

Furnace

NT-16FC FURNACE ASSEMBLIES

Cabinet, Vent and Thermostat	9-2
Combustion Chamber and Blower	9-2
Burner	9-2

NT-24M, NT-30M FURNACE ASSEMBLIES

Cabinet and Vent	9-2
Combustion Chamber	9-2
Blower	9-3
Burner	9-3

ELECTRICAL WIRING DIAGRAMS

NT-16 FC	9-4
NT-24M and NT-30M	9-4

HEATER REMOVAL AND REPLACEMENT

OPERATING INSTRUCTIONS	9-5
------------------------------	-----

MAINTENANCE AND CLEANING	9-6
--------------------------------	-----

SERVICE HINTS, DIAGNOSIS & CORRECTIVE MEASURES	9-7
--	-----

Vent Cap Installation	9-7
-----------------------------	-----

COMPONENT REPLACEMENT PROCEDURE	9-8
---------------------------------------	-----

HEAT DUCT SYSTEM

21 Ft.	9-12
23 & 25 Ft.	9-13
27, 29 & 31 Ft. Full Bath	9-14
29, 31 Ft. Center Bath	9-15
Excella Rear Bath	9-16
Excella Center Bath Twin	9-17
Excella Center Bath Double	9-18

HEAT DUCT FITTINGS	9-19
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NT-16 – Cabinet – Vent Assembly and Thermostat

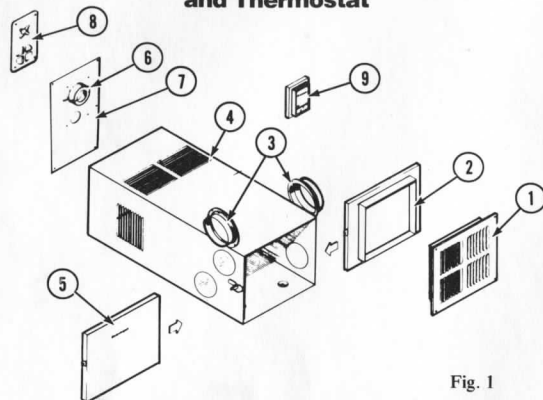


Fig. 1

NT-16FC – Combustion Chamber and Blower Assembly

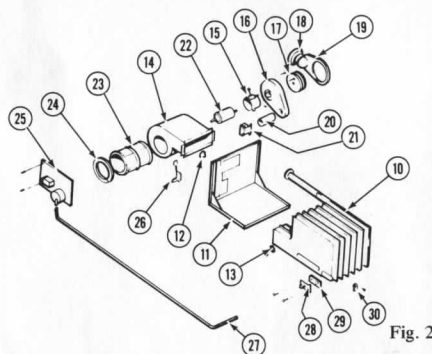


Fig. 2

NT-16FC – Burner Assembly Complete

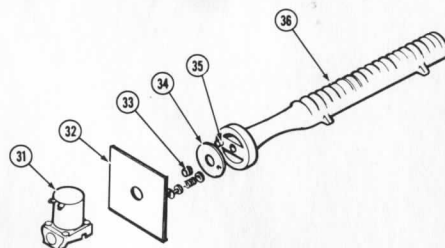


Fig. 3

Furnace Assembly NT-16

No.	Part No.	Description
1	X030402	Grill
2	X100666	Flange, adaptor, D.D. grille
3	050296	Collar duct
4	X100709	Cabinet outer assembly
5	100600	Front, outer cabinet
6	062123	Adaptor vent cap
7	—	Back cabinet assembly
8	260087	Cap vent
9	160737	Thermostat, Honeywell
10	—	Combustion chamber and radiator assembly
11	—	Panel
12	230303	Switch limit 140° 60T-11
13	230316	Switch, fan 190° 11T-13
14	X390071	Housing blower assembly
15	X061873	Mount motor assembly
16	X390075	Housing combustion air blower
17	350063	Wheel, combustion air blower
18	290107	Cup, vacuum intake
19	X062046	Air scoop, intake assembly
20	070290	Connector, cross-over tube
21	230275	Relay, thermostat
22	230291	Motor redmond
23	350066	Wheel large blower
24	390078	Ring, blower
25	230483	Module board
26	X230328	Switch micro assembly
27	230491	Electrode wire
28	230484	Electrode
29	—	Electrode gasket
30	290117	Observation hole cover
31	160739	Solenoid valve
32	030405	Door, combustion chamber
33	180194	Orifice, main burner No. 57, 11132
34	010533	Shutter, air
35	140091	Rod, air shutter adjustment
36	010532	Burner, cast iron

Cabinet and Vent Assembly NT-24M, NT-30M

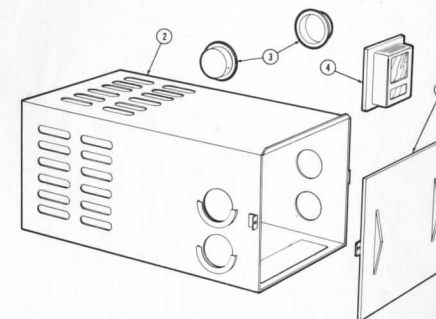


Fig. 4

Combustion Chamber Assembly Complete NT-24M, NT-30M

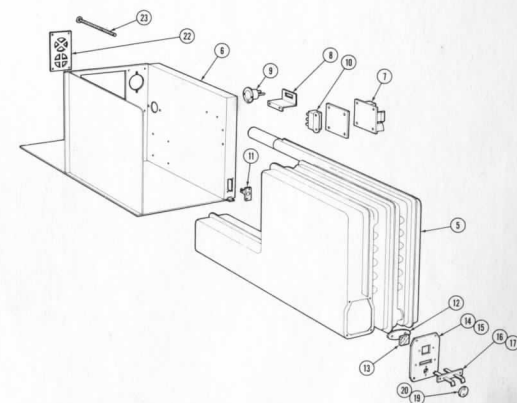


Fig. 5

**Burner Assembly Complete
NT-24M, NT-30M**

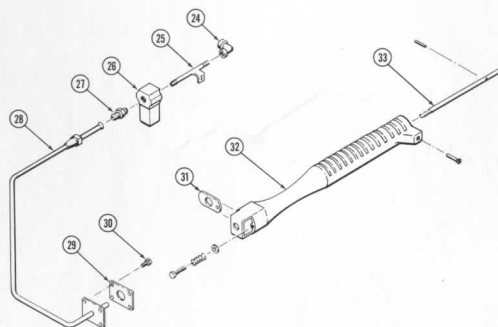


Fig. 6

**Blower Assembly Complete
NT-24M, NT-30M**

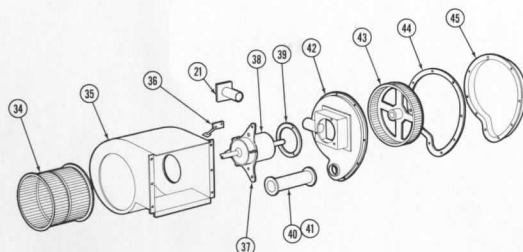


Fig. 7

Furnace Assembly NT-24M, NT-30M

No.	Part No.	Description
1	100808	Cabinet front
2	X100811	Cabinet assembly
3	050296	Duct collar
4	160737	Thermostat
5	X020785	Combustion chamber
6	X110319	Radiation shield assembly
7	230483	Modul board (Fenwal)
8	062135	Bracket (power supply)
9	230248	Fan switch
10	230423	Relay, thermostat RBM-150
11	230496	Limit switch
12	290120	Observation hole cover plate
13	310026	Observation glass disc
14	030451	Combustion chamber access door
15	070388	Access door gasket
16	230495	Electrode
17	070163	Electrode gasket
18	230491	Wire, electrode
19	290119	Air adjustment hole cover
20	070389	Air adjustment hole gasket
21	X050443	Tube, vent cap assembly
22	260088	Vent cap
23	121249	No. 8 x 3" sheet metal screw
24	170082	90° ell
25	X170494	Gas inlet pipe assembly
26	160739	Valve, essex
27	170375	Brass fitting 3/8 NPT 3/8 flare
28	X170493	Manifold pipe assembly
29	070387	Manifold pipe gasket
30	180215	Main burner orifice #54 (NT 24-M)
	180214	Main burner orifice #52 (NT 30-M)
31	010582	Shutter, burner air
32	010581	Burner, main
33	140146	Air adjustment rod
34	350076	Room air blower wheel (large)
35	390178	Room air blower housing assembly
36	X230510	Micro switch and paddle assembly (NT 24-M)
	X230509	Micro switch and paddle assembly (NT 30-M)
37	062138	Motor mount bracket
38	230504	Motor (NT 24-M)
	230339	Motor (NT 30-M)
39	070384	Motor mount gasket
40	050439	Crossover tube
41	070385	Crossover tube gasket
42	X390179	Combustion air housing assembly, left half
43	350077	Combustion air blower wheel (small)
44	070386	Combustion air housing gasket
45	390173	Combustion air housing (right side)

