

R95ESU

Product Specifications

Up to 95% AFUE, Single Stage, Ultra Low NOx, ECM Gas Furnace

EASIER TO SELL

- Up to 95% AFUE
- Approved for installations up to 5,400 ft.
- Fixed-Speeds, Constant Torque ECM blower motor
- Supports single-stage cooling units
- Insulated heat exchanger and blower compartment
- Ultra Low NOx – 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.
- 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

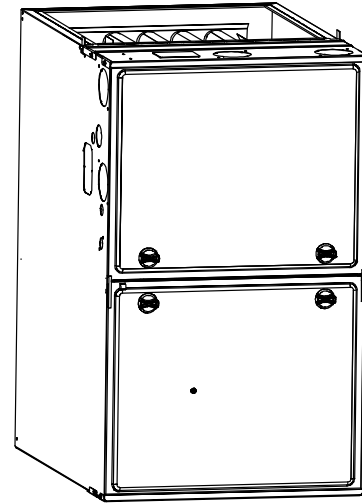
- Stainless steel tubular heat exchanger
- Stainless steel secondary heat exchanger
- Enclosed pre-mix burner with variable speed inducer
- Adjustable heating blower OFF delay
- Factory set blower ON delay
- High temperature limit control designed to prevent overheating
- Pilot free, hot surface ignitor
- High quality, corrosion-resistant, prepainted steel cabinet

EASIER TO INSTALL AND SERVICE

- Direct vent (2-pipe), single-pipe venting or ventilated combustion air
- Minor series 2 features a condensate trap with 6-3/8" (7-3/8" recommended) clearance in horizontal applications
- Quarter turn knobs for easy door removal and secure attachment
- Three position – upflow and horizontal (left/right) installation
- Factory configured to use with natural gas, not convertible to Liquid Propane
- Concentric vent available
- Self diagnostics with super bright LED
- Slide out blower assembly with extra long harness

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.



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Illustrations and photographs are only representative.
Some product models may vary.

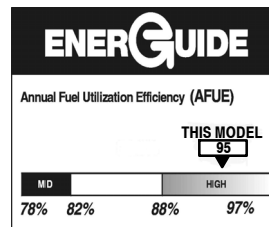
WARNING

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 not designed for use in manufactured (Mobile) homes.

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



ISO 9001
Quality



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.



Model Number	Input (BTUH)	AFUE (up to)	ENERGY STAR®	Cooling Capacity CFM range @ .5 in. w.c. (125 Pa)	Dimensions H x W x D Inches (Millimeters)	Shipping Wt. Lbs (Kg)
		UPFLOW/ HORIZONTAL				
R95ESU0401712A	40,000	95.0%	✓	326 - 1211	35 x 17-1/2 x 29-1/2 (889 x 445 x 750)	139.4 (63.2)
R95ESU0601716A	60,000	95.0%	✓	765 - 1515	35 x 17-1/2 x 29-1/2 (889 x 445 x 750)	149.4 (67.8)
R95ESU0802120A	80,000	95.0%	✓	570 - 2025	35 x 21 x 29-1/2 (889 x 533 x 750)	167.4 (75.9)
R95ESU1002120A	100,000	95.0%	✓	475 - 2065	35 x 21 x 29-1/2 (889 x 533 x 750)	174.4 (79.1)

