

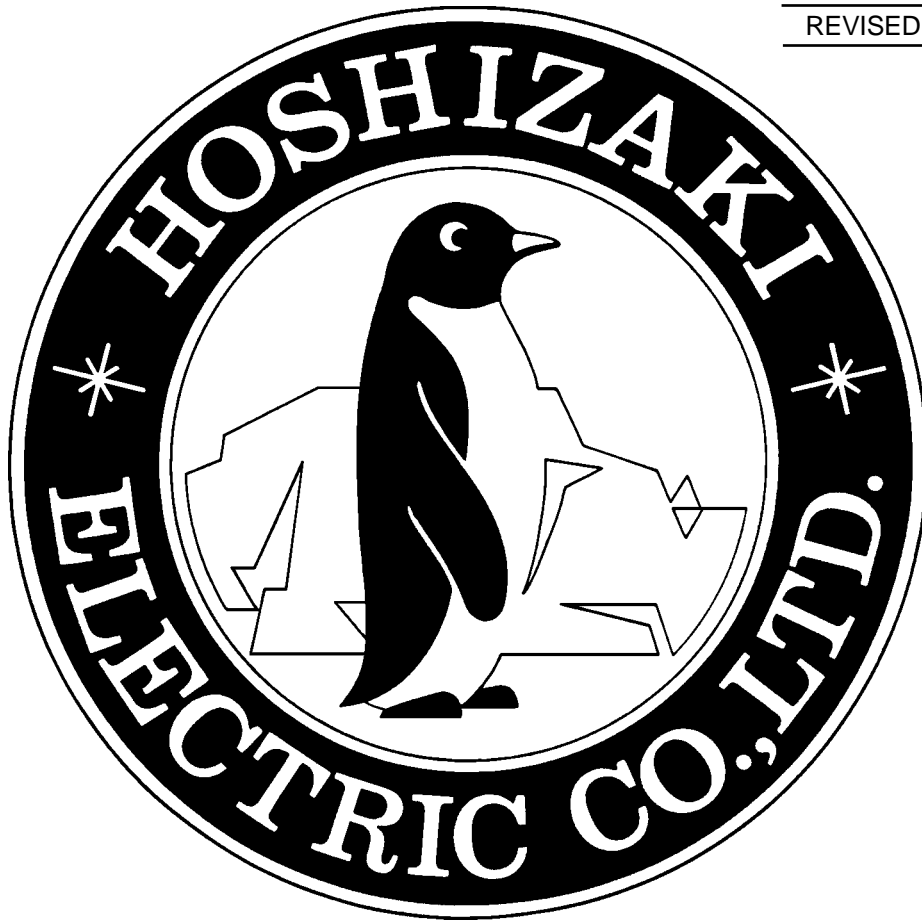
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**HOSHIZAKI  
COUNTER SHOWCASE**

**MODEL RNC-A SERIES**  
**(HA)**

**SERVICE MANUAL**

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## 1. FOR SAFETY AND BEST OPERATING RESULTS

### IMPORTANT

Hoshizaki Counter Showcase is intended for temporary food display. Constructed with much glass, this showcase gives relatively insufficient heat insulation and poor cooling performance compared with refrigerators in general. For safe and efficient operation, be sure to follow the instructions below.

- 1) Do not leave foods in the showcase after service hours, or they may dry or spoil.
- 2) Foods that should not dry must be covered or wrapped up in a plastic film.
- 3) Precool foods in a refrigerator before storing them in the showcase.
- 4) Do not leave the Doors open or open them too frequently.
- 5) Do not pack the showcase with foods.
- 6) The showcase should not be exposed to direct sunlight or located next to ovens, grills or other high heat producing equipment.
- 7) The ambient temperature should not exceed 86°F.

## 2. SPECIFICATIONS

MODEL	RNC-90A-RA -LA	RNC-120A-RA -LA	RNC-150A-RA -LA	RNC-180A-RA -LA	RNC-210A-RA -LA
AC SUPPLY VOLTAGE	1 Phase 115-120V 60Hz				
AMPERAGE	2.5A	2.4A	3.1A	3.1A	3.1A
STARTING AMPERAGE	11A	11A	15A	15A	15A
ELECTRIC CONSUMPTION	145W	146W	195W	195W	195W
POWER FACTOR	58%	61%	54%	54%	54%
PULL DOWN TIME (10°C) SATURATION TEMPERATURE	Less than 45 min. (Ambient Temp. 86°F, No Load) 44.6°F (Ambient Temp. 86°F, No Load)				
NET CAPACITY	0.85 cu.ft.	1.3 cu.ft.	1.8 cu.ft.	2.3 cu.ft.	2.8 cu.ft.
EXTERIOR DIMENSIONS (W) (D) (H)	35-7/16"	47-1/4"	59-1/16"	70-7/8"	82-11/16"
INTERIOR DIMENSIONS (W) (D) (H)	20-7/8"	32-11/16"	44-1/2"	56-5/16"	68-1/8"
EXTERIOR INTERIOR INSULATION	Glass, Rigid PVC, ABS Resin Stainless Steel Polyurethane Foam				
REFRIGERATION SYSTEM DEFROST SYSTEM	Convection Cooling None				
COMPRESSOR	Hermetic				
CONDENSER EVAPORATOR REFRIGERANT CONTROL REFRIGERANT REFRIGERANT CHARGE	OUTPUT 75W	75W	130W	130W	130W
	Fin and Tube type (Air-cooled), Fan Motor 2P (UPPER) Bare Tube type, (LOWER) Pipe on Sheet type Constant Pressure Expansion Valve R134a				
	4.8 oz.	6.3 oz.	4.6 oz.	6.3 oz.	7.4 oz.
ELECTRIC CIRCUIT PROTECTION COMPRESSOR PROTECTION	Circuit Breaker, Grounding Wire Auto-reset Protector - Compressor				
SLIDING DOOR	2 pcs.	2 pcs.	4 pcs.	4 pcs.	4 pcs.
NET WEIGHT	46 lbs.	55 lbs.	66 lbs.	75 lbs.	84 lbs.
ACCESSORIES BOARD CAP VINYL HOSE	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.
	2 pcs. 1 pc. (19/32" DIA x 3/4" DIA x 59")				
AMBIENT TEMP. RELATIVE HUMIDITY VOLTAGE VARIATION	50 - 86°F Max. 60% Rated voltage ±10%				

