

OS12 SERIES UNITS (105, 125, 155, 185, 250 & 310)

I - INTRODUCTION

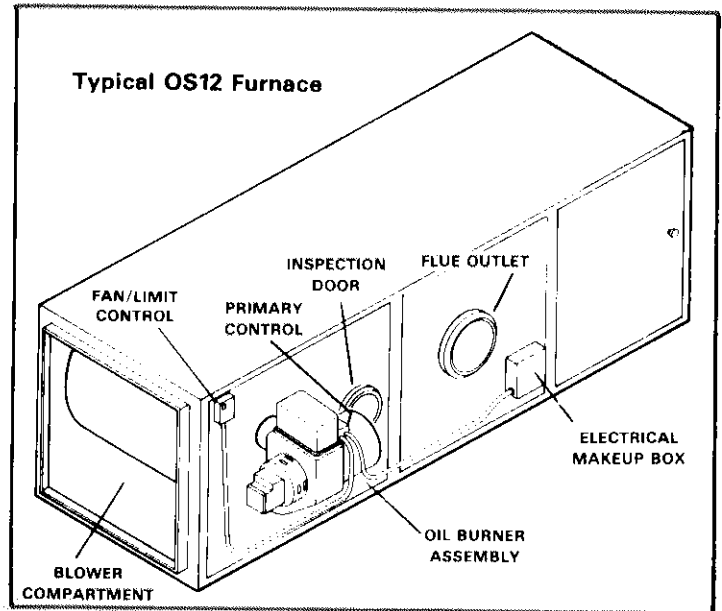
OS12 horizontal furnaces use DM and DMR series oil burners. The unit is shipped standard with either a single or two stage oil pump depending upon the size of the unit. Table 1 lists the oil burner model numbers applicable to each size furnace.

Units are sent standard for a single line system, but the oil pump can be converted for two line operation by installing the by-pass plug provided in attached bag according to accompanying instructions. Never operate the pump with a single line when by-pass is installed. This will ruin the bearing seal and damage the pump.

Units are shipped with standard nozzles. The "Nozzle Information" lists nozzle capacities.

TABLE 1

Unit Model No.	Burner Model Number
OS12Q3-105	DMR-10A (single stage)
OS12Q3-125	DMR-10A (single stage)
OS12-155	DMR-15A (two stage)
OS12-185	DMR-15A (two stage)
OS12-250	DM-25 (two stage)
OS12-310	DM-25 (two stage)



