LENNOX®
ENGINEERING DATA

G20E and G20X WhisperHeat™ SERIES UP-FLO GAS FURNACES

*78.0% A.F.U.E.

48,000 to 150,000 Btuh Input

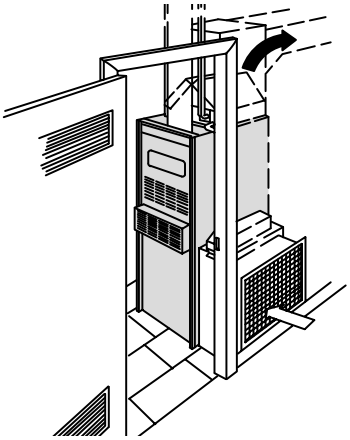
Add-On Cooling — 1 thru 6 Nominal Tons

*Isolated Combustion System Rating For Non-weatherized Furnace

G20E(X)

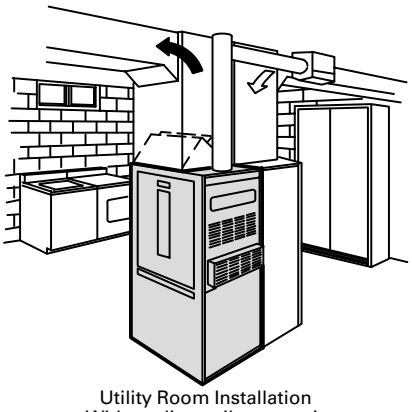
Bulletin #480021
February 1993
Supersedes July 1992

Typical Applications



Closet Installation
With cooling coil and
electronic air cleaner

EXISTING NEG



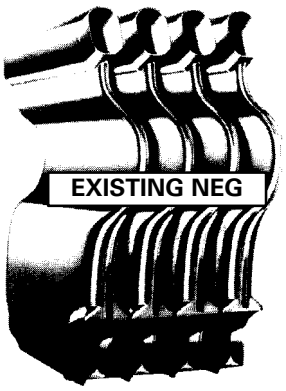
Utility Room Installation
With cooling coil, return air
cabinet and humidifier

Applications — G20E and G20X series gas fired furnaces include ten models with input capacities of 50,000, 75,000, 100,000, 125,000 and 150,000 Btuh and energy efficiencies (AFUE) of 78.0%. G20E models are available with either natural gas or LPG. G20X models are available with natural gas only. Compact cabinet will allow installation in a basement, closet, recreation or utility room. Lennox add-on evaporator coils, electronic air cleaners and power humidifiers can be easily added to the furnace. Units are shipped factory assembled. Each unit is factory test operated.

Approvals — Units are certified by A.G.A. Laboratories and ratings are certified by GAMA. Units have been rated and tested in the Lennox Research Laboratory according to DOE test procedures and FTC labeling regulations. G20X models meet California Nitrogen Oxides (NO_x) Standards and California Seasonal Efficiency requirements. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber. Units are approved for conventional or horizontal (sidewall) venting.

Equipment Warranty — "DURACURVE" Aluminized Steel Heat Exchangers have a limited warranty for a full twenty years. Solid-state ignition modules have a limited warranty for three years. All other components have a limited warranty for one year. Refer to the Lennox Equipment Limited Warranty certificate included with the equipment for details.

Lennox DURACURVE® Aluminized Steel Heat Exchanger — Lennox developed heat exchanger eliminates fatigue failure, ticking, resonance and cleanability problems. In the unique design of this heat exchanger the sides of the clam section form a flue restriction zone comprised of two concentric cylinders. As the sides grow, they expand and move, but in the same direction and at the same rate. The result is perfect combustion, proper venting and absolute freedom of movement for the metal. Design also results in high input to heat surface ratio, low resistance to air travel, reducing blower motor horsepower requirements and ease of cleaning. Heavy gauge aluminized steel construction provides long service life. Compact size of heat exchanger permits low overall design of furnace cabinet and smooth lines give minimum resistance to air travel. Laboratory life cycle testing proves long life of the heat exchanger.



NOTE — Specifications, Ratings and Dimensions subject to change without notice.

