



Installation and Maintenance Manual

IM 970-2

Group: **Applied Air Handling**

Part Number: **920102421-20**

Date: **May 2017**

Maverick® I

Heating & Cooling

Models MPSA03 – A05, 14 SEER

Models MPSH03 – H05, 15 SEER

3 to 5 Tons

R-410A Refrigerant



Introduction	3	Dimensional Data	29
General	3	Unit Dimensions MPS A03C – A05C	29
Checking Product Received	3	Performance Data	30
Hazardous Information Messages	3	System Performance – Standard Efficiency	30
Mechanical Installation	4	System Performance – High Efficiency	33
General	4	Airflow Performance	36
Major Components	4	Accessories	40
Pre-Installation Check-Points	4	Economizers	40
Location Considerations	4	Roof Curbs	42
Outside Slab Installation	5	Controls and Operation	43
Attaching Exhaust and Combustion Air Inlet Hoods	5	Furnace Section Controls and Ignition System	43
Cover Panel Installation/Conversion	5	Dehumidification Control	45
Clearances	6	Maintenance	47
Rigging and Roof Curb	7	General	47
Gas Supply, Condensate Drain and Piping	8	Unit Maintenance	47
Electrical Installation	11	System Charge Charts	49
Power Supply	11	Blower Motor Speed Taps	52
Customer Supplied Thermostat	14	Troubleshooting	54
Optional Factory Supplied Thermostat	14	Warranty	57
Wiring Diagrams	15	Replacement Parts	57
Physical Data	25		
Unit Capacity and Physical Data	25		
Motor Data	27		
MCA and MCOP Data	27		

General

This manual contains the installation and operating instructions for your packaged rooftop unit. There are some precautions that should be taken to derive maximum satisfaction from it. Improper installation can result in unsatisfactory operation or dangerous conditions.

Read this manual and any instructions packaged with separate equipment prior to installation. Give this manual to the owner and explain its provisions. The owner should retain this manual for future reference.

This product line does have an optional DDC controller. For operation and information on using and programming the MicroTech® III unit controller, refer to the appropriate operation manual (see [Table 1](#)).

For a description of operation and information on using the keypad to view data and set parameters, refer to the appropriate program-specific operation manual (see [Table 1](#)).

Table 1: Operation, Installation and Maintenance Resources

Unit	Manual
Rooftop Unit Control Configuration	Operation Manual Bulletin Number
DDC Unit Controller	OM 1077
BACnet Communication Module	IM 1000
LonWorks Communication Module	IM 999

Checking Product Received

Upon receiving the unit, inspect for any damage from shipment. Claims for damage, either shipping or concealed, should be filed immediately with the shipping company.

Important: Check the unit model number, heating size, electrical characteristics, and accessories to determine if they are correct.

Hazardous Information Messages

DANGER

The manufacturer’s warranty does not cover any damage or defect to the air conditioner caused by the attachment or use of any components, accessories or devices (other than those authorized by the manufacturer) into, onto, or in conjunction with the air conditioner. You should be aware that the use of unauthorized components, accessories or devices may adversely affect the operation of the air conditioner and may also endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized components, accessories or devices.

WARNING

Provide adequate combustion and ventilation air to the unit space as specified in the combustion and ventilation air section of these instructions.

CAUTION

Install this unit only in a location and position as specified in the “[Mechanical Installation](#)” section of these instructions. Provide adequate combustion and ventilation air to the unit space as specified in the venting section of these instructions.

WARNING

Combustion products must be discharged outdoors. Connect this unit to an approved vent system only, as specified in “[Mechanical Installation](#)” section of these instructions.

NOTICE

Use only with type of gas approved for this unit. Refer to the unit rating plate.

DANGER

Never test for gas leaks with an open flame. It can cause an explosion or fire resulting in property damage, personal injury or death. Use a commercially available soap solution made specifically for the detection of leaks to check all connections, as specified in the “[Mechanical Installation](#)” section of these instructions.

NOTICE

Always install unit to operate within the unit’s intended temperature-rise range with a duct system which has an external static pressure within the allowable range, as specified in the “[Mechanical Installation](#)” section of these instructions. See also unit rating plate.

DANGER

Units are not design certified to be installed inside the structure. Doing so can cause inadequate unit performance as well as property damage and carbon monoxide poisoning resulting in personal injury or death.

General

WARNING

When a unit is installed so that supply ducts carry air circulated by the unit to areas outside the space containing the unit, the return air shall also be handled by duct(s) sealed to the unit casing and terminating outside the space containing the unit.

Install this unit in accordance with The American National Standard Z223.1-latest edition manual entitled “National Fuel Gas Code,” and the requirements or codes of the local utility or other authority having jurisdiction.

Additional helpful publications available from the “National Fire Protection Association” are: sNFPA-90A - Installation of Air Conditioning and Ventilating Systems 1985 or latest edition. NFPA-90B - Warm Air Heating and Air Conditioning Systems 1984.

These publications are available from:
National Fire Protection Association, Inc.
Batterymarch Park
Quincy, MA 02269

Major Components

The unit includes a hermetically-sealed refrigerating system (consisting of a scroll compressor, condenser coil, and evaporator coil with a thermal expansion valve), a circulation air blower, and a condenser fan. The cooling system of these units is factory-evacuated, charged and performance tested. Refrigerant amount and type are indicated on rating plate.

Heat options include natural gas fired furnace or a field installed electric resistance heater. The furnace assembly comes complete including a heat exchanger assembly, gas burner and control assembly, combustion air motor and fan, and all necessary internal electrical wiring.

Pre-Installation Check-Points

Before attempting any installation, carefully consider the following points:

- A. Structural strength of supporting members (rooftop installation)
- B. Clearances and provision for servicing power supply and wiring
- C. Gas supply and piping
- D. Air duct connections and sizing
- E. Drain facilities and connections
- F. Location for minimum noise and vibration - away from bedroom windows

Location Considerations

WARNING

This unit may be used to heat the building or structure during construction if the following installation requirements are met. Installation must comply with all installation instructions including:

- Proper vent installation
- Furnace operating under thermostatic control
- Return air duct sealed to the furnace
- Air filters in place
- Set furnace input rate and temperature rise per rating plate marking
- Means of providing outdoor air required for combustion
- Return air temperature maintained between 55°F (13°C) and 80°F (27°C)
- Installation of exhaust and combustion air inlet hoods completed
- Clean furnace, duct work and components upon substantial completion of the construction process, and verify furnace operating conditions including ignition, input rate, temperature rise and venting, according to the instructions.

The metal parts of this unit may be subject to rust or deterioration in adverse environmental conditions. This oxidation could shorten the equipment’s useful life. Salt spray, fog or mist in seacoast areas, sulphur or chlorine from lawn watering systems, and various chemical contaminants from industries such as paper mills and petroleum refineries are especially corrosive.

If the unit is to be installed in an area where contaminants are likely to be a problem, give special attention to the equipment location and exposure.

1. Avoid having lawn sprinkler heads spray directly on the unit cabinet.
2. In coastal areas, locate the unit on the side of the building away from the waterfront.
3. Shielding by a fence or shrubs may give some protection.
4. Frequent washing of the cabinet, fan blade and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
5. Regular cleaning and waxing of the cabinet with a good automobile polish will provide some protection.
6. A good liquid cleaner may be used several times a year to remove matter that will not wash off with water.

Several different types of protective coatings are offered in some areas. These coatings may provide some benefit, but the effectiveness of such coating materials cannot be verified by the equipment manufacturer.

The best protection is frequent cleaning, maintenance, and minimal exposure to contaminants.

Outside Slab Installation

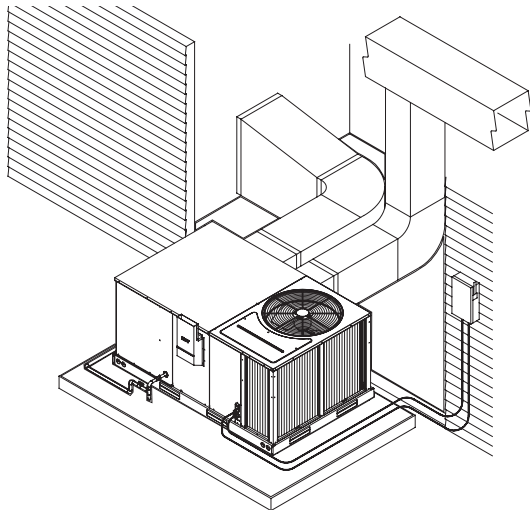
⚠ DANGER

These units are designed certified for outdoor installation only. Installation inside any part of a structure can result in inadequate unit performance as well as property damage. Installation inside can also cause recirculation of flue products into the conditioned space resulting in personal injury or death.

Typical outdoor slab installation is shown in [Figure 1](#).

1. Select a location where external water drainage cannot collect around unit.
2. Provide a level slab sufficiently high enough above grade to prevent surface water from entering the unit
3. The location of the unit should be such as to provide proper access for inspection and servicing as shown in [Figure 3 on page 6](#).
4. Locate unit where operating sounds will not disturb owner or neighbors.
5. Locate unit so roof runoff water does not pour directly on the unit. Provide gutter or other shielding at roof level. Do not locate unit in an area where excessive snow drifting may occur or accumulate.
6. Where snowfall is anticipated, the height of the unit above the ground level must be considered. Mount unit high enough to be above anticipated maximum area snowfall and to allow combustion air to enter the combustion air inlet.
7. Select an area which will keep the areas of the vent, air intake, and A/C condenser fins free and clear of obstructions such as weeds, shrubs, vines, snow, etc. Inform the user accordingly.
8. Remove compressor shipping supports (if so equipped) after installation.

Figure 1: Outside Slab Installation



Attaching Exhaust and Combustion Air Inlet Hoods

⚠ IMPORTANT

Do not operate this unit without the exhaust/ combustion air inlet hood properly installed. This hood is shipped in a carton in the blower compartment inside the unit and must be attached when the unit is installed. See [Figure 29 on page 29](#).

To attach exhaust/combustion air inlet hood:

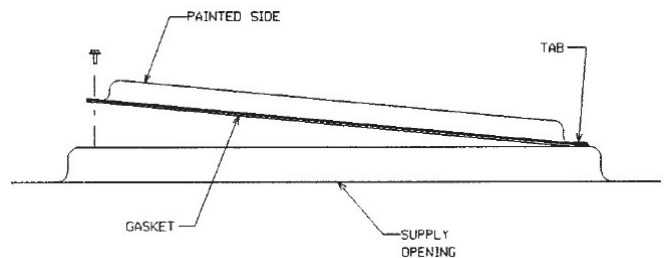
1. Remove screws securing blower access panel and remove access panel. For location of blower access panel, see [Figure 28 on page 29](#).
2. Remove exhaust/combustion air inlet hood from the carton, located inside the blower compartment.
3. Attach blower access panel.
4. Attach the combustion air inlet/exhaust hood with screws. Reference [Figure 29 on page 29](#) for proper location. Screws are in carton with the hood.
5. Vent the unit using the flue exhaust hood, as supplied from the factory, without alteration or addition.

Cover Panel Installation/ Conversion

Downflow to Horizontal

1. Remove the screws and covers from the outside of the supply and return sections.
2. Install the covers in the bottom supply and return openings with the painted side up ([Figure 2](#)). Use the existing gasket to seal the covers.
3. Secure the supply cover to the base of the unit with one screw, engaging prepunched tab in unit base.
4. Secure the return cover to the base of the unit with screws engaging prepunched holes in the unit base.

Figure 2: Cover Gasket Detail—Down-Flow to Horizontal



This unit is provided with 2 - 25" x 16" x 1" disposable filters. When replacing filters, ensure they are inserted fully to the back to prevent bypass.

Clearances

The following minimum clearances (Table 2) must be observed for proper unit performance and serviceability (also reference Figure 3).

NOTE: Supply duct may be installed with 0" clearance to combustible materials, provided 1" minimum Fiberglass insulation is applied either inside or outside of the duct.

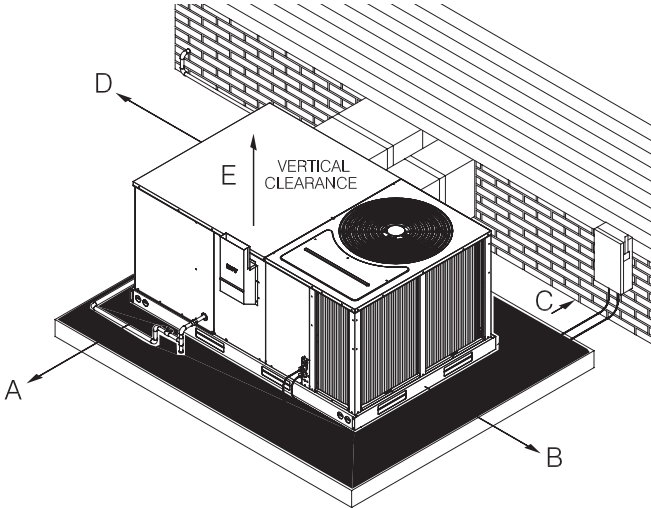
Rooftop Installation

NOTICE

If unit will not be put into service immediately, block off supply and return air openings to prevent excessive condensation.

1. Before locating the unit on the roof, make sure that the roof structure is adequate to support the weight involved (see "Unit Capacity and Physical Data" on page 25). THIS IS VERY IMPORTANT AND THE INSTALLER'S RESPONSIBILITY.
2. For rigging and roofcurb details, see Figure 5, Figure 6 and Figure 7.
3. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.
4. Remove compressor shipping supports (if so equipped) after installation.

Figure 3: Clearances



Ductwork

DANGER

Never connect return ductwork to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury, property damage or death.

The installing contractor should fabricate ductwork in accordance with local codes. Use industry manuals as a guide when sizing and designing the duct system. Contact Air Conditioning Contractors of America, 1513 16th St. N.W., Washington, D.C. 20036.

Place the unit as close to the conditioned space as possible allowing clearances as indicated. Run ducts as directly as possible to supply and return outlets. Use of non-flammable weatherproof flexible connectors on both supply and return connections at unit to reduce noise transmission is recommended.

On ductwork exposed to outside temperature and humidity, use a minimum of 2" of insulation and a vapor barrier. Distribution system in attic, furred space or crawl space should be insulated with at least 2" of insulation. 1/2" to 1" thick insulation is usually sufficient for ductwork inside the air conditioned space.

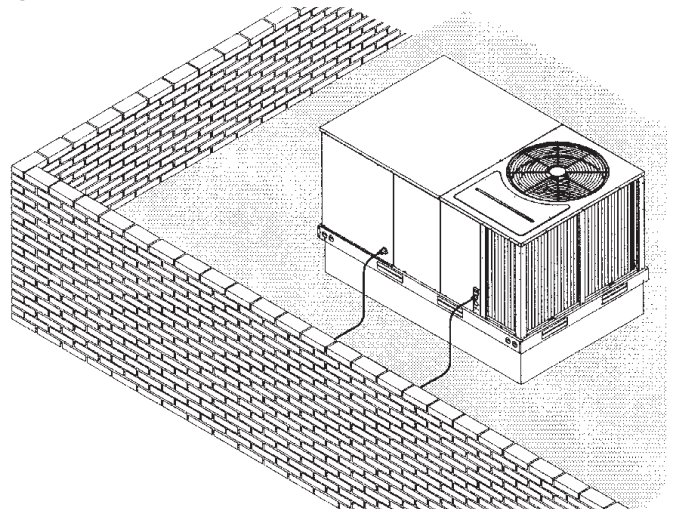
Provide balancing dampers for each branch duct in the supply system. Properly support ductwork from the structure.

Table 2: Recommended Clearances

Location	Clearance
A - Front	48"
B - Condenser Coil	18"
C - Duct Side	12"*
D - Evaporator End	36"
E - Above	60"

NOTE: *without Economizer. 57" with Economizer.

Figure 4: Unit Mounted on Roof Curb



Return Air

⚠ DANGER

Never allow products of combustion or the flue products to enter the return air ductwork or the circulating air supply. All return ductwork must be adequately sealed and secured to the furnace with sheet metal screws and joints must be taped. All other duct joints must be secured with approved connections and sealed airtight.

Failure to prevent products of combustion from being circulated into the living space can create potentially hazardous conditions, including carbon monoxide poisoning that could result in personal injury or death.

In the event that the return air ducts must be run through an “unconfined” space containing other fuel burning equipment, it is imperative that the user be informed against future changes in construction which might change this to a “confined space.” Also, caution the user against any future installation of additional equipment (such as power ventilators, clothes dryers, etc.) within the existing unconfined and/or confined space which might create a negative pressure within the vicinity of other solid, liquid, or gas fueled units.

Rigging and Roof Curb

Figure 5: Rigging Detail

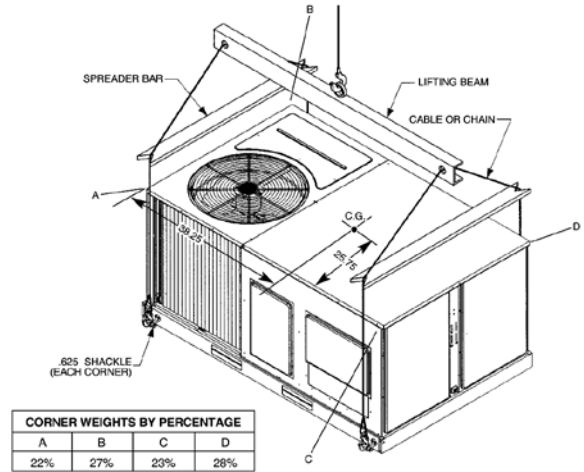


Figure 6: Roof Curb

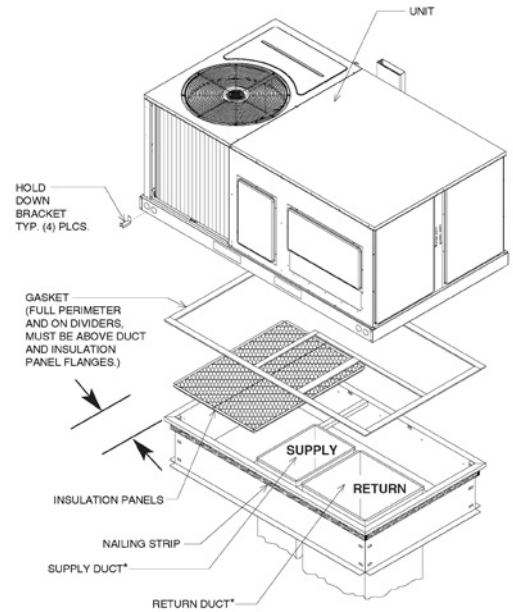
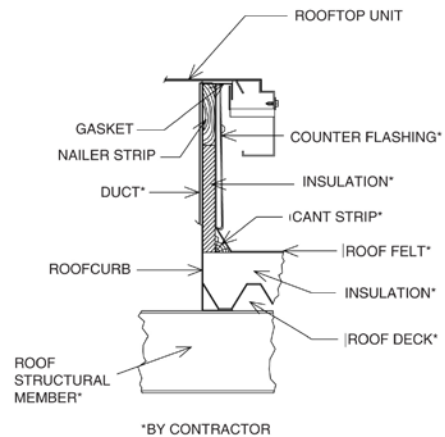


Figure 7: Roof Curb Detail



Gas Supply, Condensate Drain and Piping

Gas Connection

WARNING

Connect this unit only to gas supplied by a commercial utility.

DANGER

Never test for gas leaks with an open flame. It can cause an explosion or fire resulting in property damage, personal injury or death. Use a commercially available soap solution made specifically for the detection of leaks to check all connections, as specified in the "Mechanical Installation" section of these instructions.

CAUTION

Any additions, changes or conversions required for the furnace to satisfactorily meet the application should be made by a qualified installer, service agency or the gas supplier, using factory-specified or approved parts. In the commonwealth of Massachusetts, installation must be performed by a licensed plumber or gas fitter for appropriate fuel.

CAUTION

Disconnect the furnace and its individual shutoff valve from the gas supply piping during any pressure testing of that system at test pressures in excess of 1/2 pound per square inch gauge or isolate the system from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of this gas supply system at pressures equal to or less than 1/2 PSIG.

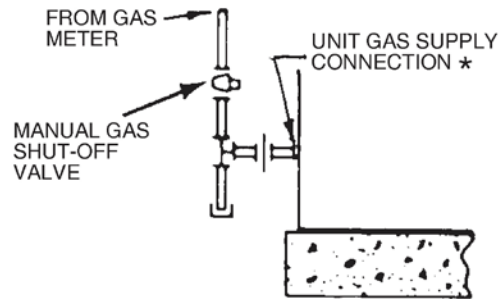
NOTICE

Check the rating plate to make certain the unit is equipped to burn the type of gas supplied. Care should be taken after installation of this equipment that the gas control valve not be subjected to high gas supply line pressure.

1. Install gas piping in accordance with local codes and regulations of the local utility company. In the absence of local codes, the installation must conform to the specifications of the National Fuel Gas Code, ANSI Z223. 1 - latest edition.
2. Connect the gas line to the gas pipe inlet opening provided into the 1/2" inlet valve. See [Figure 1 on page 5](#) or [Figure 4 on page 6](#) for typical piping.
3. Size the gas line to the furnace adequate enough to prevent undue pressure drop and never less than 1/2".
4. Install a drip leg or sediment trap in the gas supply line as close to the unit as possible.
5. Install an outside ground joint union to connect the gas supply to the control assembly at the burner tray.
6. Gas valves have been factory installed. Install a manual gas valve where local codes specify a shut-off valve outside the unit casing (see [Figure 8](#)).
7. Make sure piping is tight. A pipe compound resistant to the action of liquefied petroleum gases must be used at all threaded pipe connections.

NOTE: The use of flexible gas connectors is not permitted. The Commonwealth of Massachusetts requires the gas shut-off valve to be a T-handle gas lock.

Figure 8: Suggested Gas Piping



*Factory supplied grommet must be utilized.

Table 3: Gas Pipe Capacity Table (Cu. Ft./Hr.)

Nominal Iron Pipe Size	Equivalent Length of Pipe, Feet							
	10	20	30	40	50	60	70	80
1/2"	132	92	73	63	56	50	46	43
3/4"	278	190	152	130	115	105	96	90
1"	520	350	285	245	215	195	180	170
1-1/4"	1,050	730	590	500	440	400	370	350
1-1/2"	1,600	1,100	890	760	670	610	560	530

In making gas connections, avoid strains as they may cause noise and damage the controls. A backup wrench is required to be used on the valve to avoid damage.

The capacities of gas pipe of different diameters and lengths in cu. ft. per hr. with pressure drop of 0.3 in. and specific gravity of 0.60 (natural gas) are shown in [Table 3](#).

After determining the pipe length, select the pipe size which will provide the minimum cubic feet per hour required for the gas input rating of the furnace. By formula:

$$\text{Cu. Ft. Per Hr. Required} = \frac{\text{Gas Input of Furnace (BTU/Hr.)}}{\text{Heating Value of Gas (BTU/Ft.)}}$$

The gas input of the furnace is marked on the furnace rating plate. The heating value of the gas (BTU/FT³) may be determined by consulting the local natural gas utility or the L.P. gas supplier.

LP Conversion

DANGER

This unit is equipped at the factory for use with natural gas only. Conversion to LP gas requires a special kit supplied by the distributor or manufacturer. Mailing addresses are listed on the furnace rating plate, parts list and warranty. Failure to use the proper conversion kit can cause fire, carbon monoxide poisoning, explosion, personal injury, property damage, or death.

NOTICE

To remove the gas valve, remove the four screws securing the manifold pipe to the burner tray. Remove the manifold pipe with gas valve attached. See [Figure 10](#).

Convert the valve to use liquefied petroleum (LP) gas by replacing the pressure regulator spring with the conversion kit spring. This LP kit spring allows the regulator to maintain the proper manifold pressure for LP gas. The correct burner LP orifices are included in the kit. See [Figure 9](#).

NOTE: Order the correct LP conversion kit from the furnace manufacturer. See Conversion Kit Index shipped with unit for proper LP kit number. Furnace conversion to LP gas must be performed by a qualified technician.

NOx Models

When converting units equipped with NOx inserts to LP gas, the stainless steel screen mesh inserts in the entrance of the tubular exchangers are not required to meet SCAQMD NOx emission levels. These inserts and 1/8" diameter retaining rod should be carefully removed before firing this furnace on LP gas. **Important:** This furnace is not designed to operate on LP gas with the NOx inserts in place.

Step by step instructions on removing the NOx inserts and retaining rod are included in the Conversion Kit Installation Instructions.

Table 4: LP Gas Pipe Capacity Table (Cu. Ft./Hr.)

Maximum capacity of pipe in thousands of BTU/hour of undiluted liquefied petroleum gases at 11 inches water column inlet pressure (Based on a pressure drop of 0.5 inch water column).

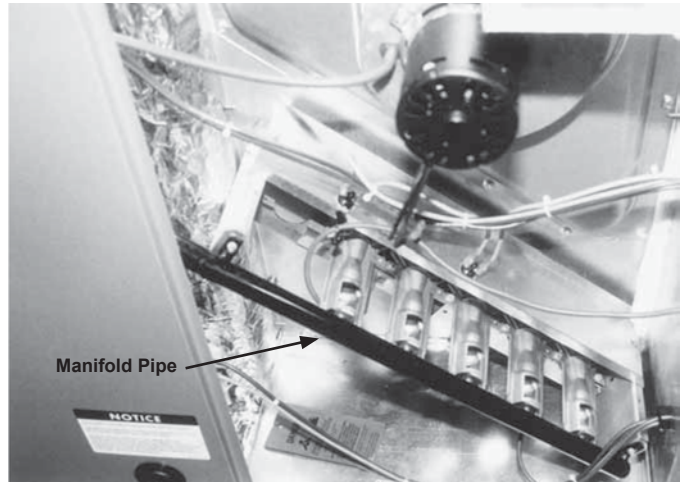
Nominal Iron Pipe Size (in.)	Length of Pipe (ft.)											
	10	20	30	40	50	60	70	80	90	100	125	150
1/2	275	189	152	129	114	103	96	89	83	78	69	63
3/4	567	393	315	267	237	217	196	182	173	162	146	132
1	1071	732	590	504	448	409	378	346	322	307	275	252
1-1/4	2205	1496	1212	1039	913	834	771	724	677	630	567	511
1-1/2	3307	2299	1858	1559	1417	1275	1181	1086	1023	976	866	787
2	6221	4331	3465	2992	2646	2394	2205	2047	1921	1811	1606	1496

Example (LP): Input BTU requirement of unit, 150,000
Equivalent length of pipe, 60 ft. = 3/4" IPS required

Figure 9: NOx Inserts



Figure 10: Manifold Pipe



Adjusting or Checking Furnace Input

- Natural Gas Line Pressure 5" – 10.5" W.C.
- LP Gas Line Pressure 11" – 13" W.C.
- Natural Gas Manifold Pressure – 3.5" W.C.
- LP Gas Manifold Pressure – 10" W.C.

Supply and manifold pressure taps are located on the gas valve body 1/8" N.P.T. and on the manifold.

Use a properly calibrated manometer gauge for accurate gas pressure readings.

Only small variations in the gas flow should be made by means of the pressure regulator adjustment. Furnaces functioning on LP gas must be set by means of the tank or branch supply regulators. The furnace manifold pressure should be set at 10" W.C. at the gas control valve.

To adjust the pressure regulator, remove the regulator cap and turn the adjustment screw clockwise to increase pressure or counterclockwise to decrease pressure. **Then replace the regulator cap securely.**

Any necessary major changes in the gas flow rate should be made by changing the size of the burner orifices. To change orifice spuds, shut off the manual main gas valve and remove the gas manifold.

For elevations up to 2,000 feet, rating plate input ratings apply. For high altitudes (elevations over 2,000 ft.), contact Daikin Applied Parts.

Check of input is important to prevent over-firing of the furnace beyond its design-rated input. NEVER SET INPUT ABOVE THAT SHOWN ON THE RATING PLATE. Use the following table or formula to determine input rate.

$$\text{Cu. Ft. Per Hr. Required} = \frac{\text{Heating Value of Gas (BTU/Cu. Ft.)} \times 3600}{\text{Time in Seconds (for 1 Cu. Ft.) of Gas}}$$

Start the furnace and measure the time required to burn one cubic foot of gas. Prior to checking the furnace input, make certain that all other gas units are shut off, with the exception of pilot burners. Time the meter with only the furnace in operation.

Important note for altitudes above 2,000 feet (610 meters):

The main burner orifices in your furnace and in these kits are sized for the nameplate input and intended for installations at elevations up to 2,000 feet in the USA or Canada, or for elevations of 2,000 – 4,500 feet (610 – 1,373 meters) in Canada if the unit has been derated at the factory. For elevations above 2,000 feet (610 meters) **in the USA only** (see ANSI-Z223.1), the burner orifices must be sized to reduce the input 4% for each 1,000 feet (305 meters) above sea level.