II - UNIT INFORMATION

A - Specifications

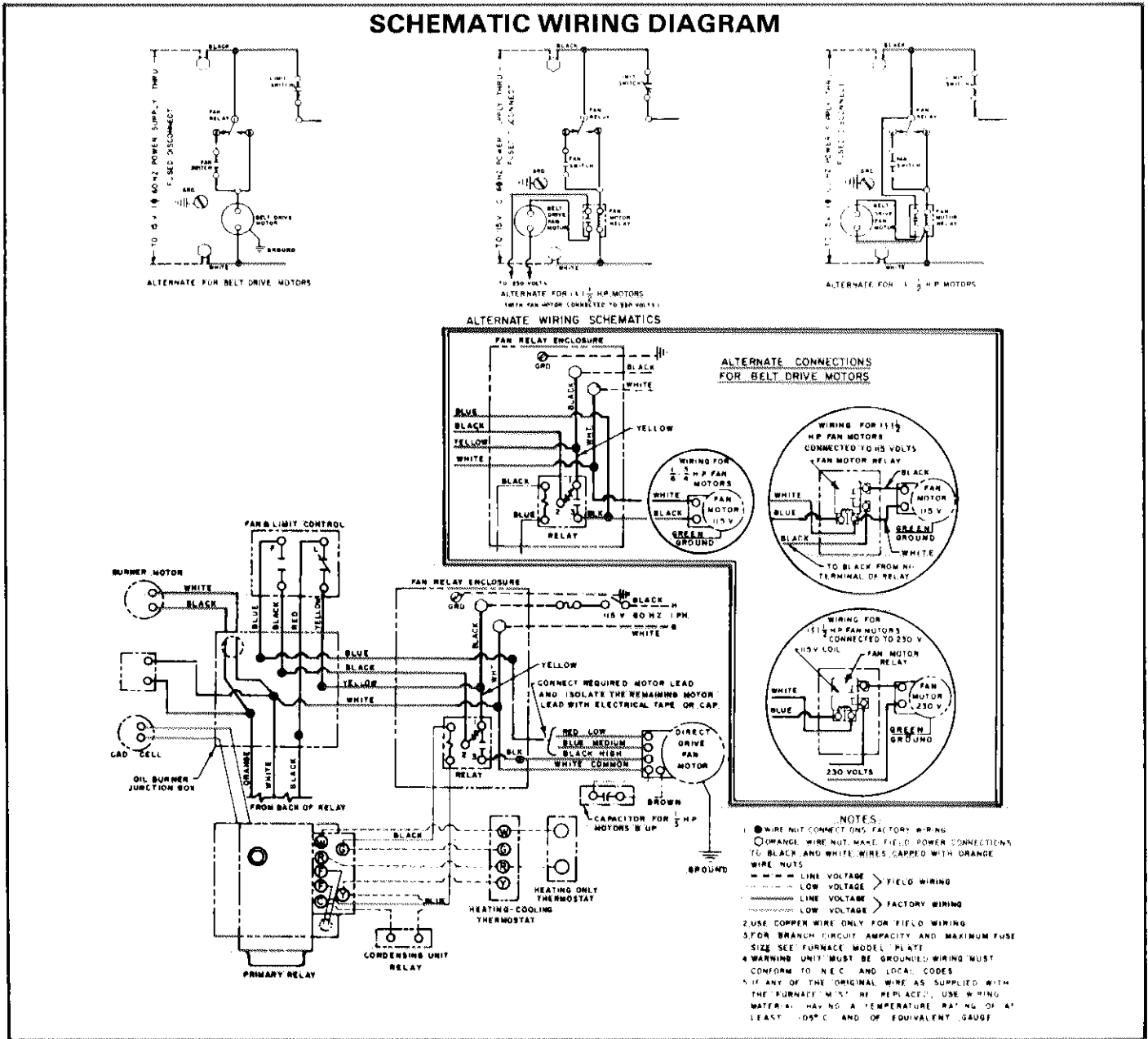
Model Number		OS12Q3-105	OS12Q3-125	OS12-155	OS12-185	OS12-250	OS12-310
Input Btuh		105,888	125,393	156,045	188,090	249,660	312,075
Output Btuh	Unconditioned Space	81,000	96,000	120,000	145,000	200,000	250,000
	Conditioned Space	84,000	100,000	124,000	150,000		
A.F.U.E.	Unconditioned Space	76.2	76.5	76.8	77.1	---	---
	Conditioned Space	79.0	79.0	79.0	79.0		
Nozzle Rating (gph)		.76	.90	1.10	1.35	1.75	2.25
Oil Burner Pump		1 Stage	1 Stage	2 Stage	2 Stage	2 Stage	2 Stage
Filters - No. and Size (in.)		(1) - 20x20x1	(2) - 20x20x1	(2) - 20x20x1	(2) - 20x20x1	(2) 20x25x1	(4) - 15x20x1
Flue Size (in. round)		7	7	7	7	8	9
Blower Wheel Nominal Diam. x Width (in.)		10 x 10 Direct Drive	10 x 10 Direct Drive	12 x 9	12 x 12	12 x 12	15 x 15
Blower Pulley Bore x Diam. (o.d. in.)		---	---	3/4 x 7	3/4 x 6	3/4 x 7	1 x 8
Blower Motor Horsepower		1/3	1/3	1/2	1/3	1/2	3/4
Motor Pulley Bore x Diam. (o.d. in.)		---	---	1/2 x 3 1/4	1/2 x 3-1/4	1/2 x 3-1/4	5/8 x 3-1/4
Belt Length (in.)		---	---	43	42	44	50
Tons of Cooling that can be added		2 thru 4	2 thru 4	3, 3 1/2 or 4	3, 3-1/2 or 4	3, 3-1/2 or 4	4 or 5
Shipping Weight (lbs.)	Furnace Section	216	234	266	282	396	472
	Oil Burner	45	45	45	45	46	46
No. of Packages in Shipment		2	2	2	2	2	2
Electrical Characteristics		115 volts - 60 hertz - 1 phase					

