HITACHI ROTARY COMPRESSOR
MODEL SH773HA5NC

I. SPECIFICATION

1. SCOPE

This specification is applied to SHANGHAI HITACHI rotary compressor.

2. SPECIFICATION OF COMPRESSOR

2.1	Model	SH773HA5NU
2.2	Rated Voltage-Frequency-Phase	208-230V/60Hz/Single
2.3	Application	Cooling Air Conditioning
2.4	Refrigerant	R-22
2.5	Compressor Cooling	Forced Air
2.6.	Displacement	19.4 ml/rev
2.7	Rated Capacity (See *)	3975/3995W at 208/230V
2.8	Motor Input (See *)	1290/1320W at 208/230V
2.9	COP	3.08/3.03 W/W at 208/230V
2.10	Current	6.2/5.8A at 208/230V
2.11	Allowable amount of refrigerant charge	1300 g
2.12	Amount of Oil Charge	520 ± 20 ml (Initial)
2.13	Oil	SUNISO-4GSI
2.14	Space Volume of Inner Case	1780 ml
2.15	New Weight	16.2 Kg including Oil
2.16	Hermetic Terminal	1/4" Quick Connect Type

2.17 Motor

Type	Permanent Split Capacitor
Capacitor	35 MFD / 440 Volts
Locked Rotor Amps	47 A (230V/60Hz)
Approved Voltage Range	Rated Voltage ± 10%
Winding Resistance (M/S)	1.70/2.65 Ù (at 20 C)

2.18 Rated Conditions

Voltage	208/230V
Evaporating Temp.	7.2 C
Condensing Temp.	54.4 C
Liquid Temp. entering Expansion Valve	46.1 C
Return Gas Temp.	35.0 C
Ambient Temp.	35.0 C

2.19 Starting Performance

1) The starting voltage should be as follows

2) The starting pressure should be balanced between the suction and discharge of the compressor and should be adjusted to the following table (Table 1)

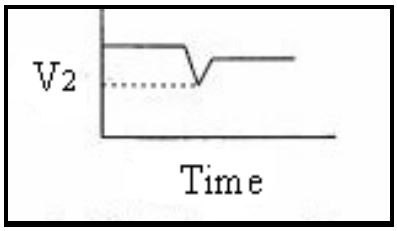
3) The temperatures of the compressor enclosure should be more than 20 C continuously at the following table

Table 1.

Starting Condition		Specification
Motor Temperature	Pressure MPa{Kgf/Cm^2}	Starting Voltage (V_2)**
Cold-Starting Cold State (Room Temperature)	1.08{10}	Below 85% of rated Voltage
Hot-Starting (Standard) Hot State after operated under standard load condition	1.08{10}	Below 85% of rated voltage

Hot-Starting (Overload) Hot State after operated under overload condition	1.18{11}	Below 90% of rated voltage

* Rated capacity and motor input are measured by secondary Refrigerant Calorimeter Methods of JIS B8606 by Shanghai Hitachi Electrical Appliances Co., Ltd. Allowable capacity should be more than 95% of the rated capacity and allowable motor input should be less than 107% of rated motor input.



** V_2 means minimum voltage measured between pins of hermetic terminal at the compressor starts.

*** The suction pressure is measured on the position above the filter of accumulator.

3. PARTS AND DRAWING LIST

PARTS NAME		Qty/Set	Drawing No.	Remark
Compressor		1	4CYC00572	Dimensioned Sketch
Mounting Parts	Rubber Grommet Bot Nut	3 - -	4CYC00029 4CYC00030 (m8)	 * *
Electrical Parts	Terminal Cover Casket Nut G-Washer Capacitor	1 1 1 1 -	4CYC00101 4CYC00102 3CYC00004 4CYC00174 4CYC00173	 *
			4CYC00124	Lead Routing Performance Curve

* - Parts not supplied. For reference only.

4. CHARACTERISTICS

4.1 Residual Moisture 250 mg MAX

4.2	Residual Impurities	150 mg MAX

II REFRIGERATION SYSTEM

1. SYSTEM DESIGN LIMITATIONS

1.1 Power Source and Voltage

Voltage applied to hermetic terminal should be within the range mentioned in the specification.

In the case of three phase, the phase imbalance should be within 3% amount the compressor terminals. The phase imbalance should be calculated according the following formula.

$$\text{The Phase Imbalance} = \frac{(V)\text{max}-(V)\text{mean}}{V(\text{mean})} \times 100\%$$

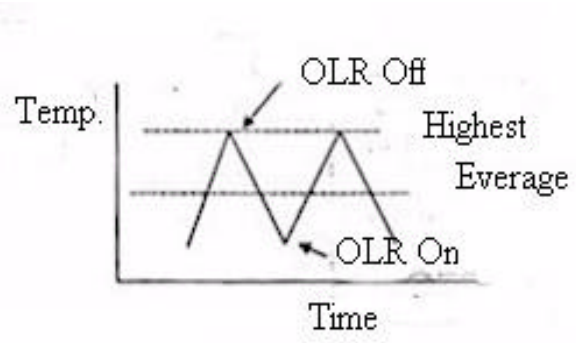
(V)max - Maximum voltage among the three terminals
(V)mean - Average voltage among the three terminals

1.2 Operating Temperatures and Pressures

The operating temperatures and pressures of the compressor should be within the range shown in the table 2.

