

**OSR20 SERIES
HORIZONTAL/ DOWN-FLO OIL FURNACES**

OSR20

Bulletin #210007

February 1993

***80.0% A.F.U.E.**

105,000 to 154,000 (30.8 to 45.1 kW) Btuh Input

2-1/2 thru 5 Tons (8.8 thru 17.6 kW) Nominal Add-On Cooling

*Isolated Combustion System Rating For Non-Weatherized Furnaces



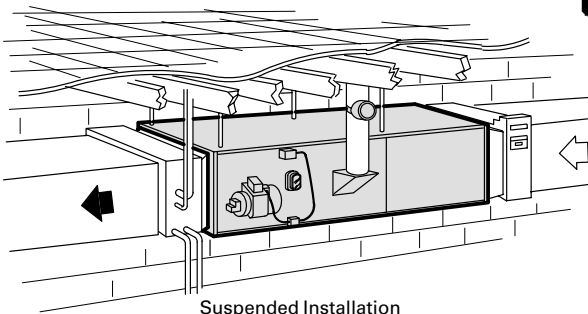
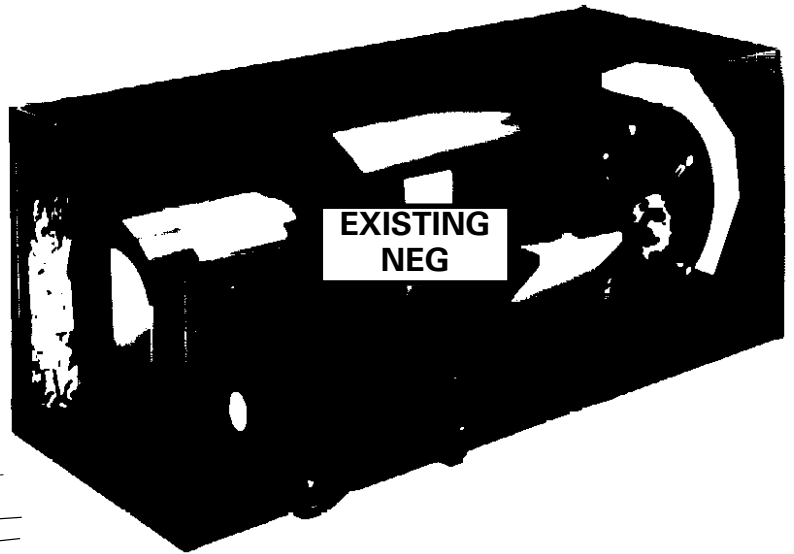
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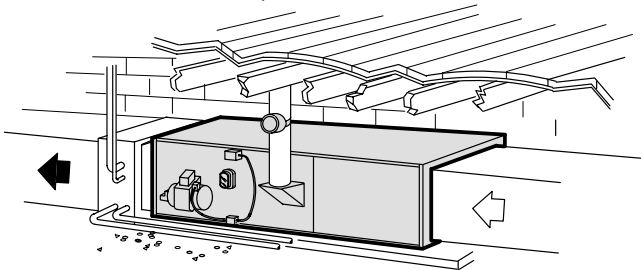
HEAT EXCHANGER



