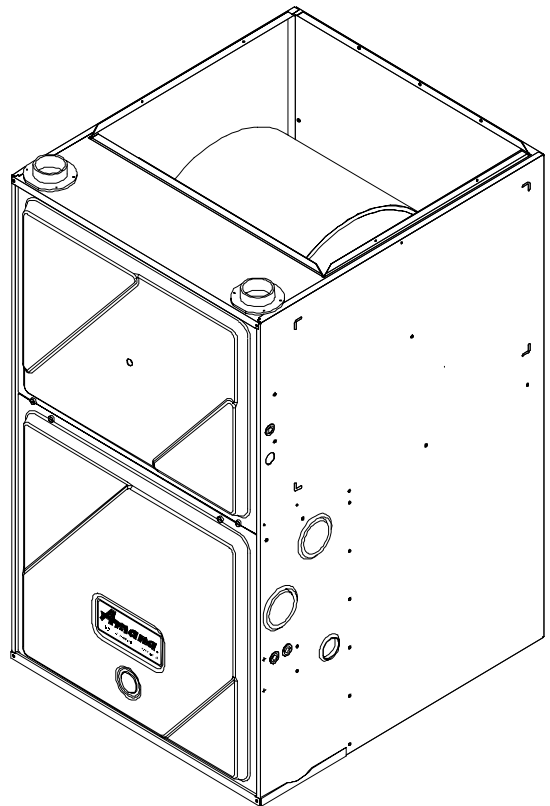
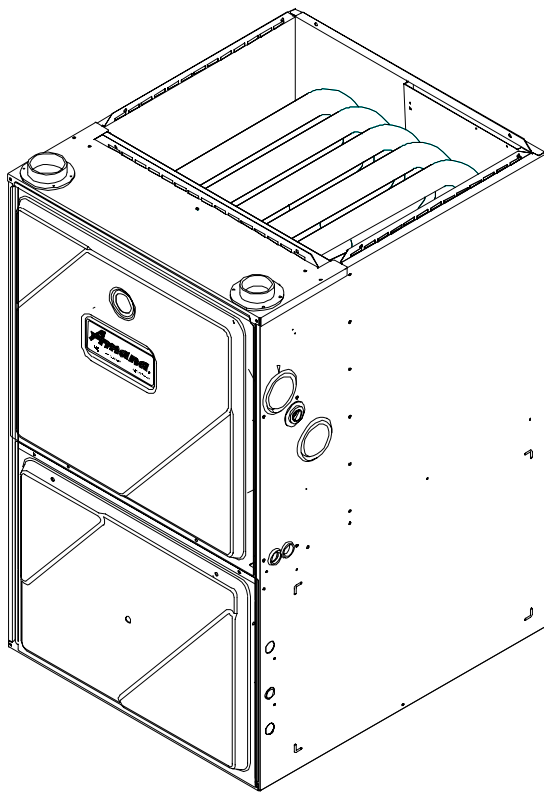


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Model and Manufacturing numbers listed on page 4.

Service Instructions

40" 90% Condensing Gas Furnaces GUCA, GCCA & Accessories



This manual is to be used by qualified HVAC technicians only. Amana does not assume any responsibility for property damage or personal injury for improper service procedures done by an unqualified person.

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RS6610002
Revision 0
October 1998

CONDENSATE DRAIN LINES AND DRAIN TRAP

Condensate Drain Lines and Drain Trap

General

A condensing gas furnace achieves its high level of efficiency by extracting almost all of the heat from the products of combustion and cooling them to the point where condensation takes place. The condensate which is generated must be piped to an appropriate drain location.

In *upright* installations, the furnace's drain hoses may exit either the right or left side of the furnace. **Note:** If the alternate vent/flue outlet is utilized in an upright installation, the drain trap and drain connections must be located on the same side as the alternate vent/flue outlet.

In *horizontal* installations, the drain hoses will exit through the bottom (down side) of the unit with the drain trap suspended beneath the furnace. The field-supplied drain system must be in accordance with all local codes and the instructions in the following sections.



