

N92MSN

Up to 92.1% AFUE, Single-Stage, Multi 18-Speed ECM, Condensing Gas Furnace

KeepRite®

Product Data



Representative drawing only. Some product models may vary.

A200105

! WARNING

CARBON MONOXIDE POISONING AND FIRE HAZARD

Failure to follow this warning could result in personal injury, death, and/or property damage.

This furnace is not designed for use in recreation vehicles or outdoors. This furnace is designed for use in manufactured (Mobile) homes when an optional Mobile Home accessory kit is installed.

Failure to follow this warning could result in personal injury, death, and/or property damage.



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahridirectory.org.



ISO 9001
Quality

A200326

EASIER TO SELL

- Multi 18-speed, constant torque (MCT) ECM blower motor
- Enhanced diagnostics with easy to read 3 digit display for faults and status
- Up to 92.1% AFUE in upflow, horizontal, and downflow positions
- Single-stage gas valve
- Cabinet air leakage less than 2.0% at 1.0 in. w.c. and cabinet air leakage less than 1.4% at 0.5 in. w.c. when tested in accordance with ASHRAE standard 193
- Approved for Twinning applications with accessory kit (601714, 801716, 802120, 1002120, 1202420 models, only).
- Approved for Manufactured Housing/Mobile Home applications with accessory (order separately)
- NOx emissions less than 40 ng/J; can be installed in California air quality management districts with a 40 ng/J NOx emission limit.

TOUGHER

- Flame roll-out sensors standard
- Adjustable heating blower OFF delay
- Factory set blower ON delay
- RPJ® primary heat exchanger
- Stainless steel secondary heat exchanger
- High temperature limit control designed to prevent overheating
- Direct ignition with Silicon Nitride igniter
- High quality, corrosion-resistant, prepainted steel cabinet

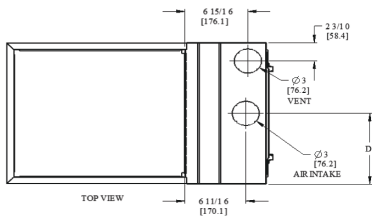
EASIER TO INSTALL AND SERVICE

- Direct vent (2-pipe), single-pipe venting or ventilated combustion air
- 24 VAC humidifier terminal & electronic air cleaner terminal
- 35" (889mm) high, for ease of installation
- Simplified, factory installed internal condensate drain system
- Quarter turn knobs for easy door removal and secure attachment
- Convertible to propane with gas conversion accessory kit
- Four position - upflow/downflow/horizontal (left/right) installation
- Twelve different venting configurations
- Through the casing flue pipe for counterflow or horizontal applications with accessory (order separately)
- Concentric vent available
- On-board NFC antenna makes setup a tap away when using the service technician app
- Slide out heat exchanger and blower assembly

LIMITED WARRANTY*

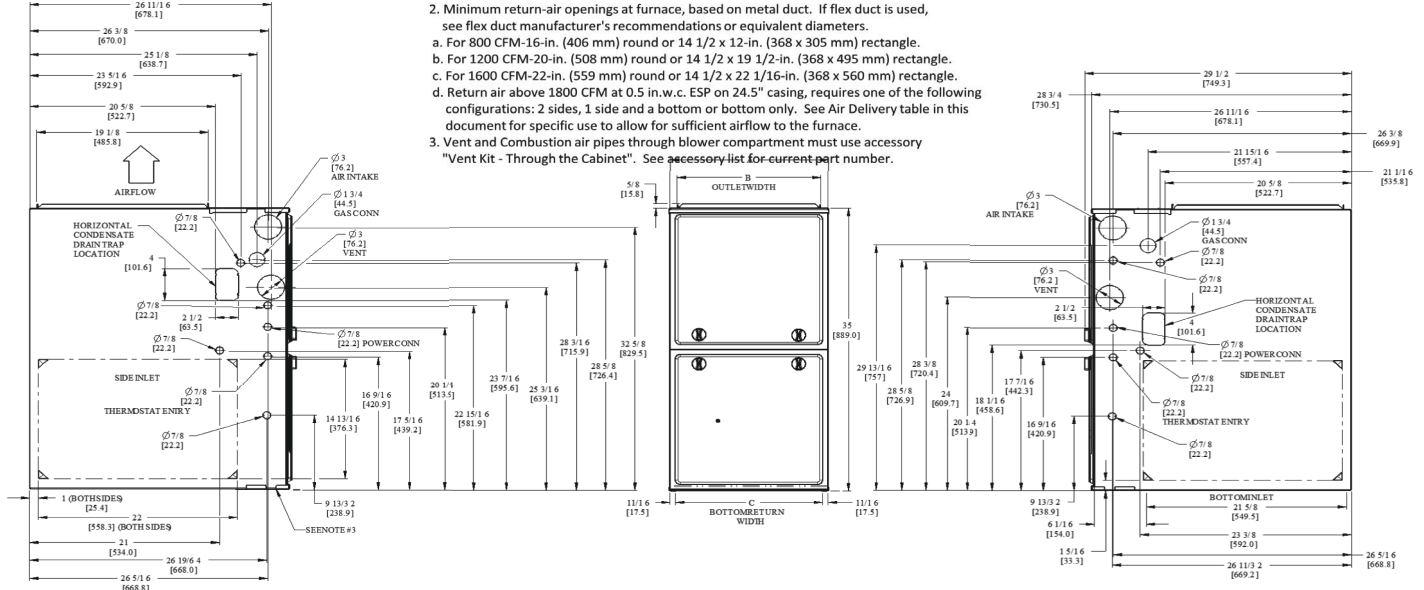
- 20 year heat exchanger limited warranty
 - 5 year parts limited warranty
 - With timely registration, an additional 5 year parts limited warranty
- *For residential applications only. See warranty certificate for complete details and restrictions, including warranty coverage for other applications.

DIMENSIONAL DATA



NOTES:

- Doors may vary by model.
- Minimum return-air openings at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendations or equivalent diameters.
 - For 800 CFM-16-in. (406 mm) round or 14 1/2 x 12-in. (368 x 305 mm) rectangle.
 - For 1200 CFM-20-in. (508 mm) round or 14 1/2 x 19 1/2-in. (368 x 495 mm) rectangle.
 - For 1600 CFM-22-in. (559 mm) round or 14 1/2 x 22 1/16-in. (368 x 560 mm) rectangle.
- Return air above 1800 CFM at 0.5 in.w.c. ESP on 24.5" casing, requires one of the following configurations: 2 sides, 1 side and a bottom or bottom only. See Air Delivery table in this document for specific use to allow for sufficient airflow to the furnace.
- Vent and Combustion air pipes through blower compartment must use accessory "Vent Kit - Through the Cabinet". See accessory list for current part number.



