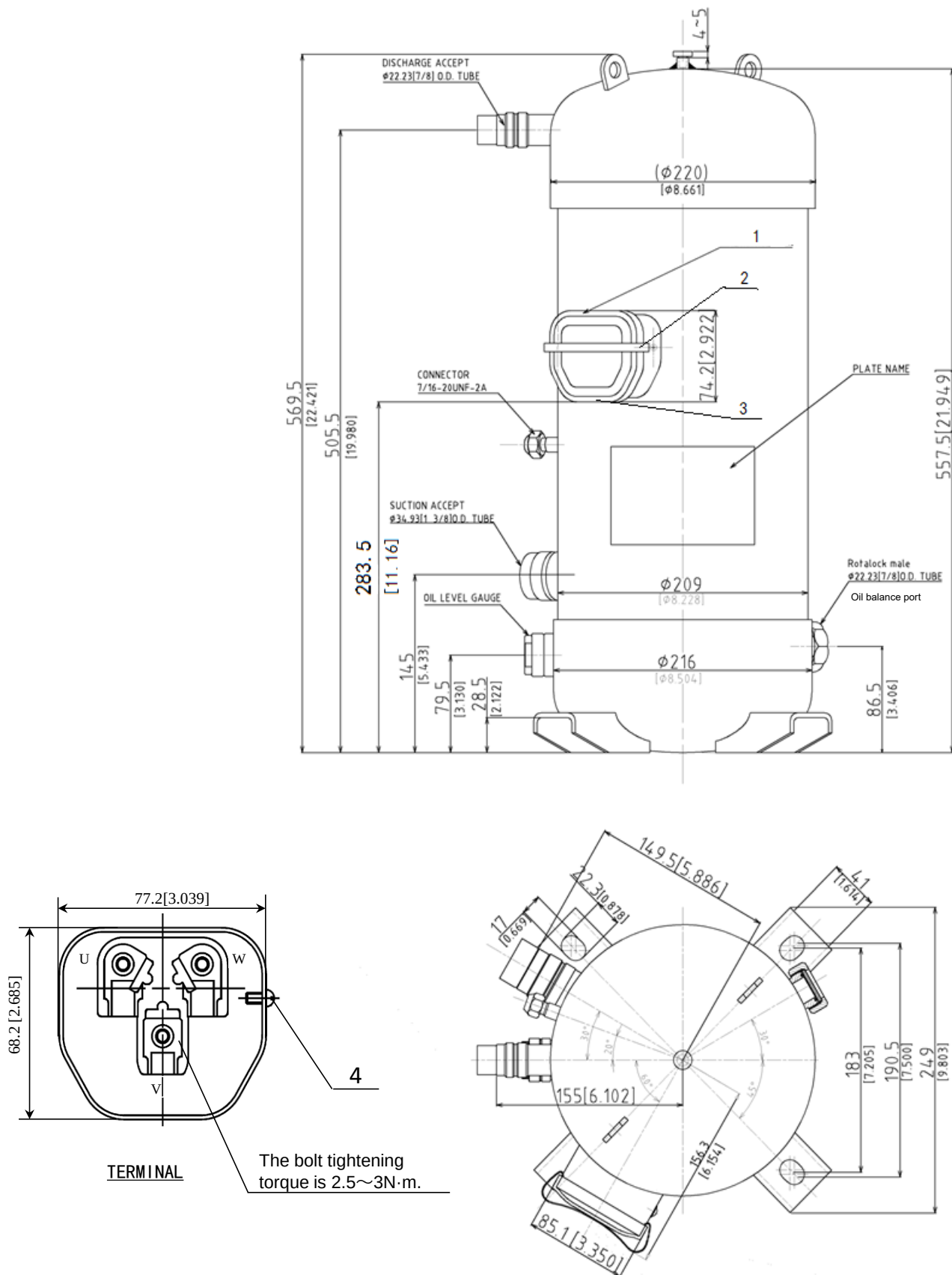
* 8.0 mm2 wire can be used below 0.8m

7.3 Caution of Ground

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

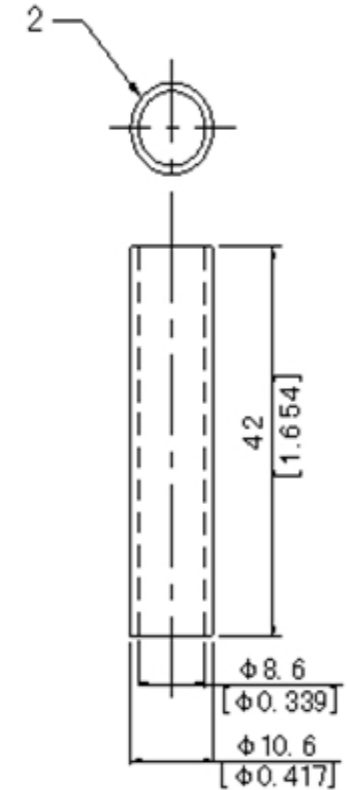
