



**GAS FURNACES**

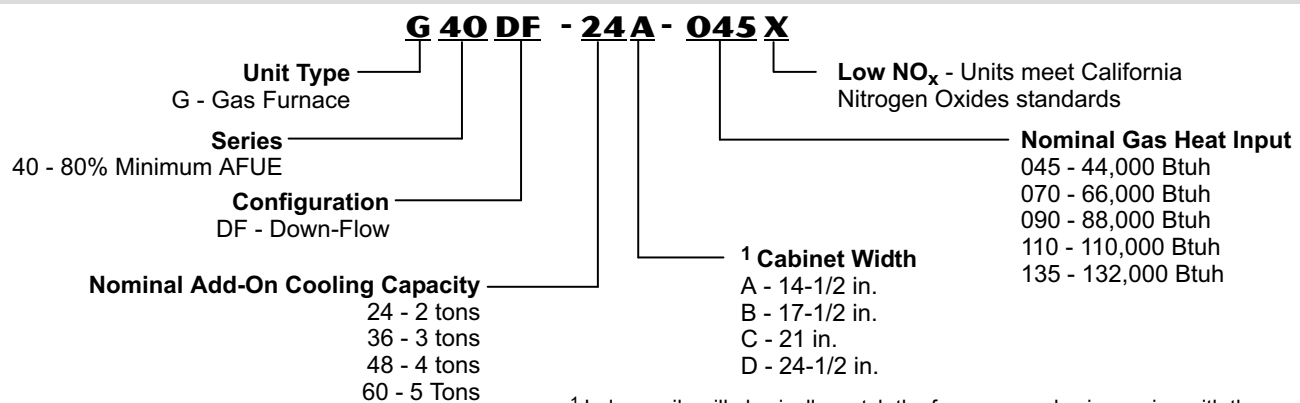
**G40DF**  
**MERIT® SERIES**  
**Down-Flow**

Bulletin No. 210320  
 December 2008  
 Supersedes May 2007



**AFUE - 80%**  
**Input - 44,000 to 132,000 Btuh**  
**Nominal Add-on Cooling - 1.5 to 5 Tons**

**MODEL NUMBER IDENTIFICATION**



<sup>1</sup> Indoor coils will physically match the furnace supply air opening with the same letter designation in the model number.

## FEATURES

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### WARRANTY

**Duralok® Aluminized Steel Heat Exchanger - Limited Twenty Year** warranty in residential applications, ten years in non-residential applications.

**All other covered components - Limited Five Year** warranty in residential applications, one year in non-residential applications.

Refer to Lennox Equipment Limited Warranty certificate included with equipment for details.

### APPROVALS

Units certified by CSA International and ratings are certified by GAMA.

Units tested and rated according to US DOE test procedures and FTC labeling regulations.

Approved by California Energy Commission and meet California Seasonal Efficiency requirements and California Nitrogen Oxides (NO<sub>x</sub>) Standards.

"X" models meet California Nitrogen Oxides (NO<sub>x</sub>) Standards.

Blower data from unit tests conducted in Lennox Laboratory air test chamber.

ISO 9001 Registered Manufacturing Quality System.

### APPLICATIONS

Input capacities of 44,000, 66,000, 88,000, 110,000 and 132,000 Btuh.

Energy efficiency (AFUE) of 80%.

Utility room, alcove, closet or attic installation.

Lennox add-on indoor coils, high efficiency air cleaners and humidifiers can easily be added to furnace.

Shipped factory assembled with all controls installed and wired.

Each unit factory test operated to insure proper operation.

### HEATING SYSTEM

#### 1 Lennox DuraLok® Aluminized Steel Heat Exchanger

Heavy gauge aluminized steel heat exchanger.

Crimped seam clamshell type design.

Designed for normal expansion and contraction

Minimum resistance to air flow.

Heat exchanger has been laboratory life cycle tested.