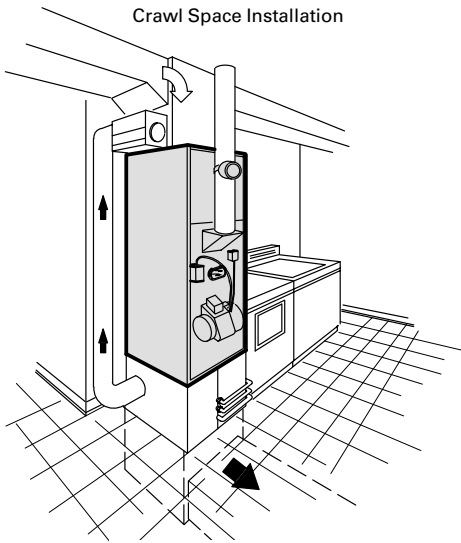
Typical Applications



Suspended Installation



Crawl Space Installation



Down-Flo Installation With Cooling Coil

Applications — OSR20 series furnaces are designed to be installed in either horizontal or down-flo position. Furnaces are designed for reduced clearances to combustibles. Three models are available with a choice of heating capacities and air volumes. All models feature dual heating inputs/outputs. Optional additive floor base is available for installation in the down-flo position on combustible floors. Units can be installed on a slab or suspended in a crawlspace, basement, utility room or furnace room. Units are not approved for attic installations. A Lennox add-on evaporator coil, remote condensng unit, electronic air cleaner and humidifier can easily be added to the furnace. Each unit is completely factory assembled with all controls installed and wired. Installer has only to set unit in desired location, install draft control mount, thermostat and make flue, duct, oil supply line and electrical connections.

Approvals — Units have been tested and certified according to U.S. Department of Energy (DOE) test procedures and Federal Trade Commission (FTC) labeling regulations. Units are listed by ETL and ratings are certified by GAMA and C.S.A.

Equipment Warranty — Heat exchangers have a limited lifetime warranty. Oil burners and all other covered components have a limited warranty for five years. Refer to the Lennox Equipment Limited Warranty certificate included with the equipment for details.

Heat Exchanger — Streamlined drum type heat exchanger exposes maximum surface area to the air stream with minimum air resistance. Constructed of heavy gauge steel for greatest service life. Heavy gauge mounting channels are provided in cabinet for support of heat exchanger.

Combustion Chamber — All models have factory installed, specially designed Alumina Silica combustion chamber. Chamber can withstand temperatures of up to 2300°F (1260°C) resulting in more complete combustion and higher efficiencies.

(Continued)

FEATURES

Flame Inspection Door — Located at the front of the unit, door is large enough for inspection mirror. Door is spring loaded so it cannot be left open.

Oil Burner — High pressure atomizing type burner blends oil and air to attain maximum efficiency. Heavy duty motor drives quiet operating blower wheel and fuel pump. Flame retention head is designed to agitate and mix oil and air for complete combustion and highest efficiency. Burner has 10,000 volt ignition transformer and ceramic glazed electrodes which provide a safe continuous flame. Equipped with a factory installed cadmium sulfide flame detector and primary safety control that provides complete shutdown in case of flame failure. All burner parts are easily removed for servicing. Burner is U.L. approved, C.S.A. certified and certified according to ANSI Standard 296.6 Dual input/output models are shipped for higher heating capacity operation. Nozzle is furnished for field conversion to lower heating capacity.

Cabinet — Constructed of heavy gauge steel with a baked-on enamel paint finish. Entire heating section is lined with foil faced insulation, keeping cabinet surface temperatures low. Large blower door allows complete service access to blower. Units are shipped for horizontal installation with left hand air discharge. For field change to right hand air discharge, rotate unit 180° end for end, and reposition burner and flue connection. Spacer legs are furnished to elevate unit off of combustible floors. For conversion to down-flo position, turn unit on end and reposition burner and flue connection. All models have knockouts provided in cabinet for suspending in horizontal position. See dimension drawing.

Blowers — All models are equipped with multi-speed direct drive motors. Motor is resiliently mounted and has integral overload protection. A choice of blower speeds is available on each motor. See blower performance tables. Blower speed adjustment is made with a simple change in wiring.

Transformer and Terminal Strip — 24 volt control transformer and terminal strip are furnished as standard and factory installed.

Fan and Limit Control — Factory installed in opening on front of cabinet. Time-start actuated fan control assures proper blower operation and has adjustable blower off temperature setting. Control turns blower on 60 to 90 seconds after thermostat demand. Limit control has fixed temperature setting and protects unit from abnormal operating conditions.

Barometric Draft Control — Furnished as standard with the unit for field installation in the flue pipe.