NOTE: ALL DIMENSIONS IN INCH (MM)

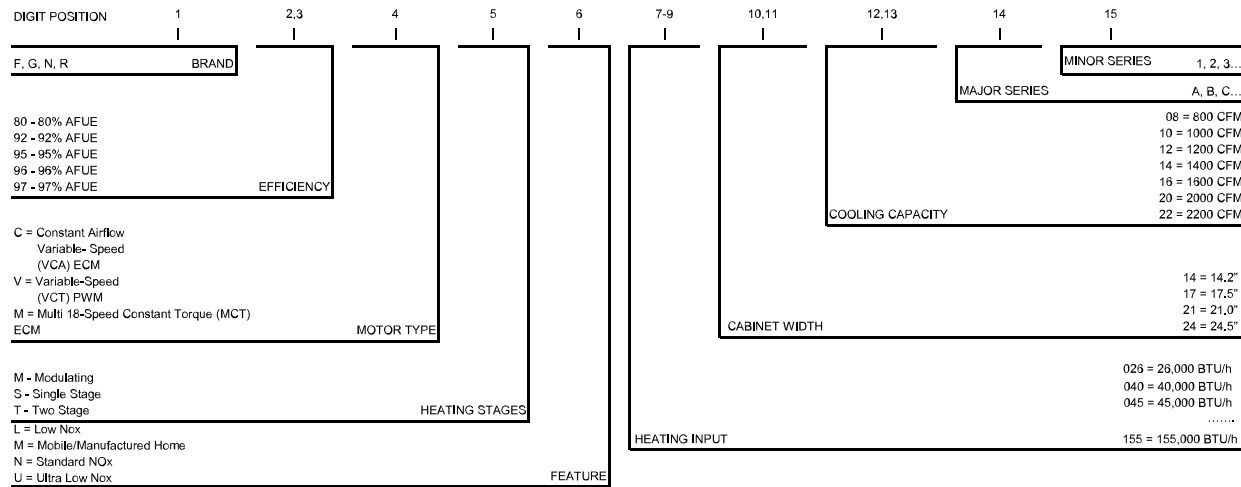
SD50014 REV. -

A210796

Dimensions

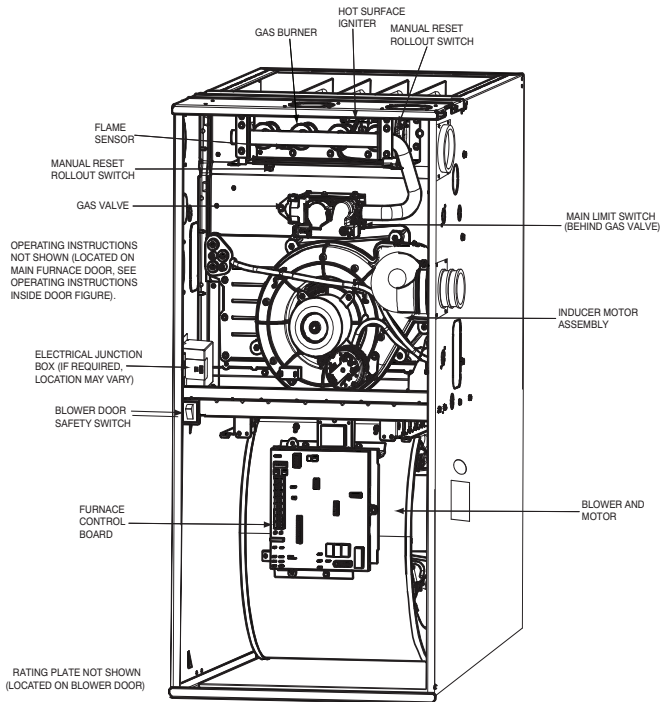
Unit Size	A	B	C	D	SHIP WT. LB (KG)
	CABINET WIDTH	OUTLET WIDTH	BOTTOM INLET WIDTH	AIR INTAKE	
0401412	14-3/16 (361)	12-1/2 (319)	12-9/16 (322)	7-1/8 (181)	122 (55)
0401712	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	123 (56)
0601412	14-3/16 (361)	12-1/2 (319)	12-9/16 (322)	7-1/8 (181)	128 (58)
0601714	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	136 (62)
0801716	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	144 (65)
0802120	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	153 (69)
1002120	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	160 (73)
1002122	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	165 (75)
1202420	24-1/2 (622)	22-7/8 (581)	23 (584)	12-1/4 (311)	180 (82)

MODEL NUMBER NOMENCLATURE



A221575

FURNACE COMPONENTS



A190145

For California Residents:

If installed with a manufactured (mobile) home conversion kit in SCAQMD: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to \$450. This furnace is not eligible for the Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com

MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS

POSITION	CLEARANCE
Rear	0 (0 mm)
Front (Combustion air openings in furnace and in structure)	1 in. (25 mm)
Required for service*	24 in. (610 mm) [†]
All Sides of Supply Plenum*	1 in. (25 mm)
Sides	0 (0 mm)
Vent	0 (0 mm)
Top of Furnace	1 in. (25 mm)

*. Consult your local building codes
[†]. Recommended

The furnace should be sized to provide 100 percent of the design heating load requirement plus any margin that occurs because of furnace model size capacity increments. None of the furnace model sizes can be used if the heating load is 20,000 BTU or lower. Use Air Conditioning Contractors of America (Manual J and S); American Society of Heating, Refrigerating, and Air-Conditioning Engineers; or other approved engineering method to calculate heating load estimates and select the furnace. Excessive oversizing of the furnace may cause the furnace and/or vent to fail prematurely, customer discomfort and/or vent freezing.

Failure to follow these guidelines is considered faulty installation and/or misapplication of the furnace; and resulting failure, damage, or repairs may impact warranty coverage.

SPECIFICATIONS

Unit Size	0401412	0401712	0601412	0601714	0801716	0802120	1002120	1002122	1202420	
HEATING AND CAPACITY AND EFFICIENCY										
Input BTU ^h	40,000	40,000	60,000	60,000	80,000	80,000	100,000	100,000	120,000	
Output Capacity (BTU ^h) [†]	37,000	37,000	56,000	56,000	75,000	75,000	93,000	93,000	111,000	
Certified Temperature Rise Range - °F (°C)	35-65 (19-36)	35-65 (19-36)	35-65 (19-36)	40-70 (22-39)	40-70 (22-39)	35-65 (19-36)	40-70 (22-39)	40-70 (22-39)	45-75 (25-42)	
AFUE	92.1%									
AIRFLOW CAPACITY AND BLOWER DATA										
Rated Certified External Static Pressure	Heating	0.10	0.10	0.12	0.12	0.15	0.15	0.20	0.20	0.20
	Cooling	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Airflow CFM @ Rated ESP (CFM) [‡]	Heating	730	760	1090	935	1320	1390	1620	1600	1830
	Cooling	195-1090	140-1100	320-1285	200-1340	270-1790	275-1890	295-1870	295-2220	355-1930
Direct Drive Motor HP	1/2	1/2	1/2	1/2	3/4	3/4	3/4	1	3/4	
Motor Full Load Amps	6.7	6.7	6.7	6.7	8.8	8.8	8.8	11.7	8.8	
Heating Blower Control (Htg OFF-Delay)	Adjustable: 90, 120 (factory-set), 150, 180 seconds									
Cooling Blower Control (Clg OFF-Delay)	Adjustable: 90 (factory-set), 5, 30 seconds									
Blower Wheel Diameter x Width - In. (mm)	11x7 (279x178)	11x8 (279x203)	11x7 (279x178)	11x8 (279x203)	11x8 (279x203)	11x10 (279x254)	11x10 (279x254)	11x10 (279x254)	11x11 (279x279)	
Air Filtration System	Field Supplied Filter									
Filter used for Certified Watt Data	325531-40**									
ELECTRICAL DATA										
Unit Volts-Hertz-Phase	115-60-1									
Operating Voltage Range	Min-Max	104-127								
Maximum Unit Amps	7.4	7.4	7.5	7.5	11.0	11.0	11.1	13.8	11.1	
Unit Ampacity	10.2	10.2	10.3	10.3	14.7	14.7	14.8	18.2	14.8	
Maximum Wire Length (Measure 1 way in Ft/M)	36/11.1	36/11.1	36/11.0	36/11.0	25/7.7	25/7.7	25/7.6	31/9.6	25/7.6	
Minimum Wire Size	AWG	14	14	14	14	14	14	12	14	
Max. Fuse/Ckt Bkr Size (Time-Delay Type Recommended)	Amps	15	15	15	15	15	15	20	15	
Transformer Capacity (24 VAC output)	40VA									
External Control Power Available	Heating	12VA								
	Cooling	35VA								
GAS CONTROLS										
Burners	2	2	3	3	4	4	5	5	6	
Gas Connection Size	1/2 in. NPT									
Gas Valve (Redundant)	Mfr	White Rodgers™								
Min. inlet pressure	(in.w.c.)	4.5 (Natural Gas)								
Max. inlet pressure	(in.w.c.)	13.6 (Natural Gas)								
Ignition Device	Silicon Nitride									
Factory installed orifice	Size 44									
CONNECTIONS										
Communication System	None									
Thermostat Connections	G, C, W, Y, R									
Accessory Connections	EAC-1 (115 VAC); HUM (24 VAC); 1-STG AC (via Y)									

