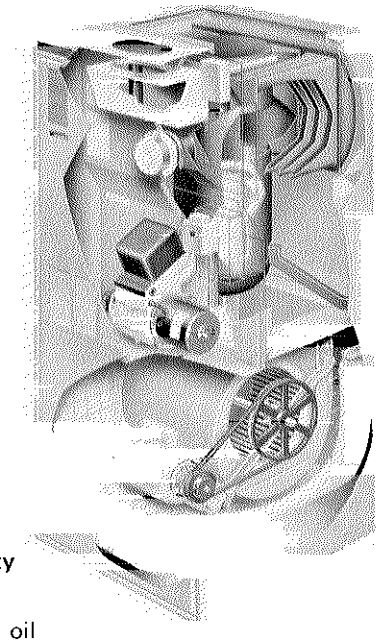
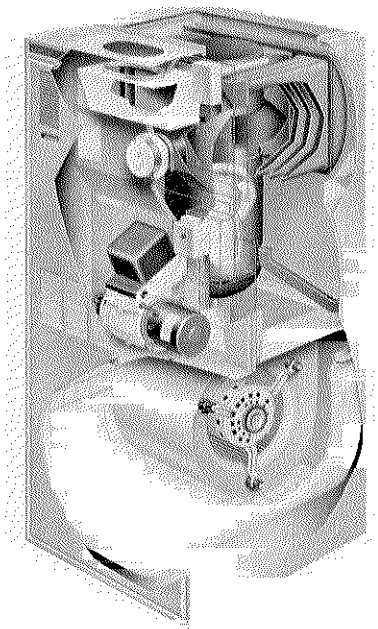
LENNOX®

FORCED AIR OIL FURNACES—UP-FLO
O11 SERIES—BELT DRIVE BLOWERS
O11D & O11Q SERIES—DIRECT DRIVE BLOWERS
105,000 to 168,000 Btuh INPUT
Add-On Cooling 1-1/2 thru 5 Nominal Tons

- Durable Heat Exchanger
- Efficient Oil Burner
- Cadmium Cell Flame Detector
- Powerful Blower
- Large "Hammock" Air Filter
- Return Air Choice
- Complete Service Access
- All Controls Furnished
- Factory Assembled And Tested
- U. L. Listed



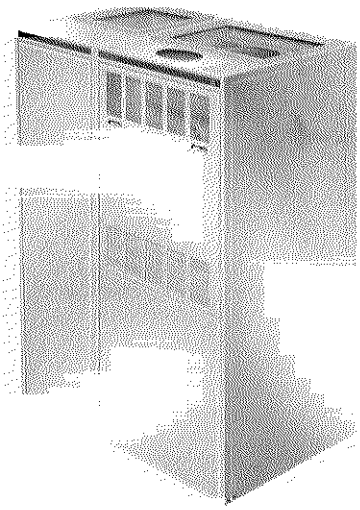
O11-140 Belt Drive



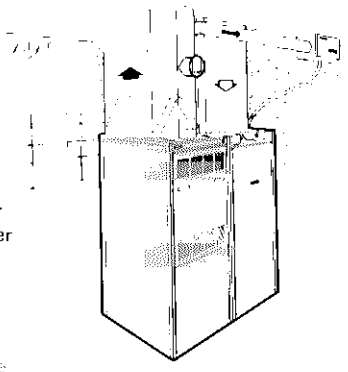
O11Q3-140 Direct Drive

Dependability, Quiet Operation and Installation Versatility Featured in Up-Flo Oil Units

