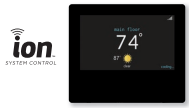
F80CSU
80% AFUE, Ultra-Low NOx, Variable-Speed, Communicating, Single Stage Gas Furnace

Arcoaire®
Air Conditioning & Heating

Product Specifications



SYST0101CW Recommended (sold separately)

A210058

⚠ WARNING

This furnace is not designed for use in mobile homes, trailers, or recreational vehicles. Such use could result in property damage and/or death.

DESIGN CERTIFIED®

AHRI CERTIFIED™ www.ahridirectory.org

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 .

Certified System™ ISO 9001 Quality

A200115

EASIER TO SELL

- 80% AFUE
- Ultra-low NOx emissions - meets the nitrogen oxides (NOx) emission limit of 14 nanograms/joule for the South Coast Air Quality Management District and San Joaquin Valley Air Pollution Control District in California.
- Four-position furnace: Upflow, Horizontal Right, Horizontal Left, Downflow (6 different vent options)
- Supports two-stage and multi stage cooling units
- Dehumidification feature in cooling
- 24 VAC humidifier terminal, electric air cleaner terminal
- Category I venting
- 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

TOUGHER

- Variable speed ECM blower
- Single-stage gas valve
- Stainless steel, tubular heat exchanger
- Pilot free, hot surface ignition
- High temperature limit control designed to prevent overheating
- Blocked vent switch

QUIETER

- Pre-mix burner
- Variable speed inducer motor

EASIER TO INSTALL AND SERVICE

- Approved for installations up to 5,400 feet
- 33 1/4" (843.9mm) high, for ease of installation
- Quarter turn knobs for easy door removal and secure attachment
- Factory shipped for natural gas, not convertible to propane
- Flexible installation: Upflow, Downflow, Horizontal
- Two position vent elbow capability
- Common venting with other Category I appliances
- Self diagnostics