Table 5: Meter Times

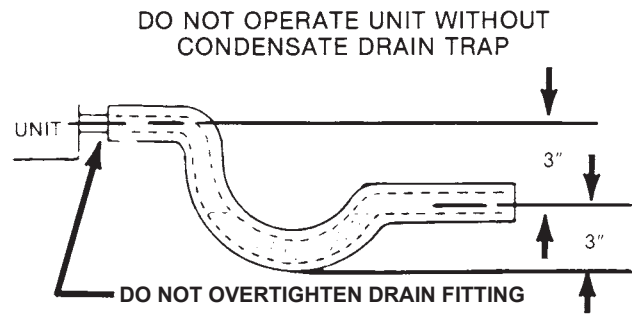
Meter time, in minutes and seconds, for normal input rating of furnaces equipped for natural or LP gas						
Input BTU/hr	Meter Size Cu.Ft.	Heating value of gas BTU per cu. ft.				
		900	1000	1040	1100	2500
40,000	1	1:21	1:30	1:34	1:39	3:45
	10	13:30	15:00	15:36	16:30	37:30
60,000	1	0:54	1:00	1:03	1:06	2:30
	10	9:00	10:00	10:24	11:00	25:00
80,000	1	0:41	0:45	0:47	0:50	1:53
	10	6:45	7:30	7:48	8:15	18:45
100,000	1	0:33	0:36	0:38	0:40	1:30
	10	5:24	6:00	6:15	6:36	15:00

Important notice: Derating of the heating input for high altitude in the field is unlawful in Canada (refer to CAN/ CGA 2.17). Units installed in altitudes greater than 2,000 feet (610 meters) must be shipped from the factory or from a factory authorized conversion station with the heating input derated by 10% so as to operate properly in altitudes from 2,000 – 4,500 feet (610 – 1,373 meters).

Condensate Drain

The condensate drain connection of the evaporator is threaded 3/4" nominal P.V.C. pipe. Install a condensate trap to ensure proper condensate drainage (Figure 11)

Figure 11: Condensate Drain



Power Supply

DANGER

Power supply to the unit must be disconnected before making field connections. To avoid electrical shock, personal injury or death, be sure to rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

NOTICE

This unit is approved for use with copper conductors only connected to unit contactor. Warranty may be jeopardized if aluminum wire is connected to unit contactor.

Special instructions apply for power wiring with aluminum conductors: Warranty is void if connections are not made per instructions.

1. **All wiring should be made in accordance with the National Electrical Code.** Consult the local power company to determine the availability of sufficient power to operate the unit. Check the voltage at power supply to make sure it corresponds to the unit's RATED VOLTAGE REQUIREMENT. Install a branch circuit disconnect (refer to [Figure 12](#) and [Figure 13](#)) near the rooftop, in accordance with the N.E.C., C.E.C. or local codes. A bracket is provided with the unit for mounting of the disconnect.
2. It is important that proper electrical power is available at the unit. Voltage should not vary more than 10% from that stamped on the unit nameplate. On three phase units, phases must be balanced within 3%.
3. For branch circuit wiring (main power supply to unit disconnect), the minimum wire size for the length of run can be determined from [Table 6](#) using the circuit ampacity found on the unit rating plate. Use the smallest wire size allowable from the unit disconnect to the unit.
4. For through the base wiring entry, all fittings and conduit are field supplied for this application ([Figure 14](#) on page 12). Reference [Table 8](#) on page 13 for proper hole and conduit size.

Figure 12: Recommended Branch Circuit Disconnect Location – Gas Heat Units

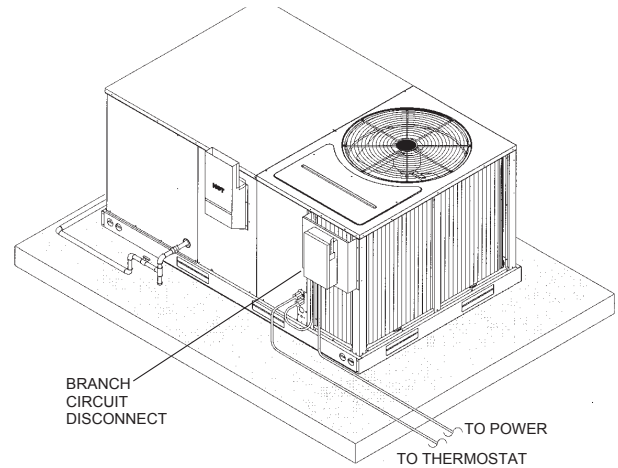


Figure 13: Recommended Branch Circuit Disconnect Location – Electric Heat or Cooling Only Units

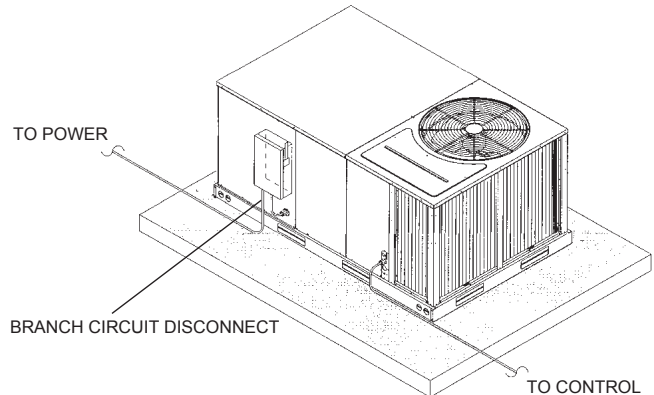


Table 6: Branch Circuit Copper Wire Size (Based on 1% Voltage Drop)*

Supply Wire Length (ft.)	Branch Circuit Ampacity							
	15	20	25	30	35	40	45	50
50	14	12	10	10	8	8	6	6
100	10	8	8	6	6	6	4	4
150	8	6	6	4	4	4	3	3
200	6	4	4	4	3	3	2	2

* Credit: National Electric Code

NOTE: Wire size based on 60°C rated wire insulation and 30°C ambient temp. (86°F).

For more than 3 conductors in a raceway or cable, see the N.E.C. for derating the ampacity of each conductor.

When installed, the unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, if an external electrical source is utilized.

Attach a length (6" or more) of recommended size copper wire to the unit contactor terminals L1 and L3 for single phase, L1, L2 and L3 for three phase.

Select the equivalent aluminum wire size from the tabulation [Table 7](#).

Splice copper wire pigtails to aluminum wire with U.L. recognized connectors for copper-aluminum splices. Please exercise the following instructions very carefully to obtain a positive and lasting connection:

1. Strip insulation from aluminum conductor.
2. Coat the stripped end of the aluminum wire with the recommended inhibitor, and wire brush the aluminum surface through inhibitor. INHIBITORS: Brundy-Pentex "A"; Alcoa-No. 2EJC; T & B-KPOR Shield.
3. Clean and re-coat aluminum conductor with inhibitor.
4. Make the splice using the above listed wire nuts or split bolt connectors.
5. Coat the entire connection with inhibitor and wrap with electrical insulating tape.

Table 7: Equivalent Aluminum Wire Size

AWG Copper Wire Size	AWG Aluminum Wire Size	Connector Type and Size (or equivalent)
#12	#10	T & B Wire Nut PT2
#10	#8	T & B Wire Nut PT3
#8	#6	Sherman Split Bolt TSP6
#6	#4	Sherman Split Bolt TSP4
#4	#2	Sherman Split Bolt TSP2

Figure 14: Electrical Conduit Installation

NOTE: 1) FOR EASE OF INSTALLATION IT IS RECOMMENDED THAT ALL FITTINGS, SEALING WASHERS AND COUPLINGS BE INSTALLED THROUGH BASE PRIOR TO SETTING ON CURB.

2) ALL CONDUIT AND FITTINGS ARE FIELD SUPPLIED.

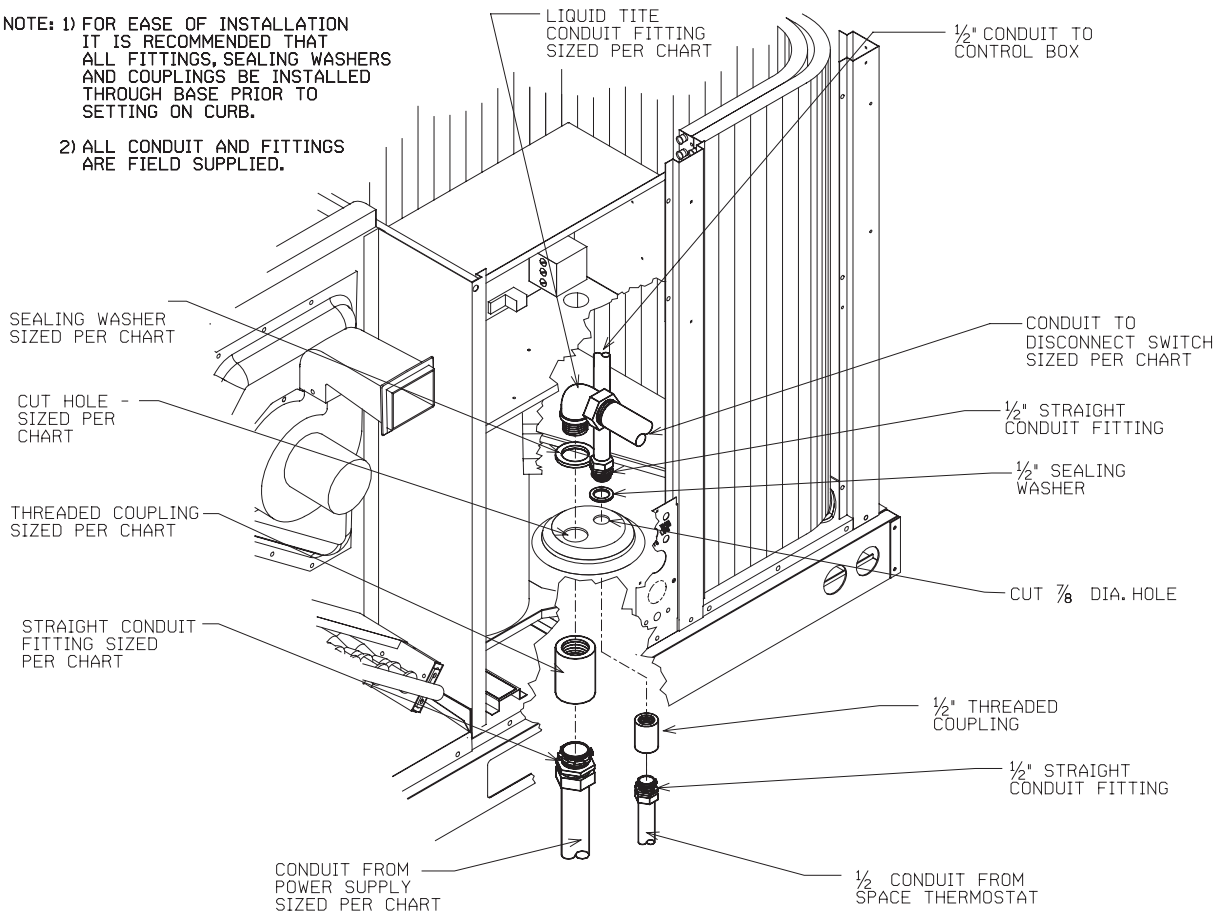


Table 8: Recommended Wire Sizes For Given Conduit and Hole Size


Wire Size, AWG	14	12	10	8	6	4	3	2	1	0	00	000
Conduit Size	1/2"	1/2"	1/2"	3/4"	1"	1"	1-1/4"	1-1/4"	1-1/2"	1-1/2"	2"	2"
Hole Size	7/8"	7/8"	7/8"	1-31/32"	1-23/64"	1-23/64"	1-23/32"	1-23/32"	1-31/32"	1-31/32"	2-15/32"	2-15/32"

Hook-Up

To wire unit, refer to the following hook-up diagram. Refer to [Figure 27 on page 29](#) and [Figure 14](#) for location of wiring entrances.

Wiring to be done in the field between the unit and devices not attached to the unit, or between separate devices which are field installed and located, shall conform with the temperature limitation for Type T wire [63°F rise (35°C)] when installed in accordance with the manufacturer’s instructions.

Internal Wiring

 NOTICE
<p>Some single phase units are equipped with a single pole contactor. Caution must be exercised when servicing as only one leg of the power supply is broken with the contactor.</p>

Some models are equipped with electronically commutated blower motors which are constantly energized, unless the main unit disconnect is in the OFF position.

A diagram of the internal wiring of this unit is located under the electrical box cover and this manual. If any of the original wire as supplied with the unit must be replaced, the wire gauge and insulation must be same as original wiring.

Transformer is factory wired for 230 volts on 208/230 volt models and must be changed for 208 volt applications. See unit wiring diagram for 208 volt wiring.

Customer Supplied Thermostat

The customer supplied room thermostat must be compatible with the spark ignition control on the unit. Generally, all thermostats that are not of the "current robbing" type are compatible with the integrated furnace control. The low voltage wiring should be sized as shown in [Table 9](#).

Table 9: Field Wire Size for 24 Volt Thermostat Circuits

	Solid Copper Wire – AWG.					
	16	14	12	10	10	10
3.0	16	14	12	10	10	10
2.5	16	14	12	12	12	10
2.0	18	16	14	12	12	10
	50	100	150	200	250	300
	Length of Run – Feet ^a					

a. The total wire length is the distance from the furnace to the thermostat and back to the furnace.

NOTE: Do not use control wiring smaller than No. 18 AWG.

Install the room thermostat in accordance with the instruction sheet packed in the box with the thermostat. See [Figure 16](#) for an example of a typical customer supplied wiring diagram.

Optional Factory Supplied Thermostat

The optional factory supplied, touch screen, commercial setback digital thermostat ([Figure 15](#)) uses microcomputer technology to provide precise time and temperature control. This thermostat offers the flexibility to design heating and cooling programs that fit building needs ([Table 10](#)). This thermostat is adaptable to most residential 24 volt forced air multi-stage systems with electric or fossil fuel auxiliary and is the ultimate for comfort, convenience, and performance. See [Figure 17](#) for an optional factory supplied thermostat wiring diagram.

Figure 15: Optional Thermostat



Table 10: Optional Factory Supplied Thermostat Specifications

Electrical Rating Single Stage:	mV to 30 V (ac), NEC Class II, 50/60 Hz or DC
Electrical Rating Staging:	20 to 30 V (ac), NEC Class II
Terminal Load:	1.5 A per terminal, 2.5 A max. combined
Setpoint Range:	45° to 99°F (7° to 37°C)
Anticipation, Heating:	Adjustable
Anticipation, Cooling:	Adjustable
Rated Differential Single Stage:	Heat 0.6°F, Cool 1.2°F
Rated Differential Staging:	Heat 0.6°F, Cool 1.2°F
Operating Ambient:	32° to +105°F (0° to +41°C)
Operating Humidity:	90% non-condensing max.
Shipping Temperature Range:	-4° to 150°F (-20° to 65°C)
Dimensions (H x W x D):	4.6" x 5.9" x 1.2"

Table 11: Thermostat Terminal Functions

Y2	2nd Stage Compressor
Y	Compressor Relay
G	Fan Relay
RC	Power for Cooling
RH	Power for Heating
C	Common wire from secondary side of cooling (Optional). Required for fault indication, continuous backlight operation or remote temperature sensor operation
L	Malfunction indicator for systems with malfunction connection
W/E	Heat Relay/Emergency Heat Relay (Stage 1)
W2	2nd Stage Heat (3rd Stage Heat in HP2)
Blank	Blank
-	Common (DC) for wired remote temperature sensor
S	Frequency signal from remote temperature sensor
+	Power (DC) to remote temperature sensor

Figure 16: Typical Customer Supplied Thermostat Wiring Diagram

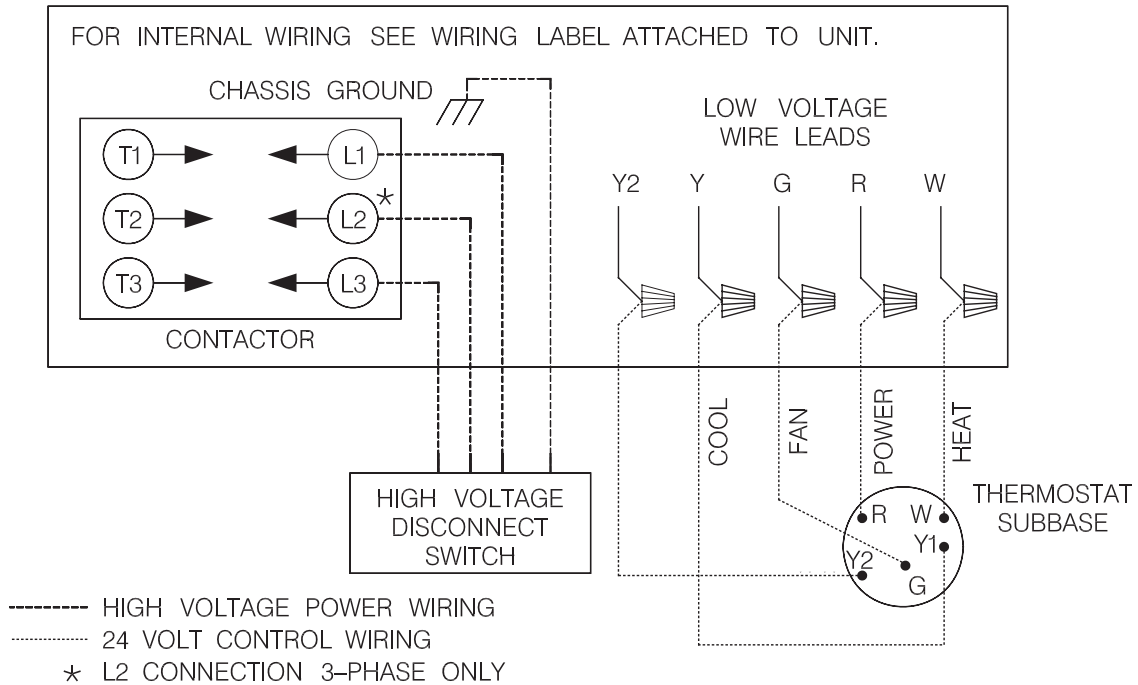
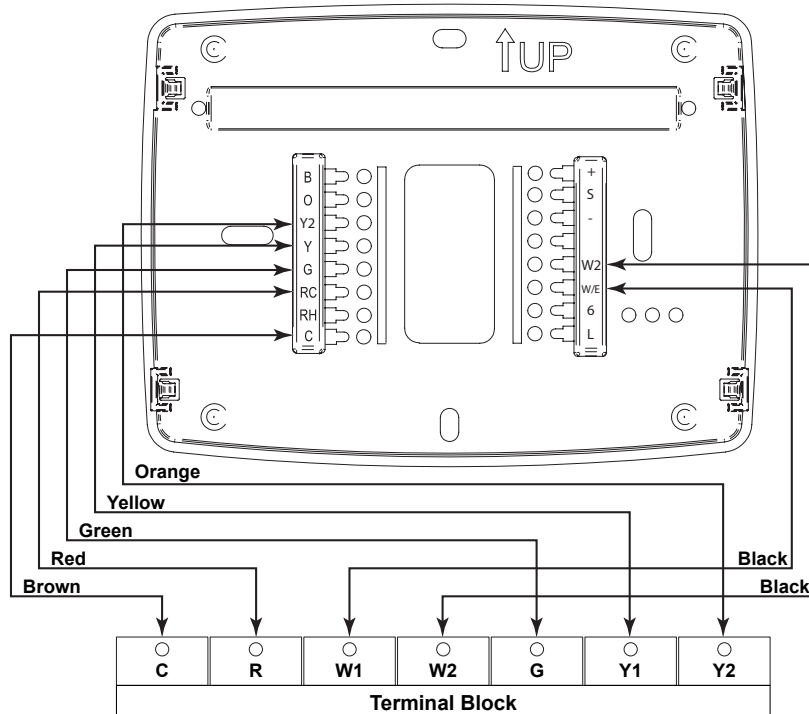


Figure 17: Optional Factory Supplied 7-170 Thermostat Wiring Diagram



1. On 3 to 5 ton units, a terminal block is not supplied. Use a wirenut to extend from the leads provided in the unit to the thermostat. W1, W2, and Y2 are optional depending upon the size and selected options of the unit. Colors shown above are typical for the MPS I.
2. For wiring with DDC control option, see [OM 1077](#) for wiring instructions.

Figure 18: Wiring Diagram: MPS A03C to A04C, 208/230 Volt

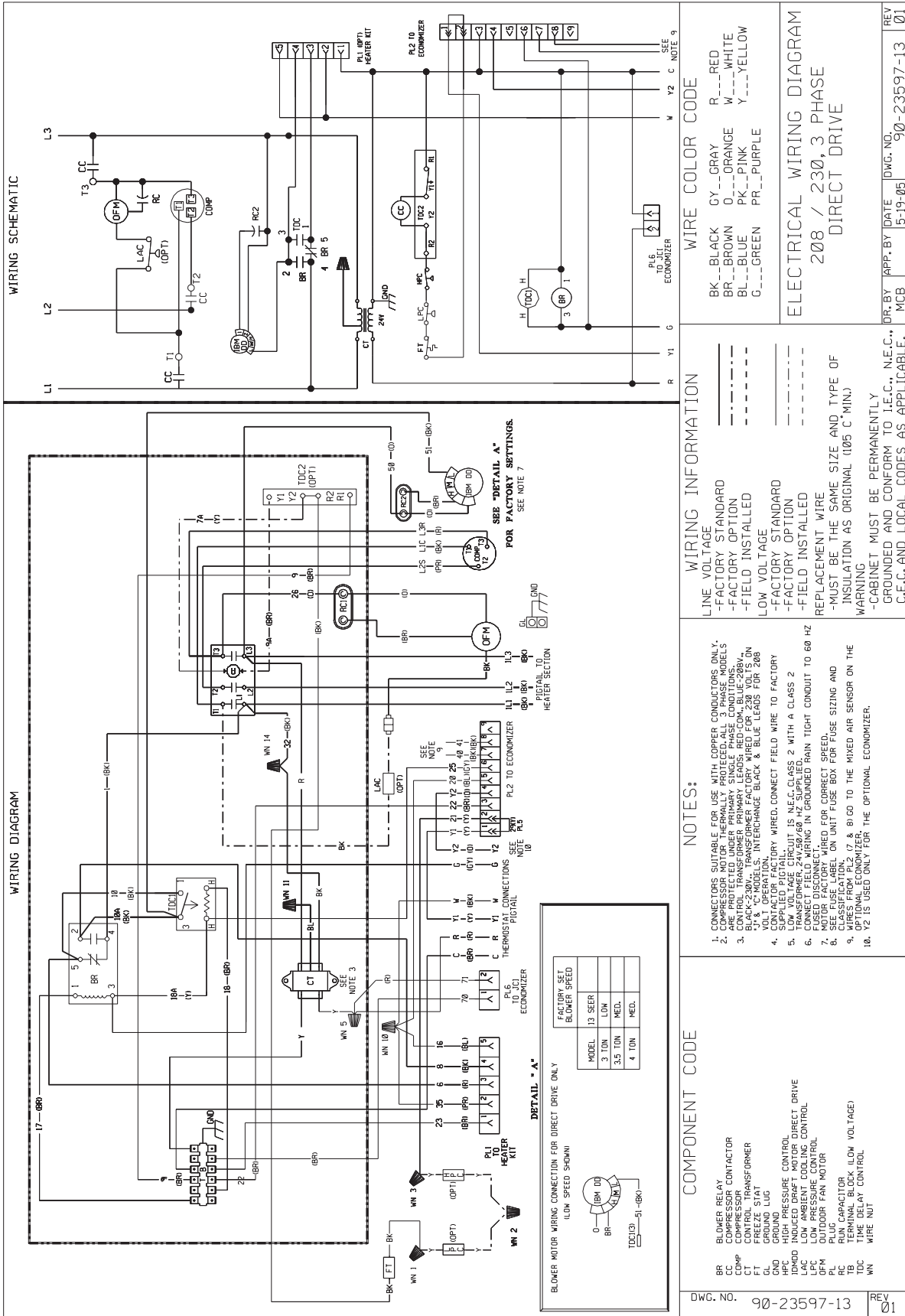


Figure 19: Wiring Diagram: MPS A03C to A04C, 460 Volt

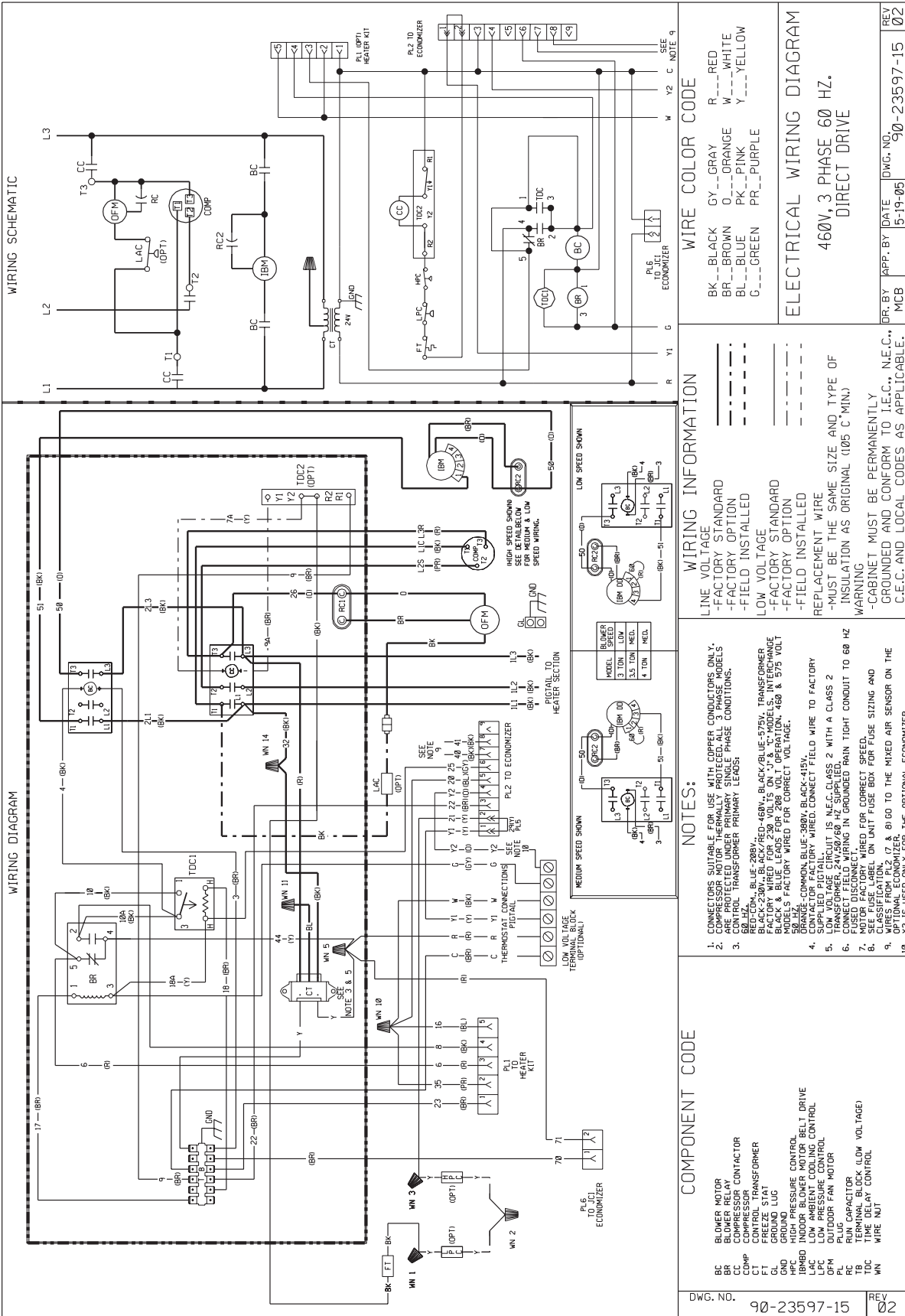
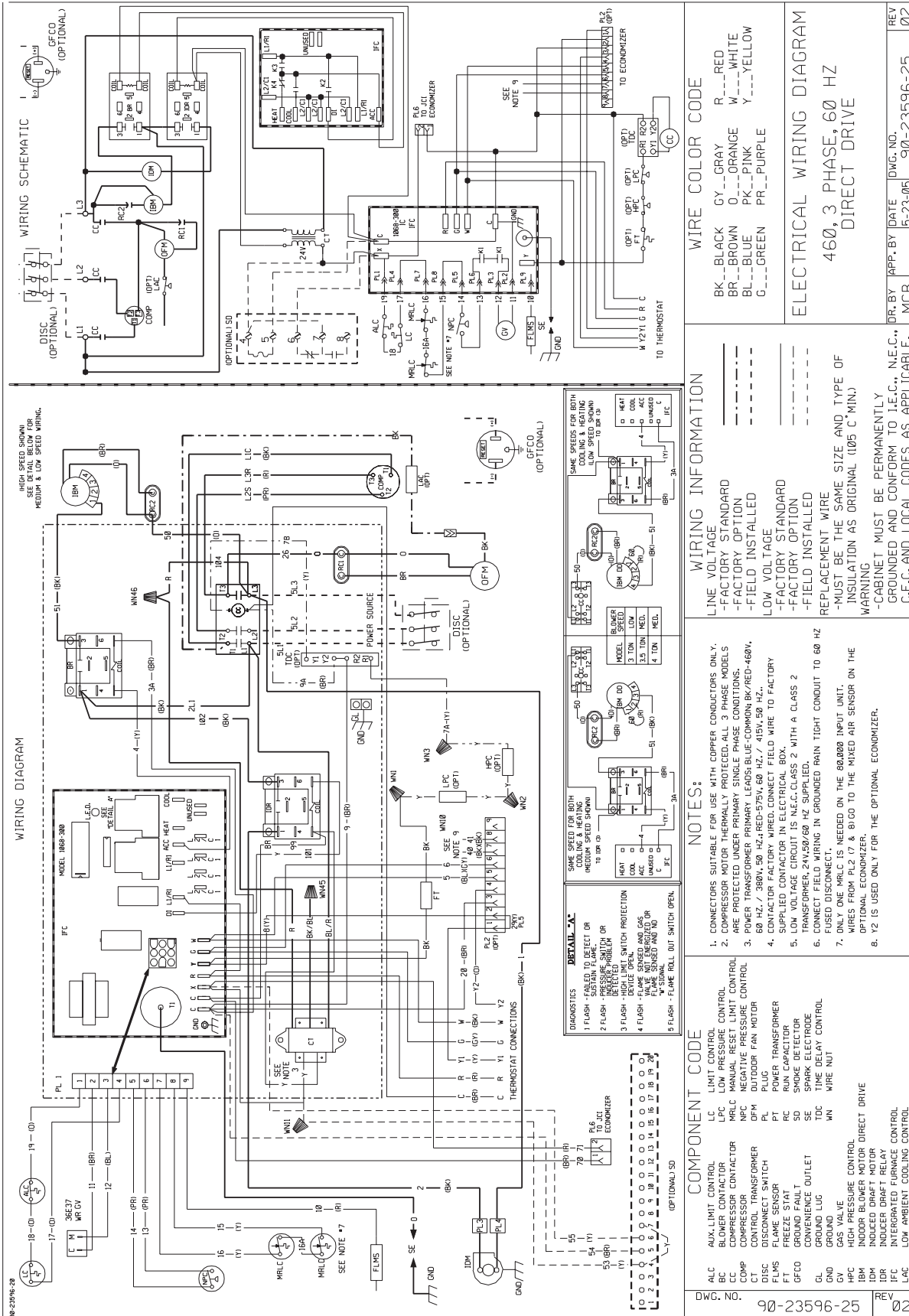


Figure 20: Wiring Diagram: MPS A03C to A04C with Gas Heat



WIRE COLOR CODE

BK_	BLACK	GY_	GRAY	R_	RED
BR_	BROWN	O_	ORANGE	W_	WHITE
BL_	BLUE	PK_	PINK	Y_	YELLOW
G_	GREEN	PR_	PURPLE		

ELECTRICAL WIRING DIAGRAM
460, 3 PHASE, 60 HZ
DIRECT DRIVE

WIRING INFORMATION

LINE VOLTAGE
-FACTORY STANDARD
-FACTORY OPTION
-FIELD INSTALLED

LOW VOLTAGE
-FACTORY STANDARD
-FACTORY OPTION
-FIELD INSTALLED

REPLACEMENT WIRE
-MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105°C MIN.)

