

Fresh Air Ventilation System CLEAR AIR Series



Model Code:

| MAU | 48 | 20 | 1 | ECM | SSR |
|-----|----|----|---|-----|-----|
| A | B | C | D | E | F |

A: Series
B: 20 - 208V 24 - 240V
C: Kilowatts
D: 1 or 3-phase
E: ECM Motor
F: Solid State Relay

Shown with
MAUFH FILTER
HOUSING.
(sold separately)

CLEAR AIR

Fresh Air Ventilation System



- Packaged, Fresh Air Ventilation System
- Designed for use with exhaust fans & timer (purchased separately)
- 700-1770 CFM @ 0.2" static pressure
- Compact design, vertical or horizontal mounting
- Fully modulating electric heat using solid state relay (SSR) technology
- Built-in electronic proportional thermostat, 0-10V DC or 4-20ma
- Includes field installed remote duct sensor connected to thermostat
- Thermostat can be relocated to be used as a wall mounted room thermostat
- Energy efficient ECM motor: 1/3, 1/2HP & 3/4HP
- 5 motor torque settings for field adjustments to meet CFM and temperature rise requirements
- Detailed CFM/static pressure/temperature rise tables to design a perfect trouble-free solution
- Available in 208V, 240V and 480V – single or three phase
- 4KW to 35KW
- Integrated control circuit for connection to: damper, exhaust fans, outside thermostat & humidistat, ect.
- Separate 40VA control power transformer for auxiliary devices
- Side access panel for easy wiring & maintenance
- 20-gauge electro galvanized steel cabinet with corrosion resistant textured paint finish
- Includes 1" replaceable filter (compatible w /2")
- 3-year limited warranty

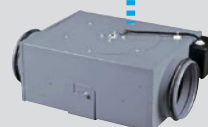
Clear Air Fresh Air Ventilation Systems are designed to provide a continuous supply of fresh indoor air to protect your house or business. By preheating incoming fresh air at the lowest cost, Clear Air provides continuously comfortable ventilation throughout the building. **Better Air. Peace of Mind.** Fresh, clean air is essential to good health. But with today's airtight construction techniques, excess humidity and airborne pollutants can easily get trapped in indoor air. This can result in serious consequences for the structure of your home or business and for the health of its occupants. Featuring an energy efficient ECM motor, the Clear Air combines a fan driven fully modulating electric heating unit with a fresh air relay logic control circuit providing an extremely versatile all-in-one packaged unit. Designed for use with optional exhaust fans, controls and other accessories to complete your Fresh Air system.

DFC
Digital Fan Control
(purchased separately)



Controls Fresh Air

Clear Air
(Unit)



MBI
Centrifugal In-Line Fan
(purchased separately)

Available Optional Accessories To Complete Your Fresh Air System

DFC120V
Digital Fan Control

EXT
External Mount Duct Fan

MBI
Centrifugal In-Line Fan

AG
Ventilation Grill

GR
Ventilation Grill

This building is equipped with a
CLEAR AIR
Fresh Air Ventilation System
by
king
Smart Comfort Solutions
BETTER AIR. PEACE OF MIND.
MADE IN USA

Place this sticker
in your front window
and you will feel confident
you are breathing fresh air.

Better Air. Peace of Mind.

Fresh Air Ventilation System CLEAR AIR Series

Ordering Information

| | MODEL | VOLTS | kilo watts | BTUH | AMPS | PHASE | # of ELEMENTS | INTERNAL C/B | MOTOR HP | MOTOR FLA | WT. (lbs) |
|------------------------|-------------------|-------|------------|-------|------|-------|---------------|--------------|----------|-----------|-----------|
| 208V 1-Phase | MAU2004-1-ECM-SSR | 208 | 3.8 | 12.8 | 18 | 1 | 1 | 60 | 1/3 | 2.7 | 57 |
| | MAU2005-1-ECM-SSR | 208 | 5.0 | 17.1 | 24 | 1 | 1 | 60 | 1/3 | 2.7 | 57 |
| | MAU2008-1-ECM-SSR | 208 | 8.0 | 27.3 | 38 | 1 | 2 | 60 | 1/3 | 2.7 | 57 |
| | MAU2010-1-ECM-SSR | 208 | 10.0 | 34.1 | 48 | 1 | 2 | 60+60 | 1/3 | 2.7 | 65 |
| | MAU2012-1-ECM-SSR | 208 | 12.0 | 41.0 | 58 | 1 | 3 | 60+60 | 1/3 | 2.7 | 74 |
| | MAU2015-1-ECM-SSR | 208 | 15.0 | 51.2 | 72 | 1 | 3 | 60+60 | 1/3 | 2.7 | 74 |
| | MAU2018-1-ECM-SSR | 208 | 17.3 | 58.9 | 83 | 1 | 4 | 60+60 | 1/3 | 3.9 | 76 |
| | MAU2020-1-ECM-SSR | 208 | 20.0 | 68.3 | 96 | 1 | 4 | 60+60 | 1/2 | 3.9 | 76 |
| | MAU2025-1-ECM-SSR | 208 | 25.0 | 85.3 | 120 | 1 | 5 | 60+60+60 | 1/2 | 6.0 | 81 |
| | MAU2030-1-ECM-SSR | 208 | 30.0 | 102.4 | 144 | 1 | 6 | 60+60+60 | 3/4 | 6.0 | 85 |
| 240V 1-Phase | MAU2404-1-ECM-SSR | 240 | 4.0 | 13.7 | 17 | 1 | 1 | 60 | 1/3 | 2.9 | 57 |
| | MAU2405-1-ECM-SSR | 240 | 5.0 | 17.1 | 21 | 1 | 1 | 60 | 1/3 | 2.9 | 57 |
| | MAU2408-1-ECM-SSR | 240 | 8.0 | 27.3 | 33 | 1 | 2 | 60 | 1/3 | 2.9 | 57 |
| | MAU2410-1-ECM-SSR | 240 | 10.0 | 34.1 | 42 | 1 | 2 | 60 | 1/3 | 2.9 | 65 |
| | MAU2412-1-ECM-SSR | 240 | 12 | 41.0 | 50 | 1 | 2 | 60 | 1/3 | 2.9 | 74 |
| | MAU2415-1-ECM-SSR | 240 | 15.0 | 51.2 | 63 | 1 | 3 | 60+60 | 1/3 | 2.7 | 74 |
| | MAU2418-1-ECM-SSR | 240 | 17.3 | 58.9 | 72 | 1 | 3 | 60+60 | 1/3 | 2.7 | 74 |
| | MAU2420-1-ECM-SSR | 240 | 20.0 | 68.3 | 83 | 1 | 4 | 60+60 | 1/2 | 4.2 | 76 |
| | MAU2425-1-ECM-SSR | 240 | 25.0 | 85.3 | 104 | 1 | 5 | 60+60+60 | 1/2 | 4.2 | 81 |
| | MAU2430-1-ECM-SSR | 240 | 30.0 | 102.4 | 125 | 1 | 6 | 60+60+60 | 3/4 | 6.2 | 85 |
| 480V 1-Phase | MAU2435-1-ECM-SSR | 240 | 34.5 | 117.8 | 144 | 1 | 6 | 60+60+60 | 3/4 | 6.2 | 85 |
| | MAU4804-1-ECM-SSR | 480 | 4.0 | 13.7 | 8 | 1 | 1 | NO | 1/3 | 0.7 | 57 |
| | MAU4805-1-ECM-SSR | 480 | 5.0 | 17.1 | 10 | 1 | 1 | NO | 1/3 | 0.7 | 57 |
| | MAU4808-1-ECM-SSR | 480 | 8.0 | 27.3 | 17 | 1 | 2 | NO | 1/3 | 0.7 | 57 |
| | MAU4810-1-ECM-SSR | 480 | 10.0 | 34.1 | 21 | 1 | 2 | NO | 1/3 | 0.7 | 65 |
| | MAU4812-1-ECM-SSR | 480 | 12.0 | 41.0 | 25 | 1 | 3 | NO | 1/3 | 0.7 | 74 |
| | MAU4815-1-ECM-SSR | 480 | 15.0 | 51.2 | 31 | 1 | 3 | NO | 1/3 | 0.7 | 74 |
| | MAU4818-1-ECM-SSR | 480 | 17.3 | 58.9 | 36 | 1 | 3 | NO | 1/3 | 0.7 | 74 |
| | MAU4820-1-ECM-SSR | 480 | 20.0 | 68.3 | 42 | 1 | 4 | NO | 1/2 | 1.1 | 76 |
| | MAU4825-1-ECM-SSR | 480 | 25.0 | 85.3 | 52 | 1 | 5 | NO | 1/2 | 1.1 | 81 |
| 208V 3-Phase | MAU4830-1-ECM-SSR | 480 | 30.0 | 102.4 | 63 | 1 | 6 | NO | 3/4 | 1.1 | 85 |
| | MAU4835-1-ECM-SSR | 480 | 34.5 | 117.7 | 72 | 1 | 6 | NO | 3/4 | 1.1 | 85 |
| | MAU2005-3-ECM-SSR | 208 | 5.0 | 17.1 | 14 | 3 | 1 | 60 | 1/3 | 2.7 | 57 |
| | MAU2007-3-ECM-SSR | 208 | 7.5 | 25.6 | 21 | 3 | 2 | 60 | 1/3 | 2.7 | 57 |
| | MAU2010-3-ECM-SSR | 208 | 10.0 | 34.1 | 28 | 3 | 2 | 60 | 1/3 | 2.7 | 65 |
| | MAU2012-3-ECM-SSR | 208 | 12 | 42.7 | 34 | 3 | 3 | 60 | 1/3 | 2.7 | 65 |
| | MAU2015-3-ECM-SSR | 208 | 15.0 | 51.2 | 42 | 3 | 3 | 60 | 1/3 | 2.7 | 74 |
| | MAU2020-3-ECM-SSR | 208 | 20.0 | 68.3 | 56 | 3 | 4 | 60 | 1/2 | 3.9 | 76 |
| | MAU2025-3-ECM-SSR | 208 | 25.0 | 85.3 | 69 | 3 | 5 | 60+60 | 3/4 | 6.0 | 81 |
| | MAU2030-3-ECM-SSR | 208 | 30.0 | 102.4 | 83 | 3 | 6 | 60+60 | 3/4 | 6.0 | 85 |
| 240V 3-Phase | MAU2405-3-ECM-SSR | 240 | 5.0 | 17.1 | 12 | 3 | 1 | 60 | 1/3 | 2.9 | 57 |
| | MAU2410-3-ECM-SSR | 240 | 10.0 | 34.1 | 24 | 3 | 2 | 60 | 1/3 | 2.9 | 65 |
| | MAU2412-3-ECM-SSR | 240 | 12.0 | 41 | 29 | 3 | 3 | 60 | 1/3 | 2.9 | 74 |
| | MAU2415-3-ECM-SSR | 240 | 15.0 | 51.2 | 36 | 3 | 3 | 60 | 1/3 | 2.9 | 74 |
| | MAU2418-3-ECM-SSR | 240 | 17.3 | 58.9 | 42 | 3 | 3 | 60 | 1/3 | 2.9 | 74 |
| | MAU2420-3-ECM-SSR | 240 | 20.0 | 68.3 | 48 | 3 | 4 | 60 | 1/2 | 4.2 | 76 |
| | MAU2425-3-ECM-SSR | 240 | 25.0 | 85.3 | 60 | 3 | 5 | 60 | 1/2 | 4.2 | 81 |
| | MAU2430-3-ECM-SSR | 240 | 30.0 | 102.4 | 72 | 3 | 6 | 60+60 | 3/4 | 6.2 | 85 |
| | MAU2435-3-ECM-SSR | 240 | 34.5 | 117.7 | 83 | 3 | 6 | 60+60 | 3/4 | 6.2 | 85 |
| | MAU4805-3-ECM-SSR | 480 | 5.0 | 17.1 | 6 | 3 | 1 | NO | 1/3 | 0.8 | 57 |
| 480V 3-Phase | MAU4810-3-ECM-SSR | 480 | 10.0 | 34.1 | 12 | 3 | 2 | NO | 1/3 | 0.8 | 65 |
| | MAU4815-3-ECM-SSR | 480 | 15.0 | 51.2 | 18 | 3 | 3 | NO | 1/3 | 0.8 | 74 |
| | MAU4818-3-ECM-SSR | 480 | 17.3 | 58.9 | 21 | 3 | 3 | NO | 1/3 | 0.8 | 74 |