HITACHI ROTARY COMPRESSOR
MODEL SH773HA5NC

Table 2

Item	Standard Load Condition	Overload Condition	Blocked Fan Condition
Discharge Pressure Mpa {kgf/Cm^2 G}	2.16{21} Max.	2.7{26.5} Max.	4.5{45} Max.
Suction Pressure Mpa {kgf/Cm^2 G}	0.40~0.77 {3.0~6.8} Max	0.40~0.77 {3.0~6.8} Max	
Compressor Case Bottom Temperature	99 C or below and 6 degrees higher than condensing temperature		
Motor Winding Temperature	99 C Max. at rated voltage	Rated Voltage ±7.5% 127 C Max.	
	127 C Max at rated voltage ± 10%		
Motor Winding Temperature under locked-rotor condition	Under stable condition: Average Temp. 165 C Max Highest Temp. 190 C Max		
Accumulator Temperature	Higher than outlet pipe of evaporator		
Ambient Temperature	35 C	43 C	

Note: Overload condition should not be continuous.

1.3 Operating and Shut-off Period

The compressor should be operated continuously at least for 5 minutes after being turned on.

At least three minutes shut-off time should be ensured until restarting.

1.4 Liquid Refrigerant Back

When knocking noise, current increase and undesirable vibration are caused, another accumulator should be equipped to the compressor and/or refrigerant charge should be reduced to prevent liquid refrigerant back.

The system should not flood back liquid to the compressor under all conditions.

There should be superheated gas returned to the compressor under all normal operating conditions.

1.5 Allowable Incline

The allowable incline should be less than 5^{o} during operation.

1.6 Pipe Vibration

The displacement of the pipes, which connect from the compressor to other parts of the refrigerator systems, should be less than 0.8mm (1/32") when the compressor is operating at rated frequency ± 10Hz and rated voltage ± 10%.

Displacement in excess of 0.8mm (1/32") will require changing tube length and/or routing.

1.7. Connecting Tube Design

In designing and routing tubing that connect from the compressor to the other parts of the air conditioner, following should be considered.

Moving tubes to the moving parts: minimum clearances 12.7mm (1/2")
Moving tubes to non-moving parts: minimum clearance 9.5mm (3/8")
Moving tubes never touch to lead wire.

2. PROCESS LIMITATIONS

2.1 The degree of vacuum in the refrigerating system should be less than 20 Pa{150 X 10^{-3}mmHg} at room temperature just before charging refrigerant.

The quantity of water should be less than 0.2ml.

2.2 The weight of foreign particles on the inside surface of the heat exchanger tubes should be less than 0.05g/m^2.

This value means the weight of foreign particles filtered after washing inside surface of the heat exchange tubes with R-11.

Metallic dust should not be permitted to enter the refrigerating system.

2.3 Eliminate all system contaminants such as trichloroethylene, alkalies, soap, acid, oil and washing fluid used at machining the heat exchanger tubes.

2.4 Always purge the compressor with dry nitrogen during assembly of system.

2.5 The motor winding temperatures should be less than 149 C in process of manufacturing the refrigerating system. The temperature of the hermetic terminal body should be less than 177 C.

2.6 The compressor should be operated for more than 20 seconds within 15 minutes after charging refrigerant into the system so proper lubrication results.

3. MISCELLANY

3.1 The pipe and hermetic pens attached to the compressor should not be bent.

3.2 The compressor should never be operated while under vacuum; otherwise, internal arcing can cause parts damaging.

3.3 The compressor should not be operated to form a vacuum and to absorb air.

3.4 The compressor should not be left opened in the atmosphere for more than 15 minutes.

3.5 The electric pulse should not be applied to the hermetic terminals when the compressor is under vacuum.

3.6 The compressor should be kept in the clean place with low-moisture.

3.7 The compressor must not be applied for transportation equipment, such as automobiles, trains, ships, and others.

3.8 The compressor should not be splashed with water intentionally.

3.9 Refrigerant should be charged from the end of condenser of refrigerating systems. Never charge refrigerant to the compressor directly.

3.10 Temperatures within systems during stable compressor operation should not be lower than -35 C to prevent wax precipitation from the oil.

3.11 Compressor Mounting - Rubber grommets are designed soft to provide the noise isolation and to lessen vibration energy transmission.

Stub bolt should be designed to provide sufficient clearance for noise and vibration isolation and to prevent compressor from coming off its mount.

3.12 The first starting voltage supplied to the refrigerating system should be more than the starting voltage mentioned in Table 1.

3.13 The compressor should be kept out of the corrosive atmosphere such as in a chemicals storage, beside a hot spring and so on.

3.14 The lead wires should be connected to hermetic terminals without being touched on the surface of the compressor.

3.15 The fuse or/and breaker should be equipped in the main circuit.

3.16 The oil should be returned continuously to the compressor and not stayed in the refrigerating system.

3.17 There should be adequate clearance between the OD23-under-surface of Push-Nut and the upper surface of rubber grommets.