#### 2 Inshot Burners

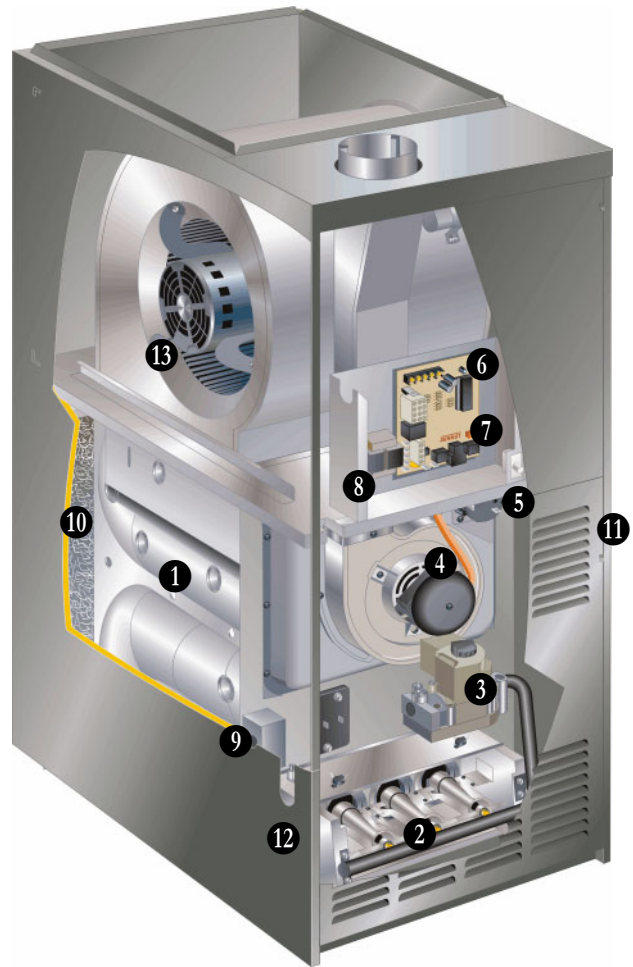
Aluminized steel inshot burners.

Burner venturi mixes air and gas in correct proportion for proper combustion.

Burner assembly is removeable from the unit as a single component for servicing.

#### 3 Gas Control Valve

24 volt redundant combination gas control valve combines manual shut off valve (On-Off), automatic electric valve (dual) and gas pressure regulation into a compact combination control.



#### Hot Surface Mini-Nitride Ignitor

Unique, non-porous, high strength proprietary ceramic material provides long life and trouble-free maintenance. Low mass element provides fast heat-up and consistent igniter temperature with low power usage.

Cemented to alumina block for positive mounting and protection against current leakage.

High temperature Teflon® insulated ignition lead wires for dependable operation.

#### 4 Combustion Air Inducer

Shaded pole heavy duty blower prepurges heat exchanger and safely vents flue products.

#### 5 Pressure switch

Proves blower operation before allowing gas valve to open.

Operates only during heating cycle.

#### Limit Controls

Automatic reset, primary and secondary limits are accurately located.

Primary limit factory installed on vestibule panel on all units, secondary limit factory installed on blower housing.

#### Flame Rollout Switches (2)

Manual reset.

Factory installed on burner box.

Switches provide protection from abnormal operating conditions.

## FEATURES

### OPTIONS

#### High Altitude Orifice Kit - Natural Gas Only

Required for all natural gas models for proper unit operation at altitudes of 7501 to 10,000 feet.

#### LPG/Propane Conversion Kit

Required for field changeover from natural gas.

### CONTROLS

#### 6 Integrated Furnace Control Board

Solid-state board contains all necessary controls and relays to operate furnace.

Combustion air inducer is controlled by board. Prior to ignition, a pre-purge cycle for 15 seconds is initiated. After the main burners are turned off, a post-purge cycle for 5 seconds is run.

Ignition control board continuously monitors line voltage and maintains the igniter power at a constant level to provide consistent lighting and maximum igniter life.

Electronic flame sensor control assures safe and reliable operation.

Should loss of flame occur, flame sensor controls will initiate 4 attempts at re-ignition before locking out unit operation for 60 minutes.

Watchguard type circuit automatically resets ignition controls after one hour of continuous thermostat demand after unit lockout, eliminating nuisance calls for service.