¹Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

B - Nozzle Information

UNIT	NOZZLE SIZE		INPUT RATING		OUTPUT RATING		SPRAY ANGLE (Solid Cone)
	Gal./hr.	L/hr.	Btuh	kW	Btuh	kW	
OS12Q3-105	.76	2.9	105,888	31.0	84,000	24.6	80°
OS12Q3-125	.90	3.4	125,393	36.7	102,000	29.3	
OS12-155	1.10	4.2	156,045	45.7	124,000	36.3	
OS12-185	1.35	5.1	188,090	55.1	150,000	44.0	
OS12-250	1.75	6.6	249,660	73.2	200,000	58.6	
OS12-310	2.25	8.5	312,075	91.4	250,000	73.3	70°

SCHEMATIC WIRING DIAGRAM

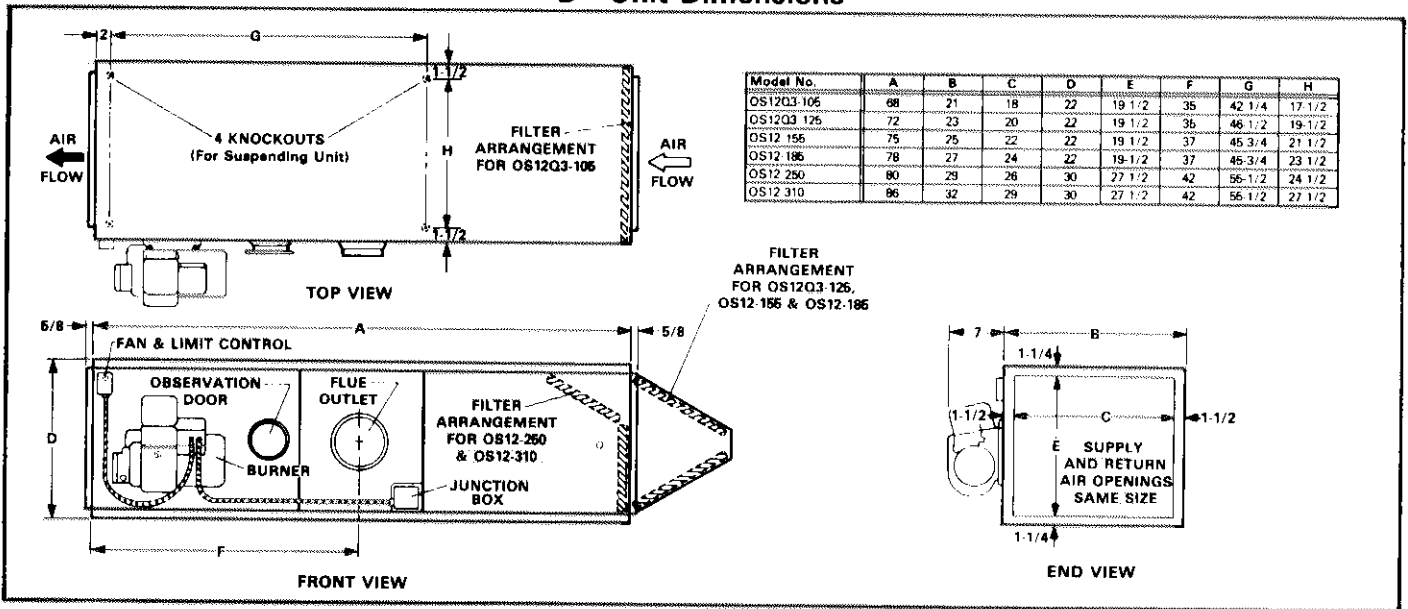


C - Field Wiring

The 120VAC power supply connects to the black and white pigtails in the junction box.

For heating only thermostat, the "R" and "W" leads connect directly to primary control (2 wire system). For combination heating and cooling thermostat, "G" lead connects at primary control to fan motor relay. "Y" lead connects at primary control to condensing unit compressor contactor (4 wire system).

D - Unit Dimensions



III - COMPONENTS

1 - Combination Fan/Limit Control (Figure 1)

The limit de-energizes the control circuit at excessive temperatures. Do not alter setting. Move fan control levers to their lowest settings to put blower into continuous operation on heating only systems. To return blower to intermittent or automatic operation move fan control levers to approximately 115° "ON" and 90° "OFF".

