DAIKIN

No. AT05C034E
July.21.2011

SPECIFICATIONS

COMPRESSOR

MODEL：JT170GABY1L

1. Range of Application and Assembly

1-1 Applied Range

The specifications provided here apply to the JT170GABY1L Hermetic Scroll Compressor.

1-2 Range of Assembly

	Name	Quantity	Plan No.	Remarks
1	Compressor	1	DA430—250	Including lubricant
2	Anti-vibration Rubber	4	DA429—903—1	
3	Spacer	4	DA429—903—2	

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

2. Main Specifications

2-1 Main Ratings

型　　号		JT170GABY1L
Rated Output	kW	4.5
Number of Poles	—	2
Displacement	cm^3/rev	84.0
Rated Speed (=Nominal Revolution)	r/min	2900［50Hz］
Lubricant	—	DAPHNE SE56P
Lubricant (Volume)	cm^3	1400
Refrigerant	—	R22
Inlet Pipe (I.D.)	mm	φ22.1～φ22.25 (Steel Pipe 20# Tinned Copper)
Outlet Pipe (I.D.)	mm	φ16～φ16.15.(C122OT—O)
External Cable Terminal	—	AMP 42232-3
Weight (including refrigeration oil)	kg	33.1
Power Supply	—	3 phase at 50Hz
Rated Voltage	V	380

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 μm)

・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 [Hz]	Voltage [V]	Refrigerating Capacity [kW]	Input [kW]	Current [A]	COP W/W	Sound Pressure [dBA]	Vibration [μm]
50	380	17.90	5.12	8.1	3.5	59max	50 max.

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

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

2. The refrigerating capacity and COP fluctuate within a range above 95%.
   The Input and Current fluctuate within a range between 95% and 105%.
3. 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.
4. The vibration value is measured at the compressor legs attached, in use Daikin's genuine.

3-4 Starting Characteristic

- Maximum Starting Current ：65A（380V/50Hz）
- Starting Current（LRA） ：62.7A（380V/50Hz）

Note：LRA means locked-current after starting 4s.

- Starting Voltage ：Minimum terminal voltage of 323V (50Hz)
- Starting Pressure ：1.77Mpa (high pressure, Max.)

3-5 Motor Characteristic

- Coil Resistance ：2.73Ω（average）at 20℃

3-6 Electric Characteristic

- Insulation Resistance ：30 MΩ min. (when dry), 1 MΩ min. (when refrigerant flood the compressor.)
- Withstand Voltage ：2,400 VAC for 1 sec. and no dielectric breakdown impress
- Leakage Current ：0.75mA/ kW Max.

3-7 Others

- Moisture content : 600 mg Max.
- Residue : 50 mg 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 7 for the Compressor's Possible Operating Range.

4-2 Precautions

1) Don’t drive under air condition, otherwise may cause the compressor explosion.

2) Temperature

- Discharge port temperature : 135℃ Max.
- Discharge gas temperature range : 125℃ Max.
- Oil temperature : 125°C Max.
- Motor winding temperature : 130°C Max. (Average temperature based up on resistance measure of motor coil)

3) Power Supply

- Maximum voltage fluctuation : ±10% of rated voltage
- Phase imbalance :±2.5%
- Maximum frequency fluctuation : ±2% of rated frequency

4) Refrigerant Systems

- Allowable refrigerant charge : 2.5 kg

Liquid compression and liquid impact ：No

- 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. Please estimate liquid or impart by unwonted sound of the compressor.
- Be sure to keep the discharge port temperature upon condensing temperature.
- Oil concentration in oil sump during operation: 35wt% Min.
- The compressor must be filled with refrigerant through the liquid pipe.

If the liquid height of residual compressor oil and refrigerant maintained in the compressor above external bottom higher than 251.5mm, the part of terminal will immerse in the liquid of residual compressor oil and refrigerant. In that case, insulation resistance of the compressor will fall. Therefore, please design the refrigerant pipeline so that liquid height of residual compressor oil and

refrigerant maintained in the compressor above external bottom lower than 251.5mm.

・Design the refrigerant pipeline so that the oil in pipeline return to compressor rapidly.

・Make sure that the moisture content in liquid refrigerant under 75ppm.

・Counter pressure (i.e. Suction pressure – discharge pressure) at pneumatic or leak test
：1.47MPa Max.

・Maximum operating times ：12 per hour Max.

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 ：±10 ° 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, 27mm.

5. Protection Devices

When the compressor is installed in an air-conditioner system, it must be installed with the following protection devices.

5-1 Discharge Pipe Thermostat

Attach a discharge pipe thermostat within 30cm 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 120± 0.5°C .

5-2 Low-Pressure Switch

Attach a low-pressure switch operating at a low pressure of 0.02±0.02MPa 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 (that had already been installed in the compressor)

・Manufacturer : UBUKATA INDUSTRIES CO., LTD

・Model : UP18WA122-54H

・Temperature Characteristics : Open Temperature 180°C±5°C

: Close Temperature 70°C±10°C

・Electrical Characteristics : Power Supply Voltage 380V

: Power Supply Frequency 50Hz

: Trip Performance Specified In Page 10/17

: Maximum Electrical Capacity 75A(380V)

5-5 Over-current Relay

Over-current relay shall be installed in order to prevent compressors from accident that may be caused by over-current especially locked-current of compressor motor.

5-6 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 of 2.9～3.0Mpa.

6. Deadening and Otherwise

The hot-proof temperature of deadening and otherwise entwining compressor must be upon 170°C.

The hot-proof temperature of scarfskin of power supply cable contacted with compressor must be upon the temperature of contacting position.

7.Performance Curves

Refer to the accessional datum.

8.Origins and Factory

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

9.Possible Compressor Operating Range

・Refer to 9-5 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

9-1 Area 1

Observe the precautions in 4-2.

9-2 Area 2

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

・Discharge port temperature	：135℃ Max.
・Motor coil temperature	：130℃ Max.(average temperature based up on resistance measure of motor coil)
・Oil temperature	：125℃ Max.
・Oil concentration	：35wt% Min.

