

### 10EER 7.5, 10, 12.5 & 15 Ton Vertical Wall Mount Air Conditioners Models MGH3090A, MGH3120A, MGH3150A & MGH3180A (Dual Compressors)



MGH3090A Center Supply/Top Return w/Economizer

#### General Description

Marvair's wall mount air conditioners are used primarily to cool electronic and mechanical equipment shelters (E-Houses). Due to the high internal heat load, these shelters require cooling even when outside temperatures are 60°F (15°C) and below. Marvair air conditioners have the necessary controls and components for operation during these temperatures. All models feature dual compressors and have a minimum 10 EER and use next generation non-ozone depleting R-454B refrigerant with a 78% lower GWP than R-410A.

Marvair wall mount air conditioners are installed on the exterior of the building – no interior space is required. Two openings in the wall allow for the conditioned (supply) air to be discharged into the building and for the indoor air to return to the air conditioner in top or center supply configurations.

A sealed condenser fan motor permits operation in hot, dusty environments.

The direct drive evaporator motor provides high aerodynamic efficiency in a compact design. The optimized blade geometry provides excellent air flow at a minimum sound level. Direct drive eliminates all belts and pulleys. Scroll compressors ensure years of efficient and dependable service, even in the harshest of operating conditions. When outside air is required to provide pressurization or cooling, an economizer or fresh air dampers can be used.

#### Safety Listed and Energy Certified

All Marvair air conditioners conform to UL/CSA standard 60335-1 and 60335-2-40 and CAN/CSA C22.2, No. 236-11 Ed.4. For energy efficiency and performance, the units are tested and rated in accordance to the ANSI/ARI (Air-Conditioning and Refrigeration Institute) Standard 390- 2003 (Single Package Vertical Units). All units meet or exceed the efficiency requirements of ANSI/ASHRAE/IESNA 90.1.2016. Marvair air conditioners are commercial units and are not intended for use in residential applications.



#### Features and Benefits

##### High Efficiency

- 2 Compressors to Better Match Heat Loads
- Available Top or Center Supply Configurations
- Thermal Expansion Valve Improves Efficiency
- High Efficiency Scroll Compressor

##### Built-In Reliability

- High Pressure Switch Protection
- Liquid Line Temperature Monitoring & Control
- Suction Line Temperature monitoring & Control
- Adjustable Short Cycle Protection
- Phase Monitor
- High Compressor Temperature Switch
- Internal Motor Overload Protection

##### Rugged Construction

- Copper Tube, Aluminum Fin Evaporator & Condenser Coil
- Field Or Factory Installed Heaters On Discharge Side of Evaporator Coil
- Baked On Finish Over Galvanneal Steel

## Standard Features

### ➤ Dual Compressors

Factory wired for maximum cooling operation utilizing both compressors.

### ➤ Designed for Operation in High and Low Ambient Conditions

- Low ambient control cycles the condenser fan to maintain proper refrigerant pressures.
- Three minute by-pass of the low pressure sensor for start-up of compressor when outdoor temperatures are below 55°F (13°C).
- Designed for operation up to 131°F (55°C).

### ➤ High Efficiency

- A Thermal Expansion Valve improves efficiency and cooling capacity at both high and low ambient temperatures.
- High efficiency scroll compressor.
- Lanced fins on the evaporator and condenser coils improve heat transfer.

### ➤ Remote Alarm Capability

- Dry contacts can be used for remote alarm or notification upon air conditioner lockout.

### ➤ Rugged Construction

- Copper tube, aluminum fin evaporator & condenser coils.
- Field or factory installed heaters on discharge side of evaporator coil (optional)
- Baked on neutral gray finish over galvanneal steel for maximum cabinet life. (Other finishes are available.)

### ➤ Ease of Installation

- Sloped top with flashing eliminates need of rainhood.
- Built-in mounting flanges facilitate installation and minimize chance of water leaks.
- Supply and air return openings match many competitive models.
- Factory installed disconnect on all units.
- Single Point Power Entry complies with latest edition of U.L. Standard 60335-2-40.
- Available Stainless Steel side plates with lifting eyes provide safe and secure method for moving the unit.

### ➤ Built-in Reliability

- High pressure switch and low pressure sensor with lockout protects refrigerant circuit.
- Adjustable .03 to ten minute delay on make for short cycle protection.
- Phase Monitor - Continuously measures the voltage of each of the three phases. The monitor separately senses low and high voltage, voltage unbalance including phase loss and phase reversal. A red LED glows to indicate a fault. When all voltages are acceptable, a green LED glows. Automatically resets when voltages and phases are within operating tolerances.  
**Note:** Not required on 1Ø units.
- High temperature switch on the compressor discharge line protects the compressor in the event of a complete loss of refrigerant.
- Internal motor overloads on the evaporator motor, the condenser motor and the compressor

### ➤ Designed for Operation on Generator Power

- All Marvair single & three phase air conditioners are designed to operate on Generator Power. See *Summary Electrical Ratings* for your specific model

### ➤ Ease of Service

- The upper panel opens to the left or the right to facilitate access to the control box and the evaporator motor and coil. This panel can also be easily removed. As an option, these panels can be locked. Stainless steel hinges on the right side of the lower panel allow access to the compressor compartment.
- Service access valves are standard.
- Standard 2" (50 mm) pleated filter with a MERV rating of 8 changeable from outside.
- All major components are readily accessible.
- Front Control Panel allows easy access and complies with NEC clearance codes on redundant side-by-side systems.
- LEDs indicate operational status and fault conditions.

## A Marvair® First – Factory Installed Economizer

Marvair air conditioners have been the industry standard since introduced in 1986. Tens of thousands of Marvair air conditioners are in operation from the metropolitan areas of North America to the deserts of the Mid-East to the Siberian tundra. Here's how the economizer works:

On a signal from the wall mounted indoor thermostat that cooling is required, either mechanical cooling with the compressor or free cooling with the economizer is provided. A factory installed enthalpy controller determines whether the outside air is sufficiently cool and dry to be used for cooling. If suitable, the compressor is locked out and the economizer damper opens to bring in outside air. Integral pressure relief allows the interior air to exit the shelter, permitting outside air to enter the shelter. The temperature at which the economizer opens is factory set to 70°F (21°C) but is adjustable from 35°F (1.6°C) to 86°F (30°C).

After the dry bulb control has activated and outside air is being brought into the building, the supply air sensor measures the temperature of the air entering the building and then modulates the economizer damper to mix the right proportion of cool outside air with warm indoor air to maintain the factory setting of 55°F (12.7°C) air being delivered to the

building. The supply air temperature is adjustable from 38°F - 70°F (3.3°C - 21°C). This prevents shocking the electronic components with cold outside air. The compressor is not permitted to operate when the economizer is functioning.

If the outside air becomes too hot or humid, the economizer damper closes completely, or to a field selectable minimum open position, and mechanical cooling is activated.

The “full flow” economizer reduces electrical costs by maximizing the use of outside air for cooling.

## Savings with an Economizer

The following table shows the annual electrical cost of cooling a 10 ft. x 20 ft. x 9 ft. (3m x 6m x 2.7m) shelter in twelve cities in the US. Costs are shown for an air conditioner without an economizer, for an air conditioner with an economizer (and the savings). The savings do not include any demand charges. The savings are based on the electrical usage of a five ton air conditioner and an electric rate of 10¢ per kilowatt-hour, the approximate average commercial rate in the US.

Hours of Operation	Atlanta, GA	Boston, MA	Chicago, IL	Dallas, TX	Denver, CO	Houston, TX
Annual Compressor & Condenser Motor Run Time without Economizer (Hrs.)	4,032	3,916	3,914	4,110	3,921	4,133
Annual Compressor & Condenser Motor Run Time with Economizer (Hrs.)	2,487	1,509	1,688	2,895	1654	3,243
Run Time Savings with the Economizer (Hrs.)	1,544	2,407	2,227	1,215	2,268	890
<b>Annual Costs Saving (\$) of 10.0 EER unit with an Economizer</b>						
Annual Operating Cost 10.0 EER Unit without Economizer (\$)	\$4,437.98	\$4,141.35	\$4,192.64	\$4,867.57	\$4,312.37	\$4,732.07
Annual Operating Cost 10.0 EER with Economizer	\$2,893.65	\$1,813.19	\$1,994.74	\$3,553.41	\$2,016.03	\$3,810.12
Annual Savings using 10.0 EER Unit with Economizer	\$1,544.33	\$2,328.16	\$2,197.90	\$1,314.16	\$2,296.34	\$921.95

Hours of Operation	Los Angeles, CA	Miami, FL	Phoenix, AZ	Pittsburgh, PA	Kellog, ID	St. Louis, MO
Annual Compressor & Condenser Motor Run Time without Economizer (Hrs.)	4,047	4,225	4,200	3,907	3,849	3,960
Annual Compressor & Condenser Motor Run Time with Economizer (Hrs.)	2,859	4,099	2,431	1,566	862	2,004
Run Time Savings with the Economizer (Hrs.)	1,189	126	1,768	2,341	2,987	1,956
<b>Annual Costs Saving (\$) of 10.0 EER unit with an Economizer</b>						
Annual Operating Cost 10.0 EER Unit without Economizer (\$)	\$4,423.32	\$4,617.36	\$5,365.92	\$4,040.71	\$3,923.75	\$4,359.32
Annual Operating Cost 10.0 EER with Economizer	\$3,273.85	\$4,495.30	\$3,389.47	\$1,825.68	\$1,132.29	\$2,378.18
Annual Savings using 10.0 EER Unit with Economizer	\$1,149.47	\$122.06	\$1,976.45	\$2,215.03	\$2,791.46	\$1,981.14

### Shelter Metrics:

- 10' x 20' x 9' building
- Internal heat gain (electronics load): 12,000 watts.
- Building surface area (excluding floor area): 740 ft²
- R-Value of walls and ceiling: R-12
- Internal shelter temperature (Thermostat set point): 75°F

### Air Conditioner Metrics:

- Economizer setting: 57°F (dry bulb or enthalpy sensor)
- A/C unit capacity: 60,000 BTUH (5 tons) with 1-stage compressor
- Nominal EER (unit efficiency): 10.0
- Cost of power: 10¢ per KWH

## Options for Outside Air for Ventilation

### ► Configuration “C”: Up to 100% Modulating Economizer

The economizer reduces the cost of air conditioning by using outside air when acceptable to cool the room (Free Cooling). The factory installed Marvair® economizer has integral pressure relief.

Control Board Logic: Upon a “Call for Cooling”, the economizer control board calculates whether the HVAC operates in economizer mode or mechanical cooling mode based on outdoor temperature (dry bulb) or temperature/humidity (enthalpy). When outdoor conditions are favorable for economizer cooling, the damper drives open and modulates to maintain a 55°F mixed air temperature through the supply grille. When outdoor conditions are not favorable for economizer cooling, the economizer damper remains closed, and the HVAC unit will operate in mechanical cooling mode.

#### Features Designed for Telecommunication applications:

**Hydrogen Fault Input:** When 24VAC is applied to the H\_FLT input, the economizer board forces the damper to open 100% for emergency ventilation. The compressor does not operate during Hydrogen Fault/Emergency Ventilation. Thermostat must provide the fan “G” signal to HVAC to activate the indoor blower.

**Forced Mechanical Cooling:** When 24VAC is applied to the FC input of the economizer board, the economizer damper is forced closed, and the HVAC will operate in mechanical cooling mode. This is considered as economizer override in the event economizer cooling is not sufficient for the heat load. Thermostat must provide the fan “G” signal to HVAC to activate the indoor blower.

**Economizer Status:** The economizer board has contacts that when used with the Marvair CommStat 4 Telecom HVAC Controller, change state to provide feedback to the CommStat 4 to indicate when the HVAC is in economizer mode versus mechanical cooling mode. This feedback allows the CommStat 4 to initiate the forced cooling feature to override economizer cooling and force mechanical cooling.

When used with minimum position potentiometer (optional), the Marvair® economizer can meet requirements of ASHRAE Std. 62.

➤ **Configuration “D”: Two-Position Motorized Fresh Air Damper w/Pressure Relief Ventilation**

Factory Installed Relay Logic: Upon a “Call for indoor blower” via a 24V signal (G), the motorized damper opens to a maximum of 50% of the fully open position. The open position can be decreased from 50% by adjusting the rod position on the drive linkage. In this case, the damper will not open unless there’s a call for the indoor blower.

**Note:** This circuit does not interrupt the compressor or heater operation.

➤ **Configuration “E”: Two-Position Motorized Fresh Air Damper w/Pressure Relief Ventilation & Independent Control**

Factory Installed Relay Logic: Upon a “Call for Motorized damper” via a 24V signal from an external user-installed device, the motorized damper opens to a maximum of 50% of the fully open position. The open position can be decreased from 50% by adjusting the rod position on the drive linkage.

The motorized damper Does NOT open when there is a call for the indoor fan (G). A 24VAC signal {sourced from LVTB pin 10 and supplied through a user-provided Normally Open (NO) contact} activates (opens) the Motorized Damper and connected Relief Damper. When the 24VAC signal is removed, the Motorized Damper and connected Relief Damper close (spring return).

**Note:** This circuit does not interrupt the compressor or heater operation.

➤ **Configuration “F”: No Free Cooling, 100%- Damper Opening, Emergency Ventilation Only w/Pressure Relief and Independent Control**

Factory Installed Relay Logic: Upon a “Call for emergency ventilation”, from an external user-provided device; the motorized damper opens to 100% open position and the indoor blower is forced to operate. During “Emergency Ventilation mode”, the compressor and heater do not operate. The relay has a wire lead extended for the installer to connect their emergency ventilation control signal.

**Note:** This circuit interrupts the compressor and heater operation and forces the indoor blower and damper to operate during emergency ventilation mode.

## Controllers and Thermostats

➤ **Thermostats and Controllers for Single Stage and 2-Stage Air Conditioners**

See the *Marvair Thermostats and Controllers Product Data Sheet* for the thermostats and controllers for use with Marvair air conditioners.

## Accessories

➤ **Supply Grille**

For MGH3090A/3120A/3150A..... P/N 93189  
42½” x 15¼” (1,080 mm x 387 mm)

For MGH3180A..... P/N 93190  
54½” x 15½” (1,384 mm x 394 mm)

➤ **Return Grille**

For MGH3090A/3120A/3150A..... P/N 93188  
42½” x 21½” (1,080 mm x 546 mm)

For MGH3180A..... P/N 93191  
54½” x 21½” (1,384 mm x 546 mm)

➤ **Lifting Eye Kit**

For MGH3090A/3120A/3150A.....P/N K/40025

For MGH3180A.....P/N K/40026



## Options

Marvair air conditioners are designed and are built to stringent requirements of the communications/electronic shelter. Applications occur that have special requirements. Numerous options are available for Marvair air conditioners that meet these special needs.

