NO.	74NA-574
ISSUED:	AUG. 10, 2001
REVISED:	————

HOSHIZAKI ELECTRIC CO.,LTD.

HOSHIZAKI
COUNTER SHOWCASE

MODEL HNC-120AA-L/R
HNC-150AA-L/R
HNC-180AA-L/R
HNC-210AA-L/R

SERVICE MANUAL

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1. SAFETY INSTRUCTIONS

The following instructions contain important safety precautions and should be strictly observed. The terms used here are defined as follows:

WARNING: There is a possibility of death or serious injury for the service person and a third party or the user due to improper service operations or defects in serviced products.

CAUTION: There is a possibility of injury for the service person and a third party or the user or damage to their property* due to improper service operations or defects in serviced products.

* The term “damage to their property” here refers to extensive damage to household effects, houses and pets.

WARNING

1. Always ask the user to keep children away from the work area. They may be injured by tools or disassembled products.

2. When there is no need to energize the unit during disassembly or cleaning, be sure to unplug the unit or disconnect the main power supply before servicing the unit to prevent electric shocks.

3. If the unit must be energized for inspection of the electric circuit, use rubber gloves to avoid contact with any live parts resulting in electric shocks.

4. Keep the following in mind when servicing the refrigeration circuit:

   (1) Be sure to recover the refrigerant. Do not discharge it into the atmosphere. It will affect the environment.

   (2) Check for any flames in the vicinity, and ensure good ventilation.

   (3) If the refrigerant should leak in servicing, immediately put out any fire used in the vicinity.

   (4) When unbrazing the refrigeration circuit connections, check that the circuit is completely evacuated. The refrigerant may produce a poisonous gas when coming in contact with an open flame.

   (5) Do not braze in an enclosed room to prevent carbon monoxide poisoning.

   (6) In case of a refrigerant leak, locate and repair the leaking part completely. Leaked refrigerant may produce a poisonous gas when coming in contact with an open flame.

   (7) Before servicing, check the surface temperature of the refrigeration circuit to prevent a burn.

5. Keep the following in mind when making electrical connections:

(1) Check for proper grounding connections, and repair if necessary to prevent electric shocks.

(2) Always use service parts intended for the applicable model for replacement of defective parts. Use proper tools to secure the wiring. Otherwise abnormal operation or trouble may occur and cause electric leaks or fire.

(3) Check for proper part installations, wiring conditions and soldered or solderless terminal connections to avoid fire, heat or electric shocks.

(4) Be sure to replace damaged or deteriorated power cords and lead wires to prevent fire, heat or electric shocks.

(5) Cut-off lead wires must be bound using closed end connectors or the like, with their closed ends up to avoid entrance of moisture that could lead to electric leaks or fire.

(6) After servicing, always use a megohmmeter (DC500V) to check for the insulation resistance of at least 1 megohm between the live part (attachment plug) and the dead metal part (grounding terminal).

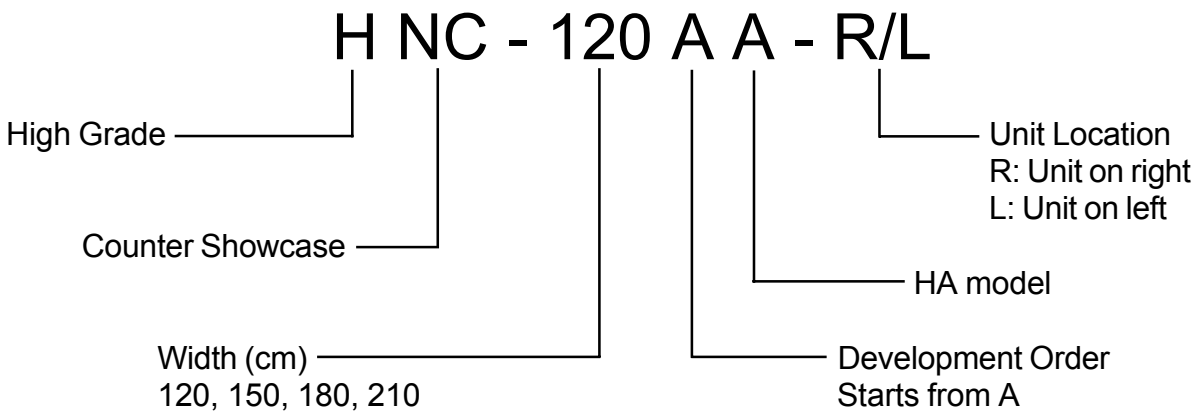
(7) Do not service the electrical parts with wet hands to prevent electric shocks.

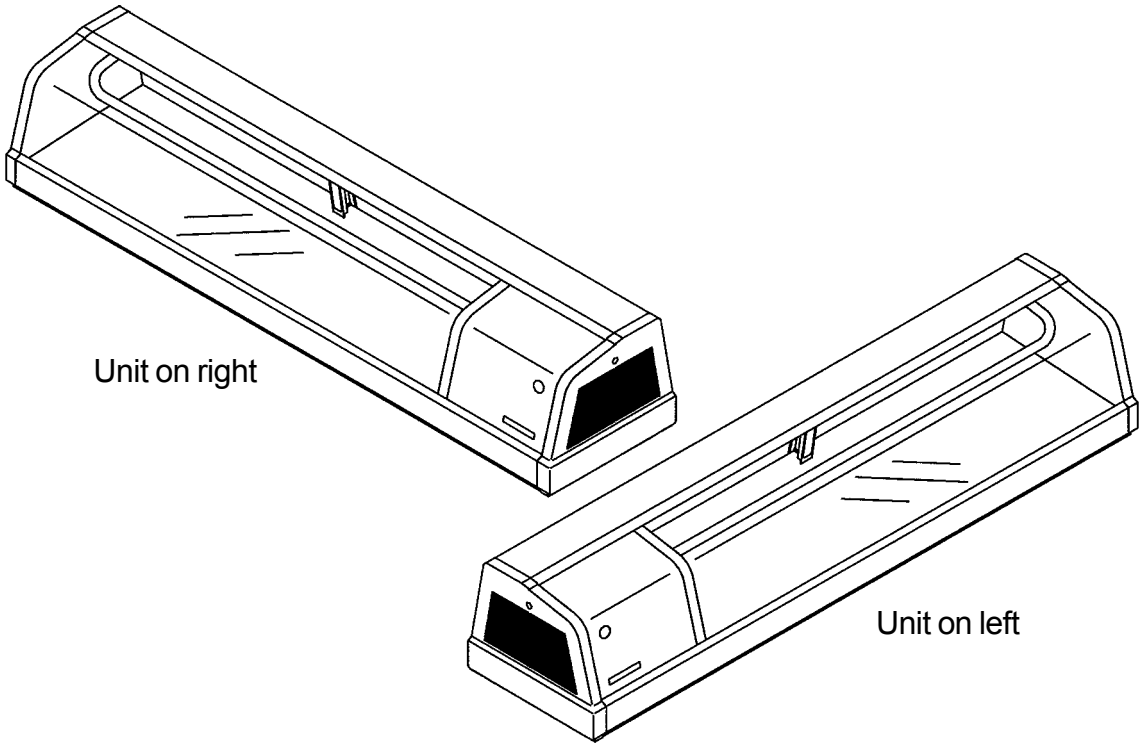
(8) The capacitors used for the compressor and other components may be under high voltage and should be discharged properly before servicing.

CAUTION

1. After servicing, always check for proper operation.

2. MODEL NAME


H NC - 120 A A - R/L
High Grade
Counter Showcase
Width (cm)
120, 150, 180, 210
Development Order
Starts from A
HA model
Unit Location
R: Unit on right
L: Unit on left


Unit on right
Unit on left

3. OPERATING INSTRUCTIONS

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. Foods that should not dry must be covered or wrapped up in a plastic film.

2) Store only pre-refrigerated items in the showcase. It takes longer for foods to cool in the showcase than in a refrigerator.

3) Do not leave the Doors open or open them too frequently. The interior temperature may rise, resulting in food deterioration.

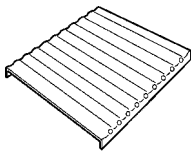
4) Do not pack the showcase with foods. The cooling performance may reduce, resulting in food deterioration.

5) The showcase should not be exposed to direct sunlight or located next to ovens, grills or other high heat producing equipment. The interior temperature may rise, resulting in food deterioration.

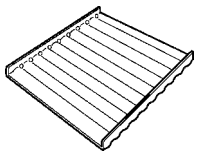
6) The ambient temperature should not exceed 80°F (27°C). The cooling performance may reduce, resulting in food deterioration.

