

Specifications No.	C-2530
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13-Jun-2018

**CUSTOMER : HAWCO**

RoHS Compliant
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## COMPRESSOR SPECIFICATIONS

Compressor type : Scroll Compressor

Refrigerant : R404A, R449A, R1270

Power source : 1PH, 220-240V, 50Hz

Motor type : CSR

Model Name	Nominal Capacity [ W ]			Motor Rated Output [ W ] (HP)	Remark
	R404A	R449A	R1270		
DS1529S1	1500	1275	1495	1500 (2.0)	with CE
DS1836S1	2440	3490	3555	1800 (2.5)	

Packing	Check
Gathered Packing	<input type="checkbox"/>
Separated Packing	<input checked="" type="checkbox"/>

We acknowledge the receipt of this copy.

Please return this compressor specifications after confirming the contents.  
If you do not return this copy by the above date, we will assume that you have checked the contents.

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NOTE

The Specifications in this bulletin are subject to change without notice, in order that HITACHI may bring the latest innovations to our customers.





# SAFETY PRECAUTION

Read and understand all of the safety precautions in this manual before operating the product. These precautions are intended to ensure safe and correct operation of the product and to prevent injury to the operator and other persons and damage to the product. Observe these precautions strictly.

The following symbols indicate the presence of potentially hazardous conditions.

 WARNING	This symbol indicates a potentially hazardous situation which, if not avoided, <u>could result in death or serious injury</u> .
 CAUTION	This symbol indicates a potentially hazardous situation which, if not avoided, <u>may result in minor or moderate injury or property damage</u> accidents to the product. It may also be used to alert against unsafe practices.

The meanings of the graphic symbols in text are shown bellow.

	<u>Be sure to perform</u> the operation.
	<u>Disconnect</u> the power cable from the electrical outlet.
	<u>Connect</u> the grounding wire.
	<u>Prohibit</u> .

## WARNING



Provide the refrigerating cycle unit with adequate electrical grounding. Incomplete grounding could result in electrical shock hazards in the event of troubles and current leakage.



Connect a fuse or a leak circuit breaker to the main circuit to avoid electrical shock hazards or fire in the event of troubles and current leakage.



Check to see that the main power is turned off, before repairing, to avoid electrical shock hazards in case of touching the terminals.



Measure the temperature of the hermetic terminals of the compressor and then connect the appropriate lead wires. Lead wire insulation deterioration (thermal deterioration) could result in electrical shock hazards, short-circuiting, or fire.



Keep the lead wires away from the surface of the compressor or the piping. Lead wire insulation deterioration (thermal deterioration) could result in electrical shock hazards, short-circuiting, or fire.



Keep the lead wires away from any rotational parts like fans or any vibrational parts like piping.

Lead wire insulation deterioration due to vibration or friction could result in electrical shock hazards, short-circuiting, or fire.



Do NOT make the compressor self-evacuated during operation, which avoids overheating the compressor that could cause burns or fire.



Do NOT touch the surface of the compressor with empty hands, which avoids burns. The surface is very hot during operation and immediately after it has stopped.



Do NOT use this compressor for air compression, which avoids overheating of the compressor that could cause burns or fire.



Do NOT view the inspection window of the compressor for internal observation directly. Use a video camera or other suitable equipment to avoid serious injury owing to explosion of the inspection window or blowout of the refrigerant.



Wear protective goggles during repairs to avoid serious injury owing to explosion of piping or blowout of the refrigerant.

## CAUTION



Do NOT install the compressor in a humid place or locations exposed to water. Do NOT dip it into water or spray it with water. In case of using the sound insulation material to enclose the compressor, which is highly hygroscopic, that material must NOT absorb water. Insulation deterioration causes electrical shock hazards, current leakage, short-circuiting, or explosion owing to corrosion.



Attach the specified cover to the hermetic terminals of the compressor by the specified method to prevent entry of dirt.

Incomplete electrical conduction of the hermetic terminals may cause troubles or fire.



Do NOT apply electrical pulse to the compressor while its inside is maintained in a vacuum. It avoids insulation failure inside the compressor, which may result in electrical shock hazards, current leakage, or fire.



Store the compressor in clean and dry environment. Insulation failure of the hermetic terminals of the compressor may result in electrical shock hazards or current leakage. Corrosion of the compressor surface may result in explosion. Blowout of the refrigerant may result in burns.



In case of attaching cluster terminals, the PTC starter, receptacle terminals, or other electrical parts to the hermetic terminals of the compressor, those parts must NOT be obliquely connected or twisted after connections, which avoids reducing fastening force of the terminals. Incomplete electrical conduction of the hermetic terminals may cause troubles or fire.

1. GENERAL SPECIFICATIONS

Model		DS1529S1			DS1836S1		
Nominal Output	HP	2.0			2.5		
	W	1,500			1,800		
Power Supply	-	1 PH, 220-240V, 50 Hz					
Refrigerant	-	R404A, R449A		R1270	R404A, R449A		R1270
Allowable amount of Refrigerant Charge	g	3000		1320	3000		1320
Refrigerant Oil	-	POE (VG68)					
Oil Charge	liter	0.85			0.85		
Displacement	cm <sup>3</sup> /rev	29.1			35.7		
	m <sup>3</sup> /h	5.03			6.17		
Rated Revolution	rpm	2,880					
Performance <sup>(1)</sup>		R404A	R449A	R1270	R404A	R449A	R1270
Cooling Capacity	W	1,500	1,275	1,495	2,440	3,490	3,555
Power Input	W	1,190	1,130	1,270	2,260	1,800	1,775
COP	-	1.26	1.13	1.18	1.08	1.94	2.00
Sound Level and Vibration Level <sup>(2)</sup>		R404A	R449A	R1270	R404A	R449A	R1270
Sound Level <sup>(3)</sup>	dBA	MAX. 65	MAX. 62	MAX. 62	MAX. 68	MAX. 66	MAX. 66
Vibration Level <sup>(4)</sup>	µm	MAX. 50	MAX. 45	MAX. 45	MAX. 60	MAX. 60	MAX. 60
Net Weight (Including Oil)	kg	22.6			22.9		
Piping <sup>(5)</sup> Suction	-	φ 16.1 I.D. ( BR )					
Connection Discharge	-	φ 9.72 I.D. ( BR )					
Injection	-	φ 6.2 I.D. ( BR )					
Motor Type	-	Capacitor Start and Run (CSR) Permanent Sprit Mortor					
Poles	-	2					
Voltage	V	220			220		
Starting Current	A	46.0			55.4		
Winding resistance (at20°C)	Ohm	Main	Aux	Main	Aux	Main	Aux
		1.490	2.048	1.299	2.198		
Capacitor Starting Capacitor	-	75µF/400V			75µF / 400V		
Running Capacitor	-	55µF/450V			55µF / 450V		
Starting Relay	-	AMVL-240V1			AMVL-240V1		

[notes]

(1)Above performance is based on the following conditions

Model		DS1529S1			DS1836S1		
Refrigerant		R404A	R449A	R1270	R404A	R449A	R1270
Evaporating Temperature °C		-30	-30	-30	-23.3	-10	-10
(dew point) (MPa[abs])		(0.202)	(0.161)	(0.212)	(0.267)	(0.360)	(0.428)
Condensing Temperature °C		40	40	40	54.4	45	45
(dew point) (MPa[abs])		(1.811)	(1.659)	(1.648)	(2.532)	(1.882)	(1.843)
Return gas Temperature °C		18	18	18	18.3	20	20
Subcooling K		5	0	0	22.2	0	0
Ambient Temperature °C		32	32	32	32.2	32	32
Compressor Cooling		Fan Cooling + Liquid Injection					

Rated capacity and Rated input are mesured by using the equipment including the calorimeter met to JIS B8606. Minimum allowable capacity is 90% of rated capacity, maximum allowable input is 110% of reted input.

(2)Measurement condition for Sound and Vibration Level.

Model		DS1529S1			DS1836S1		
Refrigerant		R404A	R449A	R1270	R404A	R449A	R1270
Suction Pressure MPa[abs]		0.202	0.161	0.212	0.433	0.360	0.428
Discharge Pressure MPa[abs]		1.811	1.659	1.648	2.044	1.882	1.843
Return gas temp. °C		18					
Noise of soundproof room dBA		under 40					
Vibration of soundproof room µm		under 5					
Liquid refrigerant back		No liquid back					
Draft		No draf					

- (3) Sound level is measured at the point 30cm away from the compressor surface in a sound measuring room.
- (4) Vibration level is measured on the compressor surface.
- (5) Connection Type  
BR : Brazing, RL : Rotalock, FL : Flange, FR : Flare
- (6) Scope of Supply
  - 1) Compressor Assembly Charged with Refrigerant Oil and Nitrogen Gas.
  - 2) The companion connections shall be provided by others.

**The other specifications**

- 1. Hermetic terminal : 1/4"quick connect type
- 2. Space volume of inner shell : 2000 mL
- 3. Motor Insulation grade : E
- 4. Approval voltage range rated voltage  $\pm 10\%$
- 5. Starting performance
  - The minimum starting voltage shall be as Table 1. (see note 7) under the following conditions.
  - (1) The starting pressure should be between the suction and discharge of the compressor was balanced and adjusted as shown in the Table 1.
  - (2) The temperature of compressor case was adjusted to 20 °C or higher at the starting conditions.

Table 1

Starting conditions Motor temperature	Ambient temp.	Pressure [abs]			Minimum starting voltage {V2}
		R404A	R449A	R1270	
Cold-starting Cold state (Room temperature)	20 °C	1.35 MPa	1.22 MPa	1.25 MPa	85% of rated voltage
Hot-starting<Standard> Hot state after operated under standard condition	32.0 °C	1.29 MPa	1.16 MPa	1.20 MPa	85% of rated voltage
Hot-Starting<Overload> Hot state after operated overload condition.	43 °C	1.42 MPa	1.28 MPa	1.31 MPa	90% of rated voltage

[note 7]

The starting voltage (V2) is measured by Hitachi starting test apparatus. It means the accelerable minimum voltage by the accelerating torque between the motor starting torque and the stalling torque, and it is different with the continuous operable voltage (V4) after the reach of maximum speed of motor. (see Fig 1)

As the starting voltage of the product depend on the structure and design of the product, you should measure the starting voltage of the product and you should confirm it is no problem.

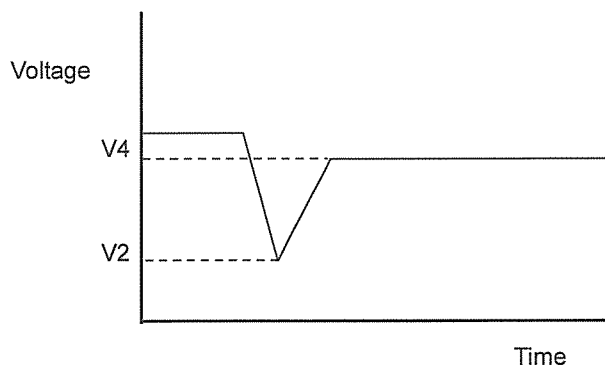


Fig 1

**2. PARTS AND DRAWING LIST**

Item	Qty/Compressor		Drawing No.	Remarks	Supply				
	DS152951	DS183651			Pat.1	Pat.2	Pat.3	Pat.4	
Dimension sketch	X	-	NN0010271		-				
	-	X	NN0010272		-				
Circuit diagram	X	X	BB0041918		-				
Refrigeration system	X	X	3CYCA6131		-				
Connecting sketch of accumulator	X	X	3CYCA6121		-				
Compressor packing sketch	Gathered Packing	X	BB0044458		-				
	Individual Packing	X	BB0044459		-				
OVER LOAD PROTECTOR	X	X	-	Internal OLP	YES				
Mounting Parts	RUBBER GROMMET	4	4	3CYC62866	3TMW65223A	YES			
	PIPE	4	4	4CYC11219	3PFHA5981A	YES			
	WASHER	4	4	4CYC11220	3SPAA5982A	YES			
Terminal and cover	HERM-COVER	1	1	BB0041336	BB0036762A	YES			
	RUBBER PLATE	1	1	3CYCA4999	3TKEA5983A	YES			
	NUT	1	1	3CYC62897	3SMGA5984A	YES			
	BUSH	1	1	BB0007021		YES			
Electrical parts	E-BOX	E	E	BB0000406	BB0000405E				
	START CAPACITOR	(1)	(1)	3CYCA4980	75µF/400V	YES	NO		
	RUNNING CAPACITOR	(1)	(1)	3CYCA4981	55µF/450V				
	DISCHARGE RESISTANCE	(1)	(1)	[note 8]	68kΩ/2W				
	STARTING RELAY [note 10]	(1)	(1)	NN0010273	AMVL-240V1				
	START CAPACITOR	1	1	3CYCA4980	75µF/400V	-	YES		
	RUNNING CAPACITOR	1	-	3CYCA4981	55µF/450V	-	YES		
	DISCHARGE RESISTANCE	1	1	[note 8]	68kΩ/2W	-	YES		
STARTING RELAY [note 10]	1	1	NN0010273	AMVL-240V1	-	YES			
Cycle parts	CAPILLARY FOR REQUID INJECTION [note 9]	1	-	BB0032682B	Resistanc value 13.3kPa	YES			
		-	1	3CYCA4165	Resistanc value 2.67kPa				
	ACCUMULATOR	2	2	3CYCA5055	2PDP62110A valid volume 1060mL(530mL × 2)	YES	NO	YES	NO

[note 8]  
A discharge resistance has been attached to the starting capacitor.

[note 9]  
The recommended resistance value for the injection capillary is the result of the matching trial using our calorimeter. Since proper capillary specification will depend on refrigeration cycle, please conduct a matching test installed in your product subject to the following conditions.

- (1) To satisfy the over load coil temperature: 115°C or lower. (preferably about 100°C max)
- (2) To apply the Injection capillary resistance value considering the appropriate amount of injection resulting in the best performance in the cooling capacity and input value.

[note 10]  
You must REPLACE with RELAY of the follwing characteristics when usig flammable refrigerant.

- Necessary characteristics
- Comforming to the ATEX directiv
  - PICK-UP VOLTAGE (OPERATING VOLTAGE) : 130V TO 153V
  - DROP-OUT VOLTAGE (RECOVERY VOLTAGE) : 90V MAX
  - CONTACT RATING (CONTACT CAPACITY) : 20A BREAK 200,000 OPERATIONS

### 3. APPLICATION RANGE

#### 1. Scope

This specification is applied to HITACHI scroll compressor.

#### 2. Common specification of compressor

##### 2.1 Appearance

The surface of compressor shall be painted black and has no cracks, dents, peeling, or significant rust.

##### 2.2 Marking

Model name and production date should be shown on the surface of compressor. The compressor containing refrigeration oil and dried N<sub>2</sub> gas has one white circle mark and one yellow circle mark.

##### 2.3 Insulation distances

IEC C60335-2-34 are applied.

##### 2.4 Insulation resistance

Measurement should be above 10 MΩ between charged parts and non-charged parts by 500 V insulation resistance meter at normal temperature and normal humidity.

##### 2.5 Dielectric Withstand Voltage Test

After 2.4 test, 1500 V A/C 50 Hz or 60 Hz is applied between live parts and dead metal parts continuously for one minute by gradual rise of voltage. In case of 1800 V, duration is one second instead of one minute.

##### 2.6 Maximum allowable pressure and Test Pressure

Table 2. Test Pressure

Maximum allowable pressure				Tightness test pressure	Strength test pressure (type-test)
Refrigerant	R404A	R449A	R1270	3.24MPa「abs」	15.79MPa「abs」
Pressure	3.19MPa「abs」	3.16MPa「abs」	2.28MPa「abs」		

##### 2.7 Dryness

Residual water content is below 0.18mL by the cold trap method described below:

Table 3. Cold trap method

Item	Condition
Furnace	146 ± 3 °C
Pre-heat hour	No pre-heat
Hour of taking water (Preheating time excluded)	6 hours
Degree of vacuum (Continuous vacuum)	Below 133 Pa「abs」
Solvent for cold bath	Methanol
Coolant for cold bath	Dry ice

##### 2.8 Cleanliness

Drain the refrigerant oil. Pour washing liquid into the compressor. Lay down and roll the compressor and drain washing liquid. Filtrate by filter paper. The trapped particles should be under 70 mg.

##### 2.9 Airtight test pressure

3.24 MPa「abs」

**3. System design limitations [Requirement for using our compressor]**

3.1 Complying with requirements of EN378

**For safety use of our compressor with flammable refrigerant (R1270), assembler (or system manufacturer) should comply with EN378 series (European Standard).**

**EN378: Refrigerating systems and heat pumps- Safety and environmental requirements**

**EN378-1: Basic requirements, definitions, classification and selection criteria**

**EN378-2: Design, construction, testing, marking and documentation**

**EN378-3: Installation site and personal protection**

**EN378-4: Operation, maintenance, repair and recovery**

3.2 Observance of the specification

The compressor should always be operated under the condition set forth in this specification and it should not be operated under any other specifications. Accessories should also be used as specified. In addition, the specified parts should be used during servicing. Fuse or circuit breaker should be connected to main electric circuit.

3.3 Power source voltage

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

In the case of 3 phases electric power source, the unequilibrium of the voltage between each phase must be used within 3%.

Unequilibrium=  $\frac{\text{Max.deviation voltage} - \text{Ave.voltage}}{\text{Average voltage}} \times 100(\%)$

Furthermore, in the case of 3 phases electric power source, the wiring for reverse rotating

caused by two phases replacement must not be used. The damage of the compressor caused by the reverse rotating is out of warranty. If wiring may cause reverse rotating, the direction relay listed on the list of equipment and materials must be connected.

3.4 Operating temperatures and pressures

Suction pressure and discharge pressure should be within the range of Fig.4~6 (Page 15~17)

The difference between discharge pressure and suction pressure must be more than the pressure of Table 4. [Oil supply system in compressor doesn't work without this pressure difference.]

Table 4

Model	DS1529S1,DS1836S1
Discharge pressure—Suction pressure(MPa)	more than 0.61

The operating temperatures and pressures of a compressor should be within the range shown in the following section 3.4 - 3.8.

3.5 Compressor case bottom temp

6 degrees higher then condensing temperature. (Refer to Fig attached with 3.11.)



### 3.6 Motor winding temp. (Measured by the resistance method)

#### (1) Standard load condition

Rated voltage ; 105°C MAX

Rated voltage  $\pm 10\%$  ; 115°C MAX

#### (2) Overload condition<sup>[10]</sup>

Rated voltage  $\pm 7.5\%$  ; 115°C MAX.

Winding temperature being lower than 115°C by liquid injection-cooling in any kind of environment.

[note 11] Overload condition should not be continuous.

### 3.7 Suction pipe temp.

Higher than outlet pipe of evaporator

### 3.8 Temperature and pressure at blocked fan condition

Don't operate compressor at blocked fan condition. To avoid problem of fire, discharge pressure should be under 4.22MPa「abs」. Under stable condition, Confirm the motor winding temperature should be not more than 165°C (average) or 190°C MAX (highest).

### 3.9 Compressor ambient temperature

The compressor should be operated within the ambient temperature range that satisfies the motor winding temperature requirements shown previously Section 3.3. This compressor should be used in the place that the ambient temperature is above  $-10^{\circ}\text{C}$ . Please confirm the starting of compressor, when the temperature of compressor surface is  $-10^{\circ}\text{C}$ .