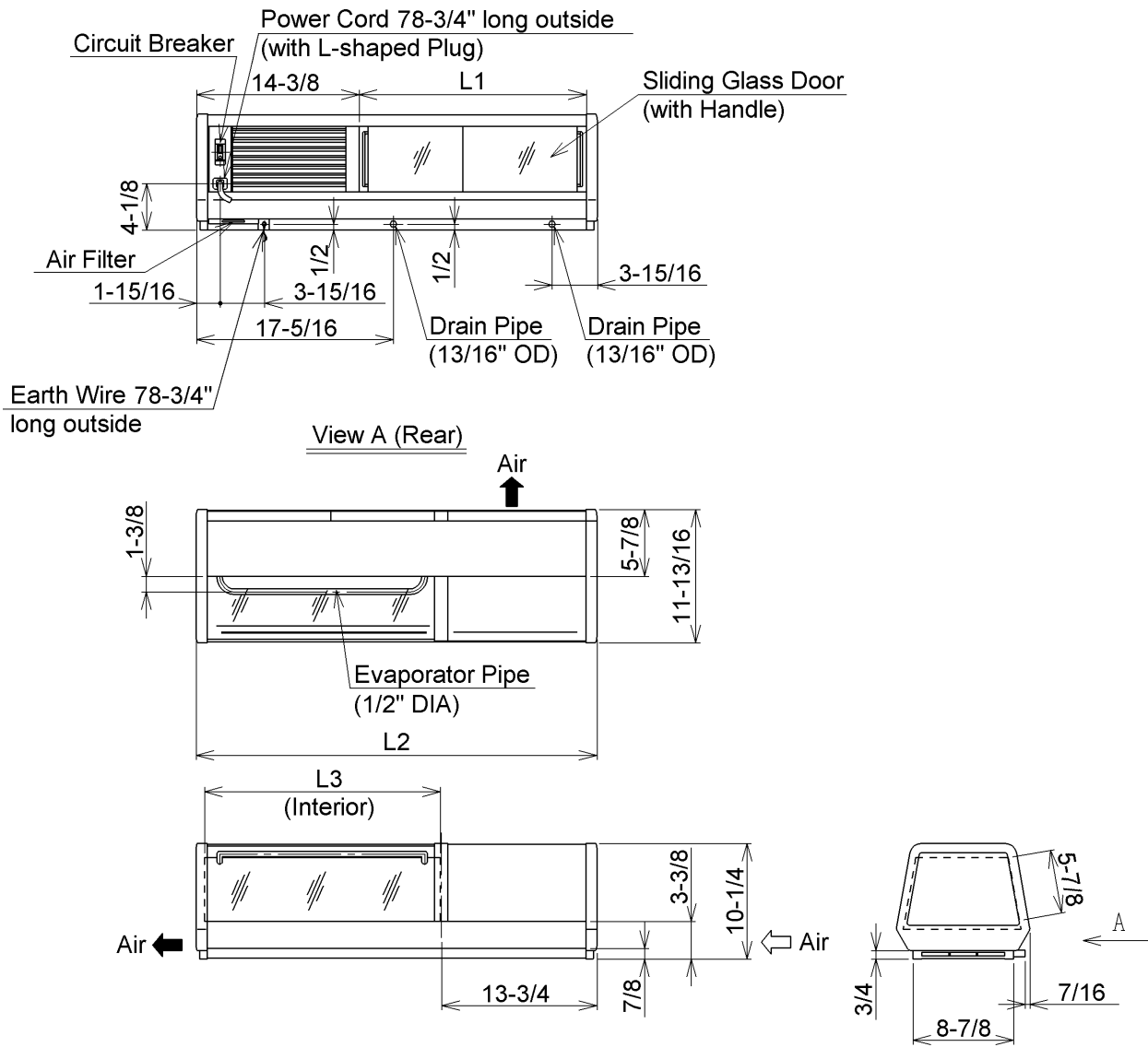
\* Relative humidity exceeding 60% may cause condensation on the exterior.

\* We reserve the right to make changes in specifications and design without prior notice.

### 3. DIMENSIONS

[a] RNC-90A-RA, RNC-120A-RA

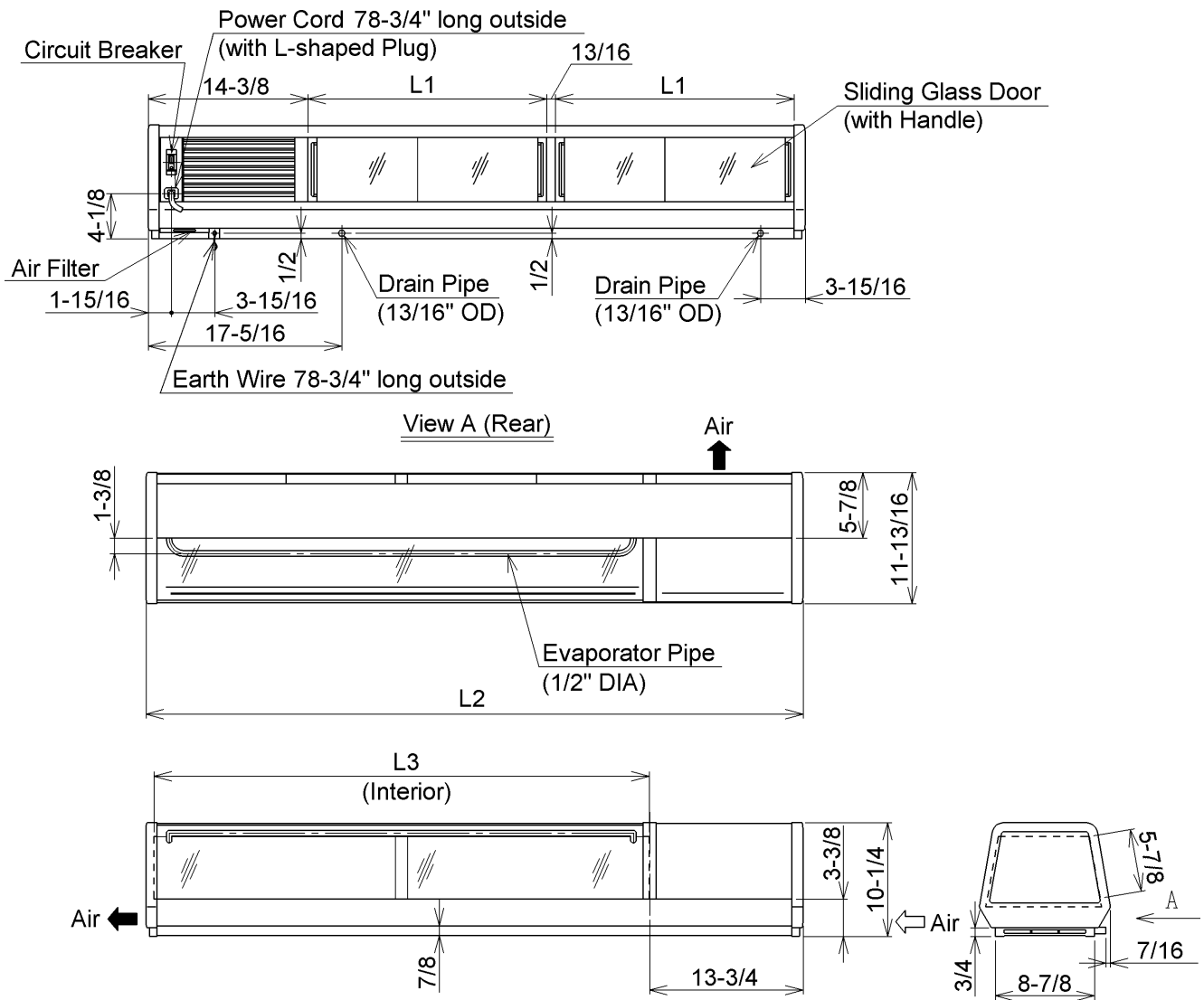
Unit: inch



Model \ Width	L1	L2	L3
RNC-90A-RA	20-1/16"	35-7/16"	20-7/8"
RNC-120A-RA	31-7/8"	47-1/4"	32-11/16"