III. CHECK UP DELIVERY

1. Basis for Checking upon Delivery

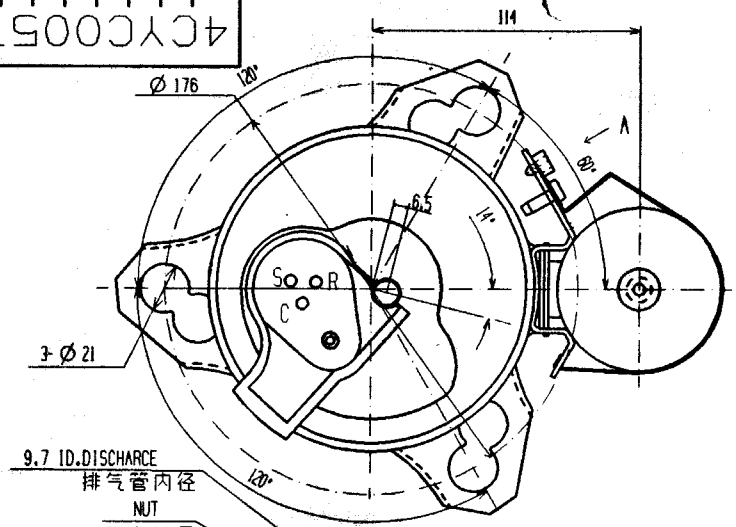
   The Performance test will be carried out in accordance with this “Compressor Specification”

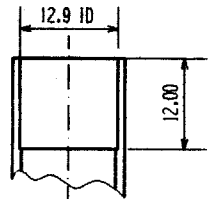
   The Safety Performance in accordance with GB4706.1 Safety of Household and Similar Electrical Appliance General Requirements and GB 4706.17 Safety of Household and Similar Electrical Appliances Particular Requirements for motor-compressor

2. Rule for Checking upon Delivery

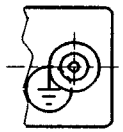
   If it comes across any quality problem, please notify the company in writing within 30 days after the arrival of the cargo, the company shall exchange exactly the number of the products. Otherwise the product shall be regarded as being up to the standard.