Under  $-10^{\circ}\text{C}$  ambient temperature, in the case that the temperature of compressor surface is above  $-10^{\circ}\text{C}$  by the crankcase beating etc, you can use the compressor if the starting is possible.

### 3.10 Operating and Shut-off interval

The compressor should not be started/stopped more than 6 times per hour. The compressor should be operated continuously at least for 5 minutes after being turned on. Allow a minimum of 3 minutes shut-off time before restarting.

Compressor should be started on the condition that pressure status of high/low pressure sides is balanced.

### 3.11 Oil back and oil level of compressor

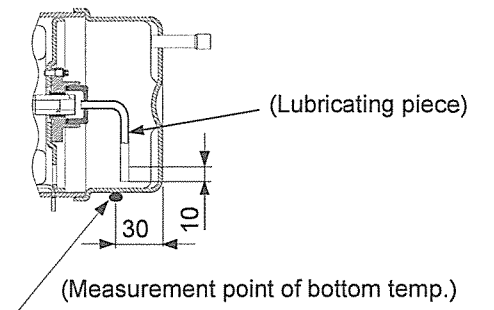
Oil level of compressor should be higher than 10 mm from the lubricating piece fixed on the end of the crankshaft.

We recommend to check oil level using compressor with sight glass. We can supply the compressor with sight glass by your order. (In case of foaming situation, the height of this foam does not mean the height of the oil level.)

If the oil level is not kept, the oil shortage will occur, and influence the reliability of compressor.

To keep oil level, following points are important.

- 1) Oil should be returned continuously to the compressor.
- 2) The compressor should be operated continuously at least for 5 minutes after being turned on.  
(see Clause 3.9)
- 3) Liquid refrigerant must not flood back to the compressor.  
Oil may flow out of the compressor if liquid refrigerant back.
- 4) The pressure difference between discharge and suction is shown in Table 4. (see Clause 3.4)



3.12 Liquid refrigerant back Accumulator

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

Liquid refrigerant must not flood back to the compressor.

Liquid back damages the compressor.

We recommend to use the accumulator to prevent liquid back to the compressor.

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 flood back.

Liquid level in the accumulator should be maintained smaller than the valid volume of accumulator. (see Fig 2)

We recommend to check liquid level in the accumulator using accumulator with sight glass.

We can supply the accumulator with sight glass by your order.

The accumulator must have a hole to return oil. If you use a non-specified accumulator, to prevent harm to oil return, please check size and location of oil return hole. Please refer to the drawing of accumulator.

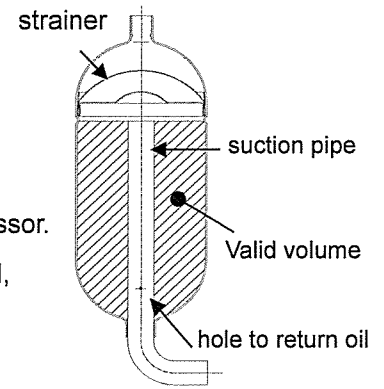


Fig 2

3.13 Strainer

Strainer should be equipped to avoid insert foreign bodies.

We can supply the accumulator with a strainer by your order.

In case of using an accumulator without a strainer, a strainer should be added to a tube on suction side.

3.14 Allowable incline

Compressor should be operating in the horizontal rotating shaft. But the inclination of shaft is within 3 deg in every direction. In case of the hermetic terminal side in the shaft direction is higher than horizontal, it should be kept up to 5 deg.

3.15 Pipe vibration

The displacement of the pipes, which connect from the compressor to other parts of the refrigeration systems, should be less than 0.8 mm (1/32") when the compressor is operating at rated frequency +10 / -10 and voltage range of rate  $\pm 10\%$ .

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

3.16 Connecting tube design

in designing and routing tubing that connects the compressor to the other parts of the air conditioner, the following should be considered.

Moving tubes to the moving parts;  
 minimum clearance 12.7 mm (1/2")

Moving tubes to non-moving parts ;  
 minimum clearance 9.5 mm (3/8")

Moving tubes never touch the electrical lead wires.

3.17 Dust of hermetic terminal

Hermetic terminal area should be covered with the electrical cover by the designated method to prevent the entering of dust.

3.18 Rotation direction of compressor

Connect compressor terminals as specified in circuit diagram. Reverse operation will result pump breakdown.

3.19 Internal over load protector (OLP).

Although an OLP that Hitachi selected is installed in this compressor, the current and temperature may not be appropriated for the structure or design of the unit in which the compressor will be mounted.

Unit-mounting matching tests should therefore be conducted and checks should be performed to ensure that the requirements listed as item (1) and (2) below are satisfied.

If the OLP could not satisfy the requirements in the unit test, this should be notified to Hitachi and then after reselection through mutual discussions on the optimum OLP for the unit, unit-mounting test should be performed again.

(1) OLP non-operating test:

The provisions of section 3.3 should be satisfied.

(2) OLP operating test (trouble-assuming test):

When the compressor ambient temperature is  $23 \pm 2 \text{ }^\circ\text{C}$ , the winding temperature should not exceed  $190 \text{ }^\circ\text{C}$  at rated voltage  $\pm 6\%$ , and when the compressor ambient temperature is  $0 \pm 2 \text{ }^\circ\text{C}$ , the winding temperature should not exceed  $240 \text{ }^\circ\text{C}$  at rated voltage  $-15\%$ .

Supplementary description;

[1] Exception for the value in transitional states.

[2] The motor winding temperature should be measured using the resistance method.

[3] The tests should be terminated when the total number of OLP operations or the total OLP operating time reaches 10,000 (time) or 15 days, which ever comes first.

But OLP is equipped in order to avoid the problem of fire.

It's not for a restriction of coil temperature,  $115^\circ\text{C}$  MAX.

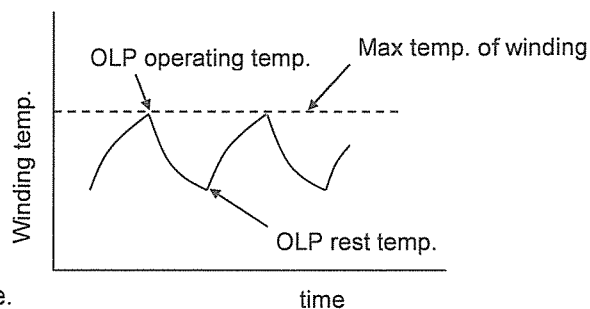


Fig 3

**4. Process limitations**

4.1 The degree of vacuum in the refrigerating system should be less than 133 Pa 「abs」 at room temperature just before charging refrigerant.

The reference quantity of water in the refrigerating system is less than 0.2g.

The quantity of water the cycle in operation is to make to the 40 ppm following in the refrigerating cycle by using the suitable dryer that does not contain ACTIVATED ALUMINA.

4.2 The structure of cycle constitution or drier should be done so that the powder of the drying material does not come out throughout the cycle.

4.3 The weight of foreign particles on the inside surface of the heat exchange tubes should be less than 0.05 g/m<sup>2</sup>. This value means the weight of foreign particles filtered after washing inside surface of the heat exchange tubes with alkali.

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

4.4 Eliminate all system contaminates such as trichloroethane, alkalis, soaps, acids, oil and washing fluid used in machining the heat exchanger.

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

4.6 The quantity and kind of contamination (the process materials) in the cycle should be grasped and managed. Carry on reliability test that Input contamination a lot than anticipated contamination quantity.

4.7 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.

4.8 The compressor should be operated for more than 20 seconds within 15 minutes after refrigerant is put into the system so that proper lubrication of the pump can occur.

**5. Miscellaneous**

5.1 The pipe and hermetic pins, which are attached to the compressor, should not be bent.

5.2 The compressor should never be operated while under vacuum; otherwise, internal arcing can damage parts.

5.3 The compressor should not be operated in a method that forms a vacuum and absorbs air.

5.4 The compressor should not be left open to the atmosphere for more than 15 minutes.

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

5.6 The compressor should be kept in a clean place with low-moisture.

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

5.8 The compressor should not be splashed intentionally with water.

5.9 Refrigerant should be charged from the condenser end of the refrigeration system. Never charge refrigerant to the compressor directly.

5.10 Temperatures within systems during stable compressor operation should not be less than -45 °C because oil is hard to return to the compressor.

5.11 The compressor, if dropped, should not be used.

#### 5.12 Compressor mounting

Rubber grommets are designed soft to provide noise isolation and to lessen vibration energy transmission. Stud bolt should be designed to provide sufficient clearance for noise and vibration isolation and to prevent compressor from coming off its mount.

#### 5.13 The first starting voltage supplied to the refrigerating system should be more than the starting voltage mentioned Table 1. (Page 4)

Because the viscosity of the oil may be high at first starting until the refrigerant dissolves in the oil.

#### 5.14 The compressor should be kept out of a corrosive atmosphere, such as a chemicals storage area.

#### 5.15 The lead wires should be connected to the hermetic terminals without touching the surface of the compressor.

#### 5.16 The compressor should be used within one year of receipt.

#### 5.17 The failure of refrigeration system components such as the reversing valve, solenoid valve, defrost mechanism, refrigerant control parts, fan motor, etc. may cause failure of the compressor. Reliability of those components should be checked.

A design that insures no leakage during manufacturing and usage should be applied.

#### 5.18 The refrigerating cycle should be grounded.

#### 5.19 The failure of accessory parts (ex. Capacitor) utilized by the customer is not related to Hitachi-Johnson Controls Air Conditioning, Inc.

#### 5.20 The person who is directly in charge of setting up the product or repair of the product should be well instructed to prevent contamination of this product by water or other foreign matters.

When recharging refrigerator, dryer must be changed. And water value should be less than 40 ppm.

#### 5.21 When connecting terminals of the unit to the hermetically sealed terminals of the compressor, the parts must not be obliquely connected or twisted after connection, fastening force of the terminals would be reduced.

#### 5.22 Modifications and additions

If modifications or additions are to be made to the items provided for in this specification, both companies shall immediately report the details of those modifications or additions, together with the reasons for them, in writing before performing the modifications or additions.

#### 5.23 Occurrence of problems

If problems occur after delivery, both companies shall immediately list those problems. After reporting, a solution to these problems will be sought and reported.

Hitachi-Johnson Controls Air Conditioning, Inc. has no obligation duty for the problem in the case that the user didn't obey this compressor using specification & criteria.

#### 5.24 Term of Validity

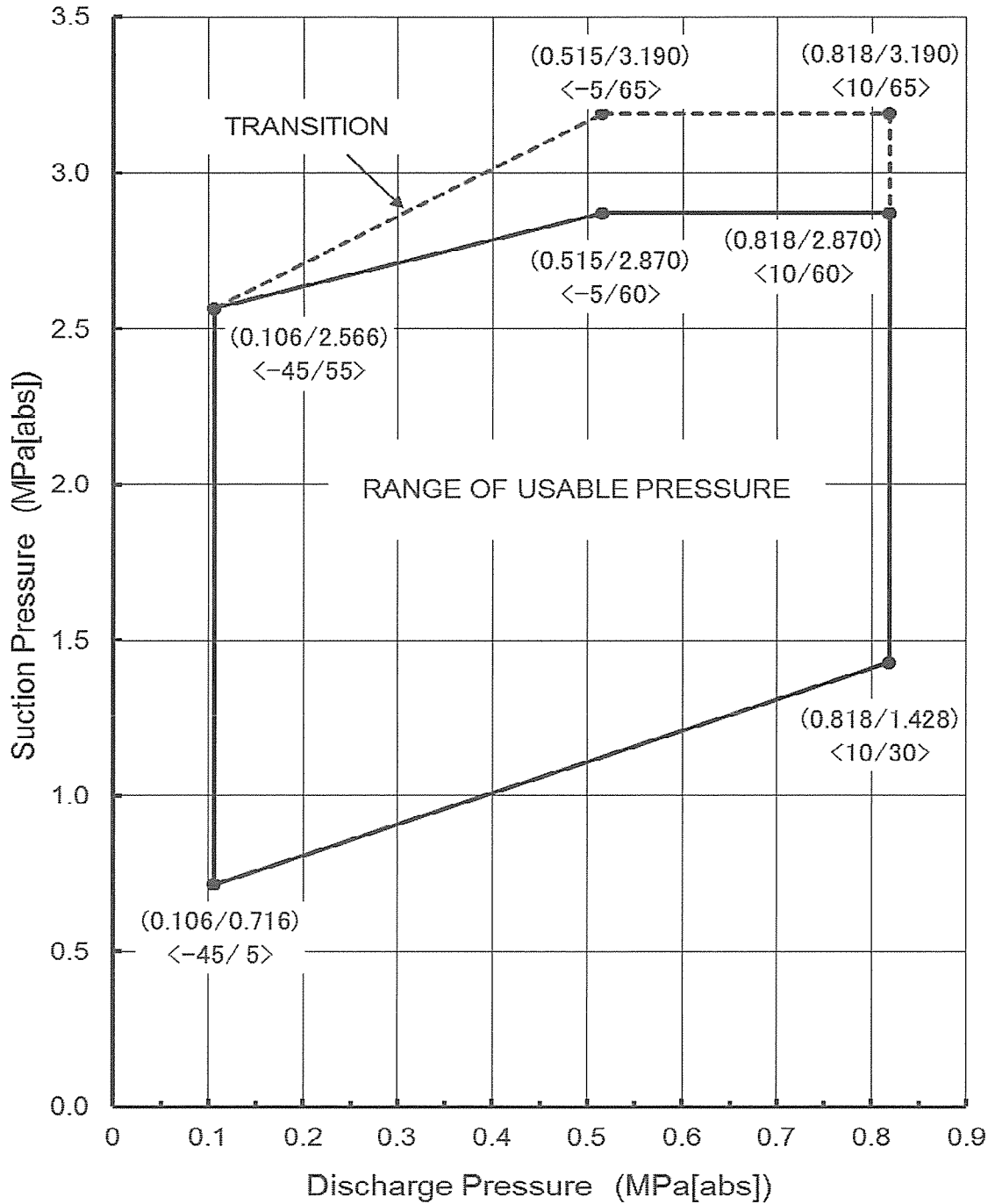
This specification shall go into effect from the date that the user signs the specification.



4. RANGE OF USABLE PRESSURE

Model : DS1529S1,DS1836S1

REFRIGERANT : R404A

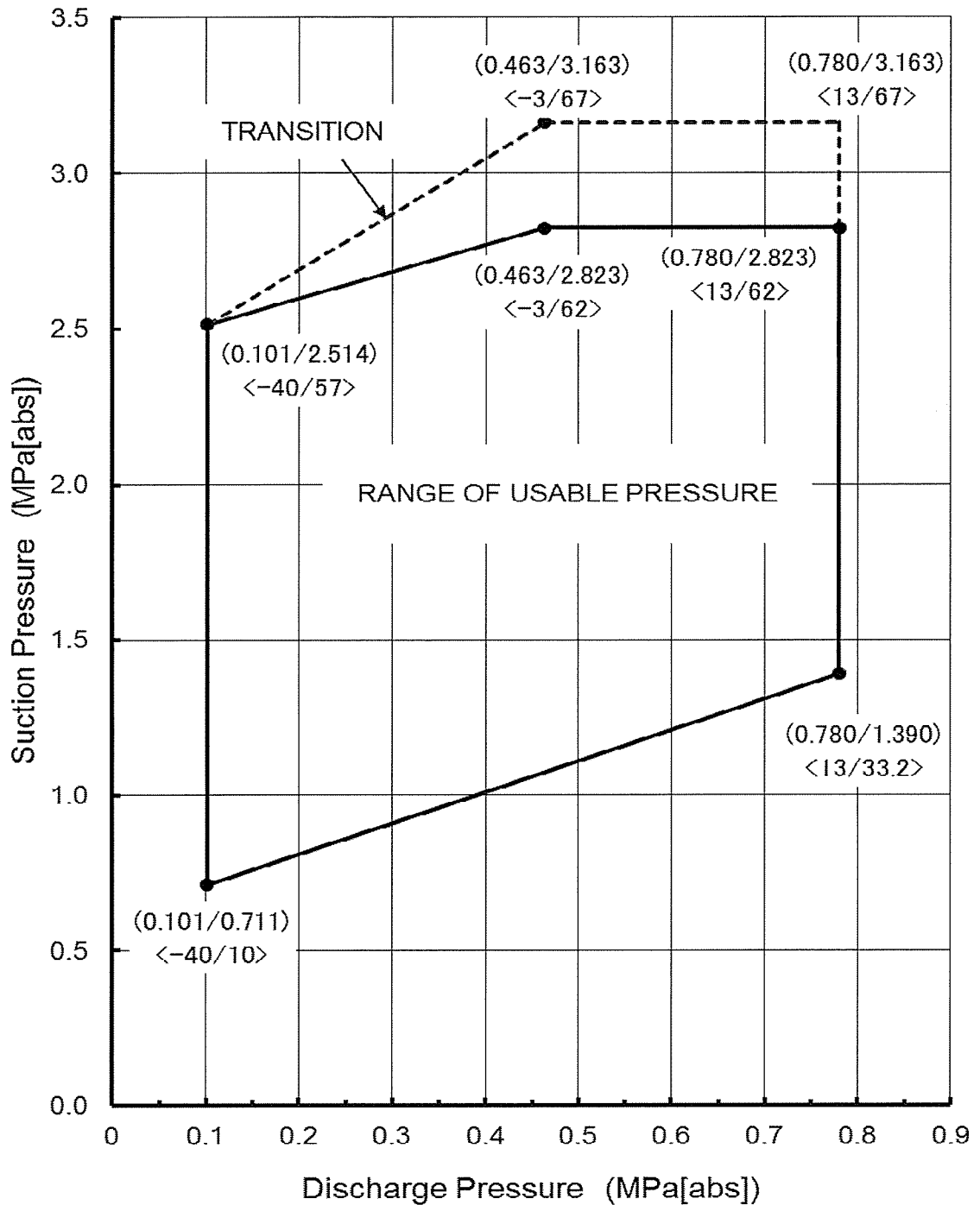


( Suction pressure / Discharge pressure (MPa[abs]) )  
 < Evaporation Temp (dew point) / Condensing Temp (dew point) [°C] >

