

**O20 SERIES  
UP-FLOW OIL FURNACES**

**O20**

Bulletin #210005

February 1993

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

**70,000 to 154,000 Btuh (20.5 to 45.1 kW) Input  
1-1/2 thru 5 Tons (5.3 thru 17.6 kW) Nominal Add-On Cooling**

\*Isolated Combustion System Rating For Non-Weatherized Furnaces



**Typical Applications**

Closet Installation  
with cooling coil

Basement Installation  
with cooling coil, electronic air  
cleaner and automatic humidifier

**Applications** — The O20 series of oil fired furnaces are suitable for installation in a residence, small business or commercial establishment. Units are available in three model sizes with input capacities of 70,000, 105,000, 119,000, 140,000 & 154,000 Btuh (20.5, 30.8, 34.9, 41.0 and 45.1 kW). O20Q3-105/120 & O20Q5-140/154 models feature dual heating inputs/outputs. Compact, rugged cabinet with side return air entry, will allow installation in a basement, closet, recreation or utility room. Furnaces are approved for reduced clearances to combustibles. Lennox add-on direct expansion evaporator coils, remote condensing unit, electronic air cleaners and power humidifiers can easily be added to the furnace. Quiet operating blowers have sufficient capacity to handle add-on cooling air volume requirements. All units are shipped factory assembled including the oil burner, with all controls installed and wired. Each unit is factory test operated insuring proper operation after shipment. Installer has only to set the unit in desired location, install barometric draft control, mount the thermostat, duct, flue, oil line and electrical connections to complete a low cost installation.

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

**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 maximum service life. Heavy gauge mounting channels are provided in cabinet base for support of heat exchanger.

**(Continued)**

## FEATURES

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

**Oil Burner** — Smooth operating 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 cell flame detector and primary safety control that provides complete shutdown in case of flame failure. All burner parts are easily removable for servicing. Burner is U.L. approved, C.S.A. certified and certified according to ANSI Standard 296.6. Burner is factory installed in the unit, wired and fire tested. Dual input/output O20Q3-105/120 and O20Q5-140/154 models are shipped for higher heating capacity operation. Nozzle is furnished as standard with burner for field conversion to lower heating capacities.

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

**Rugged Cabinet** — Constructed of heavy gauge steel with a baked-on enamel paint finish. Entire heating section is lined with foil faced fiberglass insulation keeping cabinet surface temperatures low. Removal of louvered heating section door allows access to oil burner, inspection door and control compartment. Door is equipped with handhold for ease of removal. Control compartment is totally enclosed to provide a safe, compact, clean and quiet control area. Large blower access door gives complete service access to blower. Blower assembly easily slides completely out of unit for service. Oil line and electrical inlet openings are provided in sides of cabinet, see dimension drawing. Return air entry is possible on either side of cabinet.

**Flame Inspection Door** — Conveniently located at the front of the unit. Large enough opening for normal inspection mirror. Hinged door is spring loaded so it cannot be left open.

**Barometric Draft Control** — Furnished as standard equipment and field installed in flue pipe.

**Powerful Blower** — Units are equipped with quiet, variable speed direct drive blowers. Each blower assembly is statically and dynamically balanced. Multiple-speed motor is resiliently mounted. A choice of blower speeds is available on each blower. See blower performance charts. Change in blower speed is easily accomplished by simple wiring change.

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

**Side Filter Adaptor Kit** — Furnished with the unit and field installed. Adaptor is completely assembled and can be installed on either side of the cabinet. A large cleanable frame type filter is also furnished and slides in the rack. Adaptor has flanges for ease of duct connection. See dimension drawing.

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

### OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**Thermostat (Not Furnished)** — 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 heating-cooling thermostat is available with the condensing unit.