**[b] RNC-150A-RA, RNC-180A-RA, RNC-210A-RA**

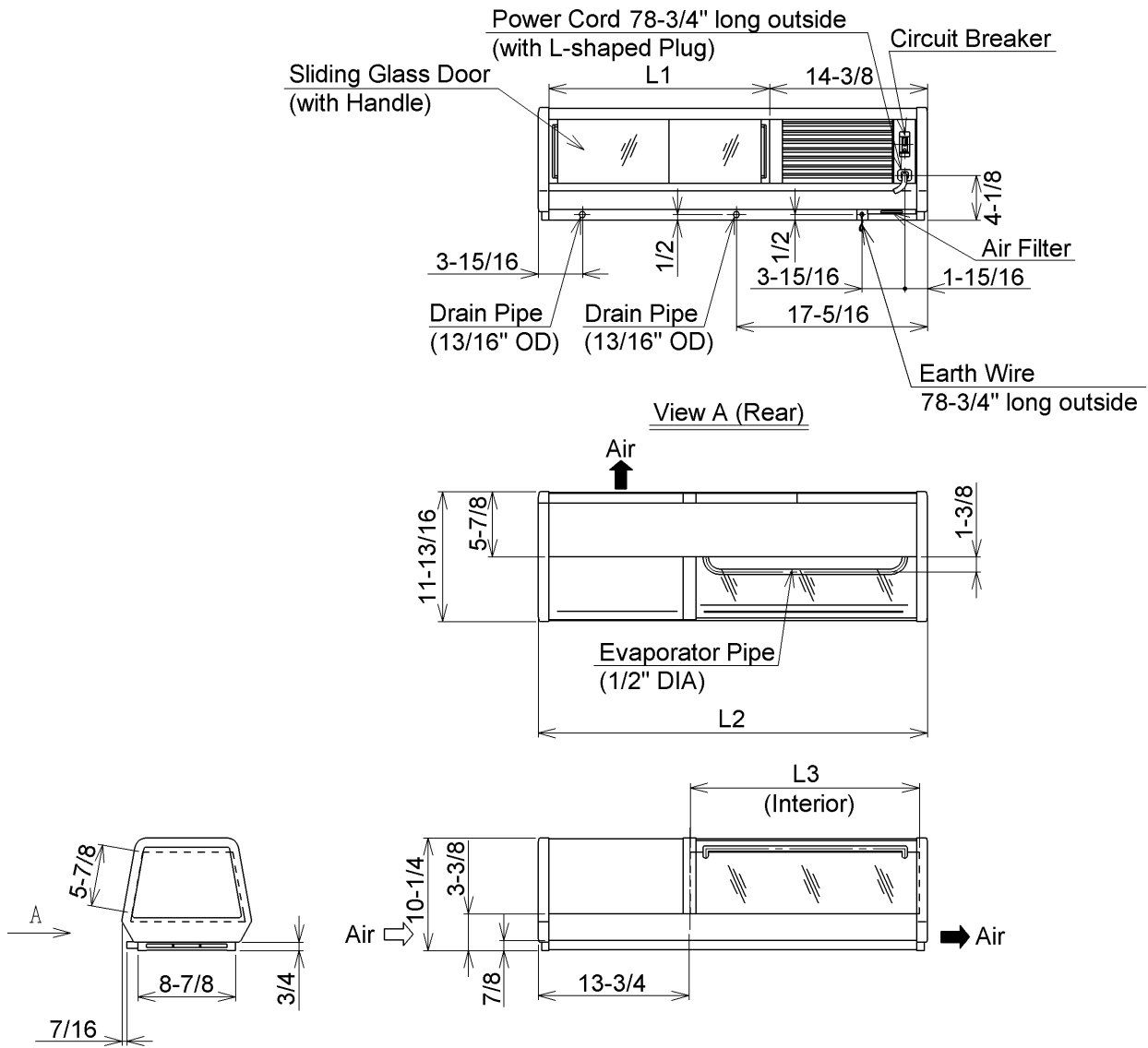
Unit: inch



Model \ Width	L1	L2	L3
RNC-150A-RA	21-7/16"	59-1/16"	44-1/2"
RNC-180A-RA	27-3/8"	70-7/8"	56-5/16"
RNC-210A-RA	33-1/4"	82-11/16"	68-1/8"