Fan control consists of adjustable blower timed-off delay (60, 90, 120, 180 seconds - factory setting 90 seconds) and fixed blower timed-on delay (45 seconds).

For air-conditioning applications, blower is automatically energized on thermostat demand for cooling.

#### 7 Two accessory terminals furnished for additional power supply requirements for 120 volt (less than 1 amp) power humidifiers and powered air cleaners.

Ignition control has two LED's to indicate status and as an aid in troubleshooting.

#### 24 Volt Transformer

#### 8 Furnished and factory installed in control box. 40VA transformer has fuse wired in series.

#### Field Wiring Make-up Box

#### 9 Furnished for line voltage wiring.

Factory installed internally on left side of furnace.

Box may be installed internally or externally on either side of furnace.

### OPTIONS

#### Furnace Twinning Kit

Required to operate two furnaces simultaneously. Kit consists of twinning control and two fan sensors.

#### Thermostat

See Thermostat bulletins in Controls section and Lennox Price Book for a complete list of thermostats.

### CABINET

Low profile, narrow width cabinet allows easy installation. Heavy gauge cold rolled steel constructed.

Pre-painted cabinet finish.

Flue outlet on top of cabinet.

Flanges provided on return air opening for ease of plenum connection.

#### 10 Insulated cabinet with foil faced insulation on sides and back of heating compartment.

Complete service access.

#### 11 Tool-less latches on burner door assure positive lock.

Safety interlock switch automatically shuts off power to unit when blower compartment access door is removed.

#### 12 Gas piping and electrical inlets are provided in both sides of cabinet.

### OPTIONS

#### Down-Flow Additive Base

Required for heating only units installed on combustible floors.

Not required in add-on cooling applications.

See dimension drawing.

### BLOWER

#### 13 Multi-speed direct drive blower.

Statically and dynamically balanced.

Resiliently mounted.

Blower assembly easily removed for servicing.

Blower speeds are easily changed on the SureLight® integrated furnace control board. See blower performance tables.

### COIL MATCH-UP

Coil inlet openings match corresponding furnace supply air openings with same letter designation in the model number. No adaptor required. See Coil/Furnace Match-up Charts in this bulletin for additional information.

### FILTER (NOT FURNISHED)

Filter and provisions for external mounting must be field provided.

## INSTALLATION CLEARANCES

Vent Type	Type B1	Type C
Sides	0 inches (0 mm)	<sup>1</sup> 0 inches (0 mm)
Rear	0 inches (0 mm)	0 inches (0 mm)
Top	1 inch (25 mm)	1 inch (25 mm)
Front	3 inches (76 mm)	3 inches (76 mm)
Front (alcove)	24 inches (610 mm)	24 inches (610 mm)
Front (service)	24 inches (610 mm)	24 inches (610 mm)
Floor	<sup>2</sup> Combustible	<sup>2</sup> Combustible
Flue	1 inch (25 mm)	6 inches (152 mm)

NOTE - Air for combustion must conform to the methods outlined in the National Fuel Gas Code (NFPA 54/ANSI-Z223.1) or the National Standard of Canada CAN/CSA-B149.1 "Natural Gas and Propane Installation Code".

NOTE - In the U.S. flue sizing must conform to the methods outlined in the current National Fuel Gas Code (NFPA 54/ANSI-Z223.1) or applicable provisions of local building codes. In Canada flue sizing must conform to the methods outlined in National Standard of Canada CAN/CSA-B149.1.

<sup>1</sup> Left side requires 4 in. clearance if single wall vent is used on 14-1/2 in. "A" width cabinets, and 2 in. clearance on 17-1/2 in. "B" width cabinets.

<sup>2</sup> Clearance for installation on combustible floor if optional additive base is installed between furnace and combustible floor. Not required in add-on cooling applications if installed in accordance with local codes or National Fuel Gas Code ANSI-Z223.1 or National Standard of Canada CSA-149.1 and CSA-149.2 "Installation Code for Gas Burning Appliances".