WARNING

In upright upflow installations, the drain trap must be mounted on the opposite side of the unit from the junction box. This will reduce the risk of water reaching the junction box in the event of a blocked drain condition. Failure to follow these instructions can result in possible death, personal injury, or property damage due to electrical shock.

Follow the bullets listed below when installing the drain system. Refer to the following sections for specific details concerning furnace drain trap installation and drain hose hook ups.

- The drain trap supplied with the furnace must be used.
- The drain line between furnace and drain location must be constructed of 3/4" PVC or CPVC.
- The drain line between furnace and drain location must maintain a 1/4 inch per foot downward slope toward the drain.
- Do not trap the drain line in any other location than at the drain trap supplied with the furnace.
- Do not route the drain line outside where it may freeze.
- If the drain line is routed through an area which may see temperatures near or below freezing, precautions must be taken to prevent condensate from freezing within the drain line.
- If an air conditioning coil is installed with the furnace, a common drain may be used. An open tee must be installed in the drain line, near the cooling coil, to relieve positive air pressure from the coil's plenum. This is necessary to prohibit any interference with the function of the furnace's drain trap.

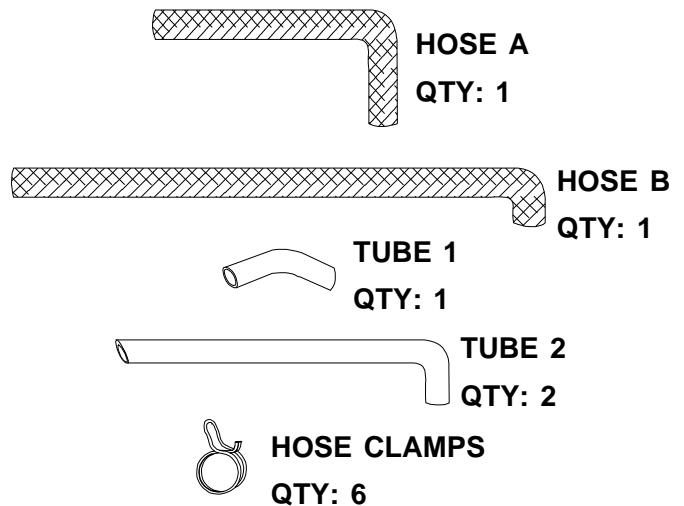
Upright Installations

In an upright installation drain hoses are connected to drain ports on the rubber elbow and the recuperator coil front cover. The drain lines are then routed through the right or left side panel and into the drain trap secured to the outside of the cabinet.

Note: Refer to *Condensate Drain Lines and Drain Trap - Alternate Vent/Flue Hose Connections* section for upright installations using an alternate vent/flue outlet .

Standard Right or Left Side Drain Hose Connections

Upright installations using the *standard* vent/flue outlet require drain hoses to be connected as follows. The following quantity of hoses, tubes, and hose clamps are provided with the unit.

