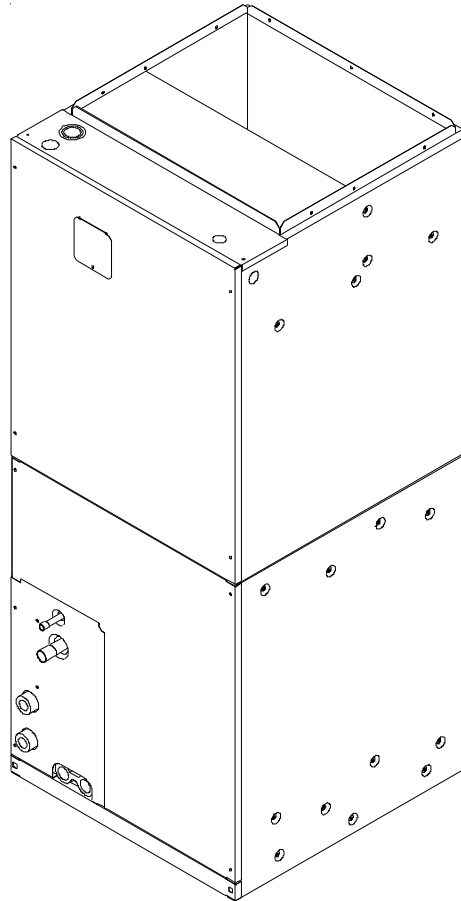


# TECHNICAL INFORMATION MANUAL

## MBR/MBE Blowers

Models listed  
on page 3

- Refer to Service Manual RS6100004 for installation, operation, and troubleshooting information.
- All safety information must be followed as provided in the Service Manual.
- Refer to the appropriate Parts Catalog for part number information.