7) The Food Mount can be used on either side. The food temperature is controllable by turning over the Food Mount to change the distance from the interior bottom.

Normal condition
When food temp. is too low



For more intensive cooling



8) The maximum safe height for displaying food products is 3.5” (9cm) above the interior bottom. Food products should not be placed above this height as they may not remain cold enough to avoid spoilage.

4. SPECIFICATIONS

MODEL	HNC-120AA-L -R	HNC-150AA-L -R	HNC-180AA-L -R	HNC-210AA-L -R
AC SUPPLY VOLTAGE	1 Phase 115V 60Hz			
POWER SUPPLY CAPACITY	0.47kVA (4.7A)			
RATED AMPERAGE	3.0A			
STARTING AMPERAGE	13A			
ELECTRIC CONSUMPTION	195W			
POWER FACTOR	56%			
PULL DOWN TIME (10°C)	Approx. 40 min. (Ambient Temp. 27°C, No Load)			
SATURATION TEMPERATURE	Approx. 4°C (Ambient Temp. 27°C, No Load)			
NET CAPACITY	42 L	57 L	72 L	87 L
EXTERIOR DIMENSIONS (W)	1200 mm	1500 mm	1800 mm	2100 mm
(D)	345 mm			
(H)	280 mm			
INTERIOR DIMENSIONS (W)	845 mm	1145 mm	1445 mm	1745 mm
(D)	288 mm (bottom)			
(H)	157 mm			
EXTERIOR	Glass, ABS Plastic, PVC Plastic, Galvanized Steel			
INTERIOR	Glass, ABS Plastic, Stainless Steel			
INSULATION	Polyurethane Foam			
REFRIGERATION SYSTEM	Convection Cooling			
DEFROST SYSTEM	None			
COMPRESSOR	Hermetic 130W Model CE56Y-1ZU			
CONDENSER	Fin and Tube Type, Cooling Fan Motor x 1			
EVAPORATOR	(UPPER) Bare Tube Type, (LOWER) Pipe on Sheet Type			
REFRIGERANT CONTROL	Constant Pressure Expansion Valve			
REFRIGERANT TYPE / CHARGE	R134a / 130 g	R134a / 150 g	R134a / 180 g	R134a / 200 g
ELECTRIC CIRCUIT PROTECTION	Ground Fault Circuit Interrupter, Ground Wire			
COMPRESSOR PROTECTION	Motor Protector			
SLIDING DOOR	2 pcs.	4 pcs.		
NET WEIGHT / GROSS WEIGHT	30 kg / 37 kg	36 kg / 45 kg	42 kg / 53 kg	48 kg / 61 kg
PACKAGE	Carton			
SHIPPING DIMENSIONS (W)	1280 mm	1580 mm	1880 mm	2180 mm
(D)	413 mm			
(H)	405 mm			
CERTIFICATION	To be NSF and UL certified			
ACCESSORIES FOOD MOUNT	3 pcs.	4 pcs.	5 pcs.	6 pcs.
PLUG	4 pcs.			
VINYL HOSE	1 pc.			
JOINT	2 pcs.			
AMBIENT TEMP.	10 - 27°C			
VOLTAGE VARIATION	Rated voltage ±10%			

* The electrical specifications were determined at an ambient temperature of 27°C according to the electrical appliance technical standards.
* The pull down time and saturation temperature were measured 20 mm above the food mount (normal position) located at the interior bottom center.
* The food temperature is controllable by turning over the food mounts.

5. DIMENSIONS

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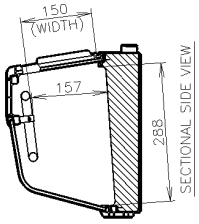
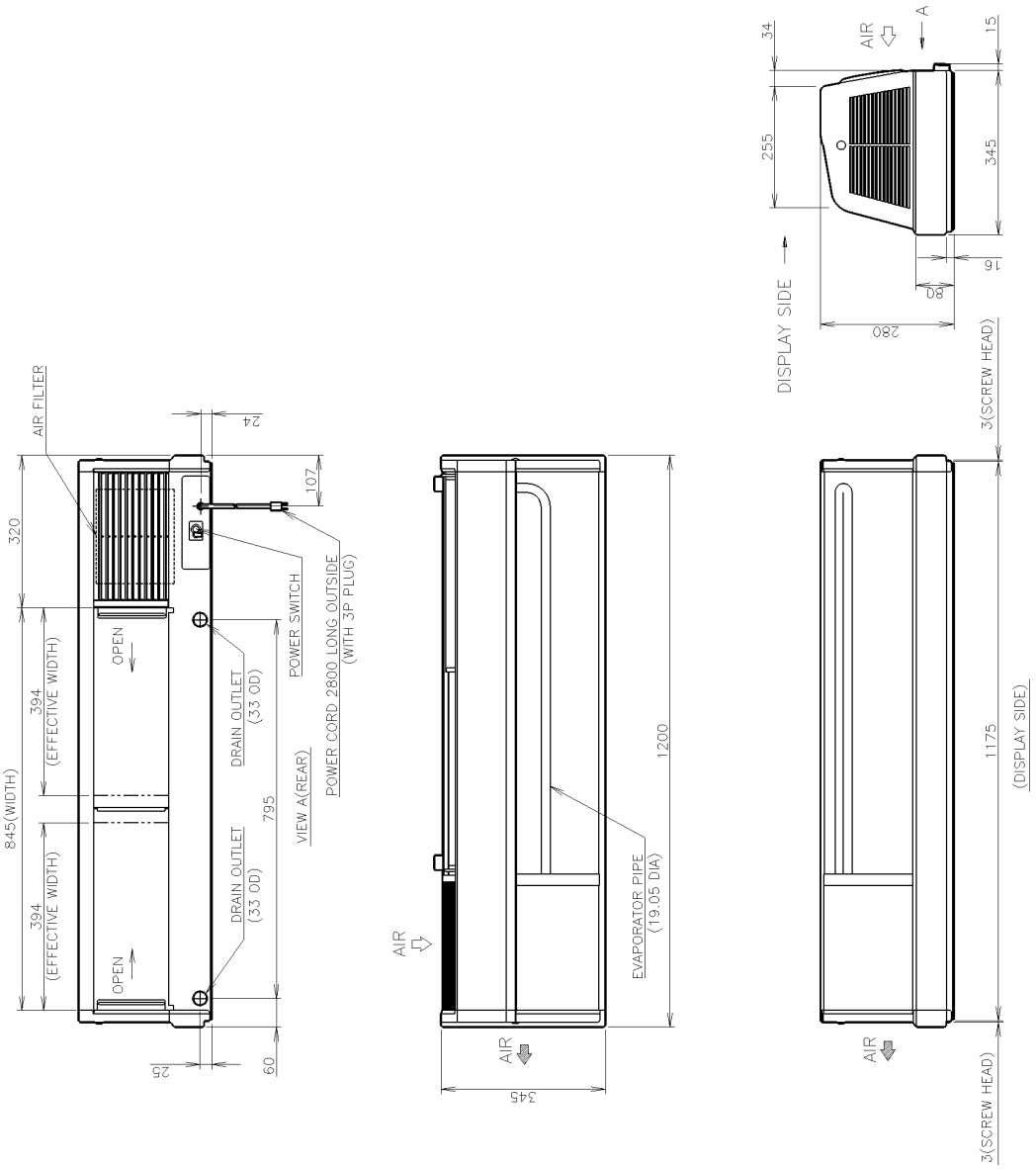
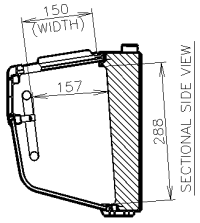