WARNING
-CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C. AND LOCAL CODES AS APPLICABLE.

- NOTES:**
- CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY.
 - COMPRESSOR MOTOR THERMALLY PROTECTED, ALL 3 PHASE MODELS ARE PROTECTED UNDER PRIMARY SINGLE PHASE CONDITIONS.
 - POWER TRANSFORMER PRIMARY LEADS: BLUE-COMMON; BK/RED-460V, 60 HZ.; 380V, 50 HZ.; RED-575V, 60 HZ.; 415V, 50 HZ.
 - CONTACTOR FACTORY WIRED; CONNECT FIELD WIRE TO FACTORY SUPPLIED CONTACTOR IN ELECTRICAL BOX.
 - LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH A CLASS 2 TRANSFORMER, 24V, 50/60 HZ SUPPLIED.
 - CONNECT FIELD WIRING IN GROUNDING RAIN TIGHT CONDUIT TO 60 HZ FUSED DISCONNECT, NEEDED ON THE 60,000 INBT UNIT.
 - WIRES #1 AND #2 & #9 TO THE MIXED AIR SENSOR ON THE OPTIONAL ECONOMIZER.
 - #2 IS USED ONLY FOR THE OPTIONAL ECONOMIZER.

COMPONENT CODE

ALC	AUX. LIMIT CONTROL	LC	LIMIT CONTROL
BC	BLOWER CONTACTOR	LPC	LOW PRESSURE CONTROL
CC	COMPRESSOR CONTACTOR	MRLC	NEGATIVE LIMIT CONTROL
COMP	COMPRESSOR CONTACTOR	NPC	NEGATIVE PRESSURE CONTROL
DISC	DISCONNECT SWITCH	IPM	INDOOR FAN MOTOR
FLMS	FLAME SENSOR	PT	POWER TRANSFORMER
FT	FREESTAT	RC	RUN CAPACITOR
GFCD	GROUND FAULT	SD	SPARK DETECTOR
GL	GROUND LUG	SE	SPARK ELECTRODE
GND	GROUND	TDC	TIME DELAY CONTROL
HP	HIGH PRESSURE CONTROL	WN	WIRE NUT
IBM	INDOOR BLOWER MOTOR		
IDM	INDUCED DRAFT MOTOR		
IDR	INDUCED DRAFT RELAY		
IFC	INTERGRADED FURNACE CONTROL		
LAC	LOW AMBIENT COOLING CONTROL		

DWG. NO. 90-23596-25
REV 02

Figure 21: MPS A03C to A05C, 208-230/460V, 3Ø, Gas Heat

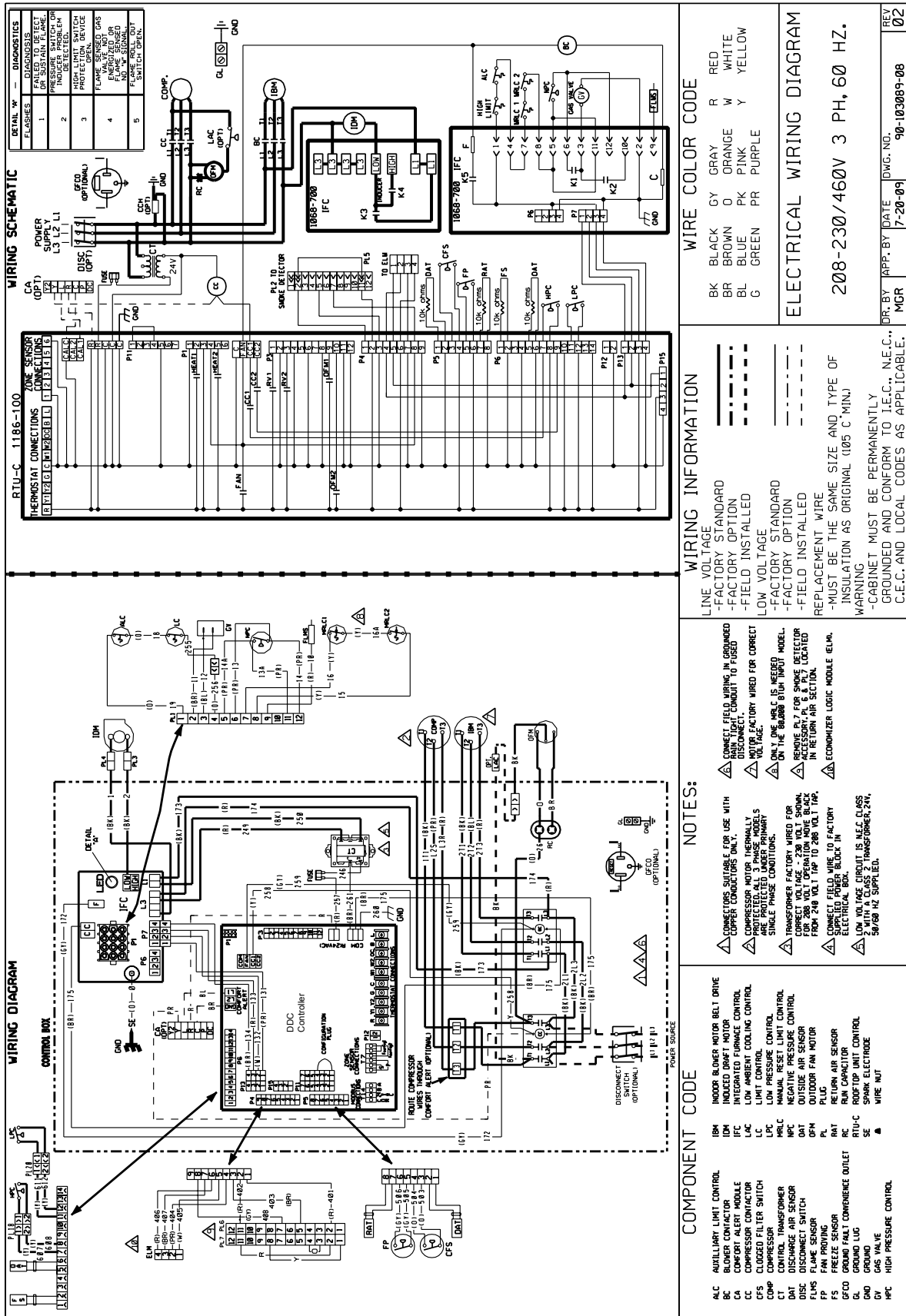


Figure 22: MPS A03C to A05C, 208-230/460V, 3Ø, Cooling Only

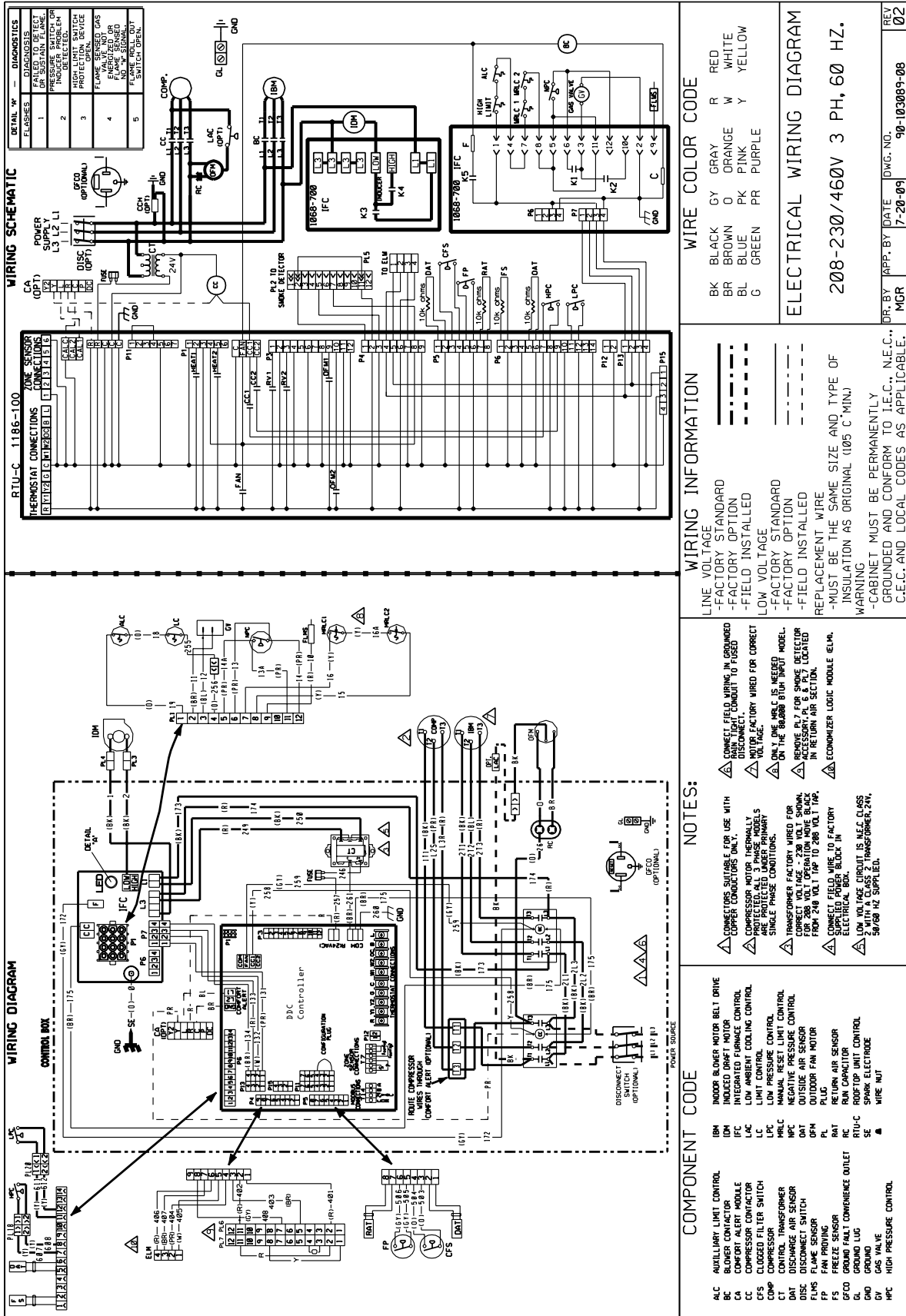
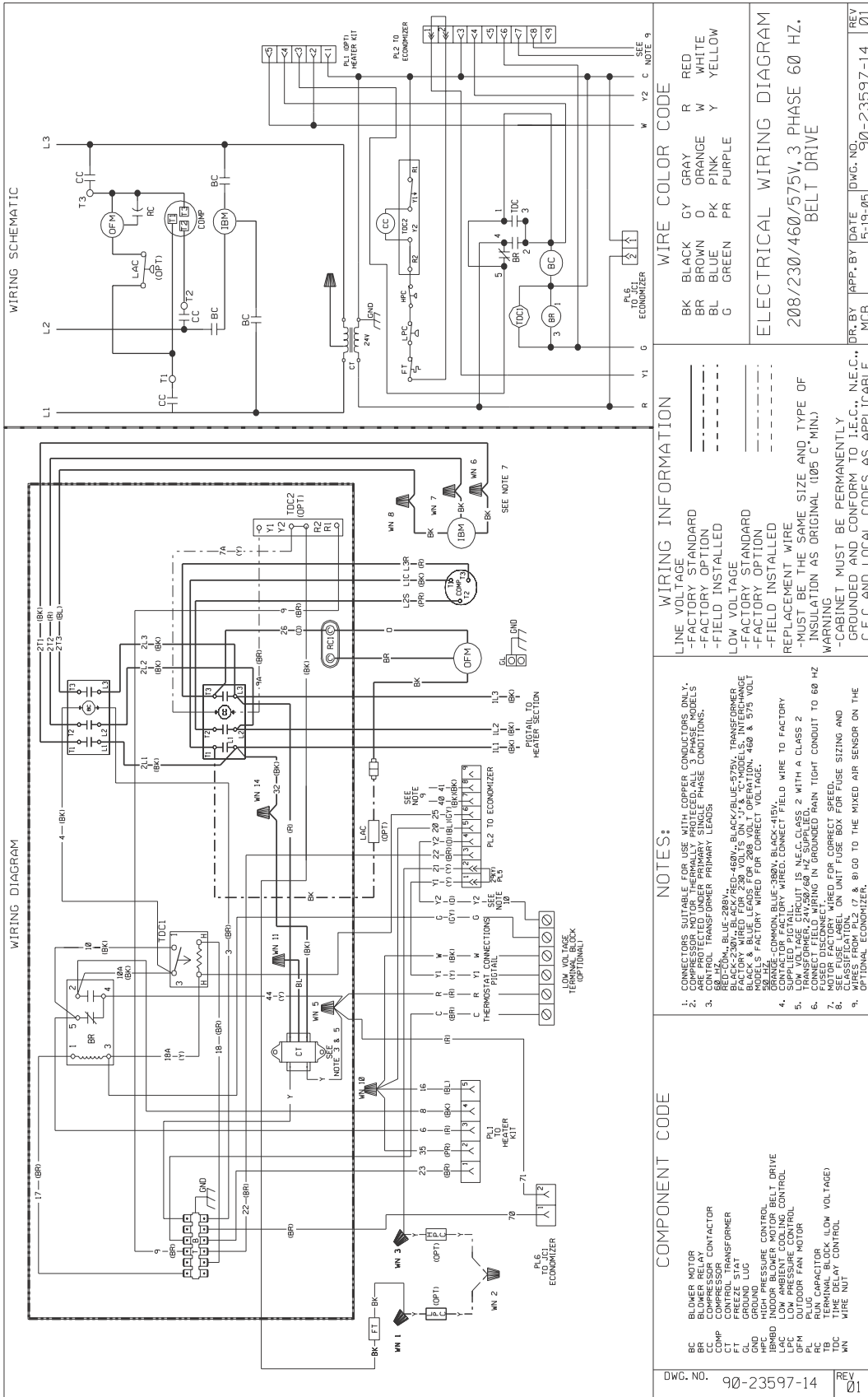


Figure 23: Wiring Diagram: MPS A05C



<p>COMPONENT CODE</p> <p>BK BLOWER MOTOR BC COMPRESSOR CONTACTOR CC COMPRESSOR TRANSFORMER FT FAN MOTOR GND GROUND LUG HPC HIGH PRESSURE CONTROL IBM80 INDOOR BLOWER MOTOR BELT DRIVE LFC LOW PRESSURE CONTROL ODFM OUTDOOR FAN MOTOR PIC PUMP CAPACITOR TB TERMINAL BLOCK (LOW VOLTAGE) TIME DELAY CONTROL WIRE NUT</p>	<p>WIRING INFORMATION</p> <p>LINE VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED LOW VOLTAGE -FACTORY STANDARD -FIELD INSTALLED REPLACEMENT WIRE -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105 C° MIN.) WARNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C. AND LOCAL CODES AS APPLICABLE.</p>	<p>WIRE COLOR CODE</p> <p>BK BLACK BR BROWN BL BLUE G GREEN GY GRAY O ORANGE PK PINK PR PURPLE R RED W WHITE Y YELLOW</p>	<p>REVISIONS</p> <p>REV 01</p> <p>DATE 5-19-05</p> <p>APP. BY MCB</p> <p>DWG. NO. 90-23597-14</p>
<p>NOTES:</p> <ol style="list-style-type: none"> CONNECTORS SUITABLE FOR USE WITH COPPER CONDUCTORS ONLY. COMPRESSOR MOTOR THERMALLY PROTECTED, ALL 3 PHASE MODELS CONTROL TRANSFORMER PRIMARY LEADS SEE NOTE 1 BLACK-230V, BLACK/RED-460V, BLACK/BLUE-575V, TRANSFORMER BLACK & BLUE LEADS FOR CORRECT VOLTAGE. MODELS FACTORY WIRED FOR CORRECT VOLTAGE. ORANGE-COMMON, BLUE-380V, BLACK-415V. SUPPLIED PIPETAIL LOW VOLTAGE CIRCUIT IS N.E.C. CLASS 2 WITH A CLASS 2 CONNECT FIELD WIRING IN GROUNDED RAIN TIGHT CONDUIT TO 60 HZ MOTOR FACTORY WIRED FOR CORRECT SPEED. SEE FUSE LABEL ON UNIT FUSE BOX FOR FUSE SIZING AND WIRES FROM PL2 (7 & 8) GO TO THE MIXED AIR SENSOR ON THE OPTIONAL ECONOMIZER. W2 IS USED ONLY FOR THE OPTIONAL ECONOMIZER. 		<p>ELECTRICAL WIRING DIAGRAM</p> <p>208/230/460/575V, 3 PHASE 60 HZ.</p> <p>BELT DRIVE</p>	

Figure 24: Wiring Diagram: MPS A05C with Gas Heat, 208/230 Volt, Belt Drive

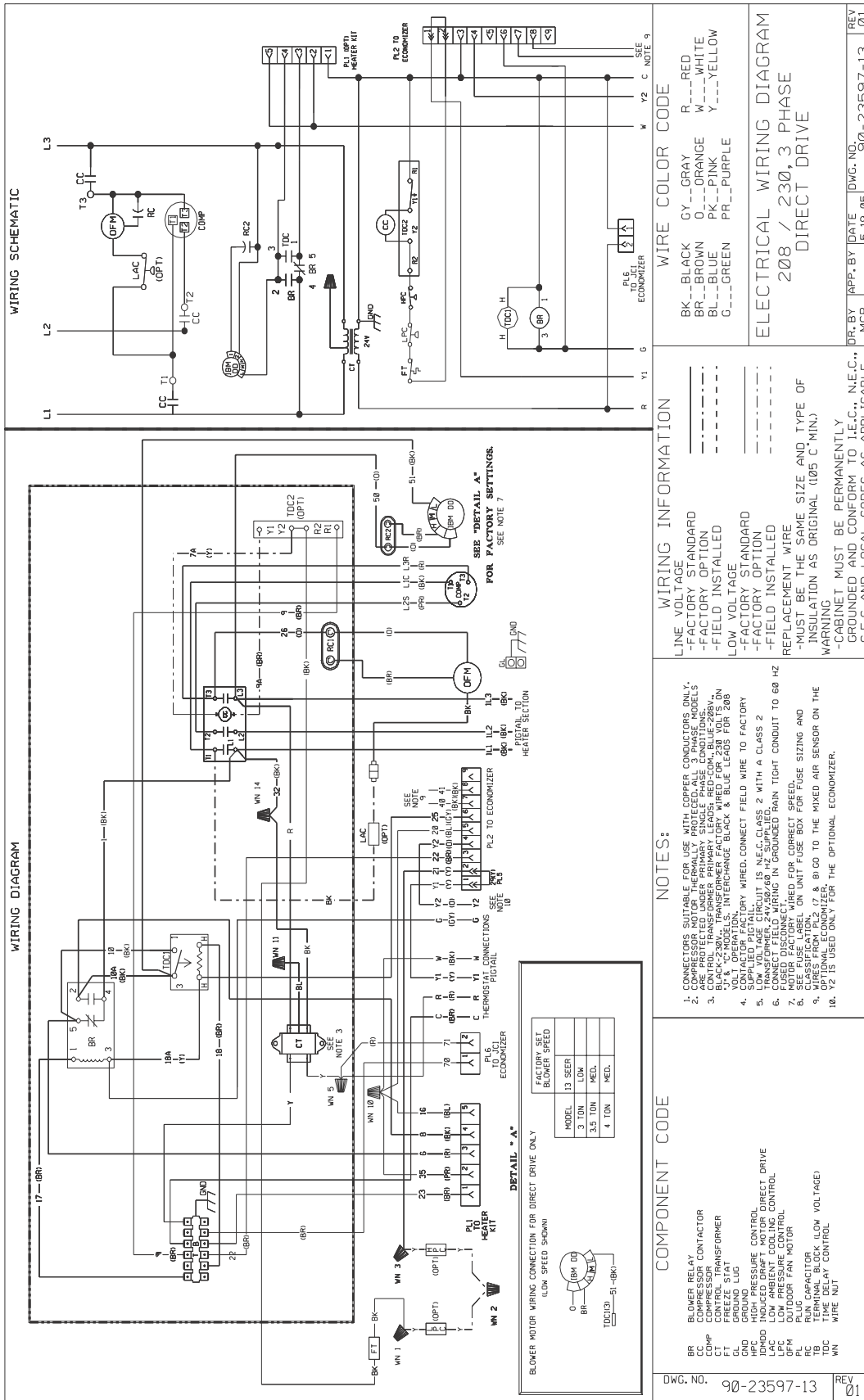


Figure 25: Wiring Diagram: MPS A05C with Gas Heat, 208/230 Volt, Direct Drive

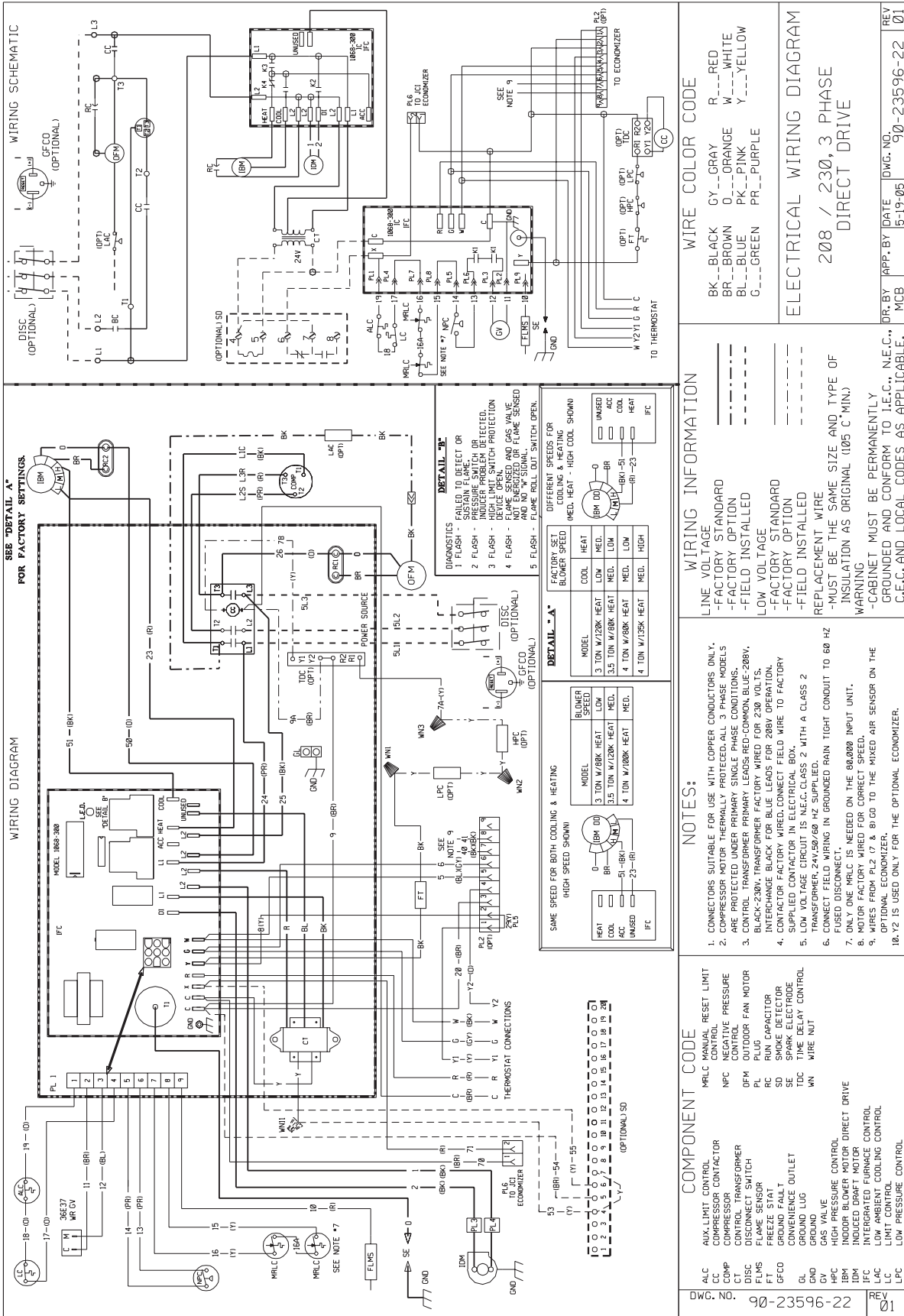
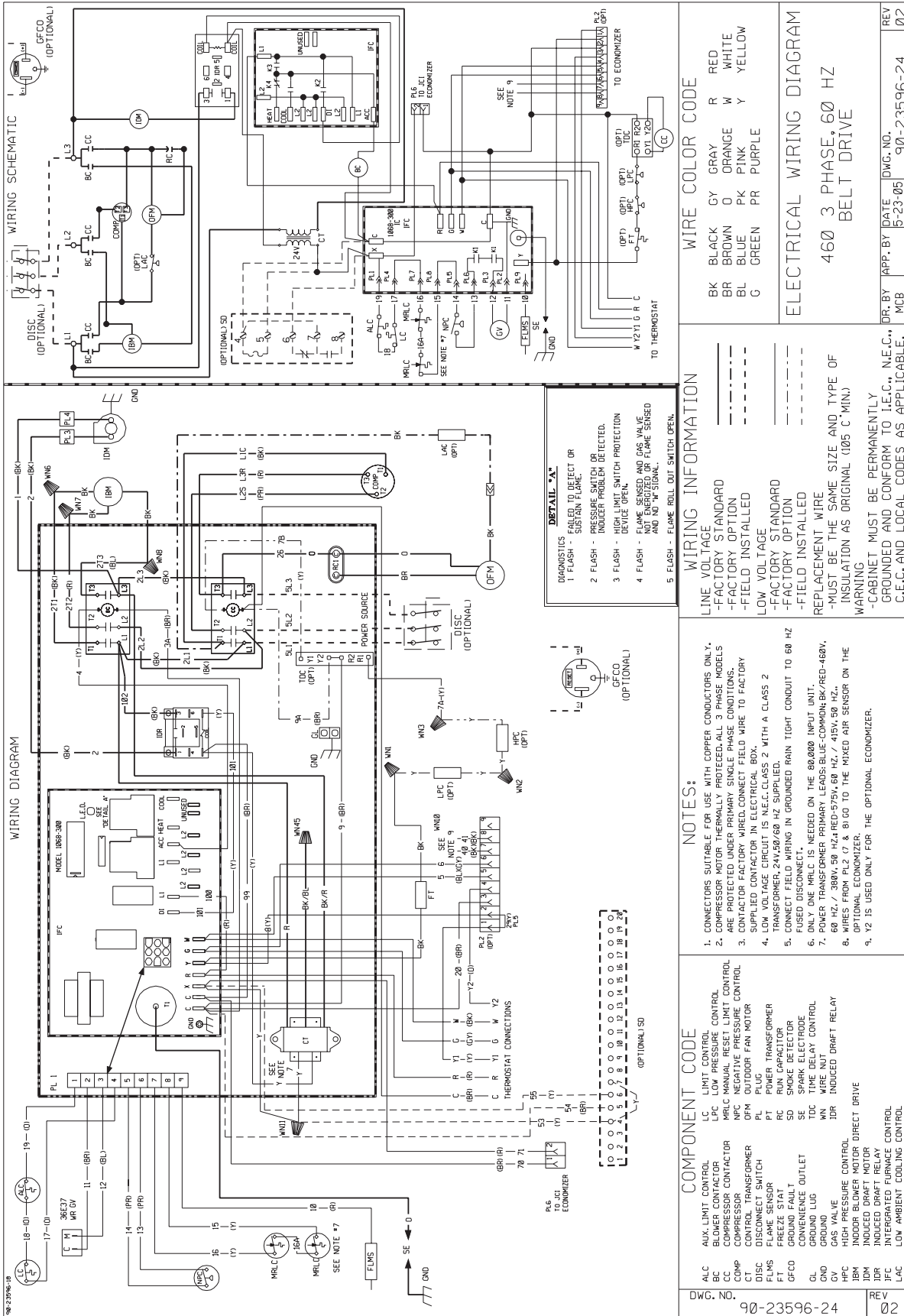