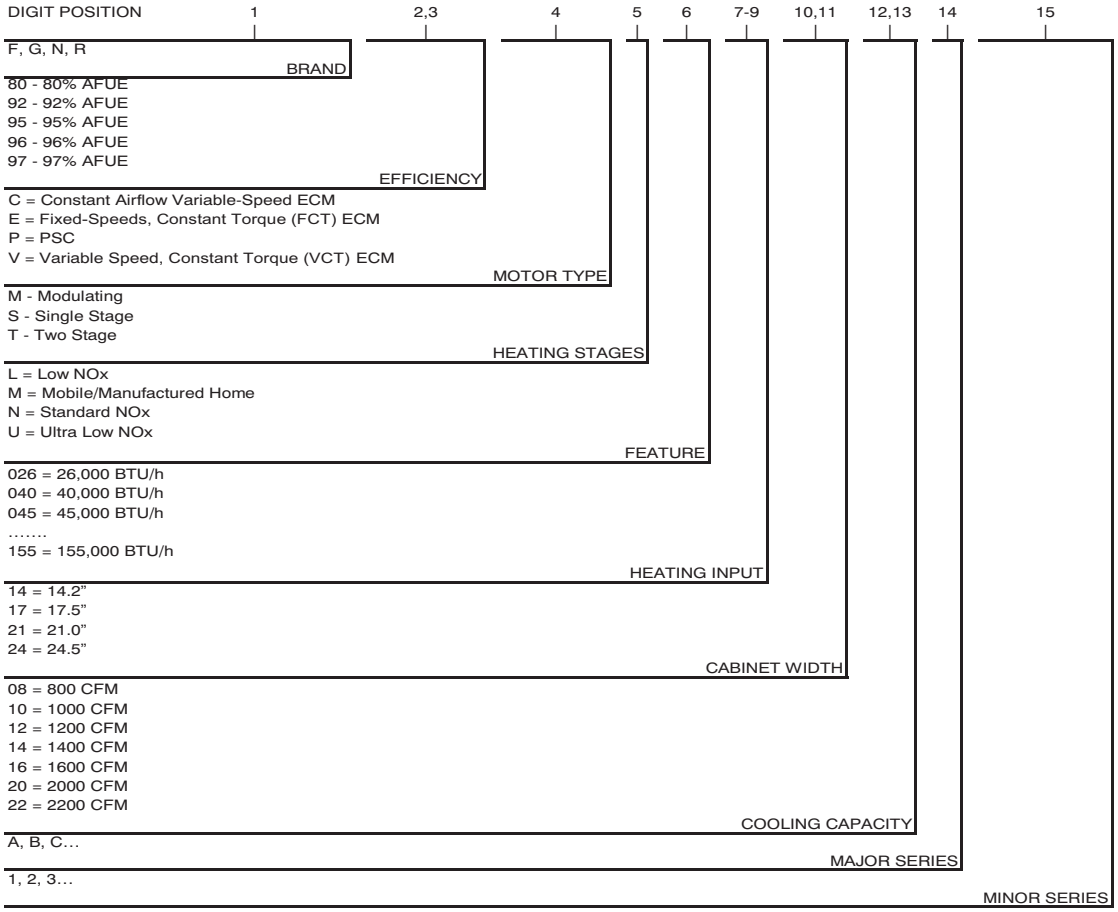
LIMITED WARRANTY *

- 5 year No Hassle Replacement™ limited warranty
- Lifetime heat exchanger limited warranty with timely registration
- 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.

Model	Input (BTUH)	Efficiency AFUE	Cooling Capacity CFM range @ .5 in. w.c. (125 Pa)	Dimensions H x W x D Inches (Millimeters)	Shipping Wt. Lbs (Kg)
F80CSU0401712A	40,000	80%	505 - 1490	33-1/4 x 17-1/2 x 29 (844 x 445 x 737)	119 (54)
F80CSU0601716A	60,000	80%	535 - 1480	33-1/4 x 17-1/2 x 29 (844 x 445 x 737)	124 (56)
F80CSU0802120A	80,000	80%	990 - 2390	33-1/4 x 21 x 29 (844 x 533 x 737)	144 (65)
F80CSU1002120A	100,000	80%	1130 - 2260	33-1/4 x 21 x 29 (844 x 533 x 737)	154 (70)

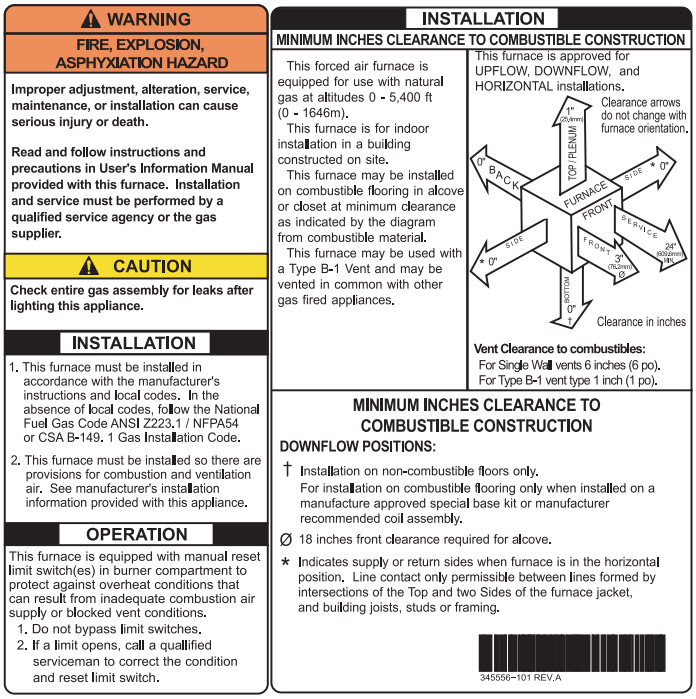
MODEL NUMBER NOMENCLATURE



A190043

ECM-Electronically Commutated Motor

MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS FOR ALL UNITS



WARNING

FIRE, EXPLOSION, ASPHYXIATION HAZARD

Improper adjustment, alteration, service, maintenance, or installation can cause serious injury or death.