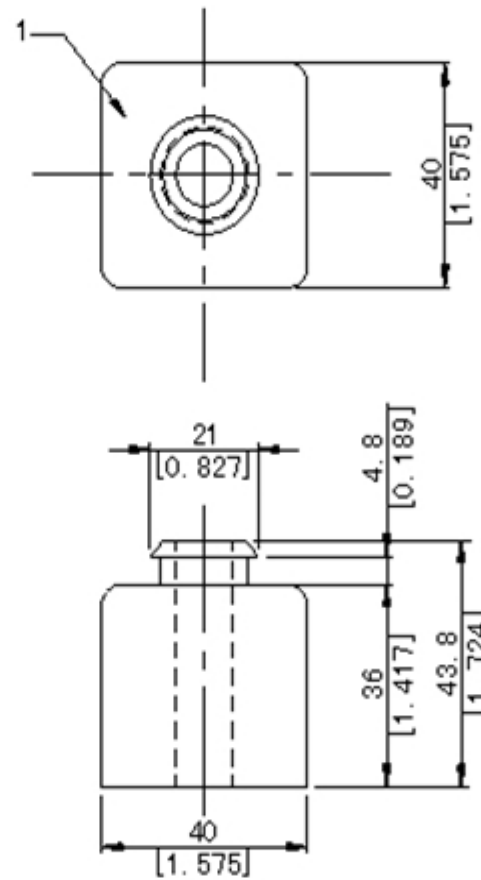
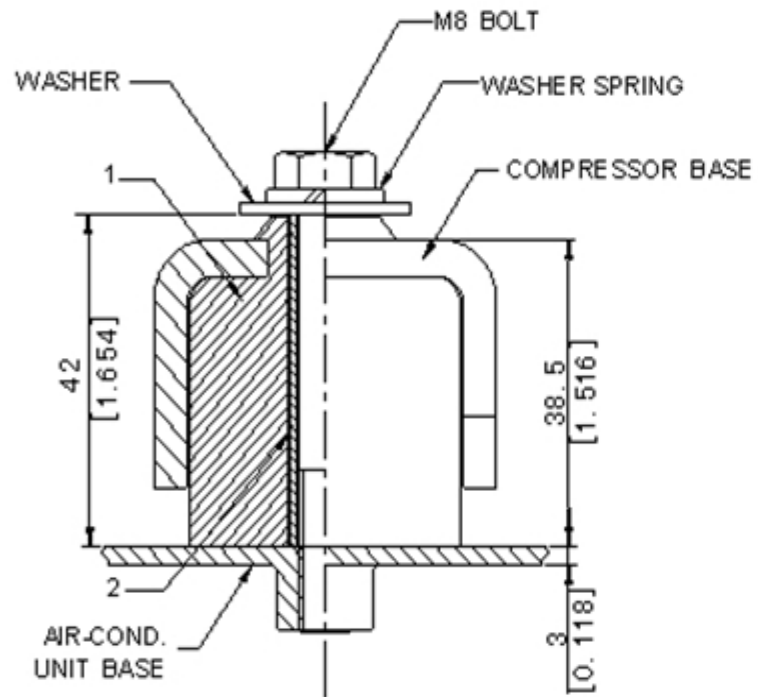
Please be sure that the system utilizes the ground connection when installed in the field.