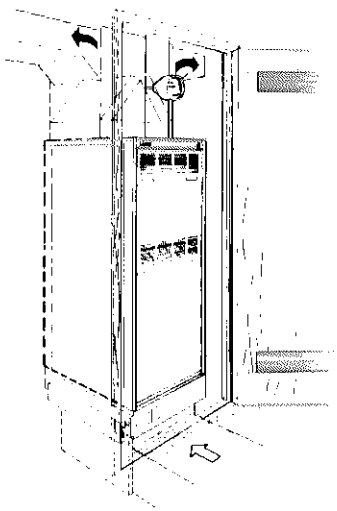
The attractive and modern design of the O11 series up-flo oil furnaces makes installation possible in almost any location in a residence, small business or commercial establishment. The compactness and quiet operation of the furnace will permit installation in a recreation or family room, basement, utility room, alcove or closet. A lo-boy type installation is easily attained with the addition of an optional deluxe return air cabinet. The return air cabinet can be installed on either side of the furnace. The furnace and return air cabinets are trim and sheer looking with a furniture finish of baked-on enamel. Die formed panels and doors have a ruggedness and appearance unequalled. A Lennox direct expansion evaporator unit with remote condensing unit, electronic air cleaner and humidifier can be added to the furnace for a complete all season Total Comfort installation. Quiet operating blowers have sufficient capacity to handle add-on cooling air volume requirements. The O11 units are U.L. listed. In addition units have been thoroughly tested and developed in the Lennox Research Laboratory. Blower data is from actual unit tests conducted in the Lennox Laboratory air test chamber. Each unit is test operated on the assembly line insuring proper operation. Units are shipped factory assembled, including the oil burner, with all controls installed and wired. Blower drives (motor, motor pulley and belt) are shipped in a separate package, on belt drive models, for field installation. Installer has only to install draft control, mount thermostat, make duct, flue, oil line and electrical connections to complete the installation.



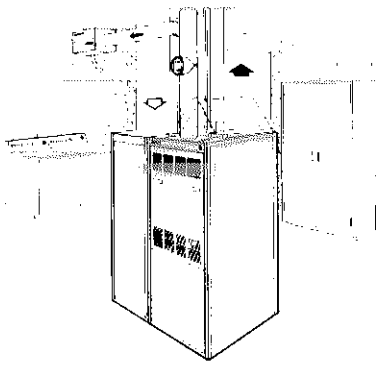
Typical Applications



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



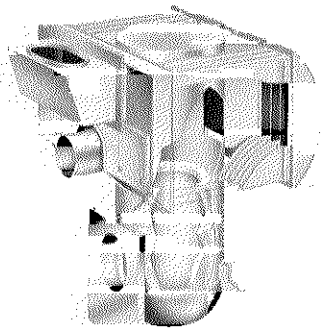
Closet Installation with cooling coil and electronic air cleaner



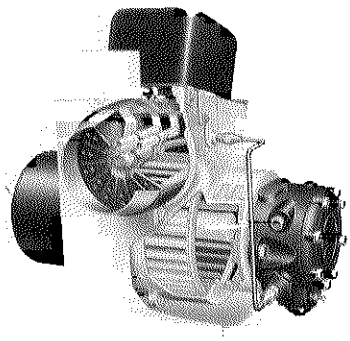
Basement Installation with cooling coil, return air cabinet and automatic humidifier

NOTE—Specifications, ratings and dimensions subject to change without notice.

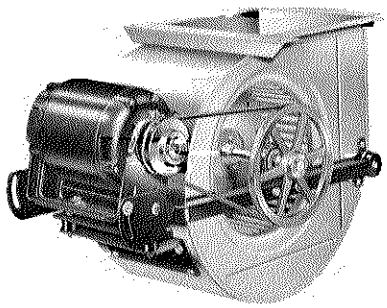
Compact Heat Exchanger—Streamlined heat exchanger design exposes maximum surface area to the air stream and offers minimum air resistance. Primary and secondary heating surfaces are constructed of combination aluminized and cold rolled steel. Ceramic fiber combustion chamber quickly attains a high temperature resulting in clean, quiet and efficient combustion. Chemical soot removers should not be used for cleaning purposes. Die formed clam sections allow normal heat element expansion and contraction without metal fatigue. Two large cleanout openings are provided into the secondary heating surface. Cleanout access plates are attached to heat exchanger with stainless steel threaded studs and brass securing nuts for easy removal. Primary heating surface cleanout access is through the 4 inch diameter inspection tube. Tube is large enough for normal flame inspection mirrors. Long life of heating element is assured by Lennox Laboratory "life cycle" test.