*. Gas input ratings are certified for elevations to 2000 ft. (610 M). In USA, For elevations above 2000 ft (610 M), reduce ratings 4 percent for each 1000 ft (305 M) above sea level. Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 Table F.4 or furnace installation instructions.

†. Capacity in accordance with U.S. Government DOE test procedures.

‡. Airflow shown is for bottom only return-air supply for the as-shipped speed tap. For air delivery above 1800 CFM, see Air Delivery table for other options. A filter is required for each return-air supply. An airflow reduction of up to 7 percent may occur when using the factory-specified 4-5/16-in. (110 mm) wide, high efficiency media filter.

** See Accessory List for part numbers available.

AIR DELIVERY - CFM

Air Delivery - CFM (with filter)

Unit Size	Airflow Setting	Default Setting	External Static Pressure (in. w.c.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
0401412	1	Cont. Fan	435	370	310	255	195	120	-	-	-	-
	2		480	420	365	310	260	200	135	-	-	-
	3		525	470	415	365	315	265	210	145	-	-
	4		550	500	445	395	350	305	255	200	135	-
	5		615	570	520	470	425	385	345	300	245	195
	6		665	620	575	525	480	440	400	365	320	275
	7		705	665	625	580	535	495	455	420	380	345
	8	Heat	730	690	650	600	560	520	480	445	405	370
	9		775	735	695	655	610	570	535	495	460	425
	10		800	765	725	690	645	605	565	535	495	465
	11		850	815	775	740	700	660	625	590	555	525
	12		900	870	835	800	765	725	690	655	620	590
	13		955	920	890	855	825	785	750	715	685	650
	14		995	965	930	900	865	835	800	765	730	700
	15		1040	1010	980	950	920	890	855	825	790	760
	16		1085	1055	1025	1000	970	940	910	875	845	810
	17		1135	1110	1080	1050	1025	990	965	935	905	870
	18	Cooling	1215	1190	1160	1130	1090	1055	1020	985	940	900
0401712	1	Cont. Fan	400	335	270	210	140	-	-	-	-	
	2		485	425	365	310	265	200	140	-	-	
	3		530	475	415	360	320	270	210	150	-	
	4		585	530	480	425	375	340	295	235	185	
	5		620	570	520	470	420	380	345	295	245	
	6		660	610	565	515	470	420	385	350	300	
	7		705	660	615	570	525	480	435	405	370	
	8		730	685	640	595	550	505	460	430	400	
	9	Heat	760	720	675	630	590	550	500	465	435	
	10		800	760	720	680	635	595	555	510	480	
	11		850	810	770	730	695	655	615	575	535	
	12		900	865	830	795	755	720	680	645	605	
	13		960	930	895	860	825	790	755	720	685	
	14		1010	980	945	910	875	840	810	780	745	
	15		1060	1025	995	965	930	895	865	835	800	
	16		1110	1080	1050	1020	985	955	925	895	865	
	17		1165	1135	1105	1080	1045	1020	990	960	930	
	18	Cooling	1225	1195	1165	1135	1100	1060	1020	985	945	
0601412	1	Cont. Fan	585	515	445	380	320	260	195	145	-	
	2		630	570	510	440	380	330	270	205	160	
	3		695	635	580	520	460	405	355	300	240	
	4		735	685	630	575	510	460	410	360	310	
	5		780	725	675	620	565	510	455	410	365	
	6		800	755	700	650	600	540	490	440	400	
	7		875	830	785	735	690	640	585	540	495	
	8		935	890	845	805	760	715	665	615	570	
	9		990	950	910	865	820	780	735	690	640	
	10		1025	980	940	900	860	820	775	730	685	
	11		1045	1005	965	925	880	840	800	760	710	
	12	Heat	1100	1065	1025	990	950	910	870	835	790	
	13		1160	1120	1085	1050	1010	975	935	900	860	
	14		1195	1160	1120	1085	1050	1015	975	940	905	
	15		1215	1180	1150	1115	1080	1045	1005	970	935	
	16		1285	1250	1220	1185	1150	1120	1085	1050	1015	
	17		1345	1315	1285	1255	1220	1190	1155	1125	1090	
	18	Cooling	1405	1375	1345	1315	1285	1255	1220	1190	1160	
0601714	1	Cont. Fan	530	440	350	270	200	125	-	-	-	
	2		610	530	450	365	295	235	170	-	-	
	3		645	570	495	410	335	280	220	155	-	
	4		680	610	530	455	380	320	265	205	140	
	5		730	665	590	520	440	375	325	270	215	
	6		790	725	660	595	520	455	390	345	290	
	7		845	785	725	665	600	530	465	410	365	
	8		900	840	785	725	665	600	535	480	425	
	9	Heat	965	910	860	805	750	690	620	565	505	
	10		1010	960	910	860	805	750	695	625	570	
	11		1065	1015	970	920	870	820	765	710	650	
	12		1135	1085	1040	995	950	900	850	795	740	
	13		1195	1150	1105	1060	1015	970	925	880	825	
	14		1250	1205	1160	1120	1080	1035	995	950	905	
	15		1320	1275	1235	1195	1155	1110	1070	1030	985	
	16		1380	1335	1295	1260	1220	1180	1140	1100	1060	
	17		1440	1400	1360	1325	1290	1250	1215	1175	1135	
	18	Cooling	1485	1450	1410	1375	1340	1300	1265	1230	1190	

Air Delivery - CFM (with filter) (Continued)