[c] RNC-90A-LA, RNC-120A-LA

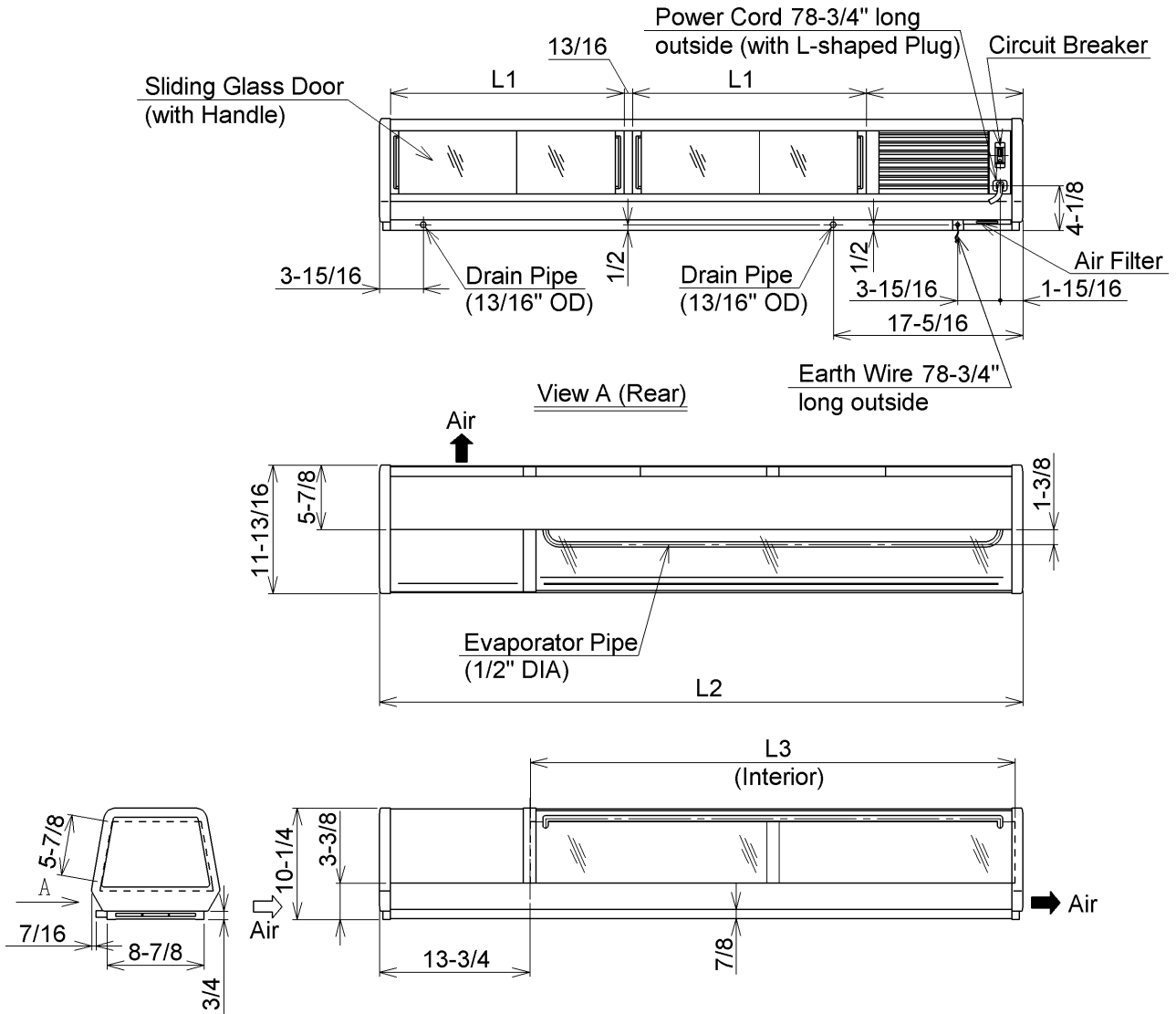
Unit: inch



Model \ Width	L1	L2	L3
RNC-90A-LA	20-1/16"	35-7/16"	20-7/8"
RNC-120A-LA	31-7/8"	47-1/4"	32-11/16"

[d] RNC-150A-LA, RNC-180A-LA, RNC-210A-LA

Unit: inch



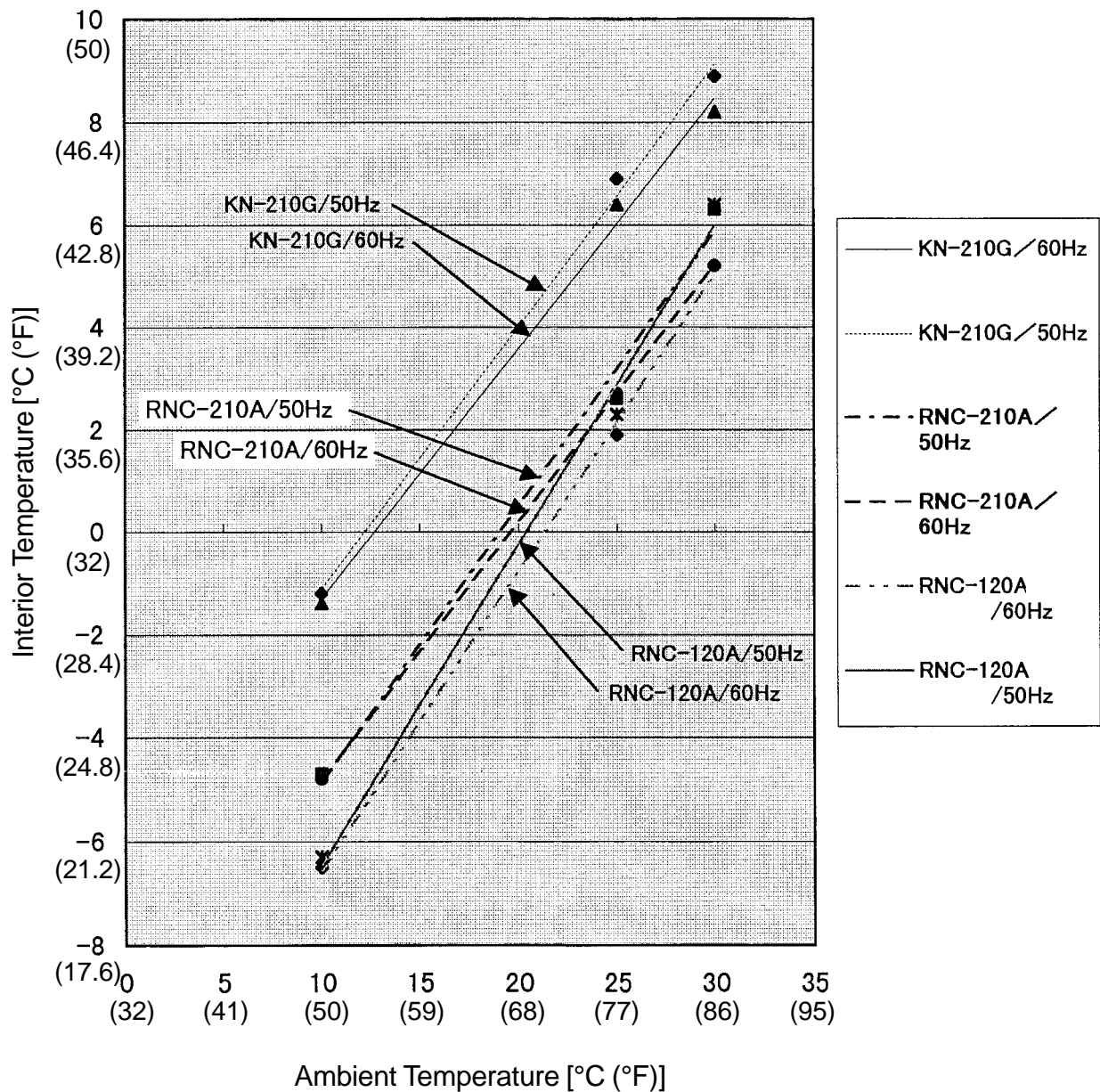
Model \ Width	L1	L2	L3
RNC-150A-LA	21-7/16"	59-1/16"	44-1/2"
RNC-180A-LA	27-3/8"	70-7/8"	56-5/16"
RNC-210A-LA	33-1/4"	82-11/16"	68-1/8"