Fig 4



Model : DS1529S1,DS1836S1  
 REFRIGERANT : R449A

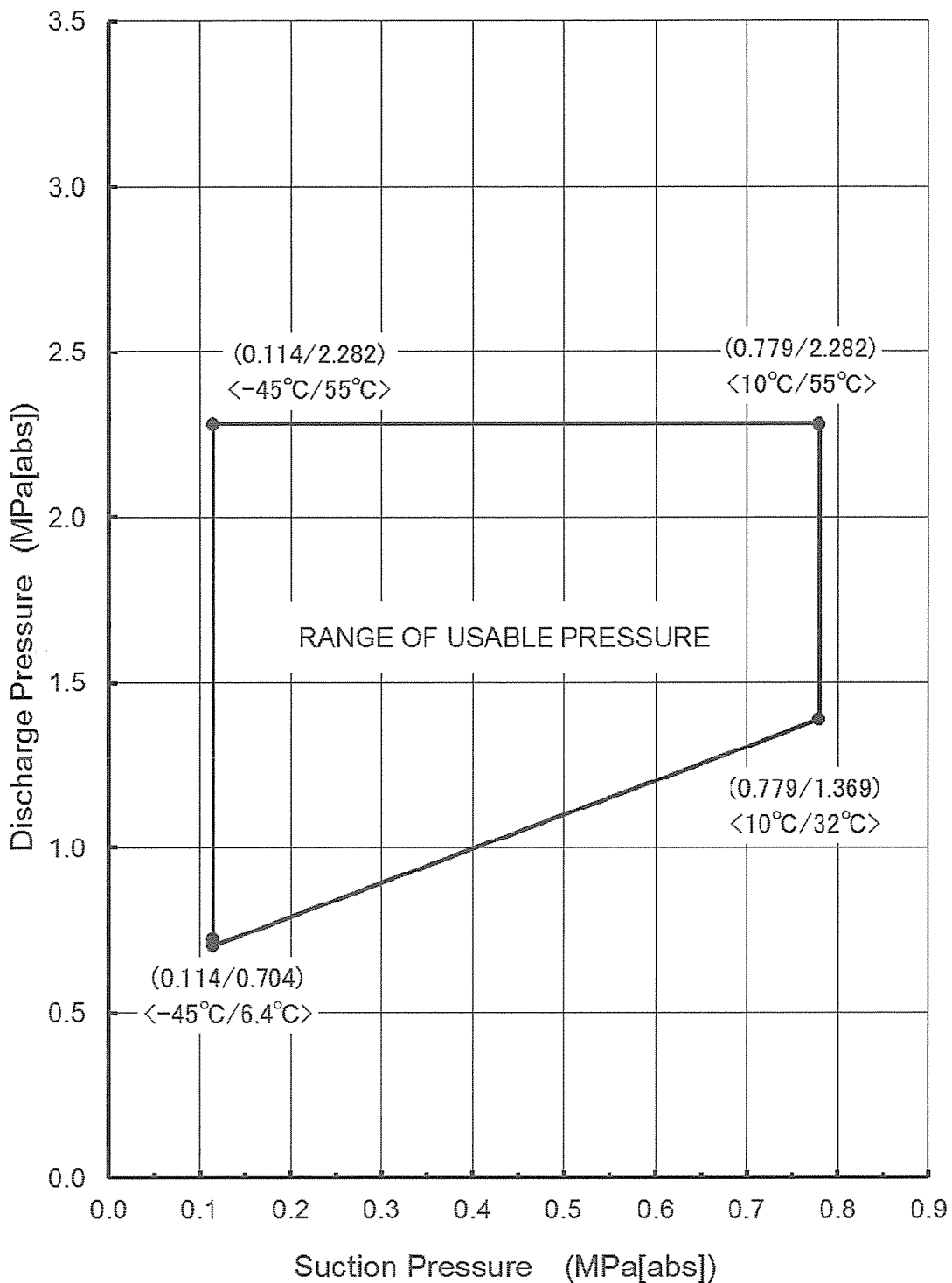


( Suction pressure / Discharge pressure (MPa[abs]) )  
 < Evaporation Temp (dew point) / Condensing Temp (dew point) [°C] >

Fig 5

Model : DS1529S1,DS1836S1

REFRIGERANT : R1270A



( Suction pressure / Discharge pressure (MPa[abs]) )

< Evaporation Temp (dew point) / Condensing Temp (dew point) [°C] >

Fig 6

5. PERFORMANCE DATA

Model : DS1529S1

REFRIGERANT : R404A

Refrigerant	R404A
Power Supply	1PH/220-240V/50Hz
Sub Cooling	0 K
Return Gas Temp.	18 °C
Cooling	Fan Cooling+Liquid Injection

Cooling capacity[W]

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	780	970	1,222	1,536	1,912	2,351	2,852	3,415	4,040	4,728	5,478	6,290
	240V-50Hz	782	972	1,225	1,540	1,918	2,358	2,860	3,425	4,052	4,742	5,494	6,308
40	220V-50Hz	725	898	1,131	1,421	1,771	2,178	2,644	3,169	3,752	4,394	5,094	5,853
	240V-50Hz	727	901	1,134	1,426	1,776	2,185	2,652	3,178	3,763	4,407	5,109	5,870
45	220V-50Hz	670	827	1,040	1,307	1,629	2,006	2,437	2,923	3,464	4,060	4,711	5,416
	240V-50Hz	672	830	1,043	1,311	1,634	2,011	2,444	2,932	3,474	4,072	4,724	5,432
50	220V-50Hz	601	751	950	1,196	1,490	1,832	2,222	2,660	3,146	3,680	4,263	4,893
	240V-50Hz	603	754	952	1,199	1,494	1,837	2,229	2,668	3,155	3,691	4,275	4,907
55	220V-50Hz	533	676	859	1,084	1,351	1,658	2,007	2,397	2,828	3,301	3,815	4,369
	240V-50Hz	534	677	862	1,088	1,355	1,663	2,013	2,404	2,837	3,310	3,826	4,382

Motor Input[W]

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,026	1,056	1,086	1,117	1,147	1,177	1,207	1,237	1,267	1,297	1,327	1,357
	240V-50Hz	1,075	1,106	1,138	1,169	1,201	1,232	1,264	1,295	1,327	1,358	1,390	1,421
40	220V-50Hz	1,126	1,157	1,188	1,219	1,250	1,281	1,312	1,342	1,373	1,404	1,435	1,466
	240V-50Hz	1,179	1,211	1,244	1,276	1,309	1,341	1,373	1,406	1,438	1,471	1,503	1,535
45	220V-50Hz	1,226	1,257	1,289	1,321	1,353	1,385	1,416	1,448	1,480	1,512	1,543	1,575
	240V-50Hz	1,283	1,317	1,350	1,383	1,416	1,450	1,483	1,516	1,550	1,583	1,616	1,649
50	220V-50Hz	1,372	1,293	1,293	1,293	1,293	1,293	1,293	1,293	1,293	1,293	1,293	1,293
	240V-50Hz	1,437	1,470	1,503	1,536	1,569	1,602	1,635	1,668	1,701	1,734	1,767	1,799
55	220V-50Hz	1,519	1,550	1,581	1,613	1,644	1,675	1,706	1,737	1,768	1,800	1,831	1,862
	240V-50Hz	1,591	1,623	1,656	1,689	1,721	1,754	1,786	1,819	1,852	1,884	1,917	1,950

Current[A]

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	4.8	4.9	5.0	5.2	5.3	5.5	5.6	5.7	5.9	6.0	6.2	6.3
	240V-50Hz	4.6	4.7	4.8	5.0	5.1	5.2	5.4	5.5	5.6	5.8	5.9	6.0
40	220V-50Hz	5.2	5.3	5.5	5.6	5.8	5.9	6.0	6.2	6.3	6.5	6.6	6.7
	240V-50Hz	5.0	5.1	5.3	5.4	5.5	5.7	5.8	5.9	6.1	6.2	6.3	6.5
45	220V-50Hz	5.7	5.8	5.9	6.1	6.2	6.3	6.5	6.6	6.8	6.9	7.0	7.2
	240V-50Hz	5.4	5.6	5.7	5.8	6.0	6.1	6.2	6.4	6.5	6.6	6.8	6.9
50	220V-50Hz	6.3	6.5	6.6	6.7	6.9	7.0	7.1	7.3	7.4	7.6	7.7	7.8
	240V-50Hz	6.1	6.2	6.3	6.5	6.6	6.7	6.9	7.0	7.1	7.3	7.4	7.5
55	220V-50Hz	7.0	7.1	7.3	7.4	7.5	7.7	7.8	8.0	8.1	8.2	8.4	8.5
	240V-50Hz	6.7	6.8	7.0	7.1	7.2	7.4	7.5	7.6	7.8	7.9	8.0	8.2

Model : DS1529S1

REFRIGERANT : R449A

Refrigerant	R449A
Power Supply	1PH/220-240V/50Hz
Sub Cooling	0 K
Return Gas Temp.	18 °C
Cooling	Fan Cooling+Liquid Injection

**Cooling capacity[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	670	847	1,083	1,382	1,744	2,172	2,666	3,229	3,860	4,562	5,333	6,174
	240V-50Hz	672	849	1,086	1,386	1,749	2,178	2,673	3,237	3,871	4,574	5,347	6,190
40	220V-50Hz	631	795	1,016	1,296	1,637	2,040	2,507	3,040	3,638	4,304	5,037	5,837
	240V-50Hz	633	797	1,019	1,300	1,641	2,046	2,514	3,047	3,647	4,314	5,049	5,852
45	220V-50Hz	592	744	950	1,211	1,531	1,910	2,350	2,852	3,418	4,048	4,744	5,505
	240V-50Hz	594	746	952	1,214	1,535	1,915	2,355	2,859	3,426	4,058	4,755	5,519
50	220V-50Hz	542	689	884	1,130	1,427	1,779	2,185	2,648	3,168	3,748	4,387	5,088
	240V-50Hz	544	691	886	1,133	1,432	1,784	2,192	2,656	3,178	3,760	4,401	5,104
55	220V-50Hz	492	635	820	1,051	1,328	1,653	2,027	2,452	2,928	3,458	4,043	4,685
	240V-50Hz	493	636	822	1,053	1,331	1,657	2,032	2,458	2,936	3,468	4,054	4,698

**Motor Input[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	949	976	1,003	1,031	1,060	1,089	1,119	1,151	1,185	1,220	1,258	1,300
	240V-50Hz	1,005	1,034	1,063	1,092	1,121	1,151	1,183	1,215	1,249	1,285	1,323	1,365
40	220V-50Hz	1,043	1,071	1,099	1,128	1,157	1,187	1,219	1,251	1,286	1,322	1,362	1,405
	240V-50Hz	1,104	1,133	1,162	1,192	1,222	1,253	1,284	1,318	1,353	1,390	1,430	1,474
45	220V-50Hz	1,139	1,167	1,196	1,225	1,255	1,286	1,318	1,352	1,388	1,425	1,466	1,511
	240V-50Hz	1,202	1,232	1,261	1,291	1,322	1,354	1,387	1,422	1,458	1,497	1,539	1,585
50	220V-50Hz	1,277	1,205	1,205	1,206	1,207	1,209	1,212	1,216	1,221	1,228	1,236	1,247
	240V-50Hz	1,344	1,373	1,403	1,433	1,464	1,496	1,529	1,564	1,601	1,641	1,684	1,731
55	220V-50Hz	1,416	1,444	1,472	1,501	1,531	1,561	1,594	1,627	1,663	1,702	1,744	1,789
	240V-50Hz	1,488	1,517	1,546	1,577	1,608	1,641	1,675	1,710	1,748	1,789	1,832	1,880

**Current[A]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	4.5	4.6	4.7	4.9	5.0	5.1	5.3	5.4	5.5	5.7	5.9	6.1
	240V-50Hz	4.3	4.4	4.5	4.7	4.8	4.9	5.0	5.2	5.3	5.5	5.6	5.8
40	220V-50Hz	4.9	5.0	5.1	5.3	5.4	5.5	5.7	5.8	6.0	6.1	6.3	6.5
	240V-50Hz	4.7	4.8	4.9	5.1	5.2	5.3	5.4	5.6	5.7	5.9	6.0	6.2
45	220V-50Hz	5.3	5.4	5.6	5.7	5.8	5.9	6.1	6.2	6.4	6.5	6.7	6.9
	240V-50Hz	5.1	5.2	5.3	5.5	5.6	5.7	5.8	6.0	6.1	6.3	6.5	6.6
50	220V-50Hz	5.9	6.1	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	7.6
	240V-50Hz	5.7	5.8	5.9	6.1	6.2	6.3	6.5	6.6	6.7	6.9	7.1	7.3
55	220V-50Hz	6.5	6.7	6.8	6.9	7.1	7.2	7.3	7.5	7.7	7.8	8.0	8.2
	240V-50Hz	6.3	6.4	6.5	6.7	6.8	6.9	7.1	7.2	7.4	7.5	7.7	7.9

**Model : DS1529S1**

**REFRIGERANT : R1270**

Refrigerant	R1270
Power Supply	1PH/220-240V/50Hz
Sub Cooling	0 K
Return Gas Temp.	18 °C
Cooling	Fan Cooling+Liquid Injection

**Cooling capacity[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	845	1,032	1,279	1,583	1,943	2,357	2,823	3,339	3,905	4,518	5,177	5,879
	240V-50Hz	847	1,035	1,282	1,588	1,949	2,364	2,831	3,349	3,916	4,531	5,192	5,896
40	220V-50Hz	800	974	1,206	1,493	1,833	2,225	2,668	3,160	3,700	4,286	4,917	5,592
	240V-50Hz	802	977	1,209	1,497	1,839	2,232	2,676	3,169	3,710	4,298	4,931	5,608
45	220V-50Hz	752	913	1,129	1,398	1,718	2,088	2,506	2,971	3,483	4,040	4,642	5,287
	240V-50Hz	755	916	1,132	1,402	1,723	2,094	2,513	2,980	3,493	4,052	4,655	5,302
50	220V-50Hz	694	853	1,060	1,315	1,617	1,963	2,353	2,786	3,262	3,779	4,339	4,941
	240V-50Hz	696	855	1,063	1,319	1,621	1,968	2,360	2,794	3,271	3,790	4,352	4,955
55	220V-50Hz	632	787	986	1,226	1,507	1,827	2,187	2,584	3,020	3,494	4,007	4,560
	240V-50Hz	634	790	989	1,230	1,511	1,833	2,193	2,592	3,029	3,505	4,019	4,573

**Motor Input[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,096	1,108	1,121	1,134	1,147	1,161	1,175	1,190	1,204	1,218	1,233	1,246
	240V-50Hz	1,147	1,160	1,173	1,187	1,201	1,216	1,231	1,246	1,261	1,276	1,291	1,305
40	220V-50Hz	1,204	1,216	1,228	1,240	1,254	1,267	1,281	1,295	1,310	1,324	1,338	1,353
	240V-50Hz	1,261	1,273	1,286	1,299	1,313	1,327	1,341	1,356	1,371	1,386	1,401	1,416
45	220V-50Hz	1,313	1,324	1,335	1,347	1,360	1,374	1,387	1,401	1,416	1,430	1,445	1,459
	240V-50Hz	1,375	1,386	1,398	1,411	1,424	1,438	1,453	1,467	1,482	1,497	1,513	1,528
50	220V-50Hz	1,473	1,364	1,342	1,321	1,303	1,285	1,269	1,254	1,240	1,227	1,215	1,203
	240V-50Hz	1,543	1,551	1,560	1,570	1,581	1,593	1,605	1,618	1,632	1,646	1,660	1,674
55	220V-50Hz	1,634	1,638	1,644	1,652	1,660	1,669	1,680	1,690	1,702	1,714	1,726	1,739
	240V-50Hz	1,711	1,716	1,722	1,730	1,738	1,748	1,759	1,770	1,782	1,794	1,808	1,821

**Current[A]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	5.3	5.4	5.4	5.5	5.5	5.6	5.7	5.7	5.8	5.9	5.9	6.0
	240V-50Hz	4.9	4.9	5.0	5.0	5.1	5.1	5.2	5.3	5.3	5.4	5.5	5.5
40	220V-50Hz	5.8	5.8	5.9	6.0	6.0	6.1	6.1	6.2	6.3	6.3	6.4	6.4
	240V-50Hz	5.3	5.4	5.4	5.5	5.5	5.6	5.7	5.7	5.8	5.8	5.9	6.0
45	220V-50Hz	6.3	6.3	6.4	6.4	6.5	6.5	6.6	6.7	6.7	6.8	6.9	6.9
	240V-50Hz	5.8	5.8	5.9	5.9	6.0	6.1	6.1	6.2	6.2	6.3	6.4	6.4
50	220V-50Hz	7.0	6.5	6.4	6.3	6.2	6.2	6.1	6.0	6.0	5.9	5.8	5.8
	240V-50Hz	6.5	6.5	6.6	6.6	6.6	6.7	6.7	6.8	6.9	6.9	7.0	7.0
55	220V-50Hz	7.7	7.7	7.7	7.8	7.8	7.8	7.9	7.9	8.0	8.0	8.1	8.1
	240V-50Hz	7.2	7.2	7.2	7.3	7.3	7.3	7.4	7.4	7.5	7.5	7.6	7.6

**Model : DS1836S1**

**REFRIGERANT : R404A**

Refrigerant	R404A
Power Supply	1PH/220-240V/50Hz
Sub Cooling	0 K
Return Gas Temp.	18 °C
Cooling	Fan Cooling+Liquid Injection

**Cooling capacity[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,079	1,240	1,499	1,855	2,309	2,861	3,510	4,256	5,100	6,041	7,080	8,217
	240V-50Hz	1,092	1,245	1,498	1,850	2,302	2,854	3,506	4,258	5,109	6,060	7,111	8,262
40	220V-50Hz	982	1,131	1,369	1,697	2,113	2,619	3,214	3,897	4,670	5,532	6,483	7,523
	240V-50Hz	991	1,135	1,370	1,696	2,112	2,619	3,216	3,905	4,684	5,553	6,514	7,565
45	220V-50Hz	884	1,022	1,240	1,538	1,917	2,377	2,918	3,539	4,240	5,022	5,885	6,829
	240V-50Hz	889	1,025	1,242	1,541	1,921	2,383	2,927	3,552	4,258	5,047	5,916	6,868
50	220V-50Hz	787	912	1,110	1,380	1,721	2,135	2,622	3,180	3,810	4,513	5,288	6,134
	240V-50Hz	788	915	1,115	1,386	1,731	2,148	2,637	3,199	3,833	4,540	5,319	6,170
55	220V-50Hz	689	803	980	1,221	1,525	1,894	2,326	2,821	3,380	4,003	4,690	5,440
	240V-50Hz	687	805	987	1,232	1,540	1,912	2,347	2,846	3,408	4,033	4,721	5,473

**Motor Input[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,538	1,528	1,518	1,508	1,498	1,489	1,479	1,469	1,459	1,449	1,439	1,430
	240V-50Hz	1,609	1,600	1,590	1,581	1,572	1,562	1,553	1,544	1,534	1,525	1,516	1,506
40	220V-50Hz	1,711	1,705	1,699	1,693	1,687	1,681	1,676	1,670	1,664	1,658	1,652	1,646
	240V-50Hz	1,810	1,803	1,796	1,789	1,782	1,775	1,768	1,761	1,754	1,747	1,740	1,733
45	220V-50Hz	1,884	1,882	1,880	1,878	1,876	1,874	1,873	1,871	1,869	1,867	1,865	1,863
	240V-50Hz	2,011	2,006	2,002	1,997	1,992	1,988	1,983	1,978	1,974	1,969	1,965	1,960
50	220V-50Hz	2,057	2,059	2,061	2,063	2,065	2,067	2,069	2,072	2,074	2,076	2,078	2,080
	240V-50Hz	2,212	2,210	2,207	2,205	2,203	2,200	2,198	2,196	2,194	2,191	2,189	2,187
55	220V-50Hz	2,230	2,236	2,242	2,248	2,254	2,260	2,266	2,272	2,279	2,285	2,291	2,297
	240V-50Hz	2,413	2,413	2,413	2,413	2,413	2,413	2,413	2,413	2,413	2,414	2,414	2,414

**Current[A]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp.°C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
	240V-50Hz	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
40	220V-50Hz	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1
	240V-50Hz	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1	8.1	8.1	8.1
45	220V-50Hz	8.5	8.5	8.5	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	240V-50Hz	8.5	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.7
50	220V-50Hz	9.0	9.1	9.1	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.2
	240V-50Hz	9.1	9.1	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.2	9.2
55	220V-50Hz	9.6	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.8	9.8	9.8
	240V-50Hz	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.8	9.8	9.8	9.8

**Model : DS1836S1**

**REFRIGERANT : R449A**

Refrigerant	R449A
Power Supply	1PH/220-240V/50Hz
Sub Cooling	0 K
Return Gas Temp.	18 °C
Cooling	Fan Cooling+Liquid Injection