Unit Size	Airflow Setting	Default Setting	External Static Pressure (in. w.c.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
0801716	1	Cont. Fan	595	510	425	345	270	195	125	-	-	-
	2		655	580	500	425	345	280	215	145	-	-
	3		740	670	600	525	460	390	325	265	205	145
	4		810	750	685	620	555	495	425	365	310	255
	5		880	820	765	705	640	580	525	460	400	350
	6		945	890	835	780	720	660	605	555	490	435
	7		1005	950	900	845	795	735	680	630	580	520
	8		1080	1030	980	930	880	830	780	725	680	630
	9		1150	1105	1055	1010	965	915	870	820	770	725
	10		1235	1190	1145	1100	1060	1015	970	925	880	835
	11	Heat	1345	1300	1260	1220	1180	1140	1100	1060	1020	975
	12		1390	1345	1305	1265	1230	1190	1150	1115	1075	1030
	13		1475	1435	1395	1360	1320	1285	1250	1215	1175	1140
	14		1560	1520	1485	1445	1410	1380	1345	1310	1275	1240
	15		1630	1595	1560	1525	1495	1460	1425	1400	1365	1335
	16		1720	1685	1655	1620	1585	1555	1525	1500	1470	1440
	17	Cooling	1805	1770	1740	1710	1680	1650	1620	1595	1570	1545
	18		1910	1885	1850	1820	1790	1750	1710	1670	1630	1590
0802120	1	Cont. Fan	660	555	460	370	275	190	-	-	-	-
	2		720	630	535	450	360	275	195	120	-	-
	3		780	690	605	520	440	355	275	200	125	-
	4		860	780	695	615	535	460	385	315	240	170
	5		940	860	780	705	630	560	490	415	350	280
	6		1025	955	880	810	740	670	600	540	470	405
	7		1110	1040	975	905	840	770	710	645	590	525
	8		1190	1125	1060	995	935	870	810	745	685	635
	9		1285	1220	1160	1100	1045	985	920	865	805	750
	10		1355	1295	1235	1180	1120	1065	1010	955	895	840
	11	Heat	1420	1365	1310	1255	1200	1145	1090	1040	985	930
	12		1530	1480	1425	1375	1325	1275	1220	1170	1120	1070
	13		1610	1555	1505	1460	1410	1360	1310	1265	1215	1165
	14		1695	1645	1595	1550	1505	1460	1410	1365	1320	1275
	15		1780	1730	1685	1640	1595	1550	1510	1465	1425	1380
	16		1860	1815	1770	1730	1685	1645	1600	1560	1520	1480
	17		1945	1905	1865	1820	1780	1745	1710	1670	1635	1595
	18	Cooling	2050	2010	1970	1930	1890	1845	1795	1745	1690	1635
1002120	1	Cont. Fan	740	640	545	455	375	295	215	140	-	-
	2		830	740	650	565	480	410	335	260	190	-
	3		905	825	740	655	575	505	440	375	300	235
	4		975	900	820	740	665	585	525	465	400	335
	5		1045	975	900	820	750	675	605	550	490	430
	6		1130	1065	995	925	850	780	715	650	595	540
	7		1210	1145	1080	1015	945	880	815	750	690	640
	8		1285	1225	1165	1105	1040	975	910	850	790	730
	9		1355	1300	1240	1185	1125	1060	1000	940	880	820
	10		1435	1380	1330	1275	1225	1165	1105	1045	990	935
	11		1535	1480	1430	1380	1330	1280	1225	1170	1115	1060
	12		1610	1560	1510	1460	1415	1365	1315	1260	1210	1160
	13	Heat	1665	1620	1570	1525	1480	1430	1385	1335	1280	1235
	14		1695	1650	1600	1555	1510	1465	1420	1370	1320	1270
	15		1780	1735	1690	1650	1605	1560	1515	1470	1425	1380
	16		1870	1830	1790	1745	1705	1665	1625	1585	1540	1500
	17		1965	1925	1880	1845	1805	1770	1730	1695	1655	1615
	18	Cooling	2060	2020	1980	1945	1905	1870	1820	1765	1710	1655
1002122	1	Cont. Fan	675	565	465	375	295	200	115	-	-	-
	2		855	770	675	595	515	440	370	295	220	150
	3		950	870	785	705	630	555	490	425	360	285
	4		1070	995	920	845	770	700	630	570	510	455
	5		1145	1075	1005	930	860	795	730	665	605	550
	6		1240	1175	1115	1045	975	910	850	790	725	670
	7		1330	1270	1210	1150	1085	1020	960	900	845	785
	8		1435	1380	1325	1270	1210	1150	1095	1035	980	925
	9		1535	1485	1430	1380	1325	1270	1215	1160	1105	1050
	10	Heat	1645	1600	1550	1500	1450	1400	1345	1295	1240	1190
	11		1735	1685	1640	1590	1550	1500	1450	1400	1350	1300
	12		1835	1790	1745	1700	1655	1610	1565	1520	1470	1420
	13		1930	1885	1845	1800	1755	1715	1670	1625	1585	1535
	14		2045	2005	1965	1925	1880	1840	1805	1760	1720	1675
	15		2160	2120	2080	2040	2000	1960	1920	1885	1845	1805
	16	Cooling	2195	2155	2120	2080	2040	2005	1965	1930	1890	1850
	17		2265	2225	2185	2145	2110	2070	2035	2000	1960	1925
	18		2370	2335	2295	2260	2220	2165	2110	2050	1990	1935

Air Delivery - CFM (with filter) (Continued)

Unit Size	Airflow Setting	Default Setting	External Static Pressure (in. w.c.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
1202420	1	Cont. Fan	770	665	545	445	355	275	185	-	-	-
	2		830	725	615	515	425	345	265	180	130	-
	3		915	815	725	615	525	445	370	295	220	165
	4		990	895	810	710	620	540	465	395	325	255
	5		1085	1000	915	835	740	655	580	510	445	380
	6		1170	1095	1010	935	855	765	690	620	555	490
	7		1235	1160	1080	1005	935	850	770	700	635	570
	8		1330	1260	1190	1115	1050	980	900	820	755	695
	9		1405	1335	1270	1200	1135	1070	1000	920	850	790
	10		1490	1425	1365	1295	1235	1170	1110	1040	965	900
	11		1585	1525	1470	1405	1340	1285	1230	1170	1105	1030
	12		1665	1605	1550	1495	1435	1375	1320	1270	1210	1145
	13		1750	1700	1645	1595	1535	1480	1425	1375	1320	1270
	14		1835	1785	1740	1685	1630	1575	1525	1475	1430	1385
	15	Heat	1880	1830	1780	1730	1680	1625	1575	1530	1480	1435
	16		1920	1875	1825	1775	1730	1675	1625	1580	1535	1490
	17		1995	1945	1900	1855	1810	1760	1715	1670	1625	1585
	18	Cooling	2115	2065	2020	1975	1930	1875	1815	1750	1690	1630

NOTE:

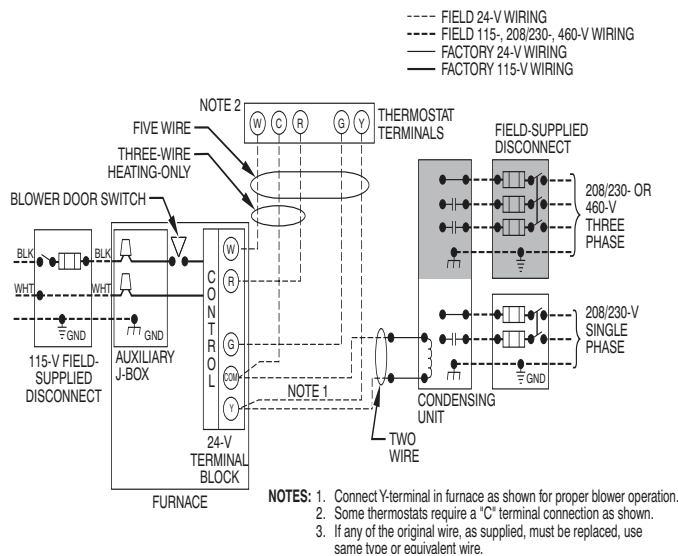
1. A filter is required for each return-air inlet. Airflow performance included 3/4-in. (19 mm) washable filter media such as contained in a factory - authorized accessory filter rack. See accessory list. To determine airflow performance without this filter, assume an additional 0.1 in. w.c. available external static pressure.
2. **Adjust the blower airflow settings as necessary for the proper air temperature rise for each installation.**
3. Airflows over 1800 CFM require bottom return, two-side return, or bottom and side return. A minimum filter size of 20" x 25" (508 x 635 mm) is required.
4. For upflow applications, air entering from one side into both the side of the furnace and a return air base counts as a side and bottom return
5. The -- entry indicates unstable operating conditions