[b] HNC-120AA-R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157
288
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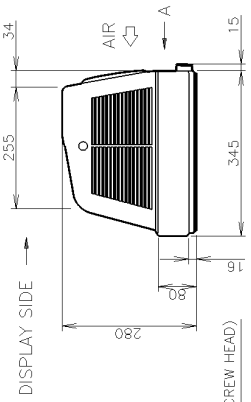
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DISPLAY SIDE
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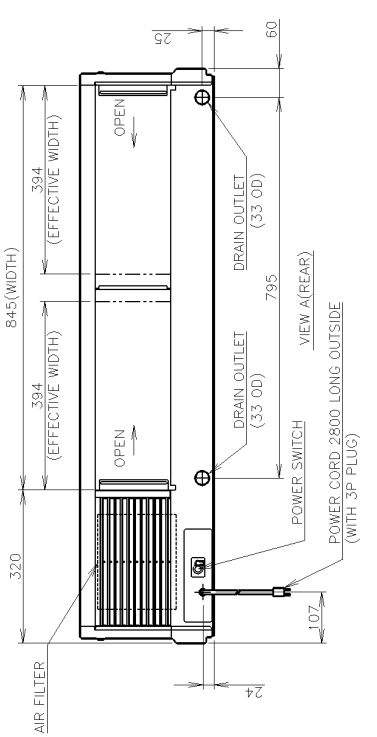
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DRAIN OUTLET
(33 OD)
795
VIEW A(REAR)
394
(EFFECTIVE WIDTH)
DRAIN OUTLET
(33 OD)
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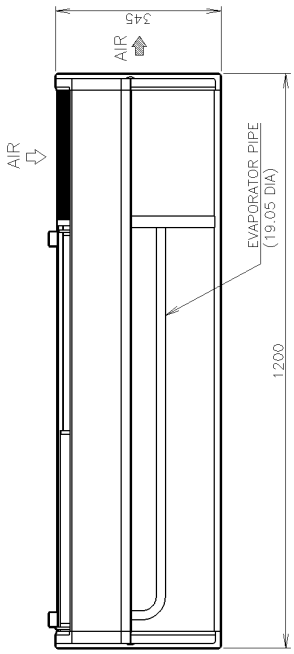
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE
(WITH 3P PLUG)
320
107
AIR FILTER
24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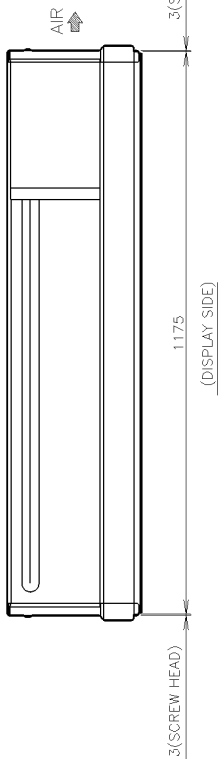
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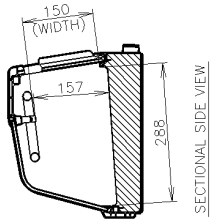
1175
(DISPLAY SIDE)
3(SCREW HEAD)

[c] HNC-150AA-L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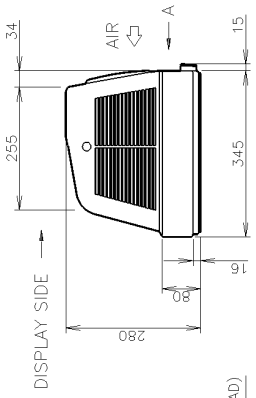
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DISPLAY SIDE
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80
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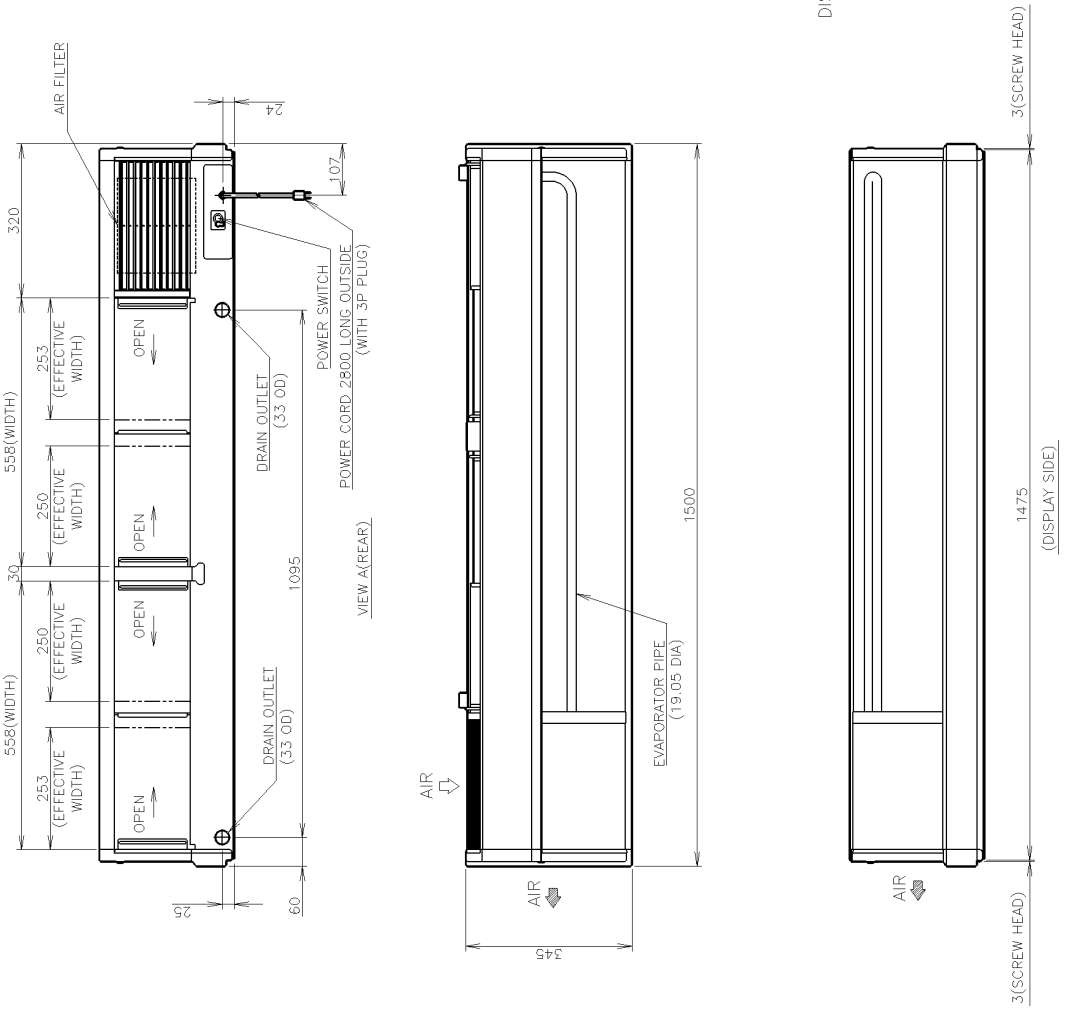
AIR FILTER
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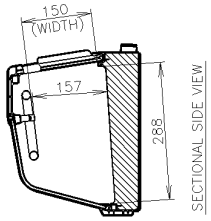
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE
(WITH 3P PLUG)
OPEN
253
(EFFECTIVE
WIDTH)
558(WIDTH)
250
(EFFECTIVE
WIDTH)
DRAIN OUTLET
(33 OD)
30
1095
VIEW A(REAR)
25
60
AIR
345
1500
EVAPORATOR PIPE
(19.05 DIA)
3(SCREW HEAD)
1475
(DISPLAY SIDE)