Figure 26: Wiring Diagram: MPS A05C with Gas Heat, 460 Volt, Belt Drive



Unit Capacity and Physical Data

Table 12: MPS A03C – A05C

Model	A03C	A04C	A05C
Cooling Performance¹			
Gross Cooling Capacity Btu (kW)	36,200 (10.61)	48,000 (14.06)	60,00 (17.58)
EER/SEER ²	11.6/14	11.6/14	11.6/14
Nominal CFM/AHRI Rated CFM (L/s)	1200/1250 (566/590)	1600/1500 (755/708)	2000/1800 (944/849)
AHRI Net Cooling Capacity Btu (kW)	34,600 (10.14)	46,000 (13.48)	58,500 (17.14)
Net Sensible Capacity Btu (kW)	25,300 (7.41)	34,000 (9.96)	41,700 (12.22)
Net Latent Capacity Btu (kW)	9,300 (2.72)	12,000 (3.52)	17,500 (5.13)
Net System Power kW	2.95	3.93	4.95
Compressor			
No./Type	1/Scroll	1/Scroll	1/Scroll
Gas Heating Performance			
AFUE %	80	80	80
Steady stage efficiency %	81	81	81
No. stages	1	1	1
Gas connection size	1/2"	1/2"	1/2"
Heating input (BtuH) low/medium/high	80,000/120,000	80,000/100,000/135,000	100,000/135,000
Heating output (BtuH)	64,800/97,200	64,800/81,000/109,400	81,000/109,400
Temperature rise °F	30–80	30–80	30–70
Sound⁴			
Outdoor Rating (dB)	78	78	83
Outdoor Coil			
Fin Type	Louvered	Louvered	Louvered
Tube Type	Microchannel	Microchannel	Microchannel
Microchannel Depth in. (mm)	0.7 (18)	0.7 (18)	0.7 (18)
Face Area sq. ft. (sq. m)	13.9 (1.29)	16.4 (1.52)	16.4 (1.52)
Rows / FPI (FPcm)	1 / 23 (9)	1 / 23 (9)	1 / 23 (9)
Indoor Coil - Fin Type			
Fin Type	Louvered	Louvered	Louvered
Tube Type	Microchannel	Microchannel	Microchannel
Microchannel Depth in. (mm)	1 (25)	1.3 (32)	1.3 (32)
Face Area sq. ft. (sq. m)	4.8 (0.45)	4.8 (0.45)	4.8 (0.45)
Rows / FPI (FPcm)	1/20 (8)	1/20 (8)	1/20 (8)
Refrigerant Control	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. (mm)	1/0.75 (19.05)	1/0.75 (19.05)	1/0.75 (19.05)
Outdoor Fan			
Type	Propeller	Propeller	Propeller
No. Used/Diameter in. (mm)	1/24 (609.6)	1/24 (609.6)	1/24 (609.6)
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1
CFM (L/s)	3680 (1737)	3680 (1737)	3930 (1855)
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075
Indoor Fan			
Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. (mm)	1/10×10 (254×254)	1/10×10 (254×254)	1/11×10 (279×254)
Drive Type/No. Speeds	Direct/1 or Belt/Adjustable	Direct/1 or Belt/Adjustable	Belt/Adjustable
No. Motors	1	1	1
Motor HP	1/2 or 3/4	1/2 or 3/4	3/4 or 1
Motor RPM Direct Drive/Belt Drive	1075/1725	1075/1725	1725
Motor Frame Size5	48 or 56	48 or 56	56
Filter			
Type	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes
[NO.] Size Recommended in. (mm × mm × mm)	[1] 1×16×25 (25×406×635) [1] 1×16×25 (25×406×635)	[1] 1×16×25 (25×406×635) [1] 1×16×25 (25×406×635)	[1] 1×16×25 (25×406×635) [1] 1×16×25 (25×406×635)
Refrigerant Charge Oz. (g)			
Charge Oz. (g)	54 (1531)	68 (1928)	63

NOTES:

() Designates Metric Conversions

- Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal CFM. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
- EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
- Integrated Energy Efficiency Ratio (IEER) is rated in accordance with AHRI Standard 340/360.
- Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.
- Greater value indicates larger HP indoor fan motor
- Heating Performance limit settings and rating data were established and approved under laboratory test conditions using ANSI standards.

Table 13: MPS H03C – H05C, High Efficiency

Model	H03C	H04C	H05C
Cooling Performance¹			
Gross Cooling Capacity Btu (kW)	36,200 (10.61)	48,000 (14.06)	59,000 (17.29)
EER/SEER ²	12.5/15	12.5/15	11.6/14
EER (1st Stage/2nd Stage)	N/A	N/A	19.9/11.6
Nominal CFM/AHRI Rated CFM (L/s) ⁷	1200/1250 (566/590)	1600/1600 (755/755)	1375/1800 (649/849)
AHRI Net Cooling Capacity Btu (kW) ⁷	35,400 (10.37)	46,500 (13.62)	49,000/57,000 (14.3/16.7)
Net Sensible Capacity Btu (kW) ⁷	26,200 (7.68)	35,700 (10.46)	34,800/40,800 (10.2/12.0)
Net Latent Capacity Btu (kW) ⁷	9,200 (2.72)	10,800 (3.52)	17,500 (5.13)
Net System Power kW ⁷	2.72	3.69	2.1/4.8
Compressor			
No./Type	1/Scroll	1/Scroll	1/Scroll
Gas Heating Performance			
AFUE %	81	81	81
Steady stage efficiency %	82	82	82
No. stages	1	1	1
Gas connection size	1/2"	1/2"	1/2"
Heating input (BtuH) low/medium/high	80,000/120,000	80,000/100,000/135,000	100,000/135,000
Heating output (BtuH)	64,800/97,200	64,800/81,000/109,400	81,000/109,400
Temperature rise °F	25-70	25-70	30 - 70
Sound⁴			
Outdoor Rating (dB)	78	78	83
Outdoor Coil			
Fin Type	Louvered	Louvered	Louvered
Tube Type	Microchannel	Microchannel	Microchannel
Microchannel Depth in. (mm)	0.7 (18)	0.7 (18)	0.7 (18)
Face Area sq. ft. (sq. m)	13.9 (1.29)	16.4 (1.52)	16.4 (1.52)
Rows / FPI (FPcm)	1 / 23 (9)	1 / 23 (9)	1 / 23 (9)
Indoor Coil - Fin Type			
Fin Type	Louvered	Louvered	Louvered
Tube Type	Microchannel	Microchannel	Microchannel
Microchannel Depth in. (mm)	1 (25)	1.3 (32)	1.3 (32)
Face Area sq. ft. (sq. m)	4.8 (0.45)	4.8 (0.45)	4.8 (0.45)
Rows / FPI (FPcm)	1/20 (8)	1/20 (8)	1/20 (8)
Refrigerant Control	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. (mm)	1/0.75 (19.05)	1/0.75 (19.05)	1/0.75 (19.05)
Outdoor Fan			
Type	Propeller	Propeller	Propeller
No. Used/Diameter in. (mm)	1/24 (609.6)	1/24 (609.6)	1/24 (609.6)
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1
CFM (L/s)	3680 (1737)	3680 (1737)	3930 (1855)
No. Motors/HP	1 at 1/3 HP	1 at 1/3 HP	1 at 1/3 HP
Motor RPM	1075	1075	1075
Indoor Fan			
Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. (mm)	1/10×10 (254×254)	1/10×10 (254×254)	1/11×10 (279×254)
Drive Type/No. Speeds	Direct/1 or Belt/Adjustable	Direct/1 or Belt/Adjustable	Belt/Adjustable
No. Motors	1	1	1
Motor HP	1/2	1/2 or 3/4	1
Motor RPM Direct Drive/Belt Drive	1075/1725	1075/1725	1725
Motor Frame Size5	48 or 56	48 or 56	56
Filter			
Type	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes
[NO.] Size Recommended in. (mm × mm × mm)	[1] 1×16×25 (25×406×635) [1] 1×16×25 (25×406×635)	[1] 1×16×25 (25×406×635) [1] 1×16×25 (25×406×635)	[1] 1×16×25 (25×406×635) [1] 1×16×25 (25×406×635)
Refrigerant Charge Oz. (g)			
Charge Oz. (g)	54 (1531)	68 (1928)	63

NOTES:

[] Designates Metric Conversions

- Cooling Performance is rated at 95°F ambient, 80°F entering dry bulb, 67°F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal CFM. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.
- EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.
- Integrated Energy Efficiency Ratio (IEER) is rated in accordance with AHRI Standard 340/360.
- Outdoor Sound Rating shown is tested in accordance with AHRI Standard 270.
- Greater value indicates larger HP indoor fan motor
- Heating Performance limit settings and rating data were established and approved under laboratory test conditions using ANSI standards.
- Values shown for H05C model are both AHRI rated. (1st stage/2nd stage)

Motor Data

Table 14: Compressor and Condenser Motor Data – 208/230 Volt

Data	Electrical Data (208/230 V)*			Electrical Data (460 V)*			Electrical Data (575 V)*		
	MPS A03C	MPS A04C	MPS A05C	MPS A03C	MPS A04C	MPS A05C	MPS A03C	MPS A04C	MPS A05C
Compressor Motor									
No.	1			1			1		
Phase	3			3			3		
RPM	3450			3450			3450		
HP, Compressor 1	3	4	5	3	4	5	3	4	5
Amps (RLA), Comp. 1	10.4	13.7	15.6	5.8	6.2	7.5	3.8	4.8	5.8
Amps (LRA), Comp. 1	88	83.1	110	38	41	52	36.5	33	38.9
HP, Compressor 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amps (RLA), Comp. 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amps (LRA), Comp. 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Condenser Motor									
No.	1			1			1		
Phase	1			1			1		
HP	1/3			1/3			1/3		
Amps (FLA, each)	1.2/1.2			1.4			1.0		
Amps (LRA, each)	4.7/4.7			2.4			1.8		

NOTE: *Unit operating voltage range is 187 – 253 for 208/230V; 414 – 506 for 460V; 518 – 632 for 575 V.

MCA and MCOP Data

Table 15: Unit MCA and MCOP Data

MPS Model		Voltage					
		208/230		460		575	
		Low*	High	Low*	High	Low*	High
A03C	MCA	19.0	N/A	11.0	N/A	N/A	N/A
	MCOP	25.0	N/A	15.0	N/A	N/A	N/A
A04C	MCA	23.0	N/A	11.0	N/A	N/A	N/A
	MCOP	35.0	N/A	15.0	N/A	N/A	N/A
A05C	MCA	N/A	26.0	N/A	13.0	N/A	10.0
	MCOP	N/A	30.0	N/A	20.0	N/A	15.0

NOTE: *Low static option is a direct drive motor for models A03C and A04C.

Table 16: Miscellaneous Data

Electrical Data												
	A03				A04				A05			
Unit Information												
Unit Operating Voltage Range	187-253	187-253	414-506	414-506	187-253	187-253	414-506	414-506	187-253	187-253	414-506	414-506
Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	208/230	460	460
Minimum Circuit Ampacity	16/16	16/16	10	10	21/21	22/22	11	11	26/26	27/27	13	13
Minimum Overcurrent Protection Device Size	20/20	20/20	15	15	25/25	25/25	15	15	30/30	35/35	15	15
Maximum Overcurrent Protection Device Size	20/20	20/20	15	15	30/30	30/30	15	15	40/40	40/40	20	20
Compressor Motor												
No.	1	1	1	1	1	1	1	1	1	1	1	1
Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	208/230	460	460
Phase	3	3	3	3	3	3	3	3	3	3	3	3
RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450	3450	3450	3450
HP, Compressor 1	3	3	3	3	4	4	4	4	5	5	5	5
Amps (RLA), Comp. 1	9/9	9/9	5.6	5.6	13.1/13.1	13.1/13.1	6.1	6.1	16/16	16/16	7.8	7.8
Amps (LRA), Comp. 1	71/71	71/71	38	38	83.1/83.1	83.1/83.1	41	41	110/110	110/110	52	52
Condenser Motor												
No.	1	1	1	1	1	1	1	1	1	1	1	1
Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	208/230	460	460
Phase	1	1	1	1	1	1	1	1	1	1	1	1
HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
Amps (FLA, each)	1.5/1.5	1.5/1.5	1	1	1.5/1.5	1.5/1.5	1	1	2.2/2.2	2.2/2.2	1	1
Amps (LRA, each)	3/3	3/3	1.9	1.9	3/3	3/3	1.9	1.9	4.9/4.9	4.9/4.9	1.9	1.9
Evaporator Fan												
No.	1	1	1	1	1	1	1	1	1	1	1	1
Volts	208/230	208/230	460	460	208/230	208/230	460	460	208/230	208/230	460	460
Phase	3	3	3	3	3	3	3	3	3	3	3	3
HP	1/2	1/2	1/2	1/2	1/2	3/4	1/2	3/4	3/4	1	3/4	1
Amps (FLA, each)	2.8/2.8	2.8/2.8	1.4	1.4	2.8/2.8	3.4/3.4	1.4	1.6	3.4/3.4	4.1/4.1	1.6	2
Amps (LRA, each)	11.3/11.3	11.3/11.3	6.2	6.2	11.3/11.3	16.8/16.8	6.2	8.4	16.8/16.8	24/24	8.4	12

Unit Dimensions MPS A03C – A05C

Figure 27: Bottom View

Important: This unit must be mounted level in both directions to allow water to drain from the condenser section and condensate pan.

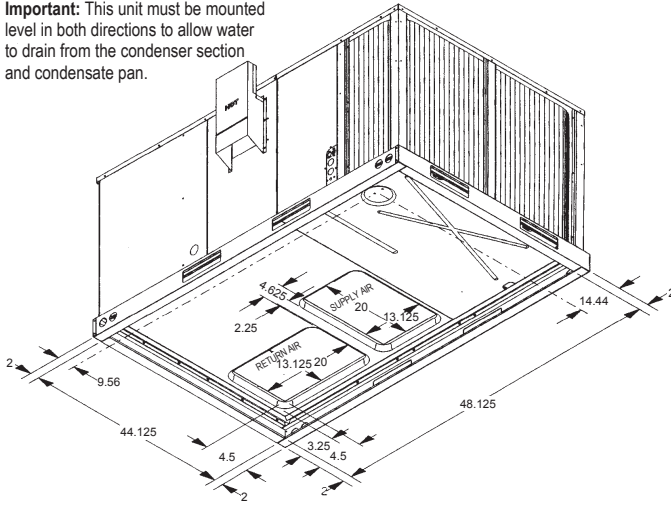


Figure 28: Cabinet Dimensions and Access Locations

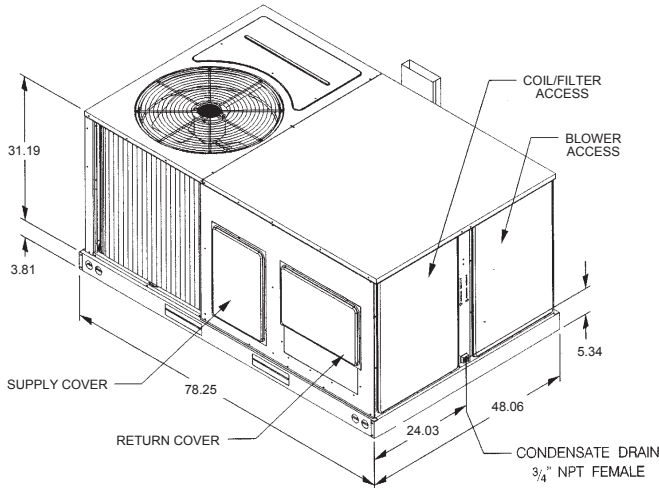


Figure 29: Cabinet Dimensions and Access Locations – Gas Heat Units

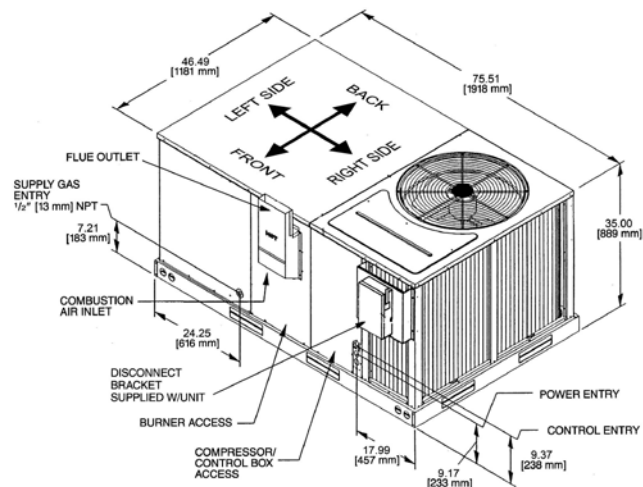


Figure 30: Unit Dimensions

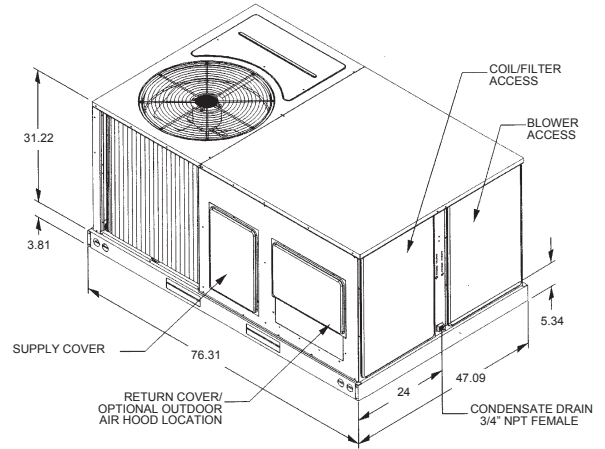


Figure 31: Supply and Return Dimensions – Back View

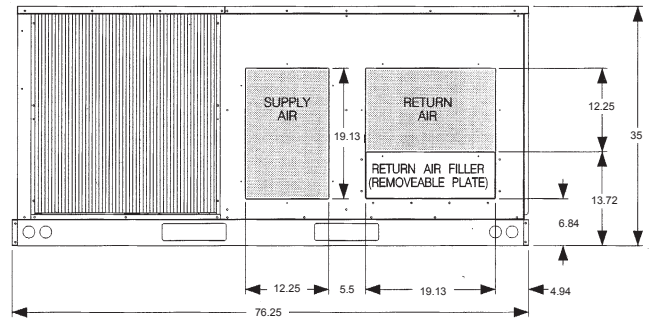
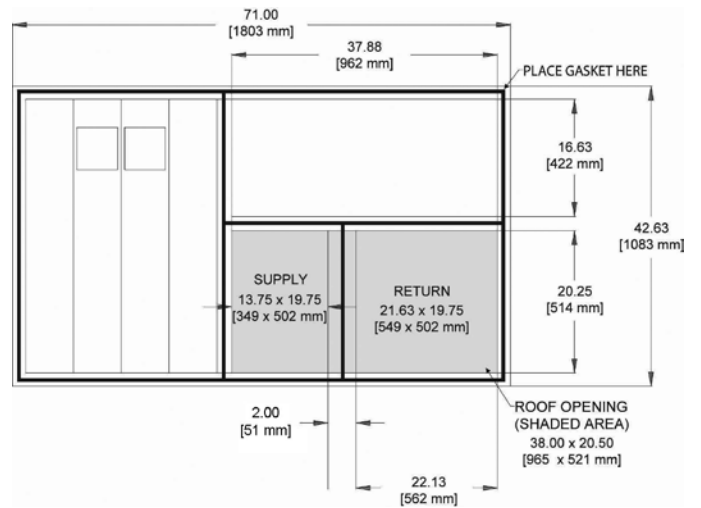


Figure 32: MPS A03C – A05C Curb Dimensions



System Performance – Standard Efficiency

Table 17: Gross System Performance—MPS A03C, 3 Tons Gas Heat

		Entering Indoor Air @ 80°F (26.7°C) dbE ¹									
		71°F (21.7°C)			67°F (19.4°C)			63°F (17.2°C)			
		1375 (649)	1250 (590)	1062 (501)	1375 (649)	1250 (590)	1062 (501)	1375 (649)	1250 (590)	1062 (501)	
		DR ¹	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15
Outdoor Dry Bulb Temperature °F (°C)	75 (23.9)	Total BTUH (kW)	44.7 (13.1)	43.9 (12.9)	42.7 (12.5)	41.5 (12.2)	40.7 (11.9)	39.6 (11.6)	38.5 (11.3)	37.8 (11.1)	36.8 (10.8)
		Sens BTUH (kW)	23.8 (7.0)	22.8 (6.7)	21.2 (6.2)	29.7 (8.7)	28.4 (8.3)	26.4 (7.7)	33.2 (9.7)	31.7 (9.3)	29.5 (8.6)
		Power (kW)	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0
	80 (26.7)	Total BTUH (kW)	43.6 (12.8)	42.9 (12.6)	41.7 (12.2)	40.4 (11.8)	39.7 (11.6)	38.6 (11.3)	37.4 (11.0)	36.7 (10.8)	35.7 (10.5)
		Sens BTUH (kW)	23.7 (6.9)	22.6 (6.6)	21.0 (6.2)	29.5 (8.6)	28.2 (8.3)	26.2 (7.7)	33.0 (9.7)	31.6 (9.3)	29.4 (8.6)
		Power (kW)	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.0
	85 (29.4)	Total BTUH (kW)	42.5 (12.5)	41.7 (12.2)	40.6 (11.9)	39.3 (11.5)	38.6 (11.3)	37.5 (11.0)	36.3 (10.6)	35.6 (10.4)	34.6 (10.2)
		Sens BTUH (kW)	23.4 (6.8)	22.3 (6.5)	20.8 (6.1)	29.2 (8.6)	27.9 (8.2)	26.0 (7.6)	32.8 (9.6)	31.3 (9.2)	29.1 (8.5)
		Power (kW)	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.2	2.2
	90 (32.2)	Total BTUH (kW)	41.4 (12.1)	40.6 (11.9)	39.5 (11.6)	38.1 (11.2)	37.4 (11.0)	36.4 (10.7)	35.1 (10.3)	34.5 (10.1)	33.5 (9.8)
		Sens BTUH (kW)	22.9 (6.7)	21.9 (6.4)	20.4 (6.0)	28.8 (8.4)	27.5 (8.1)	25.6 (7.5)	32.3 (9.5)	30.9 (9.1)	28.7 (8.4)
		Power (kW)	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3
	95 (35)	Total BTUH (kW)	40.2 (11.8)	39.5 (11.6)	38.4 (11.2)	36.9 (10.8)	36.3 (10.6)	35.3 (10.3)	33.9 (9.9)	33.3 (9.8)	32.4 (9.5)
		Sens BTUH (kW)	22.4 (6.6)	21.4 (6.3)	19.9 (5.8)	28.2 (8.3)	27.0 (7.9)	25.1 (7.3)	31.8 (9.3)	30.3 (8.9)	28.2 (8.3)
		Power (kW)	2.5	2.4	2.4	2.5	2.5	2.4	2.5	2.5	2.5
	100 (37.8)	Total BTUH (kW)	39.0 (11.4)	38.3 (11.2)	37.2 (10.9)	35.7 (10.5)	35.1 (10.3)	34.1 (10.0)	32.7 (9.6)	32.2 (9.4)	31.3 (9.2)
		Sens BTUH (kW)	21.7 (6.4)	20.7 (6.1)	19.3 (5.6)	27.5 (8.1)	26.3 (7.7)	24.5 (7.2)	31.1 (9.1)	29.7 (8.7)	27.6 (8.1)
		Power (kW)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.6
	105 (40.6)	Total BTUH (kW)	37.7 (11.1)	37.1 (10.9)	36.1 (10.6)	34.5 (10.1)	33.9 (9.9)	33.0 (9.7)	31.5 (9.2)	30.9 (9.1)	30.1 (8.8)
		Sens BTUH (kW)	20.9 (6.1)	19.9 (5.8)	18.5 (5.4)	26.7 (7.8)	25.5 (7.5)	23.7 (7.0)	30.2 (8.9)	28.9 (8.5)	26.9 (7.9)
		Power (kW)	2.8	2.7	2.7	2.8	2.8	2.7	2.8	2.8	2.8
	110 (43.3)	Total BTUH (kW)	36.5 (10.7)	35.8 (10.5)	34.9 (10.2)	33.2 (9.7)	32.7 (9.6)	31.8 (9.3)	30.3 (8.9)	29.7 (8.7)	28.9 (8.5)
		Sens BTUH (kW)	19.9 (5.8)	19.0 (5.6)	17.7 (5.2)	25.7 (7.5)	24.6 (7.2)	22.9 (6.7)	29.3 (8.6)	28.0 (8.2)	26.0 (7.6)
		Power (kW)	2.9	2.9	2.9	3.0	2.9	2.9	3.0	3.0	2.9
115 (46.1)	Total BTUH (kW)	35.2 (10.3)	34.6 (10.1)	33.6 (9.9)	32.0 (9.4)	31.4 (9.2)	30.5 (8.9)	29.0 (8.5)	28.5 (8.3)	27.7 (8.1)	
	Sens BTUH (kW)	18.8 (5.5)	18.0 (5.3)	16.7 (4.9)	24.7 (7.2)	23.6 (6.9)	21.9 (6.4)	28.2 (8.3)	26.9 (7.9)	25.0 (7.3)	
	Power (kW)	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.1	3.1	
120 (48.9)	Total BTUH (kW)	33.9 (9.9)	33.3 (9.8)	32.4 (9.5)	30.7 (9.0)	30.1 (8.8)	29.3 (8.6)	27.7 (8.1)	27.2 (8.0)	26.4 (7.7)	
	Sens BTUH (kW)	17.6 (5.1)	16.8 (4.9)	15.6 (4.6)	23.4 (6.9)	22.4 (6.6)	20.8 (6.1)	27.0 (7.9)	25.8 (7.5)	24.0 (7.0)	
	Power (kW)	3.3	3.3	3.2	3.3	3.3	3.3	3.4	3.3	3.3	
125 (51.7)	Total BTUH (kW)	32.6 (9.5)	32.0 (9.4)	31.1 (9.1)	29.3 (8.6)	28.8 (8.4)	28.0 (8.2)	26.3 (7.7)	25.9 (7.6)	25.2 (7.4)	
	Sens BTUH (kW)	16.2 (4.8)	15.5 (4.5)	14.4 (4.2)	22.1 (6.5)	21.1 (6.2)	19.6 (5.7)	25.6 (7.5)	24.5 (7.2)	22.7 (6.7)	
	Power (kW)	3.5	3.5	3.4	3.5	3.5	3.5	3.4	3.5	3.5	

Note: DR — Depression Ratio; dbE — Entering Air Dry Bulb; wbE — Entering Air Wet Bulb; Total — Total Capacity × 1000 BTUH; Sens — Sensible Capacity × 1000 BTUH Power—kW input
 1. When the entering air dry bulb is other than 80°F (27°C), adjust the sensible capacity from the table by adding (1.10 × CFM × (1 – DR) × (dbE – 80))

