

# Direct-Fired Air Turnover

Clean & Green with  
Total Energy Efficiency

Heating up to  
7,000 MBH, Ventilating  
up to 120,000 CFM



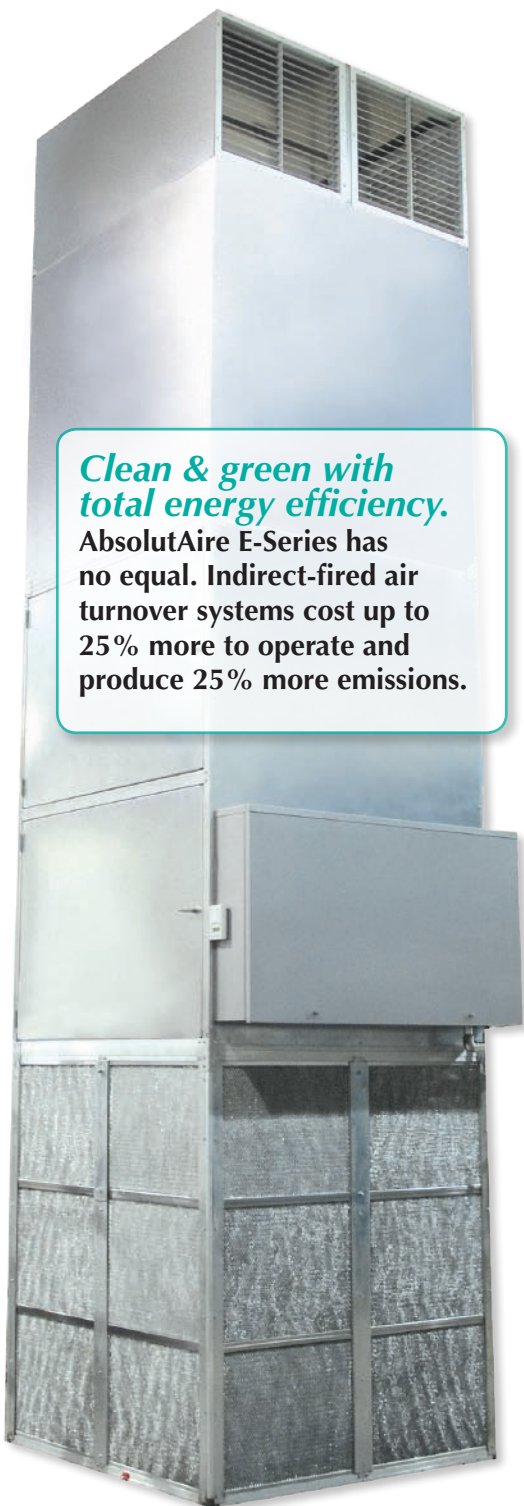
Pure and Simple Solutions

# The **E-Series**



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## **AbsolutAire's Direct-Fired Air-Turnover Solution\***



**Clean & green with  
total energy efficiency.**  
AbsolutAire E-Series has  
no equal. Indirect-fired air  
turnover systems cost up to  
25% more to operate and  
produce 25% more emissions.

Energy efficiency and environmental care are priceless. So, AbsolutAire is taking the lead in developing sustainable HVAC technologies to conserve energy and reduce greenhouse gases in today's world and for future generations to come.

AbsolutAire® E-Series Direct-Fired Air Turnover Systems are the *Best Available Technology* to preserve precious resources, slash heating & ventilating costs and shrink our environmental footprint. Our industry-first innovation is your earth-first solution.

The unique and unprecedented E-Series combines the very best features of indirect-fired air turnover units and direct-fired heating systems. The heart of the concept beats strong. Less horsepower is used for maximum ventilating with efficient axial fans. And less fuel is used for maximum heating and reduced emissions with 100%-efficient direct-fired burners. AbsolutAire has a patent pending on this breakthrough technology.

AbsolutAire E-Series ensures maximum space comfort with high-volume, low-velocity air recirculation. Supply air velocity and temperature control minimize heat stratification. Installation is simple, maintenance is minimal and AbsolutAire's customer service, engineering support and system warranty are among the industry best.



### **Industry-Best Advantages**

- ▲ Reduced Environmental Impact
  - Up to 40% Less CO<sub>2</sub> Output
  - Less than 1 PPM CO and 0.10 PPM NO<sub>2</sub>
  - Maximum Fuel Conservation
  - Minimum Electrical Consumption
- ▲ Increased Operating Economy
  - 100% Direct-Fired Thermal Efficiency
  - Lowest Motor-Fan Electrical Usage
  - Quick & Easy, Low-Cost Installation
  - Industry-Best ROI, First Cost to Life Cost
- ▲ Optimized IAQ & Space Comfort
  - High-Volume Air Recirculation
  - Uniform Heating, Minimum Stratification
  - Combustion Fresh Air, CO<sub>2</sub> Monitoring
  - Precise Temperature-Control Systems