FEATURES

Aluminized Steel Burners — Each burner has four rows of practically continuous ports which result in quiet and clean combustion. A crossover igniter of actual burner ports, perpendicular to the main burner, carries a positive flame from burner to burner to achieve quiet and sure ignition. "X" models have stainless steel NO_x rods.

Electronic Pilot Ignition — Solid-state electronic spark igniter provides positive ignition of pilot burner on each operating cycle. Pilot gas is ignited and burns during each running cycle (intermittent pilot) of the furnace. Main burners and pilot gas are extinguished during the off cycle. This system permits main gas valve to open only when the pilot burner is proven to be lit. Should a loss of flame occur, the main valve closes, shutting down the unit. Pilot is a fully automatic operation on demand for heat.Ignition control is factory installed on the vestibule panel. Also features Watchguard circuit. Solid-state control provides automatic reset of ignition controls after 1 hour of continous thermostat demand after unit lockout.

Automatic Gas Control — Silent operating gas controls provide 100% safety shut off. 24 volt redundant combination gas control valve combines automatic safety pilot, manual shut off option (On-Off), pilot filtration, automatic electric valve (dual) and gas pressure regulation into a compact combination control. Dual valve design provides double assurance of 100% close off of gas to the pilot and main burners on each off cycle.

Rugged Cabinet — Constructed of heavy gauge cold rolled steel. Cabinet is subject to five station metal wash process resulting in a perfect bonding surface for a paint finish of baked-on enamel. The paint solution and metal are given opposite electrical charges resulting in positive adhesion and even coverage of the paint to the metal surfaces. Cabinet surface temperatures are low due to interior metal liners on each side of cabinet and foil faced fiberglass insulation on vestibule panel, side panels and on back panel. Blower compartment is completely lined with black matt faced fiberglass insulation, assuring quiet operation. Draft hood is constructed of heavy gauge aluminized steel. Holes for leveling are provided in cabinet base, installer must furnish bolts and nuts. Complete service access is accomplished by removing furnace and blower compartment access panels. Blower assembly and filter may be completely removed from unit for service. Safety interlock switch located in the wiring junction box automatically shuts off power to the unit when blower compartment access door is removed. Gas piping and electrical inlet knockouts are provided in both sides of the cabinet. Return air entry is possible on either or bottom of cabinet.

Combustion Air Damper — Damper is factory installed in the aluminized steel burner box extension of the heat exchanger. Energy saving damper closes off combustion air flow through the heat exchanger during burner off cycle to prevent loss of heated air up the flue. Heavy gauge aluminized steel damper is gasketed for tight seal and rotates smoothly in nylon bearings. Equipped with a heavy duty synchronous spring return damper motor. Removable top on burner box allows access into the burner area for servicing and field conversion to LPG. Damper proving switch confirms that damper is open before allowing main gas valve to open. An observation port with cover is furnished on burner box for flame viewing

Flame Rollout Switch — Manual reset switch is furnished as standard and is factory installed on the burner box. Switch prevents unit operation in the event combustion products passage through the flueway is reduced or blocked.

Blocked Vent Shutoff Sensor — Manual reset temperature sensor prevents unit operation in case of flue blockage and meets ANSI requirements. Sensor is furnished as standard and is factory installed on the draft hood.

Limit Controls — Factory installed and accurately located limit control gives protection against abnormal operating conditions.

Wiring Junction/Control Box — Power supply and thermostat connections are made at the wiring junction/control box which is located in the blower compartment. Box contains BCC2-2 Blower Control Center and control transformer.

BCC2-2 Blower Control Center — Furnished and factory installed in wiring junction/control box. Solid-state board contains all necessary controls and relays to operate furnace. Change in blower speed is easily accomplished by simple change on control board. Fan control consists of adjustable blower timed-off delay (90 to 330 seconds) and fixed blower timed-on delay (45 seconds). For air-conditioning applications, blower is automatically energized on thermostat demand for cooling. Provisions have been made for additional wiring connections required for power humidifiers and electronic air cleaners. Also included is a low voltage terminal strip for thermostat connections.

Transformer — 24 volt control transformer is furnished as standard equipment and is factory installed in wiring junction/control box. Transformer has fuse wired in series for added protection.