2 - Primary Control (Oil Burner Relay)

The control transformer is an integral part of the primary control (120VAC primary, 24VAC secondary, 40VA). Flame detection is by means of a cad cell flame detector. In the event of ignition or flame failure, the primary control shuts down and locks out the burner. If control locks out, push the reset button to recycle unit.

3 - Oil Burner

OS12 uses the DM and DMR series oil burner. When blower motor nameplate amps are 6.0 or more, provide branch circuit and over-current protection of 20 amps. The burner utilizes a burner-mounted light sensitive flame detector and should not be exposed to direct light which might enter through the air control band slots and upset the electric circuit of this device. In the event of motor lockout, push the reset button after motor has had sufficient time to cool.

4 - Heat Exchanger (Figure 2)

OS12Q3-105, OS12Q3-125, OS12-155 and OS12-185 models have factory installed Alumina Silica combustion chamber. OS12-250 and OS12-310 models are equipped with a stainless steel combustion chamber. Cleanout access is through vents located behind cleanout door. Spring activated hinged door in front of unit is provided for flame observation.

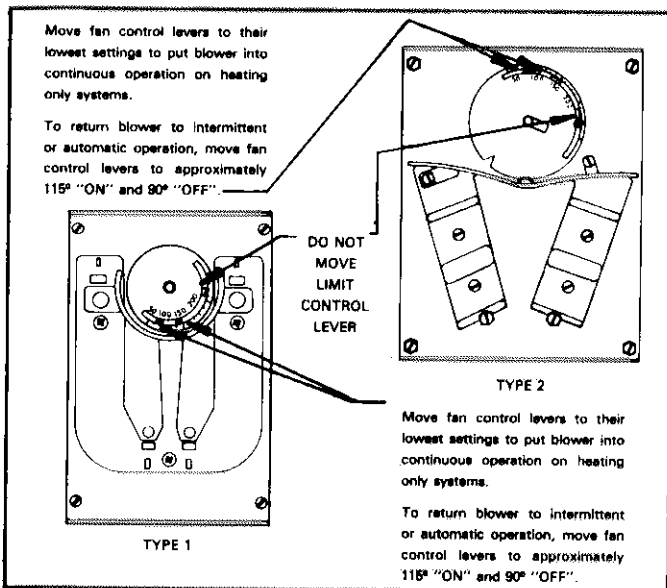


FIGURE 1

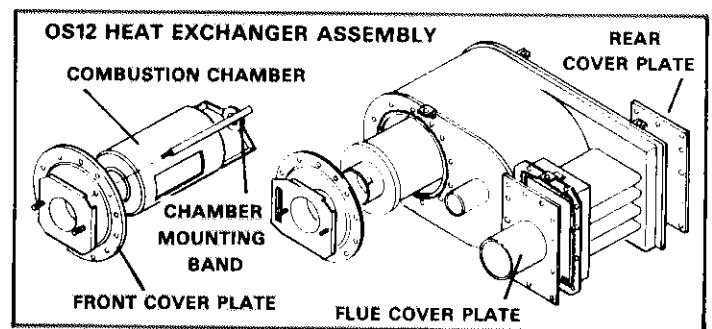


FIGURE 2

5 - Blower Motor

OS12Q3-105 and OS12Q3-125 models utilize a multtap three speed direct drive motor with integral overload protection. Consult wiring diagram for motor speed changes.

OS12-155, 185, 250 and 310 models have belt drive blowers with variable pitch motor pulleys permitting alteration of motor speeds to deliver required air flow for cooling applications. Consult wiring diagram for alternate connections.

IV - TEMPERATURE RISE

To measure temperature rise, place thermometers in warm air and return air plenums. Locate thermometer in warm air plenum where thermometer will not "see" heat exchanger, thus picking up radiant heat. Turn up thermostat as high as possible to start unit.

After plenum thermometers have reached their highest and steadiest readings, subtract the readings. The differences should be approximately 80°F. If temperature is low, decrease blower speed; if temperature is high, increase blower speed.