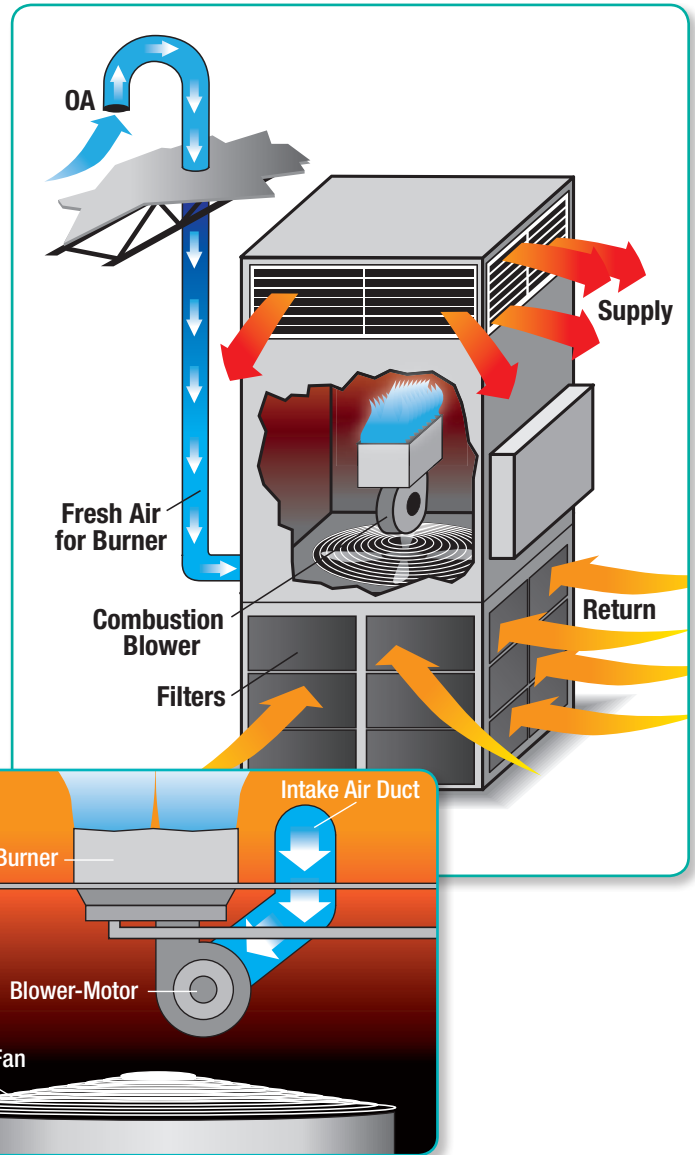
## The Concept: Conservation & Comfort

### Uniform heating without stratification.

AbsolutAire E-Series has no match. Heated supply air is discharged at the top of the unit, “washed” across ceilings to push warm air downward, and circulated throughout the space as room air is pulled back in at the bottom of the unit. The “air turnover” is continuous. Precise temperature and CO<sub>2</sub> sensing at the filtered return air inlet helps to ensure superior space comfort and maintain indoor air quality. The competition cannot deliver the same performance so efficiently and economically with such low installed cost, far less maintenance and greatly reduced environmental impact.

### Heating up to 7,000 MBH, ventilating up to 120,000 CFM.

AbsolutAire E-Series delivers unbeatable economy, from a low first cost through substantial lifecycle operating and service savings, with a 100%-efficient, direct-fired burner and high-performance, direct-drive axial fans. A low-energy blower system pulls fresh outside air through a low-cost intake duct for metered combustion air when the burner is on. Space air is recirculated when the burner is off. Some systems may match E-Series capacities, but none can match the high efficiency or low emissions. Others may cost 10%, 25% or over 70% more to operate, and may produce over 70% more greenhouse gases (CO<sub>2</sub>) in the process.



**Fuel, electrical & environmental savings.** AbsolutAire E-Series is about dollars and sense. This industry-first innovation is a true earth-first solution for heating and ventilating. Nothing else compares. Unit heaters, indirect-fired air turnover and industrial space heaters (HTLV) all require more energy, and produce more carbon emissions than E-Series. *See chart.*

### AbsolutAire E-Series: More Energy Efficient with Less Carbon Output

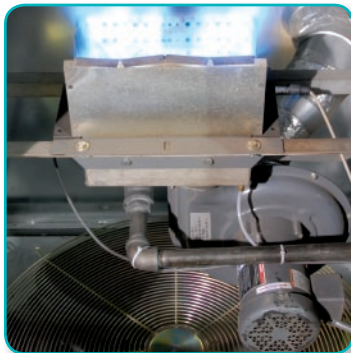
Other Systems ▶▶▶	Consume More Natural Gas	Consume More Electricity	Produce More CO <sub>2</sub>
Unit Heaters	+73%	+97%	+73%
Indirect-Fired Air Turnover	+25%	+7%	+25%
Industrial Space Heaters (HTLV)	+6%	+200%	+5%

**Data Analysis:** Heating loads and energy costs were used from six regions of the U.S. Known burner efficiencies, system electrical requirements and ANSI standards were used to compare the performance of different heating systems with that of AbsolutAire E-Series. Actual results in specific installations may vary.

# The E-Series

## An Industry-First Innovation

Direct-fired air turnover is game-changing technology. The features and benefits of indirect-fired air turnover and direct-fired systems are combined to drive heating & ventilating efficiency and environmental stewardship to new levels. You can choose from a wide range of standard and optional features. And you can capture year-after-year savings, while reducing your heating-system carbon output.



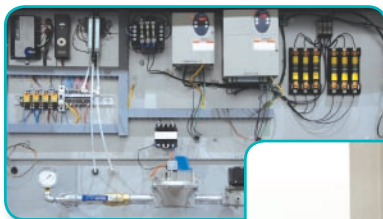
**Looking inside.** A cast-aluminum direct-fired burner and direct-drive, VFD-controlled supply air fan(s) ensure energy efficiency with less carbon output. A low-horsepower, direct-drive blower and simple outside-air duct provide fresh combustion air. Unlike indirect-fired air turnover systems, costly welded flues are not needed.



**Safety First.** Supply-air fan guards are secure on both intake and discharge. Washable filters can be easily removed and replaced even with the burner firing and the fan operating.



**Comfort Control.** Smart stats, BMS interfaces or a complete DDC network can maintain uniform space temperatures, while a CO<sub>2</sub> sensor monitors IAQ.



**ETL Certified.** Factory piped, wired and tested for ETL certification to the latest ANSI standards (Z83.18b-2008), each unit requires just one gas inlet and electrical connection.



**Robust Frame.** Heavy-duty extruded-aluminum framing is especially profiled for maximum strength, consistent quality and guaranteed on-time unit delivery.