## SPECIFICATIONS

Gas Heating Performance	Model No.	G40DF-24A-045	G40DF-36A-070	G40DF-36B-090
	Low NO <sub>x</sub> Model No.	G40DF-24A-045X	G40DF-36A-070X	---
	Input - Btuh	44,000	66,000	88,000
	Output - Btuh	36,000	53,000	71,000
	<sup>1</sup> AFUE	80.0%	80.0%	80.0%
	High static (CSA) - in. w.g.	.50	.50	.50
	Temperature rise range - °F	20 - 50	35 - 65	45 - 75
	Gas Manifold Pressure (in. w.g.) - Natural Gas	3.5	3.5	3.5
	LPG/Propane	10.0	10.0	10.0
Connections	Flue connection - in. (round)	4	4	4
	Gas pipe size IPS - in.	1/2	1/2	1/2
Indoor Blower	Wheel nominal diameter x width - in.	10 x 7	10 x 8	10 x 8
	Motor output - hp	1/5	1/3	1/3
	Tons of add-on cooling	1.5 - 2	2 - 3	2 - 3
Shipping Data	lbs. - 1 package	121	132	146
Electrical characteristics		120 volts - 60 hertz - 1 phase (less than 12 amps)		

## SPECIFICATIONS

Gas Heating Performance	Model No.	G40DF-48C-090	G40DF-48C-110	G40DF-60C-110	G40DF-60D-135
	Low NO <sub>x</sub> Model No.	G40DF-48C-090X	---	G40DF-60C-110X	---
	Input - Btuh	88,000	110,000	110,000	132,000
	Output - Btuh	71,000	89,000	90,000	108,000
	<sup>1</sup> AFUE	80.0%	80.0%	80.0%	80.0%
	High static (CSA) - in. w.g.	.50	.50	.50	.50
	Temperature rise range - °F	45 - 75	45 - 75	35 - 65	40 - 70
	Gas Manifold Pressure (in. w.g.) - Natural Gas	3.5	3.5	3.5	3.5
	LPG/Propane	10.0	10.0	10.0	10.0
Connections	Flue connection - in. (round)	4	4	4	4
	Gas pipe size IPS - in.	1/2	1/2	1/2	1/2
Indoor Blower	Wheel nominal diameter x width - in.	10 x 10	10 x 10	11-1/2 x 10	11-1/2 x 10
	Motor output - hp	1/2	1/2	1	1
	Tons of add-on cooling	3 - 4	2.5 - 4	4 - 5	4 - 5
Shipping Data	lbs. - 1 package	153	169	172	195
Electrical characteristics		120 volts - 60 hertz - 1 phase (less than 12 amps)			