9-3 Area 3

Specifically confirm the following:

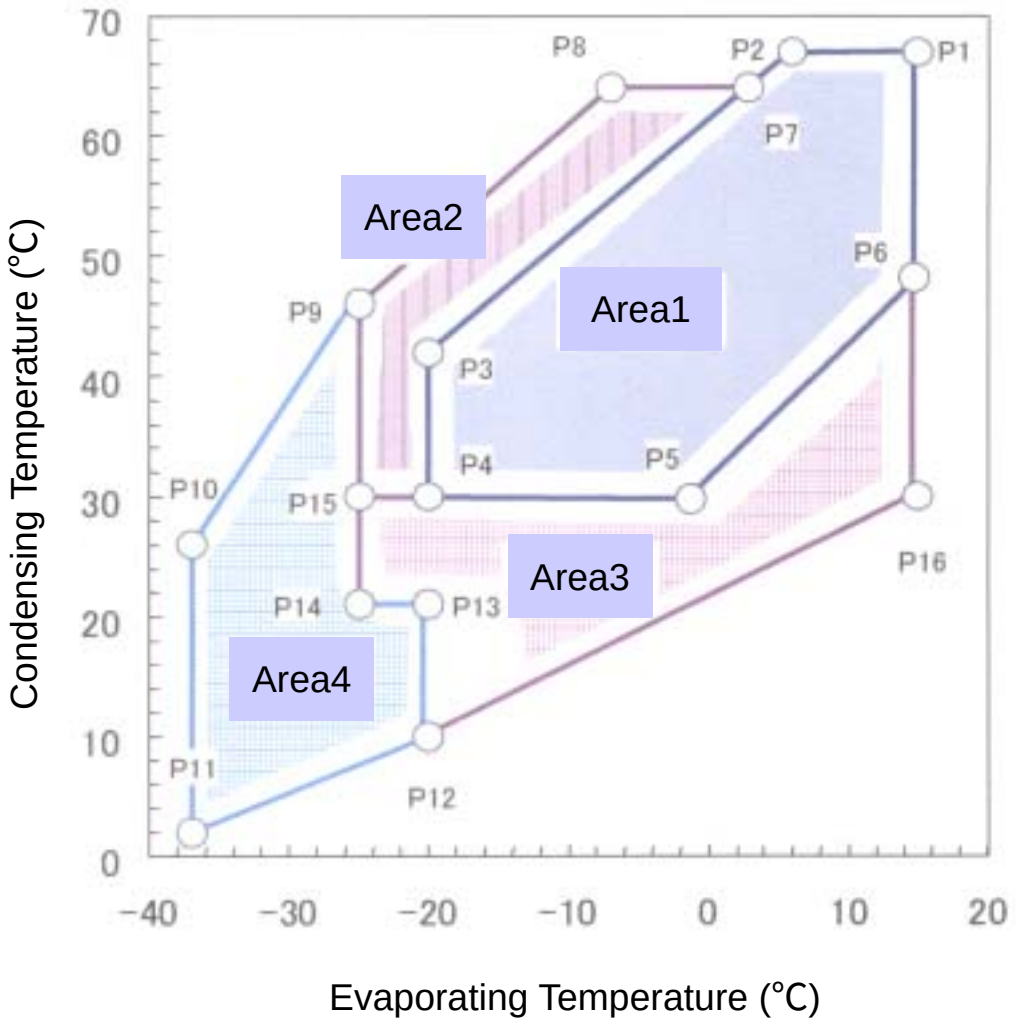
・Oil concentration	：35 wt% Min.
・Liquid compression	：No liquid compression

9-4 Area 4

Specifically confirm the following:

・Continuous operating time	：10 minutes Max.
・Oil concentration	：35 wt% Min.
・Liquid compression	：No liquid compression
・Discharge port temperature	：135℃ Max.
・Motor coil temperature	：130℃ Max.(average temperature based up on resistance measure of motor coil)

9-5 Possible Compressor Operating Range



Point	P1	P2	P3	P4	P5	P6	P7	P8
Evaporating Temperature(°C)	15	6	−20	−20	−1	15	3	−7
Condensing Temperature(°C)	67	67	42	30	30	49	64	64

Point	P9	P10	P11	P12	P13	P14	P15	P16
Evaporating Temperature(°C)	−25	−37	−37	−20	−20	−25	−25	15
Condensing Temperature(°C)	46	26	2	10	21	21	30	30

Nameplate

The nameplate on the compressor will appear as follows.

<Guide>

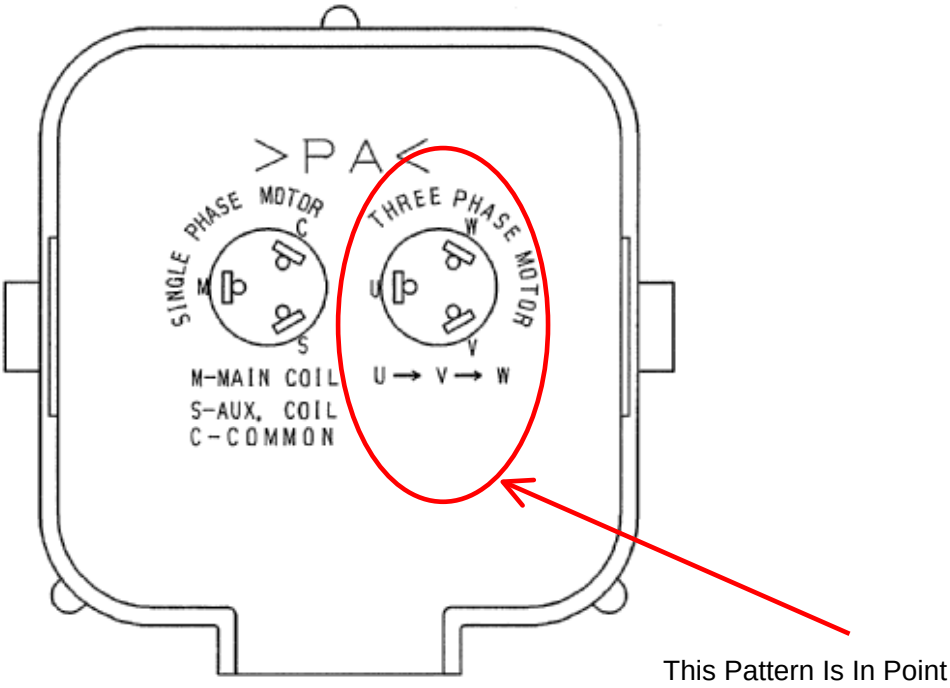
・MODEL	**A** : Model Name
・POWER SOURCE	
V	**B** : Rated Voltage
PHASE	**C** : Phase number
Hz	**D** : Rated frequency
・MFG.NO.	**E** : Manufacturing number