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AIR DELIVERY – CFM (with filter)												
UNIT SIZE	WIRE LEAD COLOR	FUNCTION SPEED TAP ^{2, 3}	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0401712	Gray	Cooling. Do not use for heating	1347	1312	1278	1244	1211	1177	1143	1110	1076	1043
	Yellow	Alt. Heating or Alt Cooling	1006	963	920	878	836	794	751	702	656	613
	Blue	Heating or Alt Cooling	860	811	763	716	668	613	560	513	472	430
	Orange	Alt. Heating or Alt Cooling	761	708	655	604	543	486	439	394	346	295
	Red	Alt. Cooling. Do not use for Heating	581	517	449	380	326	226	202	—	—	—
0601716	Gray	Cooling. Do not use for Heating	1670	1635	1595	1555	1515	1475	1435	1395	1360	1315
	Yellow	Alt. Cooling. Do not use for Heating	1465	1420	1385	1345	1310	1265	1225	1180	1135	1095
	Blue	Heating or Alt. Cooling	1215	1170	1125	1085	1050	1005	965	925	880	830
	Orange	Alt. Heating or Alt. Cooling	1120	1065	1025	980	940	900	860	815	770	720
	Red	Alt. Cooling. Do not use for Heating	945	895	855	805	765	715	670	625	570	530
0802120	Gray ^{5, 6}	Cooling. Do not use for Heating	2165	2135	2115	2070	2025	1980	1930	1885	1835	1790
	Blue ^{5, 6}	Heating or Alt. Cooling	1800	1755	1715	1670	1620	1575	1525	1475	1425	1380
	Yellow	Alt. Heating or Alt. Cooling	1645	1595	1550	1510	1460	1410	1365	1315	1265	1220
	Orange	Alt. Cooling. Do not use for Heating	1505	1450	1410	1360	1310	1265	1215	1170	1120	1080
	Red ⁷	Alt. Cooling. Do not use for Heating	885	785	705	645	570	495	430	360	295	—
1002120	Gray ^{5, 6}	Cooling Do not use for Heating	2215	2180	2140	2100	2065	2035	1995	1960	1925	1890
	Blue ^{5, 6}	Heating or Alt Cooling	1890	1850	1810	1770	1730	1690	1650	1610	1565	1520
	Yellow	Alt Cooling. Do not use for Heating	1695	1650	1605	1560	1515	1475	1425	1380	1325	1280
	Orange	Alt Cooling. Do not use for Heating	1270	1215	1155	1100	1040	980	925	865	810	765
	Red ⁷	Alt Cooling. Do not use for Heating	800	715	630	550	475	390	320	—	—	—

NOTE:

1. A filter is required for each return—air inlet. Airflow performance includes a 3/4-in. (19 mm) washable filter media. See accessory list in Specification sheet. To determine airflow performance without this filter, assume an additional 0.1 in. w.c. available external static pressure.
2. **ADJUST THE BLOWER SPEED TAPS AS NECESSARY FOR THE PROPER AIR TEMPERATURE RISE FOR EACH INSTALLATION.**
3. The “Function” column identifies which speed taps can be used for heating.
4. If the same motor speed tap is needed for heating and cooling, a Jumper Wire accessory kit is available, see Specification sheet accessories for the current Jumper Wire accessory part number. Reference the “Start—up, Adjustments, and Safety Check” section for further Jumper Wire instructions.
5. 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.
6. 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.
7. The “—” entry indicates an unstable operating condition.

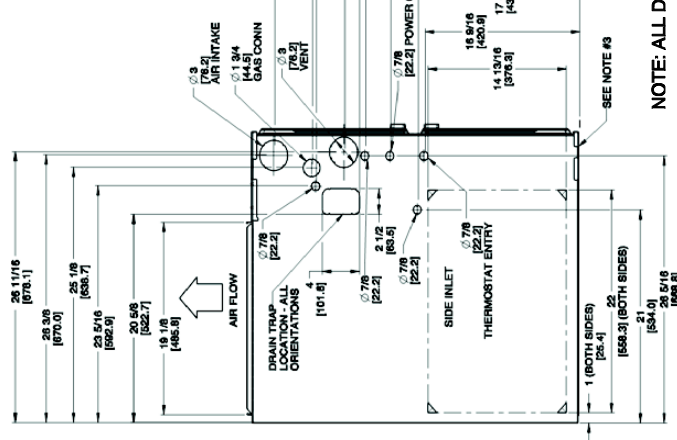
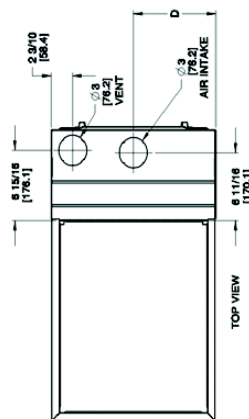
MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS FOR ALL UNITS	
POSITION	CLEARANCE
Rear	1 in.
Front (Combustion air openings in furnace and in structure)	1 in.
Required for service	24 in*
All Sides of Supply Plenum	1 in
Sides	1 in.**
Vent	0
Top of Furnace	1 in.

** Additional clearance is required for condensate trap installation.

NOTE: Furnace edge contact is permissible with combustible materials unless local codes state otherwise.