## 4. PERFORMANCE DATA

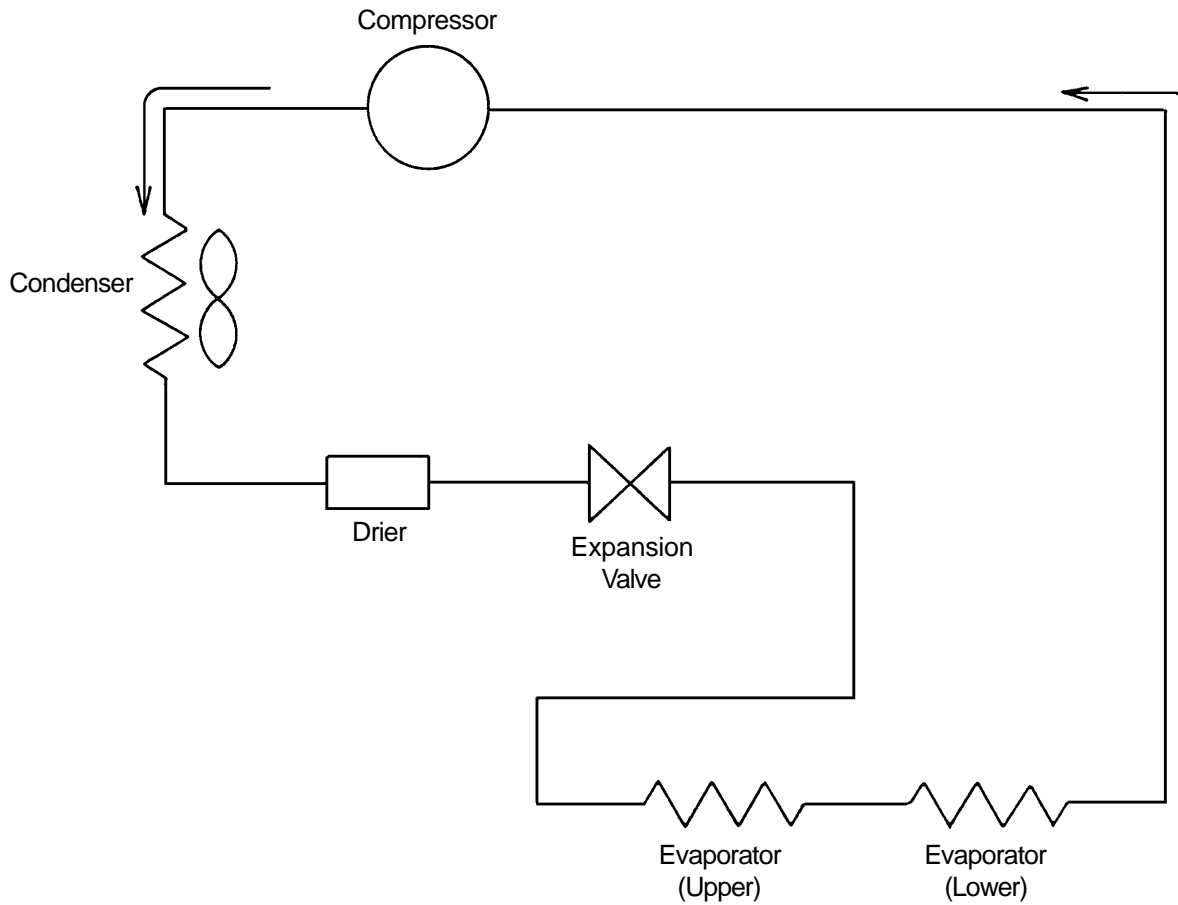
The following is a reference data showing the relationship between the ambient and interior temperatures measured at the center of the interior, 60mm above the board.

Conditions: Ambient temperature 30°C (86°F), 50/60Hz, relative humidity 50%, AC100V  
 Test units: RNC-210A and KN-210G domestic models (+ RNC-120A for reference)