Read and follow instructions and precautions in User's Information Manual provided with this furnace. Installation and service must be performed by a qualified service agency or the gas supplier.

CAUTION

Check entire gas assembly for leaks after lighting this appliance.

INSTALLATION

1. This furnace must be installed in accordance with the manufacturer's instructions and local codes. In the absence of local codes, follow the National Fuel Gas Code ANSI Z223.1 / NFPA54 or CSA B-149. 1 Gas Installation Code.
2. This furnace must be installed so there are provisions for combustion and ventilation air. See manufacturer's installation information provided with this appliance.

OPERATION

This furnace is equipped with manual reset limit switch(es) in burner compartment to protect against overheat conditions that can result from inadequate combustion air supply or blocked vent conditions.

1. Do not bypass limit switches.
2. If a limit opens, call a quallified serviceman to correct the condition and reset limit switch.

INSTALLATION

MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

This forced air furnace is equipped for use with natural gas at altitudes 0 - 5,400 ft (0 - 1646m).

This furnace is for indoor installation in a building constructed on site.

This furnace may be installed on combustible flooring in alcove or closet at minimum clearance as indicated by the diagram from combustible material.

This furnace may be used with a Type B-1 Vent and may be vented in common with other gas fired appliances.

This furnace is approved for UPFLOW, DOWNFLOW, and HORIZONTAL installations.

Vent Clearance to combustibles:
For Single Wall vents 6 inches (6 po).
For Type B-1 vent type 1 inch (1 po).

MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

DOWNFLOW POSITIONS:

† Installation on non-combustible floors only.
For installation on combustible flooring only when installed on a manufacture approved special base kit or manufacturer recommended coil assembly.

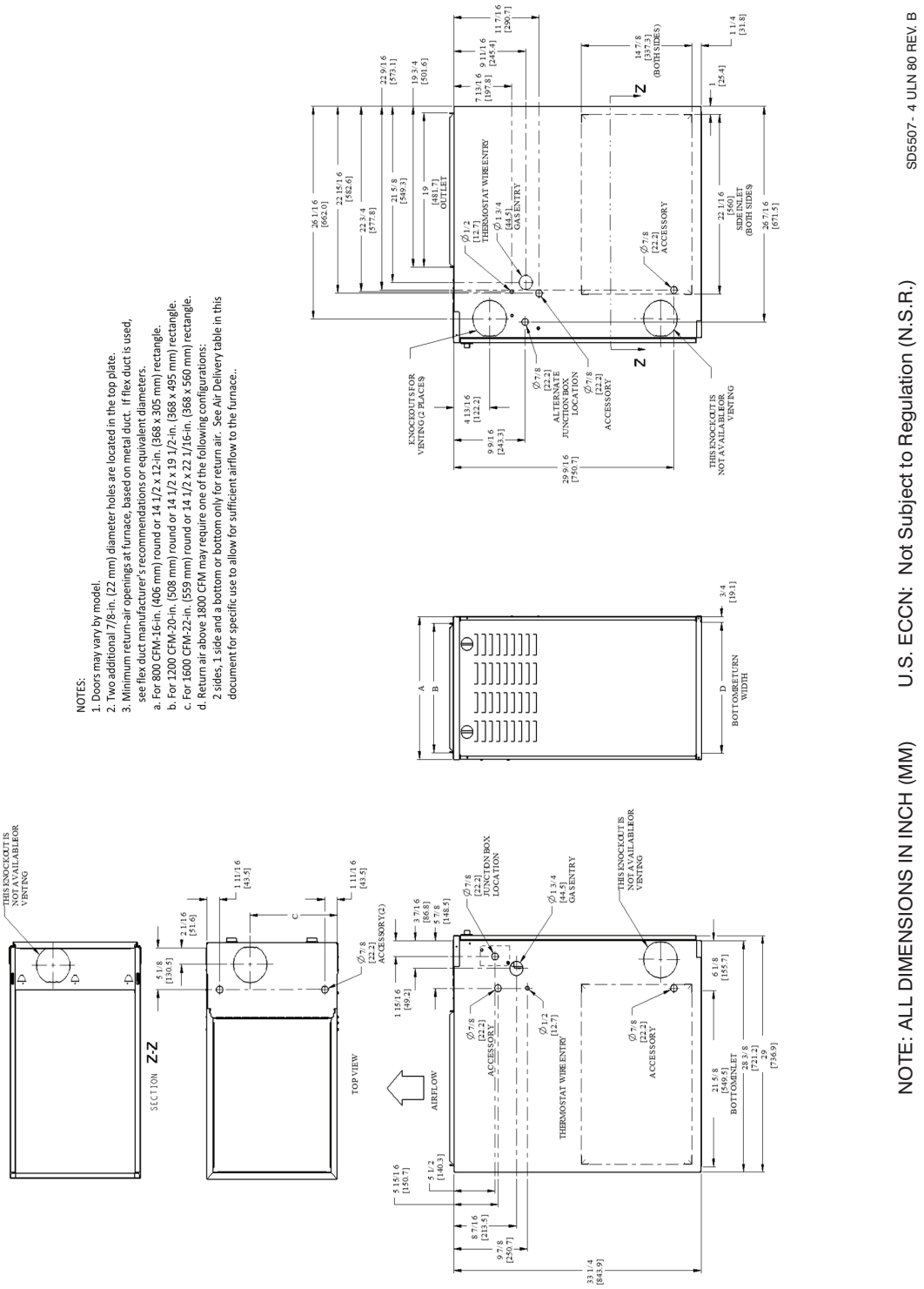
Ø 18 inches front clearance required for alcove.