Powerful Blowers — Units are equipped with quiet multi-speed direct drive blowers. Each blower assembly is statically and dynamically balanced. Multiple-speed leadless motor is resiliently mounted. A choice of blower speeds is available on each blower. See blower performance tables.

Cleanable Air Filter — Washable or vacuum cleanable polyurethane frame type filter is furnished as standard for return air applications on either side of cabinet. Filter is field installed in unit on support rails for quick and easy removal for servicing.

A bottom return air kit is required for bottom return air applications and must be ordered extra. See below and Specifications table.

OPTIONAL ACCESSORIES (Must Be Ordered Extra)

Continuous Low Speed Blower Kit (Optional) — Field installed kit LB-63646A **(67H91)** is available to provide continuous low speed blower operation. Kit includes switch and all necessary wiring. Kit is not furnished and must be ordered extra. Not used if Twinning Kit is used.

Furnace Twinning Kit (Optional) — Field Installed kit LB-63093B **(32J07)** is available to operate two furnaces simultaneously. Kit consists of heavy gauge steel control box and two auxiliary limit controls. Control box has electrical inlet knockouts and contains low voltage and high voltage terminal strips, blower control relay, heat relays, door interlock relay and 24 volt control transformer. All controls are factory installed and wired. Limit controls are field installed in each furnace. Holes for mounting control box are provided. Box may be field installed in any convenient location adjacent to or on one of the furnaces. Optional Continuous Low Speed Blower Switch **(67H18)** is available for plug-in connection to twinning kit.

LPG Conversion Kit (Optional) — For LPG models a conversion kit is required for field changeover from natural gas. Kit is not furnished and must be ordered extra. See specifications table for order number. Not available for "X" models.

Bottom Return Air Kit (Optional) — Kit is required for bottom return air applications and must be ordered extra. See Specifications tables for catalog numbers and filter sizes.

Thermostat (Optional) — Heating thermostat is not furnished and must be ordered extra. See Thermostats bulletin in Accessories Section. For all-season applications, heating and cooling thermostat is available with the condensing unit.

Return Air Cabinets (Optional) — Constructed of heavy gauge cold rolled steel with a baked-on enamel paint finish. Simplifies return air duct connection to the furnace. Shipped knocked down and must be field assembled. May be field installed on either side of furnace. Must be ordered extra. See specifications table.

SPECIFICATIONS

Model No.		G20Q2E-50 •G20Q2X-50	G20Q3E-50 •G20Q3X-50	G20Q2E-75 •G20Q2X-75	G20Q3E-75 •G20Q3X-75	G20Q4E-75 •G20Q4X-75
Input Btuh		48,000	48,000	75,000	75,000	75,000
Output Btuh		38,000	38,000	59,000	59,000	60,000
*A.F.U.E.		78.0%	78.0%	78.0%	78.0%	78.0%
California Seasonal Efficiency		72.3%	72.1%	73.9%	73.4%	73.0%
Flue size connection (in. diameter) round		4	4	4	4	4
Temperature rise range (°F)		20-50	20-50	35-65	35-65	25-55
High static certified by A.G.A. (in wg.)		.50	.50	.50	.50	.50
Gas Piping Size I.P.S. (in.) Natural or **LPG		1/2	1/2	1/2	1/2	1/2
Blower wheel nominal diameter x width (in.)		9 x 7	10 x 7	10 x 7	10 x 7	10 x 8
Blower motor hp		1/4	1/3	1/5	1/3	1/2
Number and size of filters (in.)		(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 16 x 25 x 1
Tons of cooling that can be added		1, 1-1/2 or 2	2-1/2 or 3	1, 1-1/2 or 2	2-1/2 or 3	3-1/2 or 4
Shipping weight (lbs.) 1 package		148	153	160	160	183
Electrical characteristics		120 volts — 60 hertz — 1 phase (less than 12 amps) All models				
**LPG kit (optional)		LB-62384DB **(35J89)** (All non "X" models)				
Continuous Low Speed Blower Kit (optional)		LB-63646A **(67H91)** (All models)				
Furnace Twinning Kit (optional)		LB-63093B **(32J07)** (All models)				
Cont. Low Speed Blower Switch (optional)		**67H18** (All models — used with Twinning Kit only)				
Bottom Return Air Filter Kit (optional)	Catalog No.	**12J74**				**12J71**
	No. & Size of Filter (in.)	(1) 14 x 25 x 1	(1) 14 x 25 x 1	(1) 14 x 25 x 1	(1) 14 x 25 x 1	(1) 18 x 25 x 1
Return Air Cabinet (optional)	Model No.	RA10-16-49	RA10-16-49	RA10-16-49	RA10-16-49	RA10-16-49
	Shipping weight (lbs.)	54	54	54	54	54

