

MC Model

Water Source Heat Pump

30 to 60 ton

The MC Model is options rich and provides the FHP product lineup with a large capacity, modular reverse cycle water-to-air unit that performs at a high level.

MC	UP TO	UP TO
MODEL	16.1	5.4
	EER	COP
	WSHP	WSHP



Made in
the U.S.A.



Commercial Sales Brochure
fhp-mfg.com



BOSCH
Invented for life

Option Rich, Large Capacity **MC Model**

This large capacity water-to-air heat pumps offer high efficiency, value added features and multi-levels of capacity with standard features like scroll compressors, variable air volume and 100% outside air capability giving you the flexibility, performance and quiet operation needed to exceed the expectations of your clients.

Quiet Comfort

- ▶ **Heavy-duty Construction** - Proper acoustical considerations are a critical part of every systems design and operation. Multiple scroll compressors, equipment liners, balanced fans, and heavy-duty construction makes the unit inherently quiet
- ▶ **Closed-cell Foam Insulation** (option) - Helps to provide cleaner, fiber-free air and reduces sound transmission
- ▶ **Hot Gas Reheat (HGR)** (option) - Allows for the control of space temperature and humidity levels within conditioned space

Service Friendly

- ▶ **Unit Arrangement** - All units are designed to be serviced from the front of the unit. Schrader valves for the high and low pressure gauges are standard, along with easily accessible electrical box components, allow diagnosing and servicing the unit a simple task. Insulated bulkheads are in all MC Models, separating the compressor section from the blower section, allowing the unit to be serviced during operation

Robust and Durable Construction

- ▶ **G90 Galvanized Steel Cabinet** - Provides strength and corrosion protection against the elements
- ▶ **Cupro-nickel Coaxial Heat Exchanger** (option) - Protects against corrosion when water conditions are of low quality
- ▶ **Scroll Compressors** - Provides durability and ensures that each unit will provide many years of trustworthy performance

Safety

- ▶ **Flow Proving Switch** (option) - Prevents the continued operation of the compressor should the water supply fail
- ▶ **Unit Protection Module (UPM)** - Monitors the unit operation and safety controls that protect the unit
- ▶ **Dual Refrigerant Freeze Sensors** - Monitors if refrigerant temperatures reach freeze limitations and disables unit to protect it
- ▶ **Condensate Overflow Protection** - Continuously monitors the drain pan for high condensate water level, and if this exceeds normal operating levels, the compressor operation is interrupted to protect against drain pan overflow

Quality Design & Efficiency

- ▶ **Boilerless Control** (option) - Disables the compressor and/or activates electric heater should the water temperature drop below set point
- ▶ **Water Side Economizer** (option) - Provides free-cooling without the use of mechanical cooling (compressors)
- ▶ **Hot Water Coils** (option) - Provides preheating or heating while controlling humidity under a wide variation of conditions

Options Designed for any Application

Flexible Installation

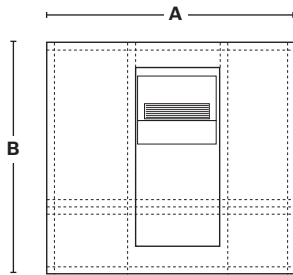
All units are available in two different configurations.

Vertical High Configuration (high-boy): The VH design concept is to provide a unit that will facilitate on site handling and can be installed in locations difficult to access. All units can be broken down into separate sections that can pass through a 36" wide standard

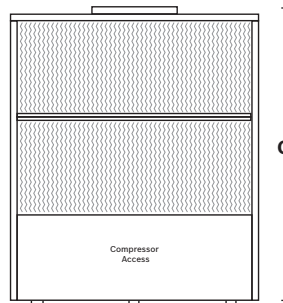
size door or service elevator. The MC360 ships in two sections and can be easily broken down into three separate sections; the fan section, main heating/cooling section and the economizer/filter bank section. The MC480 through MC720 ships in four sections and can be broken into six separate sections, two each as previously mentioned. Very few competitive equipment manufacturers have this capability.

Technical Specifications

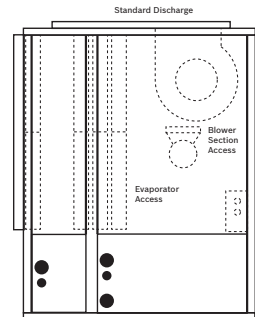
Top View



Rear View



Left Side View



Vertical High Configuration Unit Dimensions

Model	Horizontal Unit Dimensions (in inches)		
	A (width)	B (depth)	C (height)
MC360	69.50	51.63	111.00
MC480	139.00	51.63	111.00
MC600	139.00	51.63	111.00
MC720	139.00	51.63	111.00

Vertical Low Configuration Unit Dimensions

Model	Horizontal Unit Dimensions (in inches)		
	A (width)	B (depth)	C (height)
MC360	69.50	64.75	80.00
MC480	139.00	64.75	80.00
MC600	139.00	64.75	80.00
MC720	139.00	64.75	80.00

NOTES: 1. All dimensions in inches unless otherwise noted. All dimensions within $\pm 0.125"$. Specifications subject to change without notice.
2. Height does not include 1.5" for the lifting support rails.