Fresh Air Ventilation System CLEAR AIR Series

Ordering Information

| MODEL | VOLTS | kilo watts | BTUH | AMPS | PHASE | # of ELEMENTS | INTERNAL C/B | MOTOR HP | MOTOR FLA | WT. (lbs) |
|-------------------|-------|------------|-------|------|-------|---------------|--------------|----------|-----------|-----------|
| MAU4820-3-ECM-SSR | 480 | 20.0 | 68.3 | 24 | 3 | 4 | NO | 1/2 | 1.2 | 76 |
| MAU4825-3-ECM-SSR | 480 | 25.0 | 85.3 | 30 | 3 | 5 | NO | 1/2 | 1.2 | 81 |
| MAU4830-3-ECM-SSR | 480 | 30.0 | 102.4 | 36 | 3 | 6 | NO | 3/4 | 1.7 | 85 |
| MAU4835-3-ECM-SSR | 480 | 34.5 | 117.7 | 42 | 3 | 6 | NO | 3/4 | 1.7 | 85 |

*Includes motor load

Accessories

| MODEL | UPC | DESCRIPTION | WEIGHT(lbs.) |
|---------|-------|---|--------------|
| KFS-DT | 20186 | Transition from 14" x 14" Outlet to 12" round, discharge side | 2.5 |
| RIBU1C | 33347 | Fan Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil | |
| CS120AF | 33444 | Current Sensor, 120V, Solid State | 1.0 |

NOTE: Optional RIBU1C 24VAC relay is to be installed in the electrical junction box of any single phase (2-wire) exhaust fan. The 24V control wire of the relay is connected to the MAU which automatically turns the fan on and off.

Controls Accessories

| MODEL | UPC | DESCRIPTION | WEIGHT(lbs.) |
|---------|-------|---|--------------|
| DFC120V | 33445 | Digital Fan Control, 5 Modes of Operation - 120V (Requires -CR120 Factory Installed Option) | 1.0 |

NOTE: Not all configurations listed above are stock items (A+ or A stock code). Refer to price book for the Stock code

** For non-stock items refer to the table below to order heater parts separately.

External Mount Duct Fans Accessories

| MODEL | UPC | VOLTS | DESCRIPTION | WEIGHT(lbs.) |
|---------|-------|-------|-------------------------------------|--------------|
| EXT100A | 33446 | 120 | External Mount Duct Fan 4", 118 cfm | 11.6 |
| EXT100B | 33447 | 120 | External Mount Duct Fan 4", 177 cfm | 11.6 |
| EXT150A | 33448 | 120 | External Mount Duct Fan 6", 227 cfm | 11.6 |
| EXT150B | 33449 | 120 | External Mount Duct Fan 6", 396 cfm | 18.0 |
| EXT200A | 33450 | 120 | External Mount Duct Fan 8", 445 cfm | 18.0 |
| EXT200B | 33451 | 120 | External Mount Duct Fan 8", 420 cfm | 19.0 |

Centrifugal In-Line Fan Accessories

| MODEL | UPC | VOLTS | DESCRIPTION | WEIGHT(lbs.) |
|------------|-------|-------|--|--------------|
| MBI100 | 33452 | 120 | Centrifugal In-Line Fan 4", 147 cfm | 12.0 |
| MBI125 | 33453 | 120 | Centrifugal In-Line Fan 5", 173 cfm | 12.0 |
| MBI125/100 | 33454 | 120 | Centrifugal In-Line Fan 5"-4", 232 cfm | 12.0 |
| MBI150 | 33455 | 120 | Centrifugal In-Line Fan 6", 221 cfm | 16.0 |
| MBI150/125 | 33456 | 120 | Centrifugal In-Line Fan 6"-5", 290 cfm | 16.0 |