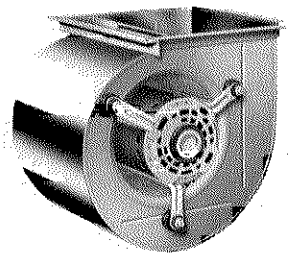


Quiet and Efficient Oil Burner—Precision built pressure atomizing oil burner is the most efficient, trouble free and serviceable burner available. To assure quiet operation burner is mounted on rubber mounts and mounting plate is isolated from cabinet by an asbestos gasket. In addition, asbestos rope isolates the blast tube of the burner from the receiving sleeve in the heat exchanger. Equipped with a factory installed cadmium sulfide cell flame detector. Burner has a 10,000 volt ignition transformer and ceramic glazed ignition electrodes. Nozzle and electrode assembly is easily removed for service. Heavy duty motor drives the powerful "quick shut-off" fuel pump and quiet operating blower wheel. All burner components may be removed and replaced separately. Burner is factory installed in the unit, wired and fire tested.



Sulky Belt Drive Blower—O11-105, O11-140 and O11-168 units are equipped with ultra quiet operating sulky blowers. All moving parts are mounted on a rigid steel frame secured to blower housing on resilient rubber mounts assuring quiet operation. Motor mount design allows easy belt adjustment and pulley alignment. Blower wheels are statically and dynamically balanced. Adjustable motor pulley permits various speed adjustments. Bearings are rubber enclosed, self aligning, solid bronze grooved and graphite filled. Large grease cups are furnished for lubrication.

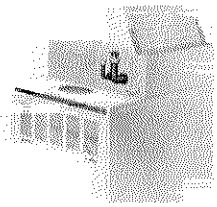


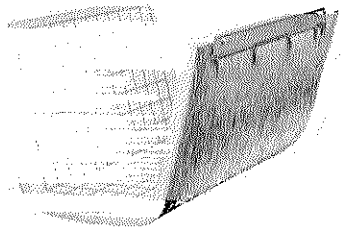


Direct Drive Blower—O11D2-105, O11Q3-105, O11Q3-140 and O11Q4-168 units are equipped with quiet variable speed direct drive blowers. Blower assembly is statically and dynamically balanced. Multiple-speed motor is resiliently mounted. A choice of blower speeds is available on each blower. See blower performance charts. Change in blower speed is easily accomplished by a simple change in wiring.

Cabinet and Blower Paint Process—The cabinet and blower have a special "Electro Deposition" process paint finish. Metal preparation consists of a special 6 station wash metal process. 1 Spray application of a strong alkaline cleaner. 2—Spray water rinse. 3 Spray application of a corrosion resistant, paint bonding iron phosphate compound. 4—Spray water rinse. 5 Spray application of a chromic acid. 6—Spray rinse with "de-ionized" water. After the final rinse the cabinet and blower enter a drying oven and are completely dried before receiving the paint finish. They are then completely submerged in the paint vat where the electroplating paint finish is applied. The paint solution and metal are given opposite electrical charges resulting in positive adhesion and even coverage of the paint to the metal surfaces. This process completely covers the entire surfaces, inside and out, including the edges of assembly holes. Following the paint process the finished components enter a high temperature oven where the bonded finish is baked on.

Rugged Trim Cabinet—Constructed of heavy gauge cold rolled steel. Metal side and rear liners plus foil covered fiberglass insulation on vestibule panel keep cabinet surface temperatures low. Provisions have been made in cabinet base for leveling. Leveling bolts and nuts are furnished. Complete service access is accomplished by removing furnace and blower compartment front doors. The controls, burner, blower and filter are then accessible for quick and easy service. Blower deck construction permits interchanging of direct drive and belt drive blowers as furnace application requires. Oil line supply inlets are provided in both sides of cabinet. Electrical inlets are located in side panel. Return air entry is possible in either side or bottom of cabinet. Matching add-on evaporator coils are available in 1-1/2 thru 5 ton sizes.





Large Air Filter—Units are equipped with hammock wrap around type filter. Media is one inch thick oil impregnated fiberglass. Filter mounting rack design provides quick and simple replacement of media for servicing.

Fan and Limit Control—Factory installed and accurately located. Fan control assures blower operation sixty seconds after burner on cycle and has adjustable blower off temperature setting. Limit protects against abnormal operating conditions and has fixed temperature setting. Continuous blower operation may be accomplished by adjusting the fan control to the minimum temperature setting.