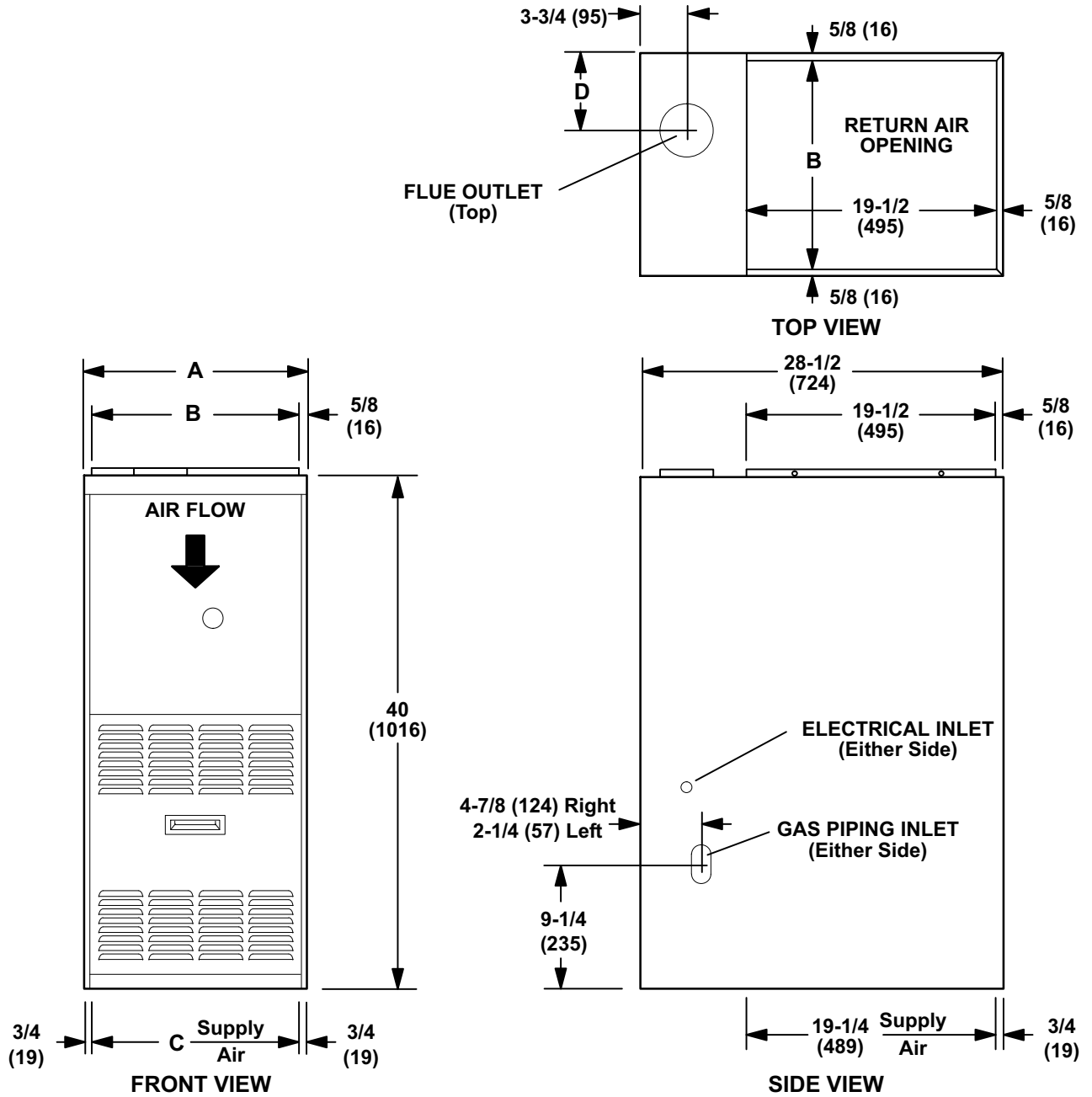
NOTE - Filters and provisions for mounting are not furnished and must be field provided.

<sup>1</sup> Annual Fuel Utilization Efficiency based on DOE test procedures and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

## OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

	"A" Width Models	"B" Width Models	"C" Width Models	"D" Width Models
<b>CABINET ACCESSORIES</b>				
Down-Flow Additive Base	11M59	11M60	11M61	11M62
<b>CONTROLS</b>				
Twining Kit	15L38	15L38	15L38	15L38
<b>GAS HEAT ACCESSORIES</b>				
Input	High Altitude Orifice Kit - Natural Gas Only	LPG/Propane Kit		
	7501-10,000 ft.	0-7500 ft.	7501-10,000 ft.	
-all models	44W51	25W20	25W21	