Table 18: Gross System Performance—MPS A04C, 4 Tons Gas Heat

		Entering Indoor Air @ 80°F (26.7°C) dbE ¹									
		wbE	71°F (21.7°C)			67°F (19.4°C)			63°F (17.2°C)		
		CFM (L/s)	1650 (779)	1500 (708)	1275 (602)	1650 (779)	1500 (708)	1275 (602)	1650 (779)	1500 (708)	1275 (602)
		DR ¹	0.1	0.08	0.05	0.1	0.08	0.05	0.1	0.08	0.05
Outdoor Dry Bulb Temperature °F (°C)	75 (23.9)	Total BTUH (kW)	60.3 (17.7)	59.3 (17.4)	57.6 (16.9)	56.1 (16.4)	55.1 (16.1)	53.6 (15.7)	51.1 (15.0)	50.2 (14.7)	48.8 (14.3)
		Sens BTUH (kW)	31.2 (9.2)	29.8 (8.7)	27.7 (8.1)	39.8 (11.7)	38.1 (11.2)	35.4 (10.4)	43.9 (12.9)	41.9 (12.3)	39.0 (11.4)
		Power (kW)	2.6	2.6	2.5	2.6	2.6	2.5	2.6	2.5	2.5
	80 (26.7)	Total BTUH (kW)	58.5 (17.1)	57.4 (16.8)	55.9 (16.4)	54.2 (15.9)	53.2 (15.6)	51.8 (15.2)	49.2 (14.4)	48.4 (14.2)	47.0 (13.8)
		Sens BTUH (kW)	31.0 (9.1)	29.6 (8.7)	27.5 (8.1)	39.6 (11.6)	37.8 (11.1)	35.2 (10.3)	43.6 (12.8)	41.7 (12.2)	38.8 (11.4)
		Power (kW)	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	85 (29.4)	Total BTUH (kW)	56.7 (16.6)	55.7 (16.3)	54.2 (15.9)	52.4 (15.4)	51.5 (15.1)	50.1 (14.7)	47.5 (13.9)	46.6 (13.7)	45.3 (13.3)
		Sens BTUH (kW)	30.6 (9.0)	29.2 (8.6)	27.1 (8.0)	39.2 (11.5)	37.4 (11.0)	34.8 (10.2)	43.2 (12.7)	41.3 (12.1)	38.4 (11.3)
		Power (kW)	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
	90 (32.2)	Total BTUH (kW)	55.0 (16.1)	54.0 (15.8)	52.5 (15.4)	50.7 (14.9)	49.8 (14.6)	48.4 (14.2)	45.7 (13.4)	44.9 (13.2)	43.7 (12.8)
		Sens BTUH (kW)	30.0 (8.8)	28.6 (8.4)	26.6 (7.8)	38.6 (11.3)	36.9 (10.8)	34.3 (10.0)	42.6 (12.5)	40.7 (11.9)	37.9 (11.1)
		Power (kW)	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	95 (35)	Total BTUH (kW)	53.3 (15.6)	52.3 (15.3)	50.9 (14.9)	49.0 (14.4)	48.1 (14.1)	46.8 (13.7)	44.1 (12.9)	43.3 (12.7)	42.1 (12.3)
		Sens BTUH (kW)	29.2 (8.6)	27.9 (8.2)	26.0 (7.6)	37.8 (11.1)	36.1 (10.6)	33.6 (9.9)	41.9 (12.3)	40.0 (11.7)	37.2 (10.9)
		Power (kW)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
	100 (37.8)	Total BTUH (kW)	51.7 (15.2)	50.8 (14.9)	49.4 (14.5)	47.4 (13.9)	46.6 (13.7)	45.3 (13.3)	42.5 (12.4)	41.7 (12.2)	40.6 (11.9)
		Sens BTUH (kW)	28.3 (8.3)	27.0 (7.9)	25.2 (7.4)	36.9 (10.8)	35.3 (10.3)	32.8 (9.6)	41.0 (12.0)	39.2 (11.5)	36.4 (10.7)
		Power (kW)	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	105 (40.6)	Total BTUH (kW)	50.2 (14.7)	49.3 (14.4)	47.9 (14.0)	45.9 (13.5)	45.1 (13.2)	43.9 (12.9)	40.9 (12.0)	40.2 (11.8)	39.1 (11.5)
		Sens BTUH (kW)	27.2 (8.0)	26.0 (7.6)	24.2 (7.1)	35.8 (10.5)	34.3 (10.0)	31.9 (9.3)	39.9 (11.7)	38.1 (11.2)	35.5 (10.4)
		Power (kW)	3.8	3.8	3.7	3.8	3.7	3.7	3.8	3.7	3.7
	110 (43.3)	Total BTUH (kW)	48.7 (14.3)	47.8 (14.0)	46.5 (13.6)	44.4 (13.0)	43.6 (12.8)	42.5 (12.4)	39.5 (11.6)	38.8 (11.4)	37.7 (11.1)
		Sens BTUH (kW)	26.0 (7.6)	24.8 (7.3)	23.1 (6.8)	34.6 (10.1)	33.1 (9.7)	30.8 (9.0)	38.7 (11.3)	36.9 (10.8)	34.4 (10.1)
		Power (kW)	4.0	4.0	3.9	4.0	4.0	3.9	4.0	4.0	4.0
115 (46.1)	Total BTUH (kW)	47.3 (13.9)	46.5 (13.6)	45.2 (13.2)	43.0 (12.6)	42.3 (12.4)	41.1 (12.0)	38.1 (11.2)	37.4 (11.0)	36.4 (10.7)	
	Sens BTUH (kW)	24.6 (7.2)	23.5 (6.9)	21.8 (6.4)	33.2 (9.7)	31.7 (9.3)	29.5 (8.6)	37.3 (10.9)	35.6 (10.4)	33.1 (9.7)	
	Power (kW)	4.3	4.2	4.2	4.3	4.2	4.2	4.3	4.2	4.2	4.2
120 (48.9)	Total BTUH (kW)	46.0 (13.5)	45.2 (13.2)	43.9 (12.9)	41.7 (12.2)	41.0 (12.0)	39.8 (11.7)	36.7 (10.8)	36.1 (10.6)	35.1 (10.3)	
	Sens BTUH (kW)	23.0 (6.7)	22.0 (6.4)	20.5 (6.0)	31.6 (9.3)	30.2 (8.9)	28.1 (8.2)	35.7 (10.5)	34.1 (10.0)	31.7 (9.3)	
	Power (kW)	4.5	4.5	4.4	4.5	4.5	4.4	4.5	4.5	4.4	4.4
125 (51.7)	Total BTUH (kW)	44.7 (13.1)	43.9 (12.9)	42.7 (12.5)	40.4 (11.8)	39.7 (11.6)	38.6 (11.3)	35.5 (10.4)	34.8 (10.2)	33.9 (9.9)	
	Sens BTUH (kW)	21.3 (6.2)	20.3 (6.0)	18.9 (5.5)	29.9 (8.8)	28.6 (8.4)	26.6 (7.8)	34.0 (10.0)	32.4 (9.5)	30.2 (8.8)	
	Power (kW)	4.8	4.8	4.7	4.8	4.8	4.7	4.8	4.7	4.7	4.7

Note: DR — Depression Ratio; dbE — Entering Air Dry Bulb; wbE — Entering Air Wet Bulb; Total — Total Capacity × 1000 BTUH; Sens — Sensible Capacity × 1000 BTUH Power—KW input
 1. When the entering air dry bulb is other than 80°F (27°C), adjust the sensible capacity from the table by adding (1.10 × CFM × (1 - DR) × (dbE - 80))

Table 19: Gross System Performance—MPS A05C5 Tons Gas Heat

		Entering Indoor Air @ 80°F (26.7°C) dbE ¹									
		wbE	71°F (21.7°C)			67°F (19.4°C)			63°F (17.2°C)		
		CFM (L/s)	1980 (934)	1800 (850)	1530 (722)	1980 (934)	1800 (850)	1530 (722)	1980 (934)	1800 (850)	1530 (722)
		DR ¹	0.13	0.12	0.09	0.13	0.12	0.09	0.13	0.12	0.09
Outdoor Dry Bulb Temperature °F (°C)	75 (23.9)	Total BTUH (kW)	73.9 (21.6)	72.6 (21.3)	70.6 (20.7)	67.7 (19.8)	66.5 (19.5)	64.7 (19.0)	62.5 (18.3)	61.4 (18.0)	59.7 (17.5)
		Sens BTUH (kW)	37.0 (10.8)	35.3 (10.4)	32.9 (9.6)	46.2 (13.5)	44.2 (12.9)	41.1 (12.0)	52.3 (15.3)	50.0 (14.7)	46.5 (13.6)
		Power (kW)	3.6	3.6	3.6	3.6	3.6	3.5	3.6	3.6	3.6
	80 (26.7)	Total BTUH (kW)	72.5 (21.2)	71.2 (20.9)	69.2 (20.3)	66.3 (19.4)	65.1 (19.1)	63.3 (18.6)	61.1 (17.9)	60.0 (17.6)	58.3 (17.1)
		Sens BTUH (kW)	37.2 (10.9)	35.6 (10.4)	33.1 (9.7)	46.5 (13.6)	44.4 (13.0)	41.3 (12.1)	52.6 (15.4)	50.3 (14.7)	46.7 (13.7)
		Power (kW)	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8
	85 (29.4)	Total BTUH (kW)	70.9 (20.8)	69.6 (20.4)	67.7 (19.8)	64.7 (19.0)	63.6 (18.6)	61.8 (18.1)	59.5 (17.4)	58.5 (17.1)	56.9 (16.7)
		Sens BTUH (kW)	37.2 (10.9)	35.5 (10.4)	33.0 (9.7)	46.5 (13.6)	44.4 (13.0)	41.3 (12.1)	52.6 (15.4)	50.2 (14.7)	46.7 (13.7)
		Power (kW)	4.1	4.0	4.0	4.0	4.0	3.9	4.0	4.0	3.9
	90 (32.2)	Total BTUH (kW)	69.2 (20.3)	68.0 (19.9)	66.1 (19.4)	63.0 (18.5)	61.9 (18.1)	60.2 (17.6)	57.8 (16.9)	56.8 (16.6)	55.3 (16.2)
		Sens BTUH (kW)	36.8 (10.8)	35.2 (10.3)	32.7 (9.6)	46.1 (13.5)	44.0 (12.9)	40.9 (12.0)	52.2 (15.3)	49.8 (14.6)	46.4 (13.6)
		Power (kW)	4.3	4.3	4.2	4.3	4.2	4.2	4.2	4.2	4.1
	95 (35)	Total BTUH (kW)	67.4 (19.8)	66.2 (19.4)	64.4 (18.9)	61.2 (17.9)	60.1 (17.6)	58.5 (17.1)	56.0 (16.4)	55.0 (16.1)	53.5 (15.7)
		Sens BTUH (kW)	36.1 (10.6)	34.5 (10.1)	32.1 (9.4)	45.4 (13.3)	43.3 (12.7)	40.3 (11.8)	51.5 (15.1)	49.2 (14.4)	45.7 (13.4)
		Power (kW)	4.5	4.5	4.4	4.5	4.5	4.4	4.5	4.4	4.4
	100 (37.8)	Total BTUH (kW)	65.5 (19.2)	64.3 (18.8)	62.5 (18.3)	59.3 (17.4)	58.2 (17.1)	56.6 (16.6)	54.1 (15.8)	53.1 (15.6)	51.7 (15.1)
		Sens BTUH (kW)	35.1 (10.3)	33.5 (9.8)	31.1 (9.1)	44.3 (13.0)	42.3 (12.4)	39.4 (11.5)	50.4 (14.8)	48.2 (14.1)	44.8 (13.1)
		Power (kW)	4.8	4.8	4.7	4.8	4.7	4.7	4.7	4.7	4.6
	105 (40.6)	Total BTUH (kW)	63.4 (18.6)	62.3 (18.2)	60.6 (17.7)	57.2 (16.8)	56.2 (16.5)	54.7 (16.0)	52.0 (15.2)	51.1 (15.0)	49.7 (14.6)
		Sens BTUH (kW)	33.7 (9.9)	32.2 (9.4)	29.9 (8.8)	42.9 (12.6)	41.0 (12.0)	38.2 (11.2)	49.0 (14.4)	46.9 (13.7)	43.6 (12.8)
		Power (kW)	5.1	5.0	5.0	5.0	5.0	4.9	5.0	5.0	4.9
	110 (43.3)	Total BTUH (kW)	61.2 (17.9)	60.1 (17.6)	58.5 (17.1)	55.0 (16.1)	54.0 (15.8)	52.6 (15.4)	49.8 (14.6)	48.9 (14.3)	47.6 (13.9)
		Sens BTUH (kW)	32.0 (9.4)	30.6 (9.0)	28.4 (8.3)	41.2 (12.1)	39.4 (11.5)	36.6 (10.7)	47.3 (13.9)	45.2 (13.3)	42.1 (12.3)
		Power (kW)	5.3	5.3	5.2	5.3	5.3	5.2	5.3	5.2	5.2
115 (46.1)	Total BTUH (kW)	58.9 (17.3)	57.8 (16.9)	56.2 (16.5)	52.7 (15.4)	51.7 (15.2)	50.3 (14.8)	47.5 (13.9)	46.6 (13.7)	45.4 (13.3)	
	Sens BTUH (kW)	30.0 (8.8)	28.6 (8.4)	26.6 (7.8)	39.2 (11.5)	37.5 (11.0)	34.8 (10.2)	45.3 (13.3)	43.3 (12.7)	40.3 (11.8)	
	Power (kW)	5.6	5.6	5.5	5.6	5.6	5.5	5.6	5.5	5.5	
120 (48.9)	Total BTUH (kW)	56.4 (16.5)	55.4 (16.2)	53.9 (15.8)	50.2 (14.7)	49.3 (14.5)	48.0 (14.1)	45.0 (13.2)	44.2 (13.0)	43.0 (12.6)	
	Sens BTUH (kW)	27.6 (8.1)	26.4 (7.7)	24.5 (7.2)	36.9 (10.8)	35.2 (10.3)	32.7 (9.6)	43.0 (12.6)	41.0 (12.0)	38.2 (11.2)	
	Power (kW)	5.9	5.9	5.8	5.9	5.9	5.8	5.9	5.8	5.8	
125 (51.7)	Total BTUH (kW)	53.8 (15.8)	52.9 (15.5)	51.4 (15.1)	47.6 (14.0)	46.8 (13.7)	45.5 (13.3)	42.4 (12.4)	41.7 (12.2)	40.5 (11.9)	
	Sens BTUH (kW)	24.9 (7.3)	23.8 (7.0)	22.1 (6.5)	34.2 (10.0)	32.6 (9.6)	30.4 (8.9)	40.3 (11.8)	38.5 (11.3)	35.8 (10.5)	
	Power (kW)	6.3	6.2	6.1	6.2	6.2	6.1	6.2	6.2	6.1	

Note: DR — Depression Ratio; dbE — Entering Air Dry Bulb; wbE — Entering Air Wet Bulb; Total — Total Capacity × 1000 BTUH; Sens — Sensible Capacity × 1000 BTUH Power—KW input
 1. When the entering air dry bulb is other than 80°F (27°C), adjust the sensible capacity from the table by adding (1.10 × CFM × (1 - DR) × (dbE - 80))

System Performance – High Efficiency

Table 20: Gross System Performance—MPS H03C, 3 Tons Gas Heat

		Entering Indoor Air @ 80°F (26.7°C) dbE ¹									
		71°F (21.7°C)			67°F (19.4°C)			63°F (17.2°C)			
		1375 (649)	1250 (590)	1062 (501)	1375 (649)	1250 (590)	1062 (501)	1375 (649)	1250 (590)	1062 (501)	
		DR ¹	0.19	0.17	0.14	0.19	0.17	0.14	0.19	0.17	0.14
Outdoor Dry Bulb Temperature °F (°C)	75 (23.9)	Total BTUH (kW)	45.2 (13.3)	44.4 (13.0)	43.2 (12.7)	41.8 (12.2)	41.0 (12.0)	39.9 (11.7)	39.0 (11.4)	38.3 (11.2)	37.3 (10.9)
		Sens BTUH (kW)	24.2 (7.1)	23.1 (6.8)	21.5 (6.3)	29.9 (8.8)	28.6 (8.4)	26.6 (7.8)	33.7 (9.9)	32.2 (9.4)	29.9 (8.8)
		Power (kW)	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9
	80 (26.7)	Total BTUH (kW)	44.0 (12.9)	43.2 (12.7)	42.1 (12.3)	40.6 (11.9)	39.8 (11.7)	38.8 (11.4)	37.8 (11.1)	37.1 (10.9)	36.1 (10.6)
		Sens BTUH (kW)	24.0 (7.0)	22.9 (6.7)	21.3 (6.2)	29.7 (8.7)	28.4 (8.3)	26.4 (7.7)	33.5 (9.8)	32.0 (9.4)	29.8 (8.7)
		Power (kW)	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0
	85 (29.4)	Total BTUH (kW)	42.8 (12.5)	42.1 (12.3)	40.9 (12.0)	39.4 (11.5)	38.7 (11.3)	37.6 (11.0)	36.6 (10.7)	35.9 (10.5)	34.9 (10.2)
		Sens BTUH (kW)	23.7 (6.9)	22.6 (6.6)	21.0 (6.2)	29.4 (8.6)	28.1 (8.2)	26.1 (7.7)	33.2 (9.7)	31.7 (9.3)	29.5 (8.6)
		Power (kW)	2.2	2.1	2.1	2.2	2.2	2.1	2.2	2.2	2.2
	90 (32.2)	Total BTUH (kW)	41.6 (12.2)	40.9 (12.0)	39.8 (11.6)	38.1 (11.2)	37.5 (11.0)	36.4 (10.7)	35.4 (10.4)	34.7 (10.2)	33.8 (9.9)
		Sens BTUH (kW)	23.2 (6.8)	22.2 (6.5)	20.6 (6.0)	28.9 (8.5)	27.6 (8.1)	25.7 (7.5)	32.7 (9.6)	31.2 (9.2)	29.1 (8.5)
		Power (kW)	2.3	2.3	2.2	2.3	2.3	2.3	2.4	2.3	2.3
	95 (35)	Total BTUH (kW)	40.4 (11.8)	39.7 (11.6)	38.6 (11.3)	36.9 (10.8)	36.3 (10.6)	35.3 (10.3)	34.2 (10.0)	33.6 (9.8)	32.6 (9.6)
		Sens BTUH (kW)	22.6 (6.6)	21.6 (6.3)	20.1 (5.9)	28.4 (8.3)	27.1 (7.9)	25.2 (7.4)	32.1 (9.4)	30.7 (9.0)	28.5 (8.4)
		Power (kW)	2.5	2.4	2.4	2.5	2.5	2.4	2.5	2.5	2.5
	100 (37.8)	Total BTUH (kW)	39.2 (11.5)	38.5 (11.3)	37.5 (11.0)	35.8 (10.5)	35.1 (10.3)	34.2 (10.0)	33.0 (9.7)	32.4 (9.5)	31.5 (9.2)
		Sens BTUH (kW)	21.9 (6.4)	20.9 (6.1)	19.5 (5.7)	27.6 (8.1)	26.4 (7.7)	24.6 (7.2)	31.4 (9.2)	30.0 (8.8)	27.9 (8.2)
		Power (kW)	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.6
	105 (40.6)	Total BTUH (kW)	38.0 (11.1)	37.3 (10.9)	36.3 (10.6)	34.6 (10.1)	33.9 (9.9)	33.0 (9.7)	31.8 (9.3)	31.2 (9.1)	30.4 (8.9)
		Sens BTUH (kW)	21.1 (6.2)	20.1 (5.9)	18.7 (5.5)	26.8 (7.9)	25.6 (7.5)	23.8 (7.0)	30.6 (9.0)	29.2 (8.6)	27.2 (8.0)
		Power (kW)	2.8	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.8
	110 (43.3)	Total BTUH (kW)	36.8 (10.8)	36.2 (10.6)	35.2 (10.3)	33.4 (9.8)	32.8 (9.6)	31.9 (9.3)	30.6 (9.0)	30.1 (8.8)	29.2 (8.6)
		Sens BTUH (kW)	20.1 (5.9)	19.2 (5.6)	17.9 (5.2)	25.8 (7.6)	24.7 (7.2)	23.0 (6.7)	29.6 (8.7)	28.3 (8.3)	26.3 (7.7)
		Power (kW)	3.0	2.9	2.9	3.0	3.0	2.9	3.0	3.0	3.0
115 (46.1)	Total BTUH (kW)	35.7 (10.4)	35.0 (10.3)	34.1 (10.0)	32.2 (9.4)	31.6 (9.3)	30.8 (9.0)	29.4 (8.6)	28.9 (8.5)	28.1 (8.2)	
	Sens BTUH (kW)	19.0 (5.6)	18.2 (5.3)	16.9 (4.9)	24.7 (7.3)	23.6 (6.9)	22.0 (6.4)	28.5 (8.4)	27.2 (8.0)	25.3 (7.4)	
	Power (kW)	3.2	3.1	3.1	3.2	3.2	3.1	3.2	3.2	3.1	
120 (48.9)	Total BTUH (kW)	34.5 (10.1)	33.9 (9.9)	32.9 (9.7)	31.0 (9.1)	30.5 (8.9)	29.6 (8.7)	28.2 (8.3)	27.7 (8.1)	27.0 (7.9)	
	Sens BTUH (kW)	17.8 (5.2)	17.0 (5.0)	15.8 (4.6)	23.5 (6.9)	22.5 (6.6)	20.9 (6.1)	27.3 (8.0)	26.1 (7.6)	24.3 (7.1)	
	Power (kW)	3.4	3.3	3.3	3.4	3.4	3.3	3.4	3.4	3.3	
125 (51.7)	Total BTUH (kW)	33.3 (9.8)	32.7 (9.6)	31.8 (9.3)	29.8 (8.7)	29.3 (8.6)	28.5 (8.4)	27.1 (7.9)	26.6 (7.8)	25.9 (7.6)	
	Sens BTUH (kW)	16.4 (4.8)	15.7 (4.6)	14.6 (4.3)	22.2 (6.5)	21.2 (6.2)	19.7 (5.8)	26.0 (7.6)	24.8 (7.3)	23.1 (6.8)	
	Power (kW)	3.6	3.5	3.5	3.6	3.6	3.5	3.6	3.6	3.5	

Note: DR — Depression Ratio; dbE — Entering Air Dry Bulb; wbE — Entering Air Wet Bulb; Total — Total Capacity × 1000 BTUH; Sens — Sensible Capacity × 1000 BTUH Power—kW input
 1. When the entering air dry bulb is other than 80°F (27°C), adjust the sensible capacity from the table by adding (1.10 × CFM × (1 – DR) × (dbE – 80))

Table 21: Gross System Performance—MPS H04C, 4 Tons Gas Heat

		Entering Indoor Air @ 80°F (26.7°C) dbE ¹									
		wbE	71°F (21.7°C)			67°F (19.4°C)			63°F (17.2°C)		
		CFM (L/s)	1760 (831)	1600 (755)	1360 (642)	1760 (831)	1600 (755)	1360 (642)	1760 (831)	1600 (755)	1360 (642)
		DR ¹	0.11	0.09	0.05	0.11	0.09	0.05	0.11	0.09	0.05
Outdoor Dry Bulb Temperature °F (°C)	75 (23.9)	Total BTUH (kW)	58.9 (17.3)	57.8 (16.9)	56.2 (16.5)	55.1 (16.1)	54.1 (15.9)	52.6 (15.4)	49.6 (14.5)	48.8 (14.3)	47.4 (13.9)
		Sens BTUH (kW)	31.1 (9.1)	29.7 (8.7)	27.6 (8.1)	40.2 (11.8)	38.4 (11.3)	35.7 (10.5)	43.7 (12.8)	41.8 (12.2)	38.9 (11.4)
		Power (kW)	2.6	2.6	2.5	2.6	2.5	2.5	2.6	2.5	2.5
	80 (26.7)	Total BTUH (kW)	57.3 (16.8)	56.3 (16.5)	54.7 (16.0)	53.5 (15.7)	52.6 (15.4)	51.1 (15.0)	48.1 (14.1)	47.2 (13.8)	45.9 (13.5)
		Sens BTUH (kW)	31.1 (9.1)	29.7 (8.7)	27.6 (8.1)	40.2 (11.8)	38.4 (11.3)	35.7 (10.5)	43.7 (12.8)	41.8 (12.2)	38.9 (11.4)
		Power (kW)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	85 (29.4)	Total BTUH (kW)	55.7 (16.3)	54.7 (16.0)	53.2 (15.6)	51.9 (15.2)	51.0 (15.0)	49.6 (14.5)	46.5 (13.6)	45.7 (13.4)	44.4 (13.0)
		Sens BTUH (kW)	30.9 (9.0)	29.5 (8.6)	27.4 (8.0)	40.0 (11.7)	38.2 (11.2)	35.5 (10.4)	43.5 (12.7)	41.6 (12.2)	38.7 (11.3)
		Power (kW)	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
	90 (32.2)	Total BTUH (kW)	54.1 (15.9)	53.2 (15.6)	51.7 (15.2)	50.4 (14.8)	49.5 (14.5)	48.1 (14.1)	44.9 (13.2)	44.1 (12.9)	42.9 (12.6)
		Sens BTUH (kW)	30.4 (8.9)	29.1 (8.5)	27.0 (7.9)	39.5 (11.6)	37.7 (11.1)	35.1 (10.3)	43.1 (12.6)	41.1 (12.1)	38.3 (11.2)
		Power (kW)	3.1	3.1	3.0	3.1	3.1	3.0	3.1	3.1	3.1
	95 (35)	Total BTUH (kW)	52.5 (15.4)	51.6 (15.1)	50.2 (14.7)	48.8 (14.3)	47.9 (14.0)	46.6 (13.7)	43.3 (12.7)	42.5 (12.5)	41.4 (12.1)
		Sens BTUH (kW)	29.7 (8.7)	28.4 (8.3)	26.4 (7.7)	38.8 (11.4)	37.1 (10.9)	34.5 (10.1)	42.4 (12.4)	40.5 (11.9)	37.7 (11.0)
		Power (kW)	3.3	3.3	3.2	3.3	3.3	3.2	3.3	3.3	3.3
	100 (37.8)	Total BTUH (kW)	50.9 (14.9)	50.0 (14.7)	48.7 (14.3)	47.2 (13.8)	46.3 (13.6)	45.1 (13.2)	41.7 (12.2)	41.0 (12.0)	39.9 (11.7)
		Sens BTUH (kW)	28.8 (8.4)	27.5 (8.1)	25.6 (7.5)	37.9 (11.1)	36.2 (10.6)	33.7 (9.9)	41.5 (12.2)	39.6 (11.6)	36.8 (10.8)
		Power (kW)	3.5	3.5	3.5	3.5	3.5	3.4	3.5	3.5	3.5
	105 (40.6)	Total BTUH (kW)	49.3 (14.5)	48.5 (14.2)	47.1 (13.8)	45.6 (13.4)	44.8 (13.1)	43.5 (12.8)	40.1 (11.8)	39.4 (11.5)	38.3 (11.2)
		Sens BTUH (kW)	27.7 (8.1)	26.5 (7.8)	24.6 (7.2)	36.8 (10.8)	35.1 (10.3)	32.7 (9.6)	40.1 (11.8)	38.5 (11.3)	35.8 (10.5)
		Power (kW)	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	110 (43.3)	Total BTUH (kW)	47.7 (14.0)	46.9 (13.7)	45.6 (13.4)	44.0 (12.9)	43.2 (12.7)	42.0 (12.3)	38.5 (11.3)	37.8 (11.1)	36.8 (10.8)
		Sens BTUH (kW)	26.3 (7.7)	25.2 (7.4)	23.4 (6.9)	35.4 (10.4)	33.8 (9.9)	31.5 (9.2)	38.5 (11.3)	37.2 (10.9)	34.6 (10.1)
		Power (kW)	4.0	4.0	3.9	4.0	3.9	3.9	4.0	3.9	3.9
115 (46.1)	Total BTUH (kW)	46.1 (13.5)	45.3 (13.3)	44.1 (12.9)	42.3 (12.4)	41.6 (12.2)	40.4 (11.9)	36.9 (10.8)	36.2 (10.6)	35.2 (10.3)	
	Sens BTUH (kW)	24.7 (7.2)	23.6 (6.9)	22.0 (6.4)	33.8 (9.9)	32.3 (9.5)	30.1 (8.8)	36.9 (10.8)	35.7 (10.5)	33.2 (9.7)	
	Power (kW)	4.2	4.2	4.1	4.2	4.2	4.1	4.2	4.2	4.1	4.1
120 (48.9)	Total BTUH (kW)	44.5 (13.0)	43.7 (12.8)	42.5 (12.5)	40.7 (11.9)	40.0 (11.7)	38.9 (11.4)	35.3 (10.3)	34.6 (10.1)	33.7 (9.9)	
	Sens BTUH (kW)	22.9 (6.7)	21.9 (6.4)	20.4 (6.0)	32.0 (9.4)	30.6 (9.0)	28.4 (8.3)	35.3 (10.3)	34.0 (10.0)	31.6 (9.3)	
	Power (kW)	4.5	4.5	4.4	4.5	4.4	4.4	4.5	4.4	4.4	4.4
125 (51.7)	Total BTUH (kW)	42.9 (12.6)	42.1 (12.3)	40.9 (12.0)	39.1 (11.5)	38.4 (11.2)	37.3 (10.9)	33.6 (9.9)	33.0 (9.7)	32.1 (9.4)	
	Sens BTUH (kW)	20.9 (6.1)	19.9 (5.8)	18.5 (5.4)	30.0 (8.8)	28.6 (8.4)	26.6 (7.8)	33.5 (9.8)	32.0 (9.4)	29.8 (8.7)	
	Power (kW)	4.8	4.7	4.7	4.8	4.7	4.7	4.7	4.7	4.7	4.6