* Indicates supply or return sides when furnace is in the horizontal position. Line contact only permissible between lines formed by intersections of the Top and two Sides of the furnace jacket, and building joists, studs or framing.

345556-101 REV.A

A190402

UNIT DIMENSIONS



A190257

FURNACE SIZE	A	B	C	D	VENT CONNECTION SIZE IN. (MM)	SHIP WT LB (KG)
	CABINET WIDTH IN (MM)	OUTLET WIDTH IN (MM)	TOP OUTLET IN (MM)	BOTTOM INLET WIDTH IN (MM)		
F80CSU0401712	17-1/2 (445)	15-7/8 (403)	11-9/16 (294)	16 (406)	4 (102)	119 (54)
F80CSU0601716	17-1/2 (445)	15-7/8 (403)	11-9/16 (294)	16 (406)	4 (102)	124 (56)
F80CSU0802120	21 (533)	19-3/8 (492)	13-5/16 (338)	19-1/2 (495)	4 (102)	144 (65)
F80CSU1002120	21 (533)	19-3/8 (492)	13-5/16 (338)	19-1/2 (495)	4 (102)	154 (70)

PRODUCT SPECIFICATIONS

FURNACE SIZE		0401712	0601716	0802120	1002122
RATINGS AND PERFORMANCE					
Input Btuh*		40,000	60,000	80,000	100,000
Output Capacity (Btuh)†		31,000	48,000	64,000	81,000
AFUE†		80.0	80.0	80.0	80.0
Certified Temperature Rise Range - °F (°C)		25 - 55 (14 - 31)	30 - 60 (17 - 33)	25 - 55 (14 - 31)	25 - 55 (14 - 31)
External Static Pressure (in. w.c.)‡	Heating	.10	.12	.15	.20
	Cooling	.50	.50	.50	.50
Airflow Delivery @ ESP Listed Above (CFM)	Heating	760	930	1500	1750
	Cooling	505-1490	535-1480	990-2390	1130-2260
ELECTRICAL					
Unit Volts-Hertz-Phase		115-60-1			
Operating Voltage Range	Min-Max	104-127			
Maximum Unit Amps		11.4	11.4	17.8	17.8
Unit Ampacity		12.6	12.6	18.9	18.9
Maximum Wire Length - Measure one way in Ft		29	29	30	30
Minimum Wire Size		14	14	12	12
Maximum Fuse or Ckt Bkr Size (Amps)**		15	15	20	20
Transformer (24v)		40 VA			
External Control Power Available	Heating	12 VA			
	Cooling	35 VA			
Air Conditioning Blower Relay		Standard			
CONTROLS					
Limit Control		SPST			
Heating Blower Control		Solid-State Time Operation			
Gas Connection Size		1/2-in. NPT			
GAS CONTROLS					
Gas Valve (Redundant)	Mfr.	White Rodgers			
	Min. inlet pressure (In. W.C.)	3.5 Natural Gas			
	Max. inlet pressure (In. W.C.)	13.6 Natural Gas			
Ignition Device		Hot Surface Ignitor			
Factory-installed orifice		3.35mm	#18	#10	#6
BLOWER DATA					
Direct-Drive Motor HP		1/2	1/2	1	1
Motor Full Load Amps		7.7	7.7	12.8	12.8
Nominal RPM		1050	1050	1050	1050
Blower Wheel Diameter x Width - In. (mm)		10 x 8 (243 x 203)	11 x 8 (279 x 203)	11 x 11 (279 x 279)	11 x 11 (279 x 279)

*. Gas input ratings are certified for elevations to 5,400 ft. (1646 M). In USA, for elevations above 2,000 ft. (610 M), reduce ratings 2 percent for each 1,000 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.
‡. DOE minimum External Static Pressure
**. Time-delay type is recommended.
ICS = Isolated Combustion System

AIR DELIVERY

AIR DELIVERY - CFM (with filter)*													
(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2)													