Terminal Position Indication

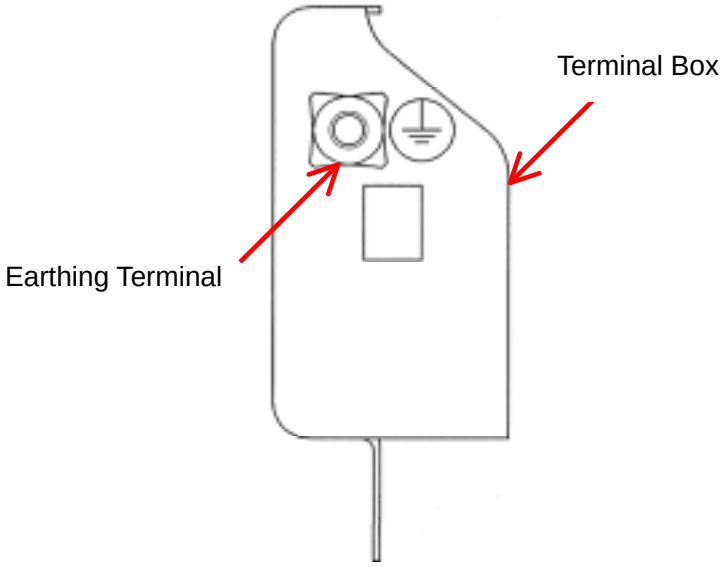
Compressor terminal box cover express position of terminal as follow fig.

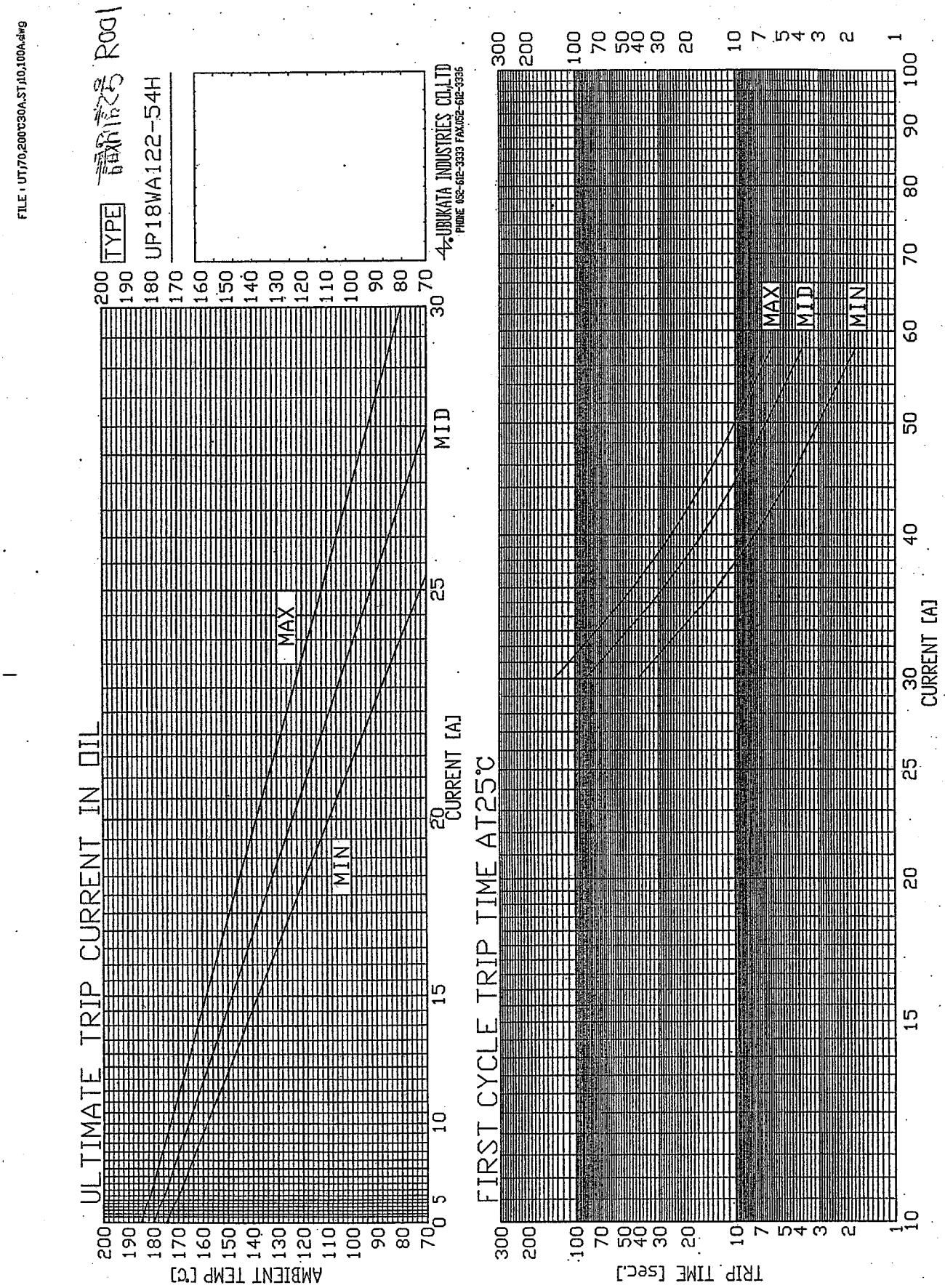
Terminal box cover express position of three phase and single-phase compressor terminal.