Note: DR — Depression Ratio; dbE — Entering Air Dry Bulb; wbE — Entering Air Wet Bulb; Total — Total Capacity × 1000 BTUH; Sens — Sensible Capacity × 1000 BTUH Power—KW input
 1. When the entering air dry bulb is other than 80°F (27°C), adjust the sensible capacity from the table by adding (1.10 × CFM × (1 - DR) × (dbE - 80))

Table 22: Gross System Performance—MPS H05C, 5 Tons Gas Heat

		Entering Indoor Air @ 80°F (26.7°C) dbE ¹									
		wbE	71°F (21.7°C)			67°F (19.4°C)			63°F (17.2°C)		
		CFM (L/s)	1980 (934)	1800 (850)	1530 (722)	1980 (934)	1800 (850)	1530 (722)	1980 (934)	1800 (850)	1530 (722)
		DR ¹	0.14	0.13	0.1	0.14	0.13	0.1	0.14	0.13	0.1
Outdoor Dry Bulb Temperature °F (°C)	75 (23.9)	Total BTUH (kW)	72.5 (21.2)	71.2 (20.9)	69.2 (20.3)	66.3 (19.4)	65.1 (19.1)	63.3 (18.6)	61.1 (17.9)	60.0 (17.6)	58.4 (17.1)
		Sens BTUH (kW)	36.2 (10.6)	34.6 (10.1)	32.1 (9.4)	45.4 (13.3)	43.4 (12.7)	40.4 (11.8)	51.5 (15.1)	49.2 (14.4)	45.8 (13.4)
		Power (kW)	3.5	3.5	3.4	3.5	3.4	3.4	3.4	3.4	3.4
	80 (26.7)	Total BTUH (kW)	71.1 (20.8)	69.8 (20.5)	67.9 (19.9)	64.9 (19.0)	63.7 (18.7)	62.0 (18.2)	59.7 (17.5)	58.6 (17.2)	57.0 (16.7)
		Sens BTUH (kW)	36.4 (10.7)	34.8 (10.2)	32.4 (9.5)	45.7 (13.4)	43.7 (12.8)	40.6 (11.9)	51.8 (15.2)	49.5 (14.5)	46.0 (13.5)
		Power (kW)	3.7	3.7	3.6	3.7	3.6	3.6	3.6	3.6	3.6
	85 (29.4)	Total BTUH (kW)	69.5 (20.4)	68.3 (20.0)	66.4 (19.5)	63.3 (18.6)	62.2 (18.2)	60.5 (17.7)	58.1 (17.0)	57.1 (16.7)	55.5 (16.3)
		Sens BTUH (kW)	36.4 (10.7)	34.8 (10.2)	32.3 (9.5)	45.7 (13.4)	43.6 (12.8)	40.6 (11.9)	51.8 (15.2)	49.4 (14.5)	46.0 (13.5)
		Power (kW)	3.9	3.9	3.8	3.9	3.8	3.8	3.8	3.8	3.8
	90 (32.2)	Total BTUH (kW)	67.8 (19.9)	66.6 (19.5)	64.8 (19.0)	61.7 (18.1)	60.6 (17.7)	58.9 (17.3)	56.4 (16.5)	55.4 (16.2)	53.9 (15.8)
		Sens BTUH (kW)	36.0 (10.6)	34.4 (10.1)	32.0 (9.4)	45.3 (13.3)	43.3 (12.7)	40.2 (11.8)	51.4 (15.1)	49.1 (14.4)	45.6 (13.4)
		Power (kW)	4.1	4.1	4.0	4.1	4.1	4.0	4.1	4.0	4.0
	95 (35)	Total BTUH (kW)	66.0 (19.3)	64.8 (19.0)	63.1 (18.5)	59.8 (17.5)	58.8 (17.2)	57.2 (16.8)	54.6 (16.0)	53.7 (15.7)	52.2 (15.3)
		Sens BTUH (kW)	35.3 (10.3)	33.7 (9.9)	31.4 (9.2)	44.6 (13.1)	42.6 (12.5)	39.6 (11.6)	50.7 (14.8)	48.4 (14.2)	45.0 (13.2)
		Power (kW)	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.2
	100 (37.8)	Total BTUH (kW)	64.1 (18.8)	62.9 (18.4)	61.2 (17.9)	57.9 (17.0)	56.9 (16.7)	55.3 (16.2)	52.7 (15.4)	51.8 (15.2)	50.3 (14.8)
		Sens BTUH (kW)	34.3 (10.0)	32.7 (9.6)	30.4 (8.9)	43.5 (12.8)	41.6 (12.2)	38.7 (11.3)	49.6 (14.5)	47.4 (13.9)	44.1 (12.9)
		Power (kW)	4.6	4.6	4.5	4.6	4.6	4.5	4.6	4.5	4.5
	105 (40.6)	Total BTUH (kW)	62.0 (18.2)	60.9 (17.8)	59.2 (17.4)	55.8 (16.4)	54.8 (16.1)	53.3 (15.6)	50.6 (14.8)	49.7 (14.6)	48.4 (14.2)
		Sens BTUH (kW)	32.9 (9.6)	31.4 (9.2)	29.2 (8.6)	42.1 (12.4)	40.3 (11.8)	37.4 (11.0)	48.2 (14.1)	46.1 (13.5)	42.9 (12.6)
		Power (kW)	4.9	4.9	4.8	4.9	4.8	4.8	4.8	4.8	4.7
	110 (43.3)	Total BTUH (kW)	59.8 (17.5)	58.7 (17.2)	57.1 (16.7)	53.6 (15.7)	52.7 (15.4)	51.2 (15.0)	48.4 (14.2)	47.6 (13.9)	46.3 (13.6)
		Sens BTUH (kW)	31.2 (9.1)	29.8 (8.7)	27.7 (8.1)	40.4 (11.9)	38.6 (11.3)	35.9 (10.5)	46.5 (13.6)	44.5 (13.0)	41.4 (12.1)
		Power (kW)	5.2	5.1	5.1	5.2	5.1	5.0	5.1	5.1	5.0
115 (46.1)	Total BTUH (kW)	57.5 (16.8)	56.5 (16.5)	54.9 (16.1)	51.3 (15.0)	50.4 (14.8)	49.0 (14.4)	46.1 (13.5)	45.3 (13.3)	44.0 (12.9)	
	Sens BTUH (kW)	29.2 (8.5)	27.9 (8.2)	25.9 (7.6)	38.4 (11.3)	36.7 (10.8)	34.1 (10.0)	44.5 (13.0)	42.5 (12.5)	39.5 (11.6)	
	Power (kW)	5.5	5.4	5.4	5.5	5.4	5.3	5.4	5.4	5.3	5.3
120 (48.9)	Total BTUH (kW)	55.0 (16.1)	54.0 (15.8)	52.6 (15.4)	48.8 (14.3)	48.0 (14.1)	46.7 (13.7)	43.6 (12.8)	42.9 (12.6)	41.7 (12.2)	
	Sens BTUH (kW)	26.8 (7.9)	25.6 (7.5)	23.8 (7.0)	36.1 (10.6)	34.5 (10.1)	32.0 (9.4)	42.2 (12.4)	40.3 (11.8)	37.5 (11.0)	
	Power (kW)	5.8	5.7	5.7	5.8	5.7	5.6	5.7	5.7	5.6	5.6
125 (51.7)	Total BTUH (kW)	52.4 (15.4)	51.5 (15.1)	50.1 (14.7)	46.2 (13.6)	45.4 (13.3)	44.2 (12.9)	41.0 (12.0)	40.3 (11.8)	39.2 (11.5)	
	Sens BTUH (kW)	24.1 (7.1)	23.0 (6.7)	21.4 (6.3)	33.4 (9.8)	31.9 (9.3)	29.7 (8.7)	39.5 (11.6)	37.7 (11.0)	35.1 (10.3)	
	Power (kW)	6.1	6.1	6.0	6.1	6.0	5.9	6.1	6.0	5.9	5.9

Note: DR — Depression Ratio; dbE — Entering Air Dry Bulb; wbE — Entering Air Wet Bulb; Total — Total Capacity × 1000 BTUH; Sens — Sensible Capacity × 1000 BTUH Power—KW input
 1. When the entering air dry bulb is other than 80°F (27°C), adjust the sensible capacity from the table by adding (1.10 × CFM × (1 - DR) × (dbE - 80))

Airflow Performance

Table 23: Airflow Performance—MPS A03C–A05C

Unit Model: MPS-	Motor Speed from Factory		Heating Input BTU/hr (kW)	Manufacturer Recommended Air-Flow Range (Min/ Max) CFM	Blower Size/Motor HP (w) # of Speeds	Motor Speed	External Static Pressure—Inches W.C. (kPa)								
	Cool	Heat					0.1 (.02)	0.2 (.05)	0.3 (.07)	0.4 (.10)	0.5 (.12)	0.6 (.15)	0.7 (.17)	0.8 (.20)	
CFM (L/s) Air Delivery/RPM/Watts—208 Volts															
A03C	Low	Low	80,000 (23.45)	1050/1350	10×10 1/2 HP (373) 3 Speed Motor	Low	CFM	1210 (571)	1193 (563)	1175 (555)	1155 (545)	1125 (531)	1075 (507)	1015 (479)	925 (437)
			Watts				450	400	395	385	380	375	370	360	
		Med	120,000 (35.17)			Med	CFM	1515 (715)	1500 (708)	1475 (696)	1450 (684)	1405 (663)	1350 (637)	1275 (602)	1180 (557)
			Watts				525	515	510	505	490	475	460	445	
		High				High	CFM	1680 (793)	1650 (779)	1625 (767)	1580 (746)	1530 (722)	1460 (689)	1390 (656)	1280 (604)
			Watts				650	640	630	610	580	560	545	515	
A04C	Med	Med	100,000 (29.31)	1400/1800	10×10 1/2 HP (373) 3 Speed Motor	Low	CFM	1210 (571)	1193 (563)	1175 (555)	1155 (545)	1125 (531)	1075 (507)	1015 (479)	925 (437)
			Watts				450	400	395	385	380	375	370	360	
		High	135,000 (39.56)			Med	CFM	1515 (715)	1500 (708)	1475 (696)	1450 (684)	1405 (663)	1350 (637)	1275 (602)	1180 (557)
			Watts				525	515	510	505	490	475	460	445	
		High				High	CFM	1680 (793)	1650 (779)	1625 (767)	1580 (746)	1530 (722)	1460 (689)	1390 (656)	1280 (604)
			Watts				650	640	630	610	580	560	545	515	
A05C	Med	Low	100,000 (29.31)	1750/2250	10×10 1 HP (745) 3 Speed Motor	Low	CFM	1575 (743)	1536 (725)	1496 (706)	1457 (688)	1417 (669)	1377 (650)	1338 (631)	1298 (613)
			Watts				297	314	330	347	364	381	397	414	
		High				Med	CFM	1985 (937)	1954 (922)	1919 (906)	1876 (885)	1824 (861)	1759 (830)	1679 (792)	1581 (746)
			Watts				535	553	574	593	606	609	599	572	
		High				High	CFM	2431 (1147)	2372 (1119)	2306 (1088)	2228 (1051)	2138 (1009)	2032 (959)	1907 (900)	1762 (832)
			Watts				970	981	964	926	872	806	736	665	
CFM (L/s) Air Delivery/RPM/Watts—230 Volts															
A03C	Low	Low	80,000 (23.45)	1050/1350	10×10 1/2 HP (373) 3 Speed Motor	Low	CFM	1400 (661)	1375 (649)	1360 (642)	1335 (630)	1305 (616)	1255 (592)	1210 (571)	1100 (519)
			Watts				470	460	455	450	440	435	425	410	
		Med	120,000 (35.17)			Med	CFM	1685 (795)	1620 (765)	1580 (746)	1550 (732)	1500 (708)	1430 (675)	1350 (637)	1230 (580)
			Watts				635	600	580	570	550	535	505	475	
		High				High	CFM	1870 (883)	1830 (864)	1790 (845)	1730 (816)	1660 (783)	1580 (746)	1500 (708)	1375 (649)
			Watts				780	760	740	700	660	635	600	555	
A04C	Med	Med	100,000 (29.31)	1400/1800	10×10 1/2 HP (373) 3 Speed Motor	Low	CFM	1400 (661)	1375 (649)	1360 (642)	1335 (630)	1305 (616)	1255 (592)	1210 (571)	1100 (519)
			Watts				470	460	455	450	440	435	425	410	
		High	135,000 (39.56)			Med	CFM	1685 (795)	1620 (765)	1580 (746)	1550 (732)	1500 (708)	1430 (675)	1350 (637)	1230 (580)
			Watts				635	600	580	570	550	535	505	475	
		High				High	CFM	1870 (883)	1830 (864)	1790 (845)	1730 (816)	1660 (783)	1580 (746)	1500 (708)	1375 (649)
			Watts				780	760	740	700	660	635	600	555	
A05C	Med	Low	100,000 (29.31)	1750/2250	10×10 1 HP (745) 3 Speed Motor	Low	CFM	1575 (743)	1536 (725)	1496 (706)	1457 (688)	1417 (669)	1377 (650)	1338 (631)	1298 (613)
			Watts				297	314	330	347	364	381	397	414	
		High				Med	CFM	1985 (937)	1954 (922)	1919 (906)	1876 (885)	1824 (861)	1759 (830)	1697 (792)	1581 (746)
			Watts				535	553	574	593	606	609	599	572	
		High				High	CFM	2431 (1147)	2372 (1119)	2306 (1088)	2228 (1051)	2138 (1009)	2032 (959)	1907 (900)	1762 (832)
			Watts				970	981	964	926	872	806	736	665	
CFM (L/s) Air Delivery/RPM/Watts—460 Volts															
A03C	Low	Low	80,000 (23.45)	1050/1350	10×10 1/2 HP (373) 3 Speed Motor	Low	CFM	1400 (661)	1375 (649)	1360 (642)	1335 (630)	1305 (616)	1255 (592)	1210 (571)	1100 (519)
			Watts				470	460	455	450	440	435	425	410	
		Med	120,000 (35.17)			Med	CFM	1685 (795)	1620 (765)	1580 (746)	1550 (732)	1500 (708)	1430 (675)	1350 (637)	1230 (580)
			Watts				635	600	580	570	550	535	505	475	
		High				High	CFM	1870 (883)	1830 (864)	1790 (845)	1730 (816)	1660 (783)	1580 (746)	1500 (708)	1375 (649)
			Watts				780	760	740	700	660	635	600	555	
A04C	High	Med	100,000 (29.31)	1400/1800	10×10 1/2 HP (373) 3 Speed Motor	Low	CFM	1400 (661)	1375 (649)	1360 (642)	1335 (630)	1305 (616)	1255 (592)	1210 (571)	1100 (519)
			Watts				470	460	455	450	440	435	425	410	
		High	135,000 (39.56)			Med	CFM	685 (795)	1620 (765)	1580 (746)	1550 (732)	1500 (708)	1430 (675)	1350 (637)	1230 (580)
			Watts				635	600	580	570	550	535	505	475	
		High				High	CFM	1870 (883)	1830 (864)	1790 (845)	1730 (816)	1660 (783)	1580 (746)	1500 (708)	1375 (649)
			Watts				780	760	740	700	660	635	600	555	

() Designates Metric Conversions

Table 24: Airflow Performance—MPS A03C, 208V, 230V, 460V

Airflow Performance – 3 Ton [10.55 Kw] Three Phase Belt Drive

Air Flow CFM [L/s]	Capacity 3 Ton [10.55 kW]																													
	Voltage 208/230/460/575, 3-Phase																													
	External Static Pressure - Inches of Water [kPa]																													
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W		
900 [425]	—	—	—	—	699	223	765	261	827	292	886	318	941	338	993	352	1042	360	1087	362	1129	358	1168	348	1203	332	1235	310	1264	282
1000 [472]	—	—	662	228	717	258	781	293	842	323	899	346	952	364	1002	376	1049	381	1093	381	1133	374	1170	362	1203	344	1233	320	1260	289
1100 [519]	—	—	667	275	737	295	798	328	857	355	912	377	964	392	1012	401	1057	404	1099	402	1137	393	1172	378	1204	358	1232	331	1257	298
1200 [566]	643	278	693	298	756	334	817	365	873	390	927	409	976	422	1023	428	1066	429	1106	424	1143	413	1176	396	1205	373	1232	344	1255	309
1300 [614]	661	316	716	341	777	376	835	404	890	426	942	443	990	453	1035	458	1076	456	1114	449	1149	435	1180	416	1208	391	1232	359	1254	322
1400 [661]	669	352	739	387	799	419	855	445	908	465	958	479	1004	487	1047	489	1087	485	1123	475	1156	460	1185	438	1211	410	1234	377	1253	337
1500 [708]	702	399	763	434	821	464	876	487	927	505	975	517	1019	523	1060	522	1098	516	1132	504	1163	486	1191	462	1215	432	1236	396	1254	354

NOTE: L-DRIVE left of bold line, M-DRIVE right of bold line

Drive Package	L										M				
Motor H.P. [W]	1/2 [373]										1/2 [373]				
Blower Sheave	6.9" Pitch Diameter										6.4" Pitch Diameter				
Motor Sheave	2.4" – 3.4" Pitch Diameter										3.4" – 4.4" Pitch Diameter				
Turns Open	0	1	2	3	4	5	0	1	2	3	4	5			
RPM	910	869	818	775	728	682	1176	1145	1108	1060	996	968			

Component Air Resistance

Component	Standard Indoor Airflow – CFM [L/s]					
	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [850]	2000 [944]
	Resistance – Inches Water [kPa]					
Wet Coil	0.035	0.040	0.060	0.070	0.085	0.100
Downflow	0.055	0.060	0.066	0.072	0.080	0.086
R.S.I. Economizer	0.05	0.06	0.07	0.08	0.09	0.10
R.A. Damper						

NOTES:

- Performance shown with dry coil & standard 2" [50.8 mm] filters.
- Standard CFM @ .075 lbs./cu.ft.
- Motor efficiency = 80%
- BHP = Watts × Motor Efficiency/746.
- Add component resistance to duct static to determine E.S.P as shown on charts

[] Designates Metric Conversions

Table 25: Airflow Performance—MPS A04C, 208V, 230V, 460V

Airflow Performance – 4 Ton [14.07 Kw] Three Phase Belt Drive

Air Flow CFM [L/s]	Capacity 4 Ton [14.07 kW]																													
	Voltage 208/230/460/575, 3-Phase																													
	External Static Pressure - Inches of Water [kPa]																													
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	
1200 [566]	—	—	—	—	—	—	817	425	879	440	940	456	999	475	1057	496	1113	519	1168	545	1221	572	1272	602	1322	634	1371	669	1420	704
1300 [614]	—	—	—	—	—	—	838	437	899	457	958	479	1015	503	1071	529	1126	558	1178	589	1230	622	1279	657	1327	695	1374	734	1421	773
1400 [661]	—	—	—	—	806	418	861	457	919	482	976	510	1032	539	1086	571	1138	605	1189	641	1239	680	1286	720	1333	763	1377	808	1421	853
1500 [708]	—	—	—	—	825	458	883	486	940	517	995	549	1048	584	1101	622	1151	661	1200	703	1248	746	1294	792	1338	841	1382	890	1426	939
1600 [755]	—	—	798	449	849	490	905	523	960	559	1013	598	1065	638	1115	681	1164	725	1211	772	1257	821	1301	873	1343	926	1385	979	1427	1032
1700 [802]	—	—	817	493	873	530	928	569	981	611	1032	654	1082	700	1130	748	1177	798	1222	851	1266	905	1308	962	1349	1021	1390	1080	1431	1139
1800 [850]	791	490	844	537	898	579	950	624	1002	670	1051	719	1099	771	1146	824	1190	880	1234	937	1276	997	1316	1059	1355	1124	1394	1189	—	—
1900 [897]	816	543	870	589	923	637	973	687	1023	739	1070	793	1116	850	1161	908	1204	969	1245	1033	1285	1098	1324	1166	1361	1235	1398	1304	—	—
2000 [944]	845	599	897	650	947	703	996	758	1044	816	1089	875	1134	937	1176	1002	1217	1068	1257	1137	1295	1207	1332	1280	1367	1355	—	—	—	—

NOTE: L-DRIVE left of bold line, M-DRIVE right of bold line

Drive Package	L										M				
Motor H.P. [W]	1/2 [373]										3/4 [559]				
Blower Sheave	6.9" Pitch Diameter										6.4" Pitch Diameter				
Motor Sheave	2.8" – 3.8" Pitch Diameter										3.4" – 4.4" Pitch Diameter				
Turns Open	0	1	2	3	4	5	0	1	2	3	4	5			
RPM	1029	984	950	915	855	816	1281	1207	1174	1141	1111	1071			

Component Air Resistance

Component	Standard Indoor Airflow – CFM [L/s]					
	1000 [472]	1200 [566]	1400 [661]	1600 [755]	1800 [850]	2000 [944]
	Resistance – Inches Water [kPa]					
Wet Coil	0.035	0.040	0.060	0.070	0.085	0.100
Downflow	0.055	0.060	0.066	0.072	0.080	0.086
R.S.I. Economizer	0.05	0.06	0.07	0.08	0.09	0.10

NOTES:

- Performance shown with dry coil & standard 2" [50.8 mm] filters.
- Standard CFM @ .075 lbs./cu.ft.
- Motor efficiency = 80%
- BHP = Watts × Motor Efficiency/746.
- Add component resistance to duct static to determine E.S.P as shown on charts

[] Designates Metric Conversions

Table 26: Airflow Performance—MPS A05C, 208V, 230V, 460V

Airflow Performance – 5 Ton [17.6 Kw] Three Phase Belt Drive

Air Flow CFM [L/s]	Capacity 5 Ton [17.6 kW] 14 SEER																													
	Voltage 208/230/460/575, 3-Phase																													
	External Static Pressure - Inches of Water [kPa]																													
	0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]	
RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	
1400 [661]	—	—	—	—	—	—	784	466	835	497	886	533	935	574	983	621	1030	674	1077	732	1122	795	1166	864	1209	939	1251	1019	1292	1104
1500 [708]	—	—	—	—	—	—	800	484	850	519	899	558	947	604	994	655	1040	711	1085	773	1129	841	1172	914	1214	992	1255	1076	1295	1166
1600 [755]	—	—	—	—	766	478	816	511	865	549	913	593	960	643	1006	698	1051	758	1095	824	1137	895	1179	972	1220	1055	1260	1143	1300	1231
1700 [802]	—	—	—	—	785	509	833	546	881	589	928	637	974	690	1018	749	1062	813	1105	883	1146	959	1187	1040	1227	1126	1265	1218	1303	1310
1800 [850]	—	—	755	505	804	550	851	591	898	637	943	689	988	747	1031	810	1074	878	1115	952	1156	1031	1195	1116	1234	1207	1271	1302	1308	1397
1900 [897]	716	491	776	560	823	600	869	645	915	695	959	751	1003	812	1045	879	1086	951	1127	1029	1166	1113	1204	1202	1242	1296	1278	1396	1314	1496
2000 [944]	745	562	797	615	843	658	889	707	933	762	976	821	1018	887	1059	958	1099	1034	1139	1116	1177	1203	1214	1296	1250	1394	1285	1498	1320	1602
2100 [991]	773	637	819	679	864	726	908	779	951	837	993	901	1034	970	1074	1045	1113	1125	1151	1211	1188	1303	1224	1399	1259	1502	1293	1609	—	—
2200 [1038]	797	706	842	751	886	803	929	860	971	922	1011	990	1051	1063	1090	1142	1128	1226	1165	1316	1200	1411	1235	1512	1269	1618	—	—	—	—
2300 [1085]	822	783	865	833	908	888	950	949	990	1015	1030	1087	1069	1164	1106	1247	1143	1335	1179	1429	1213	1528	1247	1633	1279	1743	—	—	—	—
2400 [1133]	847	870	889	924	931	983	971	1048	1011	1118	1049	1194	1087	1275	1123	1362	1159	1454	1193	1551	1227	1655	1259	1763	1291	1878	—	—	—	—
2500 [1179]	873	966	914	1023	954	1087	994	1155	1032	1229	1069	1309	1106	1394	1141	1485	1175	1581	1209	1683	1241	1790	1272	1903	—	—	—	—	—	—

NOTE: L-DRIVE left of bold line, M-DRIVE right of bold line

Drive Package	L										M				
Motor H.P. [W]	3/4 [559]										1 [746]				
Blower Sheave	6.9" Pitch Diameter										6.9" Pitch Diameter				
Motor Sheave	2.8" – 3.8" Pitch Diameter										4.0" – 5.0" Pitch Diameter				
Turns Open	0	1	2	3	4	5	0	1	2	3	4	5			
RPM	967	936	900	855	816	769	1248	1203	1163	1123	1078	1042			

Component Air Resistance

Component	Standard Indoor Airflow – CFM [L/s]					
	1600 [755]	1800 [850]	2000 [944]	2200 [1038]	2400 [1133]	2600 [1227]
	Resistance – Inches Water [kPa]					
Wet Coil	0.070	0.085	0.100	0.110	0.120	0.125
Downflow	0.072	0.080	0.086	0.093	0.100	0.107
R.S.I. Economizer	0.08	0.09	0.10	0.11	0.12	0.13
R.A. Damper						

NOTES:

1. Performance shown with dry coil & standard 2" [50.8 mm] filters.
2. Standard CFM @ .075 lbs./cu.ft.
3. Motor efficiency = 80%
4. BHP = Watts × Motor Efficiency/746.
5. Add component resistance to duct static to determine E.S.P as shown on charts

[] Designates Metric Conversions

Table 27: Accessory Weights

Accessory	Daikin Part Number	Shipping Weight lbs (kg)	Operating Weight lbs (kg)
Economizer, Analog Controls, 3–5 ton, Vert/Horiz	MXRD-01RECAM3	70 (32)	60 (27)
Economizer, DDC Controls, 3–5 ton, Vert/Horiz	MXRD-01RKCCM3	70 (32)	60 (27)
OA damper, 3–5 ton, Manual	MXRF-FGA1	11 (5)	9 (4)
OA damper, Analog Controls, 3–5 ton, Motorized	MXRF-FGB1	13 (6)	11 (5)
Power Exhaust Kit, 3–5 Ton 208/230V	MXRX-BGF06C	70 (32)	60 (27)
Power Exhaust Kit, 3–5 Ton 460V	MXRX-BGF06D	70 (32)	60 (27)
14" Roof Curb, 3–5 Ton	RXKG-CBH14	92 (42)	88 (40)
Receptacle Outlet	RXRX-AN01	N/A	N/A
Thermostat Guard	113130101	N/A	N/A
7-Day Programmable Stat	113129901	N/A	N/A
Ionization Smoke Detector	113126601	N/A	N/A
CO ₂ Sensor	RXRX-AR02	N/A	N/A
Dual Enthalpy Kit	RXRX-AV02	N/A	N/A

Economizers

Economizers: 3–5 Tons [10.6–17.6 kW]

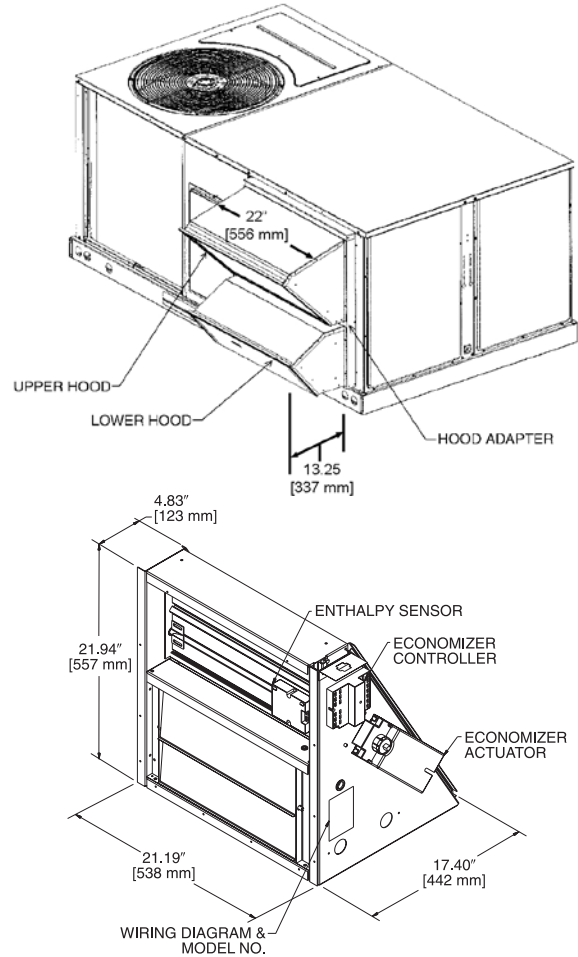
3-5 Ton [10.6-17.6 kW] Models Single Enthalpy with Barometric Relief