Primary Safety Control—Factory installed and wired. Provides complete shut down of unit in case of flame failure. Mounts on wiring junction box in furnace vestibule. 40 VA transformer is an integral part of the primary control.

Cadmium Sulphide Cell Flame Detector—Furnished as standard equipment. Cell is furnished integral with oil burner.

Draft Control—Furnished with unit as standard equipment and field installed in the flue pipe.

Flame Inspection Door—Conveniently located at front of unit and equipped with peep hole cover for flame viewing. Hinged door is spring activated so that it cannot be accidentally left open.

Thermostat (Not Furnished)—Heating thermostat is optional equipment and must be ordered extra. For all season applications heating-cooling thermostat is furnished with the condensing unit.

Blower Cooling Relay (Optional)—Relay must be ordered extra (order no. P-8-3251). Field installs on wiring junction box. Relay is furnished and factory installed on O11Q3-105 model only.

Lennox Total Comfort System—Consists of central furnace with the air mover, central air conditioning system, air filter and humidifier. Air is circulated through these units (also the proper amount of outdoor fresh air, Fresh Air Inlet BM-3632, if desired) where it is heated or cooled, cleaned by the air filter and humidity added (in summer humidity is removed). The air mover (blower) operates constantly, gently and quietly 24 hours a day. This constant air circulation keeps even room temperature and lowers operating costs by continually mixing and recirculating the air.

INSTALLATION CLEARANCES (inches)

Model No.	O11D2-105 O11Q3-105 O11-105	O11Q3-140 O11-140	O11Q4-168 O11-168
Top, sides & rear of cabinet	1	1	1
Front of cabinet	9	9	9
Top of plenum	1	1	1
Sides of plenum	2	2	2
Horizontal warm air duct within 6 ft. of furnace	1	1	1
Below or opposite flue pipe	9	9	9
Above flue pipe	11	12	13
Floor	Combustible	Combustible	Combustible

Approved for closet or alcove installation. When installing in a closet two ventilation openings must be provided in the closet door; one six inches from the top and one 6 inches from the bottom. Each opening should be at least 2 sq. inches per 1,000 Btuh input for O11Q3 140 & O11-140; 2.5 sq. inches per 1,000 Btuh input for the O11D2-105, O11Q3 105, O11 105 and O11Q4 168, O11 168 models.

SPECIFICATIONS AND RATINGS

Model No.	O11D2-105	O11Q3-105	O11-105	O11Q3-140	O11-140	O11Q4-168	O11-168
Btuh input (maximum U.L. Listing)	105,000	105,000	105,000	140,000	140,000	168,000	168,000
Btuh input (nozzle furnished)	91,000	91,000	91,000	119,000	119,000	140,000	140,000
Btuh input (minimum)	91,000	91,000	91,000	119,000	119,000	140,000	140,000
Btuh output (maximum U.L. Listing)	84,000	84,000	84,000	112,000	112,000	134,000	134,000
Btuh output (nozzle furnished)	73,000	73,000	73,000	95,000	95,000	112,000	112,000
Btuh output (minimum)	73,000	73,000	73,000	95,000	95,000	112,000	112,000
Nozzle range (gph)	.65 .75	.65 – .75	.65 – .75	.85 – 1.00	.85 1.00	1.00 1.20	1.00 1.20
Nozzle furnished (gph)	.65	.65	.65	.85	.85	1.00	1.00
Flue size (in. Oval)	6	6	6	7	7	7	7
Oil burner –standard (1 stage)	OL1-50-311	OL1-50-311	OL1-50-311	OL1-50-321	OL1-50-321	OL1-51-331	OL1-51-331
Oil burner–optional (2 stage)	OL1-50-312	OL1-50-312	OL1-50-312	OL1-50-322	OL1-50-322	OL1-51-332	OL1-51-332
Blower wheel nom. diam. x width (in.)	9 x 7	10 x 8	10 x 8	10 x 8	12 x 12	12 x 9	12 x 12
Blower motor hp	1/5	1/3	See Drive	1/3	See Drive	1/3	See Drive
Blower drives (shipped separate)	Direct Drive	Direct Drive	Table	Direct Drive	Table	Direct Drive	Table
Tons of cooling that can be added	1-1/2 or 2	2-1/2 or 3	2, 2-1/2 or 3	2-1/2 or 3	3, 3-1/2, 4 or 5	3, 3-1/2 or 4	3, 3-1/2, 4 or 5
Free filter area (sq. ft.) and cut size (in.)	7.7 30 x 45 x 1	7.7 30 x 45 x 1	7.7 30 x 45 x 1	9.3 30 x 55 x 1	9.3 30 x 55 x 1	10.4 30 x 59 x 1	10.4 30 x 59 x 1
No. of packages in shipment	1	1	*2	1	*2	1	*2
Net weight (lbs.)	238	242	245	276	290	320	319
Return Air Cabinet Model No.	**RA-105 (Net weight 66 lbs.)**			**RA-140-168 (Net weight 75 lbs.)**			
Electrical characteristics	120 volts–60 hertz–1 phase (All Models)						