The following pattern is eye view of compressor terminal position.



Earthing Terminal Position



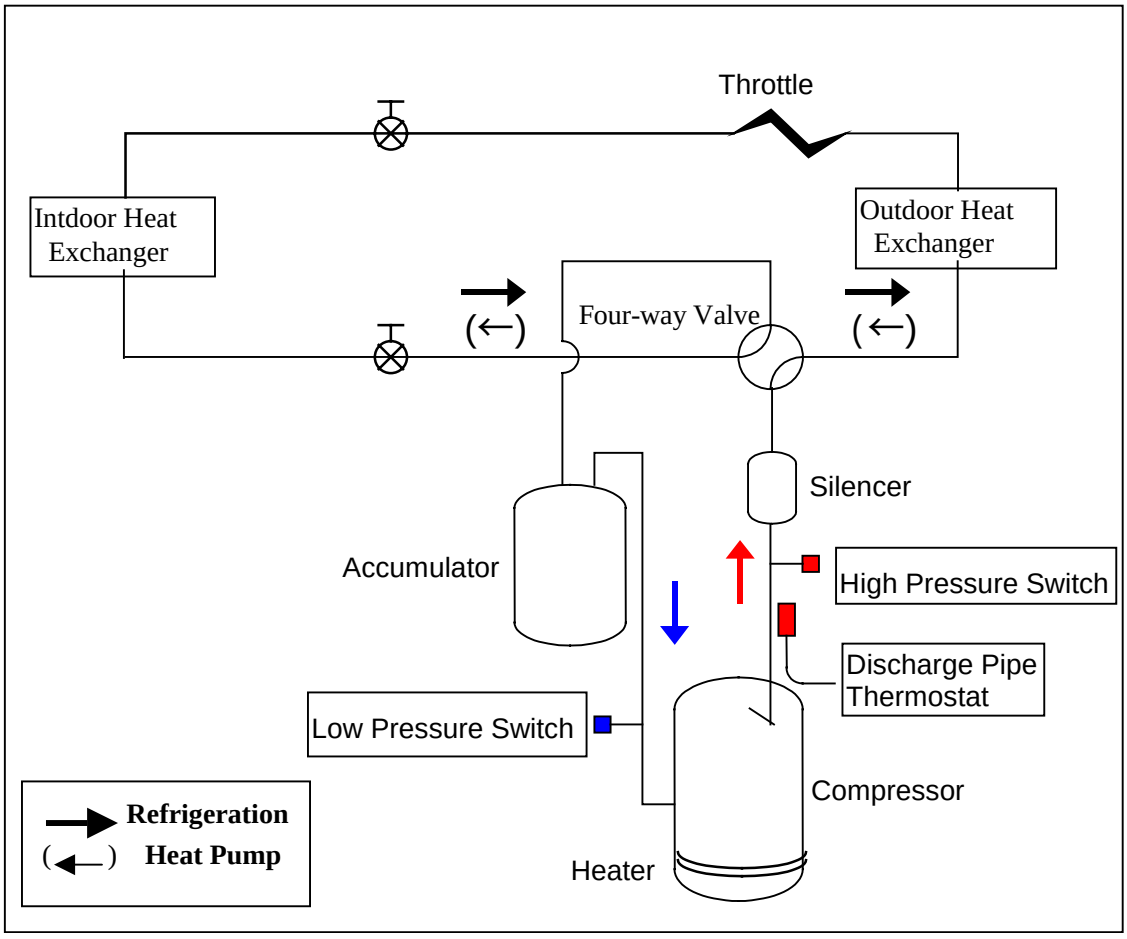

FILE : UT,70,200℃30A.ST,10,100A.dwg
TYPE
UP18WA122-54H
UBUKATA INDUSTRIES CO.,LTD
PHONE 052-612-3333 FAX.052-612-3336
ULTIMATE TRIP CURRENT IN OIL
AMBIENT TEMP [℃]
CURRENT [A]
MAX
MID
MIN
FIRST CYCLE TRIP TIME AT25℃
TRIP TIME [sec.]
CURRENT [A]
MAX
MID
MIN

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	Distance from discharge pipe is 30cm (max)	Confirm discharge port temperature

Notice: The setting position must possibly close to the compressor.