[d] HNC-150AA-R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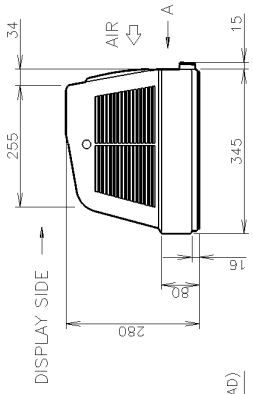
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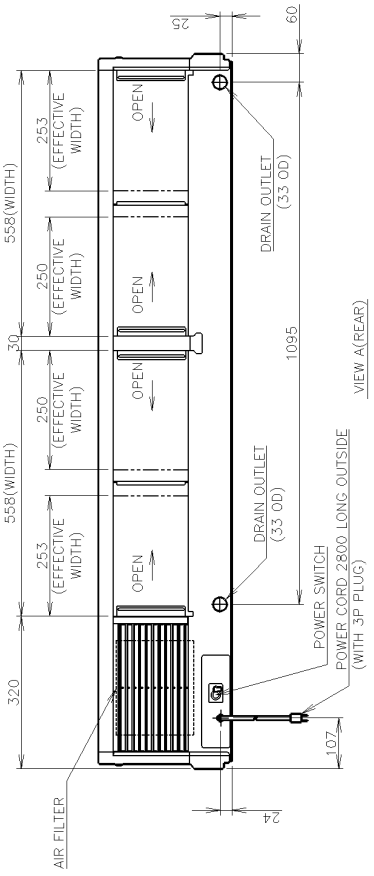
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DRAIN OUTLET
(33 OD)
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(EFFECTIVE
WIDTH)
30
1095
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(33 OD)
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE
(WITH 3P PLUG)
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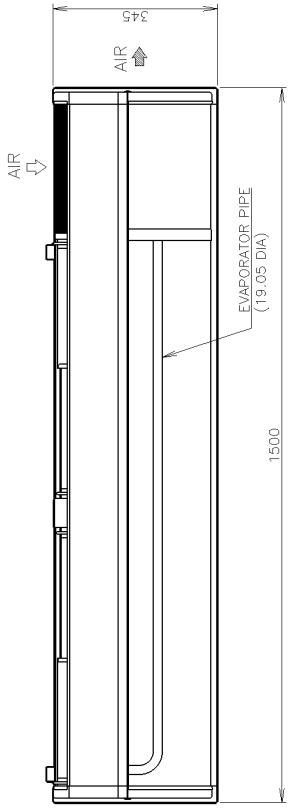
107
24
AIR FILTER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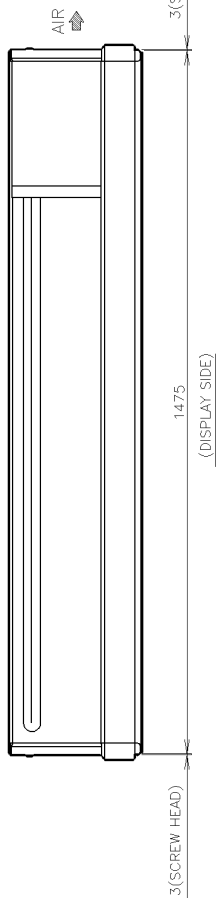
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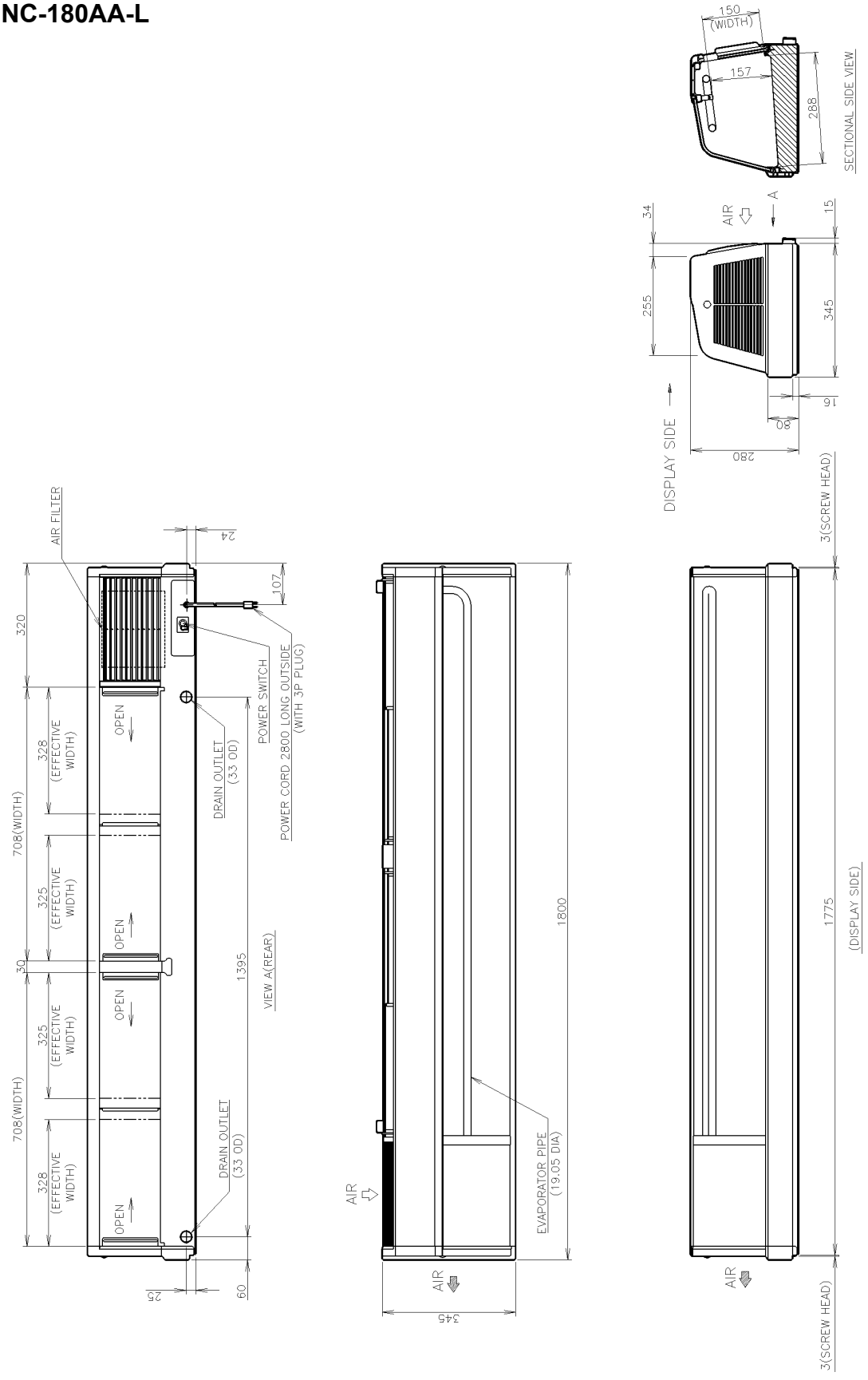
3(SCREW HEAD)

[e] HNC-180AA-L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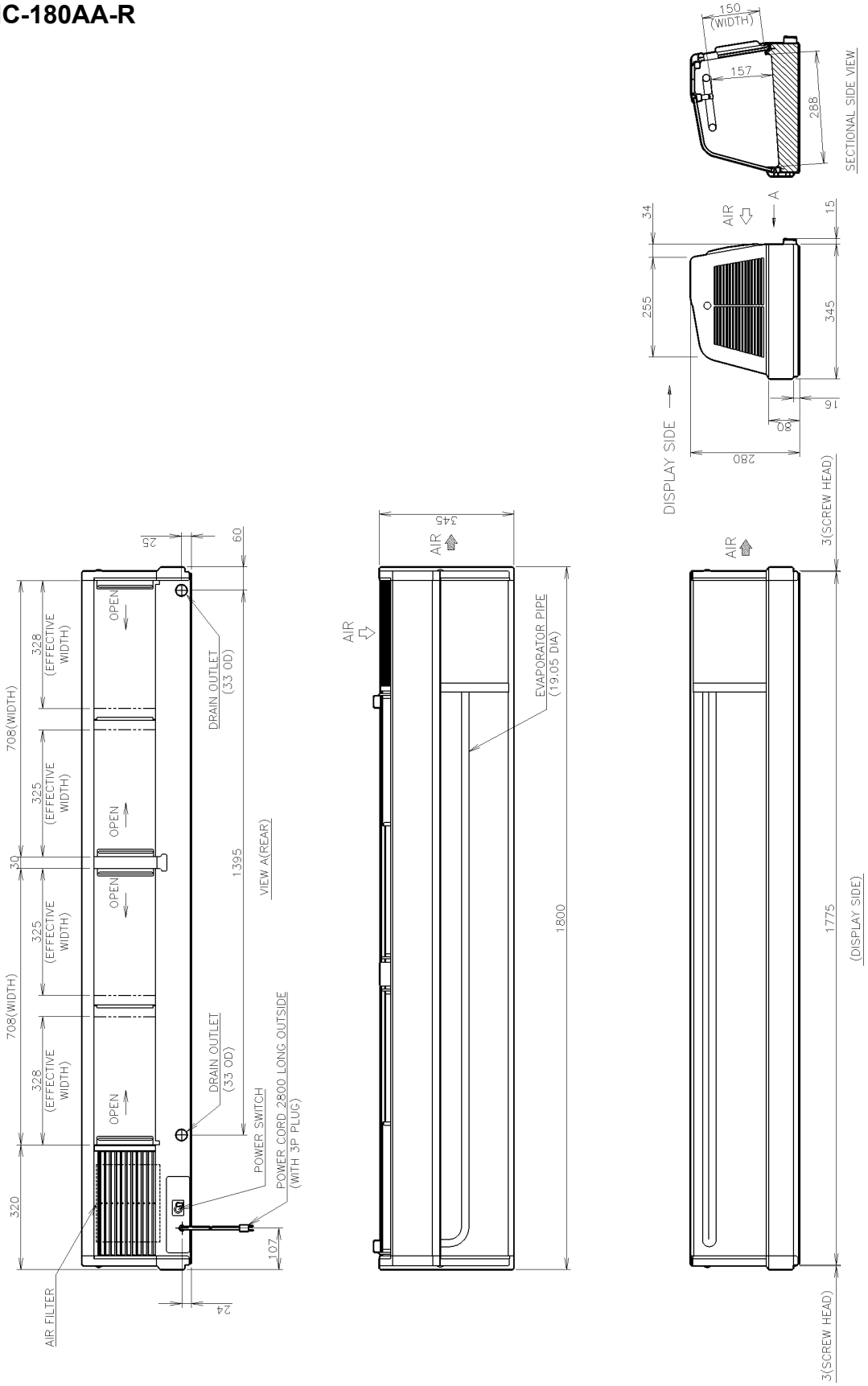
(WIDTH)
157
288
SECTIONAL SIDE VIEW
AIR
A
34
15
255
345
DISPLAY SIDE
6
80
280
3(SCREW HEAD)
AIR FILTER
24
107
320
OPEN
328
(EFFECTIVE
WIDTH)
325
(EFFECTIVE
WIDTH)
30
708(WIDTH)
DRAIN OUTLET
(33 OD)
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE
(WITH 3P PLUG)
1395
VIEW A(REAR)
25
60
1800
EVAPORATOR PIPE
(19.05 DIA)
345
1775
(DISPLAY SIDE)