### Optional Features

- Aluminum or Stainless Steel Skins
- Painted Cabinet Exterior and/or Interior: Enamel or Epoxy, Color by Owner
- Insulated Double-Wall Construction
- Application-Engineered Discharge Extension(s)
- Service Platform with Ladder (OSHA-Compliant)
- Access Door Interlock Switch
- Inlet Cooling Coils
- Multiple Air Filter Options
- DDC Controls, with Web Access Option
- Smart Stat with BACnet or LonWorks BMS Interface
- Motorized Discharge Louver Blades
- Factory-Certified Field Start-Up & Operator Training
- Foil-Faced 1" Fiberglass Interior Insulation
- Internal Fan & Motor Vibration Isolation
- External "Whole Unit" Vibration Isolation
- Variable-Frequency Drive (VFD) for Combustion Blower Motor
- Through-Door Fused Disconnect Switch
- Clogged Filter Light and/or Alarm Horn and/or Magnehelic Gauge
- 120/1/60 GFI Service Outlet and Light
- Burner-Failure Alarm Horn
- Smoke Detector
- Inlet Gas-Pressure Gauge
- High Gas-Pressure Regulator
- FM and IRI Insurance Gas Manifolds
- High and/or Low Gas-Pressure Switches
- Single Phase Supply Voltages
- Piloted Ignition System

### Standard Features

- Heavy Duty Extruded Aluminum Frame
- Heavy Gauge Aluminized Steel Skins
- Hinged Access Doors
- Quick, Easy, Low-Cost Installation
- Low Maintenance System Construction
- 1" Aluminum (Washable) Room Air Filters
- Inlet and Discharge Guarding of Supply Fan(s)
- As Low As 2% Outside Air, 98% Room Air
- Multiple Supply-Air Discharge Configurations
- Multiple Space Return Air Configurations
- Factory Piped, Wired and Tested
- ANSI Z83.18b-2008 Design Certified
- Two-Year Parts and 90-Day Labor Limited Warranty
- "Smart Stat" Control (Single-Stage Heat)
- 100% Efficient Direct-Fired Burner
- Cast Aluminum Burner Manifold with SS Burner Mixing Plates
- CO<sub>2</sub> Monitoring
- Burner Gas-Pressure Gauge
- Inlet Gas-Pressure Gauge
- NEMA 1 Electrical Enclosure
- 460/3, 230/3 or 208/3 Supply Voltages
- Low-HP Axial Supply Fan Technology
- Direct-Drive VFD-Controlled Supply Air Fan(s)
- Direct-Drive Combustion Air Fan
- Control Circuit Fusing
- High-Temperature Limit Switch
- Non-Fused Disconnect Switch
- Motor Overload Protection
- High- and Low-Airflow Switches
- Direct Spark Ignition

# An Earth-First Solution

**Pure & Simple:** Direct-fired air turnover systems from AbsolutAire deliver the most energy-efficient heating & ventilating available ... reduce environmental impact with low emissions ... cut costs with quick and easy installation ... and require minimum lifecycle maintenance.

## Total Efficiency with Reduced Emissions

Building Specification	Design Specifications	System Requirements
Space Size = 320,000 sq. ft. Floor to Ceiling = 25 ft. R Values = 8 (walls), 12 (roof) Infiltration Rate = 0.33 CFM/sq. ft. of wall area Average Construction	Space Temperature = 65°F Outside Temperature = 0°F Electric Cost = \$0.09 per KWh Gas Cost = \$1.05 per Therm (CCF)	Output on Design Day <sup>1</sup> = 3,617,228 BtuH Building Infiltration = 19,800 CFM

Heating & Ventilating Solutions	Selection & Sizing				Performance & Economy <sup>4</sup>				Environmental Impact <sup>2,4</sup>		
	Number of Units	Supply Air CFM	Outside Air CFM	Motor & Fan BHp	Heating Efficiency %	Burner Therms CCF	Motor Energy KWh	Estimated Operating Cost	CO <sub>2</sub> Output Tons	CO Output PPM	NO <sub>2</sub> Output PPM
Unit Heaters	14	81,480	0	21.00	80	166,497	50,554	\$179,503	971	40.00	5.00
Indirect-Fired Air Turnover	2	80,000	0	13.50	80	120,181	27,363	\$128,724	701	28.00	2.50
Industrial Space Heaters <sup>3</sup>	4	22,625	22,625	15.00	100	101,440	77,022	\$113,675	591	5.00	0.50
Direct-Fired Building Press. (DWDI 80/20) <sup>5</sup>	3	63,360	12,672	38.46	100	96,145	197,486	\$119,239	561	5.00	0.50
Direct-Fired Building Press. (R-Series 85/15) <sup>5</sup>	2	63,360	9,504	25.91	100	96,145	133,043	\$113,272	561	3.75	0.45
Direct-Fired Air Turnover (E-Series)	2	80,000	900	13.18	100	96,145	25,653	\$103,328	561	0.75	0.09

- Notes:**
1. Design Day Output is based on a non-stratified building, unit heater selection is based on a stratified building.
  2. Emission values are approximates based on burners with complete combustion, and industry ANSI standard limitations.
  3. Industrial Space Heaters bring in 100% OA all of the time.
  4. Values for Natural Gas, Propane (LP) values may differ slightly.
  5. Building Pressure units assume OA requirement does not exceed infiltration.