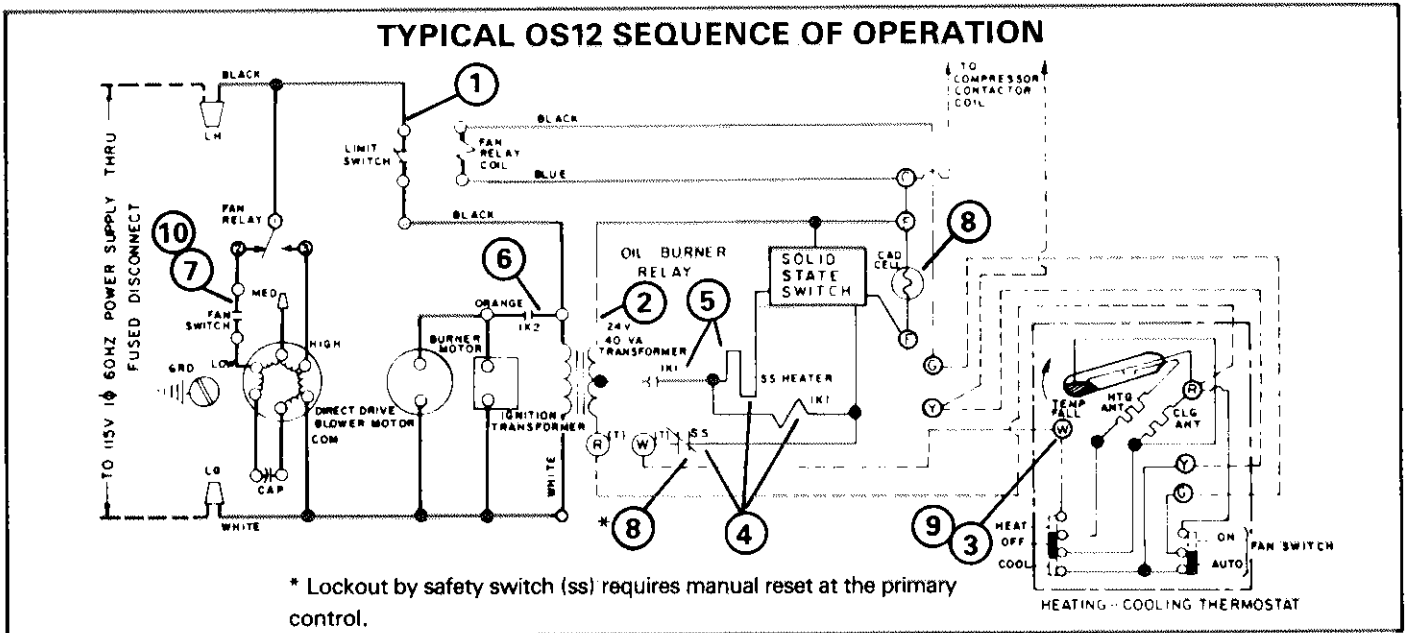


FIGURE 3

V - SCHEMATIC WIRING DIAGRAM OPERATING SEQUENCE (Figure 3)

- 1 - Line potential feeds through the limit control to power primary control.
- 2 - The primary control provides 24 volt control circuit.
- 3 - On heating demand thermostat heating bulb makes energizing the primary control terminal "W".
- 4 - Primary control relay 1K1 is energized through solid state switch N.C. contacts - SS, SS heater coil and solid state switch.
- 5 - Control relay 1K1 contacts close latching on 1K1 coil through the solid state switch.
- 6 - Control relay 1K2 contacts close energizing ignition transformer and oil burner motor. The burner motor operates the oil pump and combustion blower to feed air and oil vapor into the combustion chamber. The fuel mixture should ignite with the spark furnished by ignition transformer.
- 7 - When furnace temperature rises above fan control "cut in" point, the contacts make to energize blower motor.
- 8 - If combustion does not take place within approximately 45 seconds, as detected by cad cell, the primary control locks itself out through N.C. SS contacts. Should a flame failure occur during an "on" cycle, the primary control locks itself out in response to the cad cell.
- 9 - As the heating demand is satisfied, the thermostat heating bulb breaks. This de-energizes the oil burner circuits.
- 10 - The blower motor continues running until furnace temperature drops below fan control set point.