[f] HNC-180AA-R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SECTIONAL SIDE VIEW
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15
255
345
DISPLAY SIDE
80
280
25
60
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328 (EFFECTIVE WIDTH)
325 (EFFECTIVE WIDTH)
708(WIDTH)
30
1395
VIEW A(REAR)
DRAIN OUTLET (33 OD)
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE (WITH 3P PLUG)
320
107
AIR FILTER
24
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EVAPORATOR PIPE (19.05 DIA)
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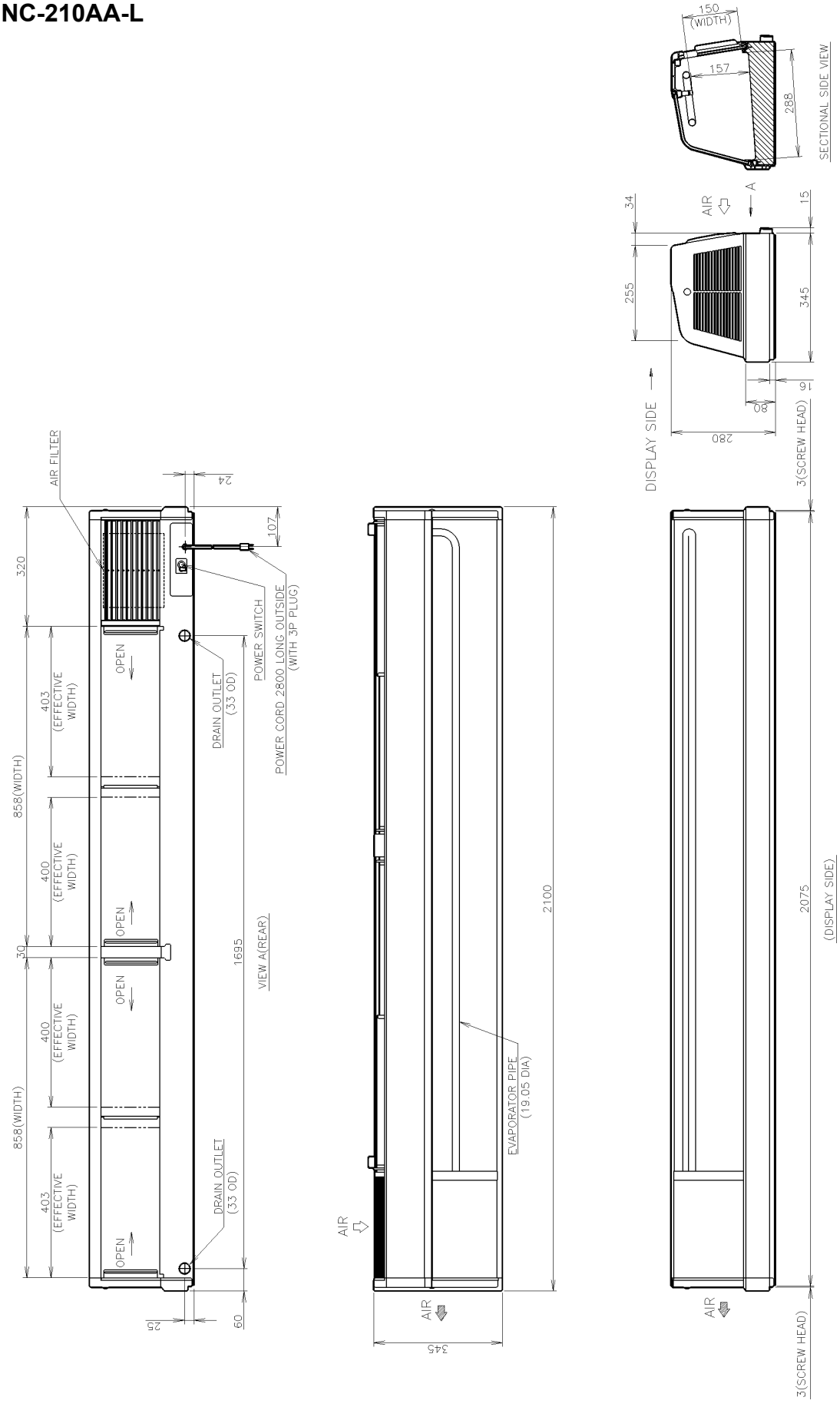
3(SCREW HEAD)
1775
(DISPLAY SIDE)

[g] HNC-210AA-L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A
34
15
255
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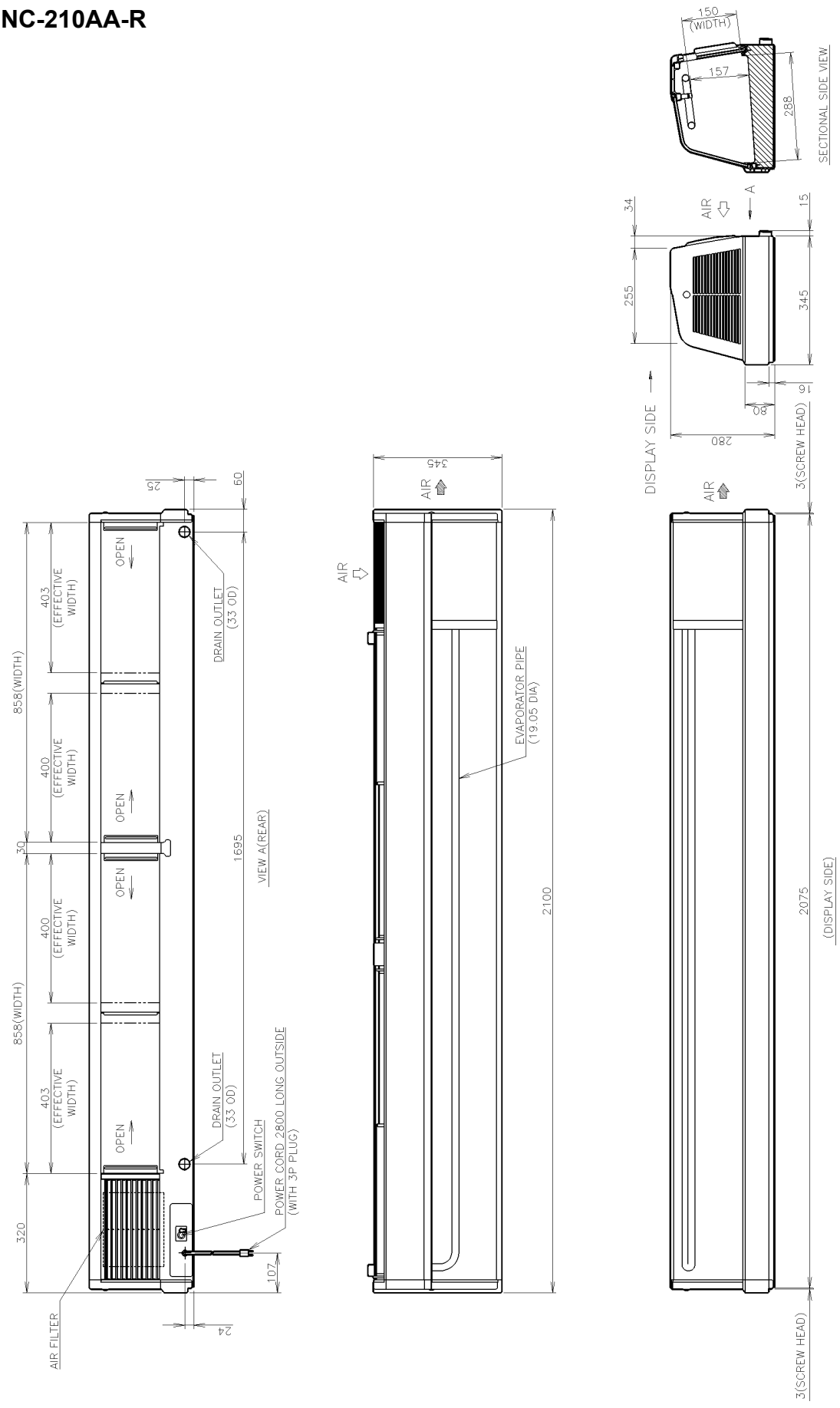
DISPLAY SIDE
280
3(SCREW HEAD)
AIR FILTER
24
107
320
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE (WITH 3P PLUG)
OPEN
403 (EFFECTIVE WIDTH)
DRAIN OUTLET (33 OD)
858(WIDTH)
400 (EFFECTIVE WIDTH)
30
1695
VIEW A(REAR)
2100
EVAPORATOR PIPE (19.05 DIA)
2075
(DISPLAY SIDE)
25
60
345