Ventilation Grills Accessories

| MODEL | UPC | DESCRIPTION | WEIGHT(lbs.) |
|-----------|-------|------------------------------------|--------------|
| AG150 | 33457 | AeroGrill 6" | 5.0 |
| AG150-C | 33458 | AeroGrill 6", Collar | 6.0 |
| AG150-CD | 33459 | AeroGrill 6", Collar, Damper | 7.0 |
| GR100 | 33460 | Adjustable Grill 4", Collar | 1.0 |
| GR150 | 33461 | Adjustable Grill 6", Collar | 1.0 |
| GR200 | 33462 | Adjustable Grill 8", Collar | 2.0 |
| GR100-6PK | 33463 | Adjustable Grill 4", Colla - 6 Pcs | 4.0 |
| GR150-6PK | 33464 | Adjustable Grill 6", Colla - 6 Pcs | 6.0 |

Motor Options

| ADD SUFFIX: | DESCRIPTION |
|-------------|--|
| -1/2 HP | 1/2 HP Motor & Blower - 4kW to 17.25kW |
| -3/4 HP | 3/4 HP Motor & Blower - 4kW to 25kW |

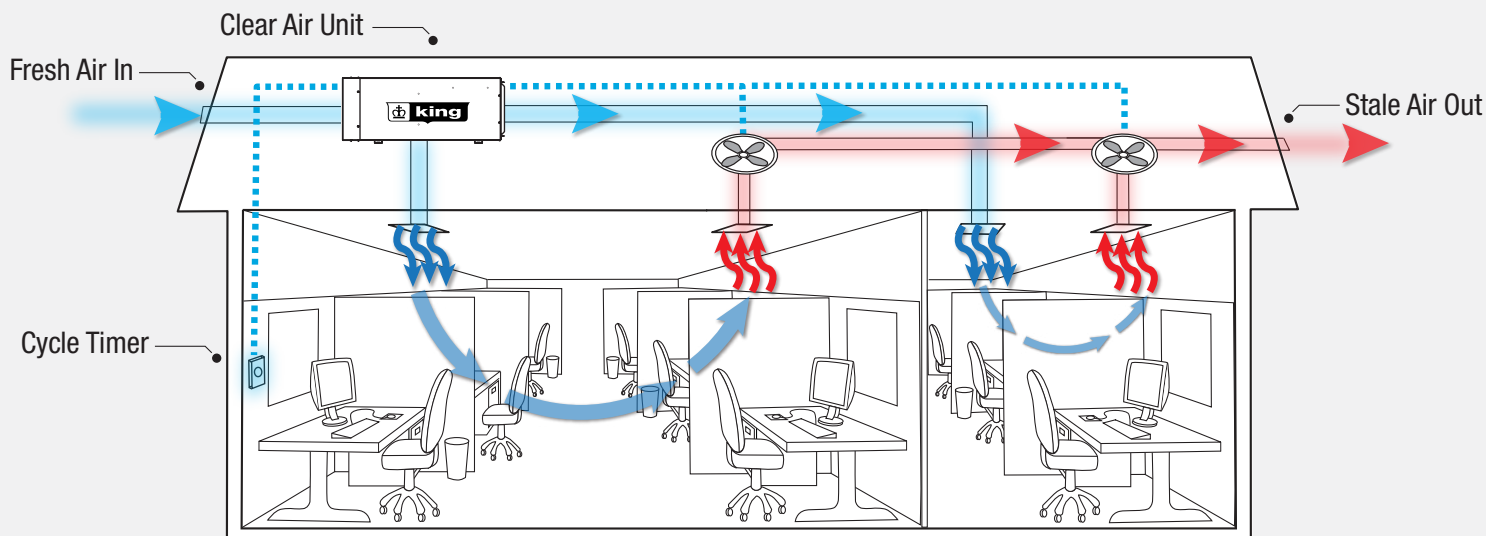
Factory Installed Options

| ADD SUFFIX: | DESCRIPTION |
|-------------|---|
| -CR120 | 10 Amp Relay, SPDT w/10-30 Vac/dc/120 Vac Coil that switches the 24V heater control circuit |
| -DS32 | 32 Amp, 3-Pole Disconnect Switch w/ Padlock Provision |
| -DS63 | 63 Amp, 3-Pole Disconnect Switch w/ Padlock Provision |
| -DS100 | 100 Amp, 3-Pole Disconnect Switch w/ Padlock Provision |

Fresh Air Ventilation System CLEAR AIR Series

Direct Ducting Installation

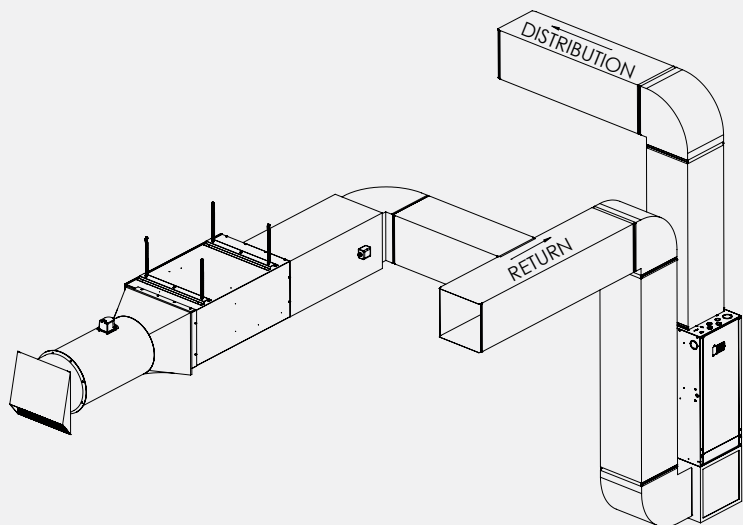
The Clear Air unit can be installed to have its own dedicated outdoor fresh air duct system that is filtered, pre-heated and then is distributed DIRECTLY to each room and hallway through register grills. In this way, it acts independently to the primary heating system that could be hydronic, electric zonal heat or a centralized HVAC system. When installed as a direct system, make sure the Temperature rise is sufficient to bring adequate warm tempered air into the building. For example, in a cold climate when the outside air is at 0°F the Temperature rise would need to be at least 70°F to warm the air adequately before delivering it directly to the occupied space.



HVAC Return and Supply Air Ducting Connection

The second method consists of using the furnace distribution system to distribute fresh air. There are two methods of connecting the device to the furnace: Supply air side connection or Return air side connection.

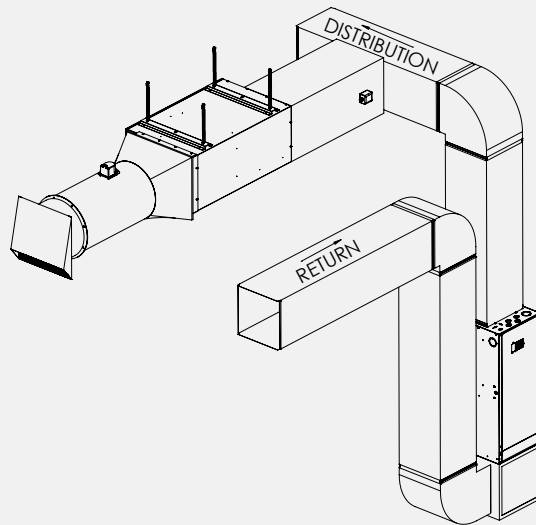
RETURN AIR SIDE SYSTEM



Return Connection:

Cut an opening in the return air duct at least 3 feet from the furnace. Connect this opening to the Clear Air unit.

DISTRIBUTION AIR SIDE SYSTEM



Supply Connection:

Cut an opening in the supply air duct, at least 2 ft. from the furnace. Connect this opening to the Clear Air unit.