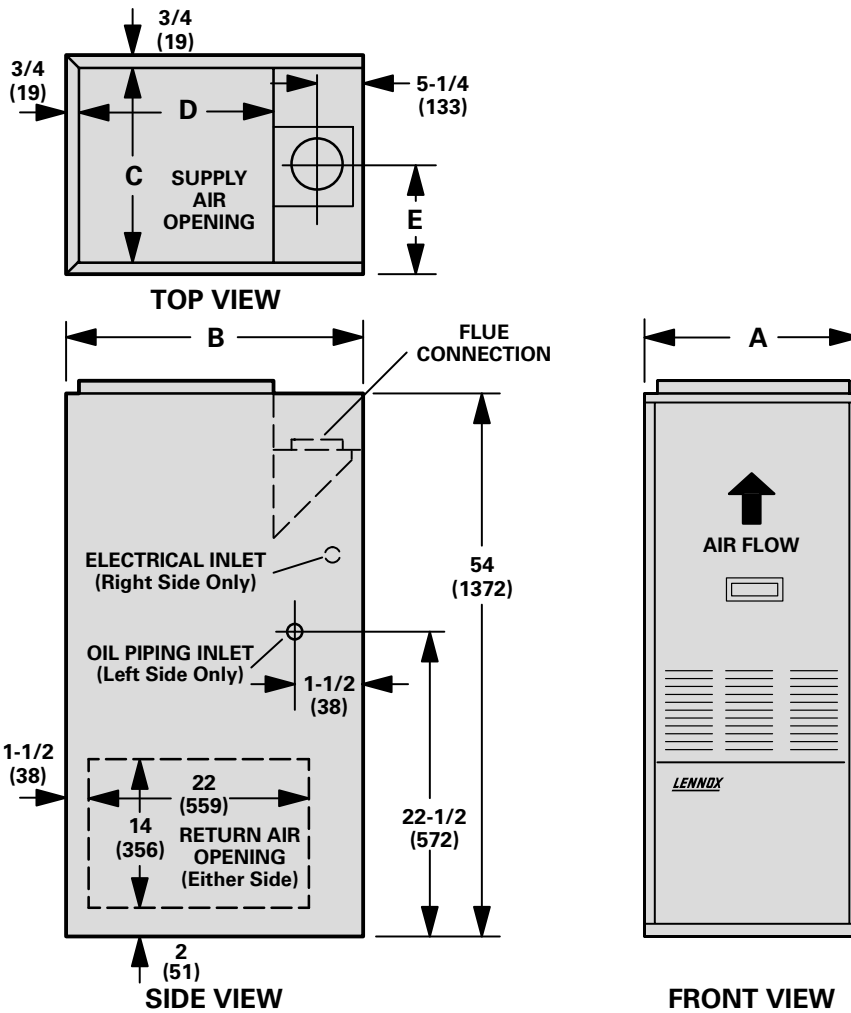
## SPECIFICATIONS

Model Number		O20Q2-70	O20Q3-105/120	O20Q5-140/154
Input — Btuh (kW) low/high		70,000 (20.5)	105,000/119,000 (30.8/34.9)	140,000/154,000 (41.0/45.1)
Output — Btuh (kW) low/high		56,000 (16.4)	85,000/95,000 (24.9/27.8)	113,000/125,000 (33.1/36.6)
*A.F.U.E.		80.0%	80.0%	80.0%
Nozzle Rating — gph (L/hr) and spray angle		.50 (1.9) — 80° hollow	.75 (2.8) — 80° (-105 input) solid .85 (3.2) — 80° (-120 input) solid	1.00 (3.8) — 80° (-140 input) solid 1.10 (4.2) — 80° (-154 input) solid
Flue Size Diameter — in. (mm)		6 (152)		
Oil Burner Pump		1 Stage	1 Stage	1 Stage
Optional 2 Stage Fuel Pump		34H74		
Blower wheel nominal diameter x width	in.	10 x 6	10 x 8	12 x 9
	mm	254 x 152	254 x 203	305 x 229
Blower Motor Output — hp (W)		1/3 (249)	1/3 (249)	3/4 (560)
Nominal cooling that can be added	Tons	1-1/2 thru 2-1/2	1-1/2 thru 3-1/2	3 thru 5
	kW	5.3 thru 8.8	5.3 thru 12.3	10.6 thru 17.6
**Number and size of filters — in. (mm)		(1) 16 x 25 x 1 (406 x 635 x 25)		
Shipping weight — lbs. (kg) 1 package		225 (102)		275 (125)
Electrical characteristics		115 volts — 60 hertz — 1 phase		

