



Coleman Technical Guide: Z8ES Series - Non-condensing Residential Gas Furnaces

Single-Stage Standard ECM Multi-position Standard and
Low NOx



York International Corporation, 5005 York
Drive, Norman, OK 73069

6368918-CTG-A-0423

Supersedes: nothing

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Contents

Description.....	5
Certification.....	5
Warranty.....	5
Features.....	6
Dimensions.....	7
Ratings and physical and electrical data.....	8
Horizontal sidewall venting.....	8
Filter performance.....	8
Accessories.....	9
Blower performance.....	11
Third-party trademarks.....	12

Description

These compact units employ induced combustion, reliable hot surface ignition, and high heat transfer aluminized steel tubular heat exchangers. The units are factory shipped for installation in upflow applications and can be converted for downflow or horizontal applications.

These furnaces are designed for residential installation in a basement, closet, alcove, attic, recreation room, or garage, and are also ideal for commercial applications. All units are factory assembled, wired, and tested to ensure safe, dependable, and economical installation and operation.

These units are Category I listed and can be common vented with another gas appliance as allowed by the National Fuel Gas Code.

Due to continuous product improvement, specifications are subject to change without notice. **This document is only for distribution use - it is not to be used at point of retail sale.**

Visit us on the web at www.simplygettingthejobdone.com and www.colemanac.com.

Additional rating information can be found at www.ahridirectory.org.

Certification



Assembled at a facility with an ISO 9001:2015-certified Quality Management System



Warranty

20-year limited warranty on the heat exchanger.

10-year heat exchanger warranty on non-residential applications.

5-year limited parts warranty.

Extended residential limited lifetime heat exchanger and 10-year limited parts warranty when product is registered online within 90 days of purchase for replacement or within 90 days of closing for new home construction.

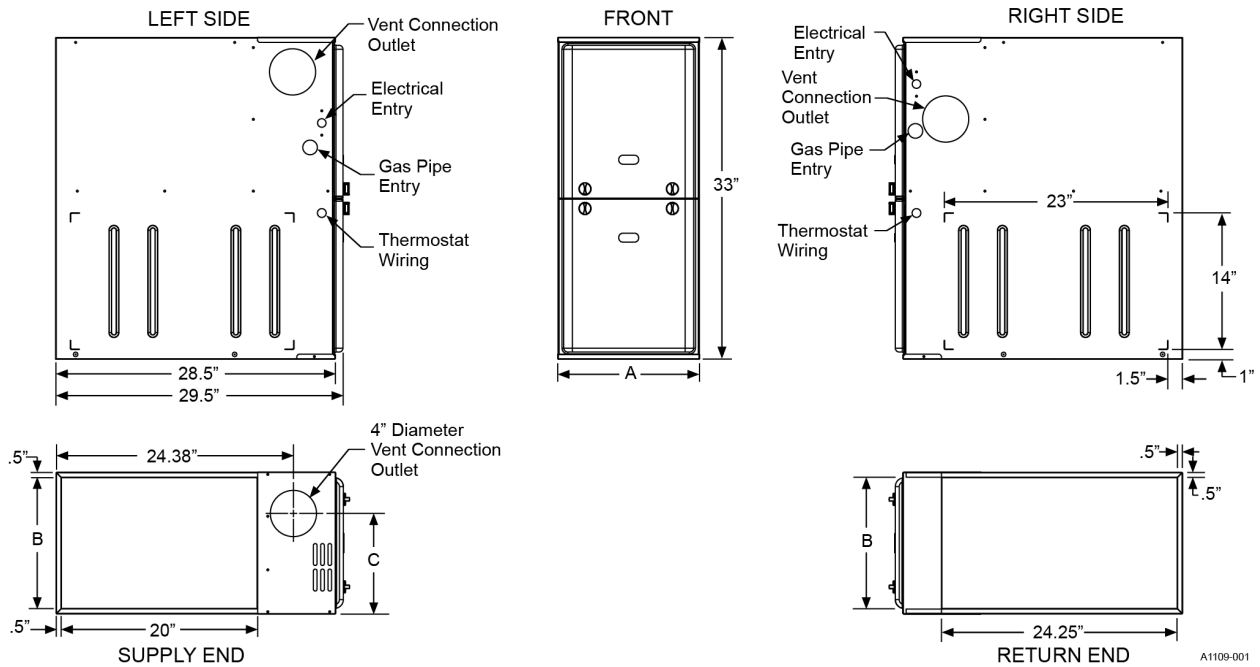
See the *Limited Warranty certificate* in the *Users Information Manual* for details.