**Cooling capacity[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	928	1,084	1,331	1,671	2,107	2,644	3,282	4,024	4,872	5,828	6,892	8,064
	240V-50Hz	940	1,089	1,330	1,667	2,103	2,640	3,281	4,029	4,885	5,851	6,927	8,113
40	220V-50Hz	856	1,003	1,233	1,550	1,957	2,456	3,050	3,742	4,532	5,422	6,413	7,506
	240V-50Hz	864	1,006	1,234	1,549	1,956	2,456	3,053	3,749	4,545	5,443	6,444	7,549
45	220V-50Hz	784	921	1,135	1,428	1,805	2,268	2,818	3,457	4,189	5,013	5,933	6,948
	240V-50Hz	788	924	1,137	1,431	1,809	2,273	2,826	3,470	4,206	5,037	5,963	6,987
50	220V-50Hz	711	838	1,036	1,307	1,653	2,079	2,584	3,173	3,846	4,605	5,453	6,391
	240V-50Hz	712	841	1,040	1,313	1,662	2,090	2,599	3,191	3,868	4,632	5,485	6,428
55	220V-50Hz	638	756	937	1,186	1,503	1,891	2,353	2,891	3,506	4,201	4,979	5,842
	240V-50Hz	636	758	944	1,196	1,517	1,910	2,375	2,916	3,534	4,232	5,012	5,877

**Motor Input[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,419	1,411	1,405	1,398	1,392	1,387	1,382	1,377	1,374	1,371	1,370	1,370
	240V-50Hz	1,473	1,466	1,458	1,452	1,446	1,440	1,436	1,432	1,429	1,428	1,428	1,431
40	220V-50Hz	1,570	1,566	1,563	1,560	1,557	1,555	1,554	1,554	1,554	1,557	1,561	1,567
	240V-50Hz	1,664	1,658	1,654	1,649	1,646	1,643	1,640	1,639	1,639	1,641	1,644	1,650
45	220V-50Hz	1,730	1,730	1,729	1,730	1,731	1,733	1,735	1,739	1,744	1,751	1,760	1,772
	240V-50Hz	1,854	1,851	1,849	1,847	1,845	1,844	1,845	1,846	1,848	1,853	1,859	1,869
50	220V-50Hz	1,896	1,899	1,902	1,906	1,911	1,917	1,923	1,931	1,940	1,951	1,964	1,981
	240V-50Hz	2,047	2,046	2,045	2,045	2,046	2,048	2,050	2,054	2,059	2,066	2,075	2,088
55	220V-50Hz	2,065	2,071	2,078	2,086	2,094	2,104	2,114	2,126	2,139	2,154	2,171	2,192
	240V-50Hz	2,241	2,242	2,244	2,246	2,249	2,253	2,258	2,264	2,272	2,281	2,293	2,308

**Current[A]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	6.8	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	7.0	7.0	7.1
	240V-50Hz	6.8	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.9	6.9	7.0
40	220V-50Hz	7.4	7.4	7.4	7.4	7.4	7.4	7.5	7.5	7.5	7.6	7.6	7.7
	240V-50Hz	7.4	7.4	7.4	7.4	7.5	7.5	7.5	7.5	7.6	7.6	7.6	7.7
45	220V-50Hz	7.9	7.9	7.9	7.9	7.9	8.0	8.0	8.0	8.1	8.1	8.2	8.2
	240V-50Hz	7.9	7.9	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.2	8.2	8.3
50	220V-50Hz	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.6	8.6	8.7	8.7	8.8
	240V-50Hz	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.6	8.6	8.7	8.7	8.8
55	220V-50Hz	8.9	8.9	8.9	8.9	9.0	9.0	9.0	9.1	9.1	9.2	9.3	9.3
	240V-50Hz	8.8	8.9	8.9	8.9	8.9	9.0	9.0	9.1	9.1	9.2	9.3	9.3

**Model : DS1836S1**

**REFRIGERANT : R1270**

Refrigerant	R1270
Power Supply	1PH/220-240V/50Hz
Sub Cooling	0 K
Return Gas Temp.	18 °C
Cooling	Fan Cooling+Liquid Injection

**Cooling capacity[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,150	1,299	1,544	1,882	2,309	2,822	3,419	4,096	4,851	5,682	6,585	7,558
	240V-50Hz	1,164	1,304	1,543	1,877	2,303	2,816	3,415	4,097	4,859	5,699	6,614	7,600
40	220V-50Hz	1,066	1,206	1,437	1,754	2,153	2,633	3,191	3,824	4,531	5,310	6,158	7,073
	240V-50Hz	1,076	1,211	1,438	1,752	2,152	2,633	3,194	3,832	4,545	5,331	6,188	7,113
45	220V-50Hz	977	1,109	1,324	1,619	1,990	2,435	2,952	3,540	4,195	4,919	5,707	6,560
	240V-50Hz	983	1,113	1,327	1,622	1,994	2,441	2,961	3,553	4,213	4,942	5,737	6,598
50	220V-50Hz	894	1,019	1,219	1,494	1,838	2,252	2,732	3,277	3,887	4,561	5,297	6,097
	240V-50Hz	895	1,022	1,225	1,501	1,848	2,264	2,748	3,297	3,910	4,588	5,328	6,132
55	220V-50Hz	805	921	1,107	1,359	1,675	2,054	2,493	2,993	3,553	4,171	4,849	5,587
	240V-50Hz	801	924	1,114	1,371	1,691	2,073	2,517	3,019	3,581	4,202	4,881	5,621

**Motor Input[W]**

Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	1,565	1,527	1,492	1,460	1,429	1,400	1,373	1,347	1,322	1,298	1,274	1,251
	240V-50Hz	1,638	1,599	1,563	1,530	1,499	1,470	1,442	1,415	1,390	1,365	1,342	1,318
40	220V-50Hz	1,744	1,708	1,674	1,642	1,613	1,586	1,560	1,535	1,512	1,490	1,468	1,447
	240V-50Hz	1,845	1,806	1,769	1,735	1,704	1,674	1,646	1,619	1,594	1,570	1,546	1,524
45	220V-50Hz	1,924	1,889	1,856	1,826	1,798	1,772	1,748	1,725	1,704	1,683	1,664	1,645
	240V-50Hz	2,054	2,014	1,976	1,942	1,909	1,879	1,851	1,825	1,799	1,776	1,753	1,731
50	220V-50Hz	2,104	2,070	2,039	2,010	1,984	1,959	1,937	1,916	1,896	1,878	1,861	1,844
	240V-50Hz	2,263	2,221	2,183	2,148	2,116	2,085	2,057	2,031	2,006	1,982	1,960	1,939
55	220V-50Hz	2,285	2,252	2,222	2,194	2,170	2,147	2,126	2,107	2,090	2,074	2,059	2,045
	240V-50Hz	2,473	2,430	2,391	2,356	2,323	2,292	2,264	2,238	2,214	2,191	2,169	2,149

**Current[A]**

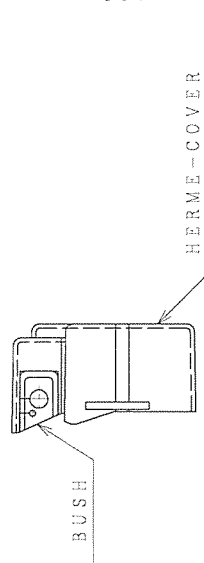
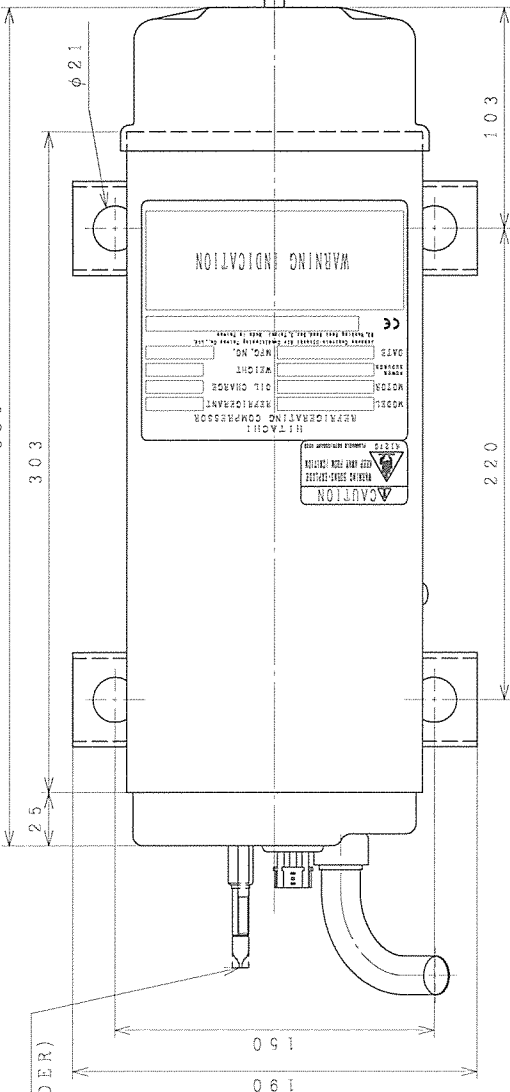
Calculated values

Condensing Temp. °C	Power Supply	Evaporating Temp. °C											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
35	220V-50Hz	7.2	7.0	6.9	6.7	6.6	6.5	6.3	6.2	6.1	6.0	5.9	5.8
	240V-50Hz	7.5	7.3	7.2	7.1	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.2
40	220V-50Hz	8.1	7.9	7.7	7.6	7.5	7.3	7.2	7.1	7.0	6.9	6.8	6.7
	240V-50Hz	8.3	8.2	8.0	7.9	7.8	7.6	7.5	7.4	7.3	7.2	7.1	7.0
45	220V-50Hz	8.9	8.7	8.6	8.5	8.3	8.2	8.1	8.0	7.9	7.8	7.7	7.6
	240V-50Hz	9.2	9.0	8.9	8.7	8.6	8.5	8.4	8.3	8.2	8.1	8.0	7.9
50	220V-50Hz	9.8	9.6	9.5	9.3	9.2	9.1	9.0	8.9	8.8	8.7	8.6	8.5
	240V-50Hz	10.0	9.8	9.7	9.5	9.4	9.3	9.2	9.1	9.0	8.9	8.8	8.7
55	220V-50Hz	10.6	10.5	10.3	10.2	10.1	10.0	9.9	9.8	9.7	9.6	9.5	9.5
	240V-50Hz	10.8	10.7	10.5	10.4	10.2	10.1	10.0	9.9	9.8	9.7	9.6	9.5

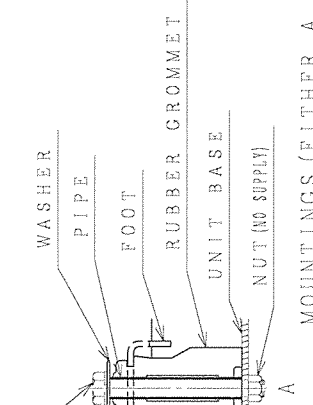
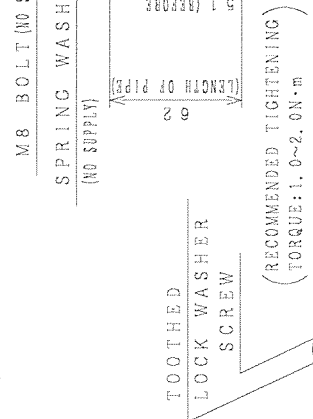
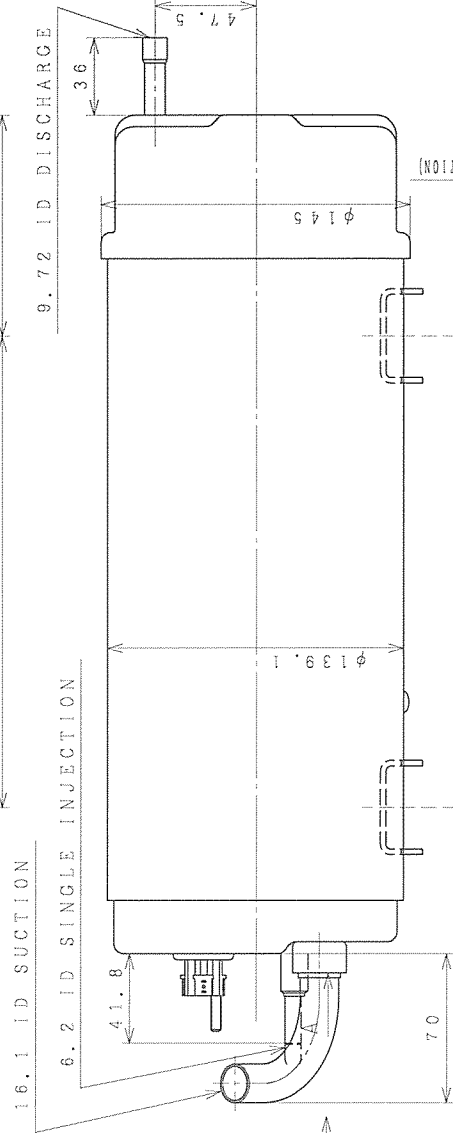
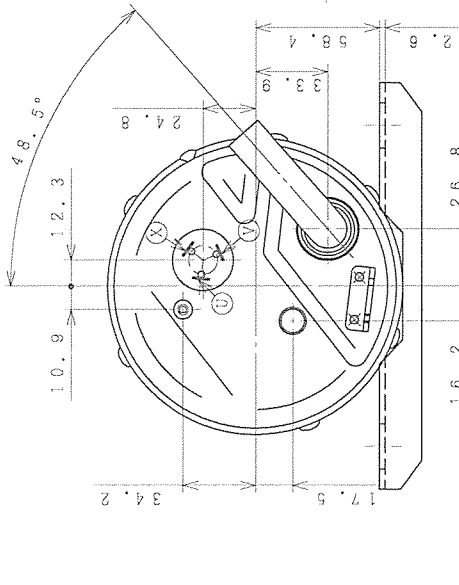


1720100NN

Compressor model  
DS1529S1

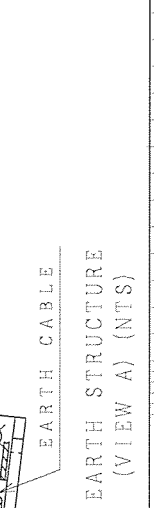


THE INSTALLATION WAY OF BUSH (VIEW B)



DIMENSION: mm

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DWN. <i>R. Reddy</i>	20/8.05.22		1:1	COMPRESSOR DIMENSION SKETCH
CHKD. <i>Z. Adityan</i>	20/8.05.22			TOCHIGI DWG. No.
APPD. <i>M. Prasad</i>	2018-05-22			3CYC NN0010271



GASKET AND HERME-COVER SETTING

EARTH STRUCTURE (VIEW A) (NTS)

Hitachi-Johnson Controls  
Air Conditioning, Inc.

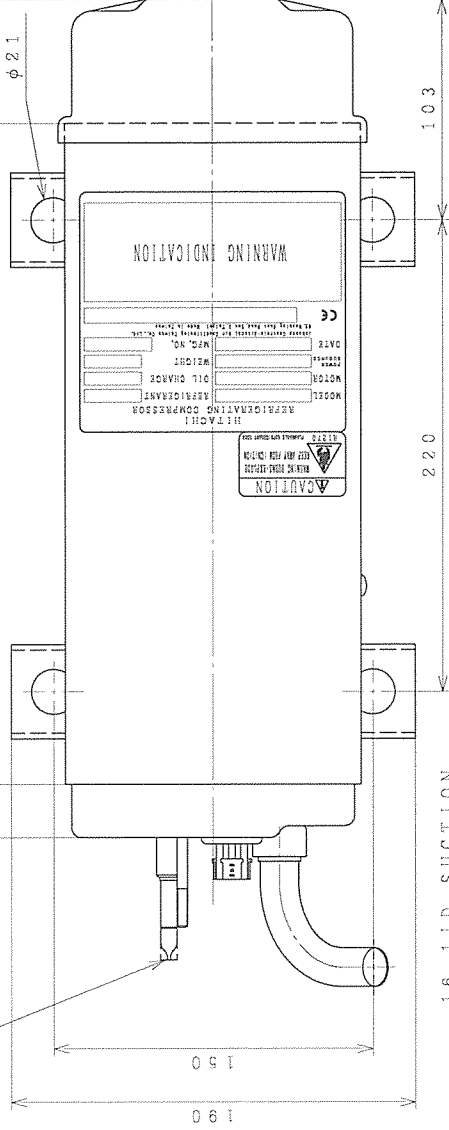
REC'D.

2720100NN

Compressor model  
DS1836S1

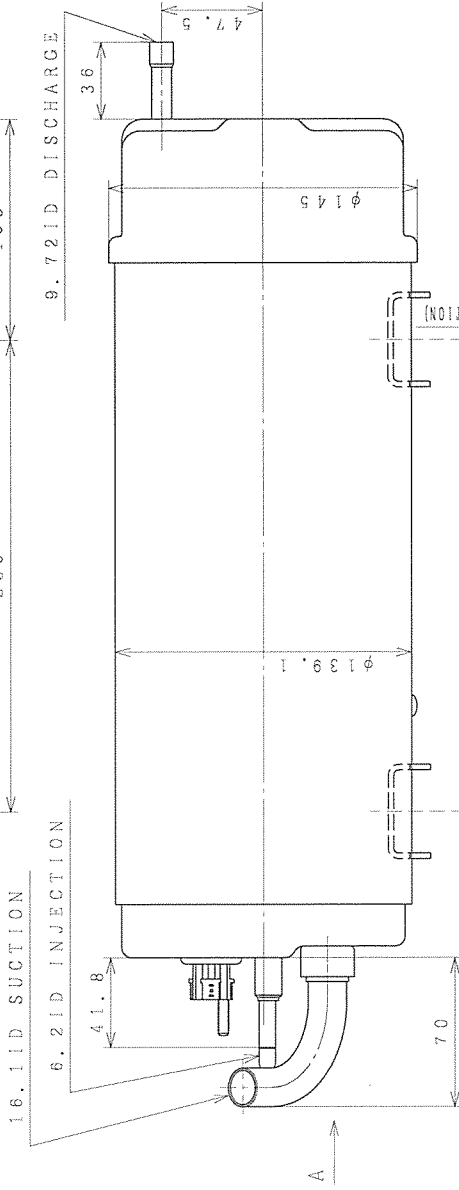
SEALING  
(SILVER SOLDER)

391  
308



16.1 ID SUCTION

9.72 ID DISCHARGE



M8 BOLT (NO SUPPLY)

SPRING WASHER (NO SUPPLY)

WASHER

PIPE

FOOT

RUBBER GROMMET

UNIT BASE

NUT (NO SUPPLY)

(RECOMMENDED TIGHTENING  
TORQUE: 1.0-2.0 N·m)

EARTH CABLE

EARTH STRUCTURE  
(VIEW A) (NTS)

(BEFORE TRANSFORMATION)

(LENGTH OF PIPE)

42

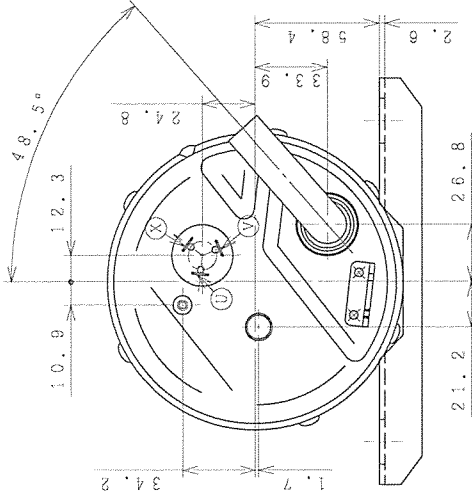
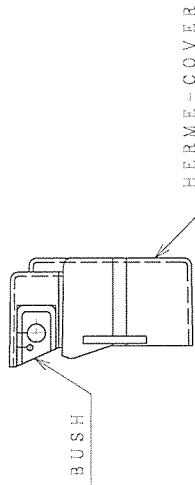
31

(BEFORE TRANSFORMATION)

MOUNTINGS (EITHER A OR B)

DIMENSION: mm

THE INSTALLATION  
WAY OF BUSH  
(VIEW B)



GASKET

HERME-COVER

NUT

TOOTHED LOCK WASHER

SCREW

(RECOMMENDED TIGHTENING  
TORQUE: 1.0-2.0 N·m)

EARTH CABLE

EARTH STRUCTURE  
(VIEW A) (NTS)

(BEFORE TRANSFORMATION)

(LENGTH OF PIPE)

42

31

(BEFORE TRANSFORMATION)

MOUNTINGS (EITHER A OR B)

DIMENSION: mm

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DWN. K. Kobayashi	2018.05.22	◎	NTS	COMPRESSOR DIMENSION SKETCH
CHKD. Z. Akiyama	2018.05.22	◎	NTS	COMPRESSOR DIMENSION SKETCH
APPD. M. Omoguchi	2018-05-22	◎	NTS	COMPRESSOR DIMENSION SKETCH

GASKET HERME-COVER SETTING  
EARTH STRUCTURE  
(VIEW A) (NTS)

Hitachi-Johnson Controls  
Air Conditioning, Inc.