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

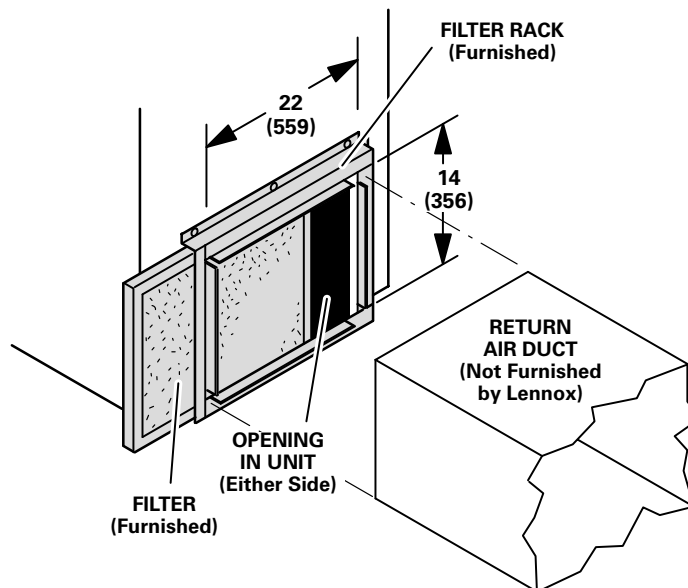
\*\*Cleanable frame type filters. Furnished with unit in Side Filter Adaptor Kit for field installation external to the cabinet.

**O20 SERIES FURNACES**



Model No.		A	B	C	D	E
O20Q2-70 O20Q3-105/120	in.	19-1/2	28	18	18	9-3/4
	mm	495	711	457	457	248
O20Q5-140/154	in.	22-1/2	31	21	21	11-1/4
	mm	572	787	533	533	286

**SIDE FILTER ADAPTOR KIT  
(Furnished With Unit)**



## INSTALLATION CLEARANCES – inches (mm)

Top of Cabinet	2 (51)
Sides & Rear of Cabinet	0 (0)
Front of Cabinet	6 (152)
Top of Plenum	2 (51)
Sides of Plenum	1 (25)
Horizontal Warm Air Duct within 6 feet (1.8m) of furnace	2 (51)
Flue Pipe Vertical	6 (152)
Flue Pipe Horizontal	6 (152)
Floor	Combustible

NOTE — Approved for closet or alcove installation. When installing in a confined space, two ventilation openings must be provided into the the space; one 6 in. (152 mm) from the top and one 6 in. (152 mm) from the bottom. Each opening should be 10 in. x 20 in. (254 mm x 508 mm) for the O20Q2-70 and O20Q3-105/120 models and 11 in. x 22 in. (279 mm x 559 mm) for the O20Q5-140/154 models.

## BLOWER DATA

### O20Q2-70 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
.20	50	1170	550	1090	515	1000	470
.30	75	1110	525	1060	500	980	460
.40	100	1070	505	1020	480	950	450
.50	125	1020	480	970	460	900	425

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

### O20Q3-105/120 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
.20	50	1425	670	1285	605	1080	510
.30	75	1388	655	1255	590	1070	505
.40	100	1345	635	1210	570	1050	495
.50	125	1280	605	1160	545	1030	485

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

### O20Q5-140/154 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
.20	50	1950	920	1680	795	1190	560
.30	75	1925	910	1670	790	1180	555
.40	100	1915	905	1640	775	1170	550
.50	125	1900	895	1620	765	1160	545

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