PHYSICAL DATA					
Heating Capacity and Efficiency		0401712	0601716	0802120	1002120
Input	Heating (BTUH)	40,000	60,000	80,000	100,000
Output	Heating (BTUH)	36,000	58,000	78,000	96,000
Certified Temperature Rise Range °F (°C)	Heating	30 - 60 (17 - 33)	30 - 60 (17 - 33)	30 - 60 (17 - 33)	35 – 65 (19 – 36)
Airflow Capacity and Blower Data					
Rated External Static Pressure (in. w.c.)	Heating	0.10	0.12	0.12	0.15
	Cooling	0.5	0.5	0.5	0.5
Airflow Delivery @ Rated ESP (CFM)	Heating	860	1205	1790	1880
	Cooling	1211	1515	2025	2065
Cooling Capacity (tons) @ CFM/ton	400 CFM/ton	3	3.5	5	5
	350 CFM/ton	3	4	5.5	5.5
Direct–Drive Motor Type		Electronically Commutated Motor (ECM)			
Direct–Drive Motor HP		1/2	3/4	1	1
Motor Full Load Amps		6.7	8.8	11.5	11.7
RPM Range		400–1300	570–1400	570–1400	400 – 1300
Speed Selections		5	5	5	5
Blower Wheel Dia x Width	in.	11 x 8	11 x 8	11 x 10	11 x 10
Filter Used for Certified Watt Data		325531–40*			
Electrical Data					
Input Voltage	Volts–Hertz–Phase	115–60–1			
Operating Voltage Range	Min–Max	104–127			
Maximum Input Amps	Amps	8.8	10.9	13.6	13.8
Unit Ampacity	Amps	12.5	14.2	17.6	17.8
Minimum Wire Size	AWG	14	14	12	12
Maximum Wire Length@ Minimum Wire Size	Feet	29.8	26.2	32.8	32.3
Maximum Fuse/Ckt Bkr (Time–Delay Type Recommended)	Amps	15	15	20	20
Transformer Capacity (24 VAC output)		40 VA			
External Control Power Available	Heating	21.8 VA			
	Cooling	34 VA			
Controls					
Gas Connection Size		1/2” - NPT			
Gas Valve (Redundant)	Manufacturer	White Rodgers			
Minimum Inlet Gas pressure (in. wc)		4.50			
Maximum Inlet Gas pressure (in. wc)		13.60			
Manufactured (Mobile) Home Kit		Not approved for Manufactured Home use			
Ignition Device		Silicon Nitride			
Heating Blower Control (Heating Off-Delay)		Adjustable: 90, 120, 150, 180 seconds			
Cooling Blower Control (Time Delay Relay)		90 seconds			
Communication System		none			
Thermostat Connections		G, C, W, Y, R			
Accessory Connections		EAC (115vac); HUM (24vac & 115vac); 1-stg AC (via Y)			

UNIT DIMENSIONS



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.

U.S. ECCN: Not Subject to Regulation (N.S.R.)

NOTE: ALL DIMENSIONS IN INCH (MM)

80649-4 REV. B

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FURNACE SIZE	A	B	C	D	SHIP WT. LB (KG)
	CABINET WIDTH	OUTLET WIDTH	BOTTOM INLET WIDTH	AIR INTAKE	
R95ESU0401712	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	139.4 (63.2)
R95ESU0601716	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	149.4 (67.8)
R95ESU0802120	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	167.4 (75.9)
R95ESU1002120	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	174.4 (79.1)

INSTALLATION CONSIDERATIONS

Refer to Installation Instructions for complete installation requirements.

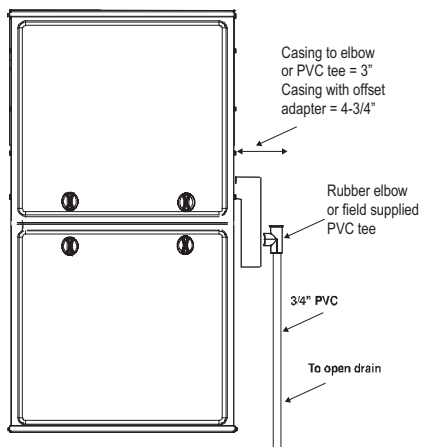
Evaporator Coil Spacer or Shield Requirements