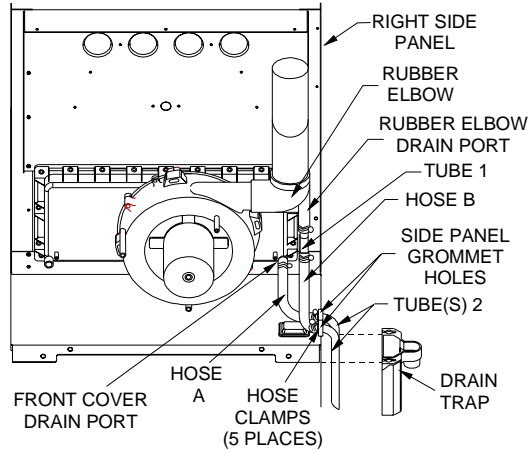


Hose and Tube Identification

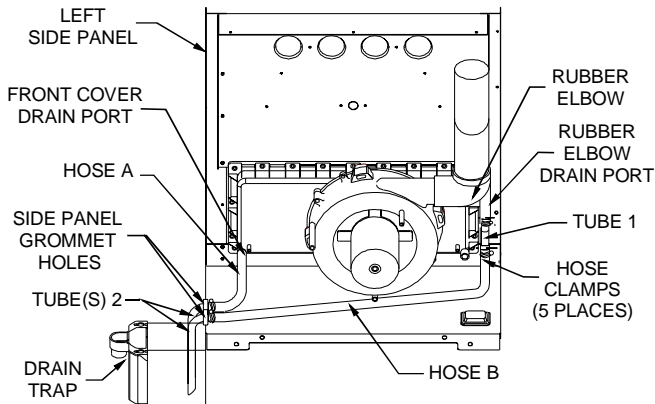
1. Remove the rubber plug from the front cover drain port (right or left side, depending on the intended drain trap mounting).
2. Secure Hose A to front cover drain port with a hose clamp. Route hose to rear side panel grommet hole.

Note: For left side drainage, grommets will have to be relocated to left side panel.

CONDENSATE DRAIN LINES AND DRAIN TRAP



**Upright "Standard" Connections
Right Side
(Upflow Shown, Counterflow Similar)**



**Upright "Standard" Connections
Left Side
(Upflow Shown, Counterflow Similar)**

3. Cut and remove 1/4 inch from the end of the drain port on the rubber elbow.
4. Insert Tube 1 into rubber elbow drain port and secure with hose clamp. Angle tube outward toward front of furnace.
5. *Right side drains*

Cut 17 3/4 inches from the long end of Hose B and discard. Secure the remaining hose to Tube 1 with a hose clamp. Route the other end of Hose B to front right side panel grommet hole.

Left side drains

Cut "X" inches from the long end of Hose B and discard. Refer to table for appropriate length to cut. Secure remaining hose to Tube 1 with a hose clamp. Route other end of Hose B to front left side panel grommet hole.

Cabinet Width (inches)	Model GUCA & GCCA (kBTU Tons)	"X" Length to Cut From Long End of Hose B (inches)
16.5	045_30	8 inches
	070_30	
20.5	070_40	4 inches
	090_40	
24.5	090_50	None
	115_50	

6. Insert short end of each Tube 2 through side panel grommet holes. Secure tubes to Hose A and Hose B with hose clamps.

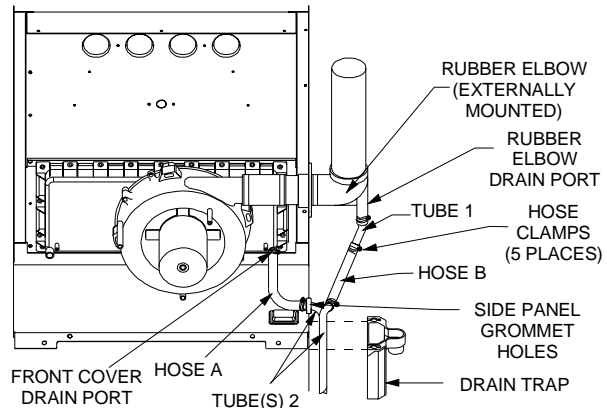
Note: Ensure hoses and tubes maintain a downward slope for proper drainage and that they are not kinked or binding.

For details concerning mounting of the drain trap, refer to, *Condensate Drain Lines and Drain Trap - Upright Drain Trap Mounting* section.

Alternate Vent/Flue Drain Hose Connections

Upright installations using the *alternate* vent/flue outlet will require "right-side only" drain hoses to be connected as follows. Refer to *Vent/Flue Pipe and Combustion Air Pipe* section for details on alternate vent/flue pipe connection.

1. Remove the rubber plug from the front cover right-side drain port. Save for use in step 3.
2. Secure Hose A to front cover drain port with a hose clamp. Route hose to rear right side panel grommet hole.