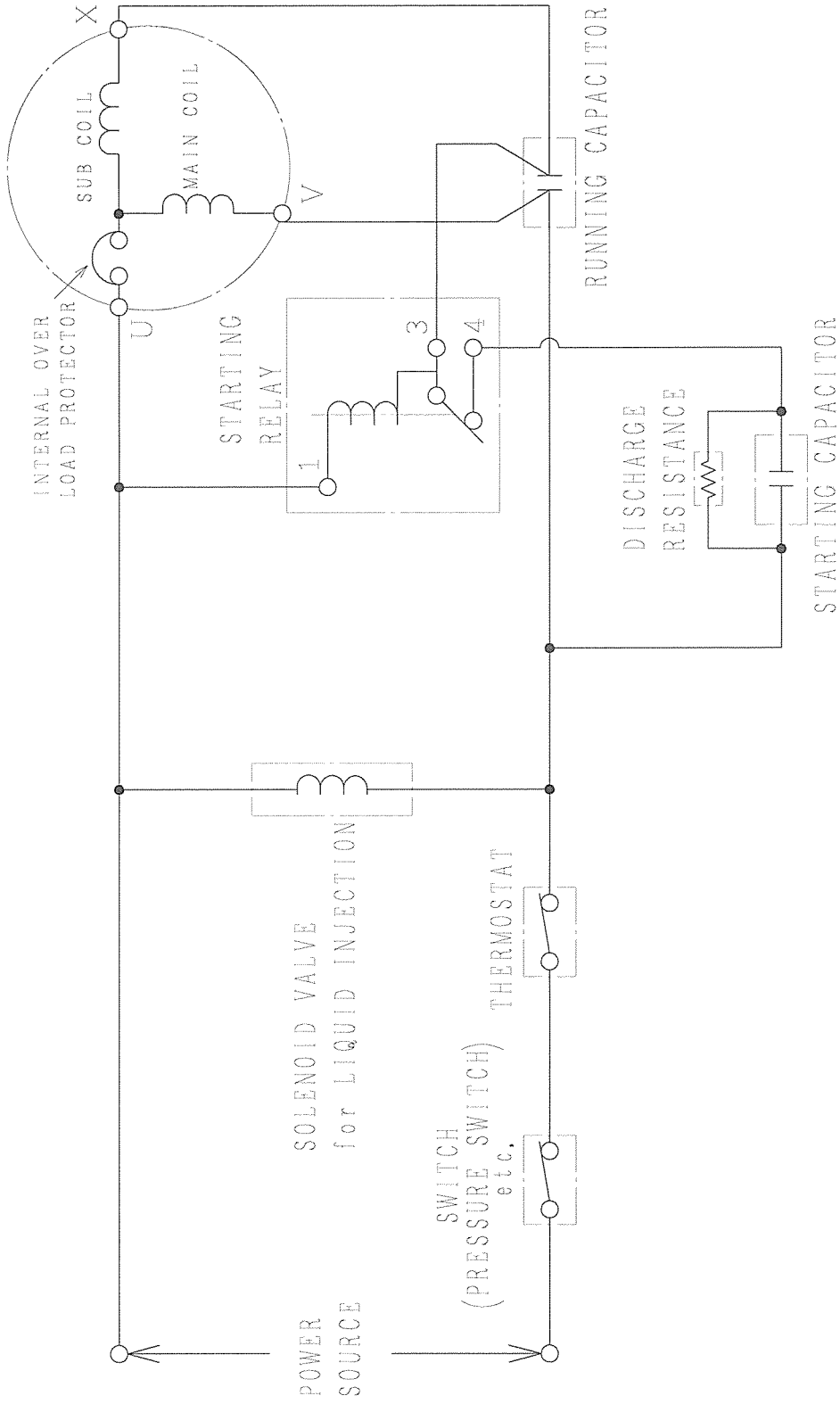
TOCHIGI DWG. No.  
3CYC NN0010272

CAD

REGD.

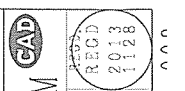
8161700BB

SINGLE-PHASE POWER

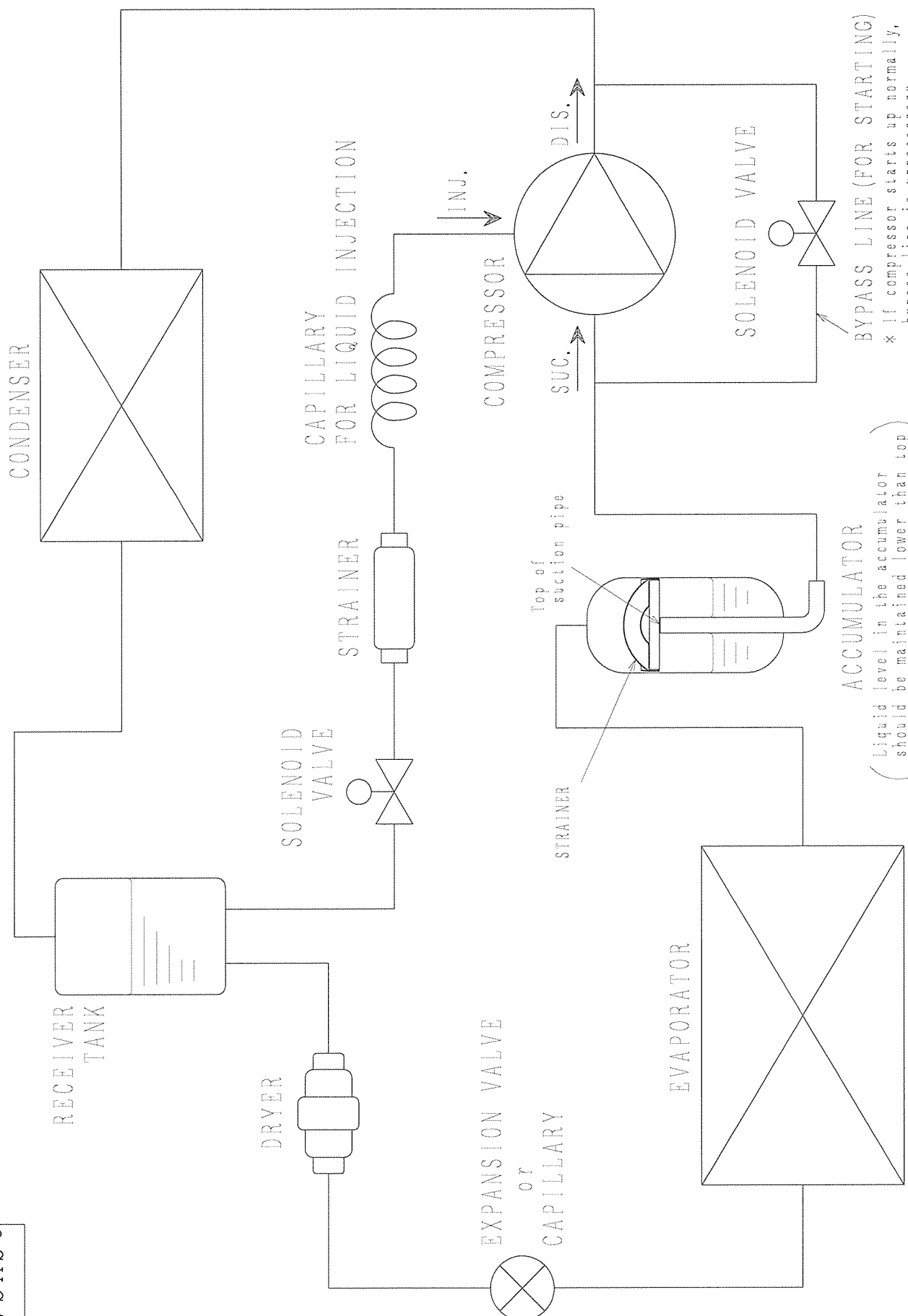


SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DMN. K. Haba	2013-11-28	①	NTS	CIRCUIT DIAGRAM
CHKD. K. Matsuyama	2013-11-28			
APPD. Y. Ogasachi	2013-11-28			

TOCHIGI DWG. No. Hitachi-Johnson Controls Air Conditioning, Inc. 3CYCBB0041918



3CYCA6131



ACCUMULATOR  
 (Liquid level in the accumulator should be maintained lower than top of suction pipe in the accumulator.)

BYPASS LINE (FOR STARTING)  
 \* If compressor starts up normally, bypass line is unnecessary.

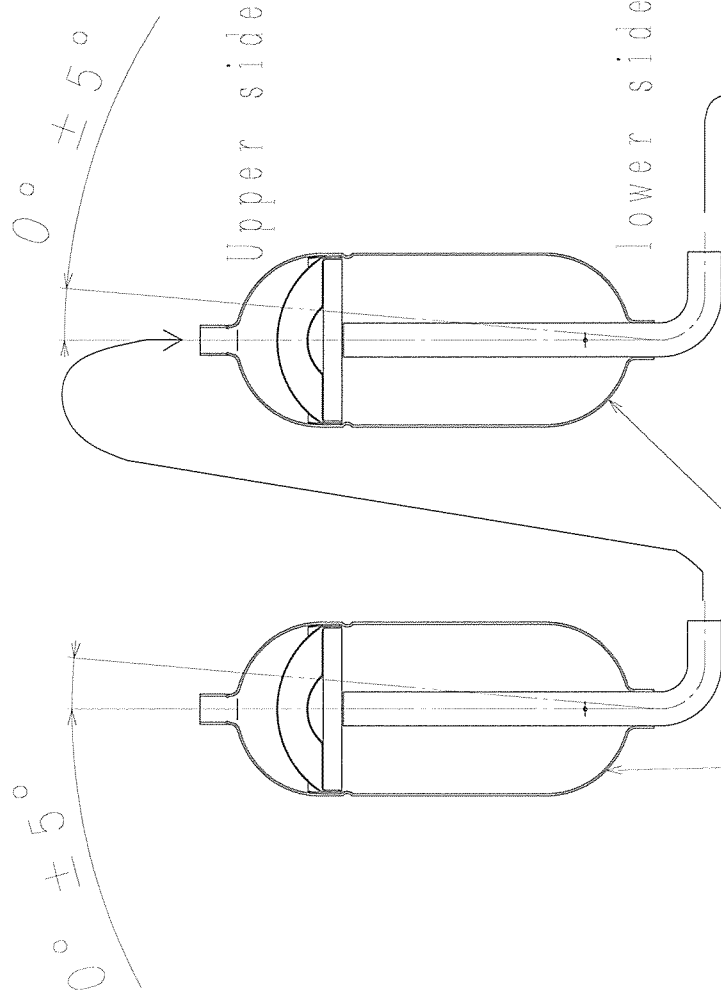
SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DWN. M. Onoguchi	2004-05-31	①	1 : 1	REFRIGERATION SYSTEM
CHKD. S. Tagawa	2004-05-31			TOCHIGI DWG. No.
APPD. S. Tagawa	2004-05-31			Hitachi-Johnson Controls Air Conditioning, Inc.

REC'D  
2004  
3606

3CYCA6131

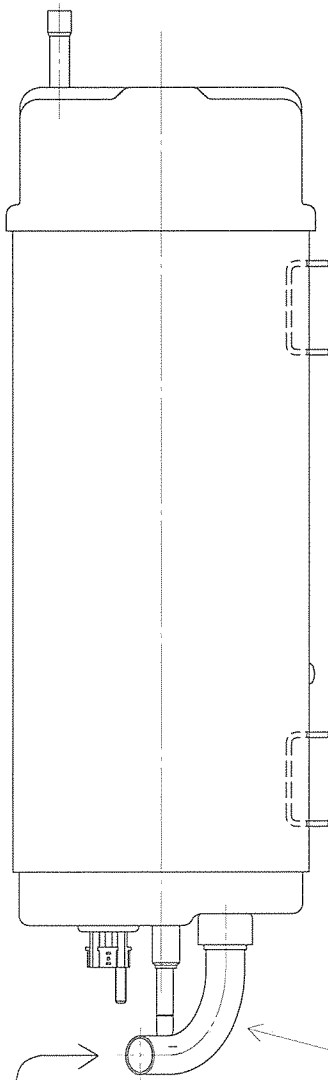
A B C D E F

3CYCA6121



ACCUMULATOR

COMPRESSOR



Suction pipe of compressor

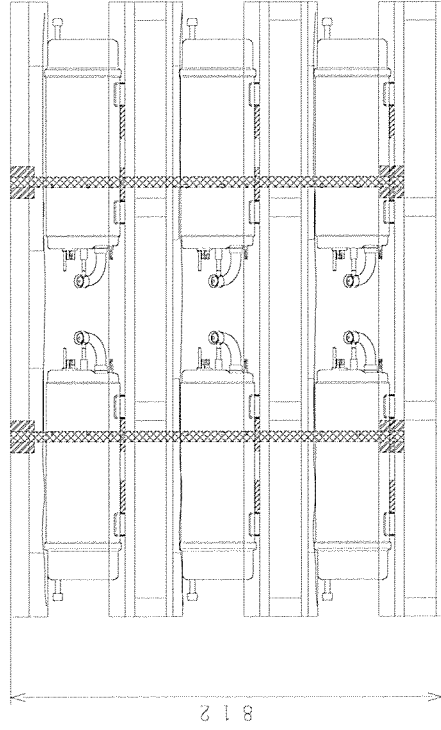
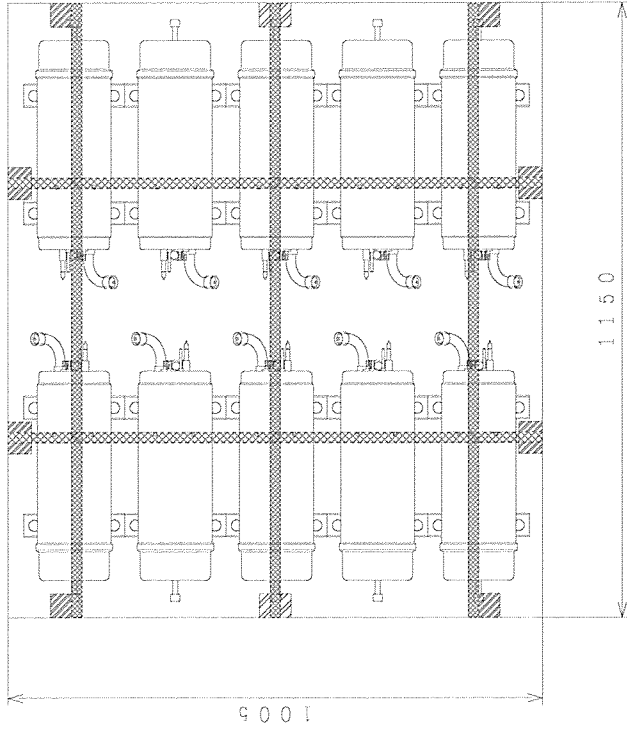
The accumulator should be connected between discharge pipe of evaporator and suction pipe of compressor. The allowable incline should be less than  $5^\circ$ . The two accumulators should be connected in series like the figure.