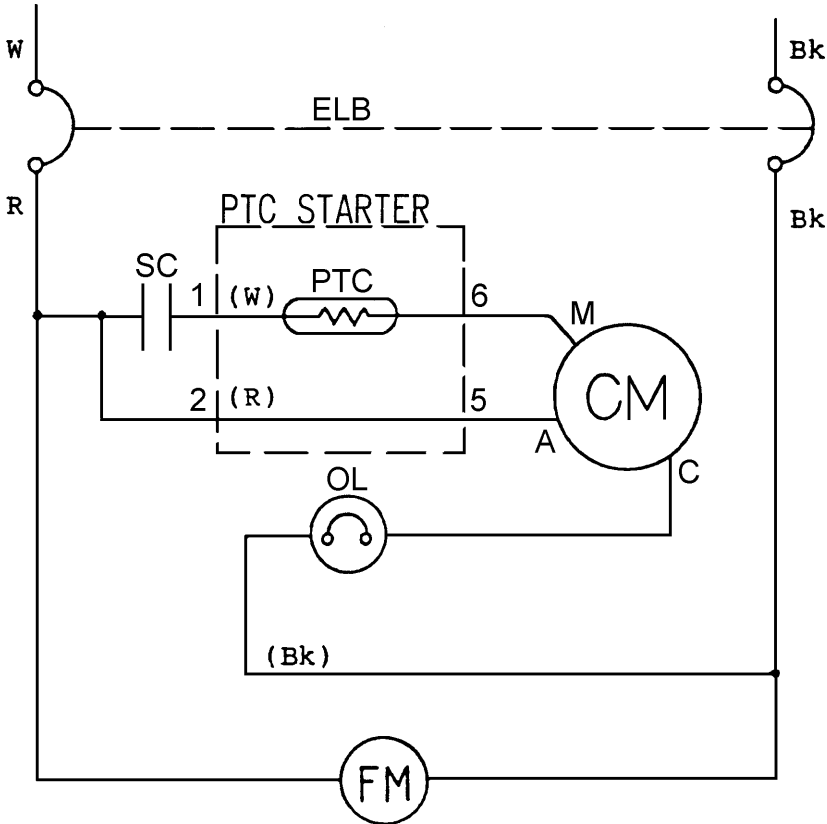
## 5. REFRIGERATION CIRCUIT

Refrigerant 134a



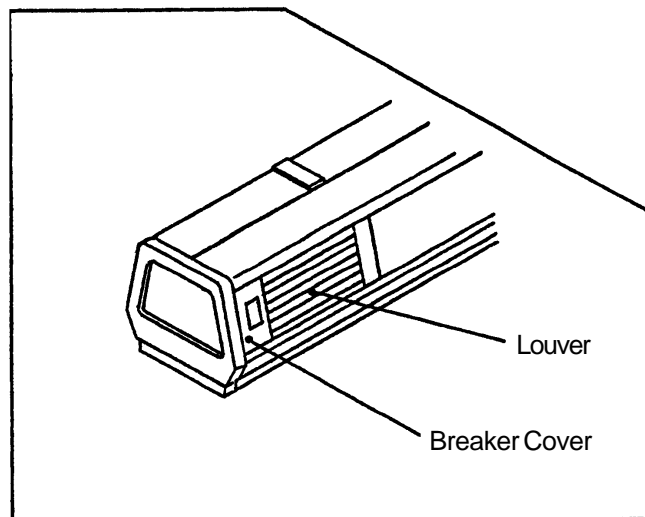
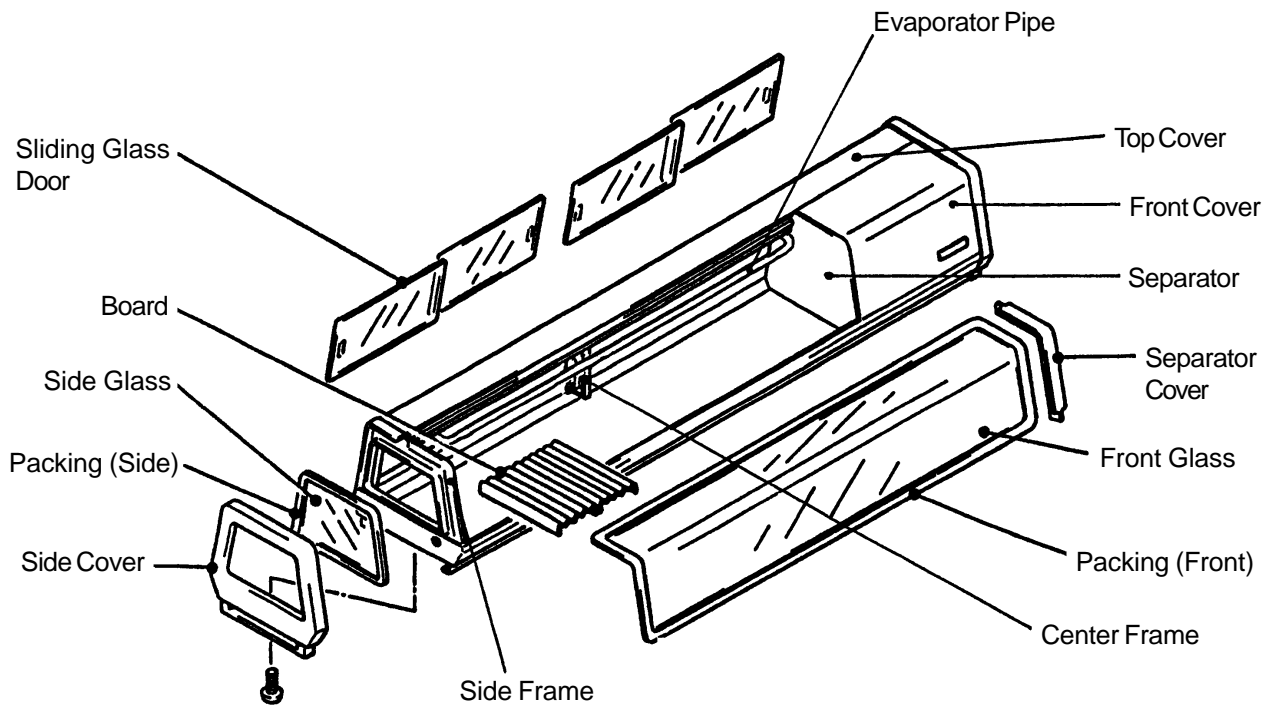
\* The Expansion Valve controls the refrigerant flow rate to stabilize the pressure at the Evaporator inlet.

# 6. WIRING DIAGRAM



CM	Compressor
SC	Start Capacitor
FM	Fan Motor
ELB	Circuit Breaker
PTC	PTC Thermistor
OL	Overload Relay

## 7. CONSTRUCTION



## 8. REMOVAL AND REPLACEMENT

### CAUTION

1. Be sure to unplug the showcase before removing or replacing the parts.
2. Handle the glass parts with care.

### [a] FRONT GLASS AND TOP COVER

### CAUTION

In some cases, the Top Cover is tightly locked on the Top Frame and will not come off easily. Remove it with care to avoid injury.

- 1) Remove the Side Cover and Separator Cover.
- 2) Hold the Front Glass from both inside and outside, and push it outward.
- 3) Remove the Sliding Glass Doors and Side Glass.
- 4) Put your hand in the channel of the Top Cover where the Front Glass was placed, and lift off the Top Cover. See Fig. 1.

Note: The Top Cover cannot be removed from the rear.

- 5) Refit the Front Glass and Top Cover at the same time as shown in Fig. 2. Do not twist the Front Packing.

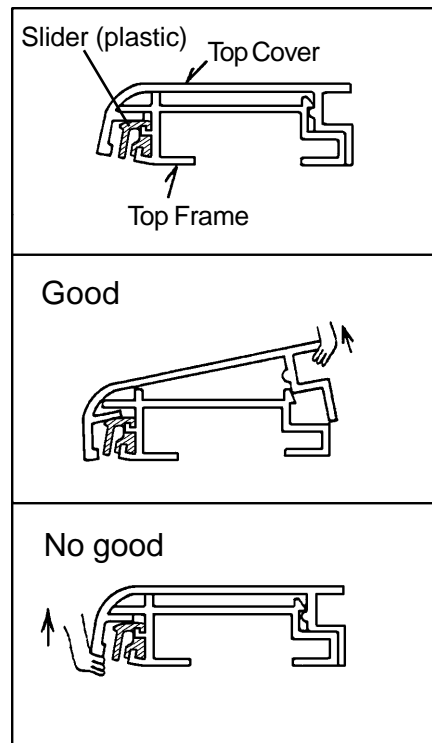


Fig. 1

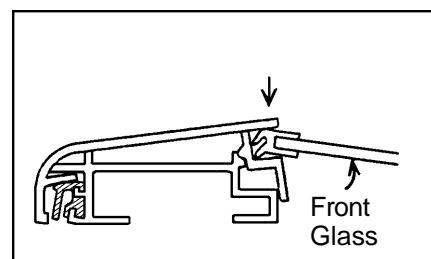
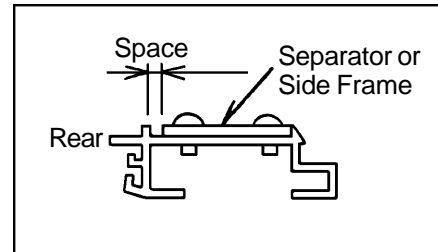


Fig. 2

## [b] TOP FRAME

- \* The Top Frame (Aluminum) on the machine compartment can be removed by unfastening two screws on the top and two screws on the side.
- \* The Top Frame on the refrigerated compartment can be removed by unfastening four screws on the top and two screws on the bottom (for the Center Frame) and by removing the Evaporator Pipes from the Pipe Holder. See Fig. 5.
- \* To assemble the Top Frame with the Separator or Side Frame, push the Top Frame to the rear end and secure it with the screws. Otherwise the Top Cover cannot be mounted. See Fig. 3.