4CYC00572

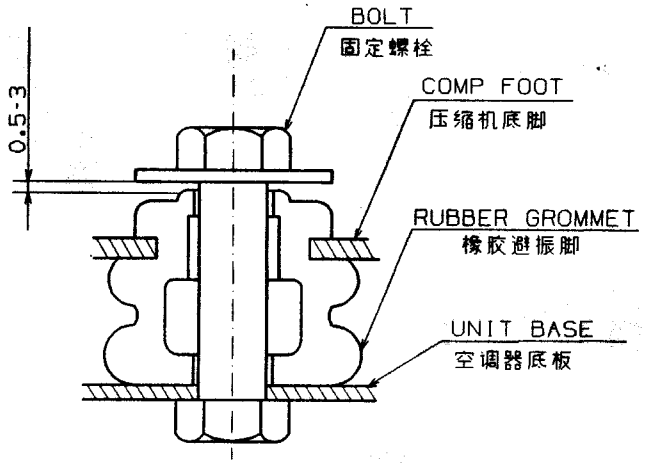




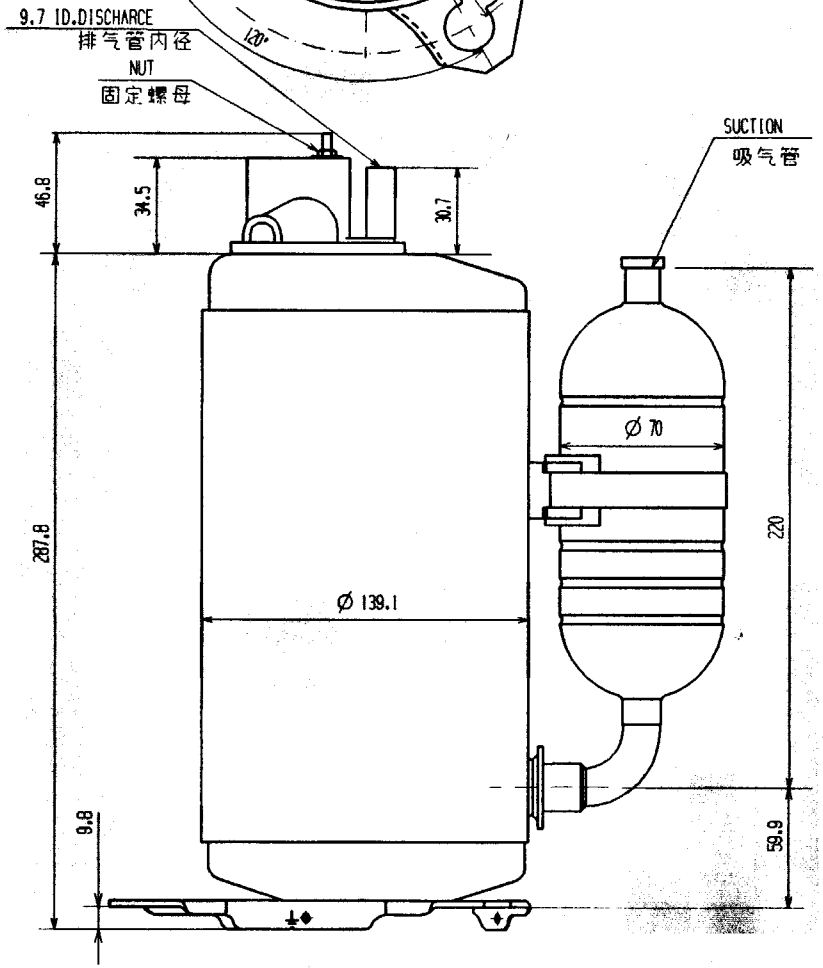
SUCTION PIPE (NTS)
排气管



VIEW FROM A (NTS)
A 向



RUBBER GROMMET STRUCTURE
橡脚避振脚结构



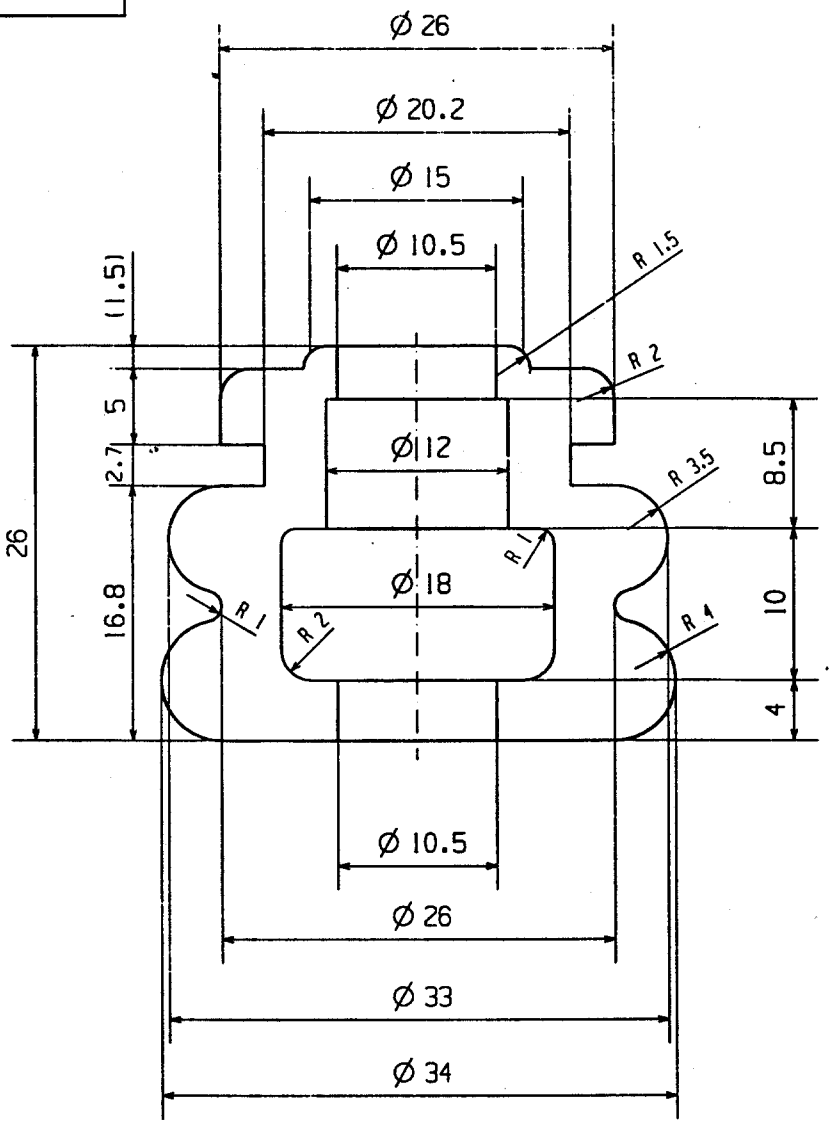
NOTE:
注：
1. THE TORQUE ENFORCED ON THE NUT IS 1.5±0.3N.m.
接线盒盖固定螺母的安装扭矩为 1.5±0.3N.m.
2. PUTING OUT RUBBER PLUG WHEN FIXING EARTH PARTS.
接地螺孔橡胶塞拔去后，安装接地附件。

DIMENSION mm
尺寸单位mm

SH7730A5NU	2000 .02 .14	陆炯	張海鋒
SH773HA5NU	2000 .02 .14	陆炯	張海鋒
MODEL TYPE	DATE	DWN.	CHKD.