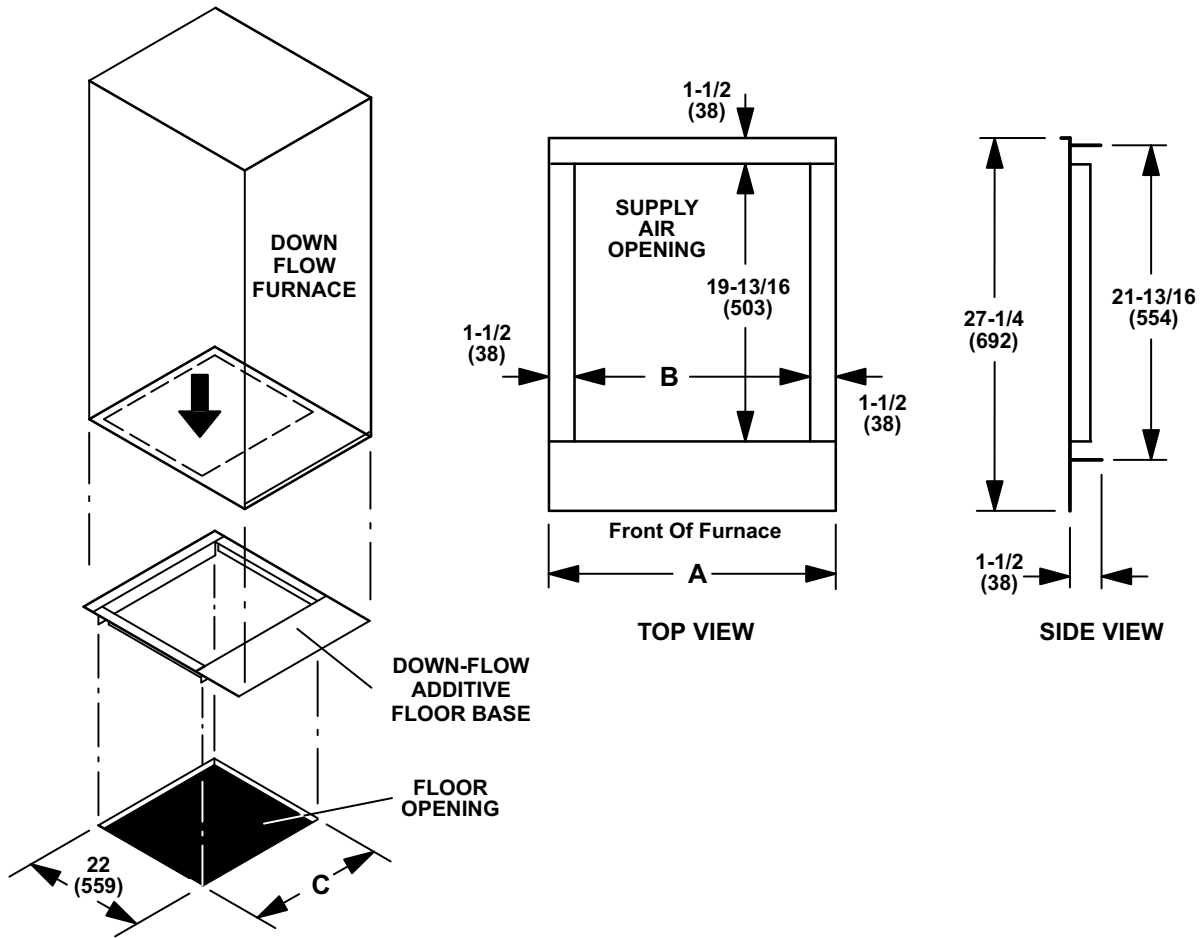
**DIMENSIONS - INCHES (MM)**



Model No.	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
G40DF-24A-045 G40DF-36A-070	14-1/2	368	13-1/4	337	13	330	4-1/2	114
G40DF-36B-090	17-1/2	446	16-1/4	413	16	406	6	152
G40DF-48C-090 G40DF-48C-110 G40DF-60C-110	21	533	19-3/4	502	19-1/2	495	7-3/4	197
G40DF-60D-135	24-1/2	622	23-1/4	591	23	584	9-1/2	241

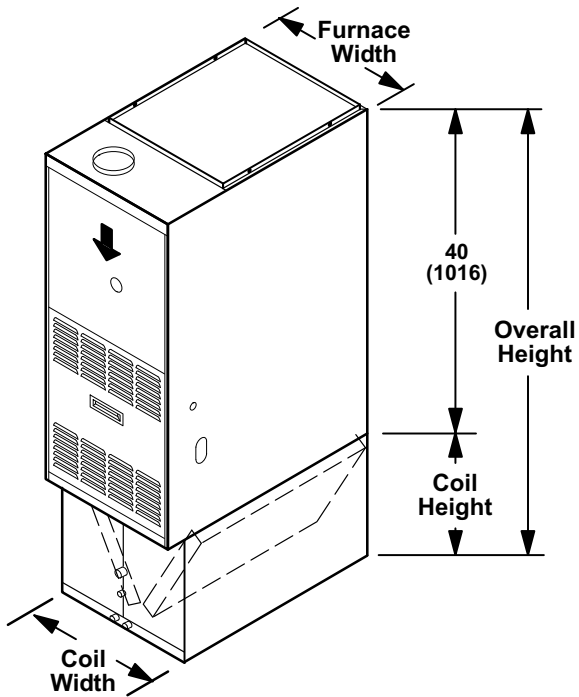
**OPTIONAL ACCESSORY DIMENSIONS - INCHES (MM)**