Airflow Settings

Unit Size	Default Airflow Settings*		Designated Airflow Settings	
	Heating	Cooling	Heating	Const. Fan
0401412	8	18	(5-8)	(1-4)
0401712	9	18	(4-9)	(1-1)
0601412	12	18	(6-14)	(1-6)
0601714	9	18	(7-14)	(1-8)
0801716	11	17	(8-14)	(1-8)
0802120	11	18	(7-14)	(1-8)
1002120	13	18	(7-16)	(1-7)
1002122	10	16	(7-12)	(1-8)
1202420	15	18	(12-16)	(1-1)

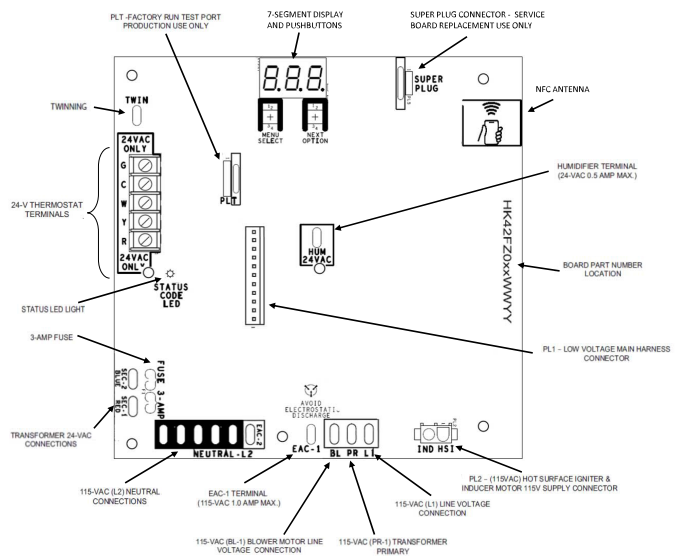
*. Setting #1 is the default setting for Constant Fan

TYPICAL WIRING SCHEMATIC



A190079

FURNACE CONTROL BOARD



A210192

MAXIMUM ALLOWABLE EXPOSED VENT LENGTH

Maximum Allowable Exposed Vent Lengths in Unconditioned Space Insulation Table - Ft.

Winter Design Temp °F	Unit Size	40,000* BTUH									60,000 BTUH											
		Uninsulated			3/8-in. Insulation			1/2-in. Insulation			Uninsulated				3/8-in. Insulation				1/2-in. Insulation			
	Pipe Dia. in.	1 ½	2	2 ½	1 ½	2	2 ½	1 ½	2	2 ½	1 ½	2	2 ½	3	1 ½	2	2 ½	3	1 ½	2	2 ½	3
20	20	20	20	20	20	50	45	20	60	50	20	30	30	25	20	75	65	60	20	85	75	65
0	10	5	5	20	25	20	20	30	25	15	15	10	10	20	40	30	25	20	45	40	30	
-20	5			20	15	10	20	20	15	10	5			20	25	20	15	20	30	25	20	
-40				15	10	5	15	15	10	5				20	15	15	10	20	20	15	10	

*. Not all model families have this size.

Winter Design Temp °F	Unit Size	80,000 BTUH														
		Uninsulated					3/8-in. Insulation					1/2-in. Insulation				
	Pipe Dia. in.	1 ½	2	2 ½	3	4	1 ½	2	2 ½	3	4	1 ½	2	2 ½	3	4
20	15	40	40	35	30	15	50	90	75	65	15	50	70	70	70	
0	15	20	15	10	5	15	50	45	35	30	15	50	50	40	35	
-20	15	10	5			15	35	30	20	15	15	40	30	25	15	
-40	10	5				15	25	20	15	5	15	30	25	20	10	

Winter Design Temp °F	Unit Size	100,000 BTUH												120,000 BTUH								
		Uninsulated				3/8-in. Insulation				1/2-in. Insulation				Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
	Pipe Dia. in.	2	2 ½	3	4	2	2 ½	3	4	2	2 ½	3	4	2 ½	3	4	2 ½	3	4			
20	20	50	40	35	20	80	95	80	20	80	105	90	10	50	40	10	75	95	10	75	105	
0	20	20	15	10	20	55	45	35	20	65	55	45	10	20	15	10	55	45	10	65	50	
-20	15	10	5		20	35	30	20	20	45	35	25	10	10		10	35	25	10	45	30	
-40	10	5			20	25	20	10	20	30	25	15	10	5		10	25	15	10	30	20	

Maximum Allowable Exposed Vent Length in Unconditioned Space - Meters

Winter Design Temp °C	Unit Size	40,000* BTUH									60,000 BTUH											
		Uninsulated			3/8-in. Insulation			1/2-in. Insulation			Uninsulated				3/8-in. Insulation				1/2-in. Insulation			
	Pipe Dia. mm	38	51	64	38	51	64	38	51	64	38	51	64	76	38	51	64	76	38	51	64	76
-7	6.1	6.1	6.1	6.1	15.2	13.7	6.1	18.3	15.2	6.1	9.1	9.1	7.6	6.1	22.9	19.8	18.3	6.1	25.9	22.9	19.8	
-18	3.0	1.5	1.5	6.1	7.6	6.1	6.1	9.1	7.6	4.6	4.6	3.0	3.0	6.1	12.2	9.1	7.6	6.1	13.7	12.2	9.1	
-29	1.5			6.1	4.6	3.0	6.1	6.1	4.6	3.0	1.5			6.1	7.6	6.1	4.6	6.1	9.1	7.6	6.1	
-40				4.6	3.0	1.5	4.6	4.6	3.0	1.5				6.1	4.6	4.6	3.0	6.1	6.1	4.6	3.0	

*. Not all model families have this size.

Winter Design Temp °C	Unit Size	80,000 BTUH														
		Uninsulated					3/8-in. Insulation					1/2-in. Insulation				
	Pipe Dia. mm	38	51	64	76	102	38	51	64	76	102	38	51	64	76	102
-7	4.6	12.2	12.2	10.7	9.1	4.6	15.2	27.4	22.9	19.8	4.6	15.2	21.3	21.3	21.3	
-18	4.6	6.1	4.6	3.0	1.5	4.6	15.2	13.7	10.7	9.1	4.6	15.2	15.2	12.2	10.7	
-29	4.6	3.0	1.5			4.6	10.7	9.1	6.1	4.6	4.6	12.2	9.1	7.6	4.6	
-40	3.0	1.5				4.6	7.6	6.1	4.6	1.5	4.6	9.1	7.6	6.1	3.0	

Winter Design Temp °C	Unit Size	100,000 BTUH												120,000 BTUH								
		Uninsulated				3/8-in. Insulation				1/2-in. Insulation				Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
	Pipe Dia. mm	51	64	76	102	51	64	76	102	51	64	76	102	64	76	102	64	76	102			
-7	6.1	15.2	12.2	10.7	6.1	24.4	28.9	24.4	6.1	24.4	32.0	27.4	3.0	15.2	12.2	3.0	22.9	28.9	3.0	22.9	32.0	
-18	6.1	6.1	4.6	3.0	6.1	16.8	13.7	10.7	6.1	19.8	16.7	13.7	3.0	6.1	4.6	3.0	16.8	13.7	3.0	19.8	15.2	
-29	4.6	3.0	1.5		6.1	10.7	9.1	6.1	6.1	13.7	10.7	7.6	3.0	3.0		3.0	10.7	7.6	3.0	13.7	9.1	
-40	3.0	1.5			6.1	7.6	6.1	3.0	6.1	9.1	7.6	4.6	3.0	1.5		3.0	7.6	4.6	3.0	9.1	6.1	