Size: 0401712	**Clg/CF Switch settings**			**External Static Pressure (ESP)**									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1275	1310	1305	1315	1310	1305	1305	1295	1290	1270
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	1275	1310	1305	1315	1310	1305	1305	1295	1290	1270
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	530	545	545	535	505	495	485	See Note 4		
	OFF	ON	OFF	715	705	730	730	735	735	740	725	720	695
	OFF	ON	ON	870	910	925	925	935	935	925	915	910	900
	ON	OFF	OFF	1100	1090	1080	1110	1120	1120	1110	1110	1100	1095
	ON	OFF	ON	1275	1310	1305	1315	1310	1305	1305	1295	1290	1270
	ON	ON	OFF	1445	1480	1480	1480	1475	1455	1415	1375	1335	1295
	ON	ON	ON	1445	1480	1480	1480	1475	1455	1415	1375	1335	1295
	Maximum Clg Airflow[2]			1635	1605	1565	1525	1490	1455	1415	1375	1335	1295
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	530	545	545	535	505	495	485	See Note 4		
Continuous Fan Airflow (SW3)	OFF	OFF	ON	530	545	545	535	505	495	485	See Note 4		
	OFF	ON	OFF	715	705	730	730	735	735	740	725	720	695
	OFF	ON	ON	870	910	925	925	935	935	925	915	910	900
	ON	OFF	OFF	1100	1090	1080	1110	1120	1120	1110	1110	1100	1095
	ON	OFF	ON	1100	1090	1080	1110	1120	1120	1110	1110	1100	1095
	ON	ON	OFF	1100	1090	1080	1110	1120	1120	1110	1110	1100	1095
	ON	ON	ON	1100	1090	1080	1110	1120	1120	1110	1110	1100	1095
Heating (SW1)	Heating Airflow[3]			760	765	790	790	800	800	800	790	775	755
Size: 0601716	**Clg/CF Switch settings**			**External Static Pressure (ESP)**									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1460	1475	1500	1500	1480	1440	1395	1355	1310	1255
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	540	565	555	555	535	See Note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	540	565	555	555	535	See Note 4				
	OFF	ON	OFF	715	735	745	760	765	See Note 4				
	OFF	ON	ON	865	910	935	950	965	955	950	955	955	945
	ON	OFF	OFF	1120	1125	1130	1145	1160	1165	1165	1160	1150	1150
	ON	OFF	ON	1275	1295	1315	1335	1340	1345	1340	1335	1310	1255
	ON	ON	OFF	1460	1475	1500	1500	1480	1440	1395	1355	1310	1255
	ON	ON	ON	1460	1475	1500	1500	1480	1440	1395	1355	1310	1255
	Maximum Clg Airflow2			1620	1595	1565	1525	1480	1440	1395	1355	1310	1255
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	540	565	555	555	535	See Note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	540	565	555	555	535	See Note 4				
	OFF	ON	OFF	715	735	745	760	765	See Note 4				
	OFF	ON	ON	865	910	935	950	965	955	950	955	955	945
	ON	OFF	OFF	1120	1125	1130	1145	1160	1165	1165	1160	1150	1150
	ON	OFF	ON	1275	1295	1315	1335	1340	1345	1340	1335	1310	1255
	ON	ON	OFF	1460	1475	1500	1500	1480	1440	1395	1355	1310	1255
	ON	ON	ON	1460	1475	1500	1500	1480	1440	1395	1355	1310	1255
Heating (SW1)	Heating Airflow[3]			960	995	1015	1020	1030	1050	1055	1060	1055	1045