## Easy Installation & Less Maintenance

E-Series Installation Benefits	E-Series Maintenance Benefits
<ul style="list-style-type: none"> <li>• Welded Flues Not Required</li> <li>• Easy-to-Assemble, Lightweight Modular Sections</li> <li>• Single-Point Gas Connection</li> <li>• Single-Point Electrical Connection</li> <li>• Easy-to-Commission Burner &amp; Gas Manifold</li> <li>• No Complicated Air-Gas Mix Settings</li> <li>• Multiple Supply- &amp; Return-Air Configurations</li> <li>• Low-Cost Supply-Air Extensions</li> </ul>	<ul style="list-style-type: none"> <li>• No Heat Exchanger Service Required</li> <li>• No Belts to Tighten or Replace</li> <li>• Easy-to-Clean Return-Air Filters</li> <li>• Fan Guards Enhance Filter Service Safety</li> <li>• No Sheaves to Adjust or Replace</li> <li>• Adjustable Air Delivery with Supply Fan VFDs</li> <li>• Maintenance-Free Combustion-Air Blower</li> <li>• Strong, Corrosion-Resistant Construction</li> </ul>

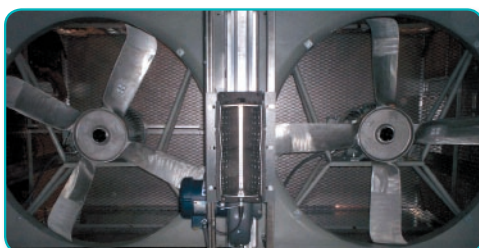
# The E-Series

## Direct-Fired Air Turnover: Performance & Selection

Model	MBH Output	Min. Gas Pressure (in. w.c.) at Unit <sup>1</sup>	Airflow (CFM)	Supply Fan Qty.	Combustion Fan Hp <sup>2</sup>	Supply Fan Hp <sup>3</sup>	Total BHp <sup>4</sup>	Electrical Connection, amps			
								MCA 460/3	MOP 460/3	MCA 208/3	MOP 208/3
E1-4-10	400	6.5	10,000	1	1/2	2	1.69	7.0	10.0	13.8	20.0
E1-4-15	400	6.5	15,000	1	3/4	3	3.12	9.3	12.0	18.9	30.0
E1-6-15	600	5.9	15,000	1	1	3	3.14	9.3	12.0	18.9	30.0
E2-4-20	400	6.5	20,000	1	1	5	3.93	13.0	20.0	27.1	40.0
E2-6-20	600	5.9	20,000	1	1-1/2	5	4.10	13.5	20.0	28.2	40.0
E2-6-25	600	5.9	25,000	1	1-1/2	5	5.60	13.5	20.0	28.2	40.0
E2-8-15	800	9.1	15,000	1	1	3	2.86	9.3	12.0	18.9	30.0
E2-8-20	800	9.1	20,000	1	1-1/2	5	4.35	14.0	20.0	29.3	40.0
E2-8-25	800	9.1	25,000	1	1-1/2	5	5.84	14.0	20.0	29.3	40.0
E2-10-20	1,000	13.5	20,000	1	1-1/2	5	4.33	14.0	20.0	29.3	40.0
E2-10-25	1,000	13.5	25,000	1	1-1/2	5	6.27	14.4	20.0	30.2	40.0
E3-8-30	800	9.1	30,000	1	2	7-1/2	7.12	17.9	25.0	37.9	60.0
E3-8-35	800	9.1	35,000	1	3	7-1/2	9.15	19.0	25.0	40.3	60.0
E3-10-30	1,000	13.5	30,000	1	2	7-1/2	7.42	17.9	25.0	37.9	60.0
E3-10-35	1,000	13.5	35,000	1	3	7-1/2	9.15	19.0	25.0	40.3	60.0
E3-15-25	1,500	13.1	25,000	1	1-1/2	5	5.34	14.0	20.0	29.3	40.0
E3-15-30	1,500	13.1	30,000	1	2	7-1/2	7.42	17.9	25.0	37.9	60.0
E3-15-35	1,500	13.1	35,000	1	3	7-1/2	9.15	19.0	25.0	40.3	60.0
E4-10-40	1,000	13.5	40,000	2	1-1/2	3	7.12	15.4	20.0	32.3	40.0
E4-10-45	1,000	13.5	45,000	2	2	5	8.69	22.5	30.0	48.0	60.0
E4-15-40	1,500	13.1	40,000	2	1-1/2	3	7.12	15.4	20.0	32.3	40.0
E4-15-45	1,500	13.1	45,000	2	2	5	8.69	22.5	30.0	48.0	60.0
E4-15-50	1,500	13.1	50,000	2	3	5	10.33	23.6	30.0	50.5	60.0
E4-20-35	2,000	13.9	35,000	2	1-1/2	3	6.36	15.4	20.0	32.3	40.0
E4-20-40	2,000	13.9	40,000	2	1-1/2	3	7.12	15.4	20.0	32.3	40.0
E4-20-45	2,000	13.9	45,000	2	2	5	8.69	22.5	30.0	48.0	60.0
E4-20-50	2,000	13.9	50,000	2	3	5	10.33	23.6	30.0	50.5	60.0
E4-20-55	2,000	13.9	55,000	2	3	5	11.69	23.6	30.0	50.5	60.0
E4-25-50	2,500	13.0	50,000	2	3	5	10.33	23.6	30.0	50.5	60.0
E4-25-55	2,500	13.0	55,000	2	3	5	11.75	23.6	30.0	50.5	60.0
E4-25-60	2,500	13.0	60,000	2	3	7-1/2	11.76	29.9	40.0	64.3	80.0
E4-30-60	3,000	11.5	60,000	2	3	7-1/2	11.76	29.9	40.0	64.3	80.0

**Notes:**

1. Maximum Gas Pressure is 28" w.c., 16 ounces or 1.0 pound for all unit burners.
2. Combustion Blower Horsepower (Hp) is based on using 25'-0" of inlet duct for outside air at 10°F and 750' elev.
3. Supply Fan Horsepower (Hp) is per fan with inlet filters. Cooling coils may increase Fan Hp requirements.
4. Total Brake Horsepower (BHp) is the sum of Combustion Blower BHp and Supply Fan BHp.