Earth leakage Circuit Breaker must be installed.



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

Part Code	Name
D-0119-DSB	Compressor Outline Drawing



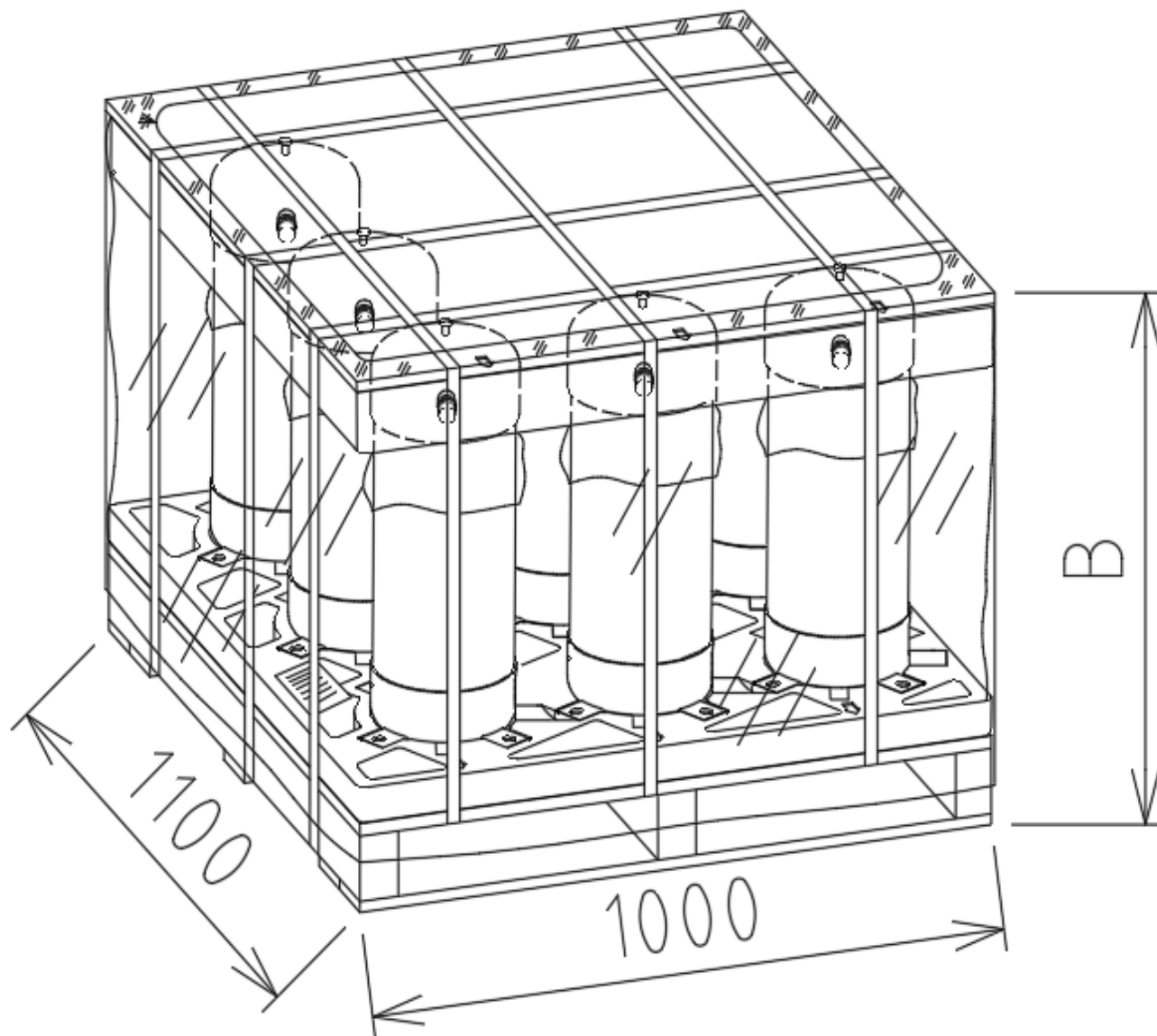
No.	Part	QTY	Name
1	M-0101-DSC	4	Mounting Grommet
2	M-0201-DSC	4	Mounting Sleeve