*Package 1 consists of assembled unit and driven pulley. Package 2 consists of blower motor, motor pulley and belt.

DRIVE SELECTION

Heating Drive Kits

Furnace Model No.	Drive Kit Model No.	Motor hp	Motor Pulley (in.) & Groove	**Blower Pulley (in.) & Groove	*Rpm Range	Belt
O11-105	DK-2001 (BM-7453)	1/4	1/2 x 2-7/8–O	3/4 x 7–O	495 –690	3L400
O11-140	DK-2003 (BM-7455)	1/4	1/2 x 3-1/4–A	1 x 9–A	365 555	4L450
O11-168	DK-2003 (BM-7455)	1/4	1/2 x 3-1/4–A	1 x 9–A	365–555	4L450

*At 1725 rpm motor speed.
**Factory installed in furnace package and not included in drive kit.

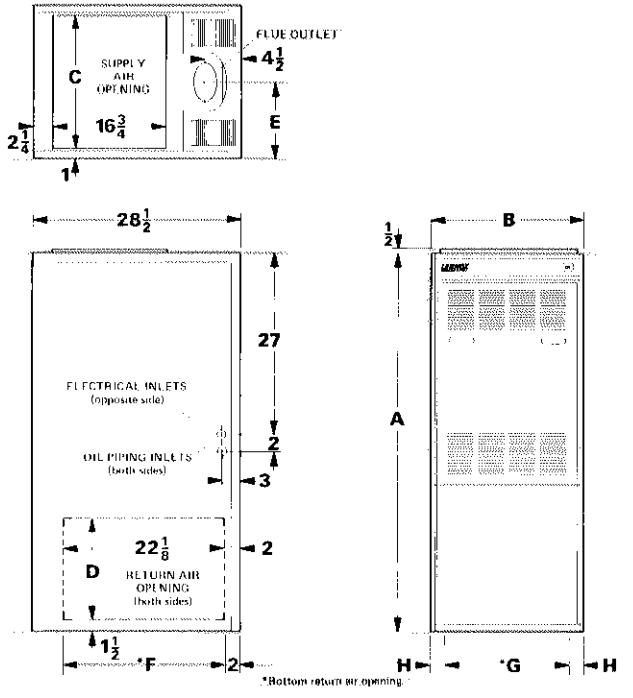
Cooling Drive Kits

Furnace Model No.		Drive Kit Model No.	Motor hp	Motor Pulley (in.) & Groove	**Blower Pulley (in.) & Groove	*Rpm Range	Belt
O11-105	2 tons	DK-2001 (BM-7453)	1/4	1/2 x 2-7/8–O	3/4 x 7–O	495–690	3L400
	2-1/2 & 3 tons	DK-2002 (BM-7454)	1/3	1/2 x 4-1/8–O	3/4 x 7–O	665–865	3L410
O11-140	3 tons	DK-2004 (BM-7456)	1/3	1/2 x 4-1/8–A	1 x 9–A	535–730	4L450
	3-1/2 & 4 tons	DK-2005 (BM-7457)	1/2	5/8 x 4-1/8–A	1 x 9 A	535 730	4L460
	5 tons	DK-2006 (BM-7458)	3/4	5/8 x 4-3/4–A	1 x 9–A	650–840	4L470
O11-168	3 & 3-1/2 tons	DK-2004 (BM-7456)	1/3	1/2 x 4-1/8–A	1 x 9–A	535–730	4L450
	4 tons	DK-2005 (BM-7457)	1/2	5/8 x 4-1/8–A	1 x 9–A	535–730	4L460
	5 tons	DK-2006 (BM-7458)	3/4	5/8 x 4-3/4–A	1 x 9 A	650–840	4L470

*At 1725 rpm motor speed.
**Factory installed in furnace package and not included in drive kit.