•Not available with LPG.
*Annual Fuel Utilization Efficiency based on D.O.E. test procedures and according to F.T.C. labeling requirements. Isolated combustion system rating for non-weatherized furnaces.
**LPG kit must be ordered extra for field changeover.

SPECIFICATIONS

Model No.		G20Q3/4E-100 •G20Q3/4X-100	G20Q5/6E-100 •G20Q5/6X-100	G20Q3/4E-125 •G20Q3/4X-125	G20Q5/6E-125 •G20Q5/6X-125	G20Q5/6E-150
Input Btuh		100,000	100,000	125,000	125,000	150,000
Output Btuh		79,000	79,000	99,000	98,000	120,000
*A.F.U.E.		78.0%	78.0%	78.0%	78.0%	78.0%
California Seasonal Efficiency		73.7%	72.5%	74.6%	73.7%	74.0%
Flue size connection (in. diameter) oval		5	5	6	6	6
Temperature rise range (°F)		35-65	25-55	45-75	35-65	40-70
High static certified by A.G.A. (in wg.)		0.50	0.75	0.50	0.50	0.50
Gas Piping Size I.P.S. (in.) Natural or **LPG		1/2	1/2	1/2	1/2	1/2
Blower wheel nominal diameter x width (in.)		10 x 8	12 x 12	10 x 8	12 x 12	12 x 12
Blower motor hp		1/2	3/4	1/2	3/4	3/4
Number and size of filters (in.)		(1) 16 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1
Tons of cooling that can be added		3, 3-1/2 or 4	5 or 6	3, 3-1/2 or 4	5 or 6	5 or 6
Shipping weight (lbs.) 1 package		206	247	247	252	294
Electrical characteristics		120 volts — 60 hertz — 1 phase (less than 12 amps) All models				
**LPG kit (optional)		LB-62384DB **(35J89)** (All non "X" models)				
Continuous Low Speed Blower Kit (optional)		LB-63646A **(67H91)** (All models)				
Furnace Twinning Kit (optional)		LB-63093B **(32J07)** (All models)				
Cont. Low Speed Blower Switch (optional)		**67H18** (All models — used with Twinning Kit only)				
Bottom Return Air Filter Kit (optional)	Catalog No.	**12J71**	**12J72**			**12J73**
	No. & Size of Filter (in.)	(1) 18 x 25 x 1	(1) 25 x 25 x 1	(1) 25 x 25 x 1	(1) 25 x 25 x 1	(1) 24 x 30 x 1
Return Air Cabinet (optional)	Model No.	RA10-16-49	RA10-16-53	RA10-16-53	RA10-16-53	RA10-16-53
	Shipping weight (lbs.)	54	56	56	56	56

•Not available with LPG.
*Annual Fuel Utilization Efficiency based on D.O.E. test procedures and according to F.T.C. labeling requirements. Isolated combustion system rating for non-weatherized furnaces.
**LPG kit must be ordered extra for field changeover.