Blower Cooling Relay — Furnished with the unit and factory installed on the wiring junction box. Relay activates blower operation during cooling cycle.

Air Filters — Filters are not furnished and must be ordered extra. Access is provided in blower compartment for filter removal and servicing on OSR20Q3-105/120 model.

OPTIONAL ACCESSORIES (Must Be Ordered Extra)

Filter Kit (Optional) — Filter kit is available for field installation. Kit for OSR20Q3-105/120 is mounted internal to unit and contains filter rails, stiffening rods and washable polyurethane filters. Kit for OSR20Q3-120/105 and OSR20Q5-140/154 is mounted external to unit and contains filter cabinet, support rods and washable polyurethane filters. Must be ordered extra. See Specifications table.

Burner Cover (Optional) — Polyester fiber reinforced burner cover (**84H26**) is available for field installation. Cover is fully insulated with foil faced fiberglass insulation.

Down-Flo Additive Base (Optional) — Additive base is required for heating only units installed in the down-flo position on combustible floors. Base must be ordered extra for field installation. See Specification table and dimension drawing. Not required in add-on cooling applications.

Thermostat (Optional) — Heating thermostat is not furnished and must be ordered extra. See Thermostats bulletin in Accessories Section (U.S. only) and Lennox Price Book. For all-season applications, a wide selection of heating/cooling thermostats is available.

SPECIFICATIONS

Model Number		OSR20Q3-105/120	☼ OSR20Q3-120/105	OSR20Q5-140/154
Input — Btuh (kW) low/high		105,000/120,000 (30.8/35.2)	105,000/120,000 (30.8/35.2)	140,000/154,000 (41.0/45.1)
Output — Btuh (kW) low/high		84,000/95,000 (24.6/27.8)	84,000/95,000 (24.6/27.8)	112,000/125,000 (32.8/36.6)
*A.F.U.E.		80.0%	80.0%	80.0%
Nozzle Rating — gph (L/hr) and spray angle		.75 (2.8) — 80° (-105 input) solid .85 (3.2) — 80° (-120 input) solid		1.00 (3.8) — 80° (-140 input) solid 1.15 (4.4) — 80° (-154 input) solid
Flue Size Diameter — in. (mm)		6 (152)	6 (152)	6 (152)
Oil Burner Pump		1 Stage	1 Stage	1 Stage
Optional 2 Stage Fuel Pump		65A44	65A44	65A44
Blower wheel nominal diameter x width	in.	10 x 10	10 x 10	12 x 10
	mm.	254 x 254	254 x 254	305 x 254
Blower motor output — hp (W)		1/2 (373)	1/3 (224)	3/4 (560)
Nominal cooling that can be added	Tons	2-1/2 or 3	2-1/2 or 3	3-1/2, 4 or 5
	kW	8.8 or 10.6	8.8 or 10.6	12.3, 14.1 or 17.6
Shipping weight — lbs. (kg) 1 package		225 (102)	260 (118)	275 (125)
Electrical characteristics		115 volts — 60 hertz — 1 phase		
Optional Filter Kit	Catalog no.	78H06	78H07	78H07
	No. & size of filters — in. (mm)	(2) 10 x 20 x 1 (254 x 508 x 25)	(2) 10 x 25 x 1 (254 x 635 x 25)	(2) 10 x 25 x 1 (254 x 635 x 25)
Optional Down-flo Additive Base	Model no. & Catalog no.		CFB-OSR20-105/120 (84H27)	CFB-OSR20-140/154 (84H28)
	Shipping weight (1) package	lbs.	7	8
		kg.	3	4