Fresh Air Ventilation System CLEAR AIR Series

Air Flow Chart (For 4 to 17.25kW Units with 1/3HP ECM Motor)

| MODEL | KW | TORQUE | 0.1"WC | | 0.2"WC | | 0.3"WC | | 0.4"WC | | 0.5"WC | | 0.6"WC | | 0.7"WC | | 0.8"WC | | 0.9"WC | | 1.0"WC | |
|---------|-------|--------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
| | | | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE |
| | | | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) |
| MAU**04 | 4 | 6.8 | 832 | 15 | 708 | 18 | 593 | 21 | 510 | 25 | 442 | 29 | 374 | 34 | 320 | 39 | 278 | 46 | | | | |
| | | 9.4 | 1,030 | 12 | 919 | 14 | 826 | 15 | 739 | 17 | 658 | 19 | 594 | 21 | 546 | 23 | 494 | 26 | | | | |
| | | 12.0 | 1,168 | 11 | 1,085 | 12 | 992 | 13 | 902 | 14 | 835 | 15 | 783 | 16 | 736 | 17 | 700 | 18 | | | | |
| | | 17.0 | 1,376 | 9 | 1,320 | 10 | 1,259 | 10 | 1,189 | 11 | 1,116 | 11 | 1,060 | 12 | 1,016 | 12 | 987 | 13 | | | | |
| | | 20.0 | 1,582 | 8 | 1,536 | 8 | 1,462 | 9 | 1,380 | 9 | 1,275 | 10 | 1,192 | 11 | 1,107 | 11 | 1,043 | 12 | | | | |
| MAU**05 | 5 | 6.8 | 832 | 19 | 708 | 22 | 593 | 27 | 510 | 31 | 442 | 36 | 374 | 42 | 320 | 49 | 278 | 57 | | | | |
| | | 9.4 | 1,030 | 15 | 919 | 17 | 826 | 19 | 739 | 21 | 658 | 24 | 594 | 27 | 546 | 29 | 494 | 32 | | | | |
| | | 12.0 | 1,168 | 14 | 1,085 | 15 | 992 | 16 | 902 | 18 | 835 | 19 | 783 | 20 | 736 | 21 | 700 | 23 | | | | |
| | | 17.0 | 1,376 | 11 | 1,320 | 12 | 1,259 | 13 | 1,189 | 13 | 1,116 | 14 | 1,060 | 15 | 1,016 | 16 | 987 | 16 | | | | |
| | | 20.0 | 1,582 | 10 | 1,536 | 10 | 1,462 | 11 | 1,380 | 11 | 1,275 | 12 | 1,192 | 13 | 1,107 | 14 | 1,043 | 15 | | | | |
| MAU**08 | 8 | 6.8 | 832 | 30 | 708 | 36 | 593 | 43 | 510 | 50 | 442 | 57 | 374 | 68 | 320 | 79 | 278 | 91 | | | | |
| | | 9.4 | 1,030 | 25 | 919 | 27 | 826 | 31 | 739 | 34 | 658 | 38 | 594 | 43 | 546 | 46 | 494 | 51 | | | | |
| | | 12.0 | 1,168 | 22 | 1,085 | 23 | 992 | 25 | 902 | 28 | 835 | 30 | 783 | 32 | 736 | 34 | 700 | 36 | | | | |
| | | 17.0 | 1,376 | 18 | 1,320 | 19 | 1,259 | 20 | 1,189 | 21 | 1,116 | 23 | 1,060 | 24 | 1,016 | 25 | 987 | 26 | | | | |
| | | 20.0 | 1,582 | 16 | 1,536 | 16 | 1,462 | 17 | 1,380 | 18 | 1,275 | 20 | 1,192 | 21 | 1,107 | 23 | 1,043 | 24 | | | | |
| MAU**10 | 10 | 6.8 | 832 | 38 | 708 | 45 | 593 | 53 | 510 | 62 | 442 | 71 | 374 | 84 | 320 | 99 | 278 | NR | | | | |
| | | 9.4 | 1,030 | 31 | 919 | 34 | 826 | 38 | 739 | 43 | 658 | 48 | 594 | 53 | 546 | 58 | 494 | 64 | | | | |
| | | 12.0 | 1,168 | 27 | 1,085 | 29 | 992 | 32 | 902 | 35 | 835 | 38 | 783 | 40 | 736 | 43 | 700 | 45 | | | | |
| | | 17.0 | 1,376 | 23 | 1,320 | 24 | 1,259 | 25 | 1,189 | 27 | 1,116 | 28 | 1,060 | 30 | 1,016 | 31 | 987 | 32 | | | | |
| | | 20.0 | 1,582 | 20 | 1,536 | 21 | 1,462 | 22 | 1,380 | 23 | 1,275 | 25 | 1,192 | 27 | 1,107 | 29 | 1,043 | 30 | | | | |
| MAU**12 | 12 | 6.8 | 832 | 46 | 708 | 54 | 593 | 64 | 510 | 74 | 442 | 86 | 374 | 101 | 320 | NR | 278 | NR | | | | |
| | | 9.4 | 1,030 | 37 | 919 | 41 | 826 | 46 | 739 | 51 | 658 | 58 | 594 | 64 | 546 | 69 | 494 | 77 | | | | |
| | | 12.0 | 1,168 | 32 | 1,085 | 35 | 992 | 38 | 902 | 42 | 835 | 45 | 783 | 48 | 736 | 52 | 700 | 54 | | | | |
| | | 17.0 | 1,376 | 28 | 1,320 | 29 | 1,259 | 30 | 1,189 | 32 | 1,116 | 34 | 1,060 | 36 | 1,016 | 37 | 987 | 38 | | | | |
| | | 20.0 | 1,582 | 24 | 1,536 | 25 | 1,462 | 26 | 1,380 | 27 | 1,275 | 30 | 1,192 | 32 | 1,107 | 34 | 1,043 | 36 | | | | |
| MAU**15 | 15 | 6.8 | 832 | 57 | 708 | 67 | 593 | 80 | 510 | 93 | 442 | 107 | 374 | NR | 320 | NR | 278 | NR | | | | |
| | | 9.4 | 1,030 | 46 | 919 | 52 | 826 | 57 | 739 | 64 | 658 | 72 | 594 | 80 | 546 | 87 | 494 | 96 | | | | |
| | | 12.0 | 1,168 | 41 | 1,085 | 44 | 992 | 48 | 902 | 53 | 835 | 57 | 783 | 61 | 736 | 64 | 700 | 68 | | | | |
| | | 17.0 | 1,376 | 34 | 1,320 | 36 | 1,259 | 38 | 1,189 | 40 | 1,116 | 42 | 1,060 | 45 | 1,016 | 47 | 987 | 48 | | | | |
| | | 20.0 | 1,582 | 30 | 1,536 | 31 | 1,462 | 32 | 1,380 | 34 | 1,275 | 37 | 1,192 | 40 | 1,107 | 43 | 1,043 | 45 | | | | |
| MAU**18 | 17.25 | 6.8 | 832 | 66 | 708 | 77 | 593 | 92 | 510 | 107 | 442 | NR | 374 | NR | 320 | NR | 278 | NR | | | | |
| | | 9.4 | 1,030 | 53 | 919 | 59 | 826 | 66 | 739 | 74 | 658 | 83 | 594 | 92 | 546 | 100 | 494 | 110 | | | | |
| | | 12.0 | 1,168 | 47 | 1,085 | 50 | 992 | 55 | 902 | 60 | 835 | 65 | 783 | 70 | 736 | 74 | 700 | 78 | | | | |
| | | 17.0 | 1,376 | 40 | 1,320 | 41 | 1,259 | 43 | 1,189 | 46 | 1,116 | 49 | 1,060 | 51 | 1,016 | 54 | 987 | 55 | | | | |
| | | 20.0 | 1,582 | 34 | 1,536 | 35 | 1,462 | 37 | 1,380 | 40 | 1,275 | 43 | 1,192 | 46 | 1,107 | 49 | 1,043 | 52 | | | | |

Air Flow Chart (For 20 to 25kW Units with 1/2HP ECM Motor)