Electrical Wiring Diagrams NT-16FC

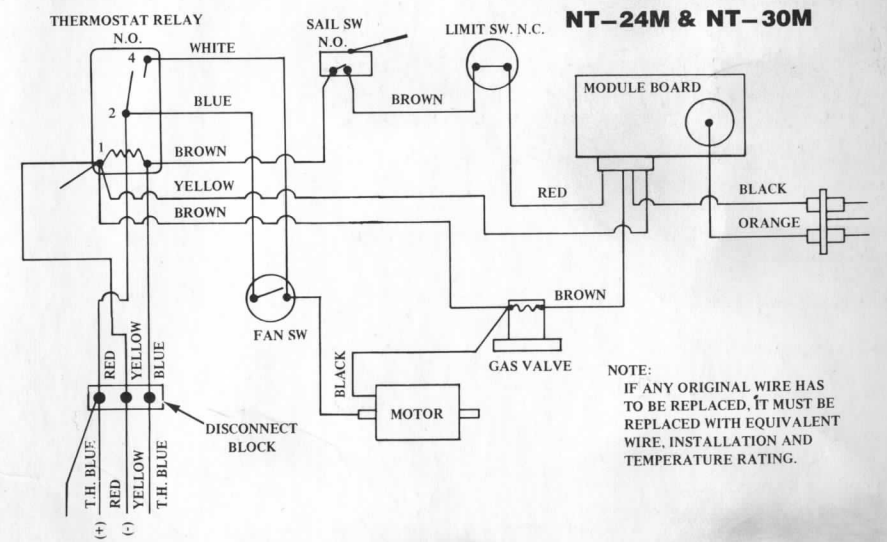
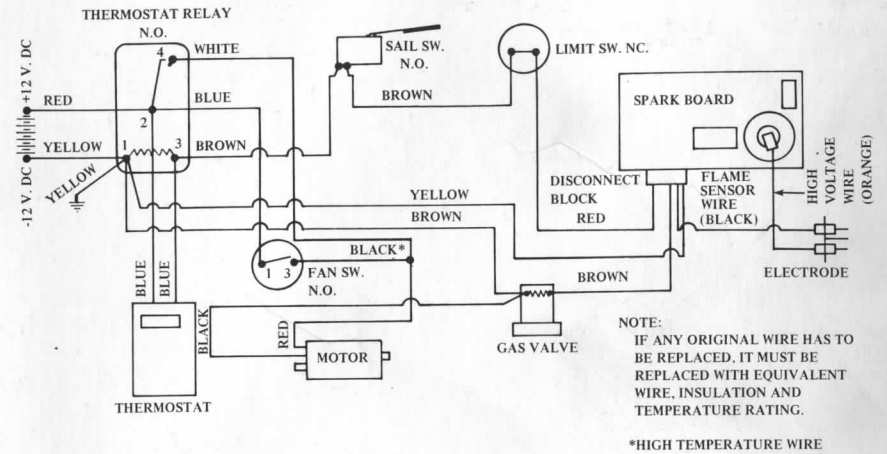


Fig. 8

Checking, Removal, Replacement and Maintenance

Furnace Removal and Replacement (All models except 21 Ft. and 27 Ft. Twin with optional L-Front Lounge)

1. Shut off gas supply.
2. Open lower tambour door.
3. Remove two screws attaching furnace cabinet front cover to cabinet, and remove cover.
4. Disconnect electrical connector.
5. Disconnect gas line.
6. Unscrew and remove L shaped gas line fitting.
7. Slide furnace assembly out of furnace cabinet.
8. To install, reverse removal procedures.

Furnace Removal & Replacement (21 Ft. & 27 Ft. Twin With Optional L-Front Lounge)

1. Shut off gas supply.
2. Drop hinged heater access door down for access to six screws mounted into frame of galley cabinet. There are three on the right side, three on the left, and one into the floor.
3. Face assembly with door can be removed as an assembly.
4. Remove two screws attaching furnace cabinet front cover to cabinet, and remove cover.
5. Disconnect electrical connector.
6. Disconnect gas line.
7. Unscrew and remove L shaped gas line fitting.
8. Slide furnace assembly out of furnace cabinet.
9. To install, reverse removal procedures.

Operating Instructions NT-16FC, NT-24M, NT-30M

1. To light the furnace, turn the manual valve to the "off" position and wait 5 minutes. Set the thermostat at its lowest setting. Open manual valve. Correct operating characteristics depend on this valve being positioned fully open. Never attempt to operate with valve partially closed.
2. Set thermostat on desired temperature.
3. Allow 15 seconds for main burner to light.
4. If burner does not light set thermostat on "off" wait 15 seconds and try again for ignition.
5. If after 3 tries and no ignition go to shut down and determine cause.

1 BURNER ADJUSTMENT

To adjust primary air to the main burner, the small sheet metal cover found just below and to the right of the lighter opening must be removed. Behind the cover is a slotted screw head. With a screwdriver, turn screw head counterclockwise for less primary air and clockwise for more primary air. A symptom of too much primary air will be a howling or screeching noise when the burner is on (reduce air to correct). A symptom of too little primary air will be sooting on the exterior vent and a distinct yellow and floating flame (increase air to correct). A slight trace of orange should remain at the tip of the burner flame — this is a sign of correct adjustment.

2. SEQUENCE OF NORMAL OPERATION

- a. When the thermostat calls for heat, the blower motor is energized immediately.
- b. As the blower motor reaches approximately 75 percent of the normal r.p.m. (within 3 to 5 seconds) the microswitch, in response to the air flow, will engage allowing current flow to the solenoid valve or base valve.
- c. The current to the valve opens it and allows gas to the main burner. The spark then ignites the main burner.
- d. After main burner ignition, the flame detector will sense the presence of flame (usually within 7 seconds) and deenergize the lockout feature. If the main burner does not ignite or the flame detector does not deenergize the lockout features within 17 seconds, the unit will go into lockout. At this time it will be necessary to set the thermostat on "off" wait 15 seconds and try again.
- e. If after 3 tries and no ignition or main burner continues to go off within 7 seconds, go to shut down and determine cause.
- f. If within a period of approximately 2 minutes after the main burner is lit, the thermostat is turned back, both the blower motor and solenoid valve are deenergized. However, if the furnace continues to run longer than 2 minutes, which it normally should, a slight snap can be heard from within the casing. The snap is caused by the fan switch as it changes its position. After this occurs, if the thermostat is satisfied or turned back, the solenoid valve will close, the flame on the main burner will go out, but the blower will continue to run for a short period of time and will then shut off. The purpose of this is to remove most of the remaining gases from the heat exchanger. Be assured that this period of blower override is a part of the unit's normal operation.

3. FAN SWITCH

The purpose of the fan switch is to control the sequence of the blower operation. The fan switch is a two pole switch. When the bimetal disc of the fan switch is heated to the operating temperature, the switch closes. This completes a circuit through the motor from a direct source. The blower will continue to run as long as the chamber is hot even though the thermostat is satisfied and the main burner is off. When the chamber cools, the fan switch changes back to its original position and shuts the blower off. If burner and blower shut off simultaneously after thermostat is satisfied, then the fan switch failed change over. This is a symptom of a faulty switch — replace it.

4. LIMIT CONTROL

The purpose of the limit control is to turn off the gas to the main burner if, for any reason, the furnace becomes hotter than is safe. Improper operation of the furnace, due to the limit control, does not always indicate a defective control. If the circulating air is blocked or only partially so, the limit control will function and cause the main burner to cycle. Cycling on the limit is not always undesirable — if it happens only occasionally. This is a good indication of safe operation and will most likely happen on a warm day. If cycling happens too often or for an extended period, the circulating air system should be thoroughly cleaned.

If the limit control is found to be defective, there is no recommended method of repairing it. Because of its importance for safety reasons, it should be replaced with a new one.

CAUTION: Never shut the limit control even for temporary operation.