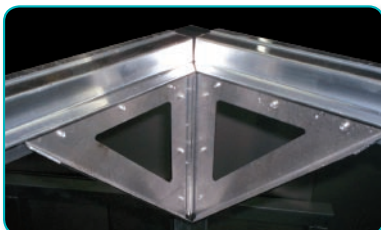
E-Series units (E4) with high-airflow capacity are equipped with dual direct-drive axial fans, both VFD-controlled for variable-volume supply air.

## Performance & Selection – Continued

Model	MBH Output	Min. Gas Pressure (in. w.c.) at Unit <sup>1</sup>	Airflow (CFM)	Supply Fan Qty.	Combustion Fan Hp <sup>2</sup>	Supply Fan Hp <sup>3</sup>	Total BHp <sup>4</sup>	Electrical Connection, amps			
								MCA 460/3	MOP 460/3	MCA 208/3	MOP 208/3
E5-20-60	2,000	13.9	60,000	2	3	5	11.38	23.6	30.0	50.5	60.0
E5-25-60	2,500	13.0	60,000	2	3	5	11.20	23.6	30.0	50.5	60.0
E5-30-60	3,000	11.6	60,000	2	3	5	10.92	23.6	30.0	50.5	60.0
E5-35-60	3,500	12.3	60,000	2	3	5	9.72	23.6	30.0	50.5	60.0
E5-25-70	2,500	13.0	70,000	2	3	7-1/2	14.13	29.9	40.0	64.3	80.0
E5-30-70	3,000	11.6	70,000	2	3	7-1/2	13.91	29.9	40.0	64.3	80.0
E5-35-70	3,500	12.3	70,000	2	3	7-1/2	13.75	29.9	40.0	64.3	80.0
E5-40-70	4,000	13.2	70,000	2	3	7-1/2	13.53	29.9	40.0	64.3	80.0
E5-30-80	3,000	11.6	80,000	2	5	7-1/2	17.19	32.1	40.0	69.2	90.0
E5-35-80	3,500	12.3	80,000	2	5	7-1/2	16.93	32.1	40.0	69.2	90.0
E5-40-80	4,000	13.2	80,000	2	5	7-1/2	16.75	32.1	40.0	69.2	90.0
E5-45-80	4,500	14.4	80,000	2	5	7-1/2	16.51	32.1	40.0	69.2	90.0
E5-35-90	3,500	12.3	90,000	2	5	10	22.14	38.9	50.0	84.0	110.0
E5-40-90	4,000	13.2	90,000	2	5	10	21.86	38.9	50.0	84.0	110.0
E5-45-90	4,500	14.4	90,000	2	5	10	21.58	38.9	50.0	84.0	110.0
E5-50-90	5,000	13.3	90,000	2	5	10	21.30	38.9	50.0	84.0	110.0
E6-45-90	4,500	14.4	90,000	2	5	10	18.98	38.9	50.0	84.0	110.0
E6-50-90	5,000	13.3	90,000	2	5	10	18.82	38.9	50.0	84.0	110.0
E6-45-100	4,500	14.4	100,000	2	7-1/2	10	22.83	41.5	50.0	89.7	120.0
E6-50-100	5,000	13.3	100,000	2	7-1/2	10	22.57	41.5	50.0	89.7	120.0
E6-55-100	5,500	13.9	100,000	2	7-1/2	10	22.37	41.5	50.0	89.7	120.0
E6-60-100	6,000	14.9	100,000	2	7-1/2	10	22.09	41.5	50.0	89.7	120.0
E6-50-110	5,000	13.3	110,000	2	7-1/2	15	27.44	57.7	60.0	125.4	170.0
E6-55-110	5,500	13.9	110,000	2	7-1/2	15	27.14	57.7	60.0	125.4	170.0
E6-60-110	6,000	14.9	110,000	2	7-1/2	15	26.92	57.7	60.0	125.4	170.0
E6-65-110	6,500	12.6	110,000	2	7-1/2	10	26.62	41.5	50.0	89.7	120.0
E6-55-120	5,500	13.9	120,000	2	7-1/2	15	30.22	57.7	60.0	125.4	170.0
E6-60-120	6,000	14.9	120,000	2	7-1/2	15	29.88	57.7	60.0	125.4	170.0
E6-65-120	6,500	12.6	120,000	2	7-1/2	15	29.64	57.7	60.0	125.4	170.0
E6-70-120	7,000	12.9	120,000	2	7-1/2	15	29.32	57.7	60.0	125.4	170.0

**Notes:**

1. Maximum Gas Pressure is 28" w.c., 16 ounces or 1.0 pound for all unit burners.
2. Combustion Blower Horsepower (Hp) is based on using 25'-0" of inlet duct for outside air at 10°F and 750' elev.
3. Supply Fan Horsepower (Hp) is per fan with inlet filters. Cooling coils may increase Fan Hp requirements.
4. Total Brake Horsepower (BHp) is the sum of Combustion Blower BHp and Supply Fan BHp.

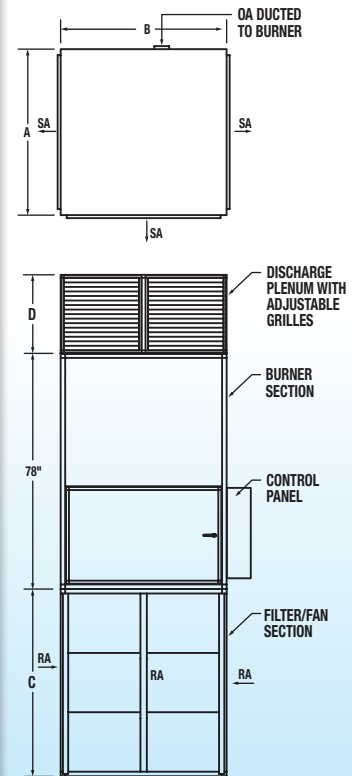


Robust E-Series construction has a specially profiled tubular aluminum frame, unique corner bracing and corrosion resistant aluminum or aluminized-steel sheathing.