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DRW. F. Nishioke	2004-05-26	①	1 : 2	CONNECTING SKETCH OF ACCUMULATOR
CHKD. M. Onoguchi	2004-05-26	②		
APPD. S. Tagawa	2004-05-26			

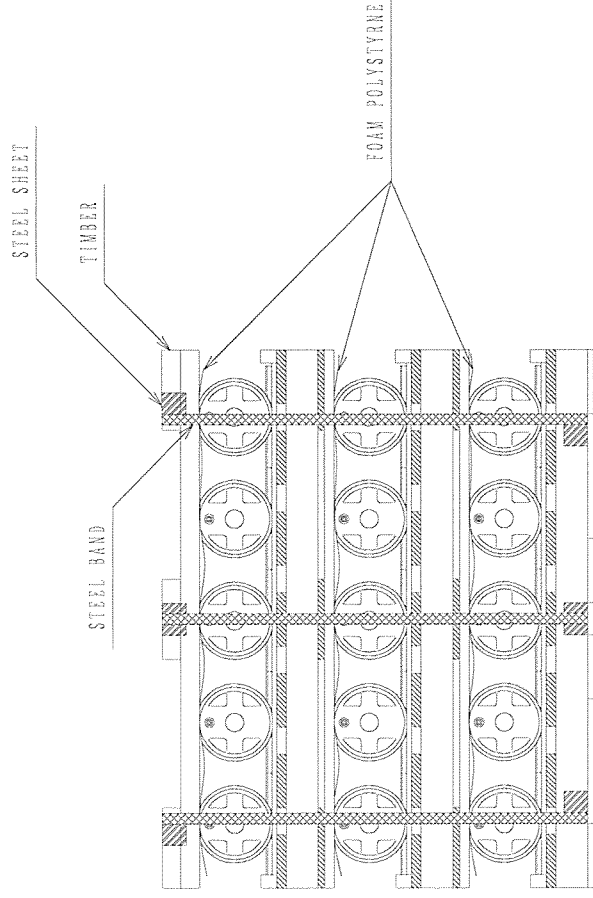
Hitachi-Johnson Controls Air Conditioning, Inc. TOCHIGI DWG. No. 3CYCA6121

REC'D 2004 0524  
 000

BB0044458



MODEL	INCLUDED NUMBER	NUMBER OF STEPS	GROSS WEIGHT (kg)
DS1836S1	30	3	760
DS1529S1	30	3	760
DS1529V1	30	3	760
DS1529X1	30	3	760
DS1834S1	30	3	760
DS1834V1	30	3	760
DS1834X1	30	3	760
DS2244V1	30	3	790

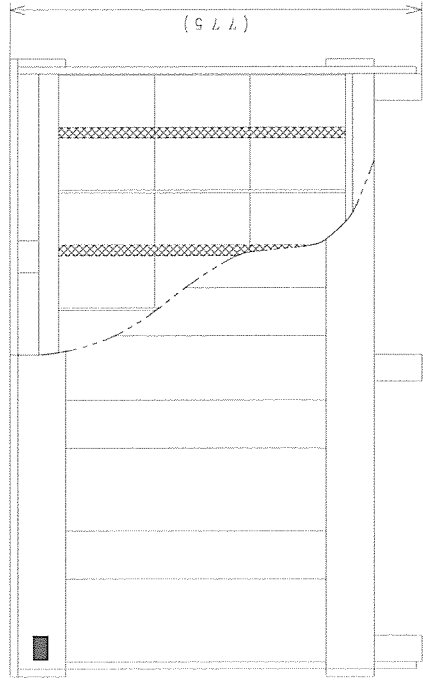
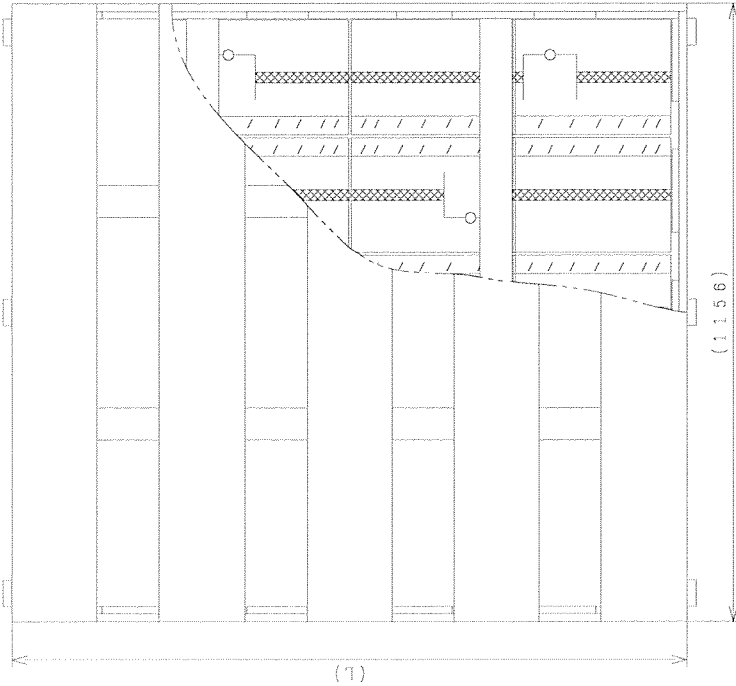


SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DRW. K. Hada	2014-04-28	1:10	1:10	DS COMPRESSOR PACKING SKETCH
CHKD. K. Matsuzaka	2014-04-28			
APPD. M. Onouchi	2014-04-28			

Hitachi-Johnson Controls  
Air Conditioning, Inc. TOCHIGI DWG. No. 3CYCBB0044458

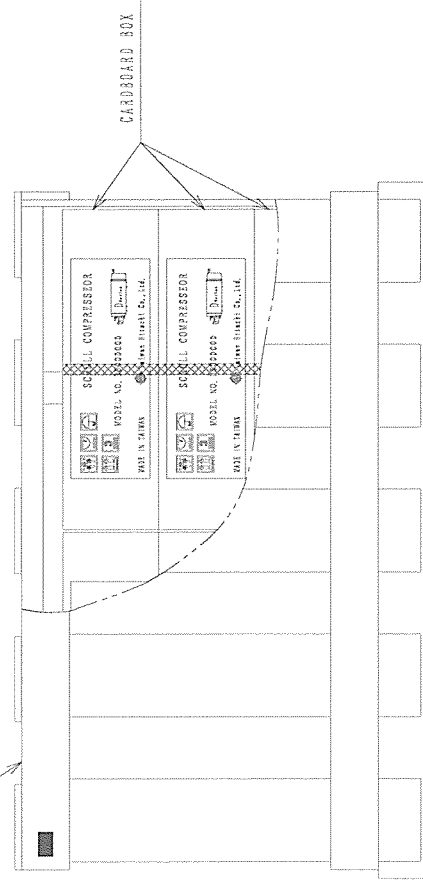
REGD 2014 6428

BB0044459



MODEL	INCLUDED NUMBER	NUMBER OF STEPS	L	GROSS WEIGHT (kg)
DS1836S1	30	3	1266	770
DS1529S1	30	3	1266	770
DS1529V1	30	3	1266	770
DS1529X1	30	3	1266	770
DS1834S1	30	3	1266	770
DS1834V1	30	3	1266	770
DS1834X1	30	3	1266	770
DS2244V1	30	3	1366	810

TIMBER

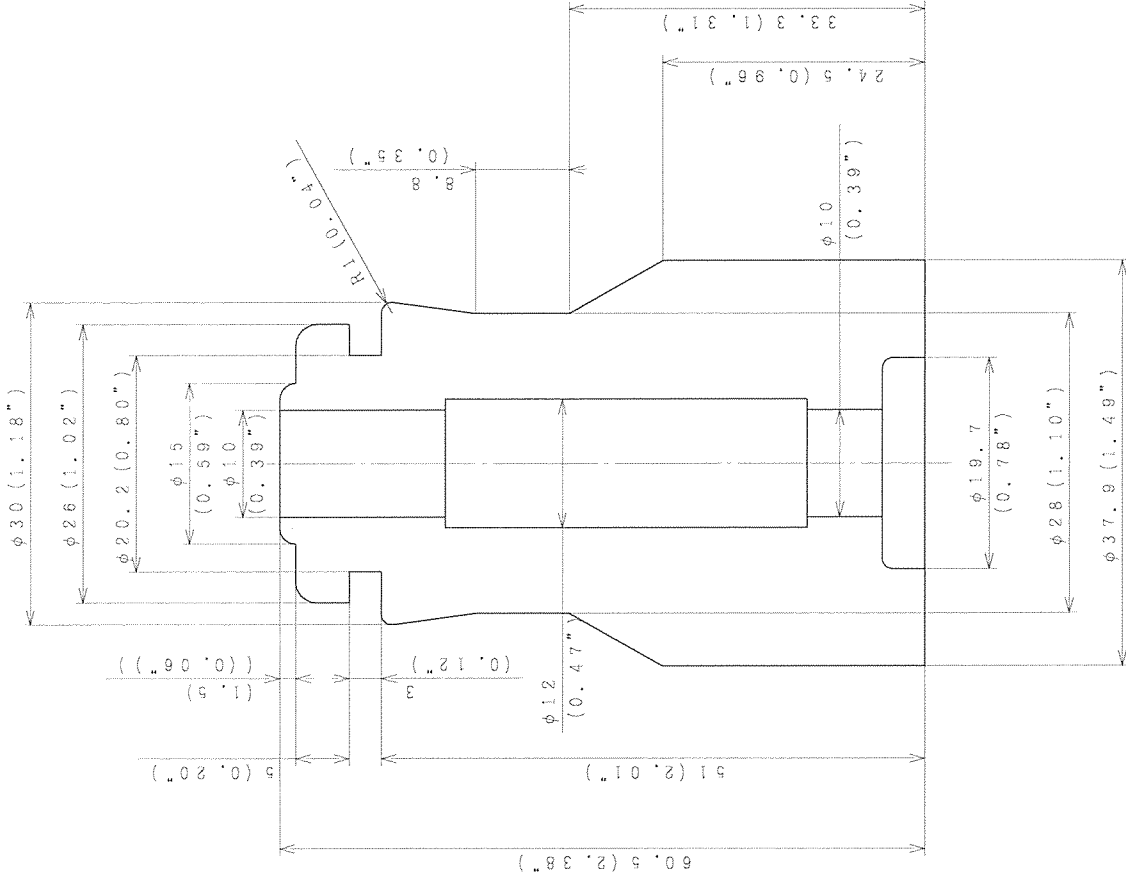


SIGNATURE	DATE	PROJECTION	SCALE	TITLE
	DWN. K. Haba	2014-04-29	1 : 10	DS COMPRESSOR PACKING SKETCH
	CHKD. K. Matsumoto	2014-04-29		TOCHIGI DWG. No.
APPD. M. Otaguchi	2014-04-29			Hitachi-Johnson Controls Air Conditioning, Inc.

RECD  
2014  
0429

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3CYC02806



MATERIAL: NATURAL RUBBER

COLOR : BLACK

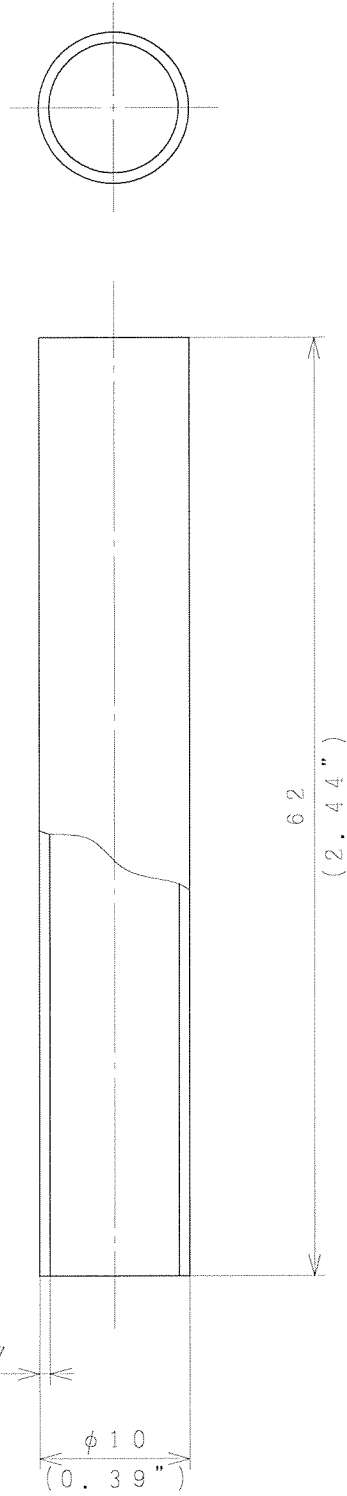
DIMENSION: mm (in)

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
SWN. Y. Nakata	1992-05-13		2 : 1	RUBBER GROMMET
CHKD. K. Setiguchi	1992-05-13			TOCHIGI DWG. No.
APPD. Y. Setiguchi	1992-05-13			Hitachi-Johnson Controls Air Conditioning, Inc.



REC'D  
1992  
0515  
3CYC02806



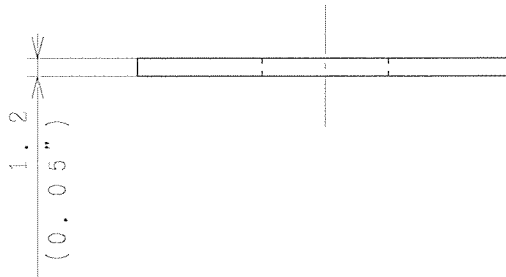
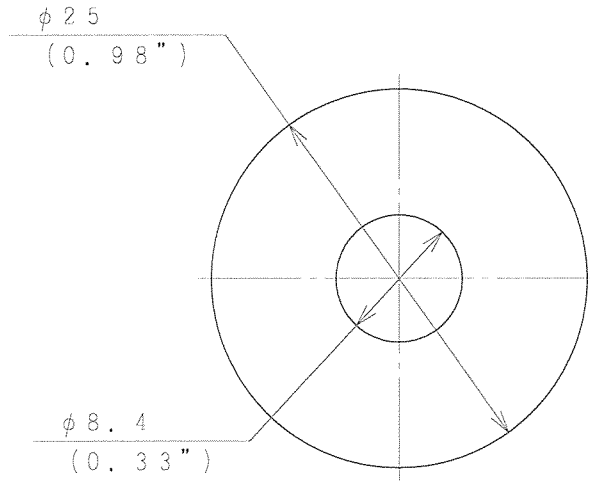
4CYC11219



MATERIAL : STEEL PIPE  
 DIMENSION : mm (in)


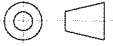
SIGNATURE		DATE	PROJECTION	SCALE	TITLE	
DWN.	P. Nishioka	2003-10-27		2 : 1	PIPE	
CHKD.	M. Onoguchi	2003-10-28				
APPD.	A. Simada	2003-10-29				
			Hitachi-Johnson Controls Air Conditioning, Inc.		TOCHIGI DWG. No.	
					4CYC11219	

4CYC11220

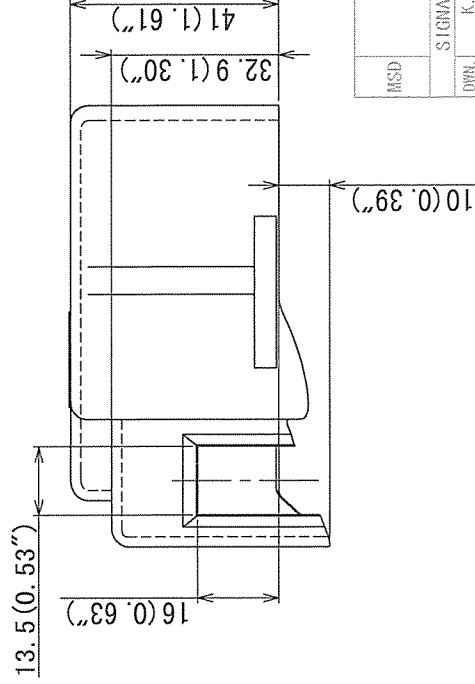
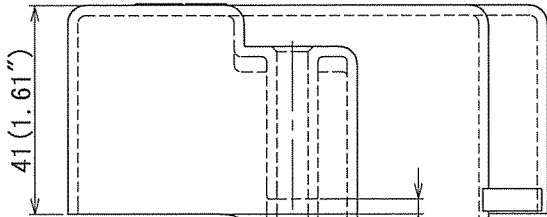
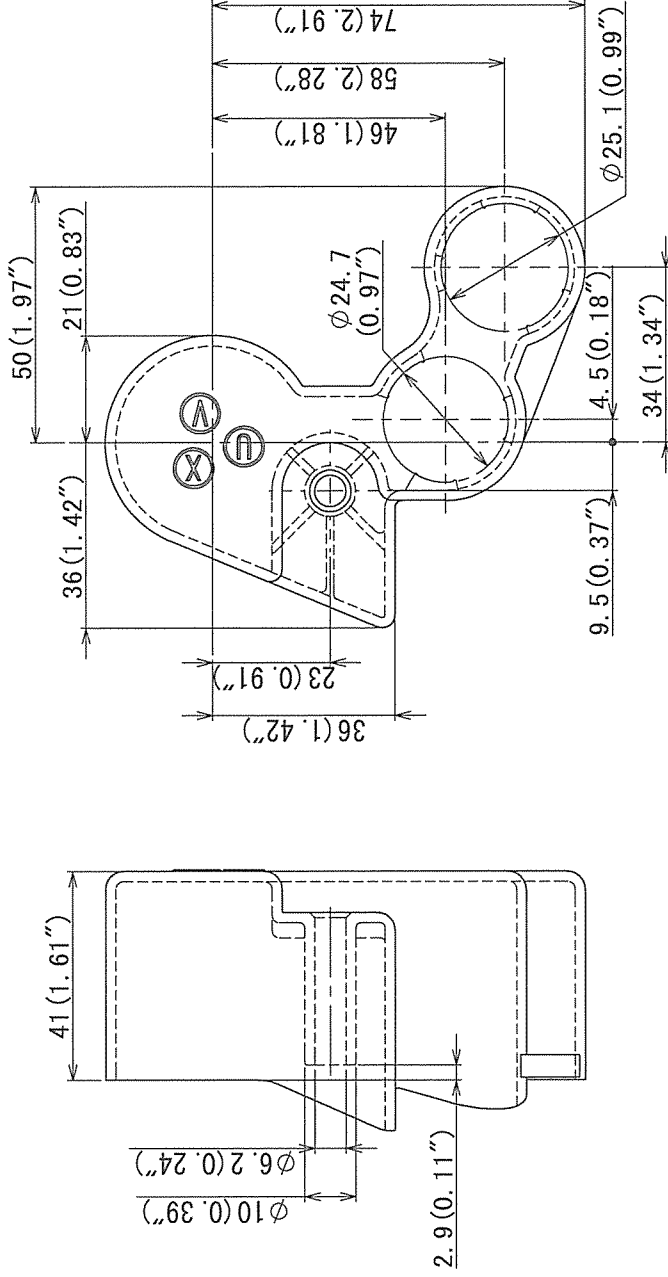


NOTES

MATERIAL: COLD ROLLED CARBON STEEL SHEETS  
AND STRIP  
SURFACE : ZINC-COATED  
DIMENSION: mm (in)

SIGNATURE		DATE	PROJECTION	SCALE	TITLE	
DWN.	F. Nishioka	2003-10-27		2 : 1	WASHER	
CHKD.	M. Onoguchi	2003-10-28				
APPD.	A. Simada	2003-10-29				
			Hitachi-Johnson Controls Air Conditioning, Inc.		TOCHIGI DWG. No.	
					4CYC11220	

BB0041336

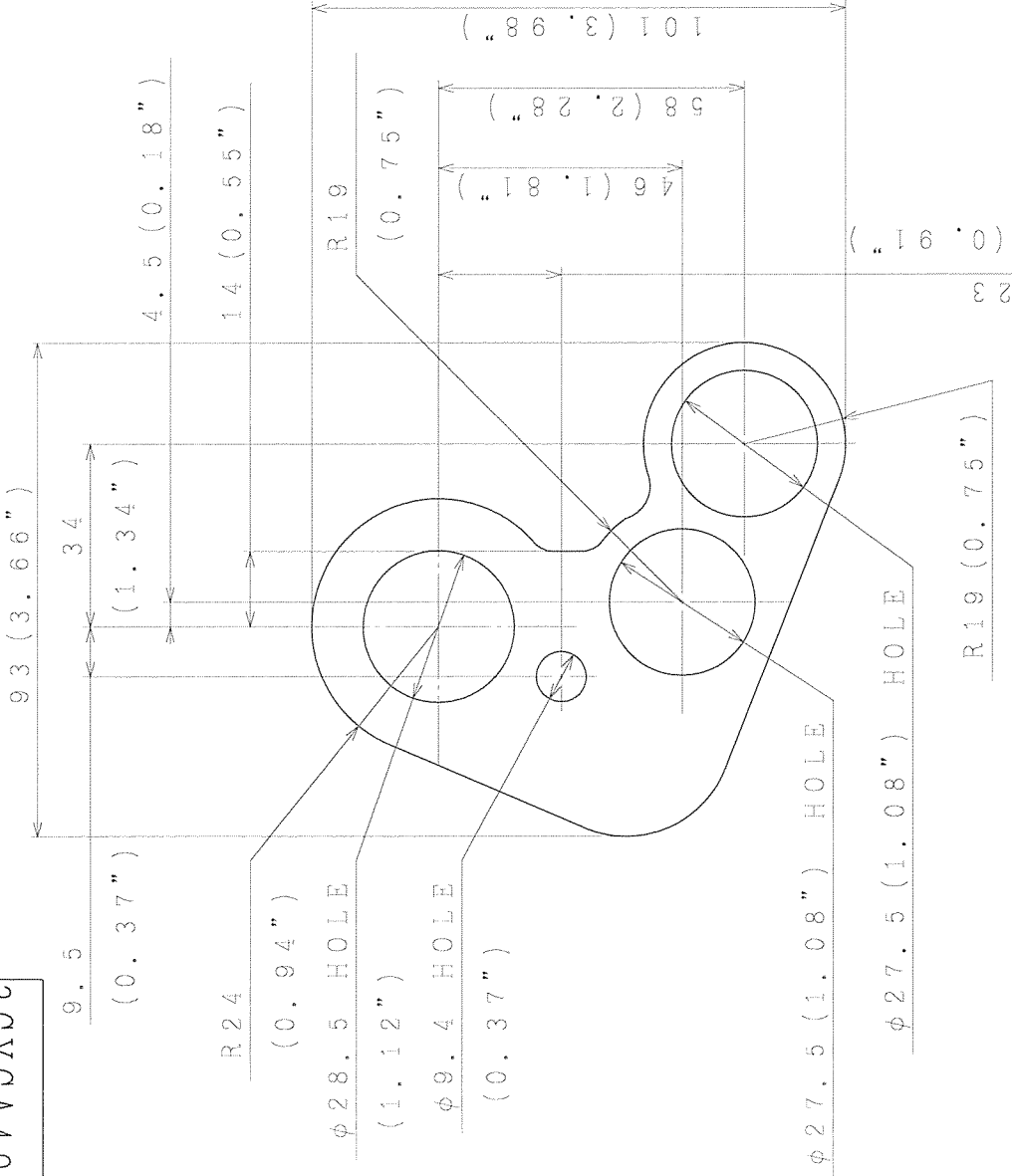


DIMENSION: mm (in)