Dual Enthalpy Kit 3-5 Ton [1 0.6-1 7.6 kW] Models

3-5 Ton [1 0.6-1 7.6 kW] Models Optional CO₂ Sensor

- Features economizer controller
- Pre-configured—no field adjustments necessary
- Available factory installed or field accessory
- Standard barometric relief damper provided
- Gear driven direct drive actuator
- Single enthalpy with dual enthalpy upgrade kit
- Fully modulating (0-100%)
- CO₂ input sensor available (field installed)
- Low leakage dampers
- Economizer slips in complete for downflow or horizontal duct application
- Horizontal or downflow applications
- Field assembled hood ships with economizer
- Slip-in design for easy installations
- Field installed power exhaust available
- Plug-in polarized electrical connections

Figure 33: Economizer: MPS A03C – A05C

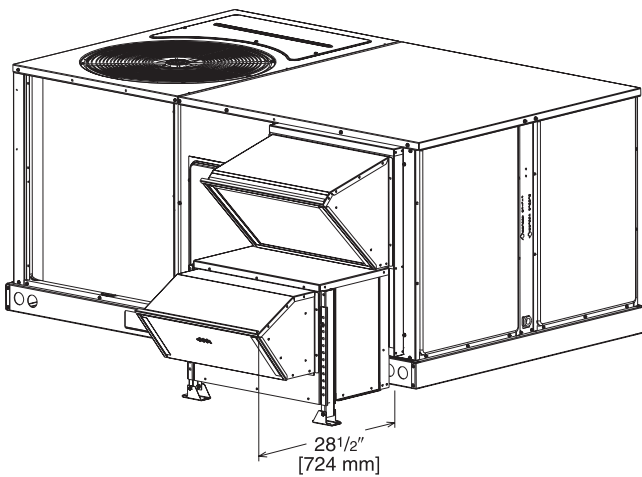


Fresh Air Dampers and Power Exhaust

Integral Power Exhaust For Economizer: 3–5 Tons [10.6–17.6 Kw] (Field Installed Only)

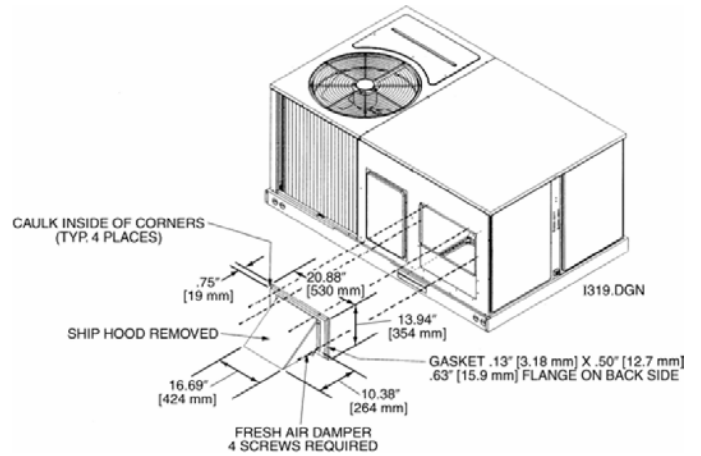
- For economizer controller
- Downflow or horizontal applications
- Requires separate power supply with disconnect
- Adjustable switch on economizer, factory preset to energize power exhaust at 95% outside air position
- Polarized plug connects power exhaust relay to economizer

**Figure 34: Integral Power Exhaust Economizer:
MPS A03C – A05C**



Fresh Air Damper Kit for 3–5 Ton Units [10.6–17.6 Kw]

Figure 35: Damper Kit: MPS A03C – A05C

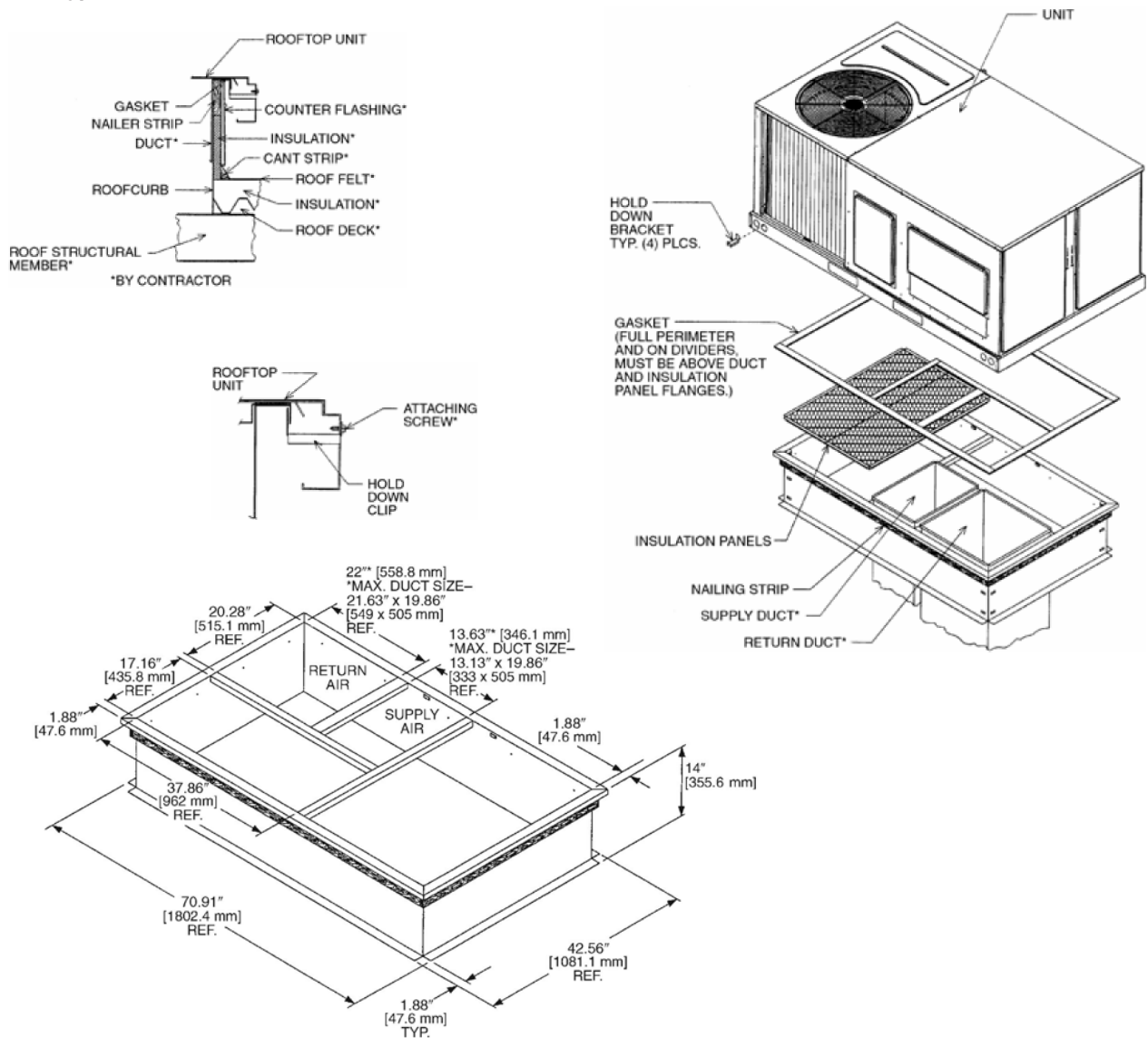


Roof Curbs

Roof Curbs (Full Perimeter): 3–5 Tons [10.6–17.6 kW]

- One available height (14" [356 mm]) for all models.
- 2" [51 mm] × 4" [102 mm] nailer provided
- Quick assembly corners for easy installation
- Insulating panels provided
- Opening provided in bottom pan to match the "Thru-the-Curb" electrical connection opening provided on the unit
- Sealing gasket (28" [711 mm]) provided with roof curb
- 18 gauge galvanized steel base pan

Figure 36: Typical Roof Curb Installation: MPS A03C – A05C



Furnace Section Controls and Ignition System

Normal Furnace Operating Sequence

This unit is equipped with an integrated direct spark ignition control.

1. The thermostat calls for heat.
2. The control board will run a self check to verify that the limit control and manual reset overtemperature control are closed and that the pressure switch is open.
3. Upon closure of the pressure switch, the control board energizes the induced draft blower for a 15 second prepurge.
4. After the 15 second prepurge, the gas valve opens and the spark is initiated for a seven second trial for ignition.
5. Burners ignite and flame sensor proves all burners have lit.
6. The circulating air blower is energized after 30 seconds.
7. The control board enters a normal operation loop in which all safety controls are monitored continuously.
8. Thermostat is satisfied and opens.
9. The gas valve is de-energized and closes, shutting down the burner flame.
10. The control board will de-energize the inducer after a five second post purge.
11. The circulating air blower is de-energized after 90 seconds.

The integrated control is a three ignition system.

After a total of three cycles without sensing main burner flame, the system goes into a 100% lockout mode. After one hour, the ignition control repeats the prepurge and ignition cycles for three tries and then goes into 100% lockout mode again. It continues this sequence of cycles and lockout each hour until ignition is successful or power is interrupted. During the lockout mode, neither the ignitor or gas valve will be energized until the system is reset by turning the thermostat to the "OFF" position or interrupting the electrical power to the unit for three seconds or longer. The induced draft blower and main burner will shut off when the thermostat is satisfied.

The circulating air blower will start and run on the heating speed if the thermostat fan switch is in the "ON" position.

The integrated furnace control is equipped with diagnostic LED. The LED is lit continuously when there is power to the control, with or without a call for heat. If the LED is not lit, there is either no power to the control or there is an internal component failure within the control, and the control should be replaced.

If the control detects the following failures, the LED will flash on for approximately 1/4 second, then off for 3/4 second for designated failure detections:

1. Flash: Failed to detect flame within the three tries for ignition.
2. Flash: Pressure switch or induced draft blower problem detected.
3. Flash: High limit or auxiliary limit open.
4. Flash: Flame sensed and gas valve not energized or flame sensed with no "W" signal.
5. Flash: Overtemperature switch open.

Operating Instructions

 DANGER

Never test for gas leaks with an open flame. It can cause an explosion or fire resulting in property damage, personal injury or death. Use a commercially available soap solution made specifically for the detection of leaks to check all connections, as specified in the “Mechanical Installation” section of these instructions.

 DANGER

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

This unit is equipped with integrated furnace control. This device lights the main burners each time the room thermostat (closes) calls for heat. See operating instructions on the back of the furnace/controls access panel.

To Start The Furnace

 DANGER

The spark ignitor and ignition lead from the ignition control are high voltage. Keep hands or tools away to prevent electrical shock. Shut off electrical power before servicing any of the controls. Failure to adhere to this warning can result in personal injury or death.

1. STOP! Read the safety information on the Operating Instructions label located on this unit.
2. Set the thermostat to its lowest setting.
3. Turn OFF all electric power to the unit.
4. This unit does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do NOT try to light the burner by hand.
5. Remove control door/access panel.
6. Move switch to the “OFF” position.
7. Wait five minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP!
 - Do not try to light any unit.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor’s phone. Follow the gas supplier’s instructions.
 - If you cannot reach your gas supplier, call the fire department.

If you don’t smell gas, go to the next step.

8. Move “OFF” position to “ON” position.
9. Replace the control door.
10. Turn ON all electric power to the unit.
11. Set the thermostat to the desired setting.
12. If the unit will not operate, follow the instructions below on how to shut down the furnace.

The initial start-up on a new installation may require the control system to be energized for some time until air has bled through the system and fuel gas is available at the burners.

To Shut Down Furnace

 DANGER

Should overheating occur or the gas supply fail to shut off, shut off the manual gas valve to the unit before shutting off the electrical supply. Failure to do so can result in an explosion or fire causing property damage, severe personal injury

1. Set the thermostat to the lowest setting.
2. Turn OFF all electric power to the unit if service is to be performed.
3. Remove control door.
4. Move switch to the “OFF” position.
5. Replace control door.

Burners

Burners for these units have been designed so that field adjustment is not required. Burners are tray-mounted and accessible for easy cleaning when required.

Manual Reset Overtemperature Control

⚠ DANGER

Do not jumper this device! Do not reset the overtemperature control without taking corrective action to assure that an adequate supply of combustion air is maintained under all conditions of operation. Failure to do so can result in carbon monoxide poisoning or death. Replace this control only with the identical replacement part.

Two manual reset overtemperature controls (one on 80,000 Btuh) are located on the burner shield. These devices sense blockage in the heat exchanger or insufficient combustion air. This shuts off the main burners if excessive temperatures occur in the burner compartment.

Operation of this control indicates an abnormal condition. Therefore, the unit should be examined by a qualified installer, service agency, or the gas supplier before being placed back into operation.

Pressure Switch

This furnace has a pressure switch for sensing a blocked exhaust or a failed induced draft blower. It is normally open and closes when the induced draft blower starts, indicating air flow through the combustion chamber.

Limit Control

⚠ DANGER

Do not jumper this device! Doing so can cause a fire or explosion resulting in property damage, personal injury or death.

The supply air high temperature limit cut-off is set at the factory and cannot be adjusted. It is calibrated to prevent the air temperature leaving the furnace from exceeding the maximum outlet air temperature.

Important: Replace this control only with the identical replacement part.

Dehumidification Control

With the factory installed reheat option, in addition to a thermostat or space temperature sensor that is normally present, an indoor relative humidity sensor is installed in the occupied space and connected to the Rooftop Unit DDC Controller which (see illustration) then controls the capacity of the cooling coil to remove moisture from the supply air and maintain space relative humidity below an adjustable limit. The default value is the ASHRAE recommended limit of 60% RH.

With this option, a refrigerant reheat coil is installed downstream from the evaporator coil. When the space humidity is too high and reheat is energized, this coil uses some of the heat that is normally rejected to the outside by the condenser coil to instead reheat the cold air from the evaporator coil just enough to avoid overcooling the space. Providing “neutral air” to the occupied space extends the run-time of the unit to provide better dehumidification than an air conditioner without this option.

Because the demand for dehumidification can be different from the cooling demand, the unit will first satisfy the demand for cooling and then if the space humidity is still too high, reheat mode is energized. When in reheat mode, the supply air leaving the unit will be near the entering air temperature, but at a much lower humidity. The unit will exit the reheat mode when the humidity setpoint is satisfied; or if the load is increased, it will return to normal cooling mode. Reheat is not available during the gas heating mode. For two-stage units with independent refrigerant circuits, reheat is only available on the first stage.

Figure 37 shows the refrigerant path during the normal cooling mode. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The superheated refrigerant vapor is then rejected and the refrigerant condenses into a subcooled liquid where the process repeats itself.

Figure 37: Refrigerant Path – Normal Cooling

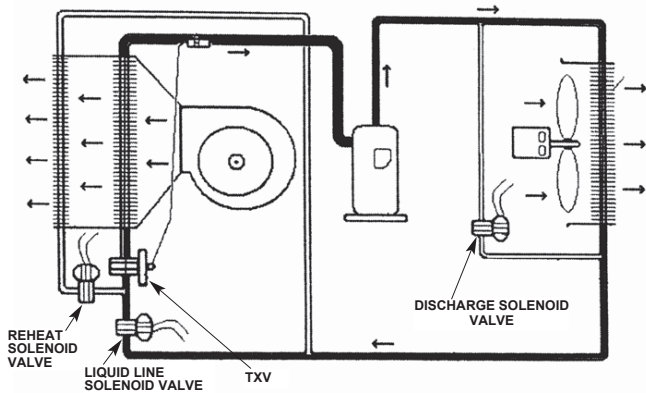
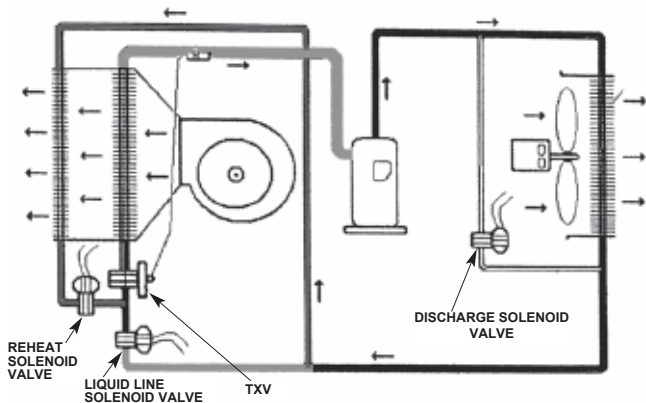


Figure 38 shows the refrigerant path during the reheat mode. When the reheat cycle is energized, a solenoid valve downstream of the reheat coil opens, a solenoid valve ahead of the TXV closes, and a solenoid valve in the compressor discharge line opens. The liquid refrigerant leaves the TXV with the sudden pressure drop causing the liquid to expand to a vapor and absorbing the heat from the supply air going through the evaporator coil. The refrigerant vapor then travels to the compressor where it is elevated to a higher pressure and temperature. The refrigerant next carries the heat to a parallel path between the outside condenser coil and a bypass circuit. Some of the heat is rejected outdoors. The ratio of heat rejected outdoors versus indoors is controlled by a variable frequency drive (OFMC) on the outdoor fan that monitors the liquid line temperature of the outdoor coil. This 2-phase refrigerant vapor is then sent to the reheat coil. As the refrigerant travels through the reheat coil it condenses into a subcooled liquid where the process repeats itself.

Figure 38: Refrigerant Path – Reheat Mode



During reheat mode the outdoor fan motor controller (OFMC) slows the outdoor fan(s) to increase the discharge pressure/temperature to maintain an optimized amount of reheat required to provide neutral air to the occupied space. The factory setting for the outdoor fan motor controller is 90°F which will provide neutral air +1 to -5°F from the entering air temperature (example if the entering or return air temperature is 75°F the leaving or supply air temperature will be 76° to 70°F during the reheat mode. If field adjustment is required to raise or lower the leaving air temperature this may be accomplished by turning the temperature control dial on the outdoor fan motor controller (OFMC). Turning the dial to a higher temperature setting will raise the leaving or supply air temperature and turning the dial to a lower setting will reduce the leaving or supply temperature.

Figure 39: Dehumidification Controller

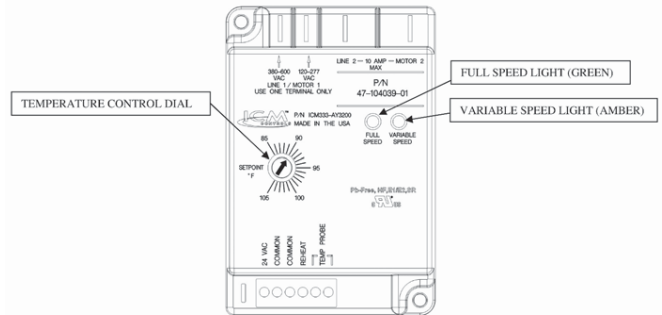
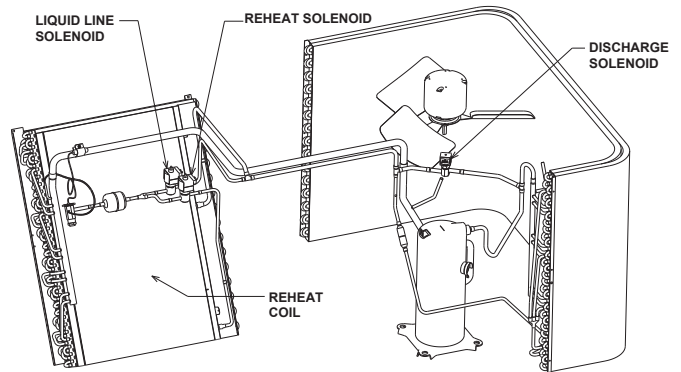


Figure 40: Solenoid Locations



General

Advise The Customer

1. Change the air filters regularly. The heating system operates better, more efficiently and more economically.
2. Except for the mounting platform, keep all combustible articles three feet from the unit and exhaust system.
3. **Important:** Replace all blower doors and compartment cover after servicing the unit. Do not operate the unit without all panels and doors securely in place.
4. Do not allow snow or other debris to accumulate in the vicinity of the unit.

Unit Maintenance

Furnace Section

⚠ DANGER

Power supply to unit must be disconnected before making field connections. To avoid electrical shock, personal injury or death, be sure to rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

⚠ DANGER

Holes in the exhaust transition or heat exchanger can cause toxic fumes to enter the building. The exhaust transition or heat exchanger must be replaced if they have holes or cracks in them. Failure to do so can cause carbon monoxide poisoning resulting in personal injury or death.

⚠ DANGER

Power supply to unit must be disconnected before making field connections. To avoid electrical shock, personal injury or death, be sure to rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

The unit's furnace should operate for many years without excessive scale build-up in flue passageways; however, it is recommended that a qualified installer, service agency, or the gas supplier annually inspect the flue passageways, the exhaust system and the burners for continued safe operation, paying particular attention to deterioration from corrosion or other sources.

If during inspection the flue passageways and exhaust system are determined to require cleaning, the following procedures should be followed (by a qualified installer, service agency, or gas supplier):

1. Turn OFF the electrical power to the unit and set the thermostat to the lowest temperature.
2. Shut OFF the gas supply to the unit either at the meter or at manual valve in the supply piping.
3. Remove the furnace controls access panel and the control box cover. Disconnect the gas supply piping from the gas valve.
4. Disconnect the gas supply piping from the gas valve.
5. Disconnect the wiring to the induced draft blower motor, gas valve, flame sensor, and flame roll-out control, and ignitor cable. Mark all wires disconnected for proper reconnection.
6. Remove the screws (4) connecting the burner tray to the heat exchanger mounting panel.
7. Remove the burner tray and the manifold assembly from the unit.
8. Remove the screws (5) connecting the induced draft blower to the collector box and screws (18) connecting the collector box to the heat exchanger center panel. Remove the induced draft blower and the collector box from the unit.
9. Remove the screws (3) connecting the divider plate to the heat exchanger center panel.
10. Remove the turbulators from inside the heat exchangers by inserting the blade of a screwdriver under the locking tabs. Pop the tabs out of the expanded grooves of the heat exchanger. Slide the turbulators out of the heat exchangers.
11. Direct a water hose into the outlet of the heat exchanger top. Flush the inside of each heat exchanger tube with water. Blow out each tube with air to remove excessive moisture.
12. Reassemble (steps 1 through 10 in reverse order). Be careful not to strip out the screw holes used to mount the collector box and inducer blower. Replace inducer blower gasket and collector box gasket with factory replacements if damaged.

The manufacturer recommends that a qualified installer, service agency or the gas supplier visually inspect the burner flames for the desired flame appearance at the beginning of the heating season and approximately midway in heating season.

The manufacturer also recommends that a qualified installer, service agency or the gas supplier clean the flame sensor with steel wool at the beginning of the heating season.

Lubrication

The blower motor and induced draft blower motor are prelubricated by the manufacturer and do not require further attention.

A qualified installer, service agency or the gas supplier must periodically clean the motors to prevent the possibility of overheating due to an accumulation of dust and dirt on the windings or on the motor exterior. And, as suggested elsewhere in these instructions, the air filters should be kept clean because dirty filters can restrict air flow and the motor depends upon sufficient air flowing across and through it to prevent overheating.

Cooling Section

DANGER

Power supply to unit must be disconnected before making field connections. To avoid electrical shock, personal injury or death, be sure to rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

It is recommended that at the beginning of each cooling season a qualified installer or service agency inspect and clean the cooling section of this unit. The following areas should be addressed: evaporator coil, condenser coil, condenser fan motor and venturi area.

To Inspect the Evaporator Coil

DANGER

Label all wires prior to disconnection when servicing the unit. Wiring errors can cause improper and dangerous operation resulting in fire, electrical shock, property damage, severe personal injury or death.

1. Remove the filter access panel and the blower/evaporator coil access panel. Remove the filters.
2. Shine a flashlight on the evaporator coil (both sides) and inspect for accumulation of lint, insulation, etc.
3. If coil requires cleaning, follow the steps shown below.

Cleaning Evaporator Coil

1. The coil should be cleaned when it is dry. If the coil is coated with dirt or lint, vacuum it with a soft brush attachment. Be careful not to bend the coil fins.
2. If the coil is coated with oil or grease, clean it with a mild detergent-and-water solution. Rinse the coil thoroughly with water. **Important: Do not** use excessive water pressure. Excessive water pressure can bend the fins and tubing of the coil and lead to inadequate unit performance. Be careful not to splash water excessively into unit.
3. Inspect the drain pan and condensate drain at the same time the evaporator coil is checked. Clean the drain pan by flushing with water and removing any matters of obstructions which may be present.
4. Go to next section for cleaning the condenser coil.

Cleaning Condenser Coil, Condenser Fan, Circulation Air Blower and Venturi

1. Remove the compressor access panel. Disconnect the wires to the condenser fan motor in the control box (see wiring diagram). Remove the wires from the opening in the bottom of the control box.
2. Remove the screws securing the condenser top panel and remove the panel with condenser fan motor and grille attached.
3. The coil should be cleaned when it is dry. If the coil is coated with dirt or lint, vacuum it with a soft brush attachment. Be careful not to bend the coil fins.
4. If the coil is coated with oil or grease, clean it with a mild detergent-and-water solution. Rinse the coil thoroughly with water. **Important: Do not** use excessive water pressure. Excessive water pressure can bend the fins and tubing of the coil and lead to inadequate unit performance. Be careful not to splash water excessively into unit.
5. The venturi should also be inspected for items of obstruction such as collections of grass, dirt or spider webs. Remove any that are present.
6. Inspect the circulating air blower wheel and motor for accumulation of lint, dirt or other obstruction and clean it as necessary. Inspect the blower motor mounts and the blower housing for loose mounts or other damage. Repair or replace if necessary.

Re-Assembly

1. Place the condenser top panel back on the unit and replace all screws.
2. Run the fan motor wires through the hole in the bottom of the control box. Reconnect fan motor wires per the wiring diagram attached to the back of the cover.
3. Replace the filter and blower/evaporator coil access panels.
4. Replace the control box cover and controls access panel.
5. Restore electrical power to the unit and check for proper operation, especially the condenser fan motor.

