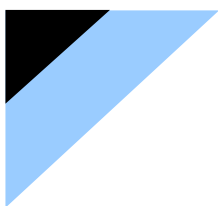


*DAIKIN*



**No. AT99C049EB**

May. 28.2011

# **SPECIFICATIONS**

**COMPRESSOR**

**MODEL : JT160BCBY1L**

**XI'AN DAIKIN QING'AN COMPRESSOR CO., LTD**

## 1. Range of Application and Assembly

### 1-1 Applied Range

The specifications provided here apply to the JT160BCBY1L Hermetic Scroll Compressor.

### 1-2 Range of Assembly

As detailed in the following table:	Name	Quantity	Plan No.	Remarks
1	Compressor	1	DA429 —293	Including lubricant
2	Anti-vibration Rubber	4	DA429 —903	
3	Spacer	4		

Note: The pressure units in these specifications refer to the gauge pressure, unless stated otherwise.

## 2. Main Specifications

### 2-1 Ratings

Item		JT160BCBY1L
Rated Output	kW	3.75
Number of Poles	—	2
Displacement	cm <sup>3</sup> /r	83.1
Rated Speed (=Nominal Revolution)	r/min	2900 [50Hz]
Lubricant	—	MINERAL
Lubricant (Volume)	cm <sup>3</sup>	1500 ~ 1700
Refrigerant	—	R22
Inlet Pipe (I.D.)	mm	(19.1 C1220T-O)
Outlet Pipe (I.D.)	mm	(12.7C1220T-O)
Weight (including refrigeration oil)	Kg	35.5
Power Supply	—	3 phase at 50/60Hz
Rated Voltage	V	380/380 [50/60Hz]

## 3. Quality Specifications

### 3-1 Appearance and Dimensions

The entire surface of the compressor has been coated with black paint (dipping and quick-dry painting). (Coating membrane pressure of at least 15 μ m)

Outer dimensions are shown on the attached diagrams of the exterior.

### 3-2 Leak Test and Pneumatic Resistance Test

The leak and pneumatic resistance tests of the compressor are conducted under the following conditions.

	Low-pressure side [MPa]	High-pressure side [MPa]
Leak Test	1.3	3.0
Pneumatic Resistance Test	10.5	10.5

### 3-3 Compressor Characteristics

Frequency	Voltage	Refrigerating Capacity	Input	Current	Sound Pressure	Vibration
[Hz]	[V]	[kW]	[kW]	[A]	[dBA]	[μm]
50	380	16.78	4.95	8.6	57max.	50 max.

Note 1. The above characteristics are satisfied under the following operating conditions (ASRE/T).

Evaporating Temperature [ °C ]	Condensing Temperature [ °C ]	Superheating Degree [ °C ]	Super-cooling Degree [ °C ]
7.2	54.4	27.8	8.3

- The refrigerating capacity, input, and current fluctuate within a range between 95% and 105%.
- The sound pressure value is measured for the position one meter in front of the compressor at a height half, in use Daikin' s genuine rubber mounting.
- The vibration value is measured at the compressor legs attached, in use Daikin's genuine rubber mounting.

### 3-4 Motor Characteristics

- Insulation : Class E
- Starting Current : 65.8 A (at 380 V/50 Hz、 LRA)
- Starting Voltage : Minimum terminal voltage of 294 V (50Hz) (within 0.8 sec.)
- Starting Pressure : 1.80 MPa (high pressure)  
: 0.60 MPa (low pressure)
- Winding Resistance : 2.572 $\Omega$  (average) at 20°C
- Insulation Resistance : 30 M  $\Omega$  min. (when dry), 1 M  $\Omega$  min. (when refrigerant flood the compressor.)
- Withstand Voltage : 2,400 VAC for 1 sec. and no dielectric breakdown impress

### 3-5 Others

- Moisture content : 500 mg [max.]
- Residue : 50mg [max.]
- The compressor is filled up with nitrogen gas at a pressure of 0.01MPa before shipping.

## 4. Compressor Operating Range

### 4-1 Operating Range

Refer to page 8 for the Compressor's Possible Operating Range.

### 4-2 Precautions

#### 1) Temperature

- Discharge port temperature : 150 max.
- Discharge gas temperature range : Between Condensing temperature + 20°C and 125°C
- Oil temperature : 80°C max.
- Motor winding temperature : 120°C max. (Average temperature based up on resistance measure of motor winding )

#### 2) Power Supply

- Maximum voltage fluctuation :  $\pm 10\%$  of rated voltage
- Maximum frequency fluctuation :  $\pm 2\%$  of rated frequency

#### 3) Refrigerant Systems

- Allowable refrigerant charge : 2.5 kg
- Design the refrigerant circuit so that the quantity of liquid refrigerant returning will be minimized.
- Oil concentration in oil sump during operation : Refer to the oil concentration range in 8-6.
- The compressor must be filled with refrigerant through the liquid pipe.
- The compressor may be filled with an excessive refrigerant charge, provided that circuit design is conducted with an appropriate device, such as an accumulator, is employed so that the compression mechanism will be free of excessive refrigerant.
- Counter pressure (i.e. Suction pressure – discharge pressure) at pneumatic or leak test : 1.47MPa max.

#### 4) Others

- Maximum operating times : 12 per hour
- Make sure that the shortest operation period is two minutes or more. Be sure to wait for at least three minutes to start the compressor after turning it off.
- Mounting Angle :  $\pm 10^\circ$  max.
- Be sure to employ a crankcase heater. The recommendable output is 33 W.
- Liquid height of residual compressor oil during operation should be maintained in the compressor external bottom at, at least, 17mm.