Features

- Easily applied in upflow, horizontal left or horizontal right, or downflow installation with minimal conversion necessary
- The unit cabinet is compact and easy to install with an ideal height of 33 in.
- Blower-off delay for cooling SEER2 improvement
- Easy access to controls to connect power and control wiring
- Built-in, high level self diagnostics with fault code displays standard on integrated control module for reliable operation
- Low unit current requirement for easy replacement application
- All models are convertible to use propane (LP) gas.
- Electronic hot surface ignition saves fuel cost with increased dependability and reliability.
- 100% shut-off main gas valve for extra safety
- Five-speed direct drive standard ECM blower motor
- 24 V, 40 VA control transformer and control provisions supplied for single or multi-stage add on cooling
- Hi-tech tubular aluminized steel primary heat exchanger
- Timed on, adjustable off blower capability for maximum comfort
- Blower door safety switch
- Solid removable bottom panel allows easy conversion for bottom return air applications
- Low NOx models have been designed to meet specific code requirements.
- Airflow leakage less than 1% of nominal airflow for duct performance testing conditions
- No electrical knockouts to deal with, making installation easier
- Fold-up duct connector flanges for application flexibility
- Quiet inducer operation
- Inducer rotates for easy conversion of venting options
- Fully supported blower assembly for easy access and removal of blower
- External air filters are used for maximum flexibility in meeting customers' indoor air quality (IAQ) needs.
- Venting applications: install as a common vent with other gas-fired appliances or use a lined masonry chimney.
- 1/4 turn knobs are provided for easy independent door removal.
- High-efficiency blower motor for lower electrical power usage and improved AC SEER2 ratings
- Insulated blower compartment for thermal and acoustic performance

Dimensions

Figure 1: Dimensions



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Table 1: Cabinet and duct dimensions

Models	Cabinet size	A (in.)	A (cm)	B (in.)	B (cm)	C (in.)	C (cm)	Approximate operating weight (lb)
Z8ES040A12S(L)MPS1	A	14 1/2	36.8	13 3/8	34.0	10.3	26.2	89
Z8ES060A12S(L)MPS1	A	14 1/2	36.8	13 3/8	34.0	10.3	26.2	94
Z8ES080B12S(L)MPS1	B	17 1/2	44.4	16 3/8	41.6	11.8	29.9	103
Z8ES080C16S(L)MPS1	C	21	53.3	19 7/8	50.5	13.6	34.5	116
Z8ES080C20S(L)MPS1	C	21	53.3	19 7/8	50.5	13.6	34.5	121
Z8ES100B12S(L)MPS1	B	17 1/2	44.4	16 3/8	41.6	11.8	29.9	108
Z8ES100C16S(L)MPS1	C	21	53.3	19 7/8	50.5	13.6	34.5	120
Z8ES100C20S(L)MPS1	C	21	53.3	19 7/8	50.5	13.6	34.5	124
Z8ES120C16S(L)MPS1	C	21	53.3	19 7/8	50.5	15.8	40.1	125
Z8ES120C20S(L)MPS1	C	21	53.3	19 7/8	50.5	15.8	40.1	131
Z8ES130D20S(L)MPS1	D	24.5	62.2	23 3/8	59.4	17.5	44.4	137