Maximum Equivalent Vent Length - Ft. (M)

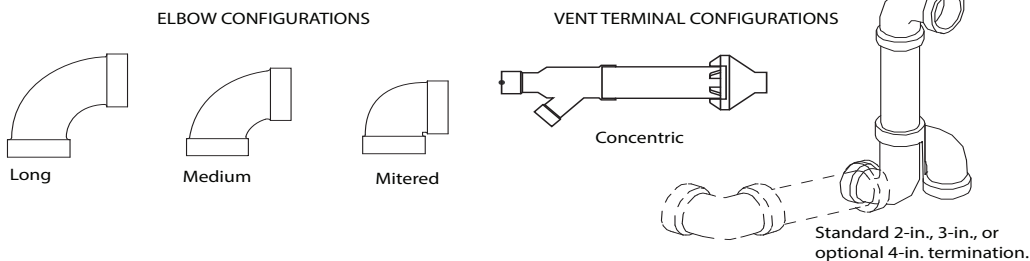
NOTE: Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT include elbows. Use Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each application.

Unit Size		40,000 ¹			60,000 ²				80,000					100,000 ³				120,000		
Altitude (feet)	Pipe Dia. (in)	1 ½	2	2 ½	1 ½	2	2 ½	3	1 ½	2	2 ½	3	4	2	2 ½	3	4	2 ½	3	4
	0-2000	20	85	185	20	100	175	200	15	55	130	175	200	20	80	175	200	10	75	185
	2001-3000	15	80	175	16	95	165	185	10	49	125	165	185	15	75	165	185	5	70	175
	3001-4000		160	160		155	175	115			155	175	155			175	165			
	4001-4500	10	70	155	15	85	150	170	N/A	44	110	150	165	10	70	155	170	N/A	60	160
	4501-5000			145		80	145	165			145	160	150			165				
	5001-6000		60	130		75	140	155			41	100	135			150	65			140
	6001-7000	5	55	120	13	70	130	145	N/A	38	90	125	140	10	60	135	145	N/A	50	140
	7001-8000		50	110	10	65	120	135				36	120			125	55			125
	8001-9000	N/A	30	95	5	60	115	125	N/A	33	80	110	115	N/A	50	115	125	N/A	43	120
9001-10000	25		85	N/A	55	105	115	30				75	100			105	45			100

Maximum Equivalent Vent Length - Meters

Unit Size		40,000 ¹			60,000 ²				80,000					100,000 ³				120,000		
Altitude (meters)	Pipe Dia. (mm)	38	51	64	38	51	64	76	38	51	64	76	102	51	64	76	102	64	76	102
	0-610	6.0	25.9	56.3	6.0	30.4	53.3	60.9	4.5	16.7	39.6	53.3	60.9	6.0	24.3	53.3	60.9	3.0	22.8	56.3
	611-914	4.5	24.3	53.3		28.9	50.2	56.3	3.0	14.9	38.1	50.2	56.3	4.5	22.8	50.2	56.3	1.5	19.8	50.2
	915-1219		48.7	4.8	27.4	47.2	53.3	47.2			53.3	47.2	53.3							
	1220-1370	3.0	21.3	47.2	4.5	25.9	45.7	51.8	N/A	13.4	33.5	45.7	50.2	3.0	19.8	47.2	51.8	NA	18.2	48.7
	1371-1524			44.1		24.3	44.1	50.2			44.1	48.7	45.7			50.2				
	1525-1829		18.2	39.6		22.8	42.6	47.2			12.4	30.4	41.1			45.7	19.8			42.6
	1830-2134	1.5	16.7	36.5	3.9	21.3	39.6	44.1	N/A	11.5	27.4	38.1	42.6	10	18.2	41.1	44.1	NA	15.2	42.6
	2135-2438		15.2	33.5	3.0	19.8	36.5	41.1				10.9	36.5			38.1	16.7			38.1
	2439-2743	N/A	9.1	28.9	1.5	18.2	35.0	38.1	N/A	10.0	24.3	33.5	35.0	N/A	15.2	35.0	38.1	N/A	13.1	36.5
2744-3048	7.6		25.9	NA	16.7	32.0	35.0	9.1				22.8	30.4			32.0	13.7			30.4

- 40K Inducer Outlet Restrictor disk (P/N 1185623; 1.25-in. (32 mm) Dia.) shipped in the loose parts bag or available through FAST Parts required under 10-ft. (3 M) TEVL in all orientations. Required for installations from 0 - 2000 ft. (0 to 610 M) above sea level. Failure to use an outlet restrictor may result in flame disturbances or flame sense lock-out.
- 60K Inducer Outlet Restrictor disk (P/N 1185623; .25-in. (32 mm) Dia. available through FAST Parts) required for less than 5-ft. (1.5 M) TEVL in downflow and horizontal orientations only. Required for installations from 0 - 2000 ft. (0 to 610 M) above sea level.
- 120K Inducer Outlet Restrictor disk (P/N 1188589; 1.50-in. (38 mm) Dia. available through FAST Parts) required for less than 5-ft. (1.5 M) TEVL in downflow and horizontal orientations only. Required for installations from 0 - 2000 ft. (0 to 610 M) above sea level.



A13110

Deductions from Maximum Equivalent Vent Length - Ft. (M)

Pipe Diameter (in):	1-1/2		2		2-1/2		3		4	
Mitered 90° Elbow	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)
Medium Radius 90° Elbow	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)
Long Radius 90° Elbow	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)
Mitered 45° Elbow	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)
Medium Radius 45° Elbow	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)
Long Radius 45° Elbow	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)
Tee	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)
Concentric Vent Termination	NA		0 (0.0)		NA		0 (0.0)		NA	
Standard Vent Termination	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)

NOTE:

- Use only the smallest diameter pipe possible for venting. Over-sizing may cause flame disturbance or excessive vent terminal icing or freeze-up.
- NA - Not allowed. Pressure switch will not close, or flame disturbance may result.
- Vent sizing for Canadian installations over 4500 ft (1370 M) above sea level are subject to acceptance by local authorities having jurisdiction.
- Size both the combustion air and vent pipe independently, then use the larger size for both pipes.
- Assume the two 45° elbows equal one 90° elbow. Wide radius elbows are desirable and may be required in some cases.
- Elbow and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
- The minimum pipe length is 5 ft. (2 M) linear feet (meters) for all applications.
- Use 3-in. (76 mm) diameter vent termination kit for installations requiring 4-in. (102 mm) diameter pipe

Venting System Length Calculations

The Total Equivalent Vent Length (TEVL) for **EACH** combustion air or vent pipe equals the length of the venting system, plus the equivalent length of elbows used in the venting system from Deductions from Maximum Equivalent Vent Length - Ft. (M) Table.

Standard vent terminations or factory accessory concentric vent terminations count for zero deduction.

See vent system manufacturer's data for equivalent lengths of flexible vent pipe or other termination systems. **DO NOT ASSUME** that one foot of flexible vent pipe equals one foot of straight PVC/ABS DWV vent pipe.

Compare the Total Equivalent Vent Length to the Maximum Equivalent Vent Lengths in Maximum Equivalent Vent Length Table.