## 5. Protection Devices

The compressor must be installed with the following protection devices.

### 5-1 Discharge Pipe Thermostat

Attach a discharge pipe thermostat within 30 cm of the discharge pipe in order to prevent the temperature of the exhaust gas of the compressor from rising excessively due to overloading or gas supply interruption. The thermostat must be sensitive to an exhaust gas temperature of  $125 \pm 0.5^{\circ}\text{C}$ .

### 5-2 Low Pressure Switch

Attach a low-pressure switch operating at a low pressure of  $0.02 \pm 0.02\text{MPa}$  in order to prevent the compressor from damage that may be caused by excessively low-pressure pumping.

### 5-3 Reverse-Phase Protector

The rotation of the compressor in the reverse direction is prohibited because the compressor may be damaged if rotated in the reverse direction. Attach a reverse-phase protector that detects the phase inversion of the compressor without operating the compressor.

### 5-4 Internal Motor Protector

- Manufacturer : UBUKATA INDUSTRIES CO., LTD
- Model : UP18SE0820-99
- Temperature Characteristics : Open Temperature  $160^{\circ}\text{C} \pm 5^{\circ}\text{C}$   
: Close Temperature  $80^{\circ}\text{C} \pm 10^{\circ}\text{C}$
- Electrical Characteristics : Power supply Voltage 380V  
: Power supply Frequency 50/60Hz  
: Trip performance Specified In Page 11/18  
: Maximum Electrical Capacity 75A(380V)

### 5-5 High Pressure Switch

In order to interrupt the operation of the compressor in the case of extraordinary pressure rises, attach a high-pressure switch that operates at the pressure values provided as leak test pressure values in 3-2.

## 6. Performance Curves

Reference the accessional datum.

## 7. Origins and Factory

Xi'an Daikin Qing'an Compressor Co., Ltd. (IN CHINA)

## 8. Possible Compressor Operating Range

- Refer to 7-5 on the following page for the possible compressor operating range.
- Possible operating range is divided into four areas (areas 1~4). The attendant conditions for each differ.
- Operate the compressor upon sufficient confirmation of the following attendant conditions, particularly for areas 2, 3 and 4.

### 8-1 Area 1

Observe the precautions in 4-2.

### 8-2 Area 2

Specifically confirm the following from the precautions in 4-2.

Discharge port temperature: 150 max.

Motor winding temperature: 120 max.

Oil temperature: 80 max.

Oil concentration: Within the oil concentration range in 8-6

### 8-3 Area 3

Specifically confirm the following.

Oil concentration: Within the oil concentration range in 8-6

Liquid compression: No liquid compression

### 8-4 Area 4

Specifically confirm the following:

Continuous operating time: 10 minutes max.

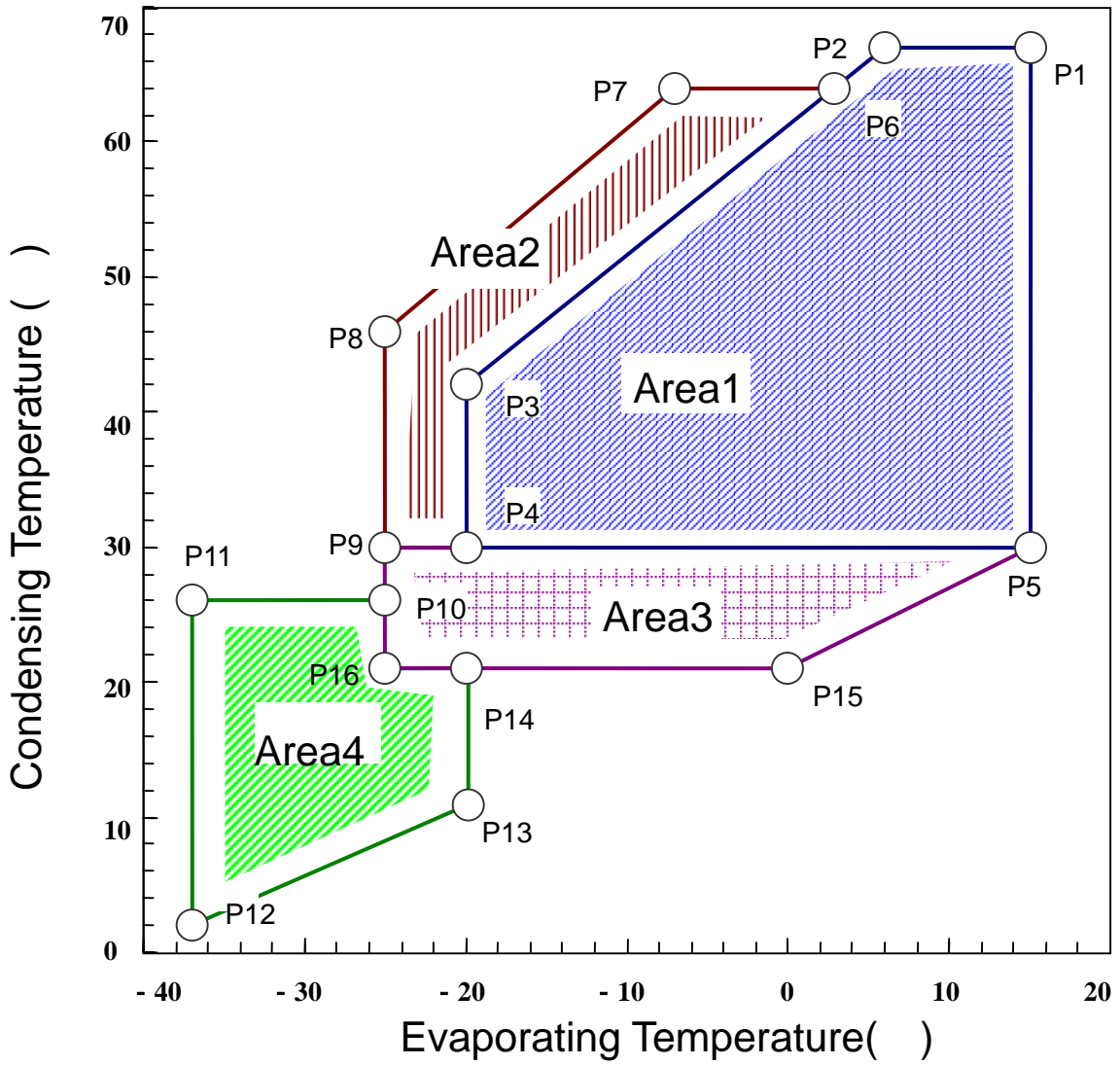
Oil concentration: Within the oil concentration range in 8-6