Ratings and physical and electrical data

Table 2: Ratings and physical and electrical data

Model	Input		Output	AFUE	Air temperature rise	Maximum outlet air temperature	Blower			Fuse or circuit breaker	Total unit	Gas pipe connection, NPT
	MBH	MBH	MBH	%	°F	°F	hp	A	in.	A	A	in.
Z8ES040A12S(L)MPS1	40	32	80	80	20 to 50	190	1/2	6.4	11 x 8	15	8.2	1/2
Z8ES060A12S(L)MPS1	60	48	80	80	30 to 60	190	1/2	6.4	11 x 8	15	8.2	1/2
Z8ES080B12S(L)MPS1	80	64	80	80	35 to 65	190	1/2	6.4	11 x 8	15	8.7	1/2
Z8ES080C16S(L)MPS1	80	64	80	80	30 to 60	190	1/2	6.4	11 x 10	15	8.8	1/2
Z8ES080C20S(L)MPS1	80	64	80	80	25 to 55	190	1	11.5	11 x 11	20	13.8	1/2
Z8ES100B12S(L)MPS1	100	80	80	80	40 to 70	190	1/2	6.4	11 x 8	15	8.7	1/2
Z8ES100C16S(L)MPS1	100	80	80	80	40 to 70	190	3/4	8.8	11 x 10	15	11.1	1/2
Z8ES100C20S(L)MPS1	100	80	80	80	25 to 55	190	1	11.5	11 x 11	20	13.8	1/2
Z8ES120C16S(L)MPS1	120	96	80	80	40 to 70	190	3/4	8.8	11 x 10	15	11.1	1/2
Z8ES120C20S(L)MPS1	120	96	80	80	35 to 65	190	1	11.5	11 x 11	20	13.7	1/2
Z8ES130D20S(L)MPS1	130	104	80	80	35 to 65	190	1	11.5	11 x 11	20	13.7	1/2

Note:

- The nominal external static pressure is 0.5 in. W.C. at furnace outlet ahead of indoor coils.
- Annual fuel utilization efficiency (AFUE) numbers are determined in accordance with DOE Test procedures.
- Wire size and overcurrent protection must comply with the National Electrical Code (NFPA-70-latest edition) and all local codes.

Horizontal sidewall venting

For applications where vertical venting is not possible, the only approved method of horizontal venting is the use of an auxiliary power vent. Auxiliary power venters must be approved by CSA, UL, or other recognized safety agencies. Follow all application and installation details provided by the manufacturer of the power vent.

Filter performance

CAUTION

In downflow furnace arrangement, the filter must be located a minimum of 12 in. from the return air inlet of the furnace.

The airflow capacity data shown in Table 5 represents blower performance **without** filters.

All applications of these furnaces require the use of field-installed air filters. All filter media and mounting hardware or provisions must be field installed external to the furnace cabinet. **Do not** attempt to install any filters inside the furnace.

NOTICE

Single side return above 1800 CFM is approved as long as the filter velocity does not exceed the filter manufacturer's recommendation and a transition is used to allow use of a 20 x 25 filter.

Table 3: Recommended filter sizes

CFM (m ³ /min)	Cabinet size	Side (in.)	Bottom (in.)
1200 (34.0)	A	16 x 25	14 x 25
1200 (34.0)	B	16 x 25	16 x 25
1600 (45.3)	C	16 x 25	20 x 25
2000 (56.6)	C	(2) 16 x 25	20 x 25
2000 (56.6)	D	(2) 16 x 25	20 x 25

ⓘ Note:

- Air velocity through disposable type filters must not exceed 300 ft/min (91.4 m/min). All velocities over this require the use of high velocity filters.
- Do not exceed 1800 CFM using a single side return and a 16 x 25 filter. For CFM greater than 1800, you may use two side returns or one side and the bottom or one return with a transition to allow use of a 20 x 25 filter.