**Fig. 3**

## [c] SEPARATOR AND SIDE FRAME

- \* The Separator and Side Frame on the refrigerated compartment are sealed with transparent silicone sealant where in contact with the Water Pan (Stainless Steel). Be sure to reseal those parts when reassembling them.
- \* To shut out hot air from the machine compartment, seal the top of the Separator.

## [d] BREAKER COVER AND LOUVER

- 1) Remove the Side Frame on the machine compartment.

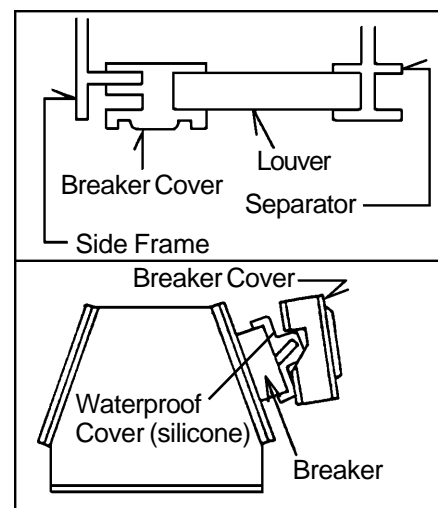
Note: Do not try to remove the Breaker Cover by force without removing the Side Frame, or the plastic Breaker Cover may break.

- 2) Make sure the showcase is unplugged, and move the Circuit Breaker to the "ON" position.

- 3) Slide off the Breaker Cover.

Note: With the Circuit Breaker in the "OFF" position, the Breaker Cover will hit the switch and cannot slide.

- 4) Remove the Louver.



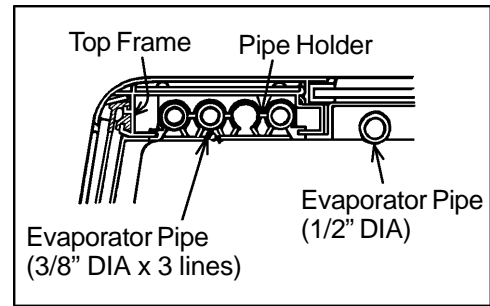
**Fig. 4**

Note: To prevent the entrance of water, the Circuit Breaker is provided with a silicone Waterproof Cover. Be careful not to damage it when attaching the Breaker Cover. See "[f] WATERPROOF COVER".

## [e] PIPE HOLDER

Note: The Evaporator Pipes are tightly snapped in the Pipe Holder and should be removed and refitted carefully one by one.

- 1) Remove the Evaporator Pipes from the Pipe Holder.
- 2) Twist the Pipe Holder and remove it from the Top Frame.
- 3) To refit the Pipe Holder and Evaporator Pipes, reverse the removal procedure.
- 4) Correct the Evaporator Pipes if deformed and in contact with the Top Frame.



**Fig. 5**

Note: The number of Pipe Holders used for each model is as follows:

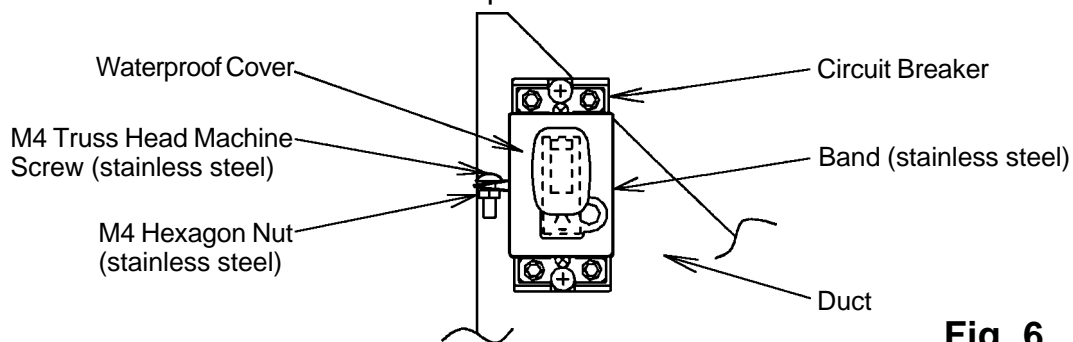
MODEL	QUANTITY
RNC-90A-R/L	2
RNC-120A-R/L	2
RNC-150A-R/L	3
RNC-180A-R/L	3
RNC-210A-R/L	4

## [f] WATERPROOF COVER

To prevent the entrance of water, the Circuit Breaker is provided with a nonrigid plastic Waterproof Cover. When it is damaged and needs to be replaced, remove the parts around the Circuit Breaker in accordance with the removal procedure in “[e] BREAKER COVER AND LOUVER”.

- (1) Before Auxiliary Code H-1

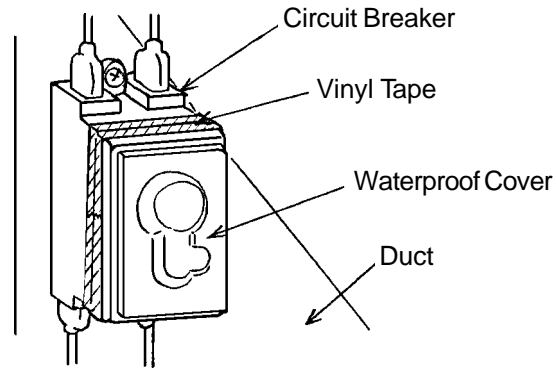
The Waterproof Cover is secured with a stainless steel band as shown below. To remove the Cover, loosen the M4 screw (stainless steel 4 x 8). After replacing the Cover, refit the removed parts in the reverse order of the removal procedure.



**Fig. 6**

(2) After Auxiliary Code H-2

The Waterproof Cover is secured with a vinyl tape as shown below. After replacing the Cover, wind a new vinyl tape and refit the removed parts in the reverse order of the removal procedure.



**Fig. 7**

The users are instructed to ask service personnel for replacement of the Waterproof Cover as required. The part code for the Waterproof Cover is:

- (1) 3R2669-01 (before auxiliary code H-1)
- (2) 454364-01 (after auxiliary code H-2)



## **9. REFRIGERANT SERVICE INFORMATION**

### **1) Allowable Compressor Opening Time and Prevention of Lubricant Mixture [R134a]**

The compressor must not be opened more than 30 minutes in replacement or service. Do not mix lubricants of different compressors even if both are charged with R134a, except when they use the same lubricant.

### **2) Treatment for Refrigerant Leak [R134a]**

If a refrigerant leak occurs in the low side of an ice maker charged with R134a, air may be drawn in. Even if the low side pressure is higher than the atmospheric pressure in normal operation, a continuous refrigerant leak will eventually lower the low side pressure below the atmospheric pressure and will cause air suction. Air contains a large amount of moisture, and ester easily absorbs a lot of moisture. If an ice maker charged with R134a has possibly drawn in air, the drier must be replaced. Be sure to use a drier designed for R134a.