**Upright "Alternate" Connections
Right Side Only
(Upflow Shown, Counterflow Similar)**

3. Remove grommet from front right-side panel drain hole. Seal hole in grommet with large end of plug. Reinstall grommet and plug into side panel drain hole.
4. Cut 1/4 inch from the end of the drain port on the externally mounted rubber elbow. Discard cut portion.
5. Insert Tube 1 into rubber elbow drain port and secure with hose clamp. Angle tube outward toward front of furnace.

CONDENSATE DRAIN LINES AND DRAIN TRAP

6. Cut 17 7/8 inches from the long end of Hose B and discard.
7. Secure remaining end of Hose B to exposed end of Tube 1 with a hose clamp. Route hose toward right side panel grommet holes.
8. Insert short end of one Tube 2 through rear right side panel grommet drain hole. Secure tube to Hose A with hose clamp.
9. Insert short end of remaining Tube 2 into Hose B from rubber elbow and secure with hose clamp.

Note: Ensure hoses and tubes maintain a downward slope for proper drainage and are not kinked or binding.

For details concerning mounting of the drain trap, refer to the following section.

Upright Drain Trap Mounting (Left or Right Side Panel)

1. Insert drain tubes into drain trap and position the drain trap against the side panel. **Note:** Drain tubes must reach the bottom of the drain trap.
2. Secure drain trap to side panel at the mounting holes (dimples or crosshairs on Counterflow models) located below the grommet drain holes.
3. Attach PVC drain line to drain trap outlet with either a 90° elbow or coupling.

Note: Ensure hoses and tubes maintain a downward slope for proper drainage and that they are not kinked or binding.

Horizontal Installations

Right Side Down

Horizontal installations with the right side down require that the drain hoses be connected to the right side front cover drain port and the rubber elbow drain port.

Note: On counterflow models, relocation of the front cover pressure switch hose is required.

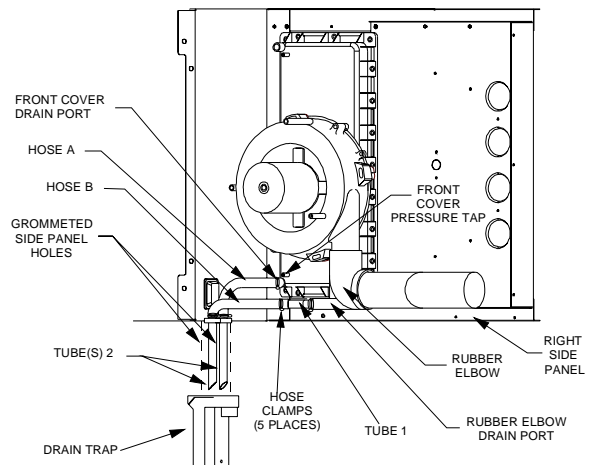
Make connections as follows:

1. Remove the rubber plug from the coil front cover drain port.

Counterflow furnaces

Relocate the front cover pressure switch hose connection from the left side pressure tap to the right (down) side tap. The pressure switch hose must be connected to the down side to guard against blocked drain conditions. Cut hose to appropriate length to minimize sagging. Plug left (unused) pressure tap with plug removed from right side.

2. Secure Hose A to front cover drain tap with a hose clamp. Route hose to rear right (down) side panel grommet holes.



**Horizontal Connections
Right Side Down
(Upflow Shown, Counterflow Similar)**

3. Cut 1/4 inch from the end of the drain port on the rubber elbow and discard.
4. Insert Tube 1 into rubber elbow drain port and secure with hose clamp. Angle tube outward toward front of furnace.
5. Cut 17 3/4 inches from the long end of Hose B and discard.
6. Secure remaining end of Hose B to exposed end of Tube 1 with a hose clamp. Route hose to front right down side panel grommet holes.
7. Cut 5 1/2 inches straight length from the long end of each Tube 2.
8. Insert approximately one inch of each Tube 2 through the right down side panel grommet holes. Secure tubes to Hose A and Hose B using hose clamps.

Note: Ensure hoses and tubes maintain a downward slope for proper drainage and are not kinked or bound.

For details concerning mounting of the drain trap, refer to *Condensate Drain Lines and Drain Trap - Upright Drain Trap Mounting Left Side Down* section.