Table 4: Unit clearances to combustibles (all dimensions in inches and all surfaces identified with the unit in an upflow configuration)

Application	Top	Front	Rear	Left side	Right side	Flue	Floor/ Bottom	Closet	Alcove	Attic	Line contact
	in. (cm)	in. (cm)	in. (cm)	in. (cm)	in. (cm)	in. (cm)					
Upflow	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	6 (15.2)	Combustible	Yes	Yes	Yes	No
Upflow B-vent	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.5)	Combustible	Yes	Yes	Yes	No
Downflow	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	6 (15.2)	1 (25.4) ¹	Yes	Yes	Yes	No
Downflow B-vent	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.5)	1 (25.4) ¹	Yes	Yes	Yes	No
Horizontal	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	6 (15.2)	Combustible	No	Yes	Yes	Yes ²
Horizontal B-vent	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.5)	Combustible	No	Yes	Yes	Yes ²

¹ A combustion floor base accessory or indoor coil cabinet is required for use on a combustible floor.

² Line contact is only permitted between lines formed by the intersection of the rear panel and side panel (top in horizontal position) of the furnace jacket and building joists, studs, or framing.

Accessories

Propane (LP) Conversion Kit

This accessory conversion kit can be used to convert natural gas units for LP operation.

S1-1NP0347 - All Models except 130 kBtu input

S1-1NP0501 - 130 kBtu input only

LP Stainless Steel Burner Kit

This accessory conversion kit may be used to convert existing burners to stainless steel burners for LP use only.

S1-32926889000 - All LP Models

Natural (NAT) Gas Stainless Steel Burner Kit

This accessory kit may be used to replace existing burners with stainless steel burners for NAT gas use only.

S1-32924441000 - all NAT gas models

Side Return Filter Racks

S1-1SR0402 - kit accommodates a 1 in. filter.

S1-1SR0402 - all models

Bottom Return Filter Racks

The S1-1BR05* series are galvanized steel filter racks. The S1-1BR06* series are pre-painted steel filter racks to match the appearance of the furnace cabinet. The S1-1BR05* and S1-1BR06* series filter racks accommodate a 1 in., 2 in., or 4 in. filter.

S1-1BR0514 or S1-1BR0614 - for 14 1/2 in. cabinets

S1-1BR0517 or S1-1BR0617 - for 17 1/2 in. cabinets

S1-1BR0521 or S1-1BR0621 - for 21 in. cabinets

S1-1BR0524 or S1-1BR0624 - for 24 1/2 in. cabinets

Masonry Chimney Kit

This accessory kit allows upflow 80% models to be vented into a tile-lined masonry chimney.

S1-1CK0604 - all 80% Non-modulating Models

Combustible Floor Base Kit

These kits are required to prevent potential overheating situations when the furnaces are installed in downflow applications directly onto combustible flooring material. These kits are also required in any applications where the furnace is installed in a downflow configuration without an indoor coil and where the combustible floor base kit provides access for combustible airflow.

S1-1CB0514 - for 14 1/2 in. cabinets

S1-1CB0517 - for 17 1/2 in. cabinets

S1-1CB0521 - for 21 in. cabinets

S1-1CB0524 - for 24 1/2 in. cabinets

High Altitude Pressure Switches

For installation where the altitude is less than 5,000 ft, it is not required to change the pressure switch. For altitudes above 5,000 ft, use an appropriate kit from below:

S1-1PS3301 - 040, 060, 080, 120

S1-1PS3302 - 100, 130

Thermostats

Compatible thermostat controls are available through accessory sourcing. For optimum performance, these outdoor units are fully compatible with our residential touchscreen thermostat available through Source 1. For more information, refer to the *Thermostat & Controllers* section at <http://www.simplygettingthejobdone.com>.