Liquid compression: No liquid compression

Discharge port temperature: 150 max.

Motor winding temperature: 120 max.

8-5 Possible Compressor Operating Range



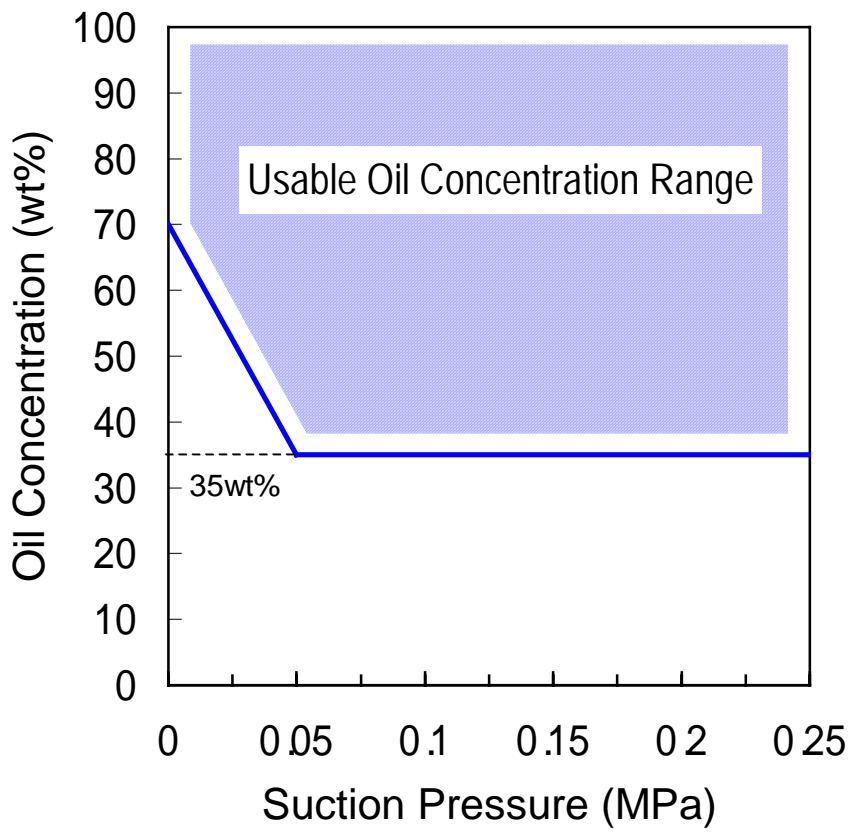
Point	P1	P2	P3	P4	P5	P6	P7	P8
Evaporating Temperature( )	15	6	- 20	- 20	15	3	-7	- 25
Condensing Temperature( )	67	67	42	30	30	64	64	46

Point	P9	P10	P11	P12	P13	P14	P15	P16
Evaporating Temperature( )	- 25	- 25	- 37	- 37	- 20	- 20	0	- 25
Condensing Temperature( )	30	26	26	2	10	21	21	21



### 8-6 Oil Concentration Range

Operate the compressor with the following oil concentration range in the compressor oil trap.