MSD		JOB NO		PROJ	C
SIGNATURE	DATE	PROJECTION/TITLE			
DRAWN K. Habu	2013-10-17	3DCAD			
CHECKED K. Matsunaga	2013-10-17	SCALE 1:1			
APPROVED M. Onoguchi	2013-10-17	TOCHIGI DWG. NO. Hitachi-Johnson Controls Air Conditioning, Inc. 3CYC BB0041336			

UL Flame Class: 94-5V or Equivalent

3CYCA4999



NOTES

COLOR: BLACK

MATERIAL: EPDMPOP-B

DIMENSION: mm (in)

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DRW. M. Hayama	2003-10-28		1:1	RUBBER PLATE
CHKD. M. Onoguchi	2003-10-28			
APPD. A. Saitoh	2003-10-29			

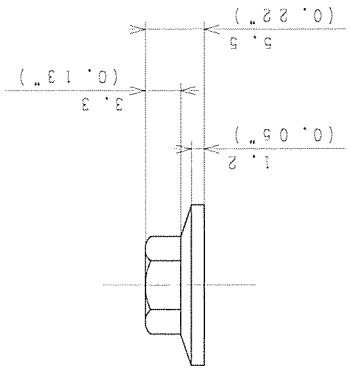
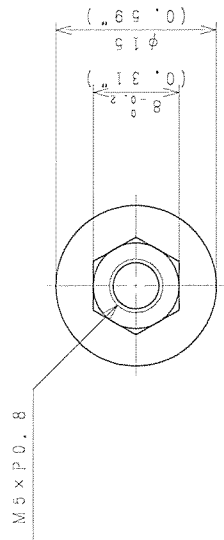
TOCHIGI DWG. No.	
Hitachi-Johnson Controls Air Conditioning, Inc.	3CYCA4999

REC'D  
2003  
1102

DATE: 2003-10-29  
DRAWN BY: M. Hayama  
CHECKED BY: M. Onoguchi  
APPROVED BY: A. Saitoh

3CYC62897

A B C D E F



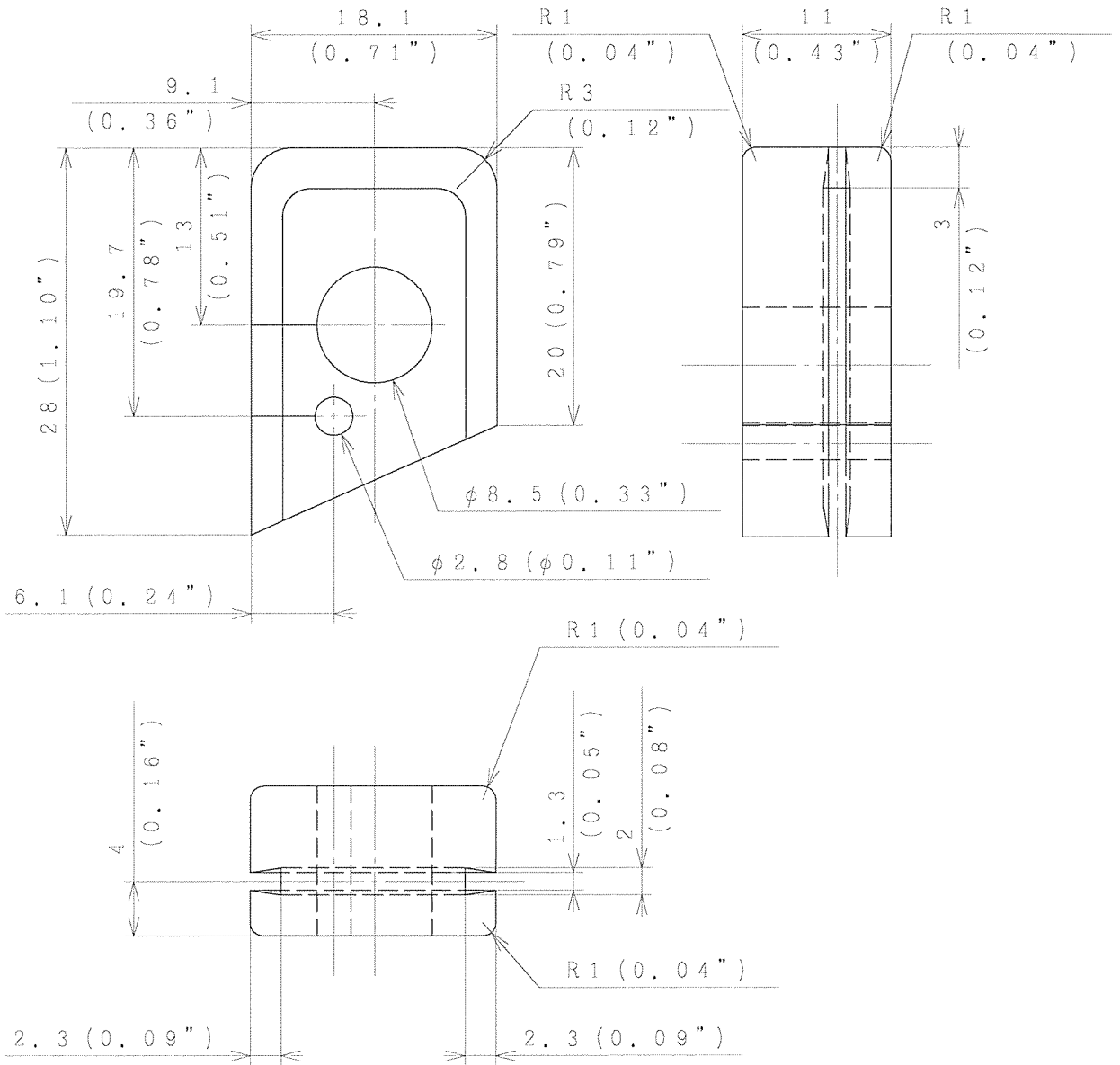
MATERIAL : SWRM6

DIMENSION : mm (in)

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DMN. Y. Nakada	1992-05-13		2:1	NUT
CHKD. Y. Shibuchi	1992-05-13			TOCHIGI DWG. No.
APPD. Y. Seritama	1992-05-13			Hitachi-Johnson Controls Air Conditioning, Inc.
				3CYC62897

REC'D 1992 0515

BB0007021

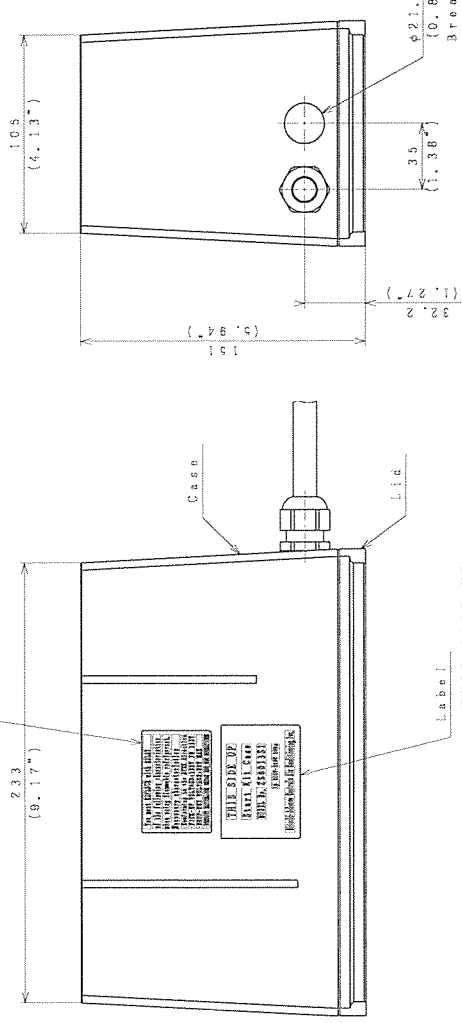


MATERIAL: EPDM  
 DIMENSION: mm (in)

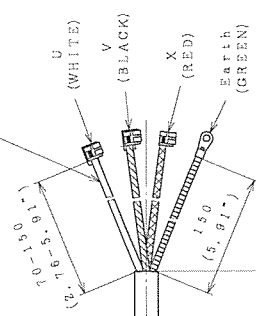
SIGNATURE		DATE	PROJECTION	SCALE	TITLE
DWN.	W. Sugawara	2007-02-22		2 : 1	BUSH TOCHIGI DWG. No. 4CYC BB0007021
CHKD.	M. Onoguchi	2007-02-22			
APPD.	A. Simada	2007-02-22			



R-Label (E-BOX Type: C, D, E only)  
 You must REPLACE with RELAY of the following characteristics when using flammable refrigerant.  
 Necessary characteristics  
 - Comforting to the ATEX directive  
 - PICK-UP VOLTAGE: 130V TO 153V  
 - DROP-OUT VOLTAGE: 90V MAX  
 - CONTACT RATING: 20A BREAK 200,000 OPERATIONS



THIS SIDE UP  
 indicate compressor type number and installation direction  
 Comp. Model: ZSxxxxxx  
 Power source: 1ø 220V-240V 50Hz



24.7 (9.72\"/>

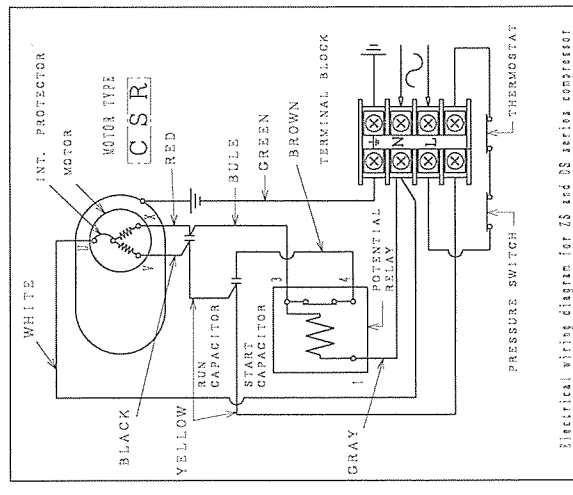


Fig. 1 Diagram  
 Electrical wiring diagram for ZS and DS series compressor

E-BOX Type	Comp. type	Power source	Potential relay	Running Capacitor	Starting Capacitor
A	ZS4084S1	1ø 220-240V 50Hz	AMVL-145V1	30µF/400V	30µF/400V
B	ZS6613S1	1ø 220-240V 50Hz	AMVL-240V1	25µF/400V	40µF/400V
C	ZS7516S1	1ø 220-240V 50Hz	AMVL-240V1	30µF/450V	40µF/450V
D	ZS1120S1	1ø 220-240V 50Hz	AMVL-240V1	40µF/450V	40µF/450V
E	DS1834S1	1ø 220-240V 50Hz	AMVL-240V1	35µF/450V	75µF/400V
F	DS1834X1	1ø 220-240V 60Hz	AMVL-250V2	55µF/450V	75µF/400V
G	ZS4084P1	1ø 115V 60Hz	AMVL-195V2	30µF/400V	60µF/400V
H	ZS6613P1	1ø 115V 60Hz	AMVL-195V2	30µF/400V	60µF/400V
J	ZS6013X1	1ø 220-240V 60Hz	AMVL-250V2	30µF/450V	40µF/450V
K	ZS7516X1	1ø 220-240V 60Hz	AMVL-250V2	30µF/450V	40µF/450V
L	ZS1120X1	1ø 220-240V 60Hz	AMVL-250V2	45µF/450V	60µF/450V
M	DS1529X1	1ø 220-240V 60Hz	AMVL-250V2	45µF/450V	60µF/450V

Notes  
 1. Material of Case and Lid: Polybutylene terephthalate  
 2. Water tight label: IP44  
 3. Case and Lid Flame resistance level: 94-5V  
 4. Potential relay operation is influenced by setting direction.  
 Box installing direction should comply with upward label indication.  
 5. The circuit diagram of Fig.1 is indicated inside a lid.  
 6. Dimension:mm (in)

0867HCA4980

STARTING CAPACITOR and DISCHARGE RESISTANCE

始動用キヤパシタと放電抵抗

1. CAPACITOR TYPE

METALLIZED FILM CAPACITOR

メタライズド フィルム コンデンサ

Please do not ALUMINUM ELECTROLYTIC CAPACITOR.

Because, starting capacitor turn on continuity electrify when the contact point of the relay deposited.

電圧リレーの接点が溶着した場合、始動キヤパシタに連続通電される恐れがあるため、アルミ電解コンデンサは使用しないでください。

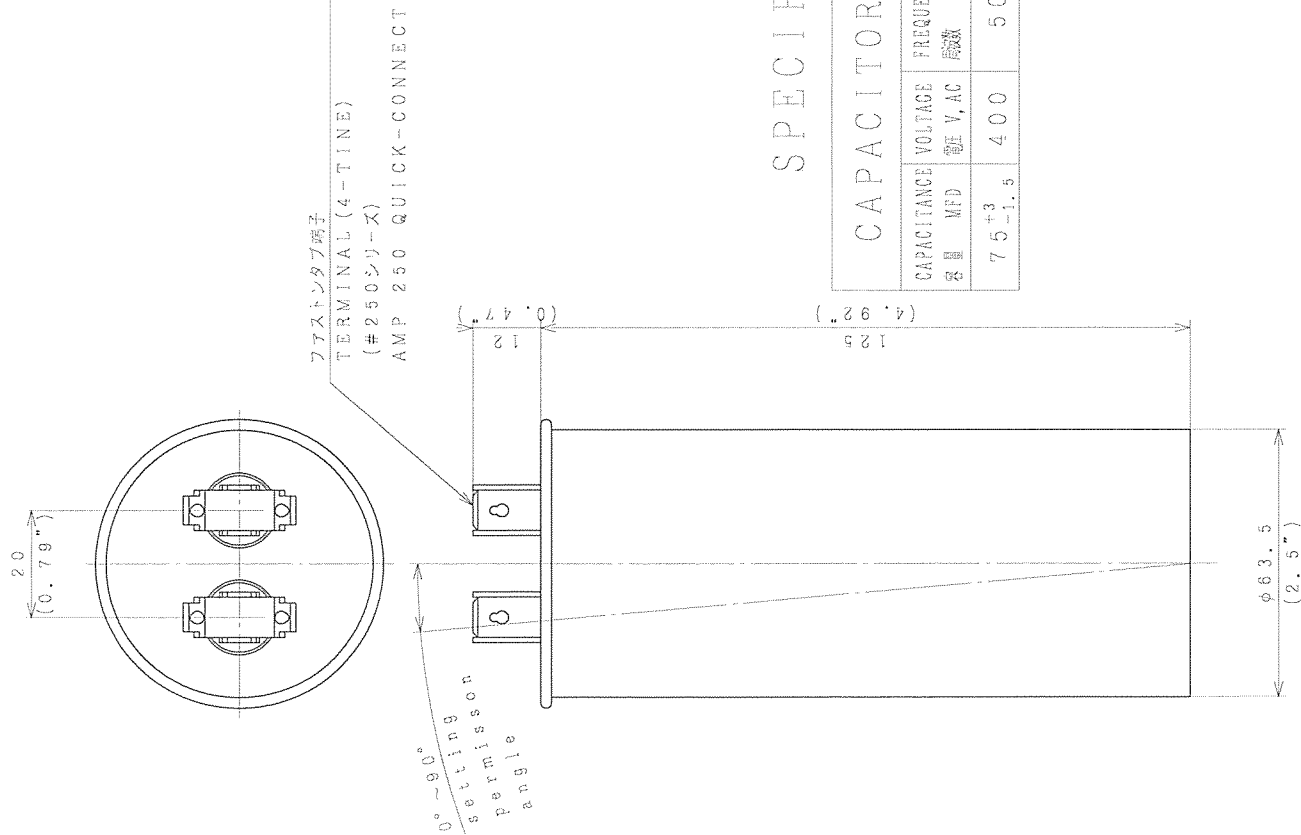
2. You need to attach a discharge resistance to the starting capacitor

始動キヤパシタには放電抵抗を取付けて下さい。

Large amount of current which was charged in the starting capacitor may go into the contact point of the relay, and the contact part might be deposited.

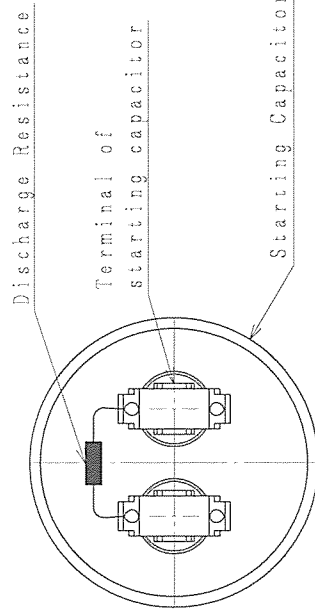
Therefore, you are required to attach a discharge resistance to the starting capacitor with the specification below.

Csに蓄えられた電荷により、リレーの接点に大電流が流れ、接点が溶着する恐れがありますので、下記仕様の放電抵抗をCsに取付けて下さい。



SPECIFICATION 仕様

CAPACITOR		DISCHARGE RESISTANCE	
CAPACITANCE 容量 MFD	VOLTAGE 電圧 V, AC	FREQUENCY 周波数 Hz	NOMAL POWER RESISTANCE
75 <sup>+3</sup> <sub>-1.5</sub>	400	50	2W
			68kΩ



SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DRN. F. Nishio	2003-10-30	◎	1:1	始動用キヤパシタ
CHKD. M. Onoguchi	2003-10-30			STARTING CAPACITOR
APPD. A. Sameda	2003-10-30			TOCHIGI DWG. No.