[h] HNC-210AA-R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DISPLAY SIDE
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280
3(SCREW HEAD)
AIR
545
AIR
AIR
EVAPORATOR PIPE (19.05 DIA)
2100
2075
(DISPLAY SIDE)
3(SCREW HEAD)
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60
OPEN
403 (EFFECTIVE WIDTH)
DRAIN OUTLET (33 OD)
858(WIDTH)
400 (EFFECTIVE WIDTH)
OPEN
30
1695
VIEW A(REAR)
OPEN
400 (EFFECTIVE WIDTH)
858(WIDTH)
403 (EFFECTIVE WIDTH)
DRAIN OUTLET (33 OD)
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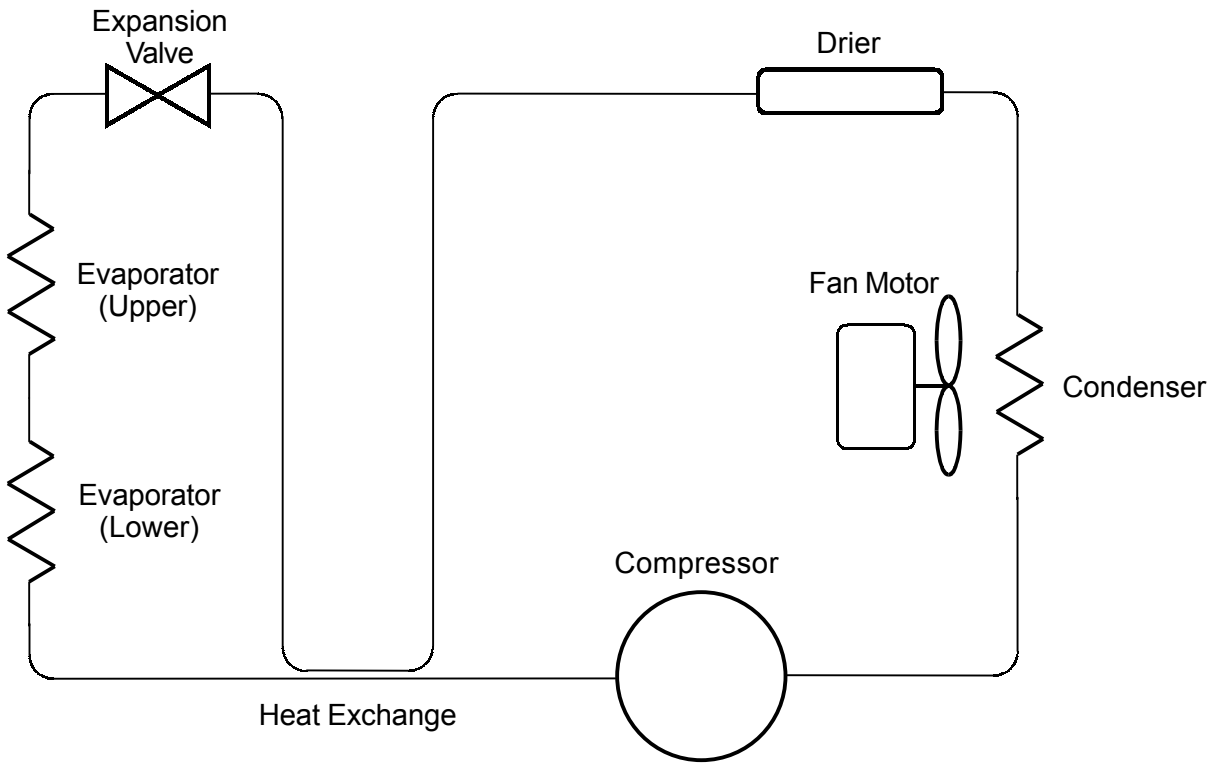
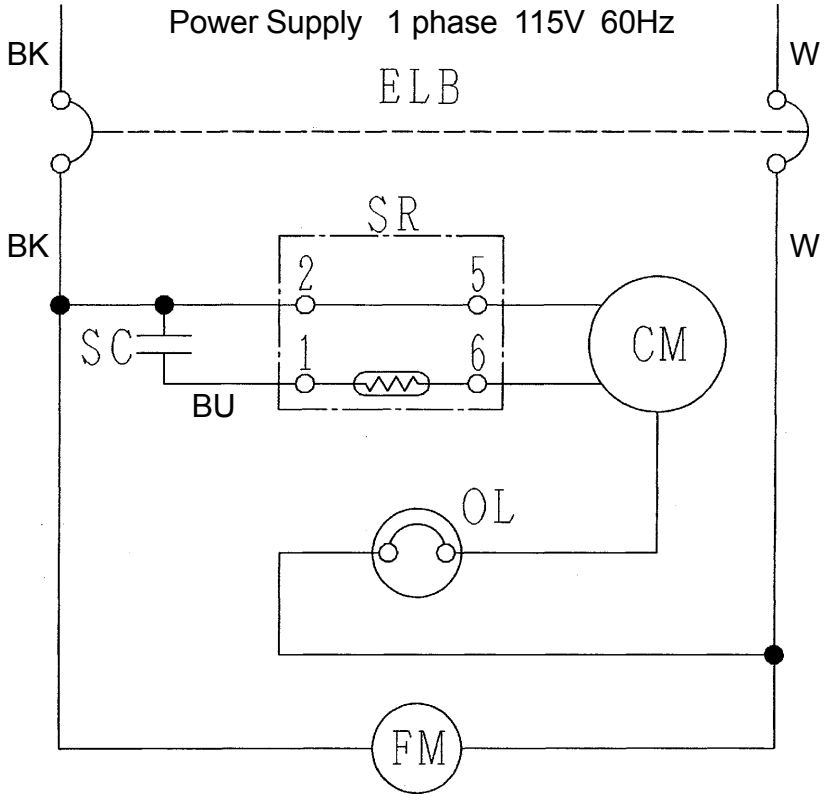
POWER SWITCH
POWER CORD 2800 LONG OUTSIDE (WITH 3P PLUG)
320
107
AIR FILTER
24