	RE. MARKS			PROJECTION	SCALE	
REGD	DWN.	陆炯	00.02.14	TITLE DIMENSIONED SKETCH	NTS	DWN.NO.
	CHKD.	張海鋒	00.2.14		Shanghai Hitachi,Ltd.	4CYC00572
	APPD.	中田	00.2.16			

4CYC00029

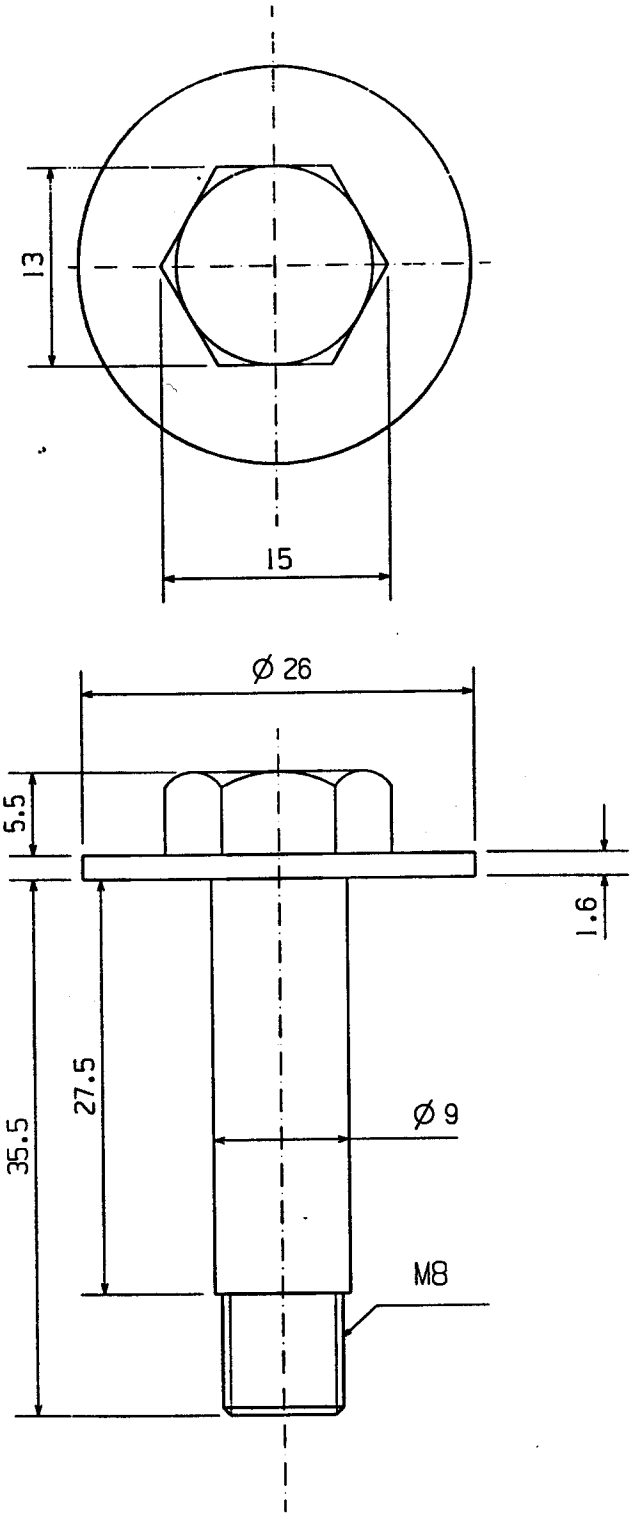


MATERIAL: NATURAL RUBBER

DIMENSION: mm

	RE-MARKS			PROJECTION	SCALE	
				-⊕⊟-	2:1	
REGD.	DWN.	黄波	'97.10.27	TITLE RUBBER GROMMET	Shanghai Hitachi.Ltd.	DWN.NO. 4CYC00029
	CHKD.	中田	97.11.4			
	APPD.	斉沢	97.11.27			

4CYC00030



注记

表面处理：电 镀

	RE-MARKS			PROJECTION	SCALE	
					2:1	
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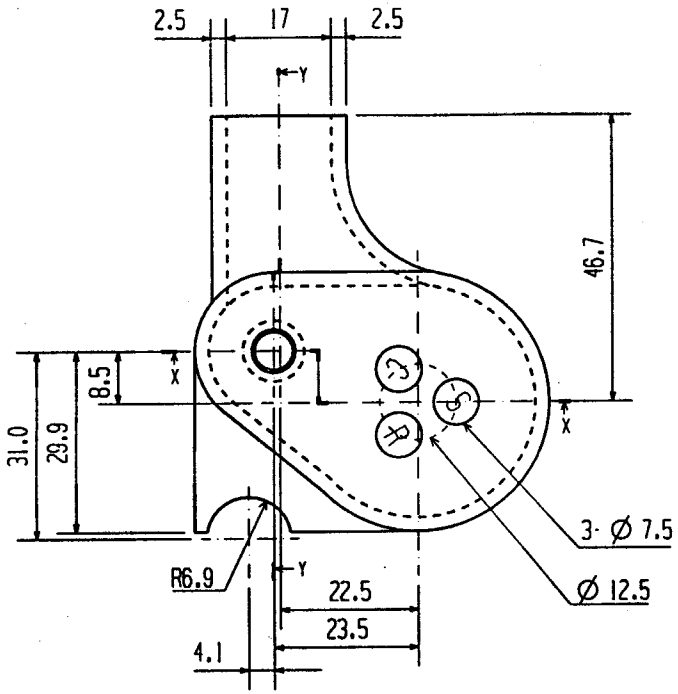
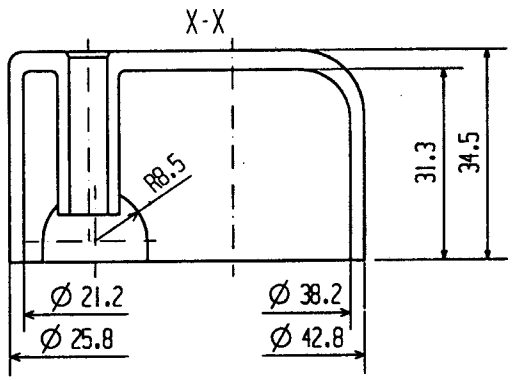
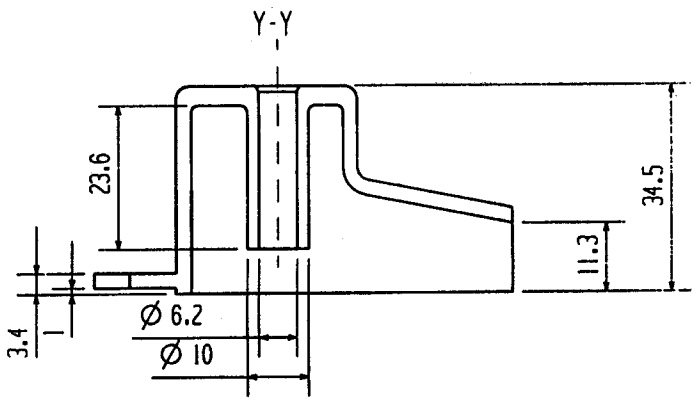
	CHKD.	中田	97.11.4			
	APPD.	青沢	97.11.27			