Example 1

A direct-vent 60,000 BTUH furnace installed at 2100 ft. (640M). Venting system includes **FOR EACH PIPE:**

70 feet (22 M) of vent pipe, 65 feet (20 M) of combustion air inlet pipe, (3) 90° long-radius elbows, (2) 45° long-radius elbows, and a factory accessory concentric vent kit.

Can this application use 2" (50 mm ND) PVC/ABS DWV vent piping?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here					70 ft. (22 M)	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	3 ft. (0.9 M)	=	9 ft. (2.7 M)	From Deductions from Maximum Equivalent Vent Length - Ft. (M) Table.
Add equiv length of (2) 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	2	x	1.5 ft. (0.5 M)	=	3 ft. (0.9 M)	From Deductions from Maximum Equivalent Vent Length - Ft. (M) Table.
Add equiv length of factory concentric vent term					0 ft.	From Deductions from Maximum Equivalent Vent Length - Ft. (M) Table.
Add correction for flexible vent pipe, if any					0 ft.	From Vent Manufacturer's instructions; zero for PVC/ABS DWV
Total Equivalent Vent Length (TEVL)					82 ft. (25 M)	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					95 ft. (29 M)	For 2" pipe from Maximum Equivalent Vent Length Table.
Is TEVL less than MEVL?					YES	Therefore, 2" pipe MAY be used

Example 2

A direct-vent 60,000 BTUH furnace installed at 2100 ft. (640M). Venting system includes **FOR EACH PIPE:**

100 feet (30 M) of vent pipe, 95 feet (29 M) of combustion air inlet pipe, (3) 90° long-radius elbows, and a polypropylene concentric vent kit. Also includes 20 feet (6.1 M) of flexible polypropylene vent pipe, included within the 100 feet (30 M) of vent pipe.

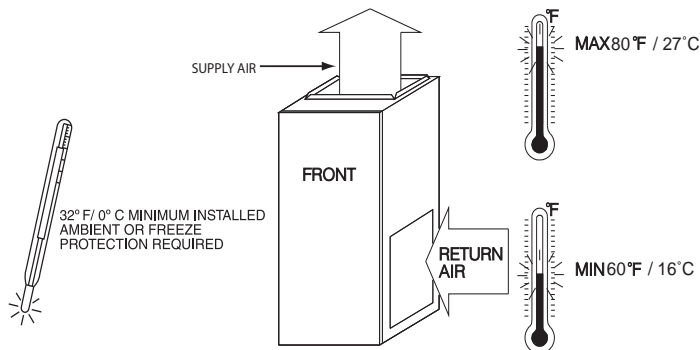
VERIFY FROM POLYPROPYLENE VENT MANUFACTURER'S INSTRUCTIONS for the multiplier correction for flexible vent pipe.

Can this application use 60mm o.d. (2") polypropylene vent piping? If not, what size piping can be used?

Measure the required linear length of RIGID air inlet and vent pipe; insert the longest of the two here: 100 ft. Of rigid pipe - 20 ft. Of flexible pipe				=	80 ft. (24 M)	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	5 ft. (1.5 M)	=	15 ft. (4.6 M)	Example from polypropylene vent manufacturer's instructions, Verify from vent manufacturer's instructions.
Add equiv length of 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	0	x		=	0 ft. (0 M)	
Add equiv length of factory concentric vent term	9	x	3.3 ft. (0.9 M)	=	30 ft. (9 M)	
Add correction for flexible vent pipe, if any	2*	x	20 ft. (6.1 M)	=	40 ft. (12.2 M)	
* VERIFY FROM VENT MANUFACTURER'S INSTRUCTIONS; For example only, assume 1 meter of flexible 60mm (2") or 80mm (3") polypropylene pipe equals 2.0 meters (6.5 ft.) of PVC/ABS pipe.						
Total Equivalent Vent Length (TEVL)					165 ft. (50 M)	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					95 ft. (29 M)	For 2" pipe from Maximum Equivalent Vent Length Table.
Is TEVL less than MEVL?					NO	Therefore, 60mm (2") pipe may NOT be used; try 80mm (3")
Maximum Equivalent Vent Length (MEVL)					185 ft. (57 M)	For 3" pipe from Maximum Equivalent Vent Length Table.
Is TEVL less than MEVL?					YES	Therefore, 80mm (3") pipe MAY be used

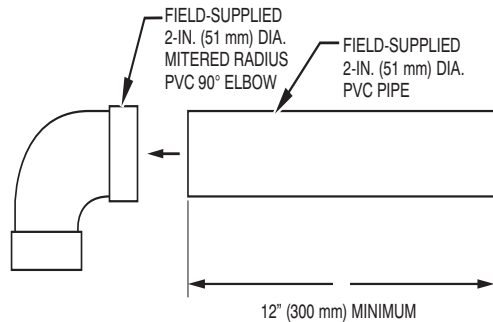
RETURN AIR TEMPERATURE

This furnace is designed for continuous return-air minimum temperature of 60°F (15°C) db or intermittent operation down to 55°F (13°C) db such as when used with a night setback thermometer. Return-air temperature must not exceed 80°F (27°C) db. Failure to follow these return air limits may affect reliability of heat exchangers, motors and controls.



A10490

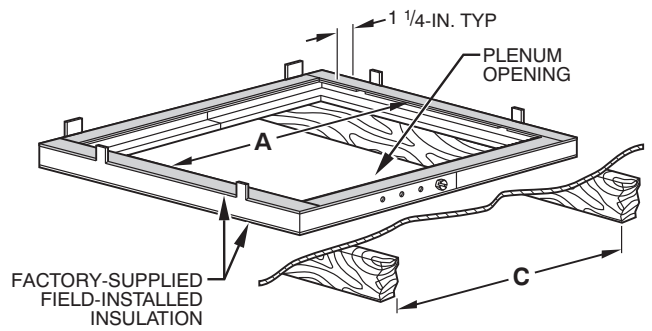
COMBUSTION-AIR PIPE FOR NON-DIRECT (1-PIPE) VENT APPLICATION



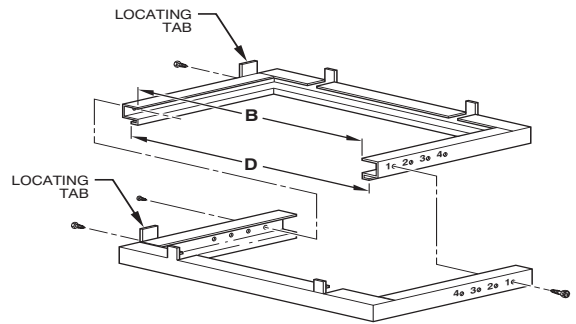
A12376

NOTE: See Installation Instructions for specific venting configurations.

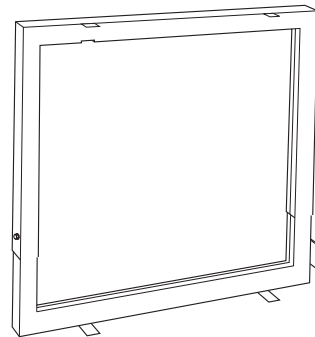
DOWNFLOW SUBBASE



A97427



A88207



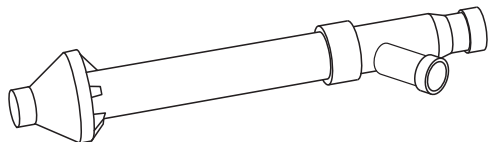
Downflow Subbase

A88202

One base fits all furnace sizes. The base is designed to be installed between the furnace and a combustible floor when no coil box is used or when a coil box other than a cased coil is used. It is CSA design certified for use with branded furnaces when installed in downflow applications.

FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	DIMENSIONS (IN. / MM)				HOLE NO. FOR WIDTH ADJUSTMENT
		PLENUM OPENING*		FLOOR OPENING		
		A	B	C	D	
14-3/16 (360)	Furnace with or without Cased Coil Assembly or Coil Box	11-3/16 (322)	19 (483)	13-7/16 (341)	20-5/8 (600)	4
17-1/2 (445)	Furnace with or without Cased Coil Assembly or Coil Box	15-1/8 (384)	19 (483)	16-3/4 (426)	20-5/8 (600)	3
21 (533)	Furnace with or without Cased Coil Assembly or Coil Box	18-5/8 (396)	19 (483)	20-1/4 (514)	20-5/8 (600)	2
24-1/2 (622)	Furnace with or without Cased Coil Assembly or Coil Box	22-1/8 (562)	19 (483)	23-3/4 (603)	20-5/8 (600)	1

*. The plenum should be constructed 1/4-in. (6 mm) smaller in width and depth than the plenum dimensions shown above.



Concentric Vent Kit

A93086

A concentric vent kit allows vent and combustion-air pipes to terminate through a single exit in a roof or side wall. One pipe runs inside the other allowing venting through the inner pipe and combustion air to be drawn in through the outer pipe.

ACCESSORIES

PART NUMBER	DESCRIPTION	0401412	0401712	0601412	0601714
1188594*	Gas Valve Tower Port Adapter Kit	X	X	X	X
ACG1425NCB*	External Filter Rack, 14-1/2 x 25"	X	-	X	-
ACG1625NCF*	External Filter Rack, 16 x 25"	-	X	-	X
325531-402*	Washable filter, 3/4" x 16" x 25"	X	X	X	X
NAHB00101CA	Coil Adapter Kits - No Offset	X	X	X	X
NAHB00201CA	Coil Adapter Kits - Single Offset	X	X	X	X
NAHB00301CA	Coil Adapter Kits - Double Offset	X	X	X	X
NAHA01401RA	Return Air Base (Upflow Applications) 14" wide	X	-	X	-
NAHA01701RA	Return Air Base (Upflow Applications) 17-1/2" wide	-	X	-	X
NAHA00101VC	Vent Kit - Through the Cabinet	X	X	X	X
NAHB00101CT	External Trap Kit	X	X	X	X
NAHA00110DA	CPVC to PVC Drain Adapters - 1/2" CPVC to 3/4" PVC (10 Pack)	X	X	X	X
NAHA002CV	Vent Terminal - Concentric - 2" (51 mm)	X	X	X	X
NAHA001CV	Vent Terminal - Concentric - 3" (76 mm)	-	-	X	X
NAHA00301VT	Vent Terminal Bracket - 2" (51 mm)	X	X	X	X
NAHA00401VT	Vent Terminal Bracket - 3" (76 mm)	-	-	X	X
NAHA00101CK	Polypropylene Inlet Air Pipe Coupling	X	X	X	X
NAHA00101HV	Horizontal Trap Grommet - Direct Vent	X	X	X	X
NAHA00101HH	Freeze Protect Kit - Condensate Drain Line Tape	X	X	X	X
NAHA00201HH	Freeze Protect Kit - Condensate Trap with Heat Pad	X	X	X	X
NAHA01101SB	Downflow Furnace Base Kit for Combustible Floors	X	X	X	X
AGAGC9NPS01C*	Gas Conversion Kit - Nat to LP†	X	X	X	X
AGAGC9PNS01C*	Gas Conversion Kit - LP to Nat†	X	X	X	X
AGAGCAMHC01A	Manufactured Home Kit - Gas Conversion†	X	X	X	X
AGATWNDTE01B	Twining Kit - (MCT) ECM Motor	-	-	-	X
NAHA001NK	Condensate Neutralizer Kit	X	X	X	X

* Order through FAST Parts.

† Factory authorized and filed installed. Gas conversion kits are CSA recognized.

X = Accessory

ACCESSORIES (continued)

PART NUMBER	DESCRIPTION	0801716	0802120	1002120	1002122	1202420
1188594*	Gas Valve Tower Port Adapter Kit	X	X	X	X	X
ACG1625NCF*	External Filter Rack, 16 x 25"	X	-	-	-	-
ACG2025NCJ*	External Filter Rack, 20 x 25"	-	X	X	X	-
ACG2424NCL*	External Filter Rack, 24-1/2" x 24"	-	-	-	-	X
325531-402*	Washable filter, 3/4" x 16" x 25"	X	-	-	-	-
325531-403*	Washable filter, 3/4" x 21" x 25"	-	X	X	X	-
325531-404*	Washable filter, 3/4" x 24" x 25"	-	-	-	-	X
NAHB00101CA	Coil Adapter Kits - No Offset	X	X	X	X	X
NAHB00201CA	Coil Adapter Kits - Single Offset	X	X	X	X	X
NAHB00301CA	Coil Adapter Kits - Double Offset	X	X	X	X	X
NAHA01701RA	Return Air Base (Upflow Applications) 17-1/2" wide	X	-	-	-	-
NAHA02101RA	Return Air Base (Upflow Applications) 21" wide	-	X	X	X	-
NAHA02401RA	Return Air Base (Upflow Applications) 24-1/2" wide	-	-	-	-	X
NAHA00101VC	Vent Kit - Through the Cabinet	X	X	X	X	X
NAHB00101CT	External Trap Kit	X	X	X	X	X
NAHA002CV	Vent Terminal - Concentric - 2" (51 mm)	X	X	X	X	X
NAHA001CV	Vent Terminal - Concentric - 3" (76 mm)	X	X	X	X	X
NAHA00301VT	Vent Terminal Bracket - 2" (51 mm)	X	X	X	X	X
NAHA00401VT	Vent Terminal Bracket - 3" (76 mm)	X	X	X	X	X
NAHA00101CK	Polypropylene Inlet Air Pipe Coupling	X	X	X	X	X
NAHA00101HV	Horizontal Trap Grommet - Direct Vent	X	X	X	X	X
NAHA00101HH	Freeze Protect Kit - Condensate Drain Line Tape	X	X	X	X	X
NAHA00201HH	Freeze Protect Kit - Condensate Trap with Heat Pad	X	X	X	X	X
NAHA00110DA	CPVC to PVC Drain Adapters - 1/2" CPVC to 3/4" PVC (10 Pack)	X	X	X	X	X
NAHA01101SB	Downflow Furnace Base Kit for Combustible Floors	X	X	X	X	X
AGAGC9NPS01C*	Gas Conversion Kit - Nat to LP†	X	X	X	X	X
AGAGC9PNS01C*	Gas Conversion Kit - LP to Nat†	X	X	X	X	X
AGAGCAMHC01A	Manufactured Home Kit - Gas Conversion†	X	X	X	X	X
AGATWNDTE01B	Twinning Kit - (MCT) ECM Motor	X	X	X	-	X
NAHA001NK	Condensate Neutralizer Kit	X	X	X	X	X

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ORIFICE

Part Number	Gas Type	Orifice Size
1185612	Natural	42
1176928	Natural	43
1185574	Natural	44
1177213	Natural	45

Part Number	Gas Type	Orifice Size
1183809	Natural	46
1185613	Natural	47
1185614	Natural	48

Part Number	Gas Type	Orifice Size
1184256	Propane	54
1185615	Propane	55
1185616	Propane	56
1185617	Propane	1.25 mm
1185618	Propane	1.30 mm