5. MICROSWITCH

The microswitch has two purposes.

- a. It is an "air prover." It operates in response to the current of air generated by the blower. Hence, if the air from the blower is not sufficient, the switch will not operate. This may be caused by a slow motor due to low voltage, restricted return air, or lint accumulation on the blower wheel.
- b. The switch allows time for the blower to pull in a sufficient amount of air to support combustion before it engages. Once it engages, the solenoid valve opens, gas flows to burner, and ignition occurs.

6. BLOWER ASSEMBLY

Pages 9-2 and 9-3 show a breakdown of the blower assembly. Although one motor drives all wheels, the blowers are separate. The combustion-air blower is sealed so no air will pass between it and the circulating room-air blower. The combustion air blower draws air from the outside atmosphere, discharges it into the combustion products out the exhaust tube. The circulating room-air blower pulls return air in and forces it across the heat chamber, discharging into the area to be heated.

Maintenance and Cleaning

The Suburban Dyna-Trail unit does not require any routine maintenance or cleaning.

If the main burner has been allowed to operate with a high yellow flame, a soot formation is sometimes deposited inside the combustion chamber. The carbon deposit may be of such quantity that cleaning will be necessary. To clean the combustion chamber, there is an access hole on the front of each radiation chamber. A vacuum cleaner is ideal to clean out any carbon deposit.

The Dyna-Trail is equipped with an oiled, sealed motor and requires no oiling.

Heater Removal Preparation

1. Open lower doors of galley cabinet.
2. Open tambour door as far as possible.
3. Remove screws along bottom side of lower tambour door track extrusion and remove lower track.
4. Remove shelf facing that is just behind and above lower door track extrusion.
5. Remove 4 screws securing short sections of vertical style extrusions on either side of furnace.
6. Remove screws securing kick panel, drop down and remove with door attached.
7. Furnace is now ready for removal. Refer to specific model information for heater removal.

Service Hints, Diagnosis, and Corrective Measures

1. COMPLAINT — NO HEAT

- Thermostat off — Check to be sure thermostat is calling for heat. Wire to thermostat could be off terminal.
- Gas supply — Be sure manual gas valve is in the open position (parallel to gas line).
- Pilot — Check to be sure pilot is lit (pilot outage discussed in "B" category).
- Electrical connections and power — Battery must be charged. If battery is low, there will be sufficient power to run the blower, but not enough to run the blower at full speed. If blower doesn't run at its prescribed speed, the microswitch cannot be engaged and gas will not flow to the main burner. Be sure the connection of the voltage lines in the terminal block are tight.
- Malfunctioning microswitch — Be sure the microswitch is sailing in far enough to open the solenoid valve and to energize the spark module board. If the switch is not sailing in, clean any dust or dirt from the actuator pin. Other reasons for switch not sailing in are:
 - Insufficient blower speed (slow motor due to low charged battery, faulty motor, lint and dust accumulation on the blower wheels, or restriction of return air to heater). Check wiring in accordance with unit's wiring diagram to assure the proper polarity of the 12-volt d.c. power supply. This polarity must be observed so the motor will run the proper direction of rotation to insure correct air delivery.
 - Faulty microswitch — Replace switch if valve doesn't open when switch is manually engaged. Switch should also be replaced if battery is fully charged and blower motor running at top speed fails to engage switch within 6 to 7 seconds.

NOTE: To service switch, combustion chamber must be pulled out.

- Solenoid valve — With test light, check solenoid valve terminals in the terminal block. If current is present, but valve is not opening (when microswitch engages), replace solenoid valve. The chamber must also be removed to check the above. To replace the solenoid valve it is necessary to remove the chamber. The valve may be replaced by:
 - Shutting off manual gas valve.
 - Removing the four Phillips head screws holding valve head to body and then remove valve head. Replace with new valve head.

g. Blower not operating — Check for burned-out motor.

h. Short cycling (fan switch) — If burner and fan shut off simultaneously when the thermostat is satisfied it indicates a shorted fan switch. Replace switch (chamber must be removed).

j. Defective relay — Relay may be faulty if motor fails to start when thermostat calls for heat. This will be evidenced by a "click" when the thermostat is raised and motor fails to operate.

2. COMPLAINT — ELECTRODE NOT SPARKING

With blower running and microswitch engaged check the following:

- Check for 12 volts at spark module board. If no voltage, check back through circuit to determine cause.
- Voltage is present but module board is not flashing — replace module board.
- Module board is flashing but electrode still not sparking — check electrode wire connections.
- Wire connections O.K. but not sparking through when removed from electrode and grounded — replace electrode wire.
- Electrode wire sparking against ground when removed from electrode — replace electrode assembly.

3. COMPLAINT — ELECTRODE SPARKING AND GAS VALVE OPENING BUT BURNER WILL NOT LIGHT

Be sure electrode is positioned approximately 3/16" above and directly over one of the sawed slots on the main burner.

4. COMPLAINT — BURNER IGNITES BUT GOES OFF AND INTO LOCKOUT

Be certain that flame sensor is over one of the slots in main burner. Adjust by loosening wing nuts and slide burner in direction necessary. Still goes into lockout — replace module board.

5. COMPLAINT — EXCESSIVE NOISE

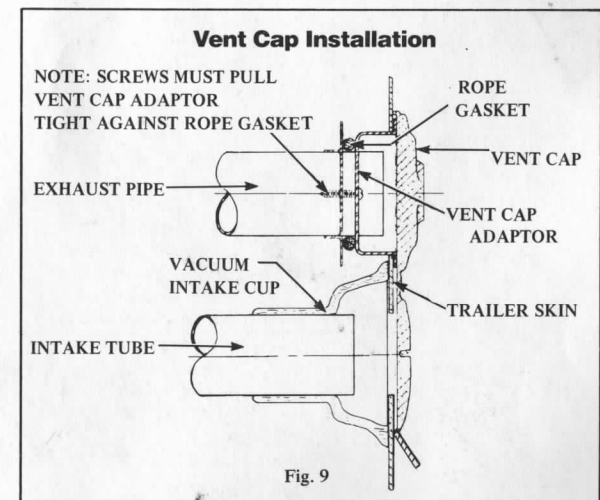
- Blower out of balance — Replace blower.
- Motor hum — Replace motor.
- Air adjustment — A screeching or howling noise while burner is on is due to excessive primary air. To adjust for less air see instructions on page

6. COMPLAINT — ERRATIC BLOWER OPERATION

- Automatic blower motor overload switch may be defective — Replace blower motor. Symptom will be blower cycling off and on rapidly after unit heats up.
- Blower assembly may be loose causing squirrel cage wheel to drag — Check assembly — secure if loose.

7. COMPLAINT — UNIT WILL NOT OPERATE

- Check all wiring to assure proper connections or detect possible shorts.
- If furnace thermostat is observed opening and closing rapidly when furnace starts, the gas valve may be shorted or a wire may be shorting out. Replace gas valve if symptom stops when gas valve is disconnected from circuit.



Component Replacement Procedure

Components	Procedures	Components	Procedures	Components	Procedures
1. Replace gas valve NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Remove chamber assembly. h. Remove two valve wires. j. Remove valve and replace.	5. Replace main burner NT-24M NT-24M	h. Disconnect wires at valve. j. Remove burner assembly and replace main burner orifice.	8. Replace microswitch NT-16 FC	j. Remove wires. k. Remove switch.
2. Replace gas valve NT-16 FC	a. Remove exterior vent cap (4 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical wires to furnace. d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Disconnect valve wires at valve. g. Remove valve and replace.	6. Replace main burner NT-16FC	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws. f. Remove 3" screw (center of exhaust, outside). g. Disconnect manifold tubing. h. Remove screws from burner compartment door. j. Remove main burner orifice.	9. Replace motor NT-24M NT-30M	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Disconnect gas manifold. g. Remove burner compartment cover screws. h. Remove burner assembly. j. Remove burner from manifold pipe and replace.
3. Replace main burner orifice NT-24M NT-30M	a. Remove exterior vent cap (4 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical wires to furnace. d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Disconnect valve wires at valve. g. Remove valve and replace.	7. Replace microswitch NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Remove chamber assembly. h. Remove two screws and nuts holding microswitch assembly to blower housing.	10. Replace motor NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Loosen screw on motor bracket. g. Remove screws from combustion blower wheel cover. Remove cover. h. Loosen Allen screw on combustion blower wheel and remove wheel.