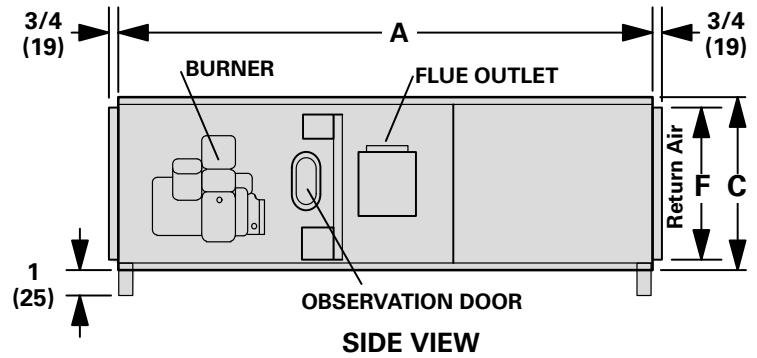
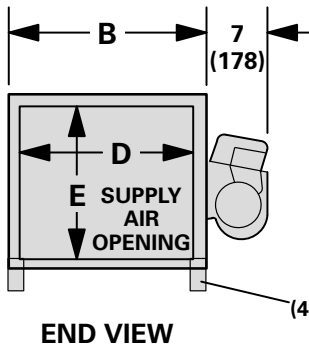
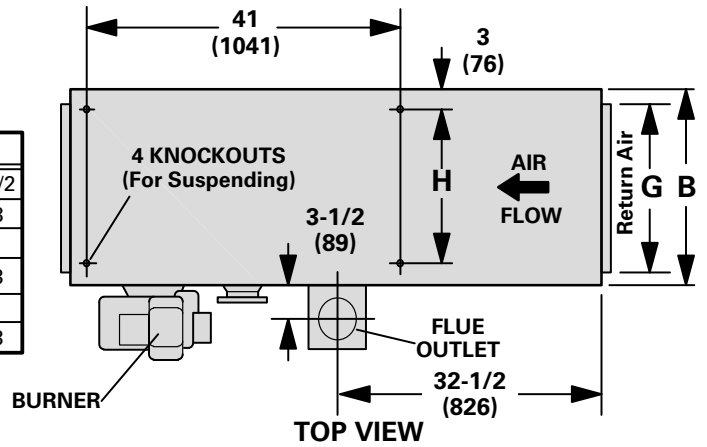
*Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

☼ Not available in the U.S.

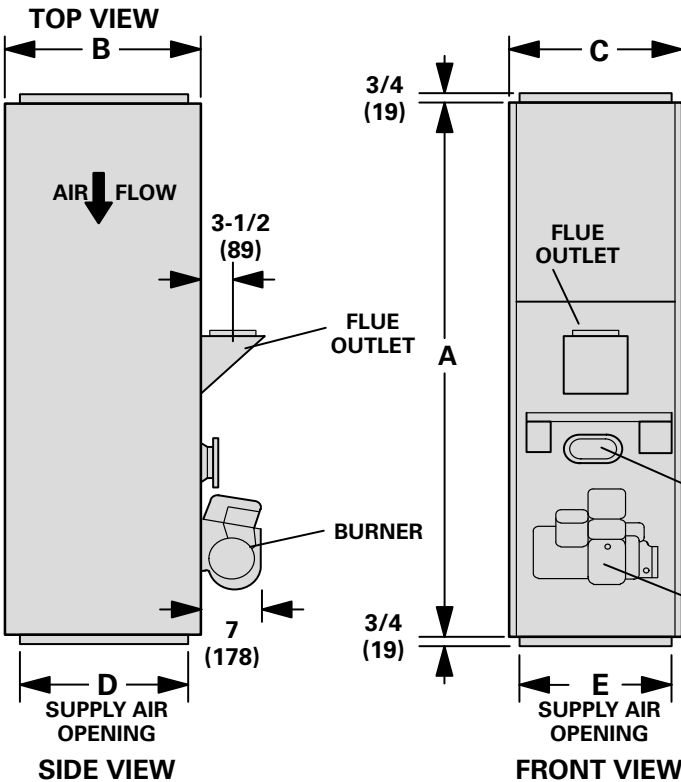
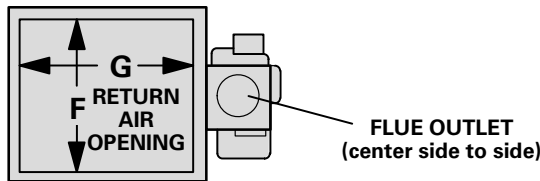
DIMENSIONS – inches (mm)