## Nameplate

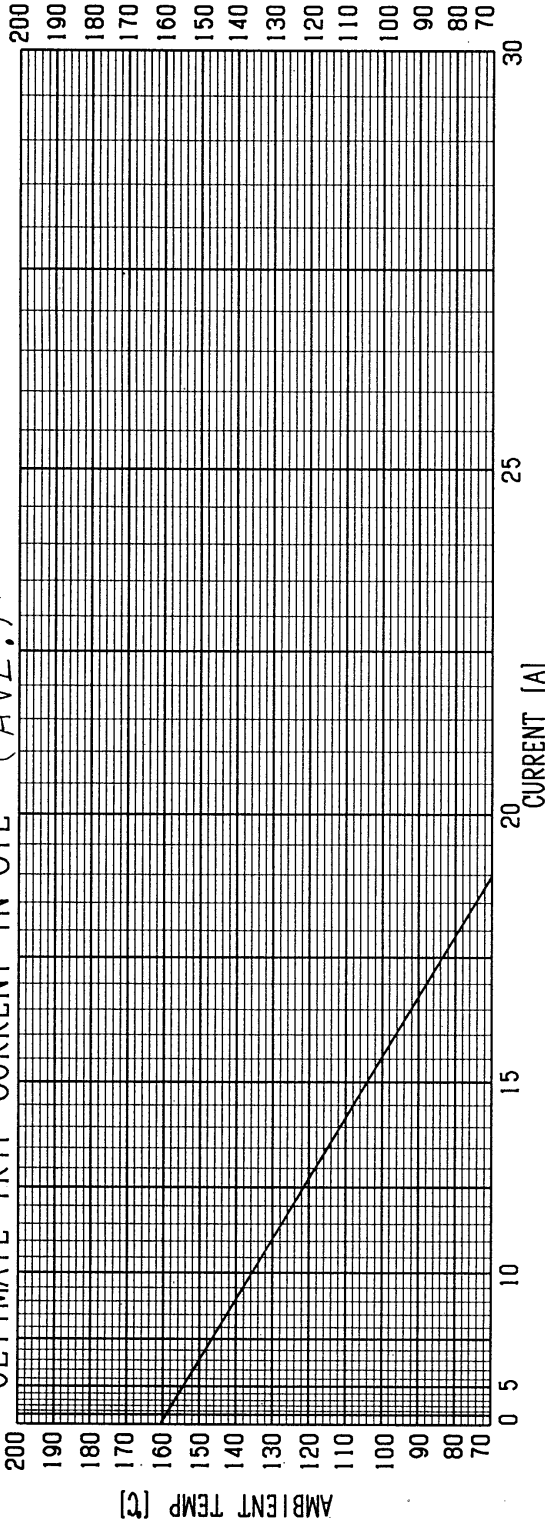
The nameplate on the compressor will appear as follows.



### <Guide>

- |                |                                |
|----------------|--------------------------------|
| • MODEL        | <b>A:</b> Model Name           |
| • POWER SOURCE |                                |
| V              | <b>B:</b> Rated Voltage        |
| PHASE          | <b>C:</b> Phase number         |
| Hz             | <b>D:</b> Rated frequency      |
| • MFG.NO.      | <b>E:</b> Manufacturing number |

ULTIMATE TRIP CURRENT IN OIL (AVE.)

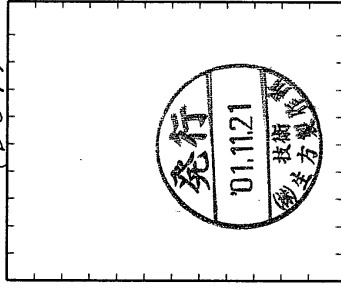


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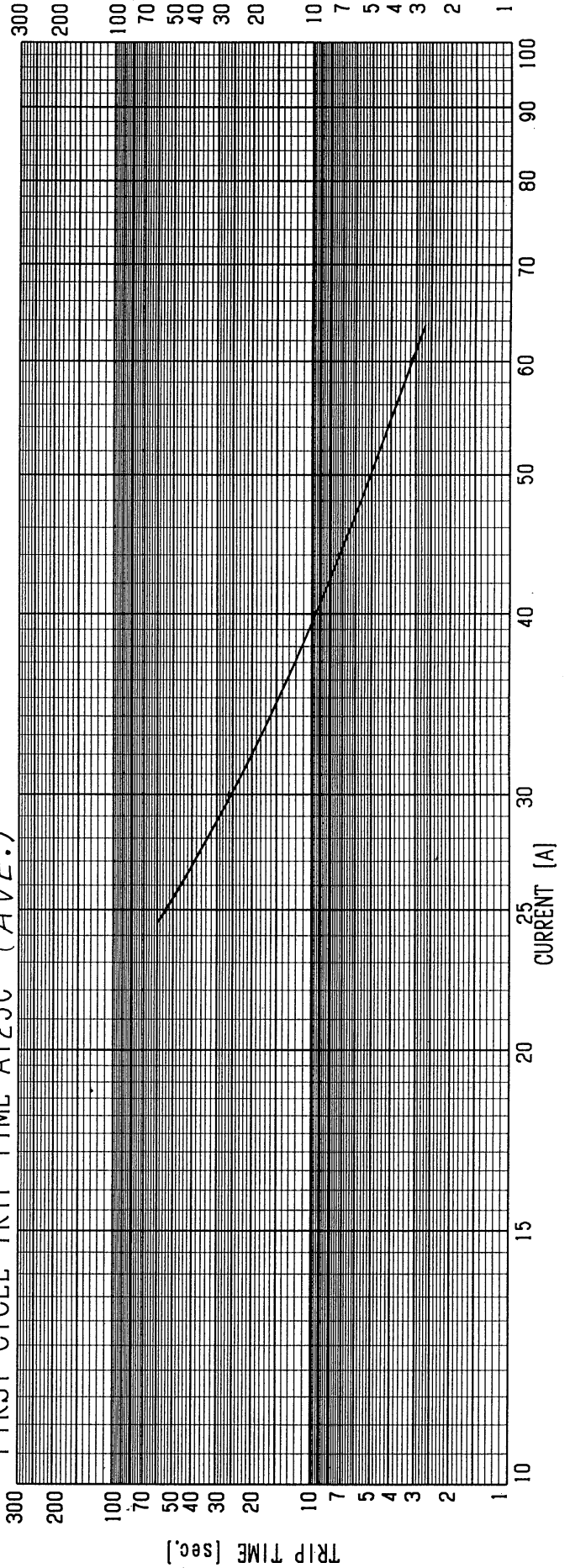
UPI8SE0820-99

(D87)



4 UNIKATA INDUSTRIES CO., LTD.  
PHONE 052-612-3333 FAX 052-612-3336

FIRST CYCLE TRIP TIME AT25°C (AVE.)