Components	Procedures	Components	Procedures	Components	Procedures
	j. Remove blower flange (rim) on blower housing. k. Disconnect motor electrical leads and pull through blower housing opening. l. Remove motor and blower wheels. m. Loosen Allen screw on circulating wheels and remove from motor shaft. n. Replace motor.		c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Remove chamber assembly. h. Remove two wires from limit switch. j. Remove limit switch.	17. Replace large blower wheel NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the four vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove microswitch wires. j. Disconnect motor wires. k. Remove blower from firewall. l. Remove large blower with 1/8" Allen wrench.
11. Replace blower assembly NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Remove chamber assembly. h. Disconnect microswitch wires. j. Remove microswitch. k. Remove screws holding blower to firewall. l. Remove metal crossover tube. m. Remove blower.	14. Replace limit switch NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Remove wire leads to limit switch. g. Remove screws from limit switch and replace switch.		
		15. Replace fan switch NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the four vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove 2 wires from fan switch. j. Remove fan switch.	18. Replace large blower wheel NT-16 FC	a. Remove exterior vent cap (6 screws) b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wire to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Remove screws (3) from blower housing flange. g. Loosen Allen screw on blower wheels. h. Remove blower wheels and replace.
12. Replace blower assembly NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Disconnect microswitch leads. g. Remove screws from blower assembly which secures assembly to radiation shield. h. Remove wires from combustion blower housing clip. j. Disconnect leads from motor to relay and limit switch. k. Remove blower assembly and replace. l. CAUTION: When replacing assembly, be sure rubber crossover tube between burner tunnel and blower assembly is securely installed in place.		a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Disconnect leads to fan switch (2 wires). g. Remove fan switch mounting screws and replace switch.	19. Replace small blower wheel NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the four vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove two microswitch wires from terminal block. j. Disconnect motor wires. k. Remove blower from firewall. l. Remove screws on motor housing. m. Remove small blower with 1/8" Allen wrench.
13. Replace limit switch NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting.	16. Replace fan NT-16 FC			

Components	Procedures	Components	Procedures	Components	Procedures
20. Replace small blower wheel NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Remove wires from blower assembly wire clip. g. Remove screws from plastic combustion blower wheel cover — remove cover. h. Loosen Allen screw on combustion blower wheel. j. Remove wheel and replace.	24. Replace chamber only NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber tiedown screw from front of chamber assembly. f. Remove combustion chamber assembly. g. Disconnect gas valve leads. h. Remove blower housing mounting screws. j. Disconnect microswitch leads to limit switch. k. Disconnect motor leads to limit switch. l. Remove relay mounting screws and remove relay. m. Disconnect fan switch leads. n. Remove blower assembly. p. Remove burner compartment cover screws. q. Remove manifold and burner assembly. r. Remove module board. s. Remove electrode assembly. t. Remove two screws to limit switch and remove limit switch. u. Remove Two screws to fan switch and remove fan switch.	27. Replace burner assembly NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Remove blower housing screws. g. Disconnect gas valve leads. h. Move blower assembly far enough to gain access to burner compartment door. j. Remove screws from burner compartment cover. k. Remove burner assembly and replace.
21. Replace complete chamber assembly NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the four vent cap screws (outside) f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly.		k. Disconnect relay leads to limit switch.	28. Replace vent cap NT-16 FC	a. Remove four vent cap screws.
22. Replace complete chamber assembly NT-16 FC	a. Remove exterior vent cap (6 screws) b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace. d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly.	25. Replace thermostat NT-16 FC NT-24M NT-30M	a. Turn power off or thermostat to "off" position. b. Remove thermostat cover. c. Remove two screws holding thermostat body to wall. d. Remove two wires.	29. Replace vent cap NT-24M NT-30M	a. Remove 4 vent cap screws (outside). b. Remove 3" screw (center of exhaust, outside).
23. Replace chamber only NT-24M NT-30M	a. Disconnect gas and power supply. b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove chamber from chamber wrapper. j. Remove electrode assembly.	26. Replace burner assembly NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnect). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the four vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove two valve wires. j. Remove screws from burner compartment door. k. Remove burner assembly.	30. Replace thermostat relay NT-16 FC	a. Remove exterior vent cap (6 screws). b. Shut off gas at gas shutoff valve. c. Disconnect electrical lead wires to furnace (quick disconnect). d. Remove nipple from manifold (right rear of cabinet). e. Remove combustion chamber assembly. f. Remove screws from relay. g. Disconnect electrical leads to relay and replace.
				31. Replace thermostat relay NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnects). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove screws from relay. j. Disconnect electrical leads to relay and replace.

Components	Procedures
32. Replace module board NT-16 FC	a. Disconnect gas and power supply (quick disconnects). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove electrode wire at board. g. Disconnect wiring at board (quick disconnect). h. Remove board.
33. Replace module board NT-24M NT-30M	a. Disconnect gas and power supply (quick disconnects). b. Disconnect gas manifold from piping at union fitting. c. Remove cabinet front. d. Remove shipping screw securing chamber shield to cabinet. e. Remove the 4 vent cap screws (outside). f. Remove 3" screw (center of exhaust, outside). g. Pull chamber assembly. h. Remove electrode wire at board. j. Disconnect wiring at board (quick disconnect). k. Remove board.

Heat Duct System (21 Ft.)

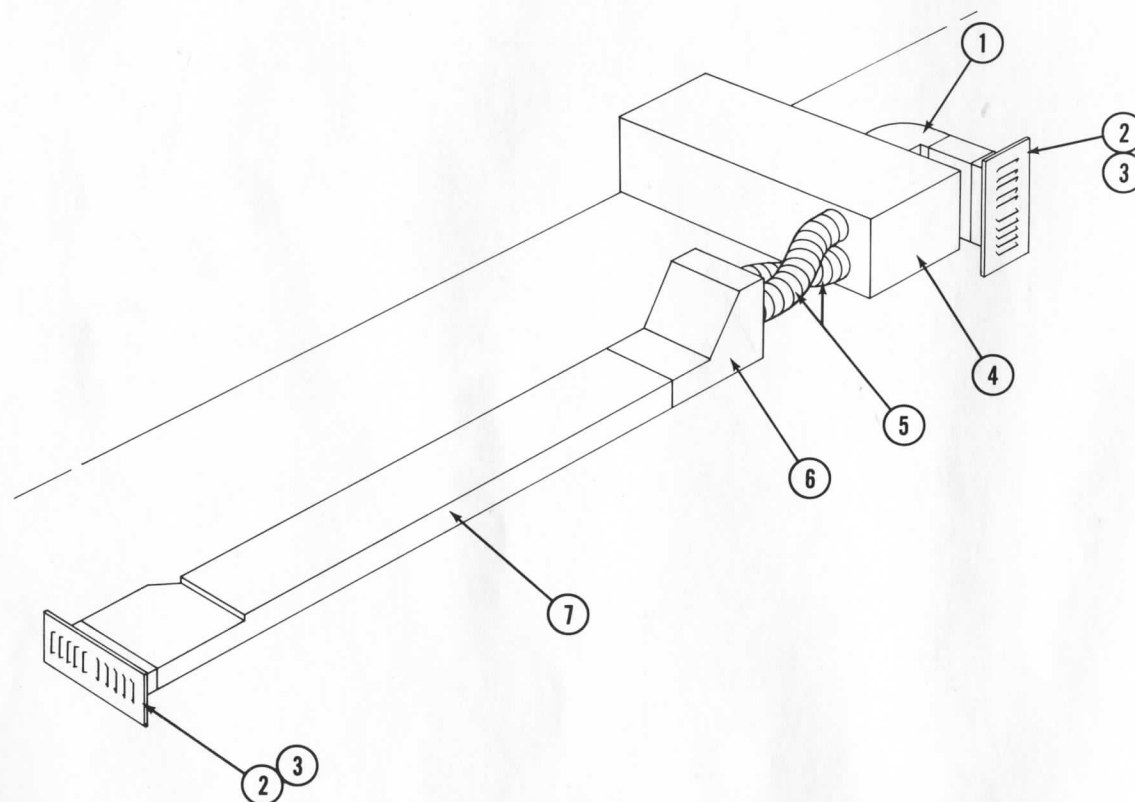


Fig. 10

No.	Part No.	Description
1	600679	Heat duct transition
2	600678	Grille
3	600653	Grille adapter
4	—	Furnace
5	600247	Heat duct 4" diameter thermaflex
6	600576	Heat duct transition
7	600354	Heat duct transition

Heat Duct System (23 & 25 Ft.)