**DOWN-FLOW ADDITIVE FLOOR BASE**



Model No.	A		B		C	
	in.	mm	in.	mm	in.	mm
G40DF-24A-045 G40DF-36A-070	16-9/16	421	13-9/16	344	15-3/4	400
G40DF-36B-090	19-9/16	497	16-9/16	421	18-3/4	476
G40DF-48C-090 G40DF-48C-110 G40DF-60C-110	23-1/16	586	20-1/16	510	22-1/4	565
G40DF-60D-135	26-9/16	675	23-9/16	598	25-3/4	654

## DIMENSIONS - INCHES (MM) - FURNACE/COIL COMBINATIONS



Model Number	Coil Width		Furnace Width		Coil Height		Overall Height	
	in.	mm	in.	mm	in.	mm	in.	mm
CR33-24B-F	17-1/2	446	17-1/2	446	13-1/4	337	53-1/4	1353
CR33-30/36B-F	17-1/2	446	17-1/2	446	16-1/8	410	56-1/8	1426
CR33-30/36C-F	21	533	21	533	16-1/8	410	56-1/8	1426
CR33-48B-F	21	533	17-1/2	446	20	508	60	1524
CR33-48C-F	21	533	21	533	20	508	60	1524
CR33-50/60C-F	24-1/2	622	21	533	23-5/8	600	53-5/8	1362
CR33-60D-F	24-1/2	622	24-1/2	622	23-5/8	600	53-5/8	1362

## FILTER AIR RESISTANCE

For 1 Inch Cleanable Filter (Field Provided)

cfm	in. w.g.
0	0.00
200	0.01
400	0.03
600	0.04
800	0.06
1000	0.09
1200	0.12
1400	0.15
1600	0.19
1800	0.23
2000	0.27
2200	0.33
2400	0.38
2600	0.44

## BLOWER/WATTS DATA

NOTE - All air data is measured external to unit with 1 in. cleanable filter (not furnished - field provided) in place. Also see Filter Air Resistance table.

### G40DF-24A-045 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds					
	High		Medium		Low	
	cfm	Watts	cfm	Watts	cfm	Watts
0.00	1200	417	1060	367	830	278
0.05	1185	410	1040	360	820	274
0.10	1165	402	1025	353	810	270
0.15	1145	396	1010	346	795	265
0.20	1125	390	990	338	775	260
0.25	1105	382	980	335	765	257
0.30	1080	374	965	331	750	254
0.40	1020	357	920	319	710	244
0.50	960	342	875	306	650	234
0.60	900	330	810	290	620	231
0.70	815	313	690	272	565	221
0.80	685	289	620	259	465	203
0.90	560	271	510	238	395	190

### G40DF-36A-070 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.00	1475	616	1345	554	1150	495	990	415
0.05	1450	606	1320	543	1140	481	985	407
0.10	1425	595	1300	532	1125	466	975	398
0.15	1395	585	1275	521	1115	452	970	390
0.20	1375	574	1255	510	1105	437	965	381
0.25	1345	563	1230	494	1090	428	955	371
0.30	1320	552	1205	478	1075	418	945	360
0.40	1250	528	1150	455	1040	395	920	346
0.50	1200	508	1095	432	1000	374	880	331
0.60	1110	475	1035	409	950	354	830	313
0.70	1030	455	970	390	855	338	720	280
0.80	960	434	875	359	735	299	665	266
0.90	770	389	715	321	665	278	590	244