➤ **Protective Coating Packages**

**Coated Coils:** Either the condenser or evaporator coil can be coated. For harsh conditions, e.g., power plants, paper mills or sites where the unit will be exposed to salt water, the coils should be coated. **Note:** Cooling capacity may be reduced by up to 5% on units with coated coils.

**Coastal Environmental Package:** This package includes:

- Corrosion resistant fasteners,
- Sealed or partially sealed condenser fan motor,
- Insitu coating applied to all exposed internal copper and metal in the in the condenser section, and
- A protective coating on the condenser coil.

**All Coat Package:** Includes the same features as the Coastal Environmental Package and adds an impregnated polyurethane on the evaporator coil and the Insitu coating on all exterior and interior components and sheet metal.

**Note 1:** The insulated internal sheet metal and the internal control box are not coated.

**Note 2:** The corrosion prevention coating can not be applied to stainless steel.

➤ **Cabinet Color**

Marvair air conditioners are available in six different cabinet colors. The standard colors are Marvair® beige, white, gray and Carlsbad Canyon (brown). The standard cabinet's sides, top and front panels are constructed of 20 gauge painted steel. Contact your Marvair representative for color chips. Custom colors are also available; contact Marvair for details.

Two stainless steel cabinet constructions are available:

**Stainless Steel Exterior (Option "5"):** This option replaces all standard exterior painted surfaces with stainless steel. This option also replaces the standard unpainted compressor base of the unit and exterior cabinet screws with stainless steel. No other standard construction surfaces are stainless steel in this option, unless listed in this description. Back panel is not stainless steel with this option. This option is designed to give a more economical alternative to full stainless steel, and still offer an enhanced level of protection. For further corrosion protection, please see our "A" offering at full stainless on all metal components.

**Stainless Steel Unit (Option "A"):** This option replaces all interior and exterior steel sheet metal parts with stainless steel. All galvanized and painted steel surfaces found in the standard unit are stainless steel with this option. All cabinet screws are stainless steel. No other standard construction surfaces are stainless steel, unless listed in this description. This option is designed to give our most robust protection against steel corrosion.

➤ **Dirty Filter Indicator**

A factory installed option that measures the difference in pressure across the internal air filter and illuminates an LED and activates a form "C" relay when the pressure exceeds the desired difference.

➤ **Fresh Air Damper**

*Fresh Air Damper..... P/N K/04657-xxx*

Allows introduction of outside air into the building to provide positive pressurization. Field installed on either the left or right hand side of the unit. "xxx" designates the color (200 = Grey (standard). 100 = Beige. 500 = Stainless Steel)

➤ **Filter Access From Return Air Opening**

Factory installed filter bracket allows access to the filters from the return air opening. See model ID, special option code "I".

➤ **Freeze Sensor**

Prevents frost on the indoor coil caused by a loss of air flow or restrictive duct work.

➤ **Center Supply/Top Return Configuration**

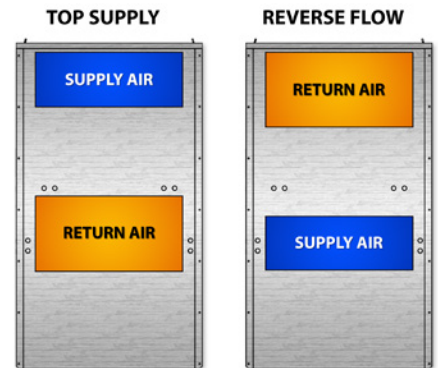
Location of Supply and Return openings are reversed. See dimensional drawings.

➤ **Optional Hot Gas By-Pass**

Provides coil protection from freeze-up during low load conditions.

➤ **Economizer**

The factory installed economizer saves energy and reduces the run time on the compressor and condenser fan motor by using outside air – when suitable – to cool the shelter.



## Standard Programmable Logic Controller

A Programmable Logic Controller (PLC) is standard equipment for all MGH3120A, MGH3150A and MGH3180A models to control the operation of the HVAC system. A display screen on the PLC shows operational status and provide assistance with diagnosis if troubleshooting is ever required. Various control functions are field selectable and programmable. The PLC is also capable of communicating to other PLCs to allow run time leveling and does not require additional equipment to be installed. The PLC provides improved reliability because of the reduction of components. The components utilized are more durable and the control box wiring has been simplified. Pertinent statistical data about the life of the refrigeration system can be accessed through the PLC.

All Marvair MGH air conditioners include built in head pressure control.

- Advanced PID algorithm to ensure accurate automatic adjustment of condenser airflow.
- Quick-Safe prevention of low and high discharge pressures ensure the system operates well under any conditions.
- Modulating of the condenser fan reduces cycling, improving reliability.
- Energy efficient, achieving the most efficient use of the condenser fan.

The PLC is factory installed and tested, requires no adjustments or changes when the air conditioning system is installed.

## Remote Access Data Points

Through the Ethernet connection, the network operations center can monitor and change various data points in the HVAC system and the shelter.

Data Points which can be monitored **and** changed:

- Cooling Set Point\*
- Heating Set Point\*
- Continuous Blower On/Off
- Cooling Stage Differential\*
- Heating Stage Differential\*
- Low Temperature Alarm Set Point\*
- High Temperature Alarm Set Point\*
- Y Fan Purge Time
- W Fan Purge Time
- Thermostat Offset\*
- AC Unit Remote Shutdown
- And more!

Data points which can only be monitored:

- Room Temperature\*
- Room Humidity\*
- High Pressure Switch Refrigeration Circuit A Fault
- Low Pressure Switch Refrigeration Circuit A Fault
- High Pressure Switch Refrigeration Circuit B Fault
- Low Pressure Switch Refrigeration Circuit B Fault
- Phase Fault
- Emergency Shutdown
- High Temperature Cut-Off
- High Temperature Alarm\*
- Low Temperature Alarm\*

\* Not available when using an external thermostat

### ► Modes of Operation

**Normal Start-up:** On a call for cooling, and with the high pressure switch closed, the cooling system (compressor, indoor blower motor and outdoor fan motor) will be energized. (Note: See the Delay on Make feature). The cooling system will remain energized during the three minute low pressure switch bypass cycle. If the low pressure is closed, the cooling system will continue to operate after the three-minute bypass. If the low pressure switch is open after the three-minute bypass, the cooling system will be de-energized.

**Lockout Mode:** If either the high or low pressure switch opens on the same call for cooling, the PLC system enters into and indicates the lockout mode. In the lockout mode, the compressor is turned off, the alarm output is energized and the status LED's will blink to indicate which fault has occurred. If there is a call for air flow, the indoor blower will remain energized. When the lockout condition has cleared, the unit will reset if the demand of the thermostat is removed or when power is reset. The lockout circuit has a 3-second delay to prevent premature activation and is factory wired for normally open contacts. The user can select either normally closed or normally open remote alarm dry contacts.

### ► Ambient Temperature Operating Ranges

Basic Model	Special Option	TEMPERATURE RANGES
Non-Economizer	Base Unit	0°F - 131°F (-18°C - 55°C)
Economizer-Equipped	Base Unit	-40°F - 131°F (-40°C - 55°C)

### ► SCFM @ Various External Static Pressures

Model Number	IWG Static Pressure											
	0	0.2	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.2
MGH3090A	3,846	3,570	3,286	3,003	2,722 <sup>1</sup>	2,515 <sup>1</sup>	2,164 <sup>1</sup>	1,888 <sup>1</sup>	1,612 <sup>1</sup>	1,338 <sup>1</sup>	1,065 <sup>1</sup>	794 <sup>1</sup>
MGH3120A	4,301	4,064	3,808	3,533	3,238	2,924 <sup>1</sup>	2,590 <sup>1</sup>	2,237 <sup>1</sup>	1,865 <sup>1</sup>	1,472 <sup>1</sup>	1,061 <sup>1</sup>	630 <sup>1</sup>
MGH3150A	4,801	4,564	4,308	4,033	3,738	3,424	3,090	2,737	2,365	1,972	1,561	1,130
MGH3180A	6,876	6,622	6,378	6,143	5,916	5,686	5,487	5,285	5,090	4,902	4,721	4,547

<sup>1</sup>Operation in the shaded area is not recommended

### ► Room Size Limitations

		MGH3090A	MGH3120A	MGH3150A	MGH3180A
Minimum Room Size (ft <sup>2</sup> )	Top Supply	143.3	125.7	143.3	235.6
	Center Supply	281.3	246.7	281.3	462.5
Minimum Supply Height (ft)	Top Supply	6.9	6.9	6.9	6.9
	Center Supply	3.5	3.5	3.5	3.5

## Marvair 5-Stage Control Scheme

Marvair's 5-Stage Control Scheme utilizes two 2-Stage compressors to provide better temperature control and reduced energy consumption. With the use of this unique controlling scheme, the HVAC system can accomplish 5 discreet cooling stages (see figure 1). The additional stages allow the unit to stage up and down in smaller increments; keeping power consumption lower than traditional dual compressor units (see figure 2). Contact your sales representative for more details.

### ► Benefits

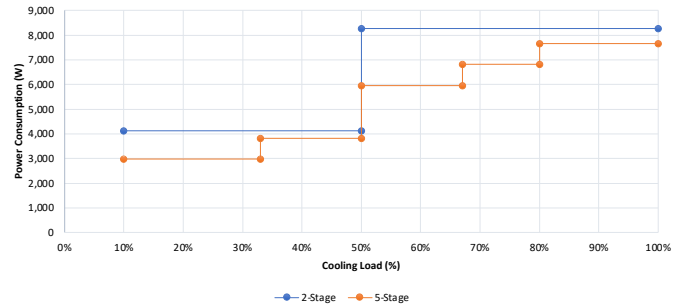
- Improved Part-Load Performance
- Improved IEER
- Better Temperature Control
- Better Load Matching
- 5 Stages of Unloading

### ► Features

- Two (2) 2-Stage Compressors
- Independent Refrigerant Circuits

Compressor	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
#1 Part Load	✓	-	✓	-	-
#1 Full Load	-	✓	-	✓	✓
#2 Part Load	-	-	✓	✓	-
#2 Full Load	-	-	-	-	✓
Multipliers	0.33	0.50	0.67	0.83	1.00

Figure 1: Control Scheme for 5-Stage Unit with Multipliers



Power consumption is based solely on the compressors in a 10 ton 480v unit at a 115°F condensing temperature and a 50°F evaporator temperature. Power consumption will vary based on application.

Figure 2: Power Consumption Vs. Cooling Demand

## Model Identification

Example	M	G	H	3	0	9	0	A	D	1	5	0	C	+	+	+	+	1	C	A	+	A	2	1	+	+	+	+	+	+
Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

1	Unit Designation/Family	M = Marvair Wall Mount
2	Energy Efficiency Ratio (EER)	G = 10
3	Refrigerant Type	H = R-454B
4	Compressor Type/Quantity	3 = Dual Compressors
5	Unit Capacity/Nominal Cooling (BTUH)	090 = 90,000   150 = 150,000 120 = 120,000   180 = 180,000
6		
7		
8	System Type	A = Air Conditioner
9	Power Supply (Volts-Phase-Hz)	A = 208/230-60-1 C = 208/230-60-3 D = 460-60-3 Z = 575-60-3 \$ = Special
10	Heat Designation	000 = No Heat 050 = 5KW 090 = 9KW 150 = 15KW 180 = 18KW
11	@ Rated Voltage	
12	KW = Kilowatt	
13	Ventilation Configuration	A = Solid Front Door C = Economizer D = Motorized Damper w/Pressure Relief E = Motorized Damper w/Pressure Relief & Independent Motorized Damper Control F = No Free Cooling, 100% Emergency Ventilation Only w/Independent Control
14	Dehumidification	R = Electric Reheat T = Electric Reheat w/Humidity Control + = None
15	Controls	A = Power Fail Alarm w/Additional Lockouts C = 24V EMS Relay Kit F = PLC w/Summed Alarms H = PLC w/2-Stage Control K = Summed Alarms N = Relay Logic Controls 2 = PLC w/5-Stage Control + = None \$ = Special
16	Operating Condition	A = Evaporator Freeze Sensor (EFS) C = EFS w/Hot Gas Bypass N = Hard Start P = Hard Start w/Low Ambient & CCH Q = Hard Start w/Low Ambient & Fan Cycle Control (FCC) R = Crank Case Heater (CCH) T = Hard Start w/EFS U = Hard Start w/Hot Gas Bypass V = Hard Start w/Low Ambient & CCH & EFS W = Low Ambient w/CCH Y = Low Ambient w/CCH & FCC Z = Low Ambient w/CCH & EFS 1 = Low Ambient w/FCC 2 = Low Ambient w/FCC & EFS 3 = CCH w/Hot Gas Bypass + = None

17	Indoor Air Quality Features	D = Dry Bulb Sensor E = Dry Bulb Sensor w/Dirty Filter G = Dirty Filter Sensor + = None
18	Air Flow	1 = Top Supply/Center Return (STD) 2 = Center Supply/Top Return
19	Compressor Location	C = Center
20	Filter Option	A = 2" Pleated (MERV 8, AC/HP-C) C = 2" Charcoal D = MERV 11 High Filtration Package E = MERV 13 High Filtration Package F = Filter Access Through Return Air Grille W = Aluminum Washable + = None
21	Corrosion Protection	A = Condenser Coil Only C = Evaporator Coil Only D = Both Coils Condenser & Evaporator E = All Coils Cond/Evap/Reheat F = Coat All G = Coastal Environmental Package & Evap Coil K = Coastal Package + = None \$ = Special
22	Engineering	A2
23	Revision Level	B2 C2
24	Cabinet Color	1 = Marvair Beige (STD) 2 = Gray (STD) 3 = Carlsbad Canyon (STD) 4 = White (STD) 5 = Stainless Steel Exterior 9 = Pebble Gray A = Stainless Steel - Unit \$ = Custom Color (Powder Coat)
25	Sound Attenuation	2 = Compressor Blanket + = None
26	Security Option	A = Lockable Access Plate/Tamper Proof + = None
27	Fastener/Drain Pan Option	A = Stainless Steel Fasteners C = Stainless Steel Drain Pan D = Stainless Steel Fasteners & Drain Pan E = IP55 Ingress + = None
28	Unused	+ = None \$ = Special
29	Unused	+ = None \$ = Special
30	Special Variation	+ = None \$ = Special Configuration Not Covered by Model Nomenclature

**Note:** Not all options are available with all configurations. Contact your Marvair sales representative for configuration details and feature compatibility.