| MODEL | KW | TORQUE | 0.1"WC | | 0.2"WC | | 0.3"WC | | 0.4"WC | | 0.5"WC | | 0.6"WC | | 0.7"WC | | 0.8"WC | | 0.9"WC | | 1.0"WC | |
|---------|----|--------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
| | | | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE |
| | | | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) |
| MAU**20 | 20 | 15.0 | | | 1,258 | 50 | 1,262 | 50 | 1,193 | 53 | 1,132 | 56 | 1,054 | 60 | 910 | 69 | 834 | 76 | 821 | 77 | 705 | 90 |
| | | 19.0 | | | 1,466 | 43 | 1,419 | 45 | 1,300 | 49 | 1,285 | 49 | 1,218 | 52 | 1,180 | 54 | 1,015 | 62 | 979 | 65 | 934 | 68 |
| | | 22.5 | | | 1,575 | 40 | 1,570 | 40 | 1,564 | 40 | 1,363 | 46 | 1,347 | 47 | 1,284 | 49 | 1,256 | 50 | 1,200 | 53 | 1,152 | 55 |
| | | 26.0 | | | 1,690 | 37 | 1,679 | 38 | 1,640 | 39 | 1,546 | 41 | 1,472 | 43 | 1,430 | 44 | 1,378 | 46 | 1,358 | 47 | 1,315 | 48 |
| | | 30.0 | | | 1,771 | 36 | 1,766 | 36 | 1,723 | 37 | 1,728 | 37 | 1,569 | 40 | 1,542 | 41 | 1,522 | 42 | 1,487 | 43 | 1,415 | 45 |
| MAU**25 | 25 | 15.5 | | | 1,258 | 63 | 1,262 | 63 | 1,193 | 66 | 1,132 | 70 | 1,054 | 75 | 910 | 87 | 834 | 95 | 821 | 96 | 705 | NR |
| | | 19.0 | | | 1,466 | 54 | 1,419 | 56 | 1,300 | 61 | 1,285 | 61 | 1,218 | 65 | 1,180 | 67 | 1,015 | 78 | 979 | 81 | 934 | 85 |
| | | 22.5 | | | 1,575 | 50 | 1,570 | 50 | 1,564 | 51 | 1,363 | 58 | 1,347 | 59 | 1,284 | 62 | 1,256 | 63 | 1,200 | 66 | 1,152 | 69 |
| | | 26.0 | | | 1,690 | 47 | 1,679 | 47 | 1,640 | 48 | 1,546 | 51 | 1,472 | 54 | 1,430 | 55 | 1,378 | 57 | 1,358 | 58 | 1,315 | 60 |
| | | 30.0 | | | 1,771 | 45 | 1,766 | 45 | 1,723 | 46 | 1,728 | 46 | 1,569 | 50 | 1,542 | 51 | 1,522 | 52 | 1,487 | 53 | 1,415 | 56 |

A ** Represents the voltage, 20=208V, 24=240V, 48=480V. Voltage of the MAU unit does not affect the data in this table.

B NR= Not Recommended, Temperature Rise is above maximum design parameter.

C The highlighted cells are the factory default torque setting for each model. The ECM motor has 5 field adjustable torque settings, allowing for a wide range of design choices.

E Blower: 10" diameter, 8" wide

Fresh Air Ventilation System CLEAR AIR Series

Air Flow Chart (For 20 to 25kW Units with OPTIONAL 3/4HP ECM Motor)

| MODEL | KW | 0.1"WC | | 0.2"WC | | 0.3"WC | | 0.4"WC | | 0.5"WC | | 0.6"WC | | 0.7"WC | | 0.8"WC | | 0.9"WC | | 1.0"WC | | |
|---------|----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|
| | | TORQUE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE |
| MAU**20 | 20 | | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) |
| | | 26.0 | | | 1,592 | 40 | 1,592 | 40 | 1,581 | 40 | 1,551 | 41 | 1,529 | 41 | 1,496 | 42 | 1,432 | 44 | 1,353 | 47 | 1,231 | 51 |
| | | 30.0 | | | 1,789 | 35 | 1,758 | 36 | 1,716 | 37 | 1,650 | 38 | 1,598 | 40 | 1,552 | 41 | 1,451 | 41 | 1,451 | 44 | 1,282 | 49 |
| | | 35.0 | | | 1,814 | 35 | 1,819 | 35 | 1,828 | 35 | 1,866 | 34 | 1,849 | 34 | 1,794 | 35 | 1,688 | 37 | 1,561 | 40 | 1,316 | 48 |
| | | 40.5 | | | 2,080 | 30 | 2,122 | 30 | 2,082 | 30 | 2,054 | 31 | 1,916 | 33 | 1,814 | 35 | 1,700 | 37 | 1,482 | 43 | 1,230 | 51 |
| MAU**25 | 25 | 45.0 | | | 2,174 | 29 | 2,154 | 29 | 2,148 | 29 | 2,138 | 30 | 2,094 | 30 | 1,928 | 33 | 1,671 | 38 | 1,471 | 43 | 1,232 | 51 |
| | | 26.0 | | | 1,592 | 50 | 1,592 | 50 | 1,581 | 50 | 1,551 | 51 | 1,529 | 52 | 1,496 | 53 | 1,432 | 55 | 1,353 | 58 | 1,231 | NR |
| | | 30.0 | | | 1,789 | 44 | 1,758 | 45 | 1,716 | 46 | 1,692 | 47 | 1,650 | 48 | 1,598 | 49 | 1,552 | 51 | 1,451 | 54 | 1,282 | 62 |
| | | 35.0 | | | 1,814 | 44 | 1,819 | 43 | 1,828 | 43 | 1,866 | 42 | 1,849 | 43 | 1,794 | 44 | 1,688 | 47 | 1,561 | 51 | 1,316 | 60 |
| | | 40.5 | | | 2,080 | 38 | 2,122 | 37 | 2,082 | 38 | 2,054 | 38 | 1,916 | 41 | 1,814 | 44 | 1,700 | 46 | 1,482 | 53 | 1,230 | 64 |
| | | | 2,174 | 36 | 2,154 | 37 | 2,139 | 37 | 2,138 | 37 | 2,094 | 38 | 1,928 | 41 | 1,671 | 47 | 1,471 | 54 | 1,232 | 64 | | |

Air Flow Chart (For 30 to 35kW Units with 3/4HP ECM Motor)

| MODEL | KW | 0.1"WC | | 0.2"WC | | 0.3"WC | | 0.4"WC | | 0.5"WC | | 0.6"WC | | 0.7"WC | | 0.8"WC | | 0.9"WC | | 1.0"WC | | |
|---------|----|--------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|
| | | TORQUE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE | CFM | RISE |
| | | | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) | | (F) |
| MAU**30 | 30 | | | | 1,592 | 60 | 1,592 | 60 | 1,581 | 60 | 1,551 | 61 | 1,529 | 62 | 1,496 | 63 | 1,432 | NR | 1,353 | NR | 1,231 | NR |
| | | 26.0 | | | 1,789 | 53 | 1,758 | 54 | 1,716 | 55 | 1,692 | 56 | 1,650 | 57 | 1,598 | 59 | 1,552 | 61 | 1,451 | 65 | 1,282 | 74 |
| | | 30.0 | | | 1,814 | 52 | 1,819 | 52 | 1,828 | 52 | 1,866 | 51 | 1,849 | 51 | 1,794 | 53 | 1,688 | 56 | 1,561 | 61 | 1,316 | 72 |
| | | 35.0 | | | 2,080 | 46 | 2,122 | 45 | 2,082 | 46 | 2,054 | 46 | 1,916 | 49 | 1,814 | 52 | 1,700 | 56 | 1,482 | 64 | 1,230 | 77 |
| | | 40.5 | | | 2,174 | 44 | 2,154 | 44 | 2,148 | 44 | 2,138 | 44 | 2,094 | 45 | 1,928 | 49 | 1,671 | 57 | 1,471 | 64 | 1,232 | 77 |
| MAU**35 | 35 | | | | 1,592 | 69 | 1,592 | 69 | 1,581 | 60 | 1,551 | 71 | 1,529 | 72 | 1,496 | NR | 1,432 | NR | 1,353 | NR | 1,231 | NR |
| | | 26.0 | | | 1,789 | 62 | 1,758 | 63 | 1,716 | 64 | 1,692 | 65 | 1,650 | 67 | 1,598 | 69 | 1,552 | 71 | 1,451 | NR | 1,282 | NR |
| | | 30.0 | | | 1,814 | 61 | 1,819 | 61 | 1,828 | 60 | 1,866 | 59 | 1,849 | 60 | 1,794 | 62 | 1,688 | 66 | 1,561 | 71 | 1,316 | 84 |
| | | 35.0 | | | 2,080 | 53 | 2,122 | 52 | 2,082 | 53 | 2,054 | 54 | 1,916 | 58 | 1,814 | 61 | 1,700 | 65 | 1,482 | 75 | 1,230 | 90 |
| | | 40.5 | | | 2,174 | 51 | 2,154 | 51 | 2,148 | 52 | 2,138 | 52 | 2,094 | 53 | 1,928 | 57 | 1,671 | 66 | 1,471 | 75 | 1,232 | 90 |

A ** Represents the voltage, 20=208V, 24=240V, 48=480V. Voltage of the MAU unit does not affect the data in this table.

B NR= Not Recommended, Temperature Rise is above maximum design parameter.

C The highlighted cells are the factory default torque setting for each model. The ECM motor has 5 field adjustable torque settings, allowing for a wide range of design choices.