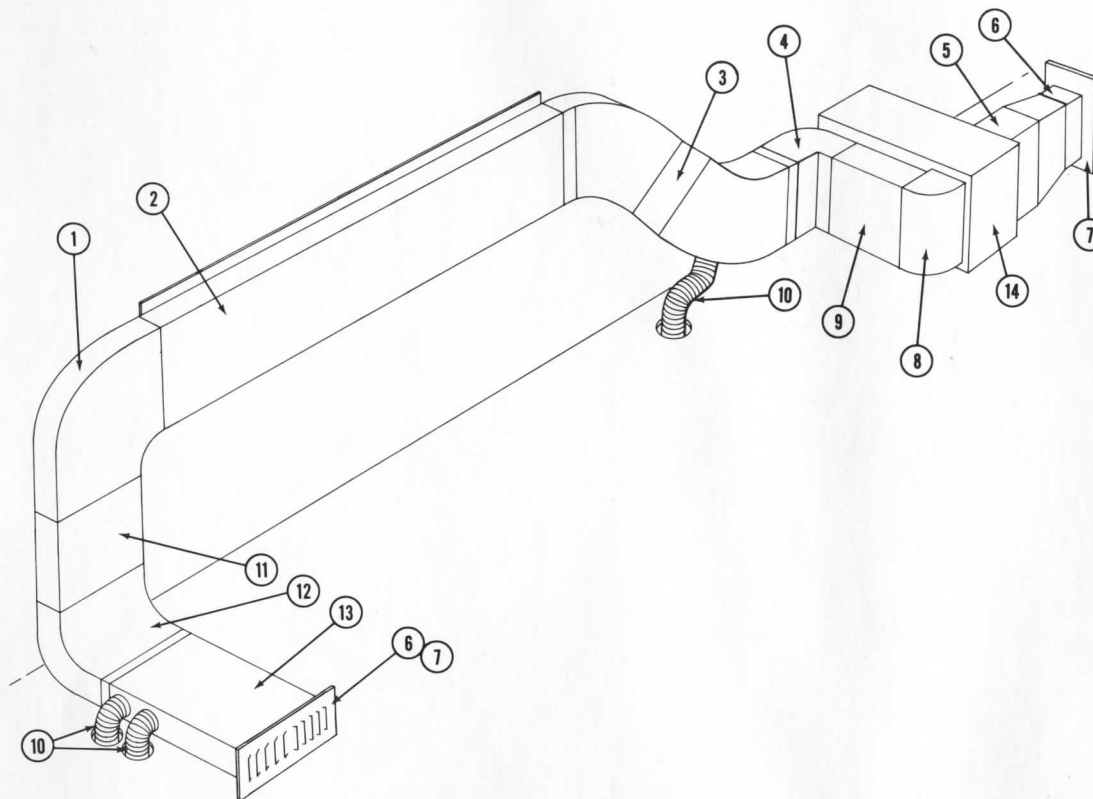


Fig. 11

No.	Part No.	Description
1	600675	Heat duct
2	600705	Heat duct
3	600692	Heat duct
4	600693	Heat duct
5	600694	Heat duct
6	600678	Grille adapter
7	600653	Grille
8	600680	Heat duct
9	600683	Heat duct
10	600193	Heat duct 2" diameter thermaflex
11	600703	Heat duct
12	600677	Heat duct
13	600688	Heat duct
14	—	Furnace

Heat Duct System (Full Bath)

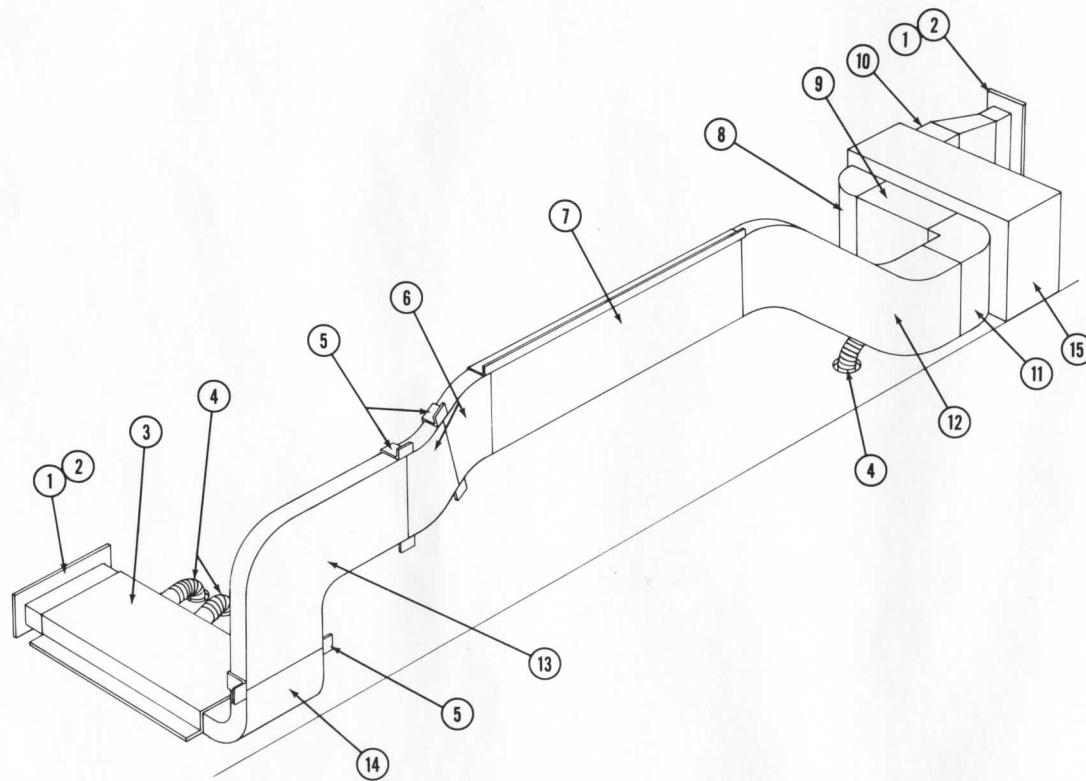
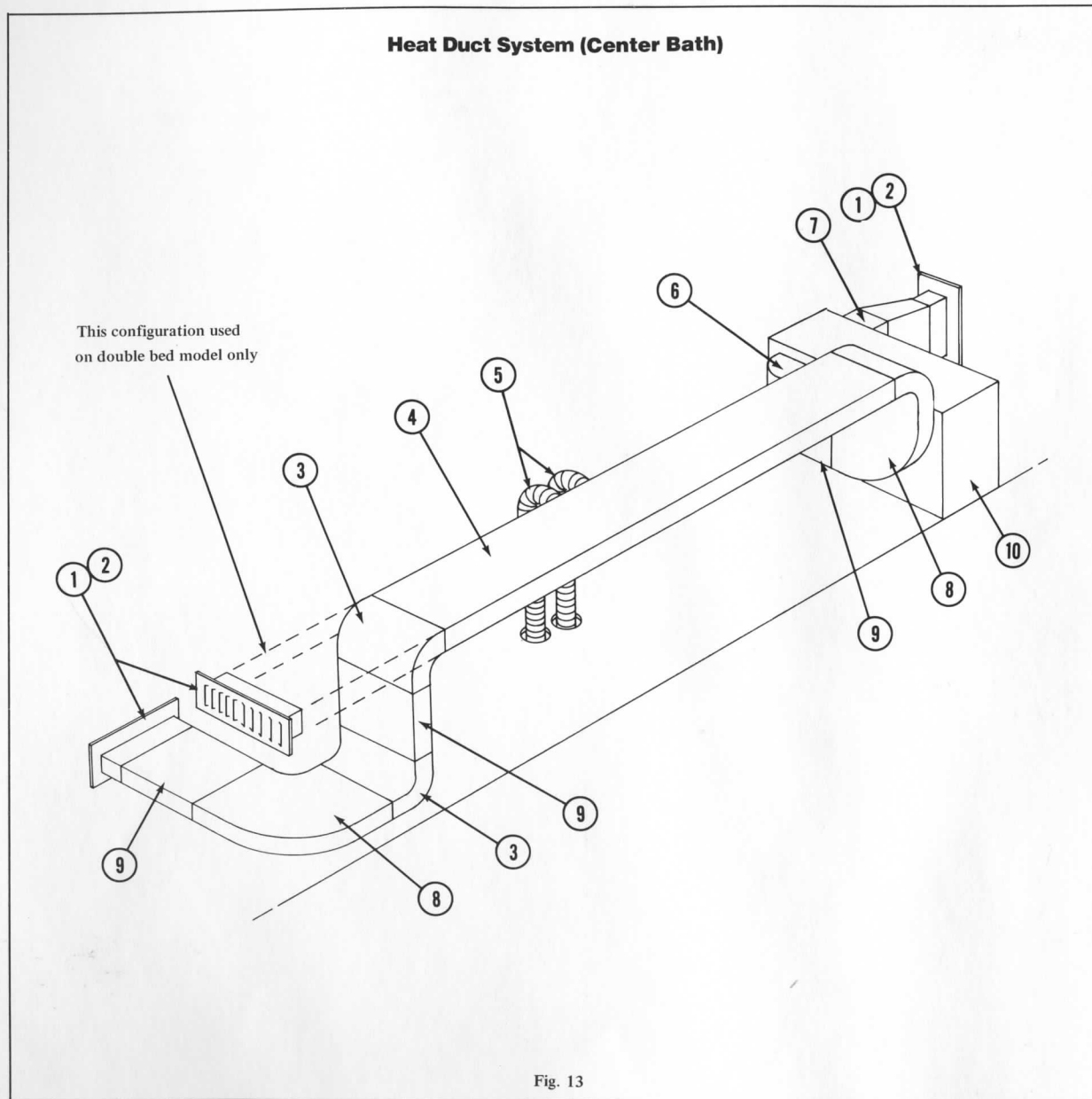