6. REFRIGERATION CIRCUIT



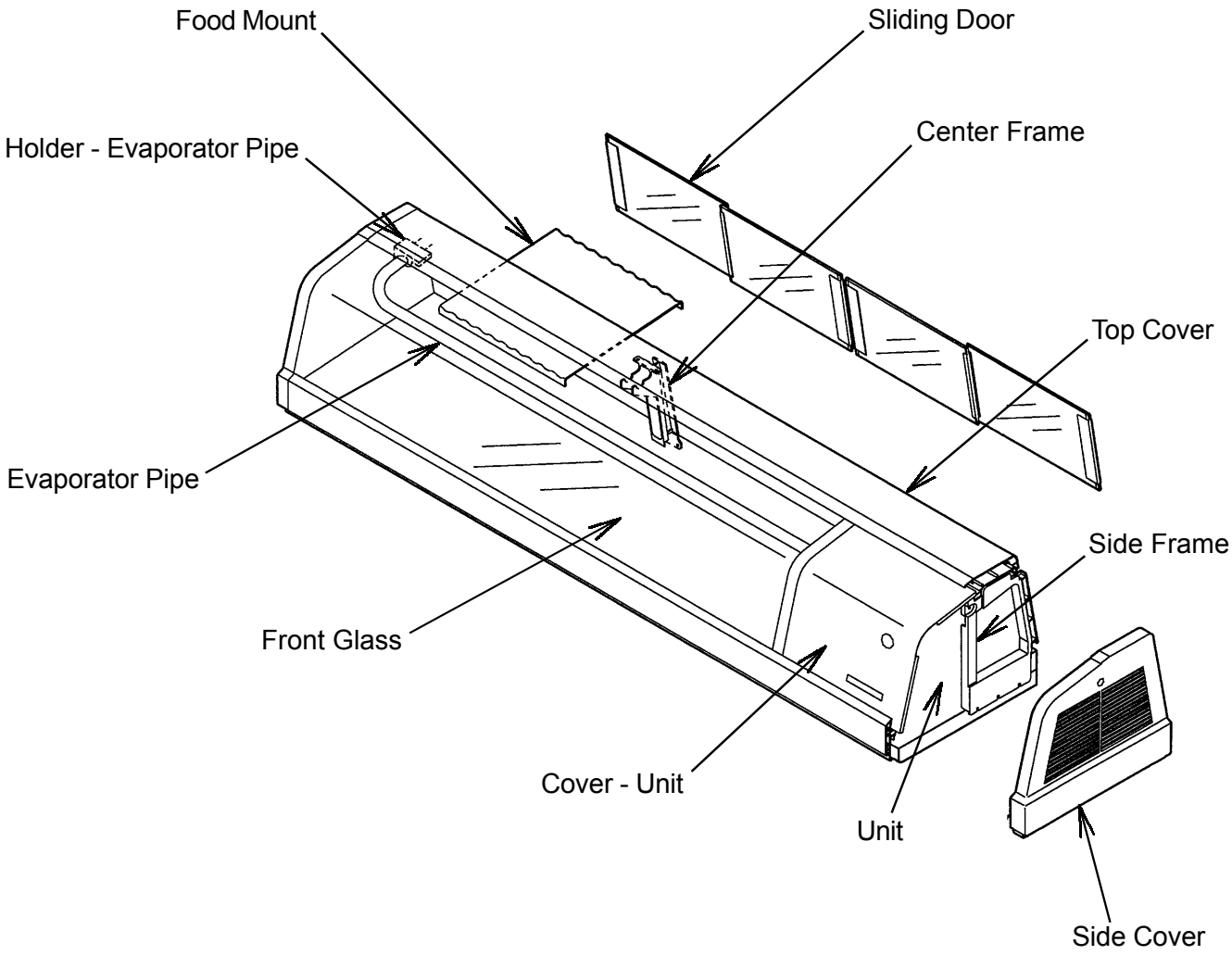
Refrigerant: R134a

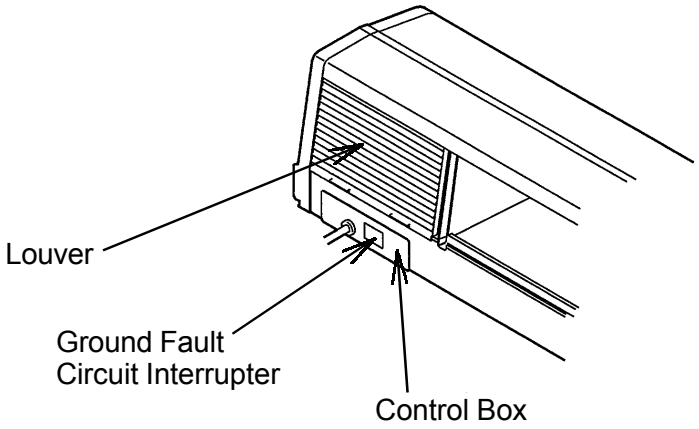
7. WIRING DIAGRAM



CM	Compressor
SR	Start Relay
SC	Start Capacitor
OL	Overload Relay
FM	Fan Motor
ELB	Ground Fault Circuit Interrupter

8. CONSTRUCTION





9. 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] SIDE COVER

Remove the Cap from the Side Cover, the machine screw inside and the two machine screws (black) at the bottom.

[b] TOP COVER

Remove the Sliding Door and Side Cover.
1) The Top Cover is hooked and fixed on the Top Frame (aluminum).
2) Lift up and unhook the rear end of the Top Cover.
3) When the rear part is lifted off, move it forward to unhook and remove the front part.

The Top Cover is tightly hooked on the Top Frame and will not come off easily. Remove it with care to avoid injury. To replace, reverse the removal procedure.

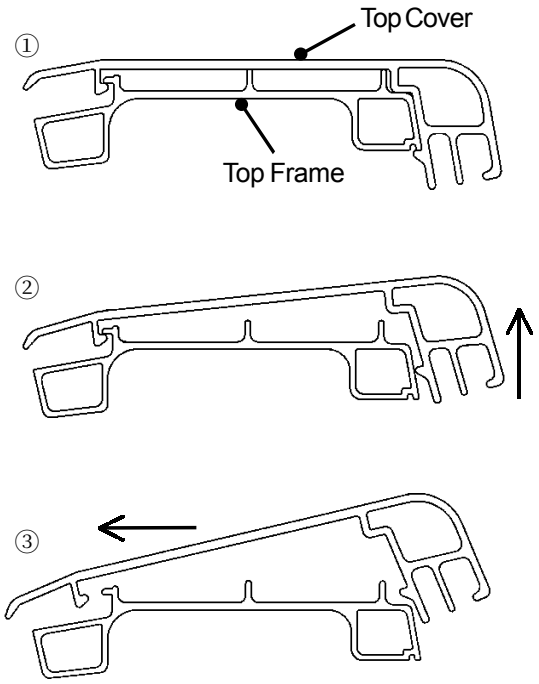


Fig. 1

[c] COVER - UNIT

Remove the Sliding Door, Side Cover and Top Cover. Remove the two machine screws securing the top of the Cover - Unit, and take off the Cover.

[d] FRONT GLASS

Remove the Sliding Door, Side Cover, Top Cover and Cover - Unit. Remove the Holder - Frame secured on the Top Frame with machine screws. Lift the Front Glass off the bottom fit.

The side interior of the Front Glass is sealed with silicone sealant (black). Be sure to re-seal it at replacement.

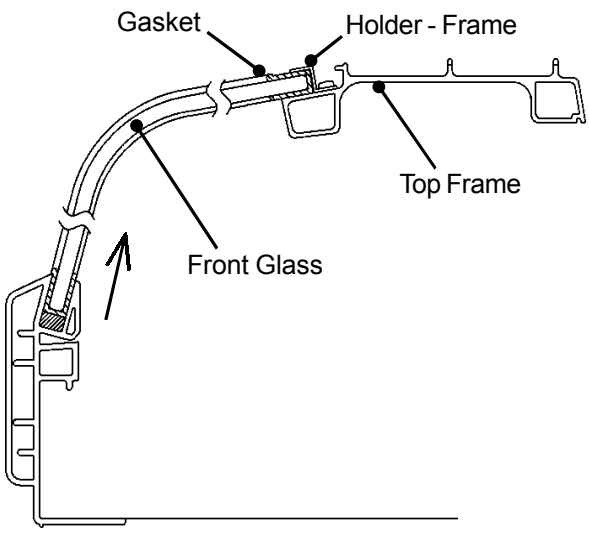


Fig. 2

[e] SIDE FRAME

Remove the Sliding Door, Side Cover and Top Cover. Unbind the wiring on the Side Frame. Remove the two screws securing the Top Frame and the top of the Side Frame. Lift the Side Frame off the bottom fit.

[f] CENTER FRAME (Except HNC-120 type)

Remove the two flat head machine screws (black) securing the Center Frame to the rear and the two machine screws securing the Center Frame to the Top Frame. Tilt the Center Frame and release it from the fit.