HORIZONTAL POSITION

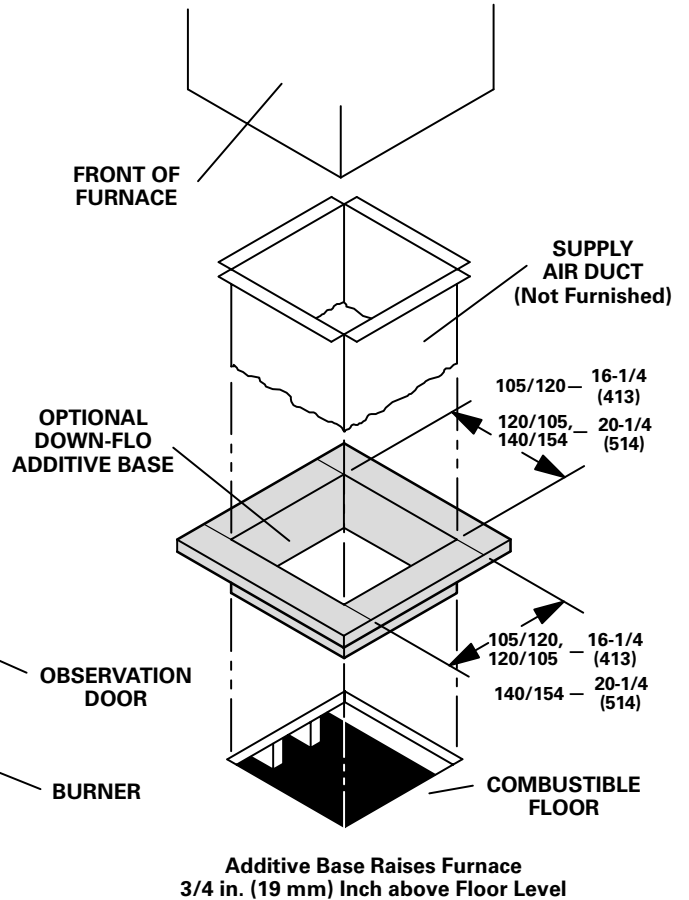
Model No.		A	B	C	D	E	F	G	H
OSR20Q3-105/120	in.	59	20-1/2	20-1/2	16	16	16	16	14-1/2
	mm	1499	521	521	406	406	406	406	368
OSR20Q3-120/105	in.	60	24	26	20	16	18	23	19
	mm	1524	610	660	508	406	457	584	483
OSR20Q5-140/154	in.	60	24	26	20	20	18	23	19
	mm	1524	610	660	508	508	457	584	483