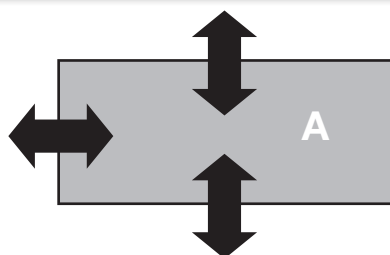
# The E-Series

## Direct-Fired Air Turnover: Dimensional Data

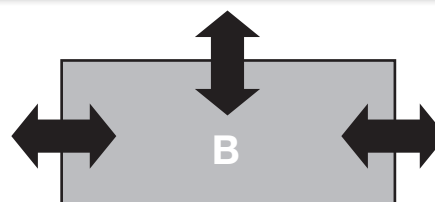
Model	Fan Size In. Dia.	Supply Air Fan Qty.	Dim. A Inches	Dim. B Inches	Dim. C, inches				Dim. D, inches				Gas Inlet, IPS	Outside Air Duct, In. Dia.
					Return on 4 Sides	Return on 3 Sides (A)	Return on 3 Sides (B)	Return on 2 Sides	Supply on 4 Sides	Supply on 3 Sides (A)	Supply on 3 Sides (B)	Supply on 2 Sides		
E1-4-10	36	1	49	49	23	43	43	43	11	14	14	20	3/4	6
E1-4-15	36	1	49	49	43	43	43	62	16	20	20	29	3/4	6
E1-6-15	36	1	49	49	43	43	43	62	16	20	20	29	3/4	7
E2-4-20	42	1	55	55	35	43	43	66	18	23	23	34	3/4	7
E2-6-20	42	1	55	55	35	43	43	66	18	23	23	34	3/4	7
E2-6-25	42	1	55	55	43	62	62	82	22	28	28	42	3/4	7
E2-8-15	42	1	55	55	35	43	43	50	14	18	18	26	1	7
E2-8-20	42	1	55	55	35	43	43	66	18	23	23	34	1	7
E2-8-25	42	1	55	55	43	62	62	82	22	28	28	42	1	7
E2-10-20	42	1	55	55	35	43	43	66	18	23	23	34	1	7
E2-10-25	42	1	55	55	43	62	62	82	22	28	28	42	1	7
E3-8-30	48	1	61	61	62	62	62	102	24	32	32	46	1	8
E3-8-35	48	1	61	61	62	82	82	121	28	36	36	50	1	8
E3-10-30	48	1	61	61	62	62	62	102	24	32	32	46	1	9
E3-10-35	48	1	61	61	62	82	82	121	28	36	36	50	1	8
E3-15-25	48	1	61	61	62	62	62	82	20	26	26	39	1-1/4	8
E3-15-30	48	1	61	61	62	62	62	102	24	32	32	46	1-1/4	9
E3-15-35	48	1	61	61	62	82	82	121	28	36	36	50	1-1/4	8
E4-10-40	48	2	61	122	43	62	62	82	22	26	32	42	1	8
E4-10-45	48	2	61	122	62	62	82	102	24	28	36	46	1	9
E4-15-40	48	2	61	122	43	62	62	82	22	26	32	42	1-1/4	8
E4-15-45	48	2	61	122	62	62	82	102	24	28	36	46	1-1/4	9
E4-15-50	48	2	61	122	62	62	82	102	26	32	39	50	1-1/4	10
E4-20-35	48	2	61	122	43	62	62	82	20	23	28	36	1-1/4	8
E4-20-40	48	2	61	122	43	62	62	82	22	26	32	42	1-1/4	8
E4-20-45	48	2	61	122	62	62	82	102	24	28	36	46	1-1/4	9
E4-20-50	48	2	61	122	62	62	82	102	26	32	39	50	1-1/4	10
E4-20-55	48	2	61	122	62	82	82	121	29	34	42	58	1-1/4	10
E4-25-50	48	2	61	122	62	62	82	102	26	32	39	50	1-1/2	10
E4-25-55	48	2	61	122	62	82	82	121	29	34	42	58	1-1/2	10
E4-25-60	48	2	61	122	62	82	102	121	32	38	46	64	1-1/2	12
E4-30-60	48	2	61	122	62	82	102	121	32	38	46	64	2	12