Type of Coil	Install Flush to Furnace	Install with 8-in. Spacer	Install with Metal Shield
Furnace Manufacturer's N Coil	Allowed	Not Required	Not Required
Furnace Manufacturer's A Coil	Not Allowed	Allowed (Except 100k BTU size in Horizontal Right – MUST use shield)	Allowed (See Note 2)
3rd Party Coil – Factory Shielded (See Note 1)	Allowed	Not Required	Not Required
3rd Party Coil – Unshielded	Not Allowed	Allowed (Except 100k BTU size in Horizontal Right – MUST use shield)	Allowed (See Note 3)

NOTE:

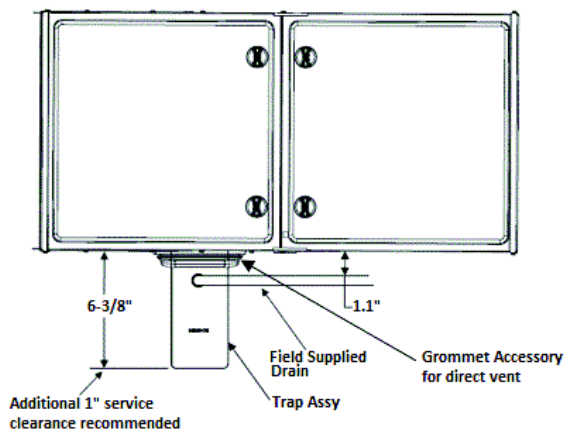
1. 3rd Party Coils that are factory-supplied with a metallic shield over the plastic composite drain pan must completely shield all plastic composite materials from direct exposure to any part of the heat exchanger. Consult with 3rd Party Manufacturer to ensure coil is properly shielded. Coils that are only partially shielded should be treated as un-shielded and require a spacer.
2. Field-fabricated metallic shield must completely shield all plastic composite materials from direct exposure to any part of the heat exchanger. Coils that are only partially shielded should be treated as un-shielded and require a spacer.
3. For 3rd party unshielded coils, consult manufacturer for design of a field-fabricated shield that completely shields all plastic composite materials from direct exposure to any part of the heat exchanger.

6-3/8" CONDENSATE TRAP (7-3/8" RECOMMENDED) CLEARANCES (MINOR SERIES 2 AND BEYOND)



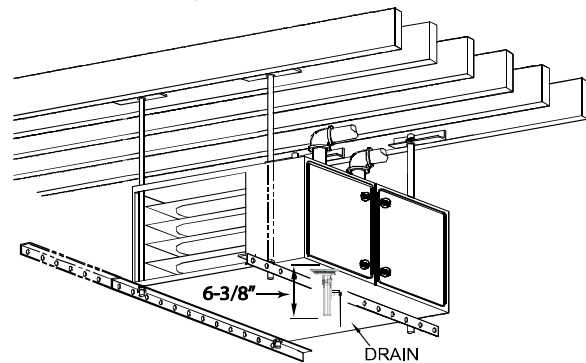
Representative drawing only, some models may vary.

Trap Clearance in Upflow Application



Representative drawing only, some models may vary.

Trap Clearance in Horizontal Application (Note: Drain line can be run horizontally or vertically)

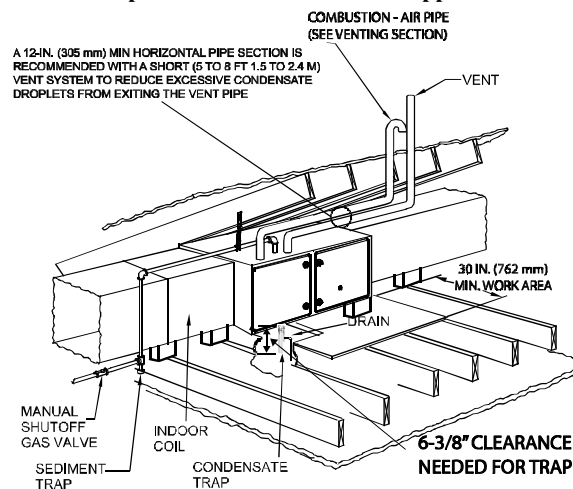


ADDITIONAL 1" CLEARANCE BELOW TRAP RECOMMENDED FOR SERVICE

Representative drawing only, some models may vary.