System Charge Charts

Figure 41: System Charging Chart: MPS A03C Cooling

SYSTEM CHARGE CHART - REFRIGERANT 410A
3 TON

- CAUTION: 1. RETURN AIR TEMPERATURE MUST BE WITHIN COMFORT CONDITIONS BEFORE FINAL REFRIGERANT CHECK!
- INSTRUCTIONS: 1. MEASURE PRESSURE AT COMPRESSOR SUCTION AND LIQUID.
2. MEASURE OUTDOOR AMBIENT TO UNIT.
3. PLACE (X) ON CHART WHERE SUCTION AND LIQUID INTERSECT.
4. IF (X) IS BELOW OUTDOOR AMBIENT LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF (X) IS ABOVE OUTDOOR AMBIENT LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

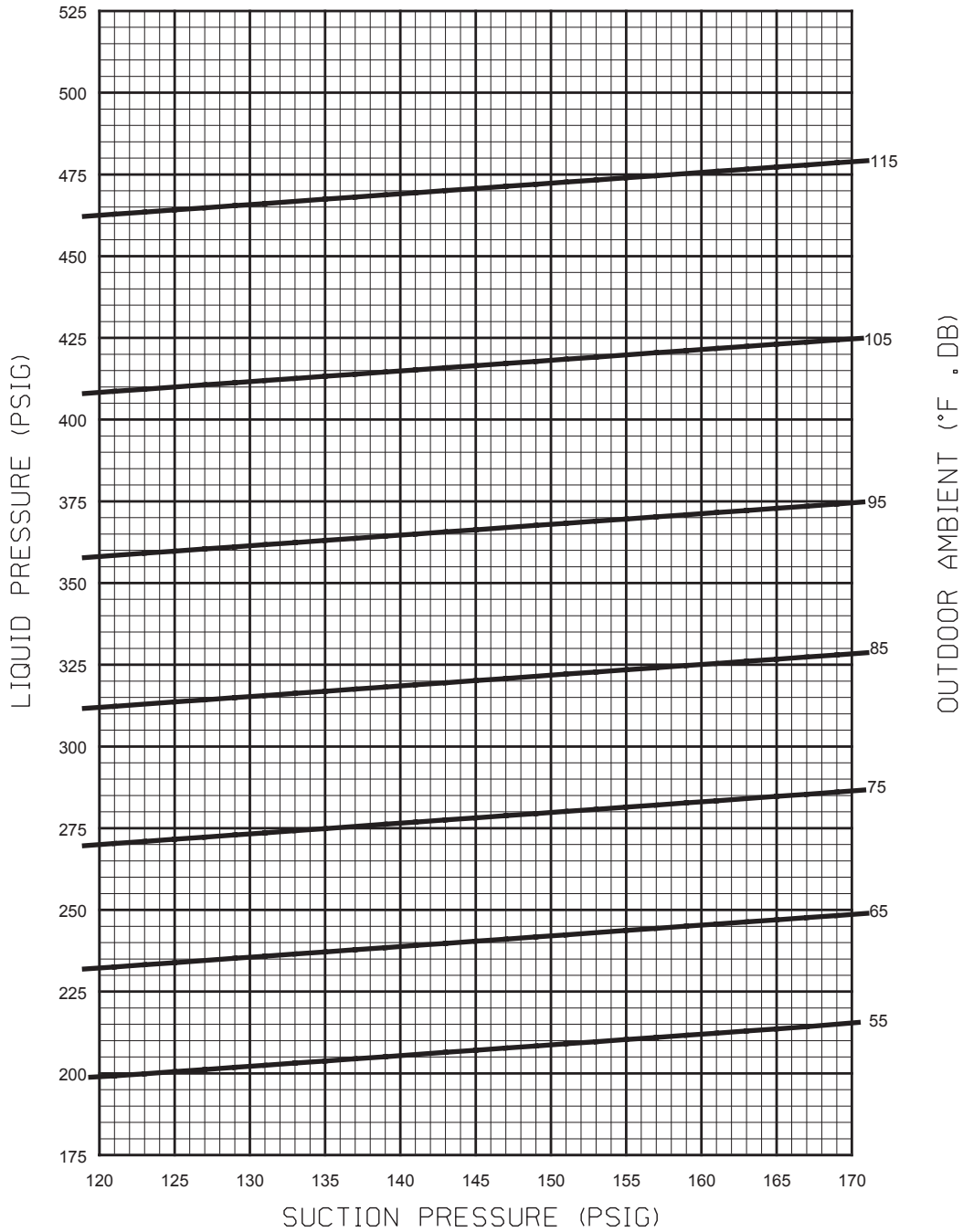


Figure 42: System Charge Chart: MPS A04C Cooling

**SYSTEM CHARGE CHART - REFRIGERANT 410A
4 TON, 13 & 14 SEER**

- CAUTION:** 1. RETURN AIR TEMPERATURE MUST BE WITHIN COMFORT CONDITIONS BEFORE FINAL REFRIGERANT CHECK!
- INSTRUCTIONS:** 1. MEASURE PRESSURE AT COMPRESSOR SUCTION AND LIQUID.
2. MEASURE OUTDOOR AMBIENT TO UNIT.
3. PLACE (X) ON CHART WHERE SUCTION AND LIQUID INTERSECT.
4. IF (X) IS BELOW OUTDOOR AMBIENT LINE, ADD CHARGE AND REPEAT STEP 3.
5. IF (X) IS ABOVE OUTDOOR AMBIENT LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.

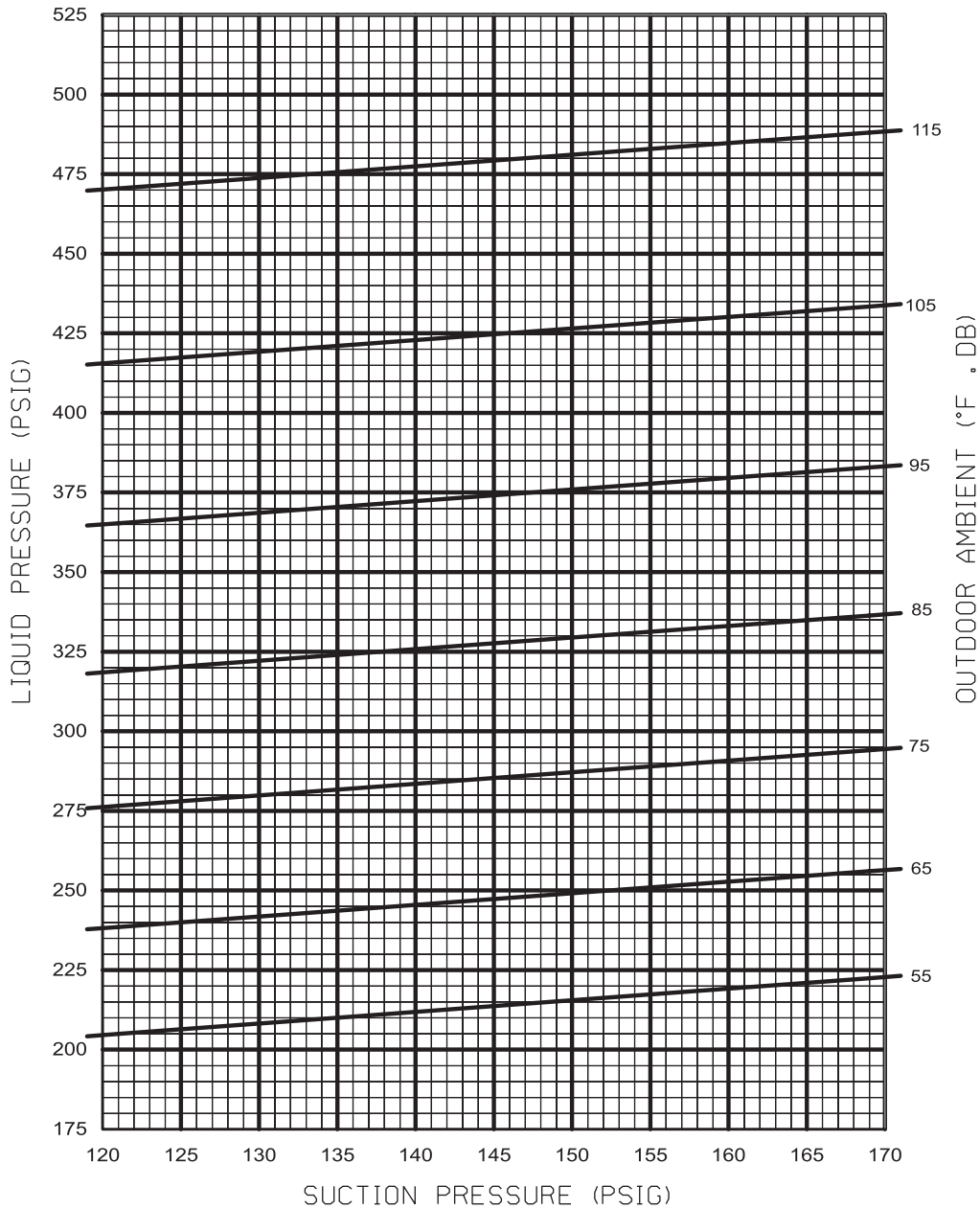
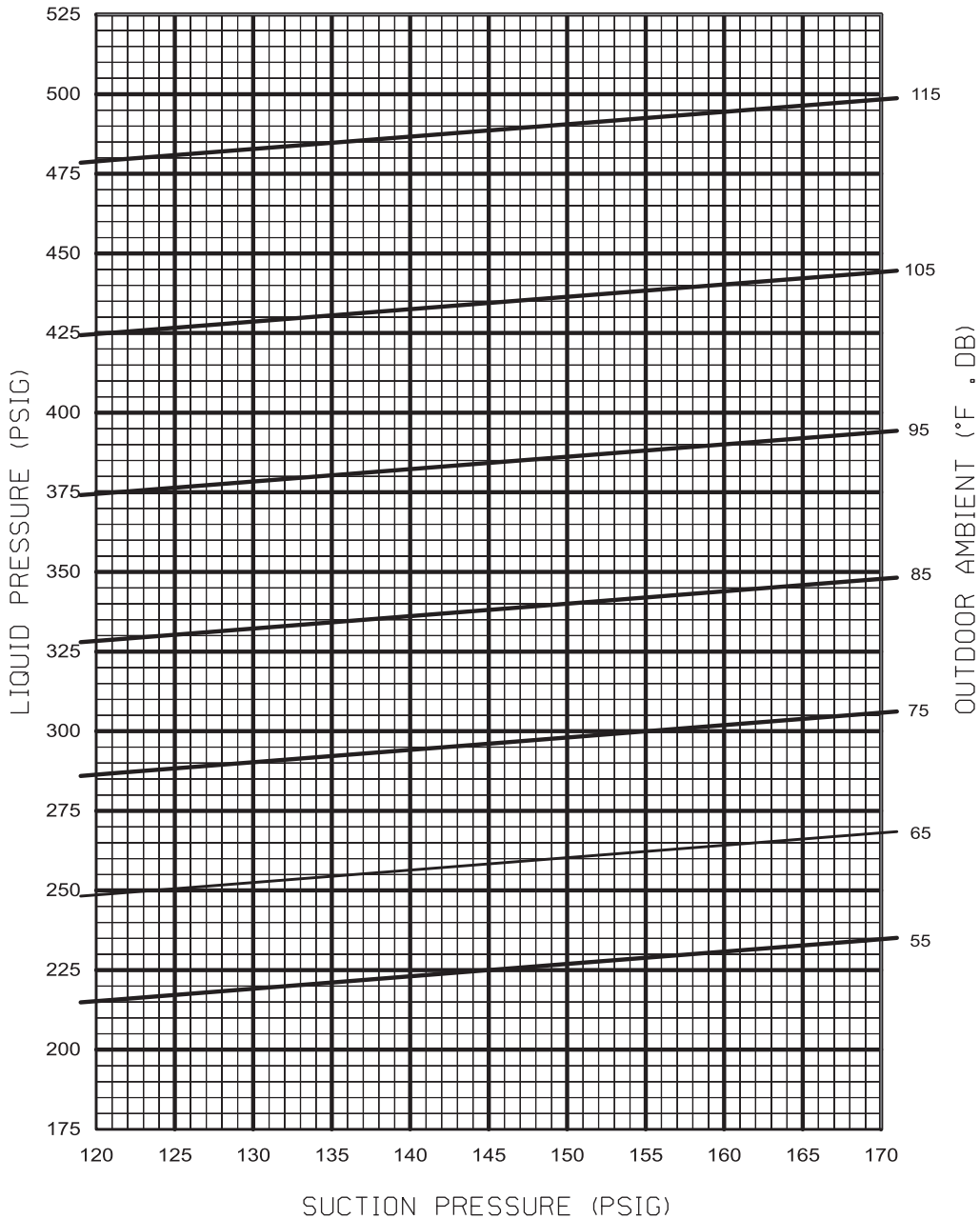


Figure 43: System Charge Chart: MPS A05C Cooling

SYSTEM CHARGE CHART - REFRIGERANT 410A
5 TON, 13 SEER

CAUTION: 1. RETURN AIR TEMPERATURE MUST BE WITHIN COMFORT CONDITIONS BEFORE FINAL REFRIGERANT CHECK!

- INSTRUCTIONS:
1. MEASURE PRESSURE AT COMPRESSOR SUCTION AND LIQUID.
 2. MEASURE OUTDOOR AMBIENT TO UNIT.
 3. PLACE (X) ON CHART WHERE SUCTION AND LIQUID INTERSECT.
 4. IF (X) IS BELOW OUTDOOR AMBIENT LINE, ADD CHARGE AND REPEAT STEP 3.
 5. IF (X) IS ABOVE OUTDOOR AMBIENT LINE, RECOVER EXCESS CHARGE AND REPEAT STEP 3.



Blower Motor Speed Taps

After determining necessary CFM and speed tap data from the Airflow Performance Data, follow the steps below to change speeds (see [Figure 46 on page 54](#) for examples).

1. Remove the blower access panel.
2. Reference [Figure 44](#) for location of the speed tap block on the blower.
3. Remove the furnace control access panel.
4. Remove the control box cover. See [Figure 45](#) for location of the integrated furnace control board.
5. Reference [Figure 44](#) and [Figure 46](#) for the proper location of the red and black wires on the speed tap block and on the furnace integrated control board to obtain the speed tap you have chosen.
6. After adjusting the wires accordingly, attach the control box cover, furnace control access panel and the blower access panel to the unit.

Figure 44: Speed Tap Block

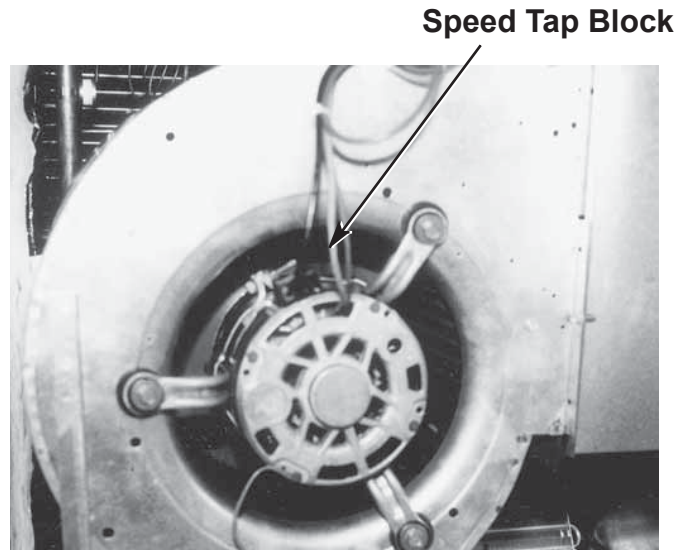
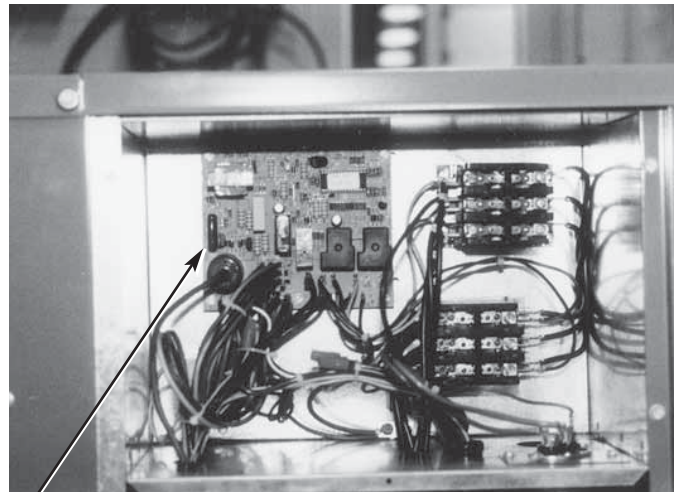


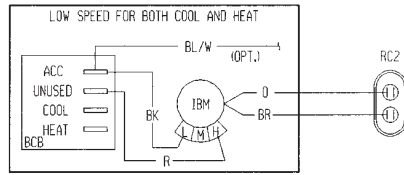
Figure 45: Integrated Furnace Control



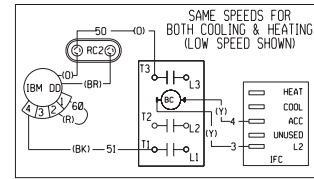
Integrated Furnace Control

Figure 46: Speed Tap Examples

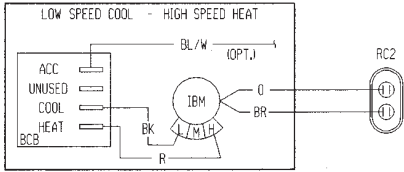
EXAMPLE 1



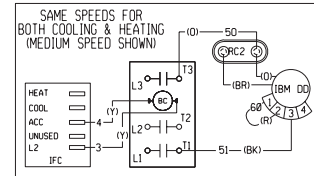
EXAMPLE 10



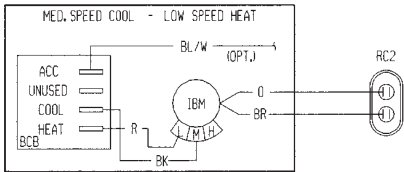
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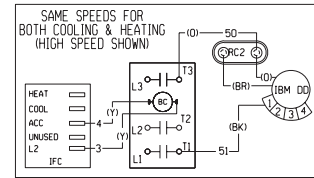
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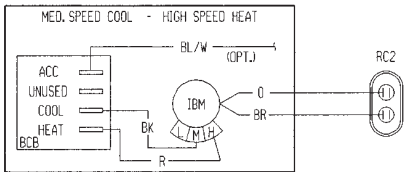
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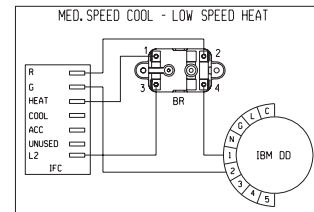
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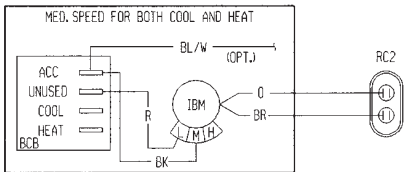
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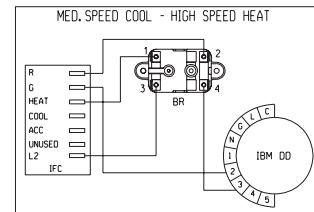
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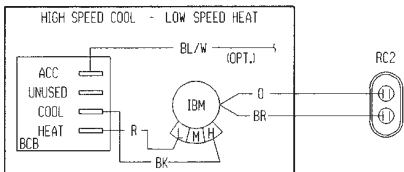
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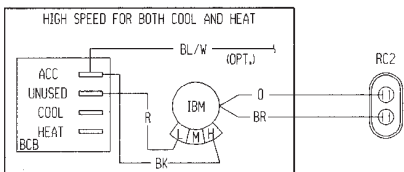
EXAMPLE 14



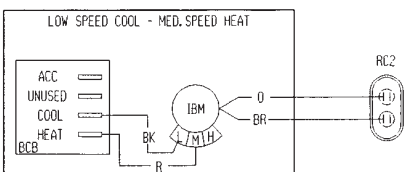
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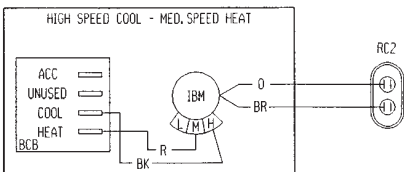
EXAMPLE 7



EXAMPLE 8



EXAMPLE 9



⚠ DANGER

Disconnect all power to unit before servicing. Contactor may break only one side. Failure to shut off power can cause electrical shock resulting in personal injury or death.

Table 28: Cooling Troubleshooting Chart

Symptom	Possible Cause	Remedy
Unit will not run	Power OFF or loose electrical connection	Check for correct voltage at compressor contactor in control box
	Thermostat out of calibration-set too high	Reset
	Failed contactor	Check for 24 volts at contactor coil replace if contacts are open
	Blown fuses/Transformer defective	Replace fuses.
	High pressure control open (if provided)	Check wiring-replace transformer – Reset-also see high head pressure remedy-The high pressure control opens at 450 PSIG
	Interconnecting low voltage wiring damaged	Replace thermostat wiring
Condenser fan runs, compressor doesn't	Loose connection	Check for correct voltage at compressor check & tighten all connections
	Compressor stuck, grounded or open motor winding, open internal overload.	Wait at least 2 hours for overload to reset. If still open, replace the compressor.
	Low voltage condition	At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating
	Low voltage condition	Add start kit components
Insufficient cooling	Improperly sized unit	Recalculate load
	Improper airflow	Check should be approximately 400 CFM per ton.
	Incorrect refrigerant charge	Charge per procedure attached to unit service panel
	Air, non-condensable or moisture in system	Recover refrigerant, evacuate & recharge, add filter drier
	Incorrect voltage	At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating.
Compressor short cycles	Incorrect voltage	At compressor terminals, voltage must be $\pm 10\%$ of nameplate marking when unit is operating.
	Defective overload protector	Replace check for correct voltage
	Refrigerant undercharge	Add refrigerant
Registers sweat	Low evaporator airflow	Increase speed of blower or reduce restriction replace air filter
High head-low vapor pressures	Restriction in liquid line, expansion device or filter drier	Remove or replace defective component
	Flow check piston size too small	Change to correct size piston
	Incorrect capillary tubes	Change coil assembly
High head-high or normal vapor pressure Cooling mode	Dirty condenser coil	Clean coil
	Refrigerant overcharge	Correct system charge
	Condenser fan not running	Repair or replace
	Air or non-condensable in system	Recover refrigerant, evacuate & recharge
Low vapor - cool compressor iced evaporator coil	Defective compressor valves	Replace compressor
	Incorrect capillary tubes	Replace coil assembly
Low vapor cool evaporator coil	Low evaporator airflow	Increase speed of blower or reduce restriction replace air filter
	Operating below 65°F outdoors	Add low ambient kit
	Moisture in system	Recover refrigerant evacuate & recharge add filter drier
High vapor pressure	Excessive load	Recheck load calculation
	Defective compressor Replace	
Fluctuating head & vapor	Air or non-condensate in system	Recover refrigerant, evacuate & recharge
Gurgle or pulsing noise at expansion device or liquid line	Air or non-condensable in system	Recover refrigerant, evacuate & recharge

Furnace Troubleshooting Guide

Figure 47: Furnace Troubleshooting Guide (Combination Heating and Cooling Units with Direct Spark Ignition)

⚠ WARNING

HAZARDOUS VOLTAGE
LINE VOLTAGE CONNECTIONS

DISCONNECT POWER BEFORE SERVICING.
SERVICE MUST BE BY A TRAINED, QUALIFIED SERVICE TECHNICIAN.

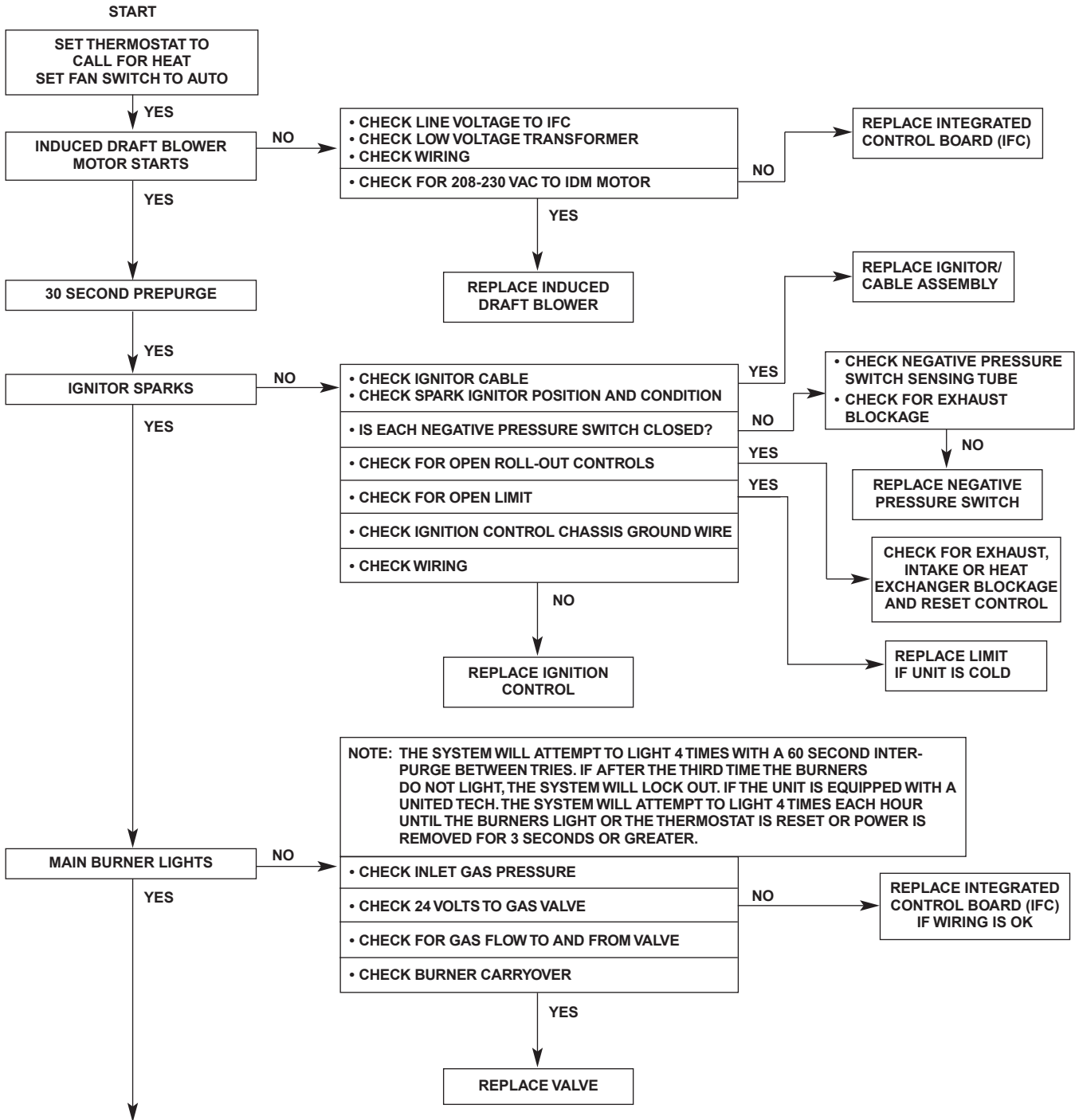
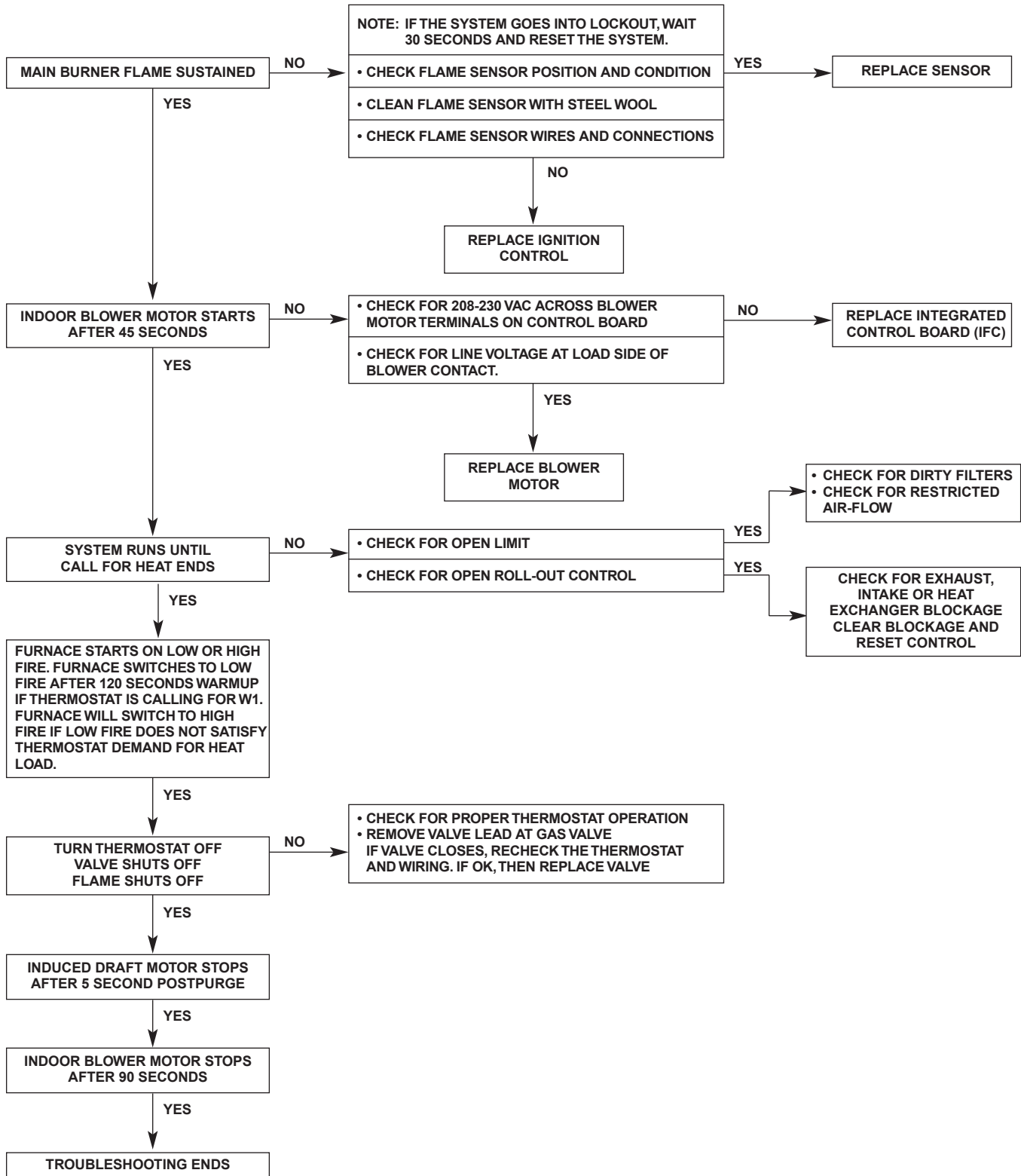


Figure 47 continued: Furnace Troubleshooting Guide



REPEAT PROCEDURE UNTIL TROUBLE FREE OPERATION IS OBTAINED.

Replacement Parts

To find your local Daikin Applied Certified Parts Distributor, go to www.DaikinApplied.com and select Parts Locator.



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