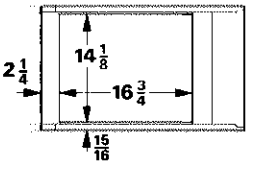
DIMENSIONS (inches)

OIL FURNACE

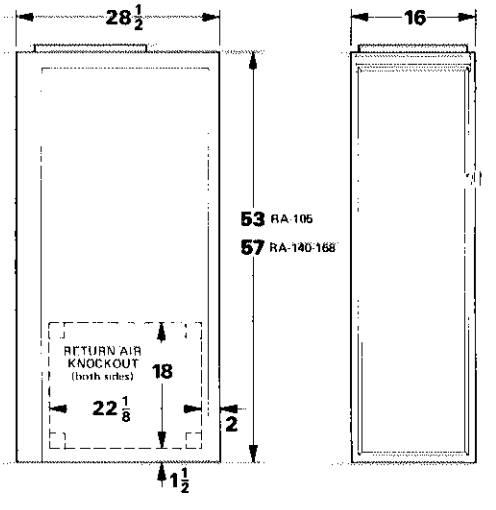


Model No.	A	B	C	D	E	F	G	H
O11, O11Q3 & O11D2-105	53	21	19	15	10-1/2	22-1/8	15	3
O11-140 & O11Q3-140	57	26	24	18	12	21-3/4	22	2
O11-168 & O11Q4-168	57	31	29	18	15-1/2	21-3/4	22	4-1/2

RETURN AIR CABINET



NOTE–Return air cabinet is shipped knocked down and must be field assembled.



BLOWER DATA

O11D2-105 BLOWER PERFORMANCE

External Static Pressure In. Wg.	Air Volume (cfm) at Various Speeds		
	High	Medium	Low
0	1060	765	605
.05	1045	765	605
.10	1025	765	605
.15	1005	760	600
.20	985	755	595
.25	965	745	590
.30	940	730	580
.40	880	690	---
.50	805	625	---
.60	705	---	---

NOTE—All cfm is measured external to the furnace with the air filter in place.

O11Q3-105 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) at Various Speeds			
	High	Med-High	Med-Low	Low
0	1605	1275	955	765
.05	1590	1270	955	765
.10	1575	1270	950	765
.15	1555	1265	950	765
.20	1535	1260	950	765
.25	1515	1255	945	765
.30	1495	1250	940	760
.40	1450	1225	925	755
.50	1390	1210	905	740
.60	1330	1155	880	720
.70	1255	---	---	---

NOTE—All cfm is measured external to the furnace with the air filter in place.

O11Q3-140 BLOWER PERFORMANCE

External Static Pressure In. Wg.	Air Volume (cfm) at Various Speeds			
	High	Med-High	Med-Low	Low
0	1640	1260	1020	865
.05	1610	1245	1010	860
.10	1580	1230	1005	855
.15	1550	1215	995	850
.20	1520	1200	985	845
.25	1490	1185	975	835
.30	1460	1170	960	825
.40	1400	1130	935	805
.50	1335	1090	900	---
.60	1260	1040	860	---
.70	1180	975	---	---

NOTE—All cfm is measured external to the furnace with the air filter in place.

O11Q4-168 BLOWER PERFORMANCE

External Static Pressure In. Wg.	Air Volume (cfm) at Various Speeds		
	High	Medium	Low
0	2150	1810	1490
.05	2115	1800	1500
.10	2075	1790	1510
.15	2040	1770	1510
.20	2000	1745	1505
.25	1955	1720	1495
.30	1910	1690	1485
.40	1810	1630	1445
.50	1705	1560	1385
.60	1585	1480	1305
.70	1400	1305	1160

NOTE—All cfm is measured external to the furnace with the air filter in place.