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Trap Clearance in Horizontal Application

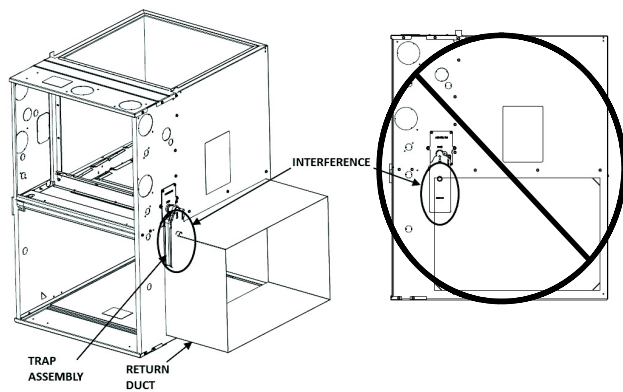


ADDITIONAL 1" CLEARANCE BELOW TRAP RECOMMENDED FOR SERVICE

Representative drawing only, some models may vary.

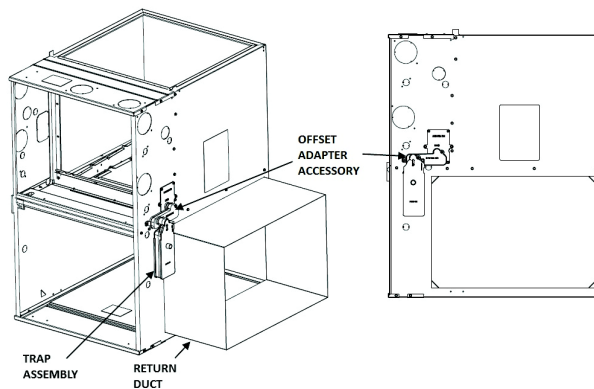
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Working Platform for Attic Installation



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**Upflow Right Side Return Configuration -
Trap Interference**



A200120

**Upflow Right Side Return Configuration -
Required Upflow Offset Installation**

ACCESSORIES						
PART NUMBER	COMPONENT NAME	DESCRIPTION	0401712	0601716	0802120	1002120
AGACDKTUA10A	TRAP OFFSET ADAPTER KIT	UPFLOW WITH RIGHT SIDE RETURN (10 PACK)	X	X	X	X
NAHA00110DA	DRAIN ACCESSORY	1/2" CPVC to 3/4" PVC (10 PACK)	X	X	X	X
NAHA002CV	VENT TERMINATION KIT	2" CONCENTRIC VENT	X	X	X	X
NAHA001CV		3" CONCENTRIC VENT	X	X	X	X
NAHA00101VC	INTERNAL VENT KIT	THROUGH THE CABINET	X	X	X	X
NAHA00301VT	DIRECT VENT TERMINATION KIT	2" BRACKET	X	X	X	X
NAHA00401VT		3" BRACKET	X	X	X	X
NAHA00101CK	INLET AIR PIPE COUPLING	COUPLING FOR POLYPROPYLENE VENT SYSTEMS	X	X	X	X
NAHA00101HV	HORIZONTAL INSTALLATION KIT	TRAP GROMMET (Direct Vent application only)	X	X	X	X
NAHA00101HH	CONDENSATE FREEZE PROTECT KIT	CONDENSATE DRAIN LINE TAPE	X	X	X	X
NAHA01101SB	FLOOR BASE KIT	COMBUSTIBLE FLOOR	X	X	X	X
1188594‡	GAS VALVE TOWER PORT ADAPTER KIT	ADAPTER FOR GAS VALVE	X	X	X	X
325531-402‡	WASHABLE FILTER	FILTER 3/4" x 16" x 25"	X	X		
325531-403‡		FILTER 3/4" x 20" x 25"			X	X
FHG1625-2‡	EXTERNAL BOTTOM FILTER RACK (FILTER NOT INCLUDED)	16" x 25"	X	X		
FHG2025-2‡		21" x 25"			X	X
NAHA01701RA	RETURN AIR KIT	17-1/2" wide	X	X		
NAHA02101RA		21" wide			X	X
NAHA001NK	CONDENSATE NEUTRALIZER KIT	NEUTRALIZES CONDENSATE	X	X	X	X
Coil Adapter Kits (see Installation Instructions for coil requirements)						
NAHB00101CA	COIL ADAPTER KIT	WITH NO OFFSET	X	X	X	X
NAHB00201CA	COIL ADAPTER KIT	WITH SINGLE OFFSET	X	X	X	X
NAHB00301CA		WITH DOUBLE OFFSET	X	X	X	X

X Accessory available

‡ Purchased through FAST Parts