Left Side Down

Horizontal installations with the left side panel down will require drain hoses to be connected to the left side front cover drain port and the induced draft blower drain port.

Note: On upflow models, relocation of the front cover pressure switch hose is required.

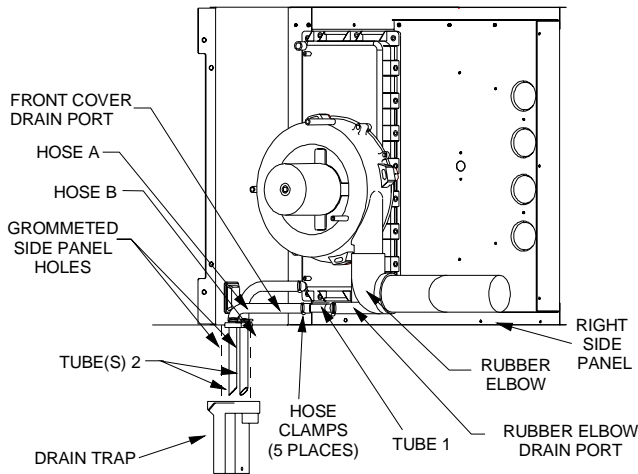
1. Remove the rubber plug from the coil front cover left (down) side drain port.

CONDENSATE DRAIN LINES AND DRAIN TRAP

2. *Upflow furnaces*

Relocate the front cover pressure switch hose connection from the right side (as shipped) pressure tap to the left (down) side tap. The pressure switch hose must be connected to the down side to guard against blocked drain conditions. Cut hose to appropriate length to minimize sagging. Plug right (unused) pressure tap with plug removed from left side.

- Secure Hose A to front cover drain port with a hose clamp. Route hose to rear left down side panel grommet holes. **Note:** For left side drainage, grommets must be relocated to left side panel.



**Horizontal Connections
Left Side Down
(Upflow Shown, Counterflow Similar)**

- Cut "X" inches from the long end of Hose B and discard. Refer to table below for appropriate length to cut.

Cabinet Width (inches)	Model GUCA & GCCA (kBTU Tons)	"X" Length to Cut From Long End of Hose B
16 1/2	045_30 070_30	19 1/8 inches
20 1/2	070_40 090_40	14 3/4 inches
24 1/2	090_50 115_50	11 1/4 inches

- Secure short end of Hose B to induced draft blower drain port using a hose clamp. Route hose to front left (down) side panel grommet holes.

- For units with a 16 1/2" cabinet width, cut 5 1/2 inches straight length from the long end of one Tube 2.

For units with a 20 1/2" and 24 1/2" cabinet width, cut 5 1/2 inches straight length from the long end of each Tube 2.

- Units with a 16 1/2" cabinet width.*

Insert approximately one inch of cut Tube 2 through left side panel grommet hole and secure to Hose A with a hose clamp. Insert uncut Tube 2 through remaining grommet hole and secure to Hose B. **Note:** Tube must reach bottom of trap.

Units with a 20 1/2" and 24 1/2" cabinet width.

Insert approximately one inch of each Tube 2 through left side panel grommet hole. Secure tubes to Hose A and Hose B with hose clamps. **Note:** Tube must reach bottom of trap.

Note: Ensure hoses and tubes maintain a downward slope for proper drainage and that they are not kinked or binding.

For details concerning mounting of the drain trap, refer to, *Condensate Drain Lines and Drain Trap - Upright Drain Trap Mounting* section.

Horizontal Drain Trap Mounting (Left or Right Side Panel)

- Position the drain trap against side panel with drain tubes inserted into trap. Note that the trap may be orientated with the outlet facing either the furnace's top cover or base pan.
- Secure drain trap to side panel at the dimples or crosshairs located on either side of the grommet drain holes.
- Confirm that tubes reach bottom of drain trap and that all hoses maintain a downward slope and are not kinked or binding.
- Attach PVC drain line to drain trap outlet with either a 90° elbow or coupling.