While install the compressor, Setting position of protection devices must be attention.

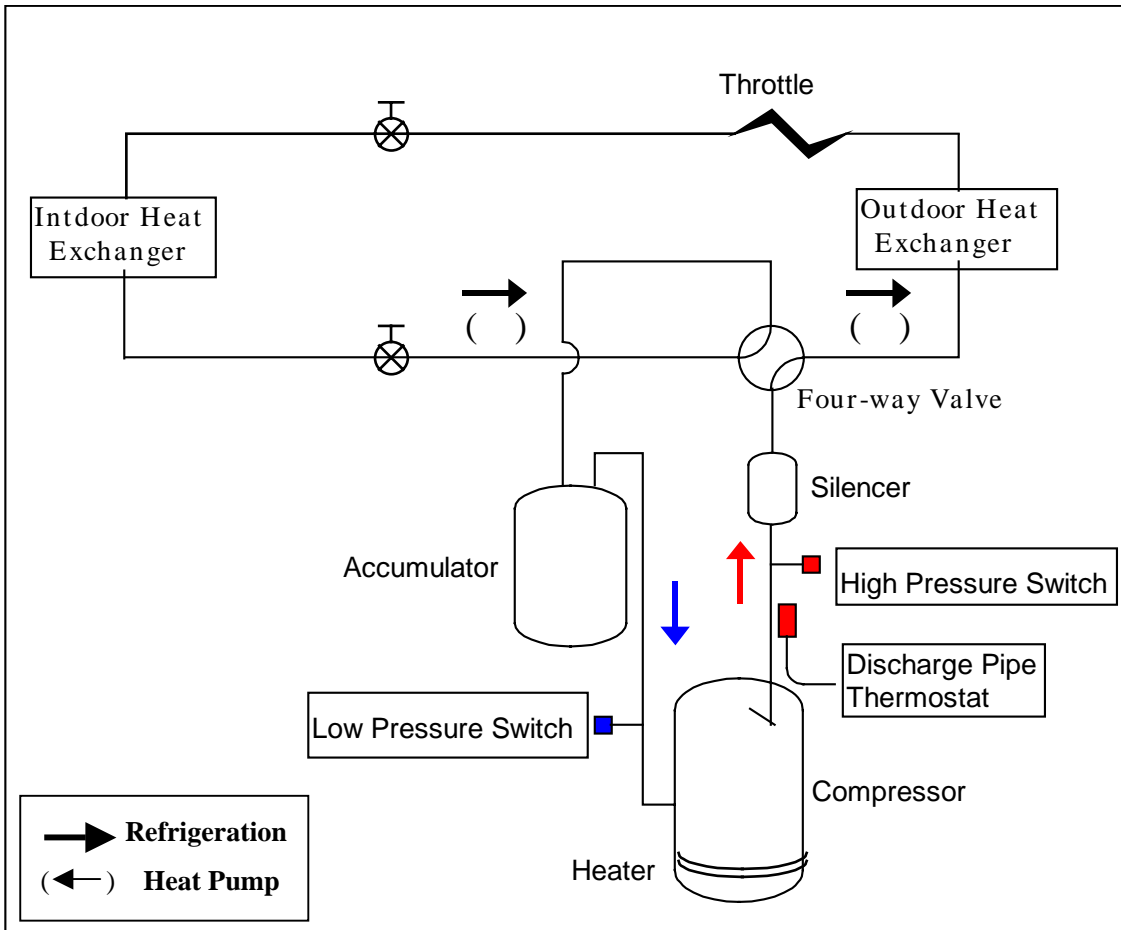
Protection Devices : Low Pressure Switch

High Pressure Switch

Discharge Pipe Thermostat

	Setting Position	Notice
Low pressure switch	Compressor ~ Accumulator	Confirm Discharge port temperature
High pressure switch	Compressor ~ Four-way Valve	
Discharge pipe thermostat	Compressor ~ Four-way Valve	Confirm Discharge port temperature

Not i ce: The setting position must possibly close to the compressor.



Reverse-Phase Protector

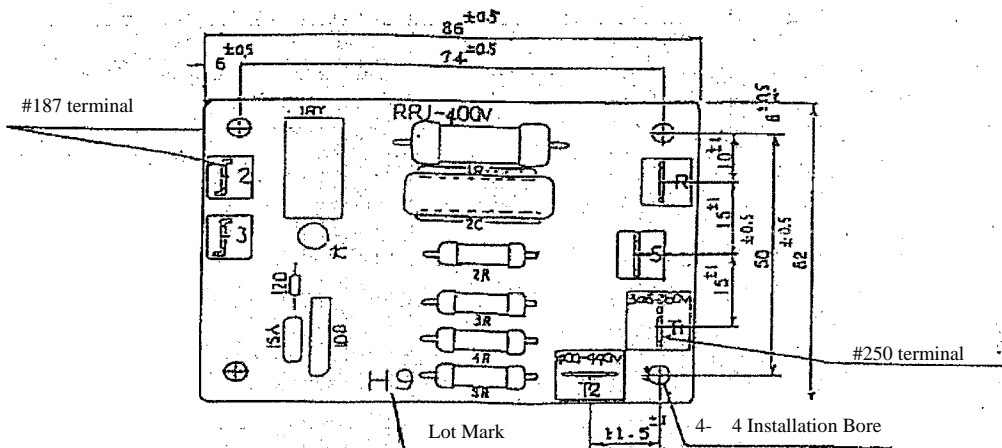
1 : Operating Condition

Item	Used Condition
1 Installation Site	Inside Control Box of Indoor or Outdoor System
2 Operating Temperature	- 2 0 ~ 6 0
3 Storage Temperature	- 2 5 ~ 7 0
4 Humidity	Maximum Range 98%RH, under 80%RH Year Average, under 80%RH at 60 .Capable fluctuating Temperature or Humidity.