# Marvair Wall Mount Air Conditioner Dual 1-Stage Compressor Performance Data



## Certified Efficiency and Capacity Ratings at ANSI/AHRI Standard 390

Model Number	MGH3090A				MGH3120A				MGH3150A			MGH3180A		
	A	C	D	Z	A	C	D	Z	C	D	Z	C	D	Z
<b>Cooling BTUH<sup>1</sup></b>	89,000				118,000				146,000			182,000		
<b>EER<sup>2</sup></b>	10				10				10			10		
<b>Rated Air Flow (CFM<sup>3</sup>)</b>	3,500				4,000				4,500			6,000		

<sup>1</sup>Cooling rated at 95°F (35°C) outdoor and 80°F DB / 67°F WB (26.5°C DB / 19.5°C WB) return air.      <sup>2</sup>EER = Energy Efficiency Ratio  
<sup>3</sup>CFM = Cubic Feet per Minute  
Ratings are with no outside air. Performance will be affected by altitude.  
Ratings are at 230 volts for 208/230 volt units ("A" & "C" models) and 460 volts for "D" models. Operation of units at different voltage from that of the rating point will affect performance and air flow.

## Sensible Total Heat Ratio @ 95°F (35°F) Outside Air Dry Bulb: MGH Air Conditioners (Dual Compressors)

Model Number	MGH3090A				MGH3120A				MGH3150A			MGH3180A		
	A	C	D	Z	A	C	D	Z	C	D	Z	C	D	Z
<b>Total Capacity</b>	89,000				118,000				146,000			182,000		
<b>Sensible Capacity</b>	69,092				91,706				106,434			136,830		
<b>Sensible Heat Ratio</b>	0.8				0.8				0.7			0.8		

Sensible heat ratios based upon outdoor air conditions of 80°F DB/67°F WB (26.5°C DB/19.5°C WB) return air.  
Derate performance by 17% for "E" (380v 3ø, 50Hz) models.



## Cooling Performance (BTUH) at Various Outdoor Temperatures - Single Compressor Operation

Model Number	Return Air DB/WB °F (°C)	Outdoor Temperature												
		Cooling Capacity BTUH	75°F (24°C)	80°F (27°C)	85°F (30°C)	90°F (32°C)	95°F (35°C)	100°F (38°C)	105°F (41°C)	110°F (43°C)	115°F (46°C)	120°F (49°C)	125°F (52°C)	130°F (54°C)
<b>MGH3090A</b>	72/61 (22/16)	Total	42,039	40,581	39,164	37,706	36,248	34,790	33,332	31,914	31,185	30,456	29,727	28,998
		Sensible	37,564	37,021	36,494	35,953	35,414	34,790	33,332	31,914	31,185	30,456	29,727	28,998
	76/63 (24/17)	Total	43,700	42,201	40,662	39,164	37,665	36,167	34,668	33,129	32,400	31,671	30,942	30,213
		Sensible	41,395	40,856	40,305	39,164	37,665	36,167	34,668	33,129	32,400	31,671	30,942	30,213
	80/67 (27/19)	Total	46,980	45,360	43,740	42,120	40,500	38,192	37,260	35,640	34,830	34,101	33,372	32,643
		Sensible	40,841	40,300	39,761	39,224	38,688	37,926	37,260	35,640	34,830	34,101	33,372	32,643
	84/71 (29/22)	Total	50,261	48,519	46,818	45,077	43,335	41,594	39,852	38,151	37,260	36,531	35,802	35,073
		Sensible	40,097	39,560	39,037	38,503	37,970	37,438	36,908	36,392	36,122	35,901	35,681	35,073
<b>MGH3120A</b>	72/61 (22/16)	Total	61,242	59,118	57,053	54,929	52,805	50,681	48,557	46,492	45,430	44,368	43,306	42,244
		Sensible	45,306	44,418	43,560	42,684	41,813	40,948	40,089	39,259	38,835	38,411	37,990	37,569
	76/63 (24/17)	Total	63,661	61,478	59,236	57,053	54,870	52,687	50,504	48,262	47,200	46,138	45,076	44,014
		Sensible	49,214	48,332	47,431	46,560	45,695	44,836	43,983	43,112	42,702	42,293	41,886	41,479
	80/67 (27/19)	Total	68,440	66,080	63,720	61,360	59,000	56,640	54,280	51,920	50,740	49,678	48,616	47,554
		Sensible	48,910	48,020	47,137	46,260	45,389	44,524	43,665	42,812	42,388	42,008	41,628	41,250
	84/71 (29/22)	Total	73,219	70,682	68,204	65,667	63,130	60,593	58,056	55,578	54,280	53,218	52,156	51,094
		Sensible	48,364	47,477	46,616	45,742	44,873	44,012	43,156	42,326	41,894	41,541	41,190	40,839
<b>MGH3150A</b>	72/61 (22/16)	Total	75,809	73,180	70,623	67,994	65,365	62,736	60,107	57,550	56,236	54,921	53,607	52,292
		Sensible	53,631	52,510	51,428	50,324	49,228	48,139	47,059	46,017	45,483	44,952	44,422	43,895
	76/63 (24/17)	Total	78,803	76,101	73,326	70,623	67,921	65,219	62,517	59,741	58,427	57,112	55,798	54,483
		Sensible	57,995	56,881	55,745	54,647	53,558	52,476	51,403	50,309	49,793	49,280	48,768	48,258
	80/67 (27/19)	Total	84,719	81,798	78,876	75,955	73,034	70,112	67,191	64,269	62,809	61,494	60,180	58,865
		Sensible	57,660	56,536	55,421	54,315	53,217	52,128	51,047	49,974	49,441	48,963	48,487	48,012
	84/71 (29/22)	Total	90,635	87,494	84,427	81,286	78,146	75,005	71,865	68,798	67,191	65,876	64,562	63,247
		Sensible	57,026	55,904	54,817	53,713	52,618	51,532	50,455	49,411	48,867	48,424	47,982	47,542
<b>MGH3180A</b>	72/61 (22/16)	Total	94,458	91,182	87,997	84,721	81,445	78,169	74,893	71,708	70,070	68,432	66,794	65,156
		Sensible	81,262	80,011	78,799	77,556	76,317	75,082	73,851	71,708	70,070	68,432	66,794	65,156
	76/63 (24/17)	Total	98,189	94,822	91,364	87,997	84,630	81,263	77,896	74,438	72,800	71,162	69,524	67,886
		Sensible	89,395	88,154	86,884	85,651	84,422	81,263	77,896	74,438	72,800	71,162	69,524	67,886
	80/67 (27/19)	Total	105,560	101,920	98,280	94,640	91,000	87,360	83,720	80,080	78,260	76,622	74,984	73,346
		Sensible	88,465	87,218	85,976	84,739	83,505	82,276	81,051	79,831	78,260	76,622	74,984	73,346
	84/71 (29/22)	Total	112,931	109,018	105,196	101,283	97,370	93,457	89,544	85,722	83,720	82,082	80,444	78,806
		Sensible	87,139	85,899	84,693	83,462	82,236	81,014	79,796	78,611	77,992	77,486	76,981	76,477

Based upon ANSI/AHRI std. 390 return air conditions of 80°F DB/67°F WB (26.5°C DB/19.5°C WB) at various outdoor temperatures.

## Cooling Performance (BTUH) at Various Outdoor Temperatures - Dual Compressor Operation

BASIC MODEL	Return Air DB/WB °F (°C)	Outdoor Temperature												
		Cooling Capacity BTUH	75°F (24°C)	80°F (27°C)	85°F (30°C)	90°F (32°C)	95°F (35°C)	100°F (38°C)	105°F (41°C)	110°F (43°C)	115°F (46°C)	120°F (49°C)	125°F (52°C)	130°F (54°C)
MGH3090A	72/61 (22/16)	Total	92,382	89,178	86,063	82,859	79,655	76,451	73,247	70,132	68,530	66,928	65,326	63,724
		Sensible	68,795	67,490	66,228	64,938	63,655	62,379	61,110	59,883	59,255	58,629	58,004	57,381
	76/63 (24/17)	Total	96,031	92,738	89,356	86,063	82,770	79,477	76,184	72,802	71,200	69,598	67,996	66,394
		Sensible	74,809	73,513	72,189	70,907	69,633	68,366	67,107	65,821	65,214	64,609	64,006	63,404
	80/67 (27/19)	Total	103,240	99,680	96,120	92,560	89,000	83,927	81,880	78,320	76,540	74,938	73,336	71,734
		Sensible	74,266	72,960	71,663	70,374	69,092	67,278	66,551	65,292	64,665	64,103	63,542	62,982
	84/71 (29/22)	Total	110,449	106,622	102,884	99,057	95,230	91,403	87,576	83,838	81,880	80,278	78,676	77,074
		Sensible	73,358	72,057	70,794	69,509	68,233	66,964	65,702	64,478	63,840	63,319	62,799	62,281
MGH3120A	72/61 (22/16)	Total	125,101	120,762	116,544	112,205	107,866	103,528	99,189	94,971	92,801	90,632	88,462	86,293
		Sensible	91,713	89,891	88,132	86,335	84,550	82,777	81,016	79,316	78,446	77,578	76,714	75,853
	76/63 (24/17)	Total	130,042	125,583	121,003	116,544	112,085	107,625	103,166	98,586	96,417	94,247	92,078	89,909
		Sensible	99,535	97,724	95,877	94,092	92,318	90,557	88,808	87,024	86,183	85,346	84,510	83,678
	80/67 (27/19)	Total	139,804	134,984	130,163	125,342	120,521	115,700	110,879	106,058	103,648	101,479	99,309	97,140
		Sensible	98,928	97,103	95,291	93,492	91,706	89,933	88,173	86,425	85,556	84,776	83,999	83,224
	84/71 (29/22)	Total	149,567	144,384	139,322	134,140	128,957	123,775	118,593	113,531	110,879	108,710	106,541	104,371
		Sensible	97,829	96,008	94,243	92,449	90,669	88,901	87,147	85,446	84,560	83,837	83,117	82,399
MGH3150A	72/61 (22/16)	Total	151,618	146,359	141,247	135,988	130,730	125,472	120,213	115,101	112,472	109,842	107,213	104,584
		Sensible	107,262	105,020	102,857	100,648	98,455	96,279	94,118	92,033	90,966	89,904	88,845	87,790
	76/63 (24/17)	Total	157,606	152,202	146,651	141,247	135,842	130,438	125,033	119,483	116,854	114,224	111,595	108,966
		Sensible	115,990	113,761	111,489	109,294	107,115	104,952	102,806	100,617	99,587	98,560	97,536	96,517
	80/67 (27/19)	Total	169,438	163,595	157,752	151,910	146,067	140,224	134,382	128,539	125,618	122,988	120,359	117,730
		Sensible	115,320	113,072	110,842	108,629	106,434	104,255	102,093	99,949	98,882	97,926	96,973	96,024
	84/71 (29/22)	Total	181,269	174,988	168,853	162,573	156,292	150,011	143,730	137,595	134,382	131,752	129,123	126,494
		Sensible	114,052	111,808	109,634	107,426	105,237	103,064	100,909	98,821	97,734	96,848	95,964	95,084
MGH3180A	72/61 (22/16)	Total	188,916	182,364	175,994	169,442	162,890	156,338	149,786	143,416	140,140	136,864	133,588	130,312
		Sensible	137,105	134,350	131,690	128,973	126,274	123,594	120,932	118,362	117,046	115,735	114,429	113,127
	76/63 (24/17)	Total	196,378	189,644	182,728	175,994	169,260	162,526	155,792	148,876	145,600	142,324	139,048	135,772
		Sensible	148,659	145,921	143,128	140,428	137,747	135,085	132,440	129,744	128,473	127,206	125,944	124,686
	80/67 (27/19)	Total	211,120	203,840	196,560	189,280	182,000	174,720	167,440	160,160	156,520	153,244	149,968	146,692
		Sensible	147,750	144,990	142,250	139,530	136,830	134,149	131,488	128,845	127,531	126,352	125,178	124,006
	84/71 (29/22)	Total	225,862	218,036	210,392	202,566	194,740	186,914	179,088	171,444	167,440	164,164	160,888	157,612
		Sensible	146,097	143,344	140,675	137,962	135,270	132,597	129,945	127,374	126,034	124,942	123,853	122,767

Based upon ANSI/AHRI std. 390 return air conditions of 80°F DB/67°F WB (26.5°C DB/19.5°C WB) at various outdoor temperatures.

## Electrical Characteristics - Compressor, Fan & Blower Motors

Basic Model	Compressor				Outdoor Fan Motor			Indoor Blower Motor		
	Type	Volts-Hz-Ph	RLA <sup>1</sup>	LRA <sup>2</sup>	Volts-Hz-PH	FLA <sup>3</sup>	HP <sup>4</sup>	Volts-Hz-PH	FLA <sup>3</sup>	HP <sup>4</sup>
MGH3090AA	Scroll	208/230-60-1	18.3 (36.6)	138.0	208/230-60-1	2.7 (5.4)	1/3	208/230-60-1	3.3	1
MGH3120AA		208/230-60-1	25.2 (50.4)	147.3	208/230-60-1	6.3 (12.6)	3/4	208/230-60-1	6.7	2
MGH3090AC	Scroll	208/230-60-3	11.9 (23.8)	112.0	208/230-60-1	2.7 (5.4)	1/3	208/230-60-1	3.3	1
MGH3120AC		208/230-60-3	13.8 (27.6)	150.0	208/230-60-1	6.3 (12.6)	3/4	460-60-3	5.2	4
MGH3150AC		208/230-60-3	23.2 (46.4)	142.0	208/230-60-1	6.3 (12.6)	3/4	460-60-3	5.2	4
MGH3180AC		208/230-60-3	26.8 (53.6)	190.7	208/230-60-1	6.3 (12.6)	3/4	460-60-3	5.2 (10.4)	4
MGH3090AD	Scroll	460-60-3	6.8 (13.6)	61.8	208/230-60-1	2.7 (5.4)	1/3	208/230-60-1	3.3	1
MGH3120AD		460-60-3	6.9 (13.8)	58.0	460-60-1	3.0 (6.0)	3/4	460-60-3	5.2	4
MGH3150AD		460-60-3	9.5 (19)	73.1	460-60-1	3.0 (6.0)	3/4	460-60-3	5.2	4
MGH3180AD		460-60-3	12.5 (25.0)	100.2	460-60-1	3.0 (6.0)	3/4	460-60-3	5.2 (10.4)	4
MGH3090AZ	Scroll	575-60-3	4.8 (9.6)	39.0	208/230-60-1	2.7 (5.4)	1/3	208/230-60-1	3.3	1
MGH3120AZ		575-60-3	5.8 (11.6)	47.8	208/230-60-1	6.3 (12.6)	3/4	460-60-3	5.2	4
MGH3150AZ		575-60-3	7.8 (15.6)	55.0	208/230-60-1	6.3 (12.6)	3/4	460-60-3	5.2	4
MGH3180AZ		575-60-3	9.4 (18.8)	65.0	208/230-60-1	6.3 (12.6)	3/4	460-60-3	5.2 (10.4)	4

<sup>1</sup>RLA = Rated Load Amps      <sup>2</sup>LRA = Locked Rotor Amps      <sup>3</sup>FLA = Full Load Amps      <sup>4</sup>HP = Horsepower