DOWN-FLO POSITION

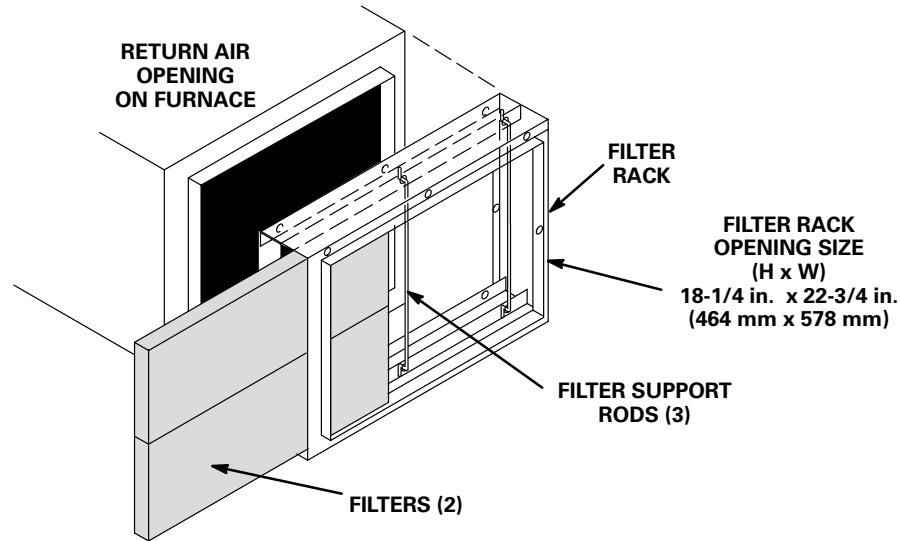


OPTIONAL DOWN-FLO COMBUSTIBLE FLOOR BASE



ACCESSORY DIMENSIONS — inches (mm)

OPTIONAL FILTER KIT FOR OSR20Q3-120/105, OSR20Q5-140/154



INSTALLATION CLEARANCES — inches (mm)

HORIZONTAL

Model No.	OSR20Q3-105/120	OSR20Q3-120/105 OSR20Q5-140/154
Top of Cabinet	2 (51)	1 (25)
Bottom & Rear of Cabinet	1 (25)	1 (25)
Front of Cabinet	24 (610)	24 (610)
End of Supply Plenum	0 (0)	0 (0)
Supply Air Opening	0 (0)	0 (0)
Return Air Opening	0 (0)	0 (0)
Above Horizontal Warm Air Duct Within 3 ft. (914 mm) of Furnace	0 (0)	0 (0)
Flue Pipe Horizontal	7 (178)	7 (178)
Flue Pipe Vertical	7 (178)	7 (178)

NOTE — When furnace is installed on combustible floor, 1 in. (25 mm) spacer legs must be installed to elevate unit off of mounting surface.

DOWN-FLO

Model No.	OSR20Q3-105/120	OSR20Q3-120/105 OSR20Q5-140/154
Top of Plenum & Duct-work	1 (25)	1 (25)
Plenum Sides	0 (0)	1 (25)
Side of Cabinet	0 (0)	1 (25)
Rear of Cabinet	0 (0)	1 (25)
Front of Cabinet	14 (356)	16 (406)
Flue Pipe Horizontal	7 (178)	7 (178)
Flue Pipe Vertical	7 (178)	7 (178)
Return Air Opening	6 (152)	0 (0)
*Floor	*Combustible	

Approved for closet or alcove installation. When installing in a closet, two ventilation openings must be provided in the closet door; one 6 in. (152mm) from the top and one 6 in. (152mm) from the bottom. Each opening should be 1 in.² (6.4 cm²) per 1000 Btuh (0.29 kW) per hour. Minimum 100 in.² (645 cm²) per opening.

*Clearance for installation on combustible floor if optional additive base is installed between the furnace and combustible floor. Not required in add-on cooling applications.

BLOWER DATA

OSR20Q3-105/120 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Speeds					
		High		Medium		Low	
in w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
.20	50	1380	650	1230	580	1040	490
.30	75	1320	620	1190	560	1020	480
.40	100	1260	595	1150	545	990	465
.50	125	1200	565	1080	510	960	455

NOTE — All air data is measured external to the unit with air filter in place.

OSR20Q3-120/105 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Speeds					
		High		Medium		Low	
in w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
.20	50	1380	650	1230	580	1040	490
.30	75	1320	625	1190	560	1020	480
.40	100	1260	595	1150	545	990	465
.50	125	1200	565	1080	510	960	455

NOTE — All air data is measured external to the unit with air filter in place.

OSR20Q5-140/154 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Speeds					
		High		Medium		Low	
in w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
.20	50	2120	1000	1770	835	1250	590
.30	75	2060	970	1730	815	1250	590
.40	100	2000	945	1710	805	1250	590
.50	125	1970	930	1670	790	1240	585

NOTE — All air data is measured external to the unit with air filter in place.