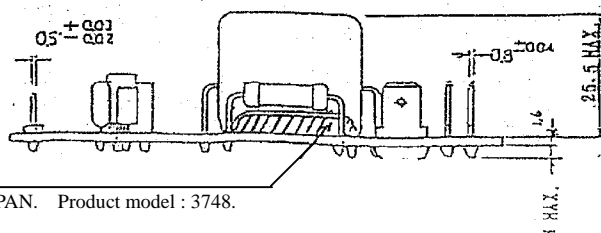
2 : Specification

Item	Specification
1 Model	RPJ-400V
2 Function	Make: Positive - Phase - Sequence Break: Negative - Phase - Sequence
3 Rated Main Circuit Voltage	R-S-T1 AC 346V ~ 380V(3 Phase) R-S-T2 AC 400V ~ 440V(3 Phase)
4 Time Rating	Continuous
5 Output Contact Rating	AC 250V Inductive Load Making 8A(Pf=0.65), Breaking 2A(Pf=0.4) Resistive Load 3A(Pf=0.95 MIN.)
6 Life	10000 Times MIN.
7 Weight	37g
8 Applicable Mounting Spacers	XGLS-8S (Made By KITAGAWA INDUSTRY CO., LTD.) 4 pieces

3 : Dimension Diagram

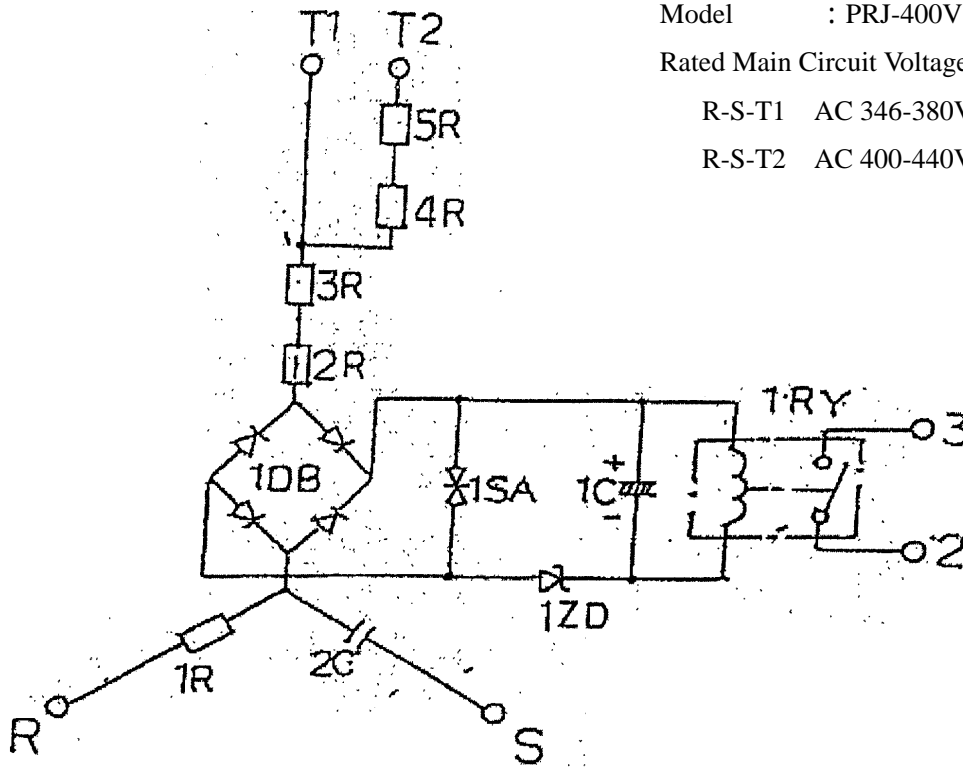


Stamp Color: Black



2C Capacitor: Fixed by Binder  
Binder is made by SIMITOMO 3M, JAPAN. Product model : 3748.

4 : Circuit Diagram



Model : PRJ-400V

Rated Main Circuit Voltage :

R-S-T1 AC 346-380V(50/60 Hz)

R-S-T2 AC 400-440V(50/60 Hz)

5 : Parts Table

	Parts Name	Mark	Quantity	Speci fication
1	Resist-Oxidation Metal -film Resistor	1R	1	8W 82k
2	Resist-Oxidation Metal -film Resistor	2R	1	2W 5.6k
3	Resist-Oxidation Metal -film Resistor	3R	1	2W 5.6k
4	Resist-Oxidation Metal -film Resistor	4R	1	2W 5.6k
5	Resist-Oxidation Metal -film Resistor	5R	1	2W 5.6k
6	Electrolytic Capacitor	1C	1	50V 22 μ F
7	Metallized Polyester film Capacitor	2C	1	AC600V 0.039 μ F
8	Diode Subassembly	1DB	1	200V 1A
9	Rheostat	1SA	1	120V
10	Low-Voltage Diode	1ZD	1	500mV 24V
11	Relay	1RY	1	G6B-1114P-US, DC 24V(OMRON)
12	Printed Circuit Board	-	1	CEM-3, 94V-0
13	Terminal (#250)	-	4	Tinned Brass (0.8t)
14	Terminal (#187)	-	2	Tinned Brass (0.5t)