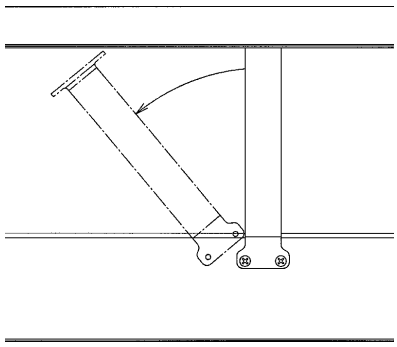


Fig. 3

[g] HOLDER - EVAPORATOR PIPE

Remove the truss head tapping screw (4 x 25) from the bottom. Take off the Center Frame. Be careful with the Evaporator Pipe. It will be released and hang down. Remove the truss head tapping screw (4 x 10) from the bottom.

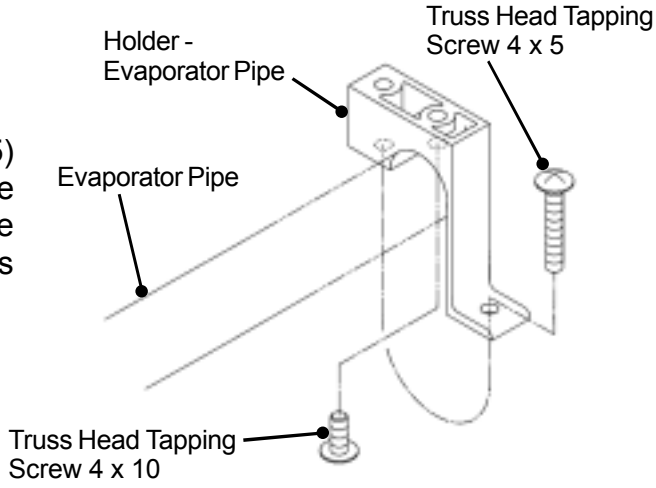


Fig. 4

[h] CONTROL BOX

Remove the two machine screws indicated. Pull out the Control Box.

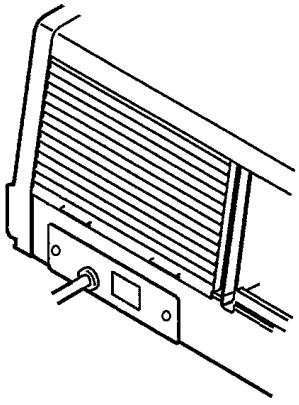


Fig. 5

[i] UNIT

Remove the Sliding Door, Side Cover, Top Cover, Cover - Unit and Side Frame. Take off the Compressor Terminal Cover and remove the Starter and Motor Protector. Uninsulate the Expansion Valve and unbraze the Inlet or Outlet Pipe with a gas burner (see “11. CONSTANT PRESSURE EXPANSION VALVE AND REFRIGERANT CHARGE”).
Unbraze the part shown in Fig. 6. Remove the four machine screws securing the Unit Base. The whole unit can be pulled out.

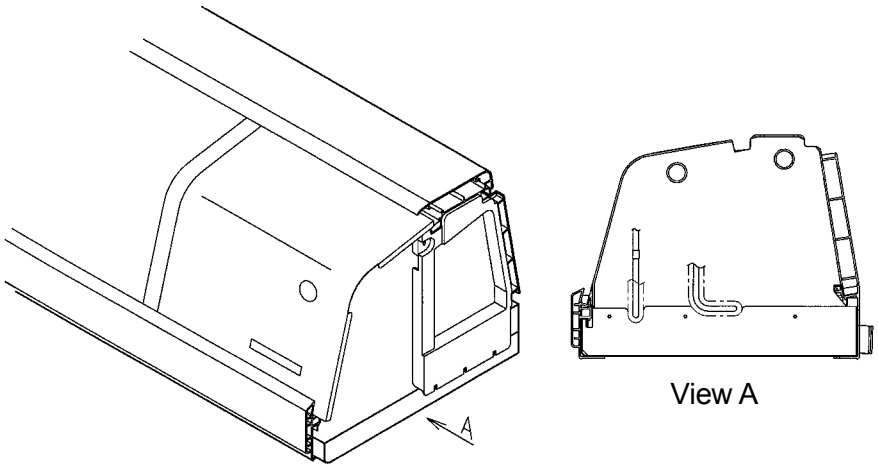


Fig. 6

10. 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 uses 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.

11. CONSTANT PRESSURE EXPANSION VALVE AND REFRIGERANT CHARGE

[a] SPECIFICATIONS

Model:	HYP-2-5QHD-5
Manufacturer:	Fuji Koki
Part Number:	447283-04
Refrigerant:	R134a
Adjustment Range:	0.01 - 0.3MPa
Pressure Rise by Adjusting Screw:	0.039 - 0.049MPa / turn

[b] FUNCTION

When the low side pressure drops, the Constant Pressure Expansion Valve opens and lets the refrigerant flow to keep a constant pressure.

[c] CONSTRUCTION

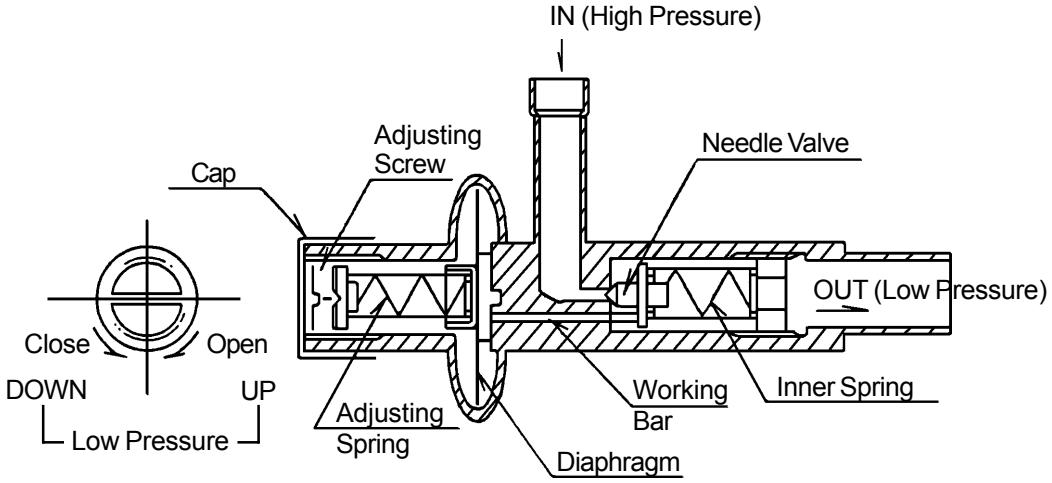


Fig. 7

[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 (110°C).

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 Cover and Cap from the Expansion Valve.

3) Remove the Expansion Valve by heating the Inlet and Outlet Pipes with a gas burner.

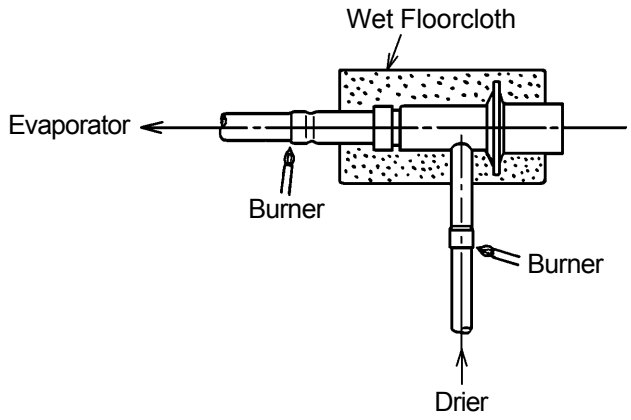


Fig. 8

12. SERVICE DIAGNOSIS

PROBLEM	POSSIBLE CAUSE	REMEDY
[1] Showcase will not start.	1. Ground Fault Cirucit Interrupter in OFF position.	1. Turn ON.
	2. Unplugged.	2. Plug in.
	3. Supply voltage too low.	3. Plug into a separate receptacle of 115V±10%.
	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 left open.	
	8. Packed with foods, or warm or hot foods inside.	
	9. Ambient temperature exceeding 80°F (27°C).	
[3] Dry foods	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] Frosting	1. [Exterior] Relative humidity exceeding 60%.	1 - 2. Instruct the user on characteristics and proper use of the showcase. Wipe off excessive frost with a soft cloth.
	2. [Interior] Doors opened too frequently or left open.	

HOSHIZAKI

HOSHIZAKI AMERICA, INC.

618 HIGHWAY 74 SOUTH, PEACHTREE CITY,
GEORGIA 30269 U.S.A.
PHONE: 770-487-2331

HOSHIZAKI ELECTRIC CO., LTD.

3-16 MINAMIYAKATA, SAKAE, TOYOAKE,
AICHI 470-1194 JAPAN
PHONE: 0562-97-2111