Hitachi-Johnson Controls Air Conditioning, Inc. 3CYCA4980

REC'D 2003 1103



3CYCA4981

RUNNING CAPACITOR 運転用キャパシタ

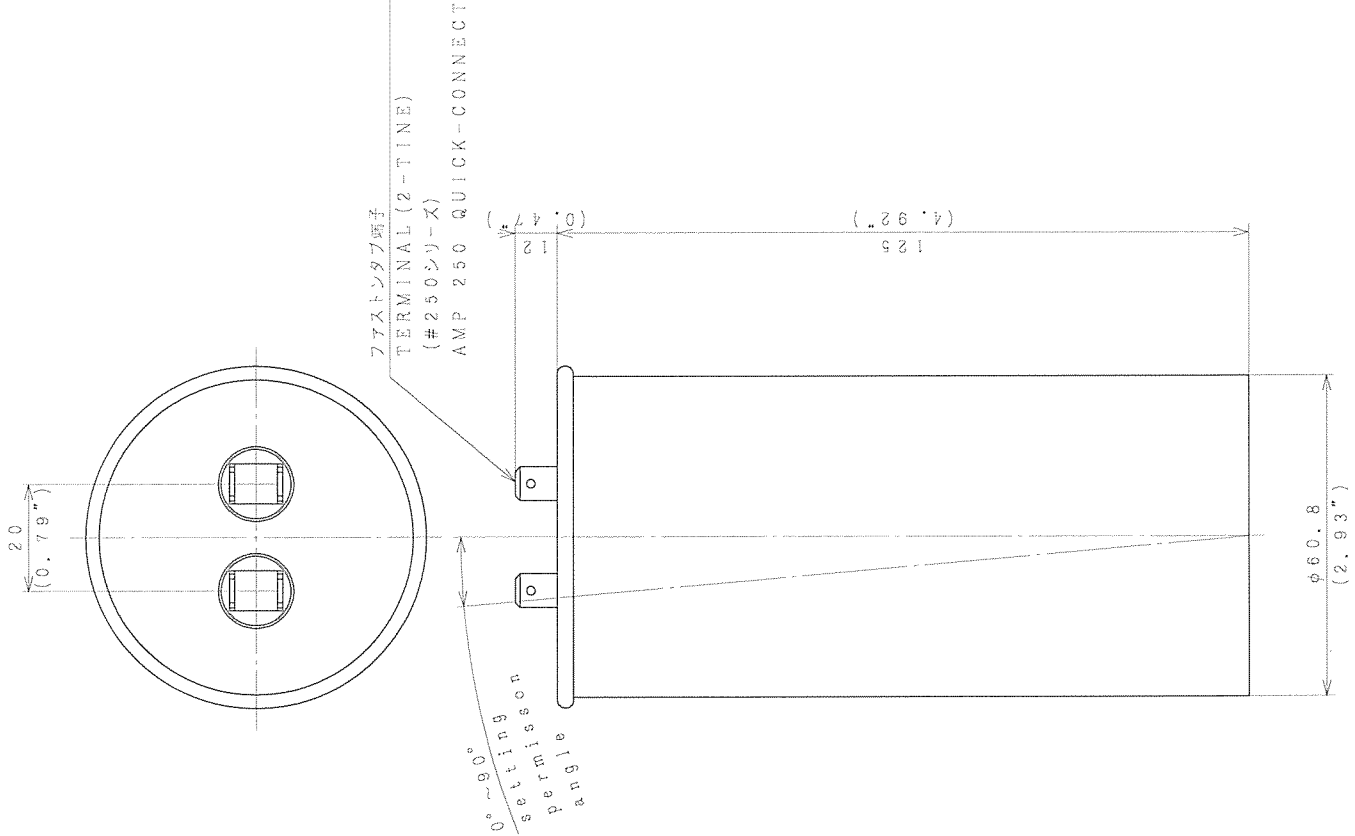
1. TYPE 種類

METALLIZED FILM CAPACITOR

メタライズド フィルム コンデンサ

2. SPECIFICATION 仕様

CAPACITOR		
CAPACITANCE 容量 MFD	VOLTAGE 電圧 V, AC	FREQUENCY 周波数 Hz
55 <sup>+4</sup> <sub>-2</sub>	450	50/60



SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DNW. F. Nishioke	2003-10-30	◎	1:1	RUNNING CAPACITOR
CHKD. M. Onoguchi	2003-10-30	◎		
APPD. A. Shinada	2003-10-30			

TOCHIGI DWG. No. 3CYCA4981

Hitachi-Johnson Controls Air Conditioning, Inc.

REGD 2003 1104

ELZOT100NN

SPECIFICATION

RELAY TYPE	AMVL-240V1
FREQUENCY	50Hz
NOMAL VOLTAGE	AC240V
OPERATING VOLTAGE	AC140±10V
RECOVERY VOLTAGE	AC90V or less
CONTACT CAPACITY	20A
CONTACT TYPE	type b

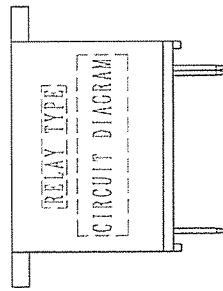
1. Please keep the direction of the installation of the relay. There is a case not to operate normally when installing in the direction which is different from the direction.

リレー設置方向を守って使用下さい。  
 図示方向と異なる向きに取付けると正常に作動しない恐れがあります。

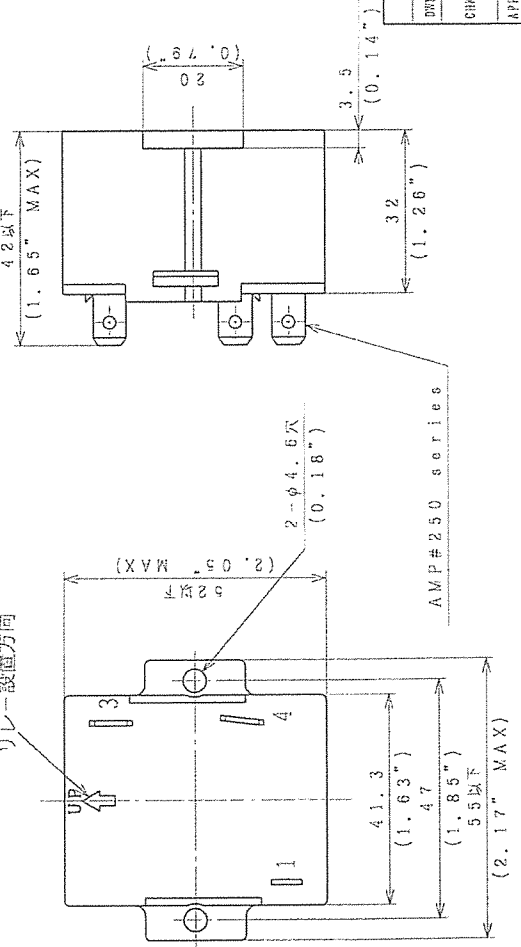
2. You must REPLACE with RELAY of the following characteristics when using flammable refrigerant.  
 Necessary characteristics  
 - Comforming to the ATEX directive  
 - PICK-UP VOLTAGE (OPERATING VOLTAGE): 130V TO 153V  
 - DROP-OUT VOLTAGE (RECOVERY VOLTAGE): 90V MAX  
 - CONTACT RATING (CONTACT CAPACITY): 20A BREAK 200,000 OPERATIONS

R1270等可燃性冷媒を使用する場合は、ATEX指令に適合した、下記特性の始動リレーに交換すること。  
 特性  
 動作電圧：130～153V  
 復帰電圧：90V以下  
 接点耐久：20A-20万回

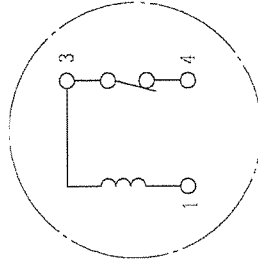
\*CONTACT TYPE b (ON-OFF)



installation of the relay  
 リレー設置方向



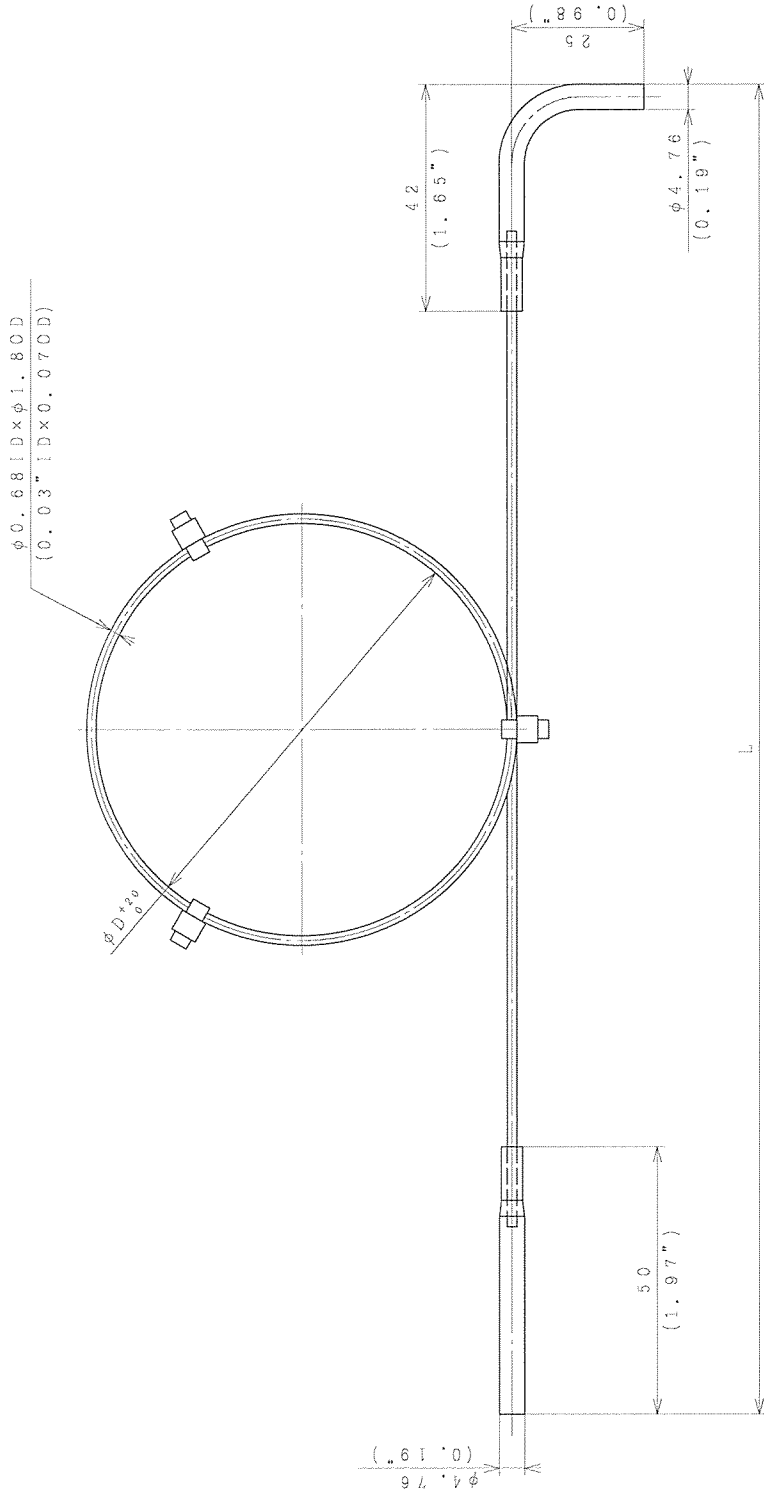
CIRCUIT DIAGRAM



DIMENSION : mm (in)

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
	2018.05.25	1:1	STARTING VOLTAGE CONTROL RELAY	
CHKD	2018.05.25	Hitachi-Johnson Controls Air Conditioning, Inc.		
APPD	2018.05.25	TOCHIGI DWG. No. 3CYC NN0010273		

BB0032682

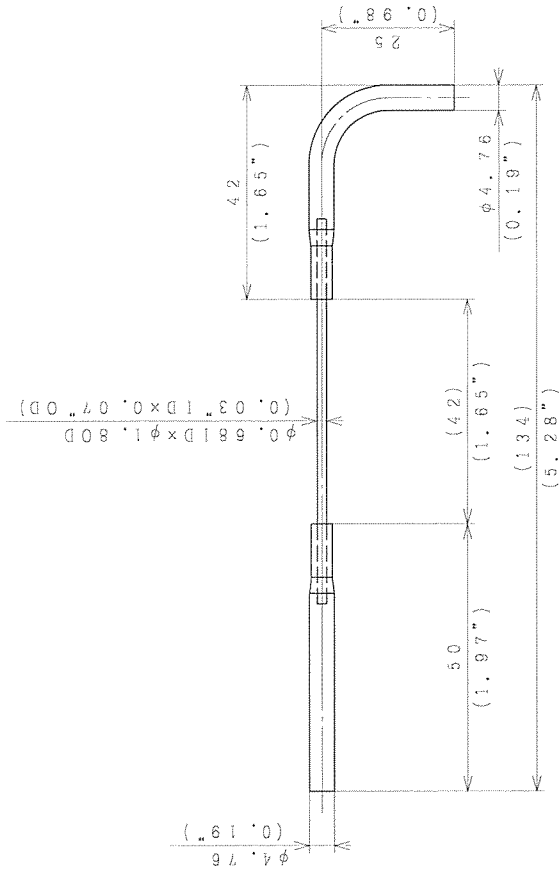


DIMENSION : mm ( in )

TYPE	RESISTANCE VALUE	L	φ D	NUMBER OF TURNS
A	79.8 kPa	250 (9.84")	45 (1.77")	19
B	13.3 kPa	155 (6.10")	47 (1.85")	1
C	26.6 kPa	206 (8.11")	71 (2.80")	2
D	53.3 kPa	246 (9.69")	77 (3.03")	6
E	39.9 kPa	206 (8.11")	77 (3.03")	4
F	6.67 kPa	142 (5.59")	10 (0.39")	1

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DWN. K. Ishigoya	2012-05-10	①	NTS	
CHKD. M. Onoguchi	2012-05-10			
APPD. A. Simada	2012-05-12			
Hitachi-Johnson Controls Air Conditioning, Inc. TOCHIGI DWG. No. 3CYCBB0032682				

3CYCA4165



NOTES

1. RESISTANCE VALUE : 2.67KPa

(THE LENGTH OF THE PIPE IS APPROXIMATELY 72 (2.83") MILLIMETERS.)

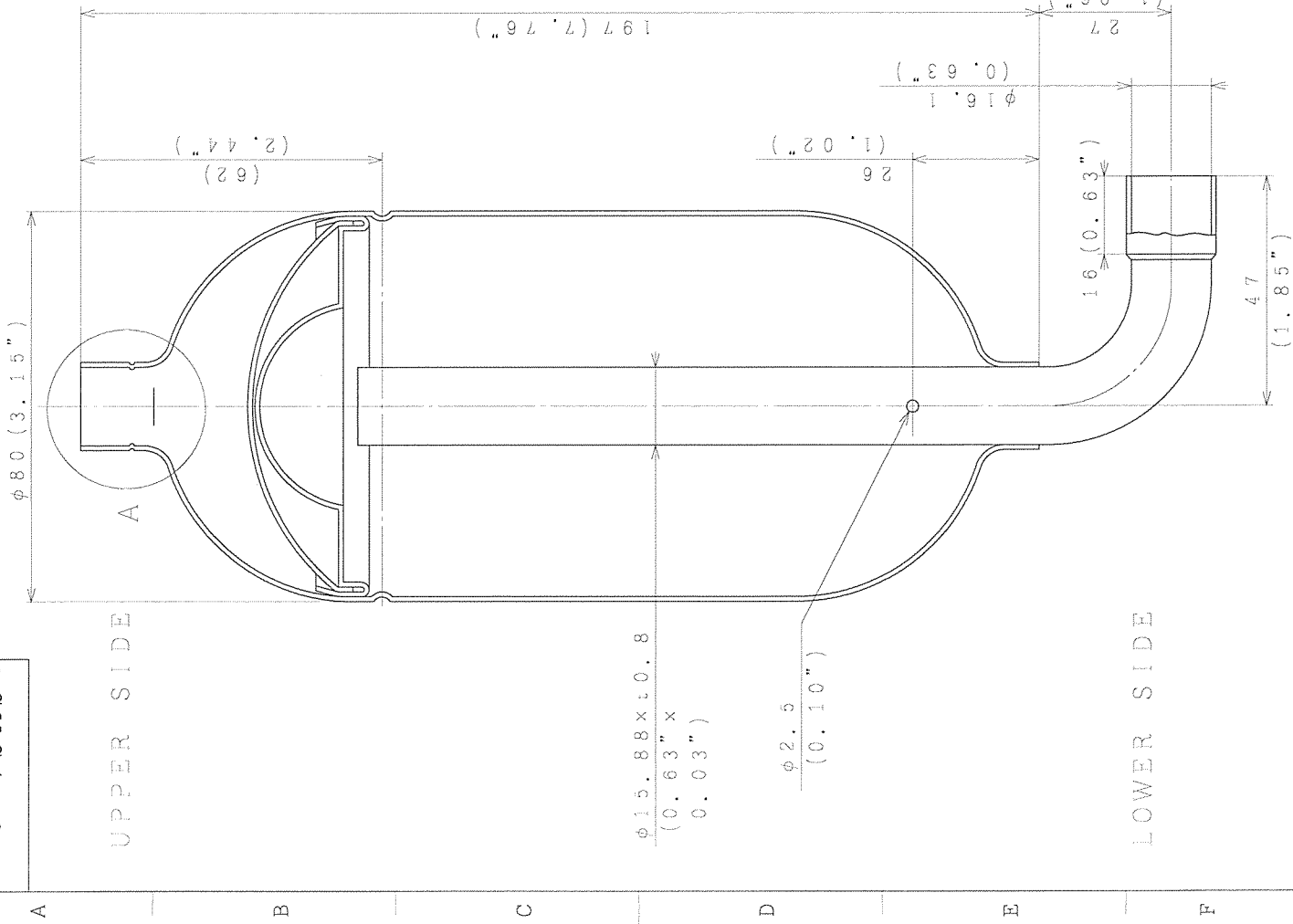
D I M E N S I O N : m m ( i n )

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DWG. A. Mirakami	2003-04-14		1 : 1	CAPILLARY FOR LIQUID INJECTION
CHKD. M. Koyama	2003-04-14			TOCHICI DWG. No.
APPD. Y. Nakada	2003-04-14			Hitachi-Johnson Controls Air Conditioning, Inc.

REC'D  
2003  
0415

3CYCA4165

3CYCA5055



UPPER SIDE

LOWER SIDE

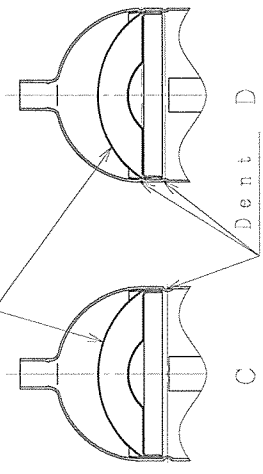
$\phi 15.88 \times 0.8$   
(0.63" x  
0.03")

$\phi 2.5$   
(0.10")

A (2:1)

SRO.5 (2-SPOT)

Mesh parts



B (NTS)

Dent for fixing  
the mesh parts (C or D)

VALID VOLUME: 530mL

Note

1. Use to stand upper A side vertically.
2. The phosphor copper brazing be done while blowing or being full of N<sub>2</sub> gas.
3. The total number: 2 pieces (Total valid volume: 1060ml)  
Use to connect accumulators in series.

DIMENSION: mm (in)

SIGNATURE	DATE	PROJECTION	SCALE	TITLE
DWN. F. Niericka	2003-11-05		1:1	ACCUMULATOR
CHKD. M. Onoguchi	2003-11-05			TOCHIGI DWG. No.
APPD. A. Sireba	2003-11-05			Hitachi-Johnson Controls Air Conditioning, Inc.

3CYCA5055

REC'D  
2003  
1106