4CYC00101





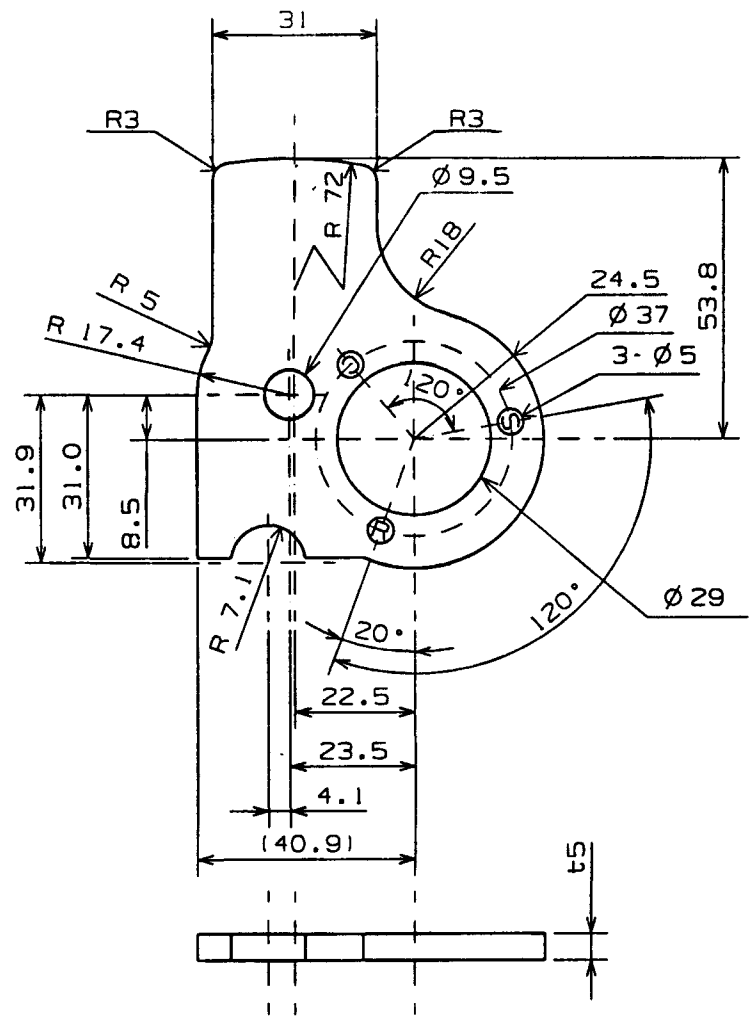


MATERIAL: VALOX 420SE07001

DIMENSION: mm

	RE-WARKS			PROJECTION	SCALE NTS	
REGD.	DWN.	黄波	'97.10.27	TITLE	Shanghai Hitachi, Ltd.	DWN. NO.
	CHKD.	中田	97.11.4	OLR-COVER		4CYC00101
	APPD.	芹沢	97.11.27			

4CYC00102

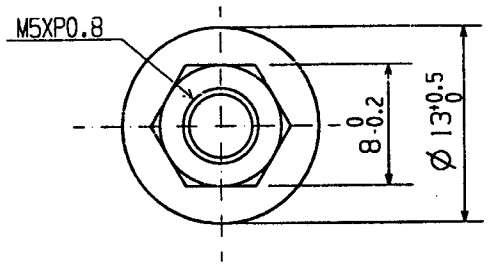


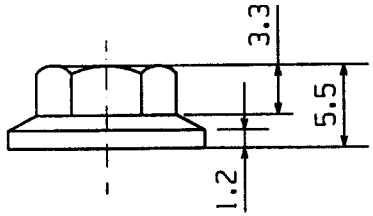
MATERIAL : EPDMFOP-B

DIMENSION : mm

	RE. MARKS				PROJECTION	SCALE	
						NTS	
REGD.	DWN.	黄波	97.10.27	TITLE GASKET	SHANGHAI HITACHI, Ltd.		DWN.NO 4CYC00102
	CHKD.	中田	97.11.4				
	APPD.	芹沢	97.11.27				