BLOWER DATA

G20Q2E(X)-50 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds			
	High	Med-High	Med-Low	Low
0	1210	945	715	535
.05	1200	945	715	535
.10	1180	945	715	535
.15	1160	945	710	535
.20	1140	945	710	535
.25	1125	945	710	535
.30	1100	945	710	535
.40	1050	920	705	535
.50	1000	885	685	535
.60	915	840	650	535
.70	840	750	590	510

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

G20Q2E(X)-75 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1185	920	755
.05	1180	915	750
.10	1175	915	750
.15	1170	910	740
.20	1165	900	735
.25	1150	895	725
.30	1145	885	715
.40	1110	865	695
.50	1070	835	655
.60	1015	800	625
.70	945	745	570

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

G20Q3E(X)-50 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds			
	High	Med-High	Med-Low	Low
0	1475	1235	945	790
.05	1470	1240	950	790
.10	1465	1240	950	790
.15	1455	1235	955	790
.20	1440	1230	955	790
.25	1425	1225	955	790
.30	1405	1210	955	790
.40	1355	1180	940	780
.50	1290	1140	915	755
.60	1220	1080	875	695
.70	1145	1010	815	600

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

G20Q3E(X)-75 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds			
	High	Med-High	Med-Low	Low
0	1480	1235	950	785
.05	1470	1230	945	775
.10	1455	1225	945	770
.15	1440	1220	940	770
.20	1420	1210	935	770
.25	1400	1200	930	770
.30	1375	1190	925	770
.40	1325	1155	905	760
.50	1255	1115	870	735
.60	1185	1055	830	690
.70	1100	980	770	610

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

G20Q4E(X)-75 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds			
	High	Med-High	Med-Low	Low
0	1835	1650	1450	1165
.05	1805	1625	1435	1165
.10	1770	1600	1425	1165
.15	1740	1570	1410	1165
.20	1700	1545	1390	1165
.25	1675	1525	1370	1160
.30	1640	1500	1350	1150
.40	1575	1440	1315	1130
.50	1500	1380	1270	1085
.60	1420	1320	1230	1040
.70	1335	1240	1180	990

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

G20Q3/4E(X)-100 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	1925	1650	1370	1120	920
.05	1885	1640	1360	1110	915
.10	1850	1635	1345	1100	910
.15	1810	1605	1335	1090	910
.20	1780	1590	1320	1085	905
.25	1735	1555	1305	1080	900
.30	1715	1535	1290	1070	895
.40	1635	1475	1250	1050	875
.50	1555	1405	1195	1025	845
.60	1465	1335	1150	985	800
.70	1375	1265	1090	920	740

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

BLOWER DATA

G20Q3/4E(X)-125 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	1855	1690	1450	1155	920
.05	1835	1670	1440	1155	920
.10	1800	1645	1420	1155	915
.15	1750	1615	1415	1150	915
.20	1720	1595	1400	1150	910
.25	1695	1575	1390	1150	905
.30	1670	1545	1375	1150	900
.40	1600	1490	1340	1140	885
.50	1530	1430	1295	1115	860
.60	1455	1365	1245	1075	815
.70	1370	1285	1180	1020	760

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

G20Q5/6E(X)-125 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	2665	2280	2040	1825	1625
.05	2630	2260	2020	1795	1600
.10	2585	2235	2000	1775	1565
.15	2560	2200	1970	1740	1550
.20	2520	2175	1945	1710	1525
.25	2485	2140	1910	1675	1480
.30	2450	2110	1880	1645	1450
.40	2365	2035	1800	1570	1375
.50	2265	1950	1720	1490	1285
.60	2160	1860	1635	1405	1190
.70	2035	1770	1540	1310	1090

NOTE- All cfm data is measured external to unit with air filter in place.

G20Q5/6E(X)-100 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	2650	2365	2125	1900	1715
.05	2635	2355	2105	1885	1700
.10	2620	2340	2085	1870	1690
.15	2590	2320	2065	1855	1665
.20	2565	2295	2050	1840	1650
.25	2535	2270	2030	1825	1630
.30	2510	2245	2010	1810	1615
.40	2450	2195	1965	1770	1575
.50	2385	2135	1920	1730	1540
.60	2320	2080	1875	1685	1495
.70	2250	2020	1820	1630	1435
.80	2180	1960	1760	1565	1340

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

G20Q5/6E-150 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	2720	2350	2080	1850	1645
.05	2690	2330	2060	1830	1640
.10	2660	2305	2040	1810	1630
.15	2625	2280	2020	1790	1615
.20	2595	2255	2000	1775	1600
.25	2565	2230	1980	1755	1575
.30	2530	2200	1960	1735	1550
.40	2465	2140	1910	1695	1490
.50	2390	2080	1850	1630	1420
.60	2305	2005	1780	1545	1350
.70	2205	1920	1685	1425	1280