## Summary Electrical Ratings (Wire and Circuit Breaker Sizing)

Electric Heat		0 kW	0 kW	5.0 kW	5.0 kW	9.0 kW	9.0 kW	10.0 kW	10.0 kW	15.0 kW	15.0 kW	18.0 kW	18.0 kW
Basic Model	Volts-Hz-Ph	SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>	
		MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>
MGH3090AA	208/230-60-1	54.5	60	54.5	60	54.5	60	56.2	60	82.3	90	97.9	100
MGH3120AA	208/230-60-1	82.3	100	82.3	100	82.3	100	82.3	100	86.5	100	102.1	110
MGH3090AC	208/230-60-3	38.5	45	38.5	45	38.5	45	38.5	45	49.2	50	58.3	60
MGH3120AC	208/230-60-3	57.5	60	57.5	60	57.5	60	57.5	60	58.1	60	67.1	70
MGH3150AC	208/230-60-3	81.0	90	81.0	90	81.0	90	81.0	90	81.0	90	81.0	90
MGH3180AC	208/230-60-3	100.4	110	100.4	110	100.4	110	100.4	110	100.4	110	100.4	110
MGH3090AD	460-60-3	21.4	25	21.4	25	21.4	25	21.4	25	24.6	25	29.1	30
MGH3120AD	460-60-3	28.5	30	28.5	30	28.5	30	28.5	30	29.1	30	33.6	35
MGH3150AD	460-60-3	35.0	40	35.0	40	35.0	40	35.0	40	35.0	40	35.0	40
MGH3180AD	460-60-3	47.7	50	47.7	50	47.7	50	47.7	50	47.7	50	47.7	50
MGH3090AZ	575-60-3	15.5	20	15.5	20	15.5	20	15.5	20	20.5	25	24.2	25
MGH3120AZ	575-60-3	23.7	25	23.7	25	23.7	25	23.7	25	24.0	25	27.8	30
MGH3150AZ	575-60-3	28.7	30	28.7	30	28.7	30	28.7	30	28.7	30	28.7	30
MGH3180AZ	575-60-3	36.9	40	36.9	40	36.9	40	36.9	40	36.9	40	36.9	40

<sup>1</sup>MCA = Minimum Circuit Ampacity (Wiring Size Amps)      <sup>2</sup>MFS = Maximum Fuse or HACR Breaker Size      <sup>3</sup>SPPE = Single Point Power Entry

MCA & MFS are calculated at 230 volts on the "A" & "C" models and 460v on the "D" models. This chart should only be used as a guideline for estimating conductor size and overcurrent protection. For the requirements of specific units, always refer to the data label on the unit.

- MFS (Maximum Fuses Size) value listed is the maximum value as per UL 60335-2-40 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Overcurrent Protective Device (Circuit Breaker) in the models may be lower than the maximum UL 60335-2-40 allowable MOCP value, but still above the UL 60335-2-40 minimum calculated value or Minimum Circuit Ampacity (MCA) listed.
- The end user shall size conductors based on the Single Point Power Entry (SPPE) - Minimum Circuit Ampacity. The service circuit breaker shall not be sized less than the minimum circuit ampacity associated to Single Point Power Entry value provided. The service circuit breaker shall also not be sized greater than the Maximum Fuse size associated to the Single Point Power Entry Value Provided.
- While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes

## Summary Electrical Ratings w/Electric Re-Heat (Wire and Circuit Breaker Sizing)

Electric Heat		0 kW	0 kW	5.0 kW	5.0 kW	9.0 kW	9.0 kW	10.0 kW	10.0 kW	15.0 kW	15.0 kW	18.0 kW	18.0 kW
Basic Model	Volts-Hz-Ph	SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>		SPPE <sup>3</sup>	
		MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>	MCA <sup>1</sup>	MFS <sup>2</sup>
MGH3090AA	208/230-60-1	54.5	60	57.6	70	78.5	80	83.7	90	109.7	110	125.3	150
MGH3120AA	208/230-60-1	82.3	90	82.3	90	97.7	110	102.9	110	128.9	150	144.6	150
MGH3090AC	208/230-60-3	38.5	40	38.6	45	50.6	60	53.6	60	68.7	70	77.7	80
MGH3120AC	208/230-60-3	57.5	60	57.5	60	67.3	70	70.3	80	85.4	90	94.4	100
MGH3150AC	208/230-60-3	81.0	90	81.0	90	81.0	90	82.1	90	97.1	110	106.1	110
MGH3180AC	208/230-60-3	100.4	110	100.4	110	100.4	110	100.4	110	112.0	125	121.0	125
MGH3090AD	460-60-3	21.4	25	21.4	25	26.4	30	27.9	30	35.4	40	39.9	40
MGH3120AD	460-60-3	28.5	30	28.5	30	33.4	35	34.9	35	42.4	45	46.9	50
MGH3150AD	460-60-3	35.0	35	35.0	35	36.6	40	38.1	40	45.6	50	50.1	60
MGH3180AD	460-60-3	47.7	50	47.7	50	47.7	50	47.7	50	54.6	60	59.1	60
MGH3090AZ	575-60-3	15.5	20	15.8	20	20.8	25	22.0	25	28.3	30	32.1	35
MGH3120AZ	575-60-3	23.7	25	23.7	25	27.7	30	29.0	30	35.3	40	39.0	40
MGH3150AZ	575-60-3	28.7	30	28.7	30	30.2	35	31.5	35	37.8	40	41.5	45
MGH3180AZ	575-60-3	36.9	40	36.9	40	36.9	40	37.7	40	43.9	45	47.7	50

<sup>1</sup>MCA = Minimum Circuit Ampacity (Wiring Size Amps)      <sup>2</sup>MFS = Maximum Fuse or HACR Breaker Size      <sup>3</sup>SPPE = Single Point Power Entry  
MCA & MFS are calculated at 230 volts on the "A" & "C" models and 460v on the "D" models. This chart should only be used as a guideline for estimating conductor size and overcurrent protection. For the requirements of specific units, always refer to the data label on the unit.

- MFS (Maximum Fuses Size) value listed is the maximum value as per UL 60335-2-40 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Overcurrent Protective Device (Circuit Breaker) in the models may be lower than the maximum UL 60335-2-40 allowable MOCP value, but still above the UL 60335-2-40 minimum calculated value or Minimum Circuit Ampacity (MCA) listed.
- The end user shall size conductors based on the Single Point Power Entry (SPPE) - Minimum Circuit Ampacity. The service circuit breaker shall not be sized less than the minimum circuit ampacity associated to Single Point Power Entry value provided. The service circuit breaker shall also not be sized greater than the Maximum Fuse size associated to the Single Point Power Entry Value Provided.
- While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes

## Unit Load Amps

Basic Model	Volts-Hz-Ph	CURRENT AMPS		LOAD OF RESISTIVE HEATING - ELEMENTS ONLY (AMPS) (1) ALL HEATING ELEMENTS ARE ON A SEPARATE CIRCUIT					TOTAL MAXIMUM HEATING AMPS INCLUDES AMPS FROM MOTOR(S) THAT ARE LOCATED ON AN ELECTRICAL CIRCUIT THAT DOES NOT HAVE HEATERS				
		AC <sup>1</sup>	IBM <sup>2</sup>	5 kW	9 kW	10 kW	15 kW	18 kW	5 kW	9 kW	10 kW	15 kW	18 kW
MGH3090AA	208/230-60-1	45.3	3.3	20.8	37.5	41.7	62.5	75.0	24.1	40.8	45.0	65.8	78.3
MGH3120AA	208/230-60-1	69.7	6.7	20.8	37.5	41.7	62.5	75.0	27.5	44.2	48.4	69.2	81.7
MGH3090AC	208/230-60-3	32.5	3.3	12.0	21.7	24.1	36.1	43.3	15.3	25.0	27.4	39.4	46.6
MGH3120AC	208/230-60-3	50.6	10.4	12.0	21.7	24.1	36.1	43.3	22.4	32.1	34.5	46.5	53.7
MGH3150AC	208/230-60-3	69.4	10.4	12.0	21.7	24.1	36.1	43.3	22.4	32.1	34.5	46.5	53.7
MGH3180AC	208/230-60-3	87.0	10.4	12.0	21.7	24.1	36.1	43.3	22.4	32.1	34.5	46.5	53.7
MGH3090AD	460-60-3	18.0	1.7	6.0	10.8	12.0	18.0	21.7	7.7	12.5	13.7	19.7	23.3
MGH3120AD	460-60-3	25.0	5.2	6.0	10.8	12.0	18.0	21.7	11.2	16.0	17.2	23.2	26.9
MGH3150AD	460-60-3	30.2	5.2	6.0	10.8	12.0	18.0	21.7	11.2	16.0	17.2	23.2	26.9
MGH3180AD	460-60-3	41.4	5.2	6.0	10.8	12.0	18.0	21.7	11.2	16.0	17.2	23.2	26.9
MGH3090AZ	575-60-3	13.1	1.3	5.0	9.0	10.0	15.1	18.1	6.3	10.4	11.4	16.4	19.4
MGH3120AZ	575-60-3	20.8	4.2	5.0	9.0	10.0	15.1	18.1	9.2	13.2	14.2	19.2	22.2
MGH3150AZ	575-60-3	24.8	4.2	5.0	9.0	10.0	15.1	18.1	9.2	13.2	14.2	19.2	22.2
MGH3180AZ	575-60-3	32.2	4.2	5.0	9.0	10.0	15.1	18.1	9.2	13.2	14.2	19.2	22.2

<sup>1</sup>AC = Air Conditioner Unit Amps      <sup>2</sup>IBM = Indoor Blower Motor  
Heating kW is rated at 240 volts on the ACA & ACC models. Derate heater output by 25% for operation at 208 volts. Heating kW is rated at 480 volts on the ACD models. Total heating and cooling amps includes all motors. Three phase models contain single phase motor loads. Loads are not equally balanced on each phase and values shown are maximum phase loads.

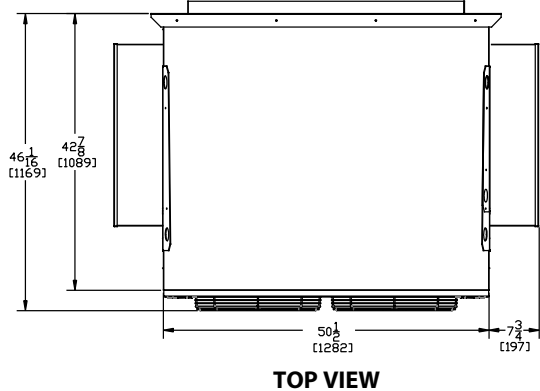
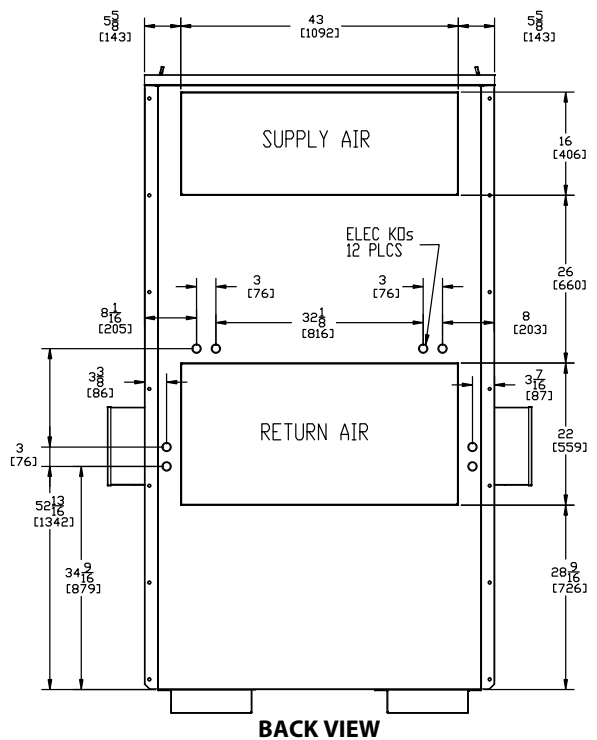
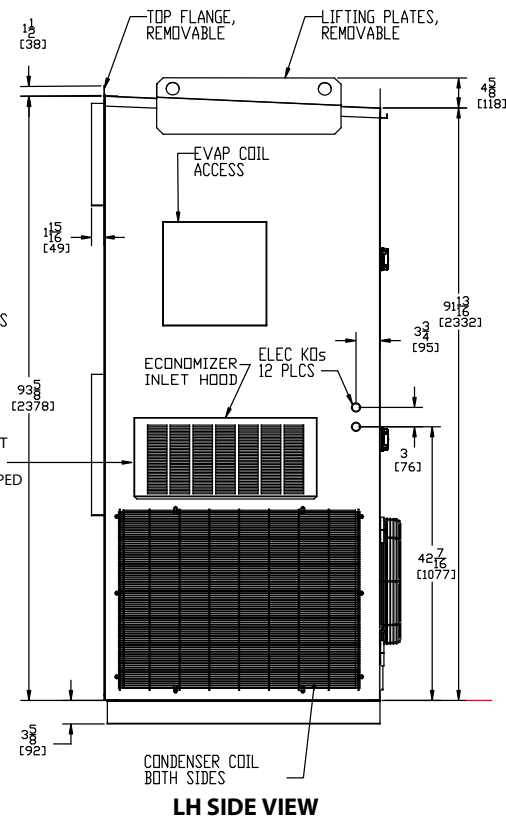
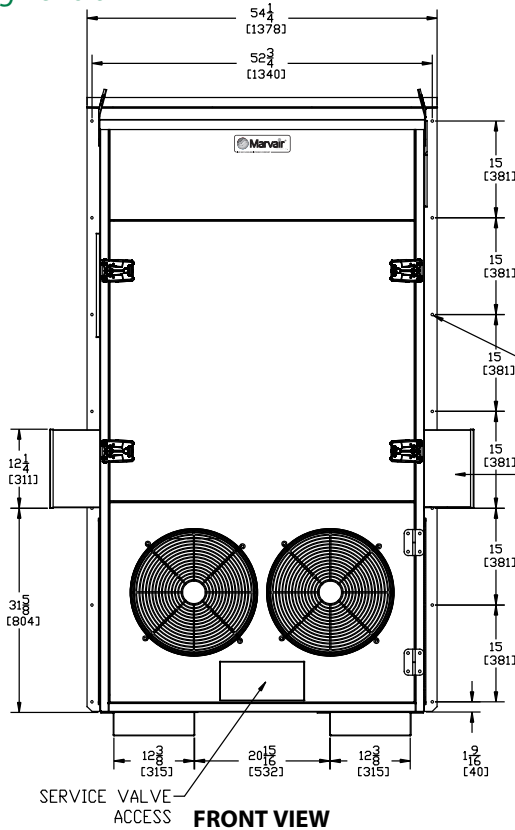
# Marvair Wall Mount Air Conditioner Dual 2-Stage Compressors Performance Data