Reverse-Phase Protector

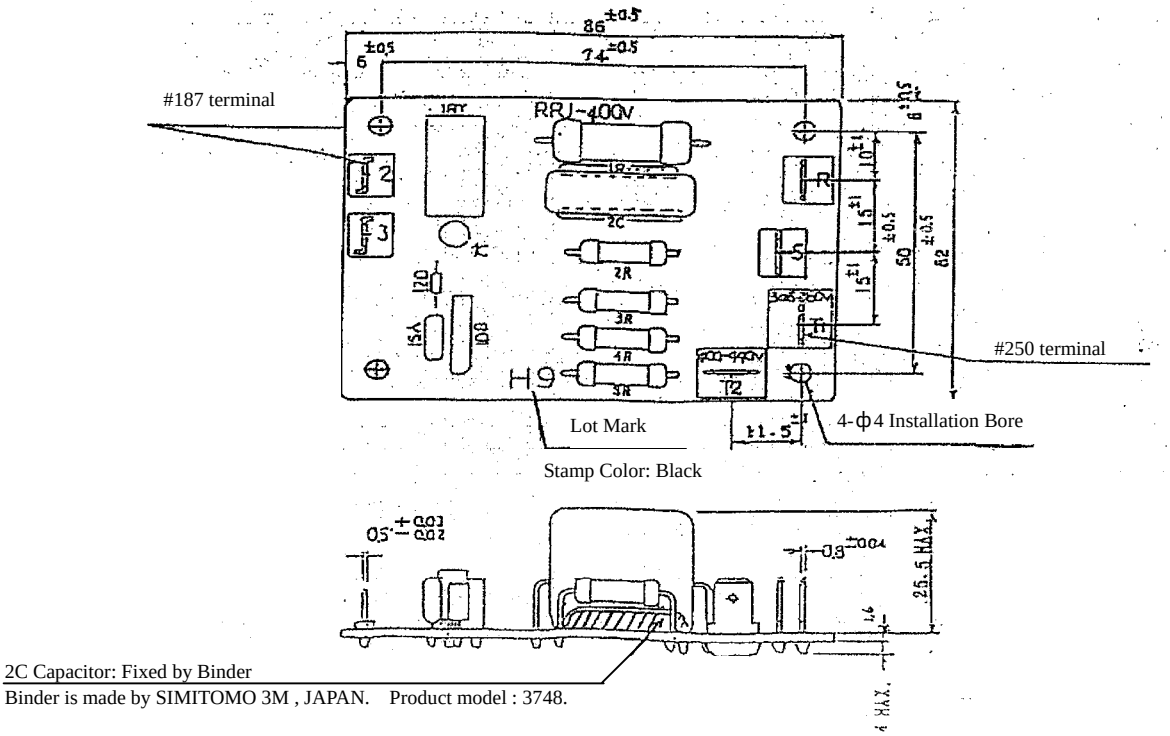
(1：Operating Condition)

№	Item	Used Condition
1	Installation Site	Inside Control Box of Indoor or Outdoor System
2	Operating Temperature	－20～65℃
3	Storage Temperature	－25～70℃
4	Humidity	Maximum Range 98%R.H., under 80%R.H. Year Average, under 80%R.H at 60℃.Capable fluctuating Temperature or Humidity.

(2：Specification)

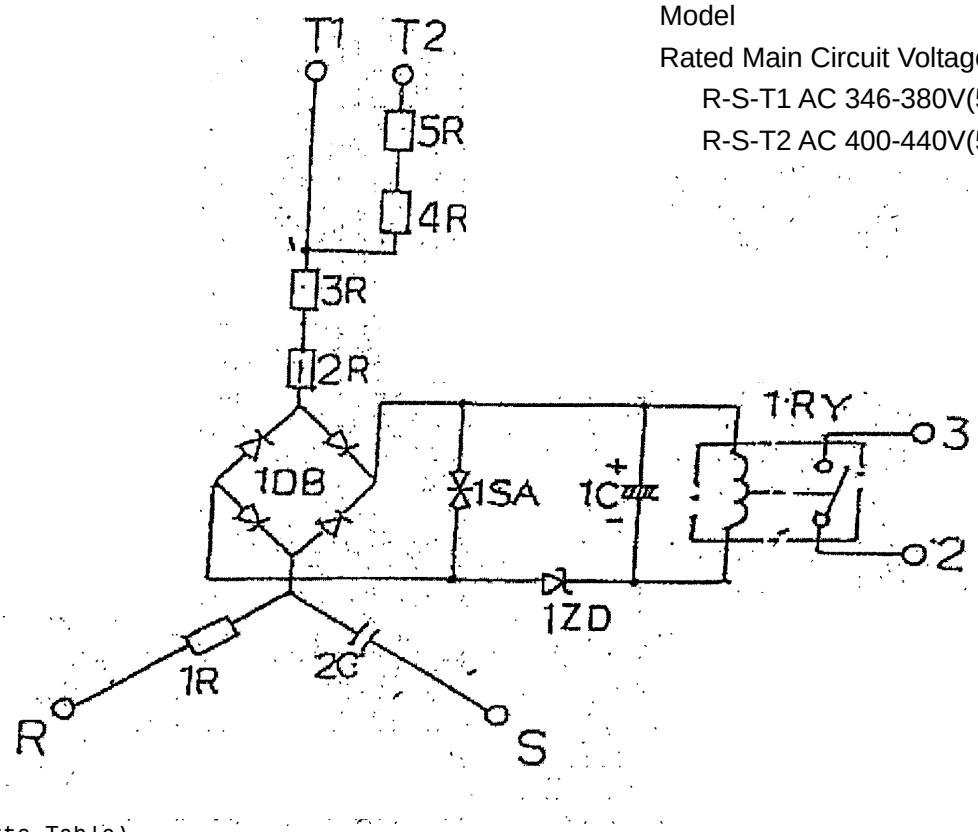
№	Item	Specification
1	Model	RPJ-400V
2	Function	Make: Positive – Phase – Sequence Break: Negative – Phase - Sequence
3	Rated Main Circuit Voltage	R-S-T1 AC 346V～380V(3 Phase) R-S-T2 AC 400V～440V(3 Phase)
4	Time Rating	Continuous
5	Output Contact Rating ① Inductive Load ② Resistive Load	AC 250V Making 8A(Pf=0.65), Breaking 2A(Pf=0.4) 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)