3CYC00004



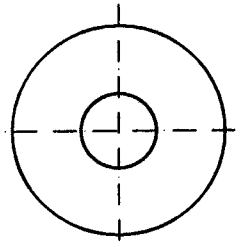


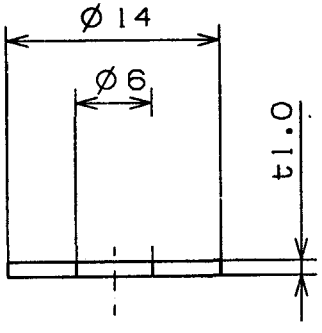
MATERIAL: SWRM10

DIMENSION: mm

	RE. MARKS				PROJECTION	SCALE	
						NTS	
REGD	DWN.	黄波	'97.10.29	TITLE NUT	Shanghai Hitachi, Ltd.	DWN.NO.	3CYC00004
	CHKD.	中田	97.11.4				
	APPD.	竹沢	97.11.27				

4CYC00174



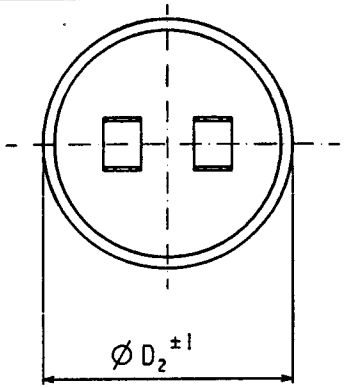


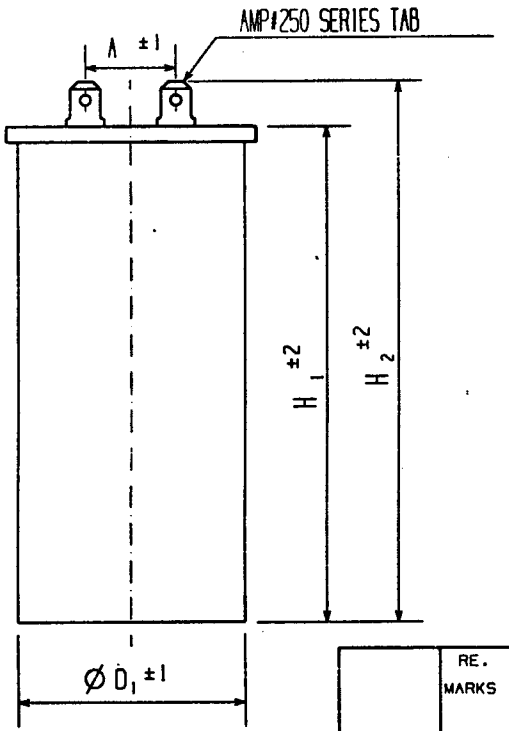
MATERIAL : EPDM

DIMENSION : mm

	RE-MARKS				PROJECTION	SCALE 2 : 1	
REGD.	DWN.	黄波	'97.11.4	TITLE	Shanghai Hitachi, Ltd.		DWN. NO.
	CHKD.	中田	97.11.4	G-WASHER			4CYC00174
	APPD.	芹沢	97.11.27				

4CYC00173





SPECIFICATION 规格

NO	RATING			DINENTIONS					MFG.NO.
	CAPACITANCE MFD	VOLTAGE V.AC	FREQUENCY H_2	$ØD_1$	$ØD_2$	H_1	H_2	A	
1	25	330	50/60	44.5	48	95	106	18	RRCG1492
2	30	230	50/60	44.5	48	80	88	18	RRCG1239
3	30	400	50/60	44.5	48	130	138	18	RRCG1281
4	35	400	50/60	50	54	130	138	20	RRCG1282
5	40	230	50/60	44.5	48	80	88	20	RRCH1240
6	40	400	50/60	50	54	130	138	20	RRCH1283
7	45	230	50/60	44.5	48	80	88	18	RRCH1241
8	50	230	50/60	44.5	48	80	88	18	RRCH1242
9	55	230	50/60	44.5	48	95	103	18	RRCH1148
10	60	230	50/60	44.5	48	95	103	18	RRCH1150
11	25	400	50/60	44.5	48	130	138	18	RRCG1456
12	14	230	50/60	40.5	44	80	88	16	RRCF1502
13	23	230	50/60	40.5	44	80	88	16	RRCF1491
14	50	400	50/60	60	64	130	138	20	RRCH1284
15	6	400	50/60	40.5	44	80	88	16	RRCF1496
16	35	450	50/60	60	64	130	138	20	RRCF1517
17	45	250	50/60	44.5	48	95	103	18	RRCH1661
18	60	250	50/60	44.5	48	130	138	18	RRCH1676
①	19	25	450	50/60	50	54	130	138	20	RRLG1537
②	20	50	270	50/60	44.5	48	130	138	18	RRCH1288
②	21	50	250	50/60	44.5	48	130	138	18	