Performance in Accordance with ARI/ISO 13256-1 ISO corrected (with fan & pump power)						
Model	GPM	CFM	Water Loop Heat Pump			
			Cooling 86° F		Heating 68° F	
			CAP	EER	CAP	COP
MC360	90	12,000	395,246	13.1	475,212	4.7
MC480	120	16,000	555,796	16.1	622,608	5.2
MC600	150	20,000	642,387	15.4	751,701	5.4
MC720	180	24,000	790,649	13.1	950,439	4.7

NOTE: The performance data results alter depending on application design; use Bosch Selection Tools software for specific performance data per the application, selection and specifications. <http://bst.fhp-mfg.com/eRep/>

Vertical Low Configuration (low-boy): The VL is designed for those applications where there is a restriction in the height of the unit. In this unit the blower is dropped into the main coil section reducing the unit's overall height and increasing unit depth. The MC360 ships in one section and can be separated into two sections, the main refrigeration and blower sections and the filter/economizer section. Unit sizes MC480 through MC720 ships in two sections and can be separated into four sections for transportation and access into the plant room.

DDC Controls

The optional factory mounted DDC Controller is preprogrammed and installed on the unit with the Unit Protection Module (UPM) to be job site ready. The unit will operate in a 100% stand-alone control mode or connect to a Building Automation System (BAS) using open protocols BACnet™, Modbus, N2 or LonWorks® (with an optional Lon card).

DDC Room and Zone Sensors

To complement the controller, Bosch Thermotechnology Corp. offers a line of intelligent FHP space sensors, which provide precision measurement and communication capabilities in an attractive low profile enclosure.

Additional Features

- ▶ 100VA transformer
- ▶ Belt drive, inverter duty fan motor
 - HP 7.5, 10, 15, 20
 - Up to sixteen different belt drives selectable
- ▶ TXV
- ▶ Reverse cycle

Additional Options

- ▶ VFD controlled VAV
- ▶ 100% outside air capability
- ▶ Hot gas bypass
- ▶ Relays - EMS, blower monitor, compressor monitor, and pump/valve

Electrical Data

Belt Drive Motor

Model	Voltage Code	Voltage/ Ph/Hz	Voltage Min/ Max	Compressor			Motor HP	Total Unit w/Belt Drive Motor			
				Quantity	RLA (each)	LRA (each)		Motor Quantity	FLA	Min Circuit Amps	Max Fuse HACR
MC360	3	208-230/3/60	197/253	2	55.8	340	7.5	1	19.4	145.0	200
	3	208-230/3/60	197/253	2	55.8	340	10	1	25.8	151.4	200
	3	208-230/3/60	197/253	2	55.8	340	15	1	38.6	164.2	200
	3	208-230/3/60	197/253	2	55.8	340	20	1	49.6	175.2	225
	4	460/3/60	414/506	2	26.9	173	7.5	1	9.7	70.2	90
	4	460/3/60	414/506	2	26.9	173	10	1	12.9	73.4	100
	4	460/3/60	414/506	2	26.9	173	15	1	19.3	79.8	100
	4	460/3/60	414/506	2	26.9	173	20	1	24.8	85.3	110
	5	575/3/60	518/632	2	23.7	132	7.5	1	7.8	61.1	80
	5	575/3/60	518/632	2	23.7	132	10	1	10.3	63.6	80
MC480	3	208-230/3/60	197/253	4	33.3	239	7.5	2	19.4	180.3	200
	3	208-230/3/60	197/253	4	33.3	239	10	2	25.8	193.1	225
	3	208-230/3/60	197/253	4	33.3	239	15	2	38.6	218.7	250
	4	460/3/60	414/506	4	17.9	125	7.5	2	9.7	95.5	110
	4	460/3/60	414/506	4	17.9	125	10	2	12.9	101.9	110
	4	460/3/60	414/506	4	17.9	125	15	2	19.3	114.7	125
	5	575/3/60	518/632	4	12.8	80	7.5	2	7.8	70.0	80
	5	575/3/60	518/632	4	12.8	80	10	2	10.3	75.0	80
	5	575/3/60	518/632	4	12.8	80	15	2	15.4	85.2	90
	5	575/3/60	518/632	4	12.8	80	20	2	19.8	90.0	90
MC600	3	208-230/3/60	197/253	4	48.1	245	7.5	2	19.4	243.2	250
	3	208-230/3/60	197/253	4	48.1	245	10	2	25.8	256.0	300
	3	208-230/3/60	197/253	4	48.1	245	15	2	38.6	281.6	300
	3	208-230/3/60	197/253	4	48.1	245	20	2	49.6	303.6	350
	4	460/3/60	414/506	4	18.6	125	7.5	2	9.7	98.5	110
	4	460/3/60	414/506	4	18.6	125	10	2	12.9	104.9	110
	4	460/3/60	414/506	4	18.6	125	15	2	19.3	117.7	125
	4	460/3/60	414/506	4	18.6	125	20	2	24.8	128.7	150
	5	575/3/60	518/632	4	14.7	100	7.5	2	7.8	78.1	90
	5	575/3/60	518/632	4	14.7	100	10	2	10.3	83.1	90
MC720	3	208-230/3/60	197/253	4	55.8	340	7.5	2	19.4	276.0	300
	3	208-230/3/60	197/253	4	55.8	340	10	2	25.8	288.8	300
	3	208-230/3/60	197/253	4	55.8	340	15	2	38.6	314.4	350
	3	208-230/3/60	197/253	4	55.8	340	20	2	49.6	336.4	350
	4	460/3/60	414/506	4	26.9	173	7.5	2	9.7	133.7	150
	4	460/3/60	414/506	4	26.9	173	10.0	2	12.9	140.1	150
	4	460/3/60	414/506	4	26.9	173	15.0	2	19.3	152.9	175
	4	460/3/60	414/506	4	26.9	173	20.0	2	24.8	163.9	175
	5	575/3/60	518/632	4	23.7	132	7.5	2	7.8	116.3	125
	5	575/3/60	518/632	4	23.7	132	10.0	2	10.3	121.3	125

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