Fig. 12

No.	Part No.	Description
1	600678	Grille
2	600653	Grille adapter
3	600688	Heat duct
4	600193	Heat duct 2" diameter thermaflex
5	600687	Fastener strap
6	600676	Heat duct
7	600685	Heat duct
8	600680	Heat duct
9	600683	Heat duct
10	600694	Heat duct
11	600693	Heat duct
12	600692	Heat duct
13	600675	Heat duct
14	600677	Heat duct 90° elbow
15	—	Furnace

Heat Duct System (Center Bath)



No.	Part No.	Description
1	600678	Grille
2	600653	Grille adapter
3	600677	Heat duct 90° elbow
4	600683	Heat duct
5	600193	Heat duct 2" diameter thermaflex
6	600688	Heat duct
7	600694	Heat duct
8	600699	Heat duct
9	600683	Heat duct
10	—	Furnace

Heat Duct System (Excella Rear Bath)

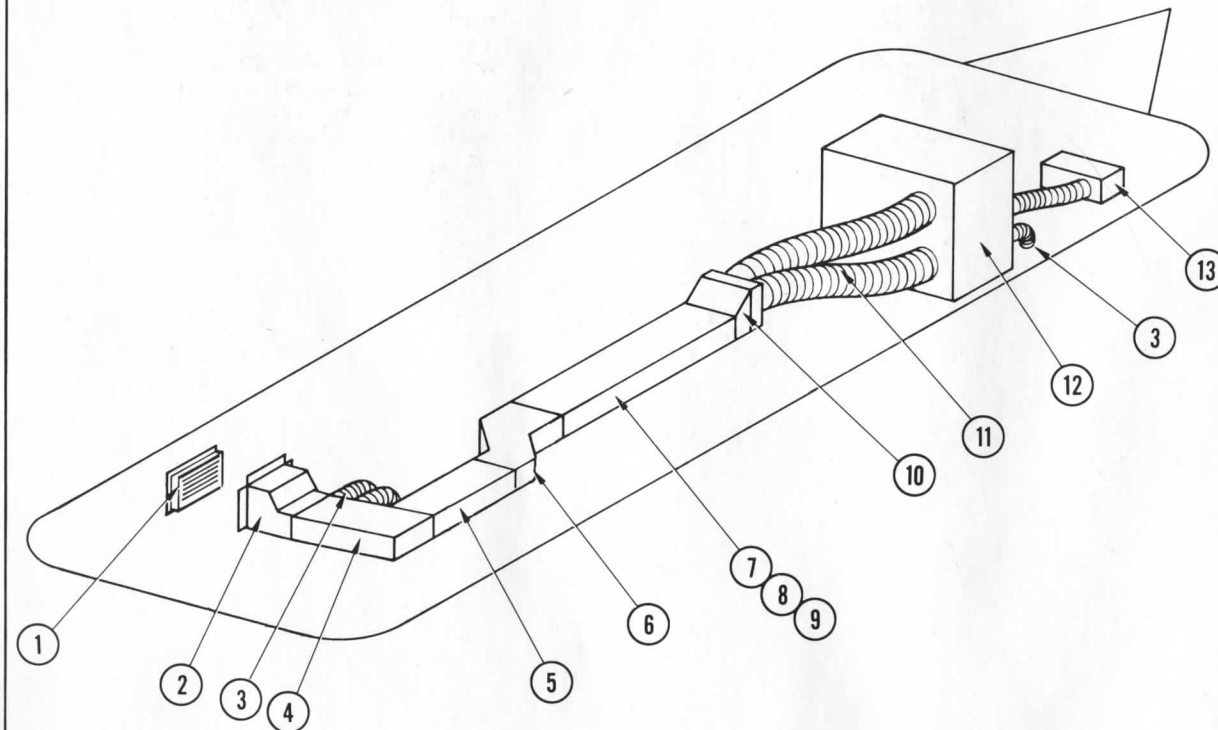


Fig. 14

No.	Part No.	Description
1	600291	Outlet cover
2	600263	Fitting
3	600593	Heat duct - thermaflex
4	600577	Heat duct
5	600354	Heat duct
6	600264	Fitting offset horizontal
7	600358	Heat duct 90''
8	600357	Heat duct 78''
9	600356	Heat duct 6C''
10	600576	Fitting
11	600247	Heat duct - thermaflex
12	-	Furnace
13	600591	Fitting

Heat Duct System (Excella Center Bath Twin)