E Blower: 10" diameter, 8" wide

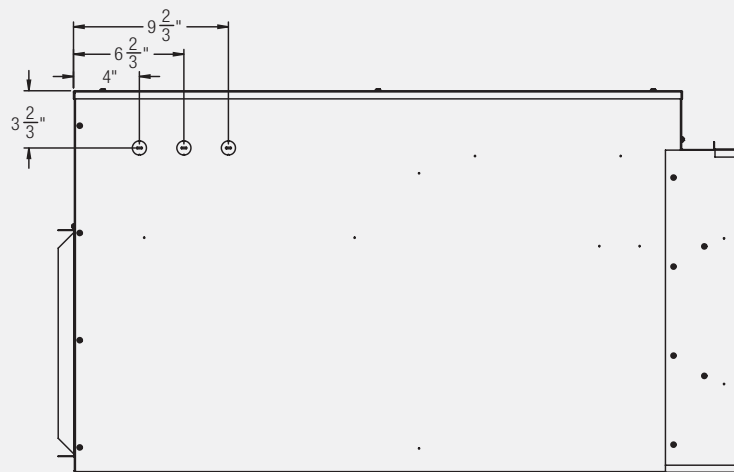
Airflow Design Considerations

The King Clear Air unit has a wide range of airflow options that can be field adjusted to match the needs of a specific installation. Providing fresh air into a building has several design parameters that must be taken into consideration:

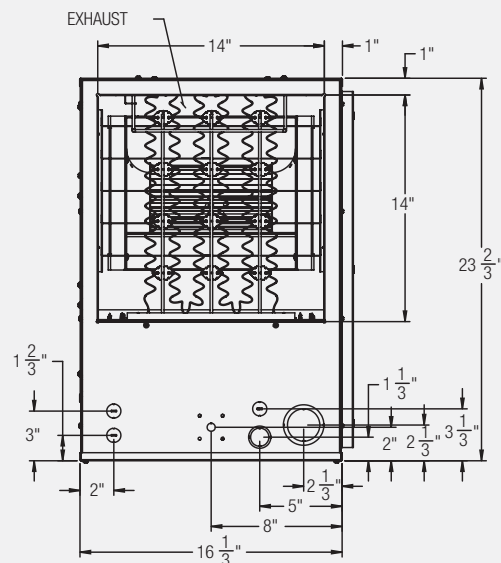
1. The amount of fresh air required is normally calculated as Cubic Feet per Minute (CFM) per person or CFM per square feet of the building or a room. The required CFM can also be designed to meet a specific exhaust air condition such as in a commercial kitchen where the Clear Air unit is set to match the exhaust air of the cooking hoods.
2. Static pressure is one of the most important factors in HVAC design. Simply put, static pressure refers to the resistance to airflow in a heating and cooling system's components and duct work. To determine operating total external static pressure, measure pressures where air enters and leaves the Clear Air unit equipment. Add the two readings together to find total external static pressure. Make sure not to exceed the external static pressures listed in the design tables, doing so will cause harm the equipment.
3. Temperature rise or Delta T is the difference between the incoming air temperature and the discharge temperature of the Clear Air unit . In make-up air applications the required temperature rise is influenced by the geographic territory where colder climates require much more heat capacity to temper cold incoming air into the building. Another factor to consider is whether the fresh air is delivered directly such as to a room, hallway or delivered to the supply side of an HVAC system where the conditioned are might need to be 70F versus the fresh air being delivered to the return air intake where the design temperature could be 55F. Under sizing the Clear Air unit could lead to insufficient delivery temperatures causing colder than desired air to enter the building.