### G40DF-36B-090 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.00	1600	608	1410	526	1165	436	965	355
0.05	1580	599	1400	518	1165	428	965	351
0.10	1560	589	1390	509	1160	420	970	346
0.15	1530	573	1370	497	1155	413	965	341
0.20	1495	556	1350	485	1150	406	965	335
0.25	1465	544	1325	473	1135	398	955	329
0.30	1430	532	1300	460	1125	389	945	323
0.40	1370	509	1250	438	1095	373	935	313
0.50	1295	482	1200	420	1055	355	900	302
0.60	1215	456	1140	397	1010	343	860	285
0.70	1140	437	1055	371	915	313	800	272
0.80	1000	401	950	342	850	295	730	251
0.90	900	374	820	313	740	272	---	---

### G40DF-48C-090 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.00	2040	749	1850	657	1595	562	1325	466
0.05	2000	727	1825	638	1575	547	1340	460
0.10	1955	704	1800	619	1555	532	1350	453
0.15	1920	692	1770	602	1540	518	1340	441
0.20	1885	679	1740	585	1525	503	1330	428
0.25	1845	662	1700	568	1500	488	1300	414
0.30	1800	645	1665	551	1475	473	1270	399
0.40	1695	606	1585	517	1415	448	1225	378
0.50	1600	570	1490	485	1335	414	1170	360
0.60	1495	540	1405	457	1250	389	1110	337
0.70	1380	509	1300	426	1165	367	1025	316
0.80	1250	478	1160	390	1025	331	---	---
0.90	1095	439	1030	360	925	307	---	---



## BLOWER/WATTS DATA

NOTE - All air data is measured external to unit with 1 in. cleanable filter (not furnished - field provided) in place. Also see Filter Air Resistance table.

### G40DF-48C-110 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
0.00	2035	846	1790	712	1510	595	1225	477
0.05	2000	825	1760	694	1495	581	1225	470
0.10	1970	803	1730	675	1475	567	1220	463
0.15	1925	781	1710	657	1475	555	1220	455
0.20	1880	758	1685	638	1465	542	1215	447
0.25	1835	736	1655	618	1440	528	1200	437
0.30	1795	714	1625	597	1420	514	1185	427
0.40	1680	669	1550	564	1360	483	1135	400
0.50	1620	630	1445	524	1280	447	1065	371
0.60	1445	592	1310	479	1165	404	1000	343
0.70	1290	545	1180	434	1055	369	905	319
0.80	1155	502	1065	406	955	348	815	296
0.90	1010	472	930	372	840	320	690	265

### G40DF-60C-110 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.00	2475	1276	2280	987	1995	845	1690	698
.10	2390	1248	2235	955	1990	829	1675	690
.20	2330	1223	2180	945	1975	809	1665	675
.30	2245	1192	2125	911	1940	786	1660	657
.40	2175	1187	2050	880	1895	757	1650	636
.50	2085	1145	1970	849	1835	734	1625	619
.60	2020	1129	1880	815	1750	695	1580	599
.70	1920	1094	1775	785	1660	669	1525	579
.80	1785	1052	1685	762	1585	645	1440	556
.90	1670	1020	1600	741	1520	633	1370	538

### G40DF-60D-135 PERFORMANCE

External Static Pressure in. w.g.	Air Volume / Watts at Different Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.00	2660	1379	2325	1059	1960	864	1655	684
.10	2560	1353	2310	1030	1945	840	1640	667
.20	2490	1325	2280	1000	1940	824	1630	661
.30	2415	1293	2225	972	1930	801	1625	649
.40	2345	1264	2170	941	1910	779	1620	638
.50	2265	1235	2115	918	1870	754	1615	624
.60	2165	1199	2020	880	1830	733	1585	604
.70	2050	1160	1940	854	1755	705	1570	604
.80	1955	1112	1865	828	1680	683	1515	584
.90	1865	1096	1760	797	1605	656	1465	567





## REVISIONS

Sections	Description of Change
All	Deleted G40DF-36A-045 and G40DF-48B-070
Optional Accessories Table/ Gas Heating Accessories	Removed High Altitude Pressure Switch Kits, updated High Altitude Orifice Kits



**LENNOX**

Visit us at [www.lennox.com](http://www.lennox.com)

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Contact us at 1-800-4-LENNOX

NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.

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