## 5-Stage Control Scheme IEER Ratings

Model	MGH3090A			MGH3120A			MGH3150A			MGH3180A		
Outdoor Temp (°F)	Capacity (BTUH)	Standard EER	Adjusted EER	Capacity (BTUH)	Standard EER	Adjusted EER	Capacity (BTUH)	Standard EER	Adjusted EER	Capacity (BTUH)	Standard EER	Adjusted EER
<b>95</b>	88,814	11.2	11.2	118,698	11.6	11.6	144,894	10.2	10.2	180,301	9.8	9.8
<b>82.5</b>	66,995	14.2	14.2	89,681	14.1	14.1	102,604	13.3	13.4	131,928	12.9	12.9
							128,718	13.2	12.7			
<b>72</b>	36,313	10.4	10.7	48,610	10.4	10.8	58,417	9.8	10.2	132,924	13.3	12.4
	67,485	14.7	13.7	90,172	14.4	13.4	103,318	13.3	12.8	74,968	10.2	9.5
<b>67</b>	29,800	11	10.5	39,746	10.3	9.4	45,529	10	9	59,353	10.2	9.8
	<b>Total IEER</b>	<b>11.8</b>		<b>Total IEER</b>	<b>11.5</b>		<b>Total IEER</b>	<b>10.9</b>		<b>Total IEER</b>	<b>11.1</b>	

# Dimensional Data - MGH3090A Air Conditioners - Top Supply with or without Economizer

Engineering Revision "A"



## Weight (pounds/kg)

## Filter Size

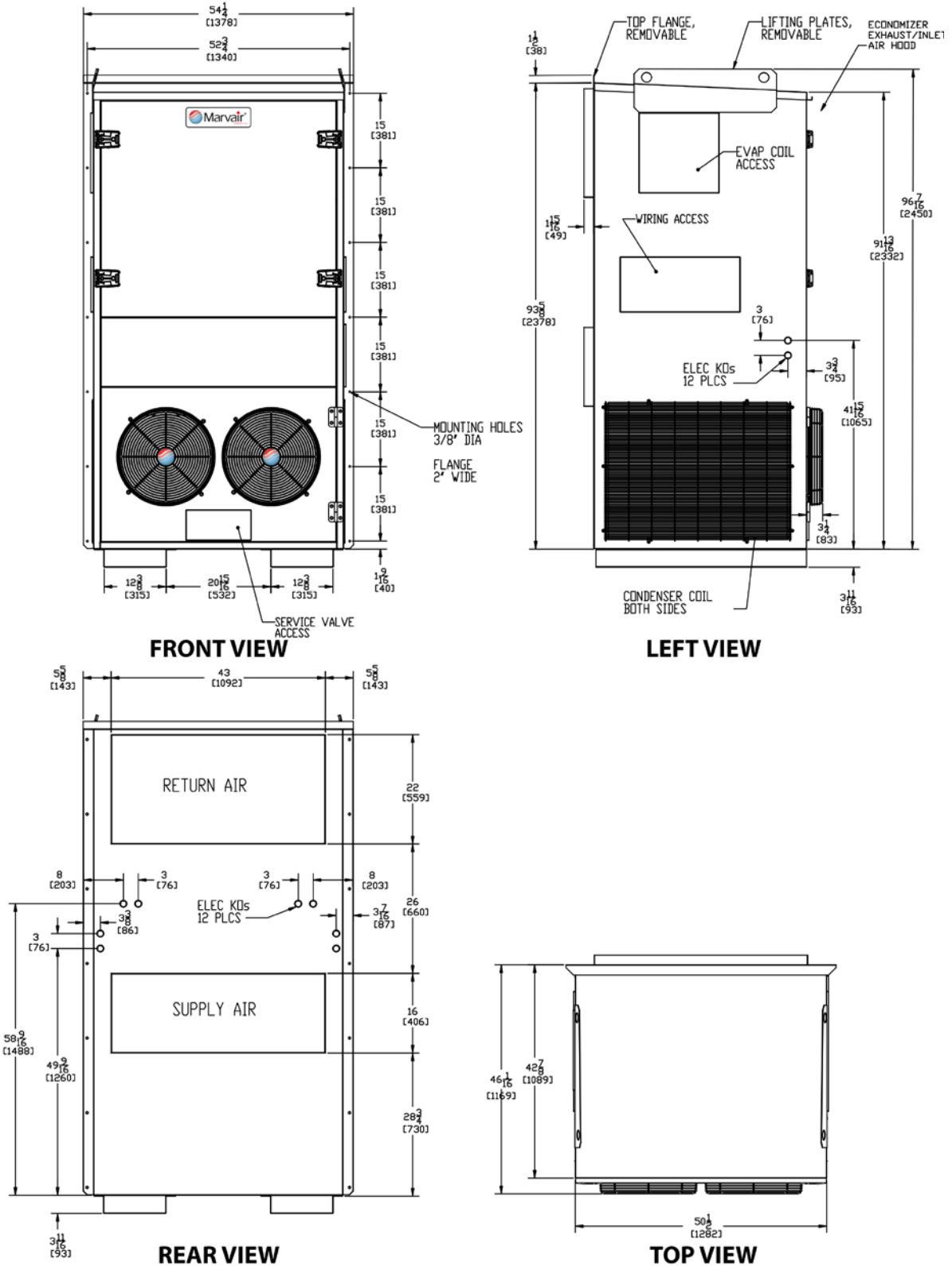
	LBS/KGS
<b>MGH3090A Top Supply</b>	1160/527.3

MGH3090A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
Exterior Access Return Air Filter	25" x 16" x 2"	635 x 406 x 51	80137	3	8 (STD)
Economizer Pre-filter (Economizer Only)	12" X 26" X 1"	305 x 660 x 25	92526	2	N/A

**Note:** All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data - MGH3090A Air Conditioners - Center Supply/Top Return

Engineering Revision "A"



## Weight (pounds/kg)

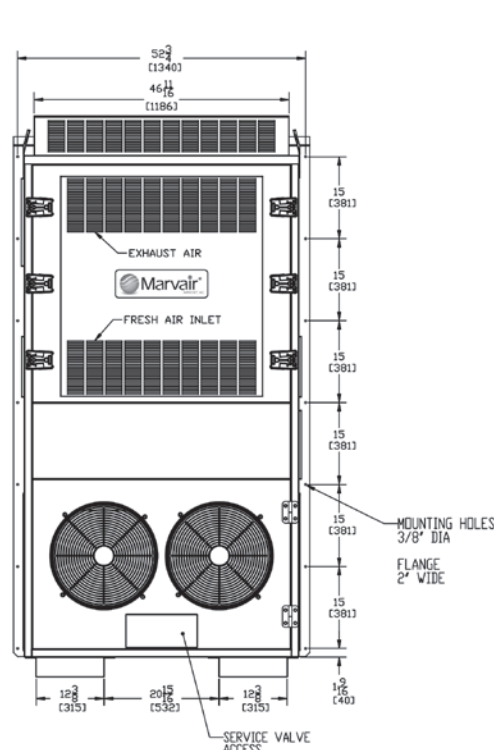
## Filter Size

	LBS/KGS	MGH3090A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
MGH3090A Center Supply/ Top Return	1160/527.3	Interior Access Return Air Filter	15" x 20" x 2"	381 x 508 x 51	92365	3	8 (STD)
		Mist Eliminator Filter	15 5/8" x 25 5/8" x 2"	397 x 625 x 51	92971	3	N/A

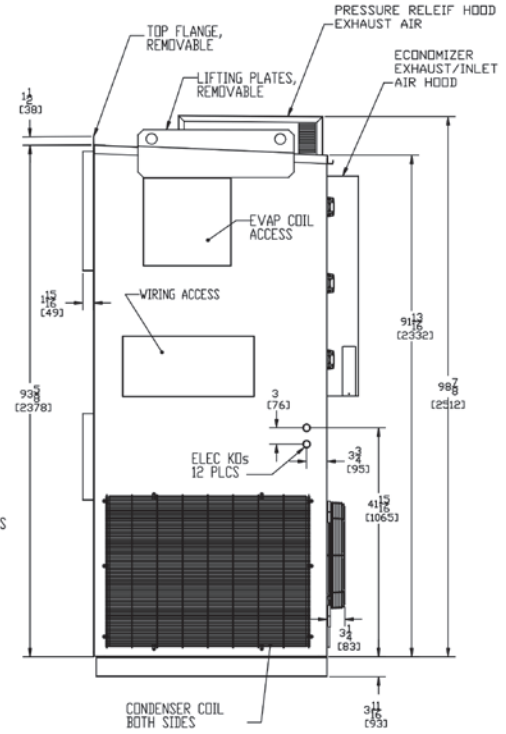
Note: All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data - MGH3090A Air Conditioners -Center Supply/Top Return w/Economizer

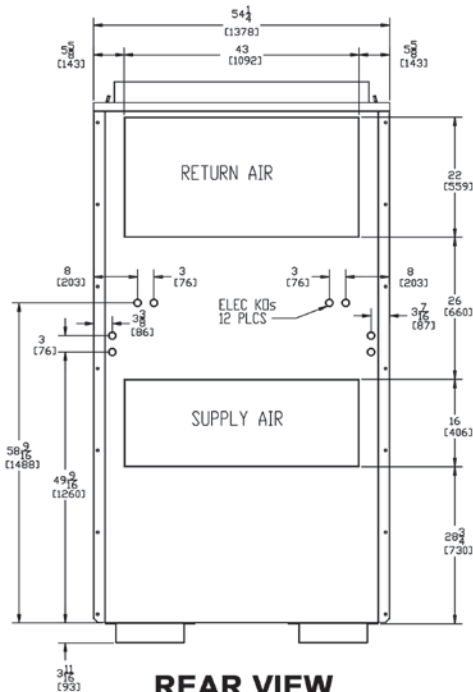
Engineering Revision "A"



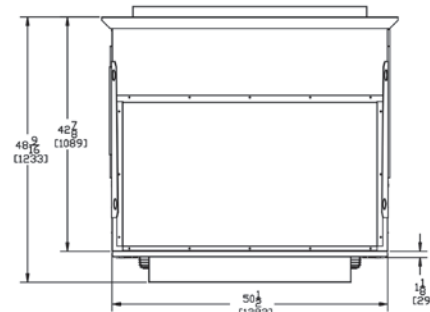
**FRONT VIEW**



**LEFT VIEW**



**REAR VIEW**



**TOP VIEW**

## Weight (pounds/kilograms)

	LBS/KGS
MGH3090A Center Supply/Top Return with Economizer	1210/550

## Filter Size

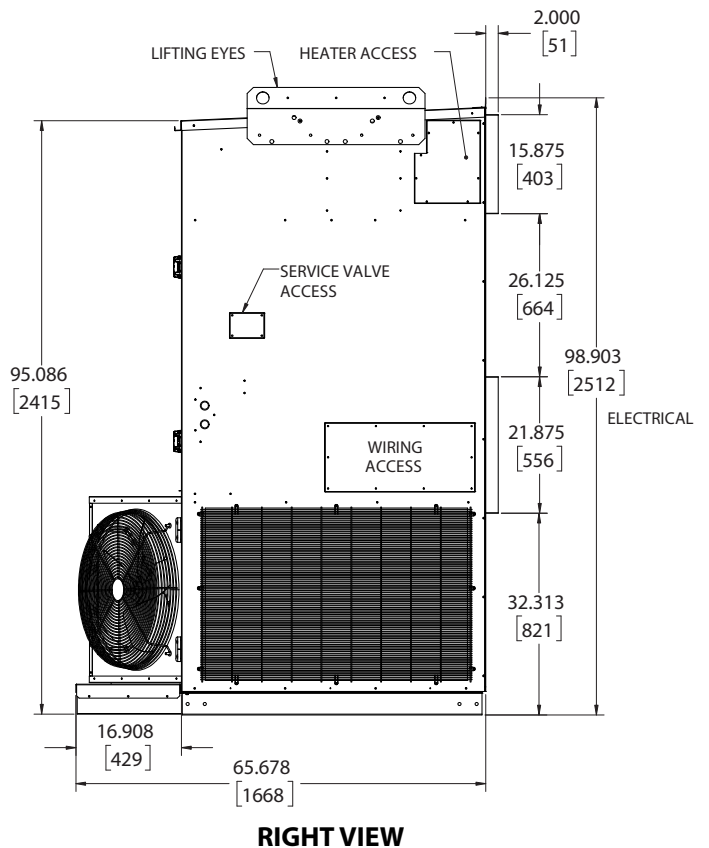
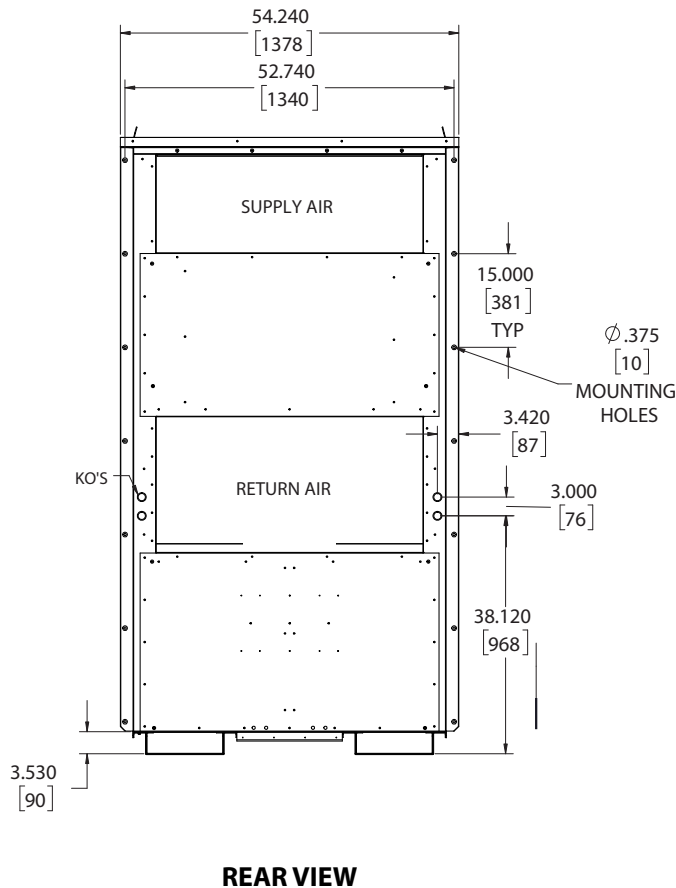
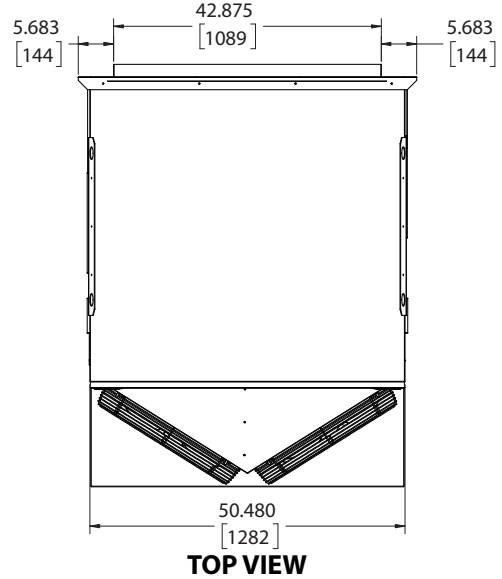
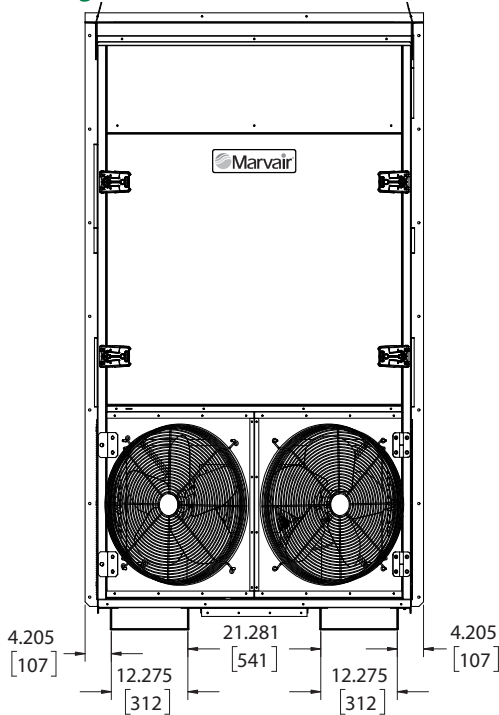
MGH3090A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
Interior Access Return Air Filter	15" X 15" X 1"	381 x 381 x 25	93584	3	8 (STD)
Mist Eliminator Filter	15 5/8" x 25 5/8" x 2"	397 x 625 x 51	92971	3	N/A
Economizer Pre-filter	37" X 9 1/4" X 5/16"	940 x 235 x 8	93283	1	N/A