Fresh Air Ventilation System CLEAR AIR Series

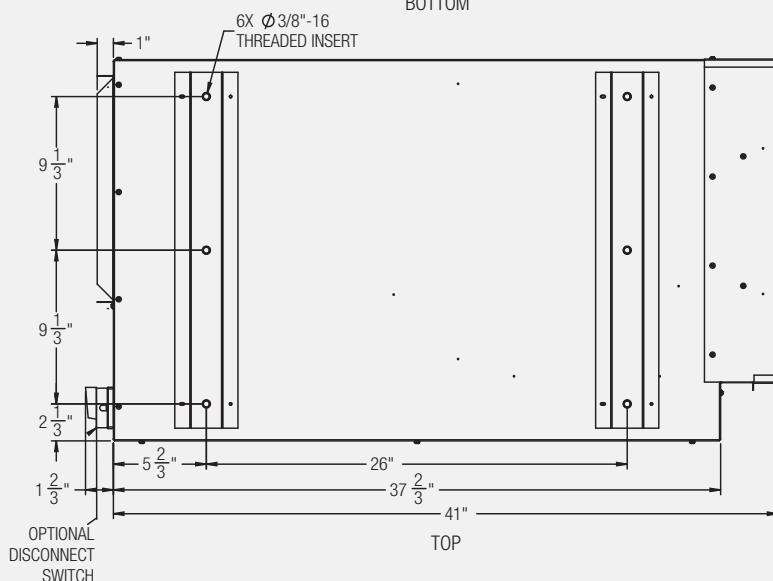
Dimensional Data



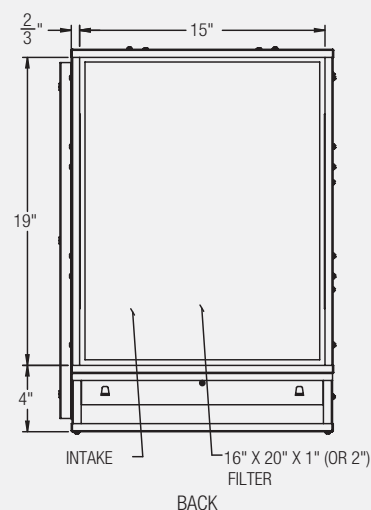
BOTTOM



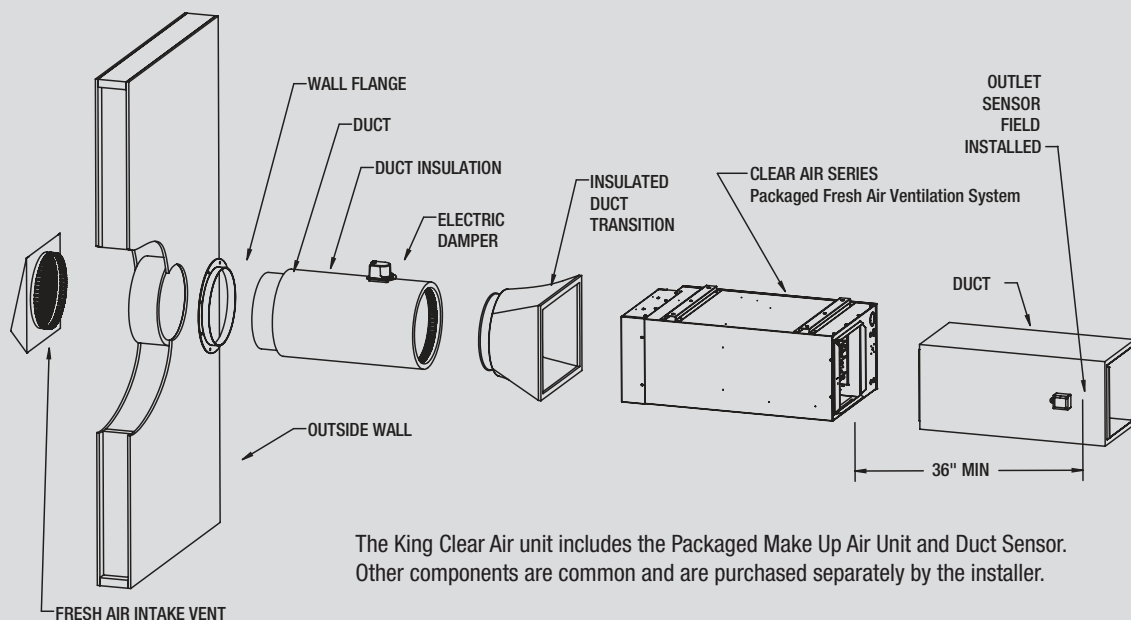
FRONT



TOP

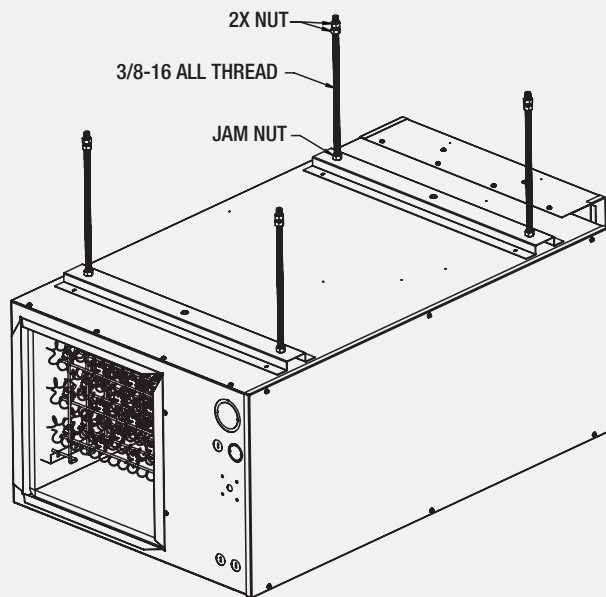


BACK

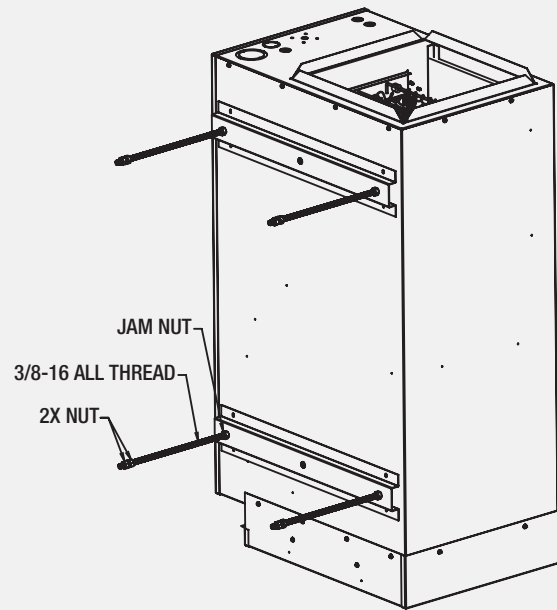


The King Clear Air unit includes the Packaged Make Up Air Unit and Duct Sensor. Other components are common and are purchased separately by the installer.

Horizontal/Vertical Mounting Illustration



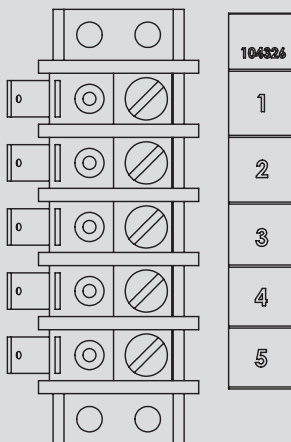
Horizontal



Vertical

Motor Torque Field Adjustment

The versatility of the King Clear Air unit allows for the ECM motor torque to be adjusted in the field. Pressure test the system to find the actual external static pressure, then fine tune the system by adjusting the motor torque setting. The goal is to meet the CFM/Temperature rise combination for the intended design criteria. The ECM motor is pre-programmed with 5 torque values and terminated at the 5-point terminal strip as shown below.

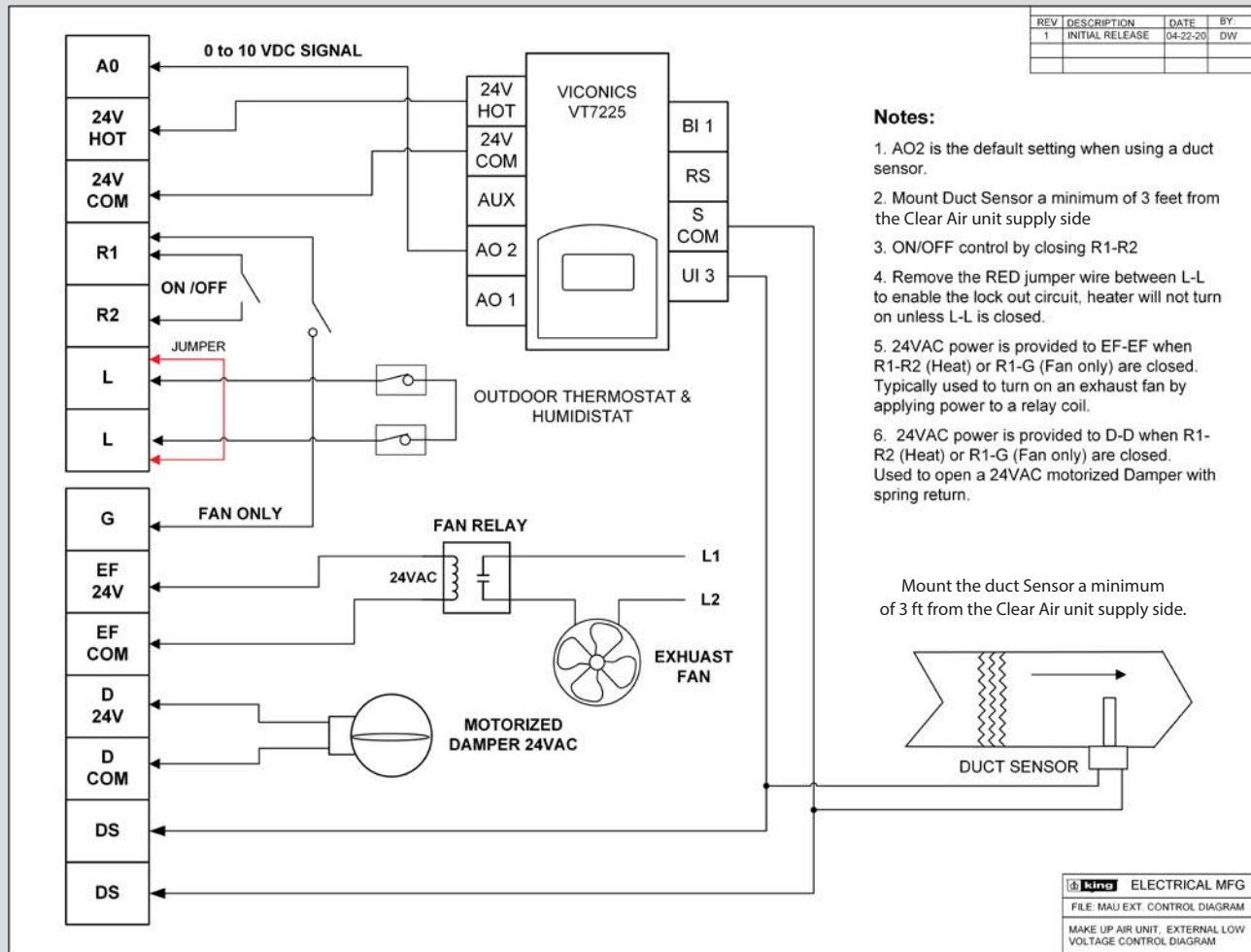


| Motor Tap# | 1/3 HP Torque | 1/2 HP Torque | 3/4 HP Torque | Wire Color |
|------------|---------------|---------------|---------------|--------------|
| 1 | 6.8 in-lb. | 15.0 in-lb. | 26.0 in-lb | RED |
| 2 | 9.4 in-lb. | 19.0 in-lb. | 30.0 in-lb | ORANGE |
| 3 | 12.0 in-lb. | 22.5 in-lb. | 35.0 in-lb | BLACK |
| 4 | 17.0 in-lb. | 26.0 in-lb. | 40.5 in-lb | ORANGE/BLACK |
| 5 | 20.0 in-lb. | 30.0 in-lb. | 45.0 in-lb | BROWN/BLACK |