**Note:** The typical outlet velocity through supply-air plenum grilles is 1,000 fpm.



"A" Style 3-Sides Return/Supply Air

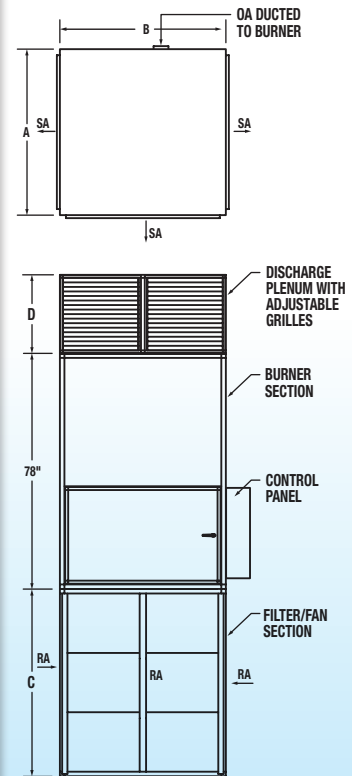


"B" Style 3-Sides Return/Supply Air

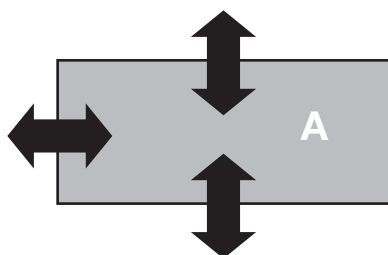


## Dimensional Data - Continued

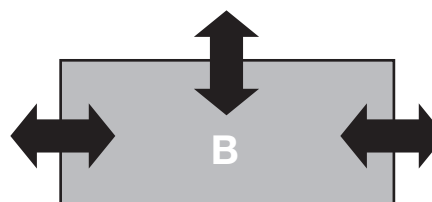
Model	Fan Size In. Dia.	Supply Air Fan Qty.	Dim. A Inches	Dim. B Inches	Dim. C, inches				Dim. D, inches				Gas Inlet, IPS	Outside Air Duct, In. Dia.
					Return on 4 Sides	Return on 3 Sides (A)	Return on 3 Sides (B)	Return on 2 Sides	Supply on 4 Sides	Supply on 3 Sides (A)	Supply on 3 Sides (B)	Supply on 2 Sides		
E5-20-60	54	2	75	150	62	62	82	102	25	30	36	48	1-1/4	12
E5-25-60	54	2	75	150	62	62	82	102	25	30	36	48	1-1/2	12
E5-30-60	54	2	75	150	62	62	82	102	25	30	36	48	2	12
E5-35-60	54	2	75	150	62	62	97	102	25	30	36	48	2	12
E5-25-70	54	2	75	150	62	82	97	121	29	34	42	58	1-1/2	10
E5-30-70	54	2	75	150	62	82	97	121	29	34	42	58	2	10
E5-35-70	54	2	75	150	62	82	97	121	29	34	42	58	2	10
E5-40-70	54	2	75	150	62	82	97	121	29	34	42	58	2	10
E5-30-80	54	2	75	150	82	82	113	141	32	38	48	66	2	10
E5-35-80	54	2	75	150	82	82	113	141	32	38	48	66	2	10
E5-40-80	54	2	75	150	82	82	113	141	32	38	48	66	2	10
E5-45-80	54	2	75	150	82	82	113	141	32	38	48	66	2	10
E5-35-90	54	2	75	150	82	97	121	160	36	44	50	74	2	12
E5-40-90	54	2	75	150	82	97	121	160	36	44	50	74	2	12
E5-45-90	54	2	75	150	82	97	121	160	36	44	50	74	2	12
E5-50-90	54	2	75	150	82	97	121	160	36	44	50	74	2-1/2	12
E6-45-90	60	2	82	164	66	82	102	128	34	40	50	68	2	12
E6-50-90	60	2	82	164	66	82	102	128	34	40	50	68	2-1/2	12
E6-45-100	60	2	82	164	82	82	121	141	37	44	56	76	2	12
E6-50-100	60	2	82	164	82	82	121	141	37	44	56	76	2-1/2	12
E6-55-100	60	2	82	164	82	82	121	141	37	44	56	76	2-1/2	12
E6-60-100	60	2	82	164	82	82	121	141	37	44	56	76	2-1/2	12
E6-50-110	60	2	82	164	82	97	128	160	40	48	62	82	2-1/2	12
E6-55-110	60	2	82	164	82	97	128	160	40	48	62	82	2-1/2	12
E6-60-110	60	2	82	164	82	97	128	160	40	48	62	82	2-1/2	12
E6-65-110	60	2	82	164	82	97	128	160	40	48	62	82	3	12
E6-55-120	60	2	82	164	97	102	141	175	44	50	68	88	2-1/2	12
E6-60-120	60	2	82	164	97	102	141	175	44	50	68	88	2-1/2	12
E6-65-120	60	2	82	164	97	102	141	175	44	50	68	88	3	12
E6-70-120	60	2	82	164	97	102	141	175	44	50	68	88	3	12



**Note:** The typical outlet velocity through supply-air plenum grilles is 1,000 fpm.



"A" Style 3-Sides Return/Supply Air



"B" Style 3-Sides Return/Supply Air

# The E-Series

## FAQs ... AbsolutAire® E-Series Direct Air Turnover

**Q** *Products of combustion from the AbsolutAire E-Series will be discharged into my building where people work. Will they become sick? How can this product be safe?*

**A** AbsolutAire has always stressed safety and indoor air quality with all of its products. The products of combustion from the AbsolutAire E-Series Direct Fired Air Turnover units are **extremely low**. The direct-fired burner technology employed has been certified by ETL Laboratories to be well below the permissible levels specified by the American National Standards Institute (ANSI Z83.18). These ANSI levels are actually much lower than those set by OSHA as being the acceptable threshold limit values (TLV) for Carbon Monoxide (CO), Carbon Dioxide (CO<sub>2</sub>), and Nitrogen Dioxide (NO<sub>2</sub>).

As further confirmation of the safety of the E-Series design: Direct-fired make-up air, space heating and building pressurization type units have been approved for and used in many facilities for more than 50 years. Their products of combustion are actually much higher than E-Series. These other very good systems typically will have a 5 parts-per-million (ppm) CO level (versus E-Series at 0.5 ppm), and they will typically see 0.50 ppm for NO<sub>2</sub> (versus 0.06 ppm of NO<sub>2</sub> for E-Series). Neither AbsolutAire nor any of its competitors providing these direct-fired products have ever experienced worker illness or safety issues with any of these direct-fired systems.

**Q** *I've been told that, although direct-fired burners used in the AbsolutAire E-Series products are 100% thermal efficient, about 8% of the heat is in the form of water. Will my steel parts rust and will I see water droplets on the walls and ceilings of my building?*

**A** No, E-Series will not cause rusting issues or condensation. You are correct, that 8% of the heat from the direct-fired burner is in the form of latent heat, and is carried into the building as water vapor. However, the E-Series uses outside air for the direct-fired burner combustion. This, coupled with the ventilation rate from the E-Series may actually lower the humidity level in the building. Water droplets will only form on un-insulated metal wall or roof panels, and this would happen regardless of the type of heating system used.