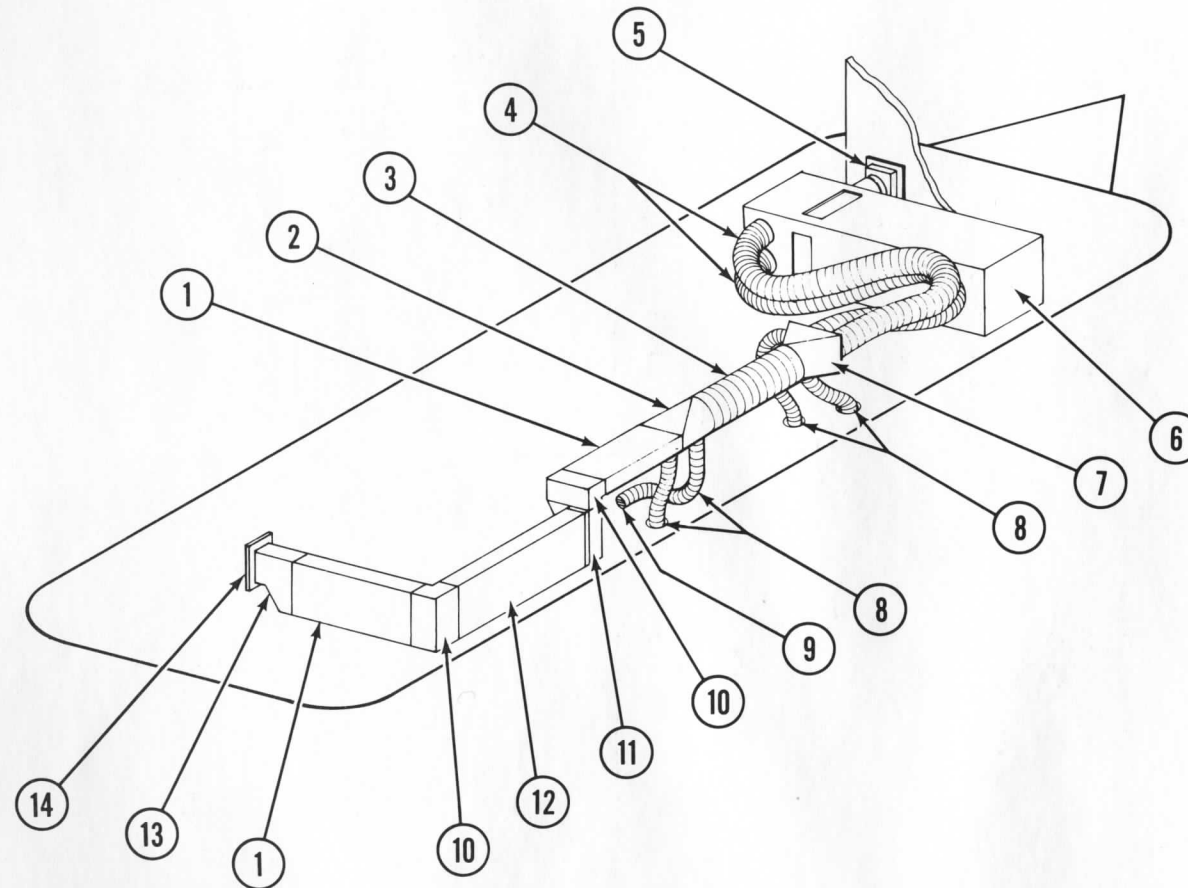


Fig. 15

No.	Part No.	Description
1	600417	Heat duct
2	600392	Heat duct fitting, transition
3	600412	Heat duct - 6" dia. - aluminum 56" long
4	600247	Heat duct - 4" dia. - thermaflex
5	600413	Register
	600415	Heat duct fitting adapter, 31T
6	-	Furnace
7	600393	Heat duct fitting, transition
8	600193	Heat duct - 2" dia. - thermaflex
9	600414	Register (bathroom)
10	600395	90° heat duct fitting, transition
11	600394	Heat duct fitting, transition
12	600418	Heat duct, rectangular
13	600416	Heat duct fitting adapter
14	600291	Register (bedroom)

Heat Duct System (Excella Center Bath Double)

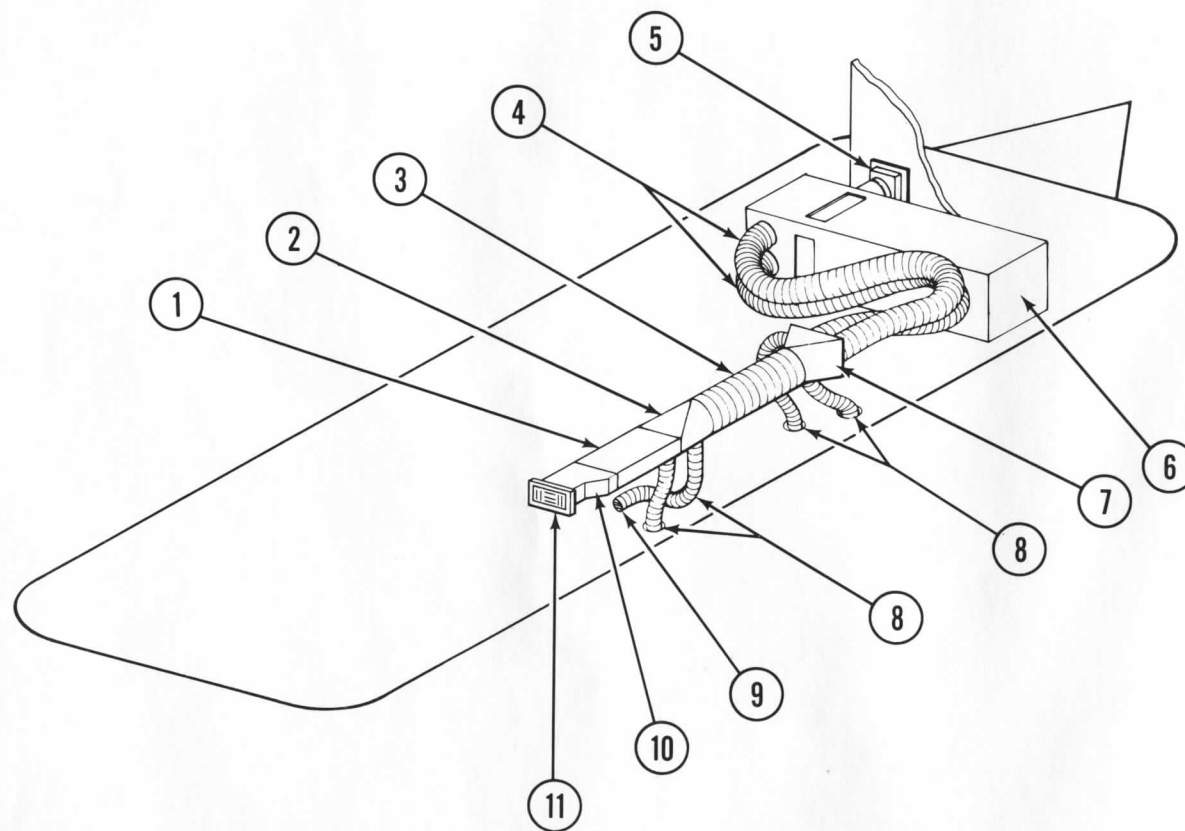
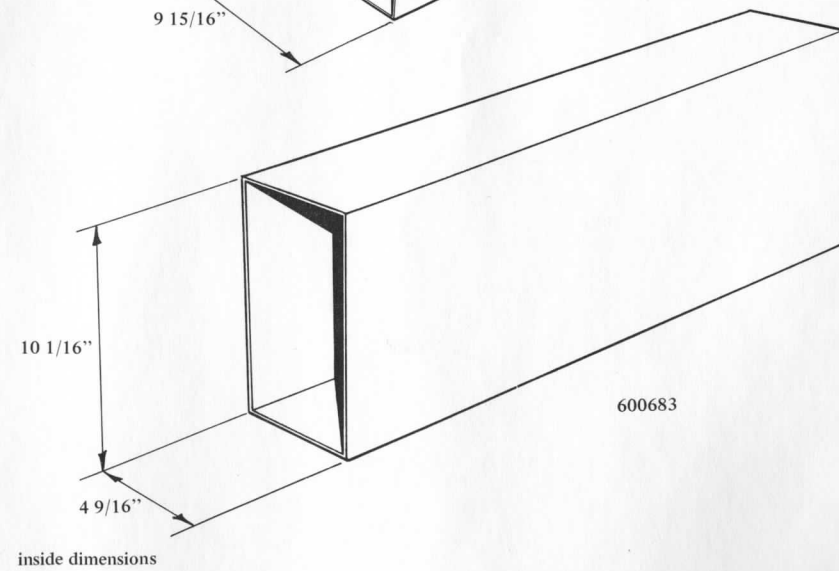
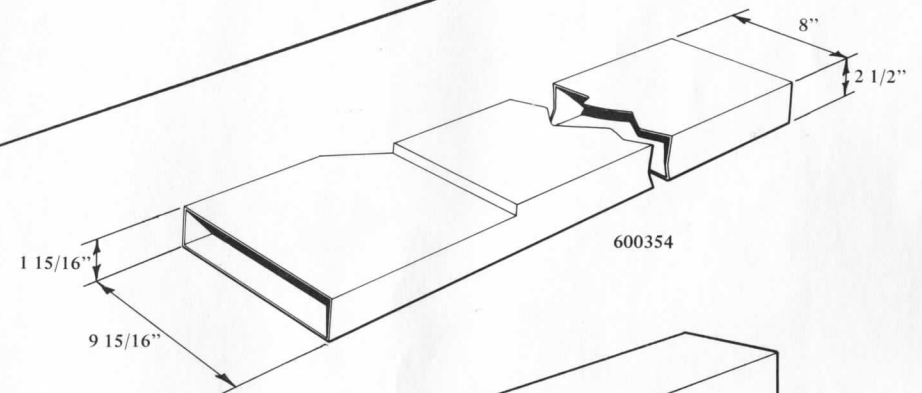
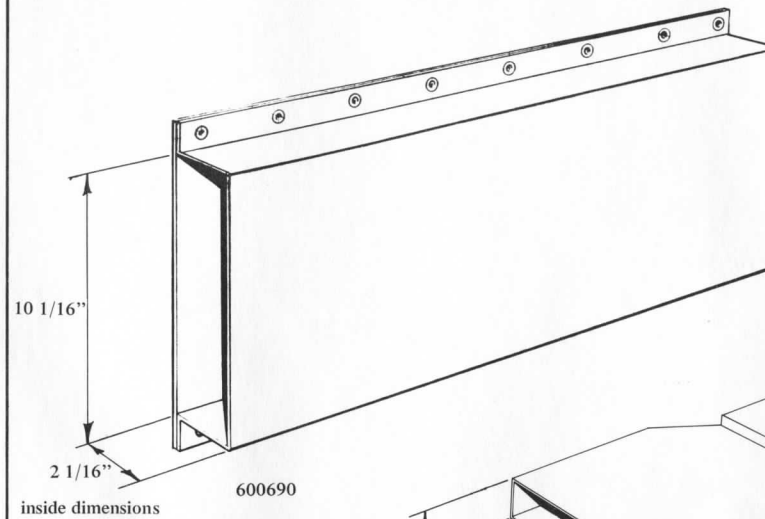
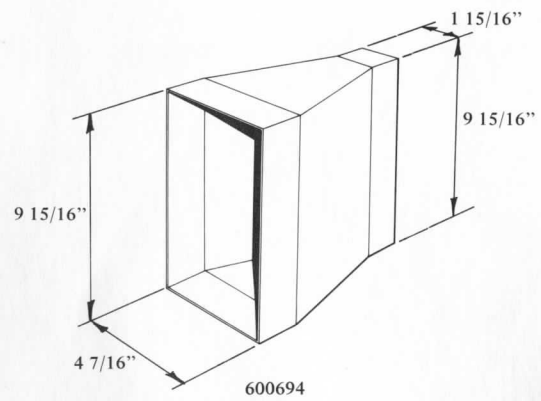
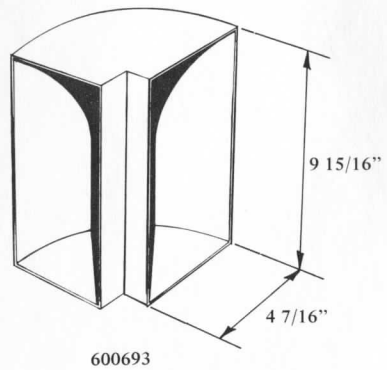