Part Code

M-5102-DSC

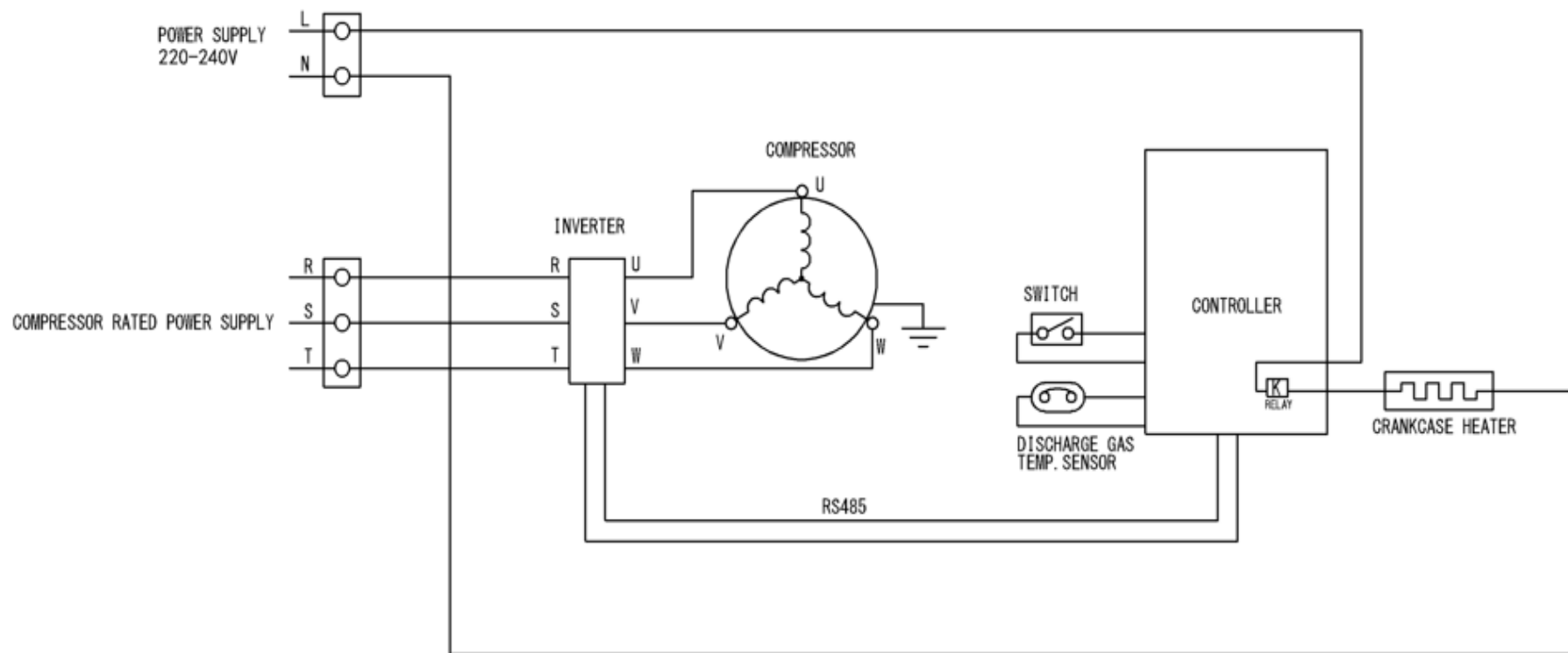
Name

Mounting Parts Listing

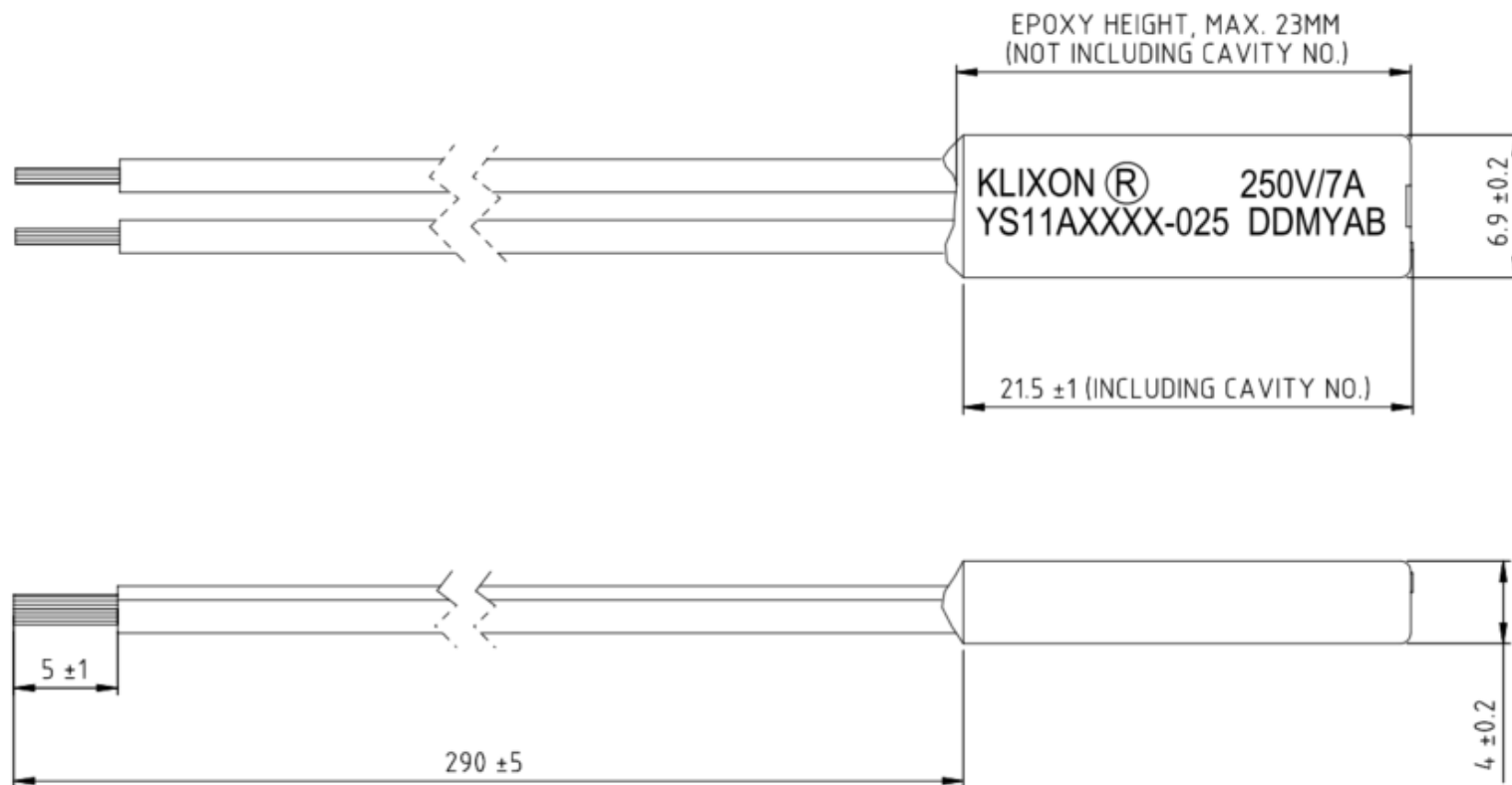


Model	B
4CC149NA04	740

Part Code
D-0202-DSC
Name
Packing Dimensions



Part Code
E-0921-DSS
Name
Wiring Diagram



Part Code
E-0101-DSC
Name
Discharge Temp. Thermostat