新3角法

02種  
型+)

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2

新規設計  
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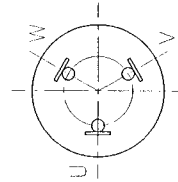
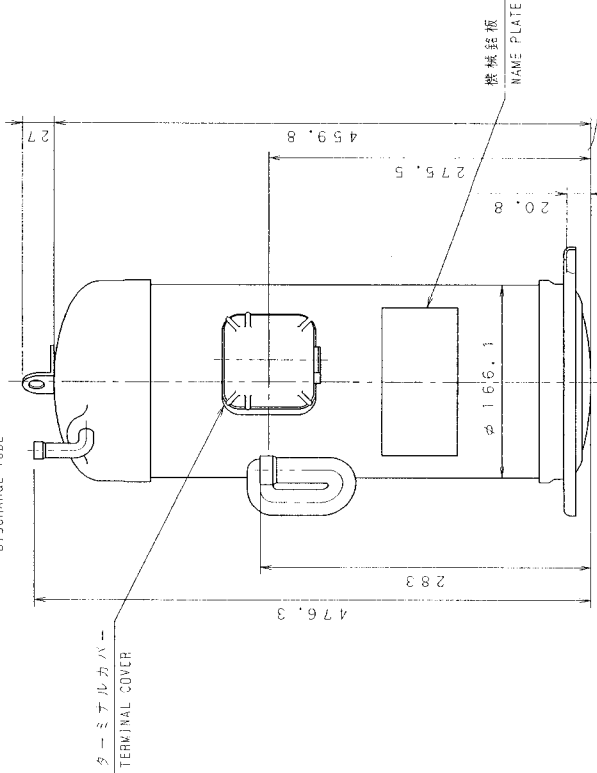
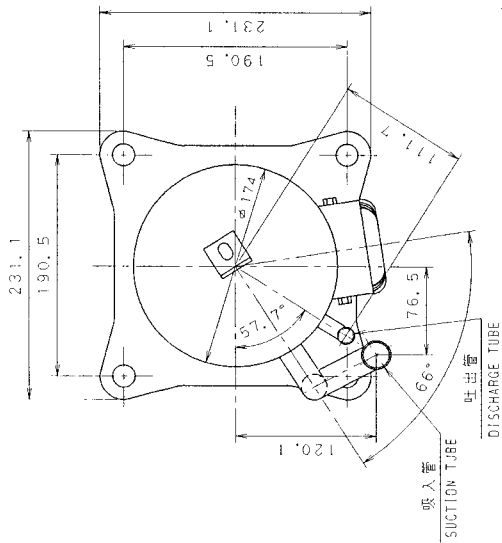
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機種名 MODEL	JT160BCBY1L
定格出力 RATED OUTPUT (kw)	3.75
排シノケ量 SWEEP VOLUME (cm <sup>3</sup> /rev)	83.1
定格回転速度 RATED SPEED (r/min)	2900
冷媒油充灌量 REF. OIL GRADE	SUNISO 40SD1D-K 3A, DAPHNE SE56P
冷媒油充灌量 REF. OIL CHARGE (kg)	1.5
冷媒 REFRIGERANT	R22
吸入側管径 SUCTION CONN.	φ 19.1 I.D.
吐出側管径 DISCHARGE CONN.	φ 12.7 I.D.
質量 (冷凍油含まず) NET WEIGHT (kg)	3.4
電源 POWER SUPPLY	3 PHASE 50 HZ
電圧 VOLTAGE RANGE (V)	380

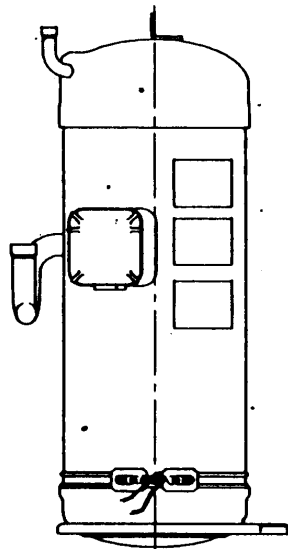
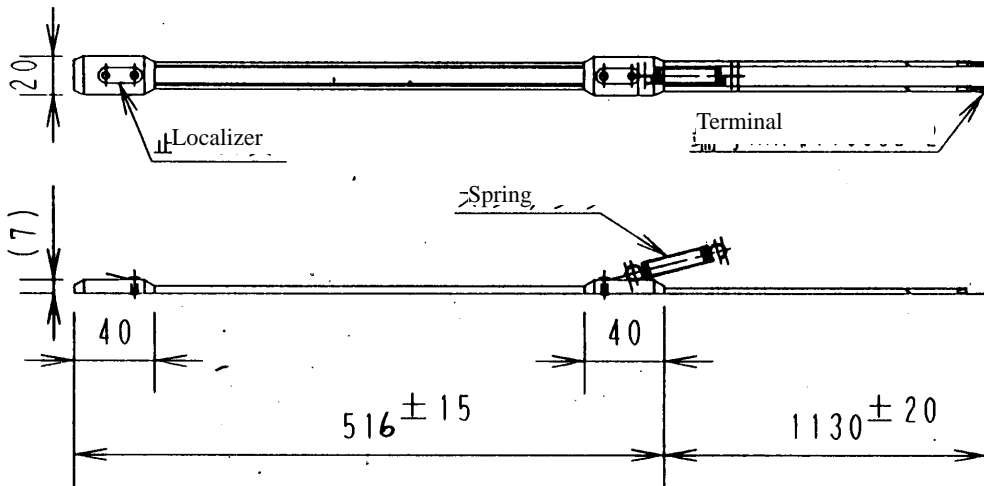