**Note:** All overall outside dimensions are given with +/- .250" (6mm) tolerance.



# Dimensional Data - MGH3120A/3150A Air Conditioners - Top Supply

Engineering Revision "B"



## Weight (pounds/kgs) Filter Size

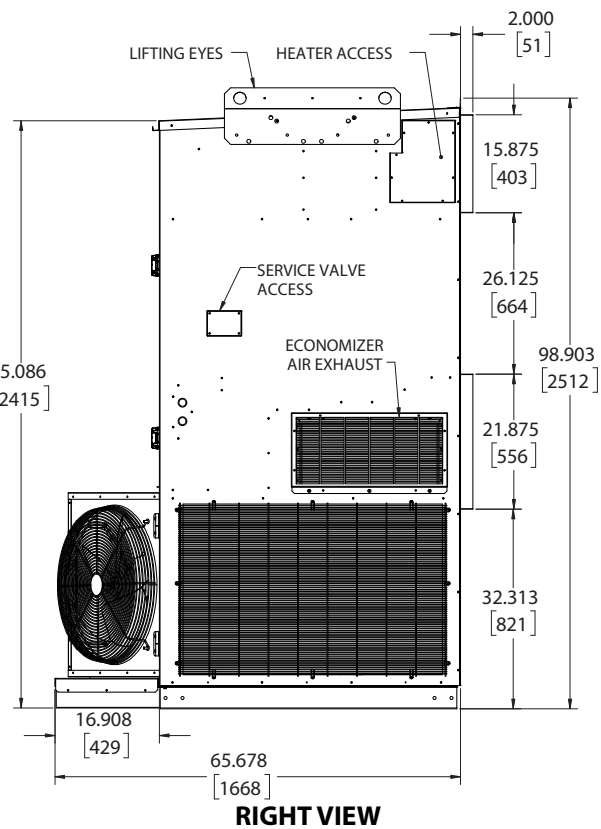
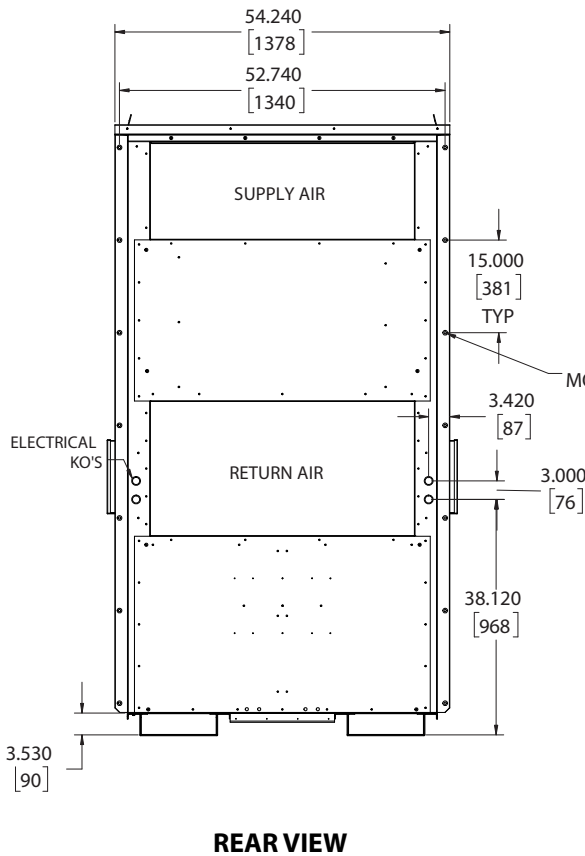
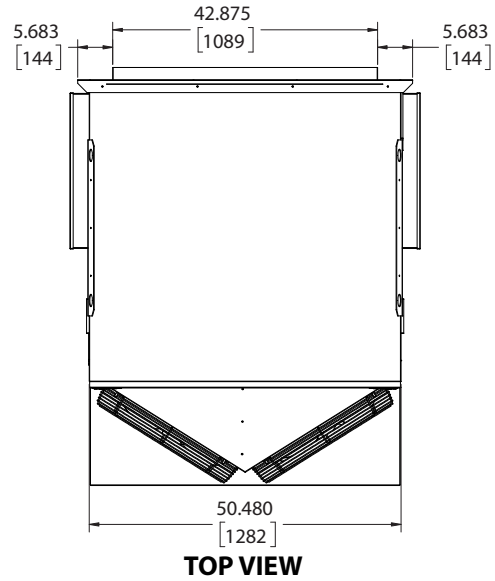
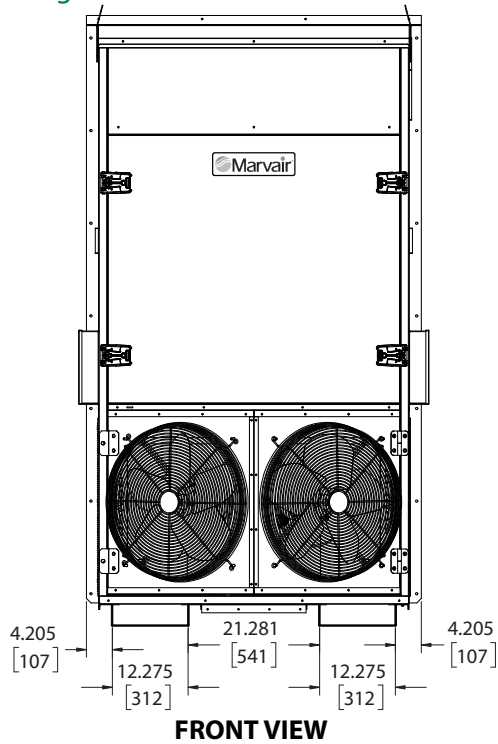
	LBS/KGS
MGH3120A/3150A	1160/527.3

Note: All overall outside dimensions are given with +/- .250" (6mm) tolerance.

MGH3120A/3150A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
Exterior Access Return Air Filter	18" x 24" x 2"	457 x 607 x 51	81257	4	8 (STD)
Interior Access Return Air Filter	15" x 20" x 2"	381 x 508 x 51	92365	3	8 (STD)
For Optional Fresh Air Hood, #K/04657	11" x 22" x 1"	279 x 559 x 25	80119	2	N/A

# Dimensional Data - MGH3120A/3150A Air Conditioners - with Economizer

Engineering Revision "B"



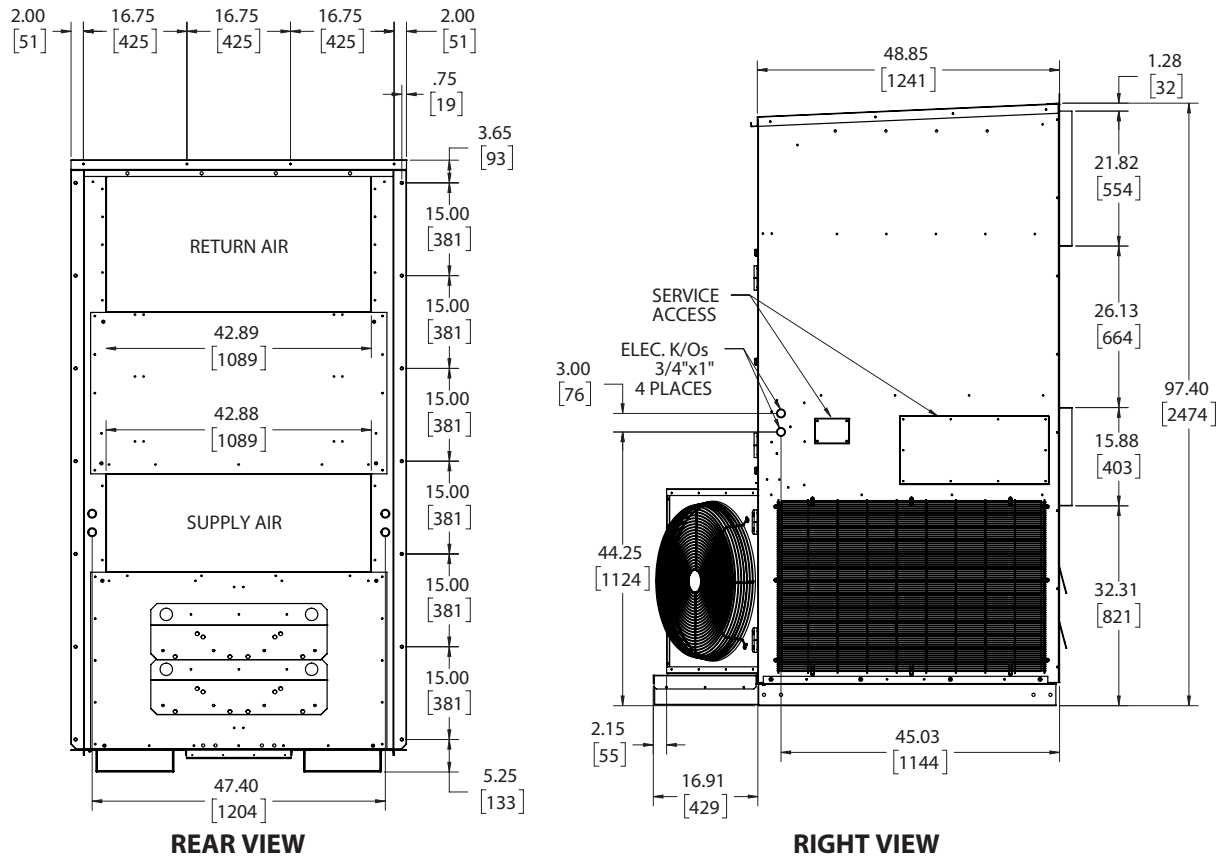
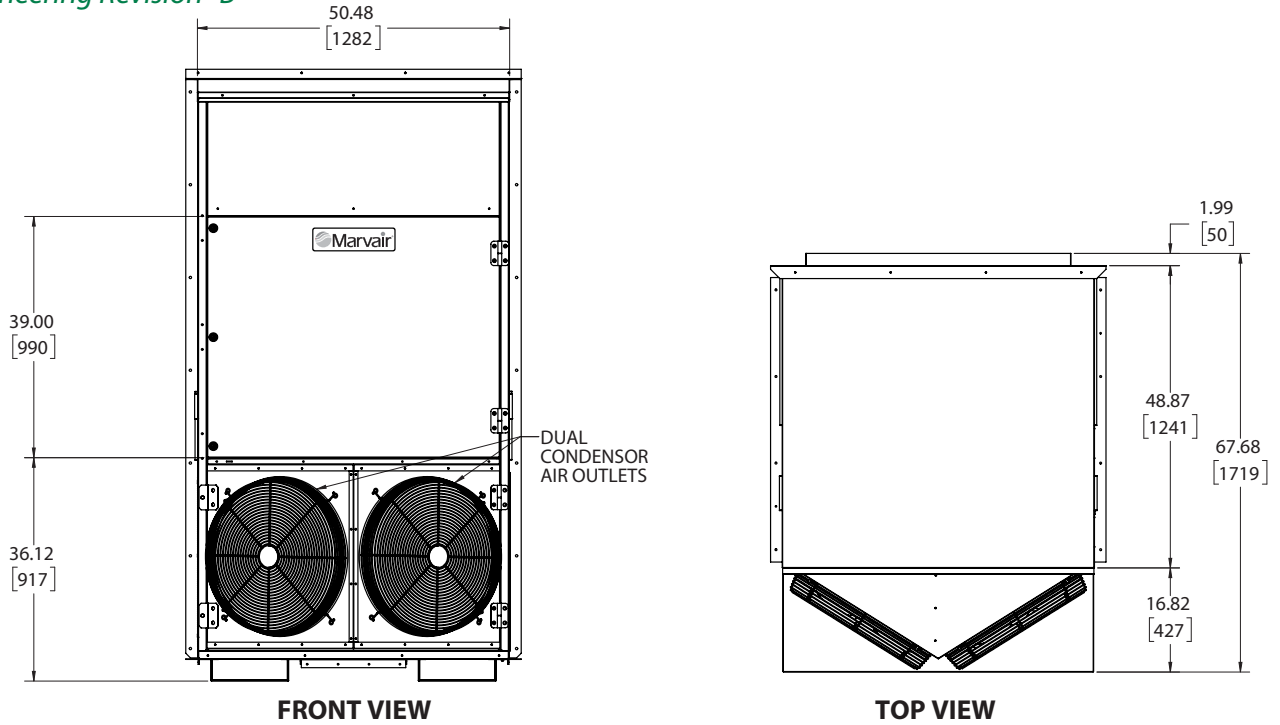
## Weight (pounds/kgs) Filter Size

	LBS/KGS	MGH3120A/3150A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
MGH3120A/3150A with Economizer	1210/550	Exterior Access Return Air Filter	25" x 16" x 2"	635 x 406 x 51	80137	3	8 (STD)
		Interior Access Return Air Filter	15" x 20" x 2"	381 x 508 x 51	92365	3	8 (STD)