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

INSTALLATION CLEARANCES (inches)

Sides	1 inch
Rear	1 inch
Top	1 inch
**Front	**6 inches
Floor	Combustible
•Flue	•1 inch
*Flue	*6 inches

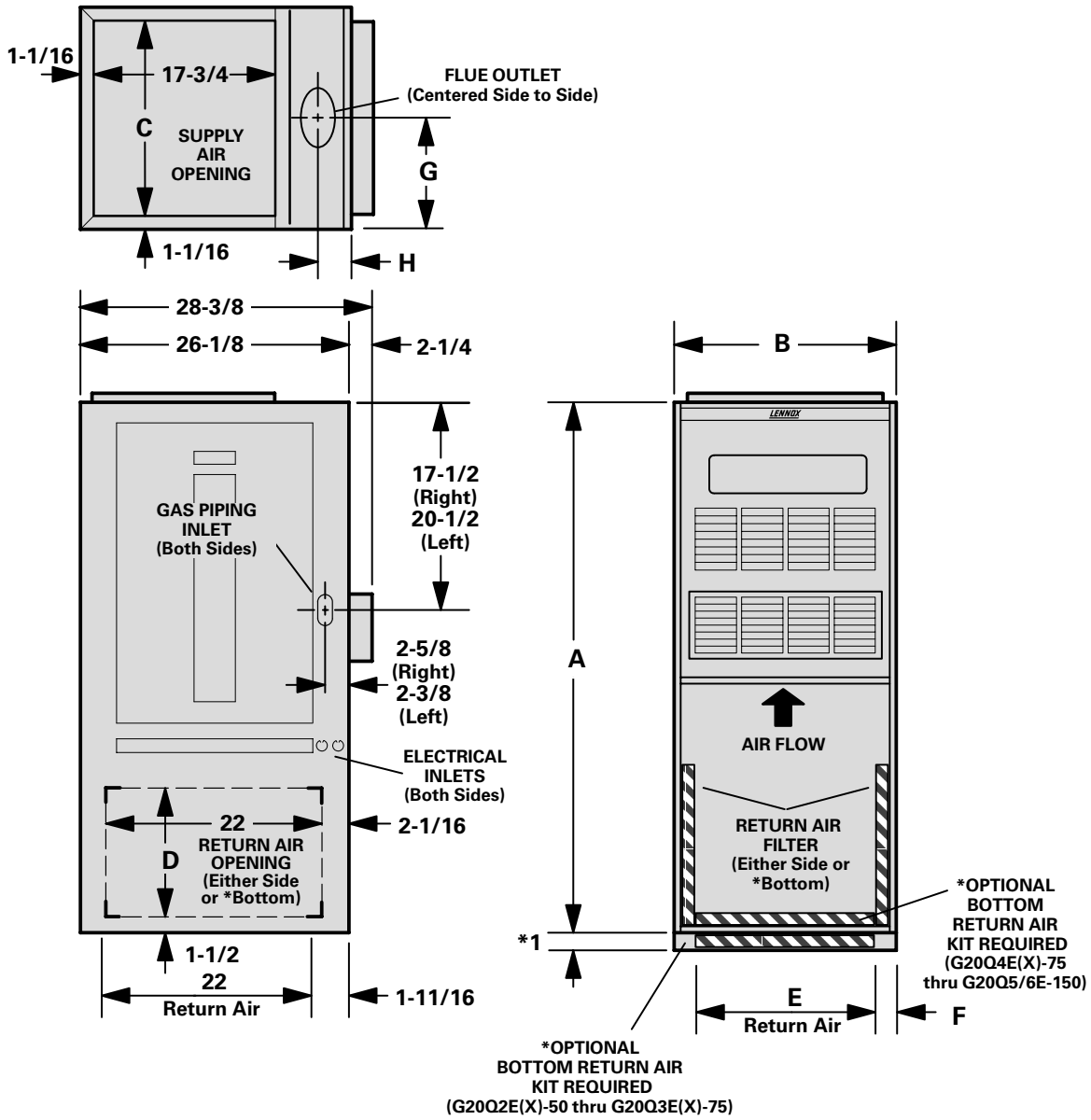
•Type "B" vent clearances as listed by U.L.
*This is clearance to all flue pipes except type "B".
**Measured from the draft hood relief opening.
NOTE—Flue sizing and air for combustion and ventilation must conform to the methods outlined in American National Standard (ANSI-Z223.1) National Fuel Gas Code.