端子位置  
PHASE ARRANGMENT

名称	JT160BCBY1L	外形	DA429-293C
管理NO.		DIMENSIONS	
製造	松浦		
検査	松浦		
承認	松浦		
設計	西川		
作成	西川		
発行	西川		
受注	西川		
製作	西川		
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DWG. NO. DA 429-906



**Heater Specification**

- 1. Output : 33W ± 7%
- 2. Voltage : 200V ± 1%
- 3. Insulating performance (after put it in water for 24h)
  - \* Withstand voltage: AC1500V for 1 min. , and the insulator no broke through.
  - \* Insulation Resistance : 100M Min. .(Test with DC 500V gauge for 1 min)

**Caution**

Even if the compressor does not work, also supply power to heater.

**Manner of Heater Installation**

改正 補 REV.

△
△
△

第 3 角 法 3RD ANGLE PROJECTION		尺 度 SCALE	
作成日 DATE		YR	MO DA
		95	6 15
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的 場	田 中	白 須	

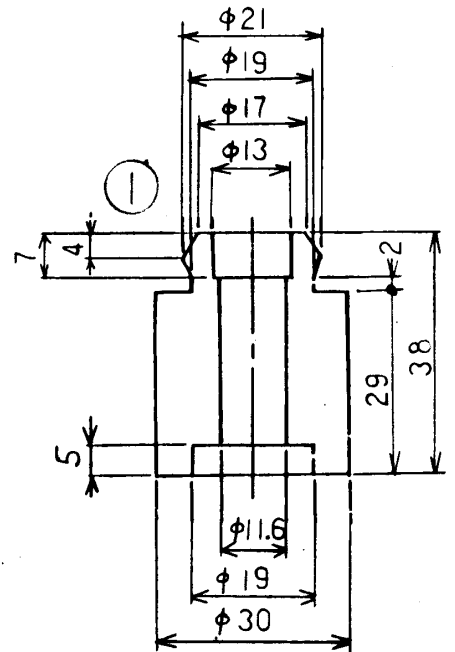
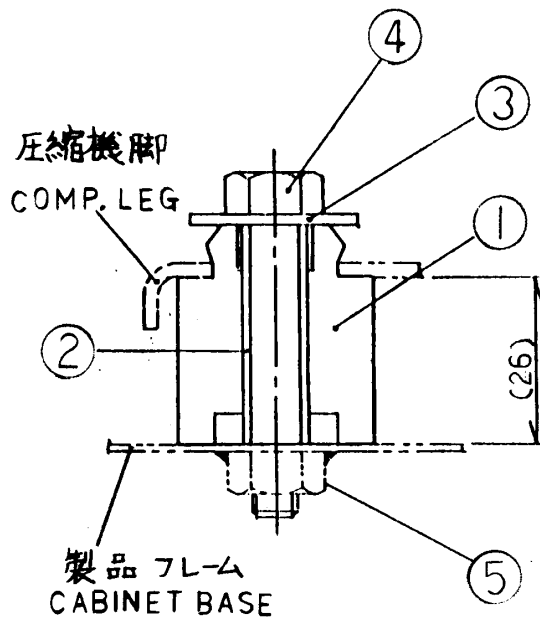
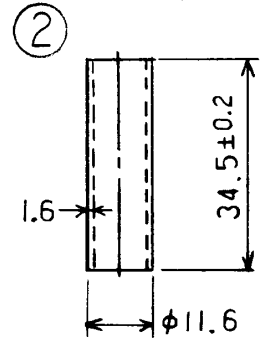
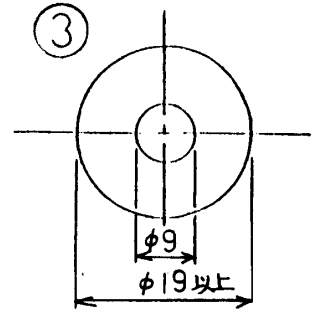
JT160~106B  
Crankcase Heater

ダイキン工業株式会社  
DAIKIN INDUSTRIES LTD.

DWG. NO. DA 429-906

品番 DWG. NO.	DA 429-903 B		品名	数量*	記号
	NO.	PART NAME	数量	REMARK	
1	防振ゴム MOUNT. RUBBER	3	4		
2	スペーサー SPAOER	3	4	鋼管 STEEL PIPE	
3	座金 WASHER	3	4	客先調達 CUSTOMER'S ARRANGE モ2.6	
4	ボルト M8x45 BOLT	3	4	客先調達 CUSTOMER'S ARRANGE	
5	ナット M8 NUT	3	4	客先調達 CUSTOMER'S ARRANGE	

注) 圧縮機ニヨリ防振ゴムノ使用数\*ガ異ナル



改正欄 REV.	
▲ 95.6.12	
仕様変更 安通火17X	
図面/図説	
▲ 96.10.8	
個数4追記	
図面/図説	
△	
配布先	

第3角法 3RD ANGLE PROJECTION	尺度 SCALE	JT * A (B)	防振ゴム MOUNT. PARTS
作成日 DATE	YR 98 MO 9 DA		
承認 APPROVED	照査設計 CHECKED DESIGNER		
配布先	西川	ダイキン工業株式会社 DAIKIN INDUSTRIES LTD	図番 DWG. NO. DA 429-903 B