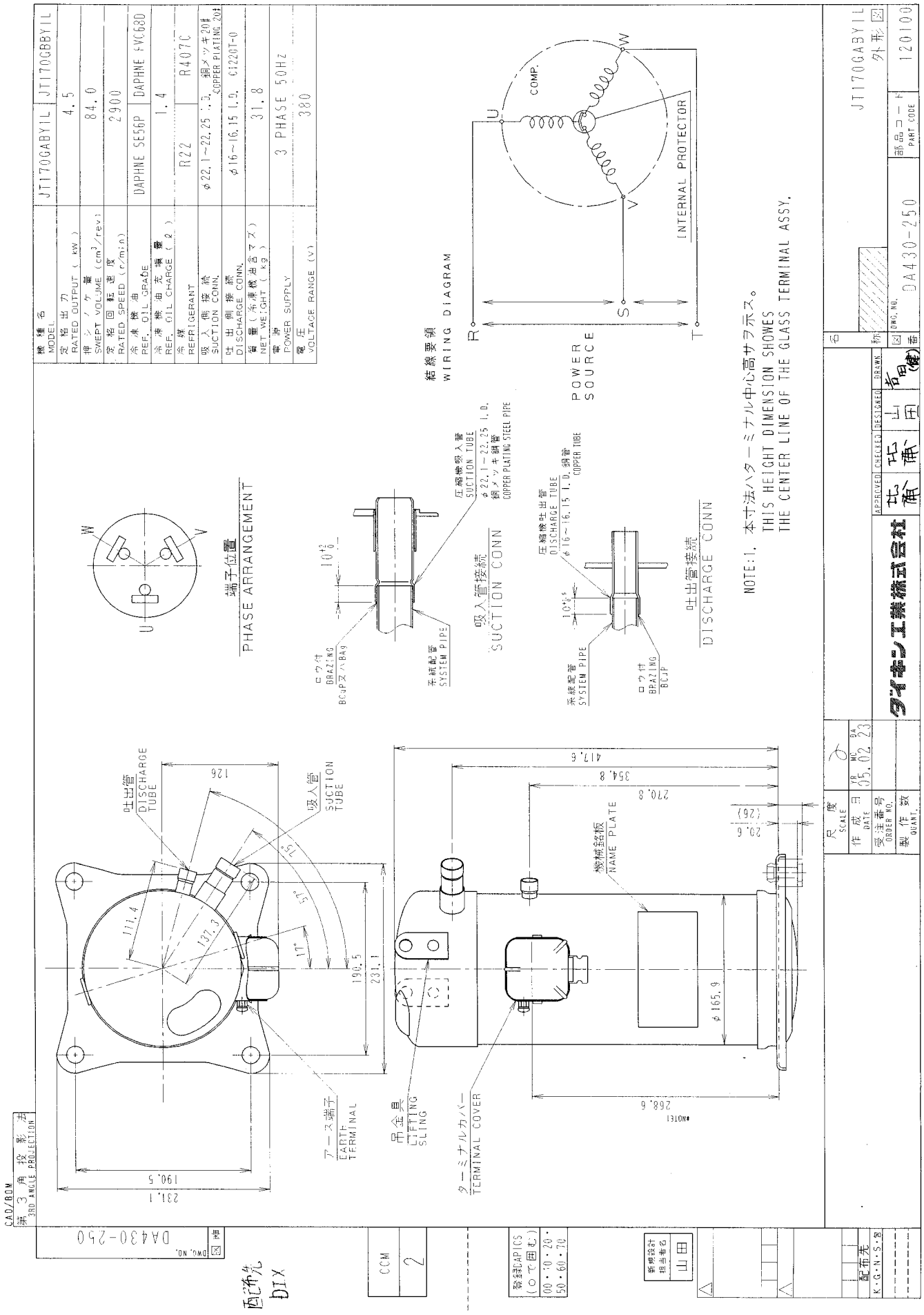
(4：Circuit Diagram)

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	Specification
1	Resist-Oxidation Metal-film Resistor	1R	1	3W 82kΩ
2	Resist-Oxidation Metal-film Resistor	2R	1	2W 5.6kΩ
3	Resist-Oxidation Metal-film Resistor	3R	1	2W 5.6kΩ
4	Resist-Oxidation Metal-film Resistor	4R	1	2W 5.6kΩ
5	Resist-Oxidation Metal-film Resistor	5R	1	2W 5.6kΩ
6	Electrolytic Capacitor	1C	1	50V 22μF
7	Metallized Polyester film Capacitor	2C	1	AC600V 0.039μF
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-O
13	Terminal (#250)	—	4	Tinned Brass (0.8 T)
14	Terminal (#187)	—	2	Tinned Brass (0.5 T)


機種名 MODEL JT170GABYIL JT170GBBYIL
定格出力 RATED OUTPUT (kW) 4.5
押しのけ量 SWEPT VOLUME (cm³/rev) 84.0
定格回転速度 RATED SPEED (r/min) 2900
冷凍機油 REF. OIL GRADE DAPHNE SE56P DAPHNE FVC68D
冷凍機油充填量 REF. OIL CHARGE (ℓ) 1.4
冷媒 REFRIGERANT R22 R407C
吸入側接続 SUCTION CONN. φ22.1~22.25 I.D. 銅メッキ 20# COPPER PLATING 20#
吐出側接続 DISCHARGE CONN. φ16~16.15 I.D. C1220T-0
質量(冷凍機油含マズ) NET WEIGHT (kg) 31.8
電源 POWER SUPPLY 3 PHASE 50Hz
電圧 VOLTAGE RANGE (V) 380
結線要領 WIRING DIAGRAM
COMP.
INTERNAL PROTECTOR
POWER SOURCE
端子位置 PHASE ARRANGEMENT
吸入管接続 SUCTION CONN
圧縮機吸入管 SUCTION TUBE φ22.1~22.25 I.D. 銅メッキ鋼管 COPPER PLATING STEEL PIPE
ロウ付 BRAZING BCuP
系統配管 SYSTEM PIPE
吐出管接続 DISCHARGE CONN
圧縮機吐出管 DISCHARGE TUBE φ16~16.15 I.D. 銅管 COPPER TUBE
NOTE:1. 本寸法ハターミナル中心高サヲ示ス。
THIS HEIGHT DIMENSION SHOWES THE CENTER LINE OF THE GLASS TERMINAL ASSY.
吐出管 DISCHARGE TUBE
吸入管 SUCTION TUBE
アース端子 EARTH TERMINAL
吊金具 LIFTING SLING
ターミナルカバー TERMINAL COVER
機械銘板 NAME PLATE
ダイキン工業株式会社
JT170GABYIL 外形図
DWG. NO. DA430-250
部品コード PART CODE 120100
CAD/ROM 第3角投影法 3RD ANGLE PROJECTION
DA430-250
CCM 2
登録CAPICS (○で囲む) 00・10・20・50・60・70
新規設計担当者名 山田
配布先 K・G・N・S・R