**Q** *I've used indirect-fired air rotation units in my facilities in the past and have been happy with the results. Why would I want to consider the direct-fired E-Series product instead of the indirect fired ATU's?*



**A** Two major reasons: Energy savings and elimination of costly maintenance. You likely have been happy with outdated heating technology that no longer meets the real definition of being "energy efficient." The E-Series uses the same axial fan technology that you have become used to, except with this critical advantage: The E-Series fan motor is more energy efficient with direct drive and a variable frequency drive (VFD). There are no drive losses, as there are no belts to tighten or sheaves to align, or replace when they become worn. An *even greater benefit*: The E-Series burner is 100% thermally efficient – converting every BTU possible from the gas being burned into heat for your building. The air turnover unit with an indirect-fired burner exhausts 20% or more of its usable heat energy to the outdoors, resulting in an "at best" efficiency of 80%.

**Q** *I'm "green" conscious and have heard E-Series is "green". Is this really true?*

**A** Absolutely – and the most important reason E-Series was developed. The E-Series uses the most energy-efficient fan and burner technology available today. The products of combustion discharged from an indirect-fired air turnover unit (or unit heater or boiler) are 25 to 40% higher than the products of combustion from E-Series. E-Series delivers true energy savings, maintenance savings and has an extremely low carbon footprint making it environmentally friendly.

**Q** *I see from the literature that E-Series uses 2% to 3% outside air for combustion. Doesn't this mean it is only 97% or 98% efficient?*

**A** No, the amount of outside air does not affect the efficiency of the burner. The E-Series was designed to use the smallest amount of outside air of any direct-fired product on the market to limit the need to heat cold outside air thus wasting energy. The E-Series direct-fired burner is **100% thermally efficient**. 97% or 98% of the air that passes through the E-Series is from the inside space (room air) and 2% to 3% is from the outside.

**Q** *I like what I see with E-Series, but my building needs 12% outside air because of our process and the local code requirements. What can be done?*

**A** The E-Series can be provided from the factory with an inexpensive outside air damper that can be balanced and tuned to the exact outside air needs for your facility. However, some building exhaust loads may require a supplemental make up air unit or an 80/20 unit in conjunction with the E-Series package. We provide either or both of these types of units as well.

**Q** *I read that the standard E-Series is unpainted. Should I be concerned with appearance or corrosion of the metals used in E-Series?*

**A** Not at all. The E-Series framing is extruded aluminum tubing. The unit walls, floor and ceiling are heavy gauge aluminized steel sheets. Both metals are excellent at resisting long-term corrosion. E-Series can be factory painted with a heavy-duty industrial enamel finish at a nominal cost. The paint color can be custom chosen by the purchaser at no added cost.

**Q** *My building is currently heated with 15-year old indirect fired air turnover units. These units work fine, but I wonder if it would make sense for me to replace these with E-Series.*

**A** Absolutely, yes – in fact, this would very likely be a prudent decision. E-Series use 20% less gas to bring in the same volume of BTU's into your space. Regardless of the size of your space, this alone will likely result in a 16 to 22 month payback on new E-Series equipment. While this payback period will vary depending on your specific building parameters and geographic location, you will also gain additional savings from reduced maintenance needs, while enjoying increased employee comfort and indoor air quality.

**Q** *Our local code inspector tells me we can't use E-Series because it does not comply with his codes. What can I do to satisfy these requirements?*

**A** Tough question, as AbsolutAire cannot possibly help re-write thousands of local codes. But, this likely is the result of a misunderstanding, as the E-Series is certified to ANSI Z83.18 by a nationally recognized testing laboratory (ETL), which is required by the International Fuel Gas Code (IFGC), Section 612. This means that a warehouse, distribution center, sports facility, aircraft hangar, storage building, manufacturing space, shipping center, garage/service center – and many other similar facilities – can use E-Series in any state that uses the IFGC as its code authority. The only exclusions are residences and areas containing sleeping quarters (true of **any** direct-fired burner product by anyone).

**Q** *The indirect-fired air rotation unit in our warehouse has a flue pipe on it. I see in the literature that E-Series also has a flue pipe. Are these the same?*

**A** No, the E-Series has an “air intake pipe” for burner combustion efficiency. This is not a “flue” like on a typical indirect-fired heater. The E-Series air intake pipe (duct) is used for drawing in the fresh outside air that is needed by E-Series for its precisely metered burner combustion air. It can be PVC, spiral or b-vent. The flue for your indirect-fired unit is likely welded, may be stainless, and is usually insulated. The “indirect fired flue” is much more expensive, and is used to exhaust your 20% energy loss to the outdoors.

**Q** *I think I'd like to try E-Series for my new distribution center, but we require cooling so we'll have to use typical rooftop HVAC units.*

**A** Not at all. The E-Series can be manufactured with direct expansion (DX) or chilled water (CW) cooling coils installed at the E-Series room air inlets. The factory can also provide the condensing unit for a DX coil unit, or your contractor can field provide the condenser.

**Q** *The E-Series comes standard with un-insulated wall panels. Will the walls condensate?*

**A** No, because E-Series re-circulates and re-heats room air. The 2-3% outside air that is ducted separately to the E-Series is used specifically for burner combustion air. Some E-Series users have chosen our insulation option for sound attenuation, because they wanted a quieter unit. E-Series units are considered quiet without having to add wall panel insulation.

**Q** *I have some 80/20 (OA/RA) direct-fired heating units on my building and one thing I have learned is it is important to change the filters on a regular schedule so the burner will not drop out due to low airflow for the direct-fired burner. Are the concerns the same with E-Series, and what has AbsolutAire done about it?*

**A** The airflow switch that proves proper airflow for the E-Series is located on the burner air, not at the return (room) air filters. As filters load, the axial fan in E-Series will lose its capability to deliver the same amount of air (CFM) to the space, but the unit will continue to run. Eventually, if the filters become heavily loaded or even blocked, the temperature rise through the E-Series unit will become higher and may cause a “burner lock out” if a high-limit switch is tripped. As with all types of heating and ventilating equipment, proper filter maintenance is important. Filters are visible without opening the cabinet.

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