### **3) Handling of Handy Flux [R134a]**

Repair of the refrigerant circuit needs brazing. It is no problem to use the same handy flux that has been used for the current refrigerants. However, its entrance into the refrigerant circuit should be avoided as much as possible.

### **4) Oil for Processing of Copper Tubing [R134a]**

When processing the copper tubing for service, wipe off oil, if any used, by using alcohol or the like. Do not use too much oil and let it into the tubing, or wax contained in the oil will clog the capillary tubing.

### **5) Service Parts for R134a**

Some parts used for refrigerants other than R134a are similar to those for R134a. But never use any parts unless they are specified for R134a because their endurance against the refrigerant have not been evaluated. Also, for R134a, do not use any parts that have been used for other refrigerants. Otherwise, wax and chlorine remaining on the parts may adversely affect R134a.

### **6) Replacement Copper Tubing [R134a]**

The copper tubes currently in use are available for R134a. But do not use them if oily inside. The residual oil in copper tubes should be as little as possible. (Low residual oil type copper tubes are used in the shipped units.)

## **7) Evacuation, Vacuum Pump and Refrigerant Charge [R134a]**

Never allow the oil in the vacuum pump to flow backward. The vacuum level and vacuum pump may be the same as those for the current refrigerants. However, the rubber hose and gauge manifold to be used for evacuation and refrigerant charge should be exclusively for R134a.

## **8) Refrigerant Leak Check**

Refrigerant leaks can be detected by charging the unit with a little refrigerant, raising the pressure with nitrogen and using an electric detector. Do not use air or oxygen instead of nitrogen for this purpose, or rise in pressure as well as in temperature may cause R134a to suddenly react with oxygen and explode. Be sure to use nitrogen to prevent explosion.

## 10. CONSTANT PRESSURE EXPANSION VALVE AND REFRIGERANT CHARGE

### [a] SPECIFICATIONS

Model:	HYP2-5QHD(-1, -3, -4, -5)
Manufacturer:	Fuji Koki
Part Number:	447283(-01, -02, -03, -04)
Refrigerant:	R134a
Adjustment Range:	1.42 - 42.67 PSIG
Pressure Increase per Turn of Adjustment Screw:	5.69 - 7.11 PSIG

### [b] FUNCTION

Opens when the low side pressure drops, and lets in the refrigerant to keep a constant pressure.

### [c] CONSTRUCTION

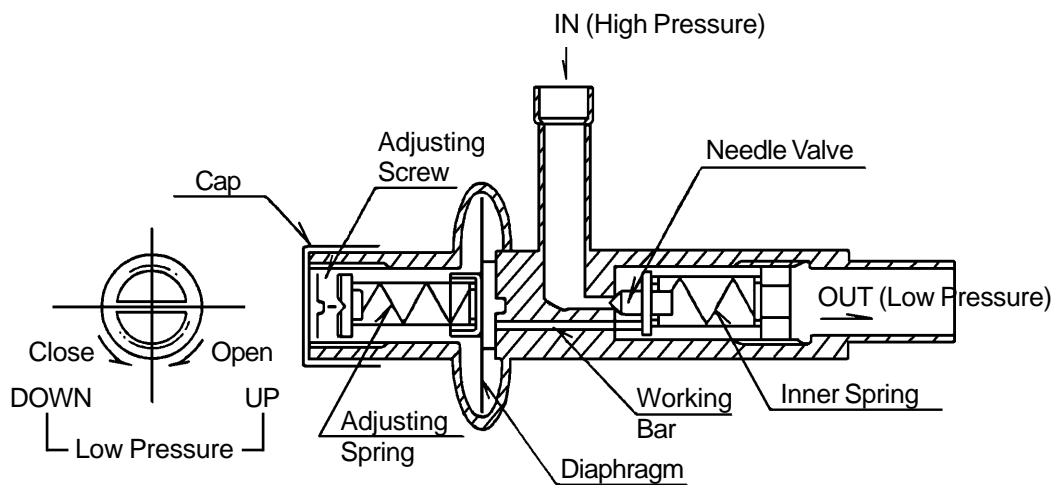


Fig. 8

## [d] REPLACEMENT

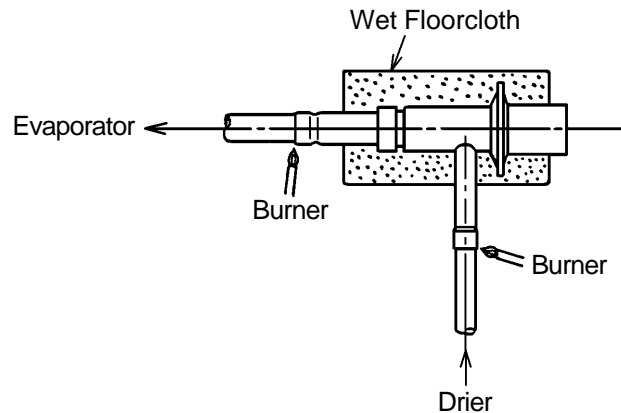
### WARNING

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 230°F.

### IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repairs or replacement have been made.

- 1) Recover the refrigerant (R134a) and store it in an approved container.
- 2) Remove the Insulation and the Cap from the Expansion Valve.
- 3) Remove the Expansion Valve by heating the liquid and suction connections.



**Fig. 9**

## 11. SERVICE DIAGNOSIS

PROBLEM	POSSIBLE CAUSE	REMEDY
[1] Showcase will not start.	1. Circuit Breaker in OFF position.	1. Move to ON position.
	2. Unplugged.	2. Plug in.
	3. Power supply voltage too low.	3. Give an exclusive power supply and ensure voltage within $\pm 10$ percent of the nameplate rating.
	4. No power supply to the wall outlet. (Breaker or fuse blown out.)	4. Correct.
	5. Electrical circuit open or bad contacts.	5. Correct.
	6. Motor Protector tripped.	6. Ventilate and reset Fan Motor.
[2] Poor cooling performance.	1. Gas leaks.	1. Repair the leaks and recharge.
	2. Fan Motor defective.	2. Replace.
	3. Condenser and/or Air Filter clogged.	3. Clean.
	4. Condenser air inlet blocked.	4 - 9. Instruct the user on characteristics and proper use of the showcase.
	5. Exposed to direct sunlight.	
	6. Located next to a high heat producing equipment.	
	7. Doors opened too frequently or hot foods inside.	
	8. Packed with foods, or warm or hot foods inside.	
	9. Ambient temperature exceeding 86°F.	
[3] Foods dry up.	1. Foods have been stored from the previous day.	1 - 2. Instruct the user on characteristics and proper use of the showcase.
	2. Foods have been stored for a long time.	
[4] Exterior or interior sweating.	1. [Exterior] Relative humidity exceeding 60%.	1 - 2. Instruct the user on characteristics and proper use of the showcase. Wipe off excessive dew with a soft cloth.
	2. [Interior] Doors opened too frequently or left open.	

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