Crankcase Heater

・Install crankcase heater along weld mark upper as follow fig.
・Please don't let Crankcase heater cover the weld mark.(May result in insulation resistance fall.）
・Heater Specification

1. Output ：33W±7%

2. Voltage ：200V $^{+20\%}_{-10\%}$ or 240V $^{+10\%}_{-20\%}$

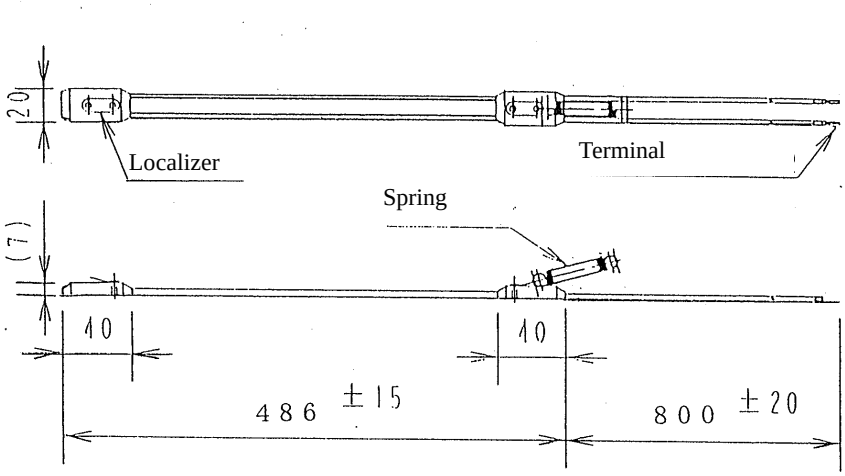
3. Insulating performance (after put it in water for 24h)

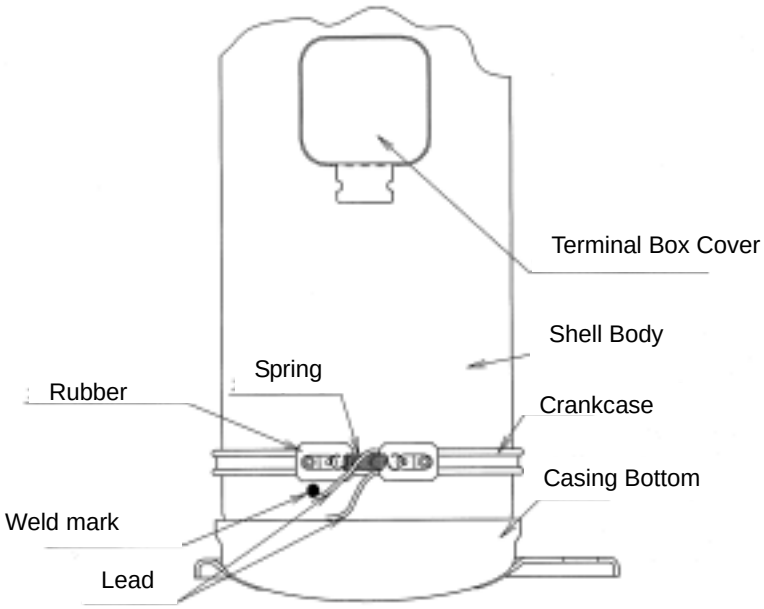
* Withstand voltage: AC1500V for 1 min. and the insulator no broke through.

* Insulation Resistance :100MΩ Min. (Test with DC 500V gauge for 1 min)

・Caution

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



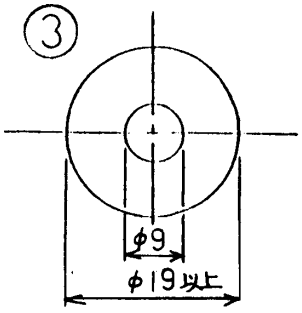


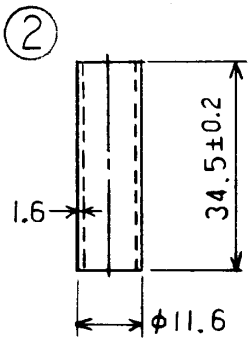
Manner of heater Installation

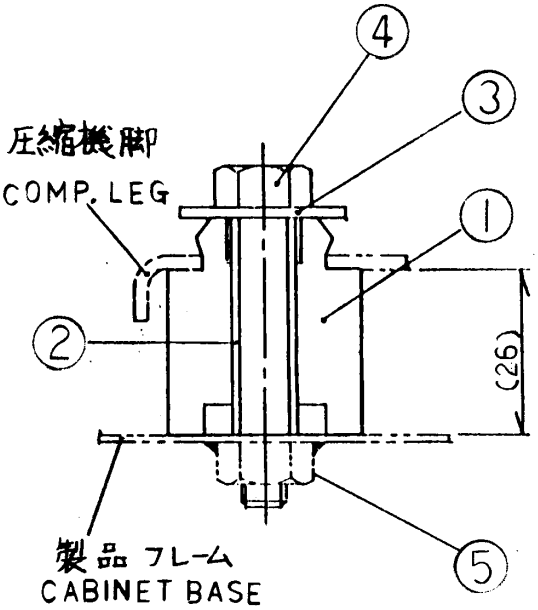
図番 DWG. NO. DA 429-903 B

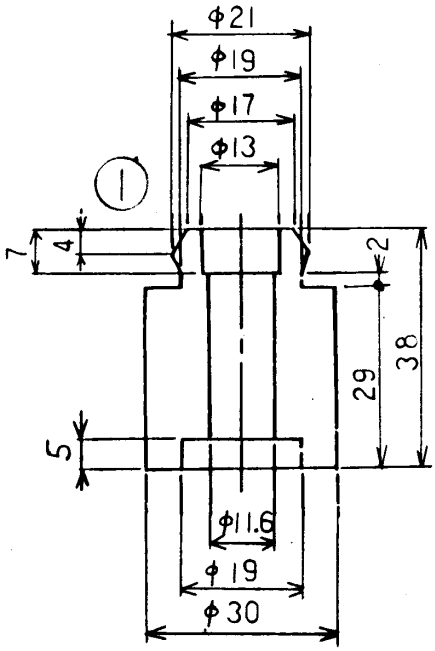
番号 NO.	品名 PART NAME	個数* QTY		記事 REMARK
1	防振ゴム MOUNT. RUBBER	3	4	
2	スペーサー SPACER	3	4	鋼管 STEEL PIPE
3	座金 WASHER	3	4	客先調達 OUSTOMER'S ARRANGE t2.6
4	ボルト M8x45 BOLT	3	4	客先調達 OUSTOMER'S ARRANGE
5	ナット M8 NUT	3	4	客先調達 OUSTOMER'S ARRANGE