Fig. 16

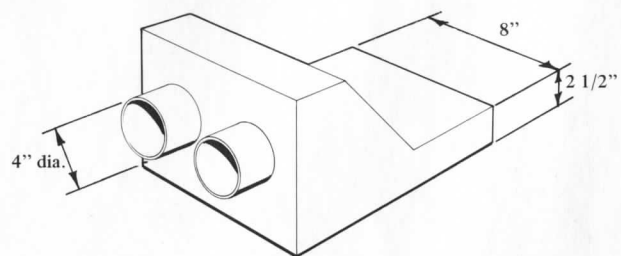
No.	Part No.	Description
1	600419	Heat duct
2	600392	Heat duct fitting, transition
3	600412	Heat duct - 6" dia. - aluminum 56" long
4	600247	Heat duct - 4" dia. - thermaflex
5	600413	Register
	600415	Heat duct fitting adapter, 31D
6	-	Furnace
7	600393	Heat duct fitting, transition
8	600193	Heat duct - 2" dia. - thermaflex
9	600414	Register (bathroom)
10	600421	Heat duct adapter fitting
11	600291	Register (bedroom)

Heat Duct Fittings

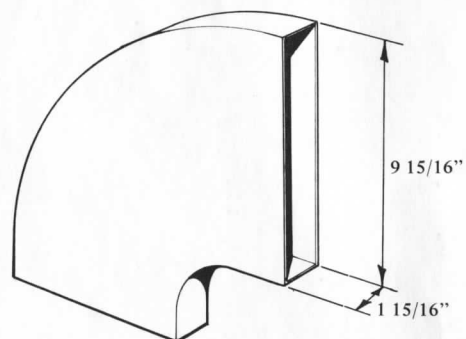
NOTE: All dimensions are outside dimensions, except as noted.



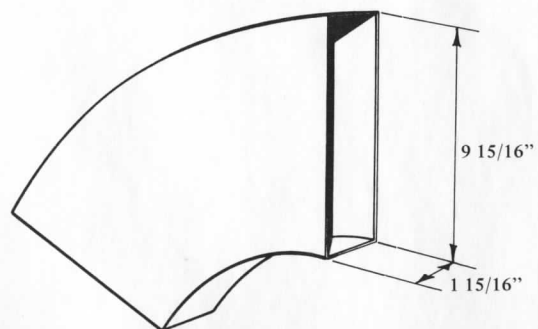
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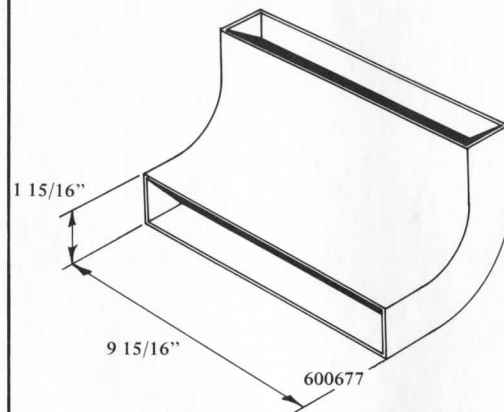
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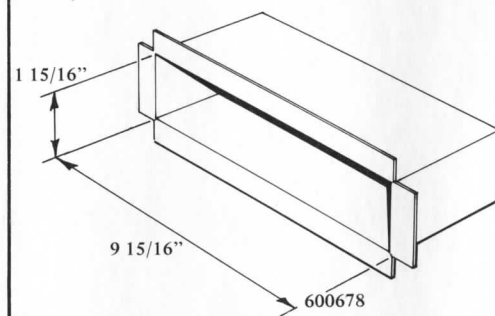
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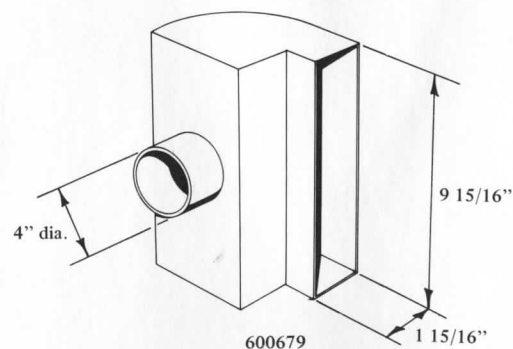
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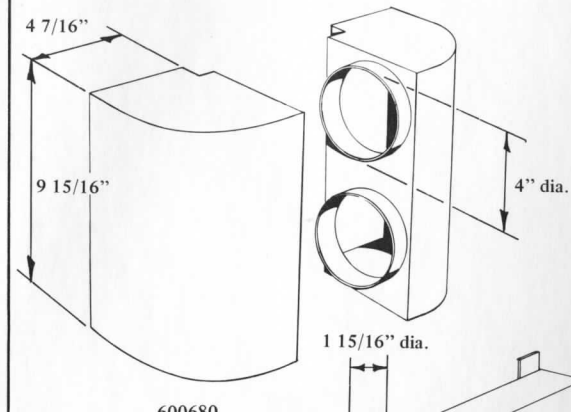
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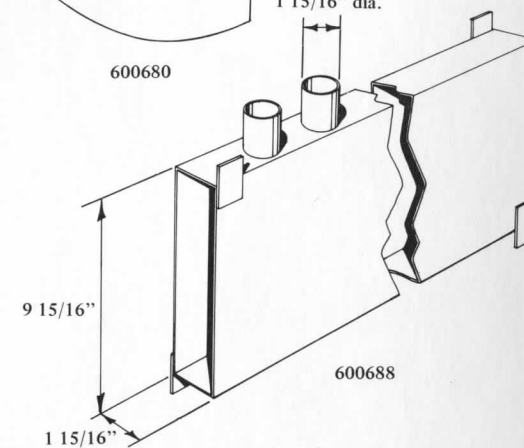
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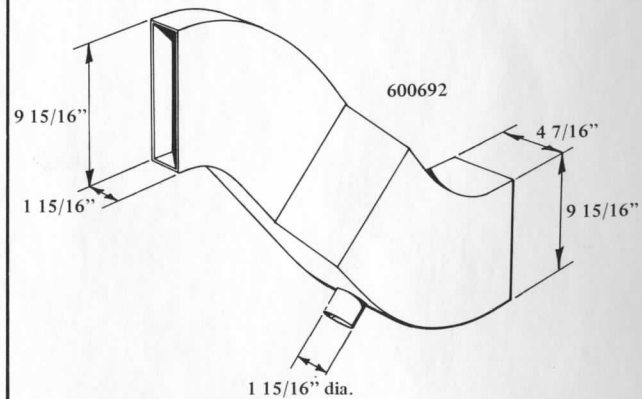
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600680



600688



600692