记号	来历	年月日	订正	审查
②	增加50MF的电容器	98.11.11	张海鲜	中田
①	增加25MF的电容器	97.12.27	张海鲜	中田

RE. MARKS: REGD

DWN.	黄波	97.11.4
CHKD.	中田	97.11.4
APPD.	竹沢	97.11.27

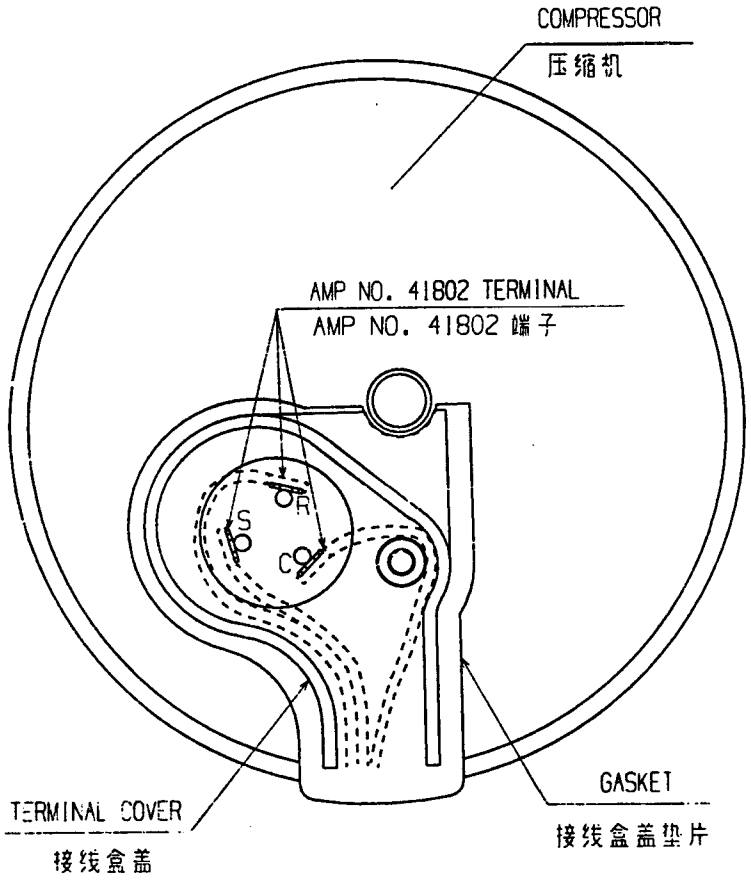
TITLE: RUNNING CAPACITOR

PROJECTION | SCALE: NTS

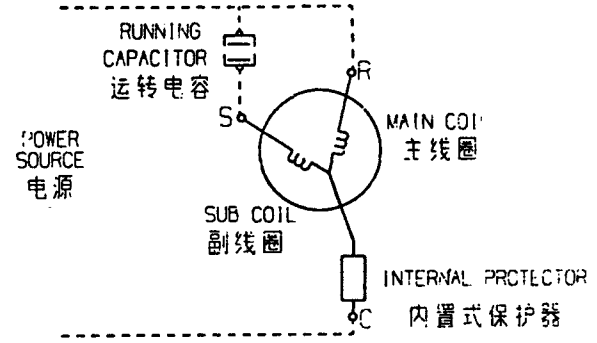
Shanghai Hitachi, Ltd.

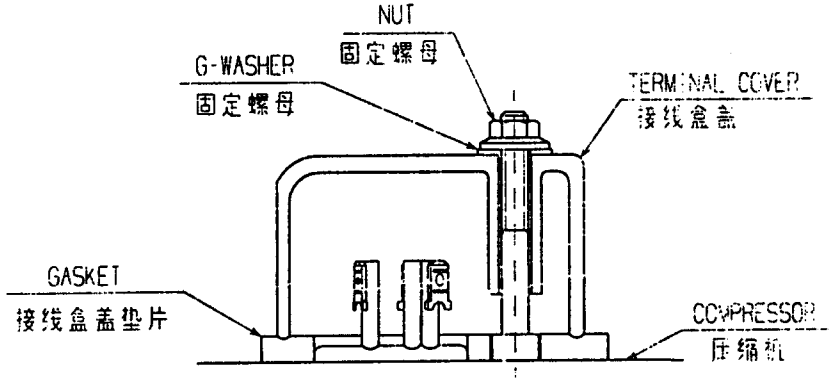
DWN.NO. 4CYC00173

4CYC00124



WIRING DIAGRAM
接线图





NOTES:
注意：

1. THE LETTER C.R or S STANDS FOR EACH TERMINAL
   C.R.S 表示每个接线端子.

	RE. MARKS			PROJECTION	SCALE	
					NTS	
REGD	DWN.	黄海文	98.7.10	TITLE	Shanghai	DWN.NO.
	CHKD.	黄波	'98.7.14	LEAD ROUTING WIRING DIAGRAM	Hitachi,Ltd.	4CYC00124
	CHKD.	申田	98.7.15			
	APPD.	黄亚非	98.7.15			

SHEC AIR CONDITIONING COMPRESSOR
SH773HA5NU 60Hz 230V