Blower performance

Table 5: Blower performance CFM - any position, without filter

Model	Speed	Airflow data (SCFM) external static pressure (in. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
040A12	High	1375	1350	1325	1300	1275	1225	1200	1175
	Medium high	1225	1200	1150	1125	1100	1075	1025	1000
	Medium	1150	1100	1075	1050	1000	975	925	900
	Medium low	1050	1025	1000	950	900	875	825	775
	Low	925	900	850	825	775	725	675	625
060A12	High	1375	1325	1300	1275	1225	1200	1175	1125
	Medium high	1125	1075	1050	1025	975	950	900	850
	Medium	1025	975	950	900	850	825	775	725
	Medium low	925	875	850	800	750	725	675	625
	Low	850	825	775	725	675	625	575	525
080B12	High	1425	1400	1375	1325	1300	1275	1225	1200
	Medium high	1325	1275	1250	1225	1175	1150	1100	1075
	Medium	1175	1125	1075	1050	1000	975	925	900
	Medium low	1050	1000	975	925	900	850	800	775
	Low	925	875	825	800	750	700	650	600
080C16	High	1750	1700	1675	1625	1575	1550	1500	1475
	Medium high	1625	1600	1550	1500	1475	1425	1375	1325
	Medium	1400	1375	1325	1275	1225	1200	1125	1100
	Medium low	1275	1225	1175	1125	1100	1050	1000	950
	Low	1150	1100	1050	1000	950	900	850	775
080C20	High	2025	1950	1900	1850	1800	1750	1700	1650
	Medium high	1825	1750	1700	1625	1600	1525	1475	1425
	Medium	1675	1625	1550	1500	1450	1400	1325	1275
	Medium low	1475	1400	1325	1275	1225	1150	1075	1025
	Low	1200	1100	1025	950	875	800	725	650
100B12	High	1550	1500	1475	1425	1400	1375	1325	1300
	Medium high	1400	1350	1300	1275	1250	1200	1175	1125
	Medium	1225	1175	1150	1100	1075	1025	1000	950
	Medium low	1025	975	950	900	850	825	775	750
	Low	900	850	800	775	725	675	650	600
100C16	High	1900	1850	1825	1800	1750	1725	1675	1625
	Medium high	1700	1675	1625	1600	1550	1525	1475	1425
	Medium	1500	1450	1400	1375	1325	1300	1250	1225
	Medium low	1250	1200	1175	1125	1075	1050	1000	950
	Low	1125	1050	1025	975	925	875	850	800
100C20	High	1975	1950	1900	1850	1825	1775	1725	1700
	Medium high	1825	1775	1725	1675	1650	1600	1550	1500
	Medium	1675	1600	1575	1500	1475	1425	1375	1325
	Medium low	1475	1425	1375	1325	1275	1225	1150	1075
	Low	1275	1225	1150	1100	1025	950	825	750
120C16	High	2050	2025	1975	1950	1925	1900	1850	1800
	Medium high	1850	1800	1775	1750	1700	1675	1625	1600
	Medium	1700	1675	1650	1600	1550	1525	1475	1450
	Medium low	1475	1425	1400	1350	1325	1275	1250	1200
	Low	1175	1125	1075	1025	1000	950	900	875
120C20	High	2000	1925	1875	1825	1775	1725	1675	1625
	Medium high	1850	1775	1725	1675	1600	1550	1500	1450
	Medium	1700	1625	1575	1500	1450	1400	1325	1275
	Medium low	1475	1400	1350	1275	1225	1175	1100	1050
	Low	1250	1175	1100	1025	950	875	800	725

Table 5: Blower performance CFM - any position, without filter

Model	Speed	Airflow data (SCFM) external static pressure (in. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
130D20	High	2100	2050	2000	1975	1925	1875	1850	1800
	Medium high	1925	1875	1825	1800	1775	1725	1675	1650
	Medium	1750	1725	1675	1625	1600	1550	1500	1475
	Medium low	1625	1575	1525	1475	1425	1375	1325	1300
	Low	1325	1250	1200	1150	1075	1025	950	900

- Airflow is shown in standard cubic feet per minute (SCFM).
- The motor voltage is 115 V.
- Not all speeds are recommended for use as heating speeds.

Third-party trademarks

Third-Party Trademarks Notice: For information about third-party trademarks, refer to the relevant company websites.