Note: All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data - MGH3120A/3150A Air Conditioners" - Center Supply/Top Return

Engineering Revision "B"



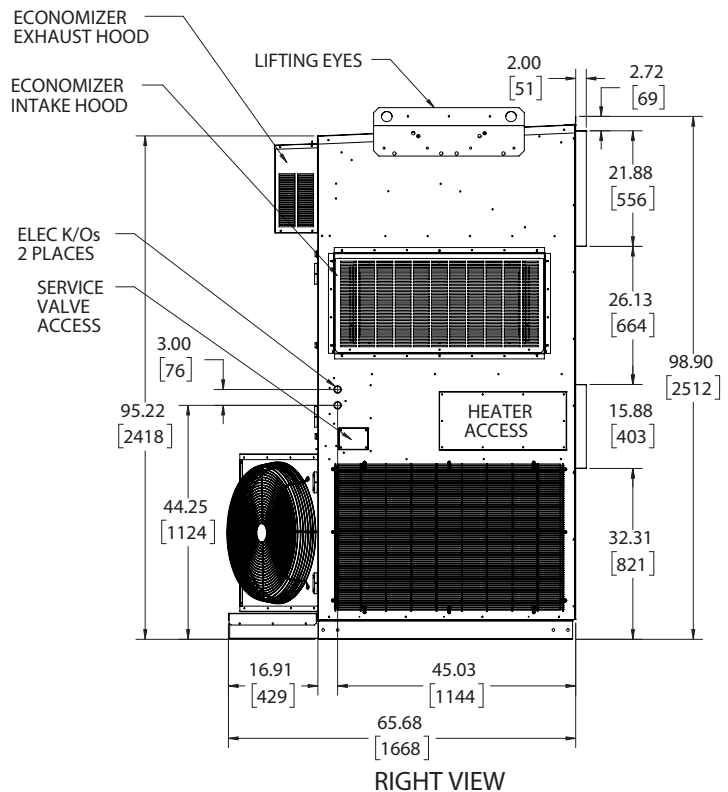
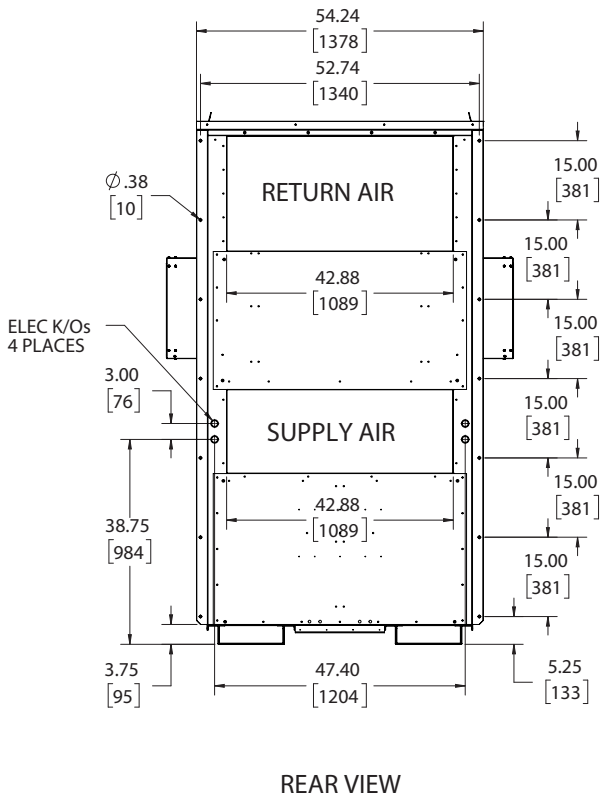
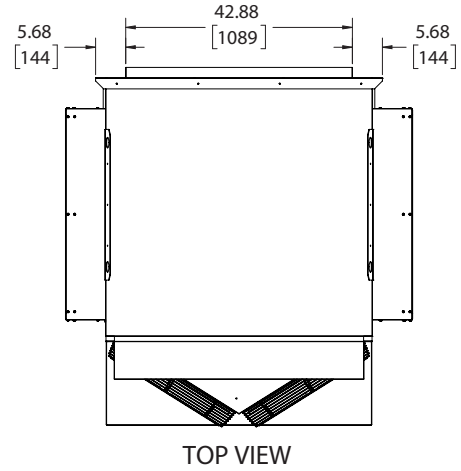
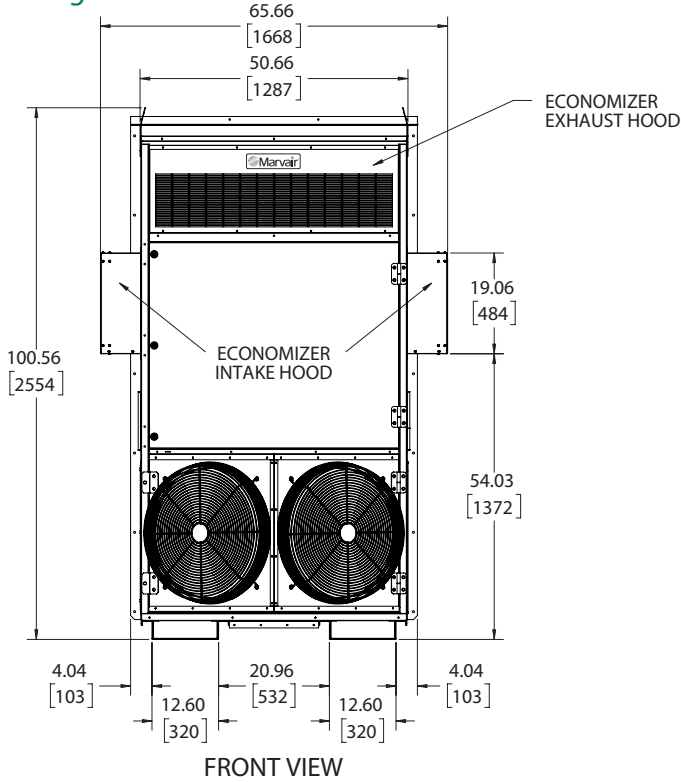
## Weight (pounds/kgs) Filter Size

	LBS/KGS	MGH3120A/3150A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
MGH3120A/3150A	1160/527.3						
		Exterior Access Return Air Filter (Optional)	18" x 24" x 2"	457 x 607 x 51	81257	4	8 (STD)
		Interior Access Return Air Filter	15" x 20" x 2"	381 x 508 x 51	92365	3	8 (STD)

**Note:** All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data - MGH3120A/3150A Air Conditioners - Center Supply/Top Return w/Econ

Engineering Revision "B"



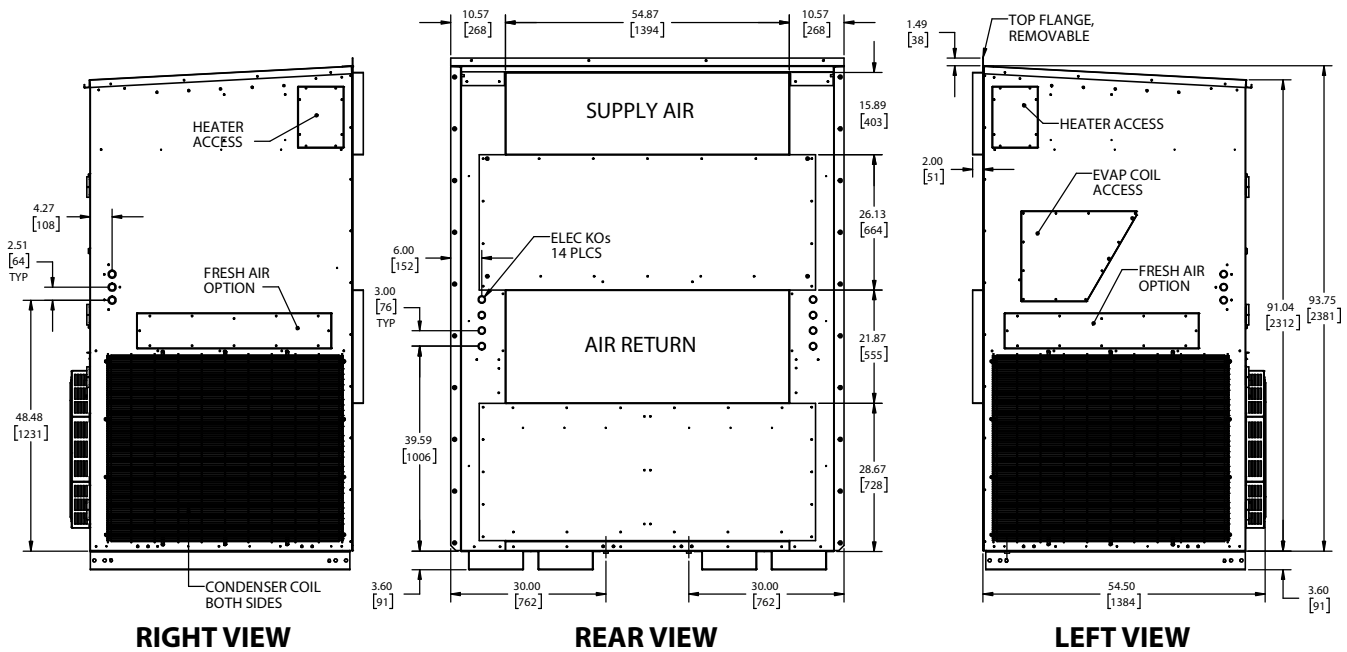
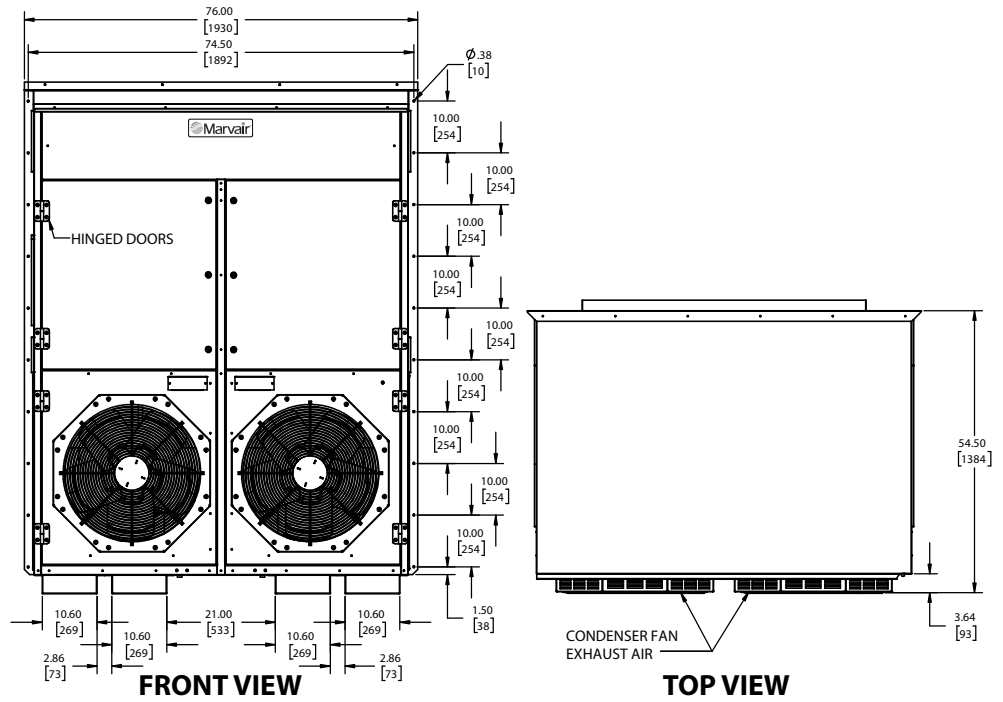
## Weight (pounds/kgs) Filter Size

	LBS/KGS	MGH3120A/3150A Center Supply/Top Return w/Economizer	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
MGH3120A	1360/617	Exterior Access Return Air Filter	18" x 24" x 2"	457 x 607 x 51	81257	4	8 (STD)
MGH3150A		Economizer Pre-filter	14" x 32" x 1"	356 x 813 x 25	93187	2	N/A

**Note:** All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data: MGH3180A - Top Supply

Engineering Revision "B"



## Weight

	LBS/KGS
MGH3180A	2523/1148



MGH3180A units require additional support if wall mounted. The mounting flanges alone are not adequate.

## Filter Size

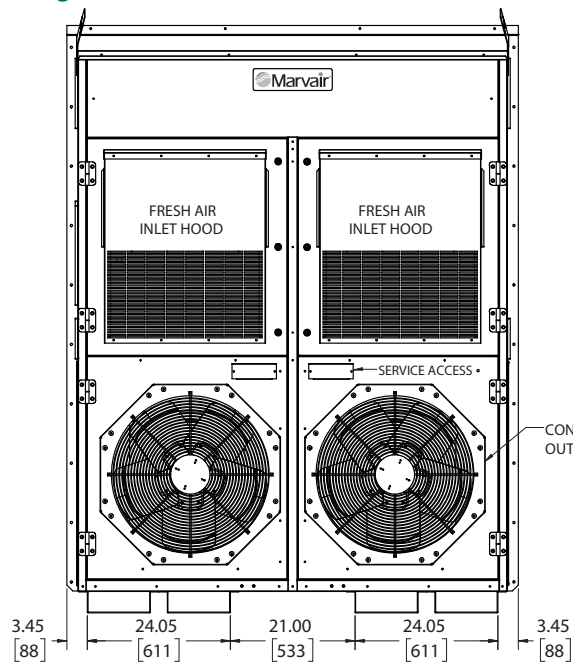
MGH3180A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
<sup>1</sup> Exterior Access Return Air Filter	25" x 16" x 2"	635 x 406 x 51	80137	4	8 (STD)
<sup>2</sup> Interior Access Return Air Filter	24" x 18" x 2"	610 x 457 x 51	81257	3	8 (STD)

<sup>1</sup>Standard Configuration <sup>2</sup>Optional (can not be combined)

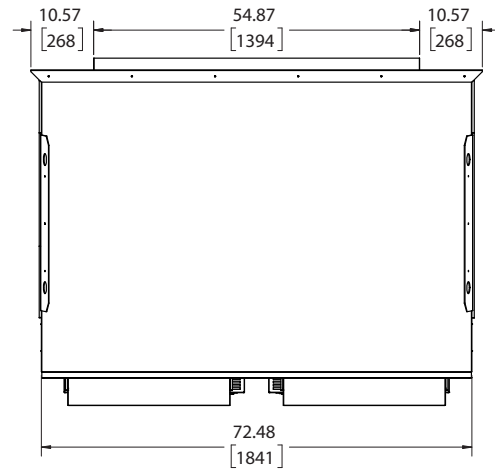
**Note:** All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data: MGH3180A - Top Supply w/Economizer