O11-105 BLOWER PERFORMANCE

Air Volume (Cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																			
	0		.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
600	310	.04	435	.05	530	.07	620	.09	700	.11	770	.13	840	.15	900	.17	960	.20	1010	.23	1060	.26
700	360	.06	470	.08	565	.09	640	.11	720	.13	790	.15	850	.17	915	.19	970	.22	1020	.25	1070	.28
800	415	.08	510	.10	600	.12	670	.14	740	.16	810	.18	870	.20	930	.23	980	.25	1030	.28	1080	.31
900	470	.09	555	.11	630	.13	700	.15	770	.17	830	.20	895	.24	945	.26	995	.29	1045	.32	1095	.36
1000	520	.11	600	.13	670	.17	735	.19	800	.22	855	.24	915	.27	965	.30	1015	.33	1065	.36	1110	.40
1200	625	.18	690	.22	755	.25	815	.27	865	.30	920	.33	970	.38	1015	.41	1065	.45	---	---	---	---
1400	725	.28	790	.32	850	.35	895	.38	945	.43	---	---	---	---	---	---	---	---	---	---	---	---

NOTE—All cfm is measured external to the furnace with the air filter in place.

O11-140 BLOWER PERFORMANCE

Air Volume (Cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																			
	0		.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
800	240	.04	355	.08	360	.10	545	.17	615	.21	680	.24	745	.27	805	.31	850	.35	895	.40	942	.45
1000	290	.10	400	.11	490	.16	570	.21	640	.26	700	.29	760	.33	820	.37	865	.42	910	.47	960	.52
1200	355	.12	450	.16	525	.21	600	.27	670	.32	725	.35	785	.39	836	.43	880	.49	930	.56	972	.61
1400	420	.17	490	.22	565	.28	635	.33	695	.38	752	.42	808	.47	856	.52	905	.58	950	.65	995	.71
1600	475	.24	540	.29	610	.36	670	.40	725	.45	780	.50	830	.55	880	.61	930	.68	975	.77	1015	.82
1800	535	.32	590	.38	652	.43	715	.50	760	.54	810	.59	860	.65	907	.73	956	.82	1000	.88	---	---
2000	590	.43	645	.48	702	.54	745	.58	795	.64	845	.70	893	.79	940	.87	---	---	---	---	---	---
2200	650	.54	700	.60	745	.65	786	.71	836	.77	885	.86	---	---	---	---	---	---	---	---	---	---
2400	710	.68	748	.73	790	.79	835	.86	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2600	760	.82	795	.89	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

NOTE—All cfm is measured external to the furnace with the air filter in place.

O11-168 BLOWER PERFORMANCE

Air Volume (Cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																			
	0		.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1000	250	.07	370	.12	460	.16	540	.19	610	.24	670	.29	730	.33	780	.38	840	.44	890	.51	930	.57
1200	300	.11	400	.15	485	.19	560	.24	625	.29	690	.34	745	.39	795	.44	850	.51	895	.57	940	.64
1400	340	.15	430	.20	515	.25	585	.31	650	.36	710	.41	760	.46	810	.51	865	.58	905	.65	950	.73
1600	390	.20	470	.27	550	.32	615	.37	675	.43	725	.47	780	.53	830	.60	880	.67	920	.74	965	.83
1800	440	.28	510	.33	580	.40	645	.45	700	.51	760	.57	800	.62	850	.69	900	.78	940	.85	980	.94
2000	490	.37	555	.43	620	.49	675	.54	730	.60	780	.66	830	.74	875	.81	920	.90	---	---	---	---
2200	540	.47	600	.53	655	.58	710	.65	765	.72	810	.79	860	.87	---	---	---	---	---	---	---	---
2400	590	.59	645	.64	695	.70	750	.78	795	.85	845	.94	---	---	---	---	---	---	---	---	---	---
2600	640	.70	685	.76	730	.83	780	.92	---	---	---	---	---	---	---	---	---	---	---	---	---	---

NOTE—All cfm is measured external to the furnace with the air filter in place.