HIGH ALTITUDE DERATE

A.G.A. certified units must be derated when installed at an elevation of more than 2000 feet above sea level. If unit is installed at an altitude higher than 2000 feet, the unit must be derated 4% for every 1000 feet above sea level. Thus, at an altitude of 4000 feet, the unit would require a derate of 16%.

NOTE — This is the only permissible derate for the units.

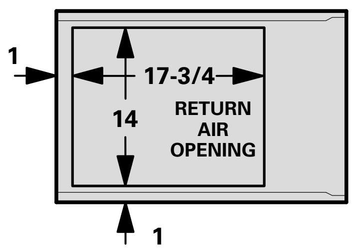
G20E(X) SERIES FURNACES



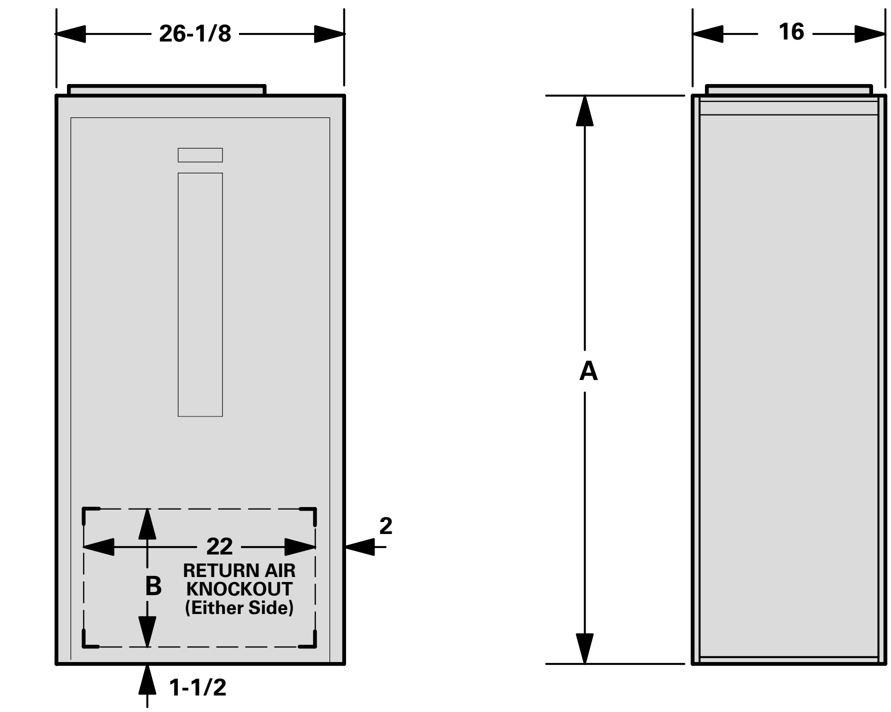
Model No.	A	B	C	D	E	F	G	H
G20Q2E(X)-50 G20Q3E(X)-50 G20Q2E(X)-75 G20Q3E(X)-75	49	16-1/4	14-1/8	14	11	2-5/8	8-1/8	3-1/8
G20Q4E(X)-75 G20Q3/4E(X)-100	49	21-1/4	19-1/8	14	14	3-5/8	10-5/8	3-1/8
G20Q5/6E(X)-100 G20Q3/4E(X)-125 G20Q5/6E(X)-125	53	26-1/4	24-1/8	18	21	2-5/8	13-1/8	3-3/8
G20Q5/6E-150	53	31-1/4	29-1/8	18	26	2-5/8	15-5/8	3-3/8

ACCESSORY DIMENSIONS (inches)

RA10 SERIES RETURN AIR CABINETS



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



Model No.	RA10-16-49	RA10-16-53
A	49	53
B	14	18

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