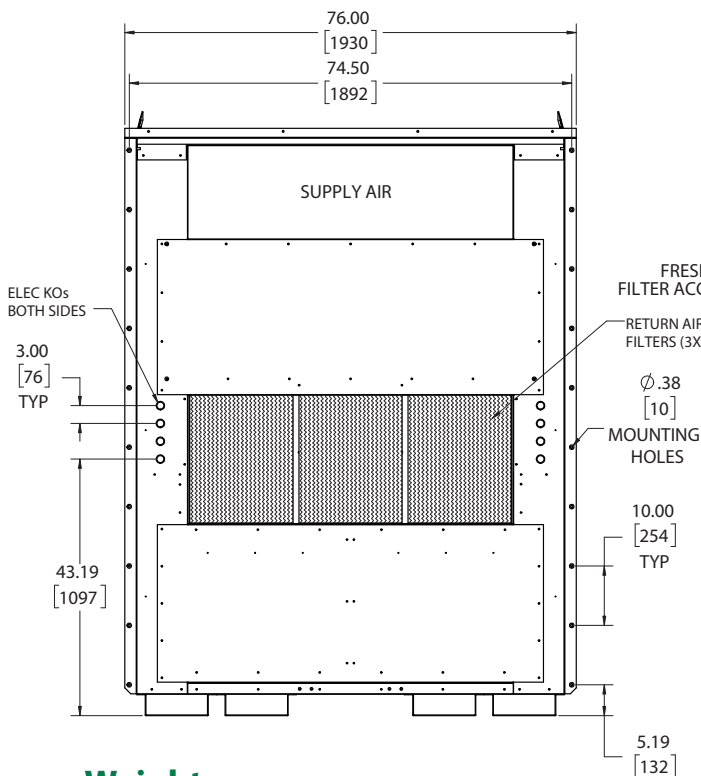
Engineering Revision "B"



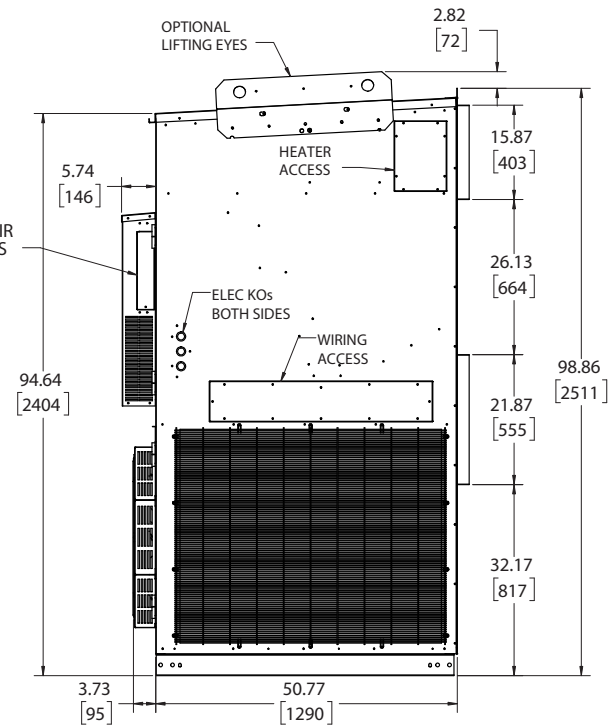
FRONT VIEW



TOP VIEW



REAR VIEW



RIGHT VIEW

## Weight

	LBS/KGS
MGH3180A	2663/1208



MGH3180A units require additional support if wall mounted. The mounting flanges alone are not adequate.

## Filter Size

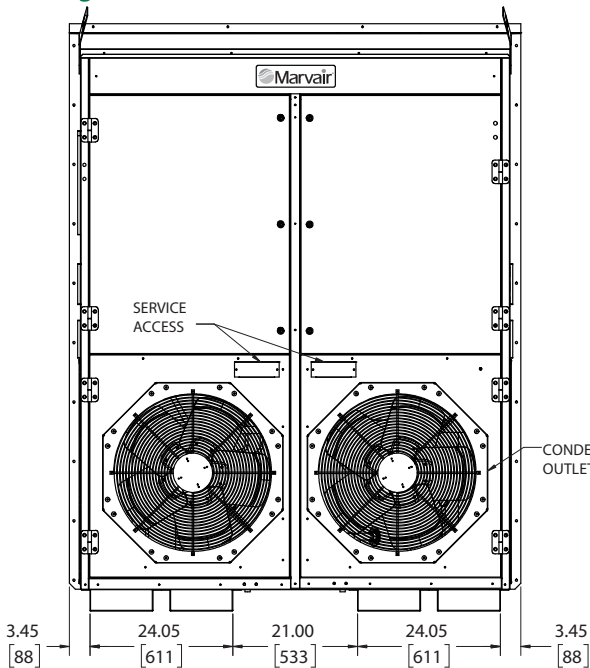
MGH3180A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
<sup>1</sup> Exterior Access Return Air Filter	25" x 16" x 2"	635 x 406 x 51	80137	4	8 (STD)
Fresh Air Hood Pre-Filter	26" x 12" x 1"	660 x 305 x 25	92526	2	N/A

<sup>1</sup>Standard Configuration

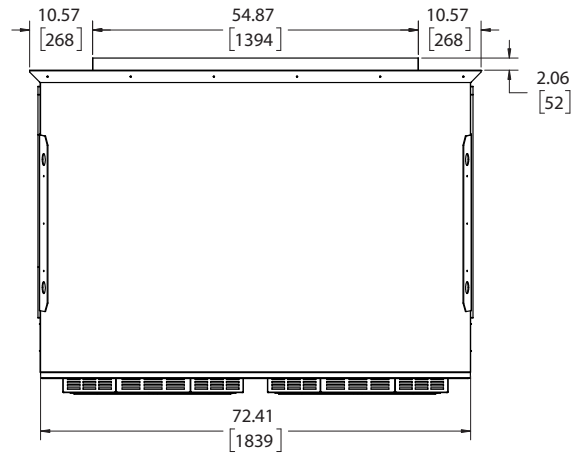
**Note:** All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data: MGH3180A - Center Supply/Top Return

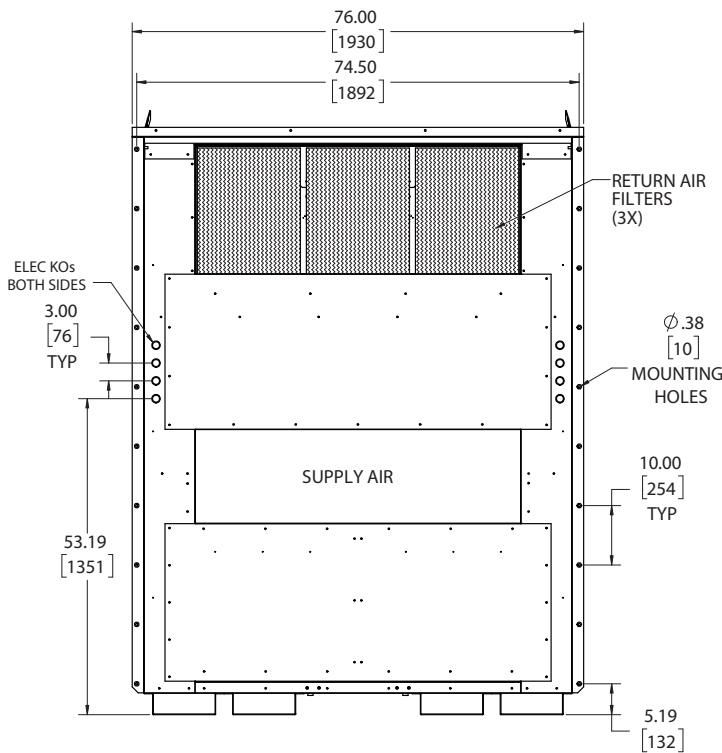
Engineering Revision "B"



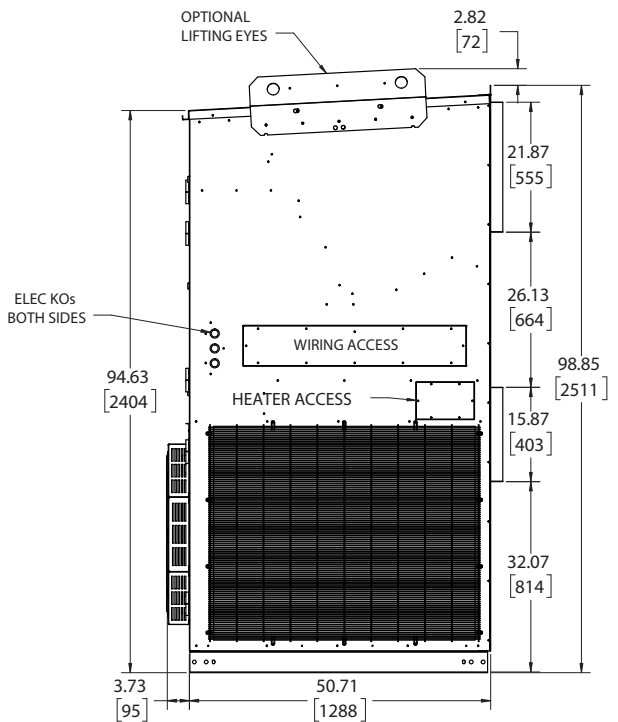
FRONT VIEW



TOP VIEW



REAR VIEW



RIGHT VIEW

## Weight

	LBS/KGS
MGH3180A	2307/1049



MGH3180A units require additional support if wall mounted. The mounting flanges alone are not adequate.

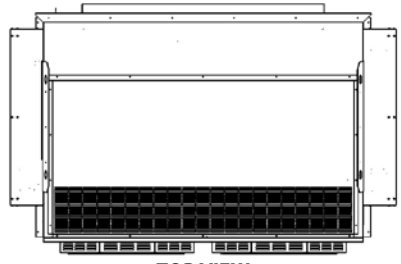
## Filter Size

MGH3180A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
Interior Access Return Air Filter	24" x 18" x 2"	610 x 457 x 51	81257	4	8 (STD)
Mist Eliminator Filter	15 5/8" x 25 5/8" x 2"	397 x 625 x 51	92971	1	N/A

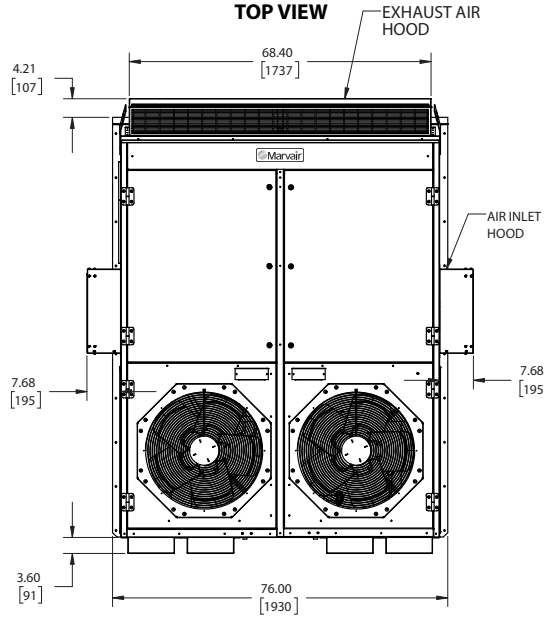
Note: All overall outside dimensions are given with +/- .250" (6mm) tolerance.

# Dimensional Data: MGH3180A - Center Supply/Top Return w/Economizer

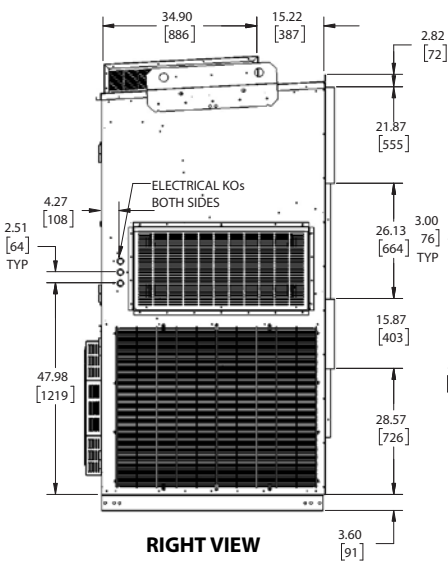
Engineering Revision "B"



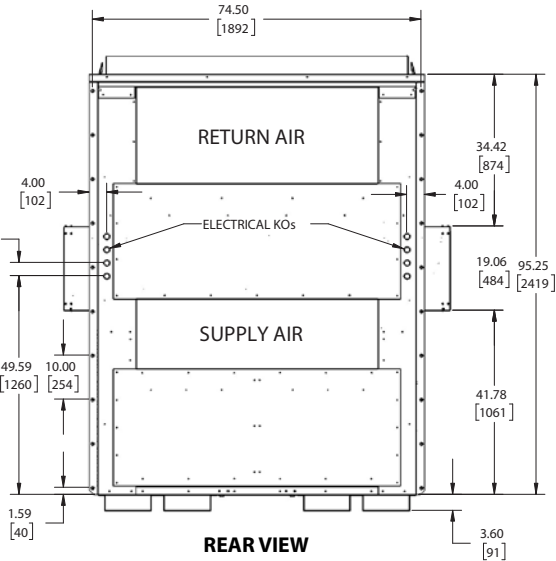
TOP VIEW



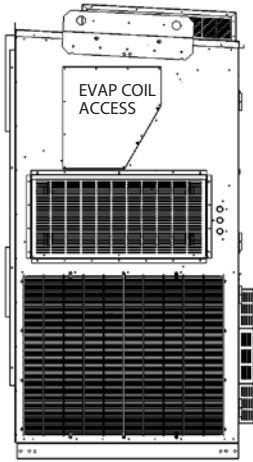
FRONT VIEW



RIGHT VIEW



REAR VIEW



LEFT VIEW

## Weight

	LBS/KGS
MGH3180A	2345/1063



MGH3180A units require additional support if wall mounted. The mounting flanges alone are not adequate.

## Filter Size

MGH3180A	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
Interior Access Return Air Filter	18" x 24" x 2"	457 x 610 x 51	81257	3	N/A
Mist Eliminator Filter	15 5/8" x 24 5/8" x 2"	397 x 625 x 51	92971	4	N/A
Fresh Air Hood Pre-filters	14" x 32" x 1"	356 x 813 x 25	93187	2	N/A

Note: All overall outside dimensions are given with +/- .250" (6mm) tolerance.



# Notes



Please consult the Marvair® website at [www.marvair.com](http://www.marvair.com) for the latest product literature. Detailed dimensional data is available upon request. A complete warranty statement can be found in each product's Installation/Operation Manual, on our website or by contacting Marvair at 229-273-3636. As part of the Marvair continuous improvement program, specifications are subject to change without notice.



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