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 機種限定→共通化ノタメ
⚠ '96·10·8 個数4追記
△

第3角法 3RD ANGLE PROJECTION	尺度 SCALE 1/2	JT※A(B)	防振ゴム MOUNT. PARTS
作成日 DATE YR 88 MO 9 DA			
承認 APPROVED	照査 CHECKED	設計 DESIGNED	製図 DRAWN
桜井		西川	

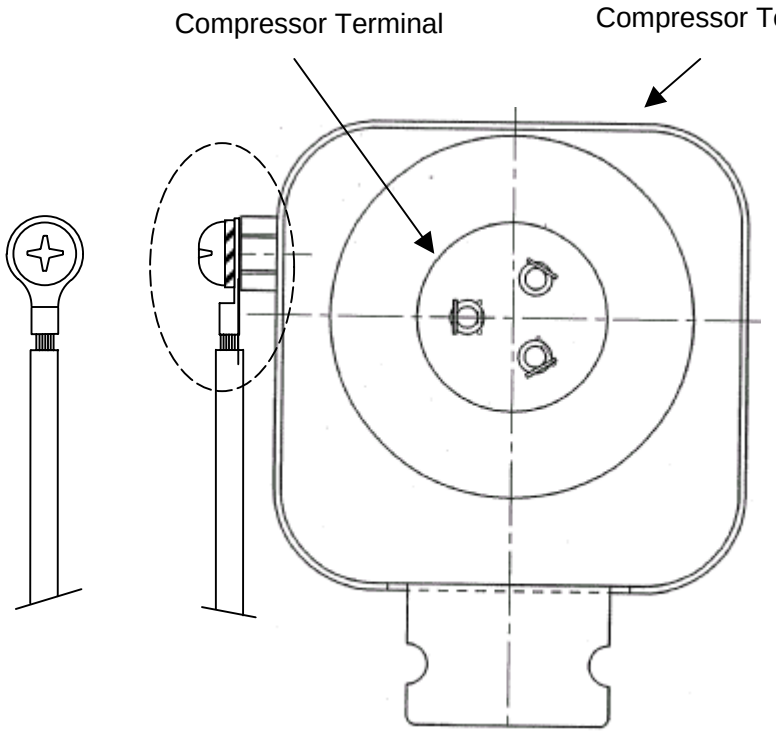
配布先

ダイキン工業株式会社 DAIKIN INDUSTRIES LTD

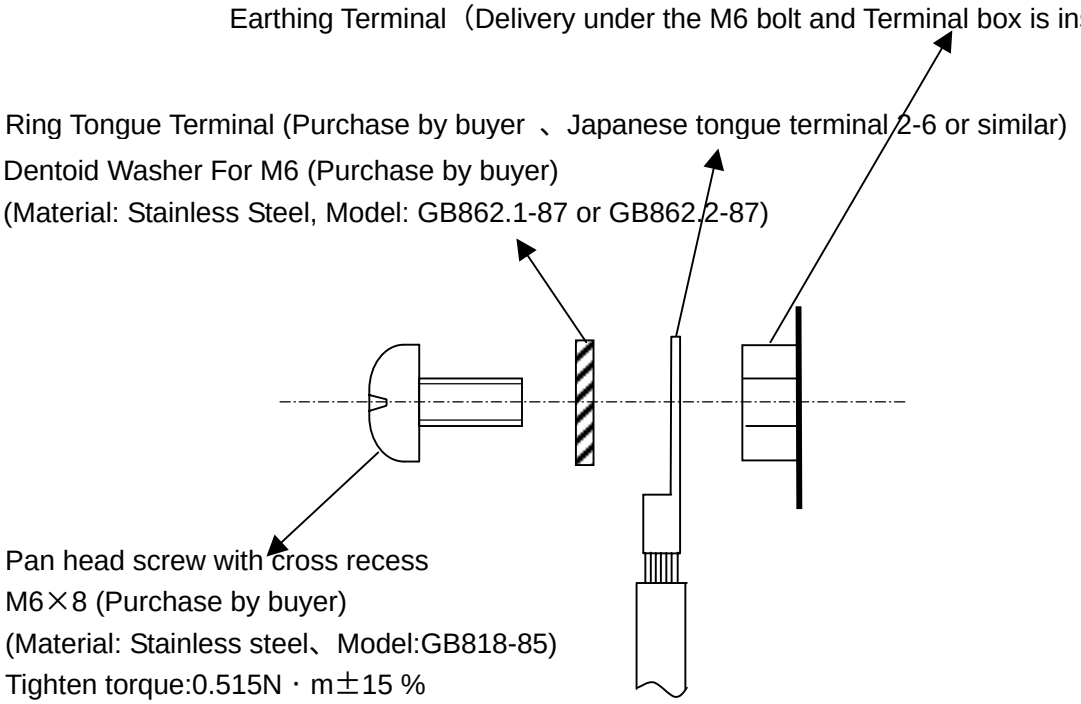
図番 DWG. NO. DA 429-903 B

Earthing Terminal

When earth with compressor earthing terminal, please operate as follow fig.



Earthing Terminal（Delivery under the M6 bolt and Terminal box is installed ）



Detailed fig. of Earthing Terminal