AIR DELIVERY (continued)

AIR DELIVERY - CFM CONTINUED (with filter)*													
(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2)													
Size: 0802120	**Clg/CF Switch settings**			**External Static Pressure (ESP)**									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1905	1920	1935	1945	1950	1945	1935	1930	1920	1905
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	1905	1920	1935	1945	1950	1945	1935	1930	1920	1905
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	785	765	775	See Note 4						
	OFF	ON	OFF	930	975	990	985	990	1000	985	See Note 4		
	OFF	ON	ON	1130	1155	1150	1175	1190	1195	1215	1215	1215	1215
	ON	OFF	OFF	1345	1345	1350	1370	1370	1365	1365	1355	1345	1335
	ON	OFF	ON	1550	1560	1580	1575	1580	1565	1555	1540	1535	1525
	ON	ON	OFF	1905	1920	1935	1945	1950	1945	1935	1930	1920	1905
	ON	ON	ON	2300	2315	2320	2325	2315	2305	2280	2240	2245	2215
	Maximum Clg Airflow[2]			2405	2410	2415	2400	2390	2360	2305	2275	2255	2215
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	785	765	775	See Note 4						
Continuous Fan Airflow (SW3)	OFF	OFF	ON	785	765	775	See Note 4						
	OFF	ON	OFF	930	975	990	985	990	1000	985	See Note 4		
	OFF	ON	ON	1130	1155	1150	1175	1190	1195	1215	1215	1215	1215
	ON	OFF	OFF	1130	1155	1150	1175	1190	1195	1215	1215	1215	1215
	ON	OFF	ON	1130	1155	1150	1175	1190	1195	1215	1215	1215	1215
	ON	ON	OFF	1130	1155	1150	1175	1190	1195	1215	1215	1215	1215
	ON	ON	ON	1130	1155	1150	1175	1190	1195	1215	1215	1215	1215
Heating (SW1)	Heating Airflow[3]			1550	1570	1585	1580	1565	1555	1550	1545	1545	1535
Size: 1002120	**Clg/CF Switch settings**			**External Static Pressure (ESP)**									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1785	1800	1805	1830	1830	1845	1855	1860	1850	1840
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	1785	1800	1805	1830	1830	1845	1855	1860	1850	1840
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	635	630	See Note 4							
	OFF	ON	OFF	785	820	865	See Note 4						
	OFF	ON	ON	1040	1045	1070	1085	1130	See Note 4				
	ON	OFF	OFF	1205	1220	1245	1280	1290	1295	1290	1280	See Note 4	
	ON	OFF	ON	1380	1425	1445	1465	1480	1475	1490	1485	1455	1460
	ON	ON	OFF	1785	1800	1805	1830	1830	1845	1855	1860	1850	1840
	ON	ON	ON	2170	2155	2175	2195	2185	2195	2190	2180	2160	2100
	Maximum Clg Airflow[2]			2200	2220	2245	2260	2260	2260	2255	2225	2170	2100
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	635	630	See Note 4							
Continuous Fan Airflow (SW3)	OFF	OFF	ON	635	630	See Note 4							
	OFF	ON	OFF	785	820	865	See Note 4						
	OFF	ON	ON	1040	1045	1070	1085	1130	See Note 4				
	ON	OFF	OFF	1205	1220	1245	1280	1290	1295	1290	1280	See Note 4	
	ON	OFF	ON	1380	1425	1445	1465	1480	1475	1490	1485	1455	1460
	ON	ON	OFF	1380	1425	1445	1465	1480	1475	1490	1485	1455	1460
	ON	ON	ON	1380	1425	1445	1465	1480	1475	1490	1485	1455	1460
Heating (SW1)	Heating Airflow[3]			1785	1800	1765	1785	1800	1820	1830	1835	1825	1810

1. Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW4-3 set to OFF.
   Set SW1-5 to ON for nominal 400 CFM/ton (+15% airflow).
   Set SW4-3 to ON for nominal 325 CFM/ton (-7% airflow).
   Set both SW1-5 and SW4-3 to ON for nominal 370 CFM/ton (+7% airflow).
   This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.
   The above adjustments in airflow are subject to motor horsepower range/capacity.
2. Maximum cooling airflow is achieved when switches SW2-1, SW2-2, SW2-3 and SW1-5 are set to ON, and SW4-3 is set to OFF.
3. All heating CFM's are when comfort/efficiency adjustment switch (SW1-4) is set to OFF
4. Ductwork must be sized for heating CFM within the operational range of ESP. Operation within the blank areas of the chart is not recommended because heat operation will be above 1.0 ESP.
5. All airflows on 21" casing size furnaces are 5% less on side return only installations.

ACCESSORIES

PART NUMBER	DESCRIPTION	0401712	0601716	0802120	1002120
SYST0101SW	ION™SYSTEM CONTROL	X	X	X	X
NAHA00101MS	ECM MOTOR SIMULATOR KIT	X	X	X	X
FHG1625-2*	BOTTOM FILTER RACK, 17 INCH	X	-	-	-
FHG2025-2*	BOTTOM FILTER RACK, 21 INCH	-	X	X	-
325531-402*	WASHABLE FILTER, 3/4 INCH 16 X 25	X	-	-	-
325531-403*	WASHABLE FILTER, 3/4 INCH 21 X 25	-	X	X	-
NAHB00101CA	COIL ADAPTER KIT WITH NO OFFSET	X	X	X	X
NAHB00201CA	COIL ADAPTER KIT WITH SINGLE OFFSET	X	X	X	X
NAHB00301CA	COIL ADAPTER KIT WITH DOUBLE OFFSET	X	X	X	X
NAHA01701RA	RETURN AIR KIT, 17” WIDE	X	X	-	-
NAHA02101RA	RETURN AIR KIT, 21” WIDE	-	-	X	X
NAHA01101SB	COMBUSTIBLE FLOOR BASE (NOT REQUIRED WHEN EVAPORATOR COIL CASE IS USED FOR DOWNFLOW)	X	X	X	X
NAHB00301VC	DOWNFLOW VENT GUARD (NOT REQUIRED WHEN VENT IS ROUTED THROUGH CABINET)	X	X	X	X

*. Purchased through FAST Parts
X = Accessory available

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