ECM Motor

Fresh Air Ventilation System CLEAR AIR Series



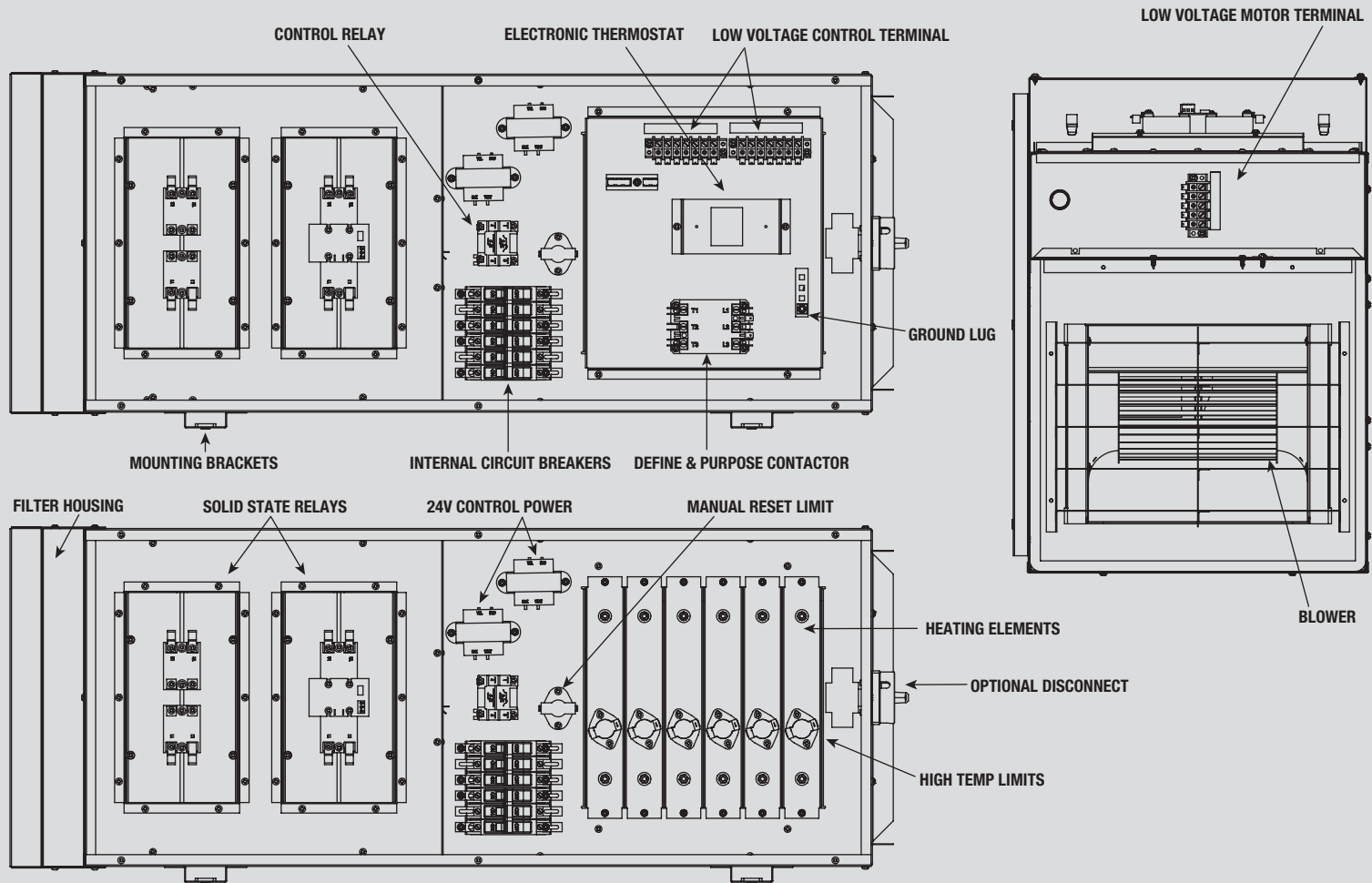
Low Voltage Control Wiring

The King Clear Air unit has a built-in relay logic control circuit enabling other make up air components to be controlled directly by the Clear Air unit. Review all the system components such as the damper, exhaust fans, outside thermostat and humidistat. All the control options are prewired to a 14-point terminal strip making them easy to integrate by the installer. The control circuit does not require any programming, simply enabled the control features by wiring the external components directly to the Clear Air unit low voltage terminal strip. List of control features:

1. R1-R2, ON/OFF control of the Clear Air unit. Closing this circuit via a dry contact will turn on the fan and the modulating heating circuit. This is often done by a building management system, but other common methods are to be activated by a current transformer (CT) on an exhaust fan, a timer, or a manual switch. Once on, the Solid-State Relay (SSR) regulates the wattage to the heating elements to accurately control the discharge air temperature from the Clear Air unit regardless of the incoming outdoor air temperature.
2. AO, proportional signal from the built-in thermostat (0-10VDC) that drives the SSR to modulate the heat output.
3. DS-DS, DUCT SENSOR, the field installed duct sensor is connected to thermostat for controlling and maintaining the output temperature, type 2 NTC thermistor, 10K ohms.
4. 24V HOT - 24V COM, these are the 24VAC connections to the modulating thermostat.
5. L-L, LOCKOUT CIRCUIT, the controller can be wired to an optional outdoor thermostat and/or a humidistat by using the 'L-L' terminals to prevent the Clear Air unit from turning on. Remove the factory set jumper to activate this feature. This feature can also be used to monitor indoor activity such as an occupancy sensor and CO2 sensor.
6. G, FAN ONLY, closing G-R1 will turn on the fan and bypass the modulating heating circuit. No heat in this mode.
7. EF-EF, EXHAUST FAN, provides a switched 24VAC circuit to connect a fan relay that will turn on an exhaust fan relay or other auxiliary device.
8. D-D, DAMPER, provides a switched 24VAC circuit to connect to a motorized damper with spring return. Note: 40VA maximum for the sum of EF-EF and D-D.

Note: If the design calls for a room thermostat, the inbuilt thermostat and duct sensor can be removed. Place the thermostat in the new room location and extend the wiring connections from the Clear Air unit low voltage terminal strip, connect AO on the terminal strip to AO 2 on the thermostat when used as a room thermostat without a duct sensor.

Fresh Air Ventilation System CLEAR AIR Series



Engineering Specifications

Contractor shall furnish and install King Fresh Air Ventilation System (Clear Air) manufactured by King Electrical Manufacturing.

Motor: Direct drive high efficiency, thermally protected, permanently lubricated ECM motor, no belts to adjust or maintain.

Motor Terminal: The Clear Air unit shall have a 5-point terminal block to easily field adjust the motor torque setting of the ECM motor.

Modulating Heat: 100% fully modulating heating control through Solid State Relay (SSR) technology. The SSR relays shall be mounted in the blower compartment to allow the free flow of incoming air to cool the heat sinks.

Thermostat: The Clear Air unit shall be controlled by an electronic proportional thermostat using a 0 to 10VDC of 4 to 20ma signal. The inbuilt thermostat can be removed and relocated to room and used as a wall mounted thermostat.

Duct Sensor: The Clear Air unit shall be provided with a field installed duct sensor, type 2 NTC thermistor, 10K ohms.

Heating Elements: Quick heating, long life Ni-Chrome elements supported by a steel frame and insulated with ceramic holders.

LV Terminal Block: All low voltage wires are terminated at a 14-point block with factory side quick connects and field side screw terminals.

Control Circuit: The Clear Air unit shall have a relay logic control circuit providing a dedicated 24V power supply that is switched to activate external devices such as: a damper, exhaust fan, etc..

Lockout Circuit: The Clear Air unit shall have a lockout circuit for auxiliary devices such as an outside thermostat or humidistat to prevent the MUA from turning on unless predetermined conditions are met.

Overcurrent Protection: The Clear Air unit shall have a 24V high temperature limit circuit wired in series to protect each individual heating element. In addition, it shall have one electrically held manual limit monitoring the condition of entire unit. If tripped, this limit must be manually reset by shutting off the power, waiting several minutes and then turning the power back on. This provides an extra level of overheating protection to the unit.

Enclosure: The Clear Air unit shall be constructed from 20GA electrogalvanized sheet metal of welded construction and finished with a corrosion resistant gray finished. Unpainted sheet steel is not acceptable. Access to the wiring compartment shall be from the side for easy wiring and maintenance. The unit shall have welded brackets with 6 - 3/8" weld nuts for sturdy mounting either vertically or horizontally. Provide both Line voltage and Low voltage knockouts to speed contractor installation. Provide knockouts for an optional disconnect.

Filter: Includes filter housing with 1" thick replaceable air filter. Compatible w/2" filter (Purchased Separately)

Blower: Centrifugal dual inlet blower shall be used, axial fans not permitted. Blower shall be rigidly mounted to the enclosure with internal welded mounting brackets.

Optional Disconnect: The unit shall have the option to mount an internal Supply Power Disconnect.

Approvals: UL: The Clear Air unit shall be Underwriters Laboratory (UL) approved and labeled.