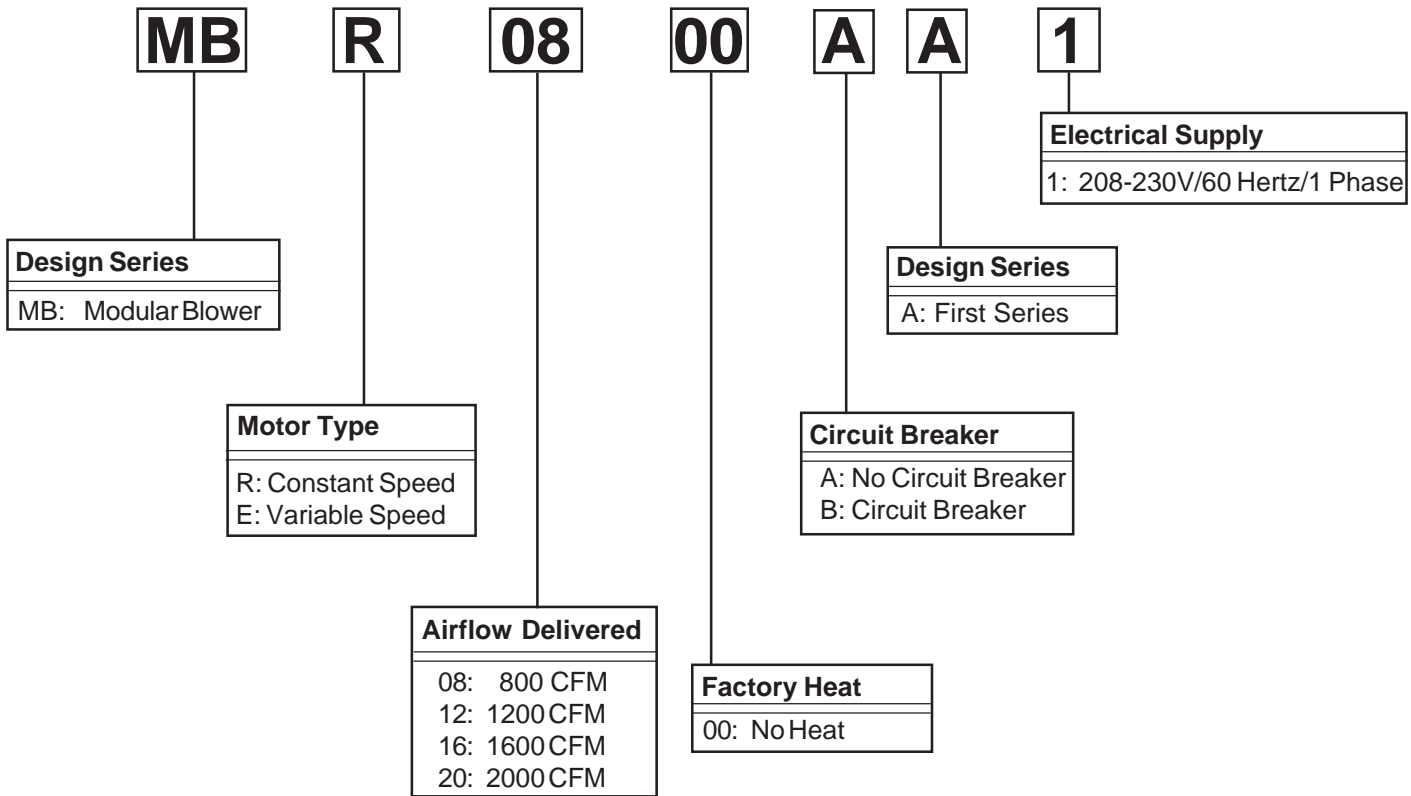




This manual is to be used by qualified, professionally trained HVAC technicians only. Goodman does not assume any responsibility for property damage or personal injury due to improper service procedures or services performed by an unqualified person.


RT6223002 Rev. 4  
July 2008


# PRODUCT IDENTIFICATION

The model number is used for positive identification of component parts used in manufacturing. Please use this number when requesting service or parts information.



 <b>WARNING</b>	<p><b>HIGH VOLTAGE!</b> Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.</p>	
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 <b>WARNING</b>	<p>Installation and repair of this unit should be performed <u>ONLY</u> by individuals meeting the requirements of an "entry level technician" as specified by the Air-Conditioning, Heating and Refrigeration Institute (AHRI). Attempting to install or repair this unit without such background may result in product damage, personal injury or death.</p>
--	--

 <b>WARNING</b>	<p>Goodman will not be responsible for any injury or property damage arising from improper service or service procedures. If you install or perform service on this unit, you assume responsibility for any personal injury or property damage which may result. Many jurisdictions require a license to install or service heating and air conditioning equipment.</p>
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# PRODUCT IDENTIFICATION

The model number is used for positive identification of component parts used in manufacturing. Please use this number when requesting service or parts information.

MBR0800

MBE1200

MBR1200

MBE1600

MBR1600

MBE2000

MBR2000



The United States Environmental Protection Agency (“EPA”) has issued various regulations regarding the introduction and disposal of refrigerants introduced into this unit. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary by jurisdiction. Should questions arise, contact your local EPA office.



To prevent the risk of property damage, personal injury, or death, do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this appliance.



Do not connect or use any device that is not design certified by Goodman for use with this unit. Serious property damage, personal injury, reduced unit performance and/or hazardous conditions may result from the use of such non-approved devices.

# PRODUCT DESIGN

MBR/MBE blower cabinets are designed to be used as a two-piece blower and coil combination. MBR/MBE blower sections can be attached to cased evaporator coil. This two piece arrangement allows for a variety of mix-matching possibilities providing greater flexibility.

The MBE blower cabinet uses a variable speed motor that maintains a constant airflow with a higher duct static. It is approved for applications with cooling coils of up to 0.8 inches W.C. external static pressure and includes a feature that allows airflow to be changed by  $\pm 15\%$ . The MBR blower cabinet uses a PSC motor. It is approved for applications with cooling coils of up to 0.5 inches W.C. external static pressure.

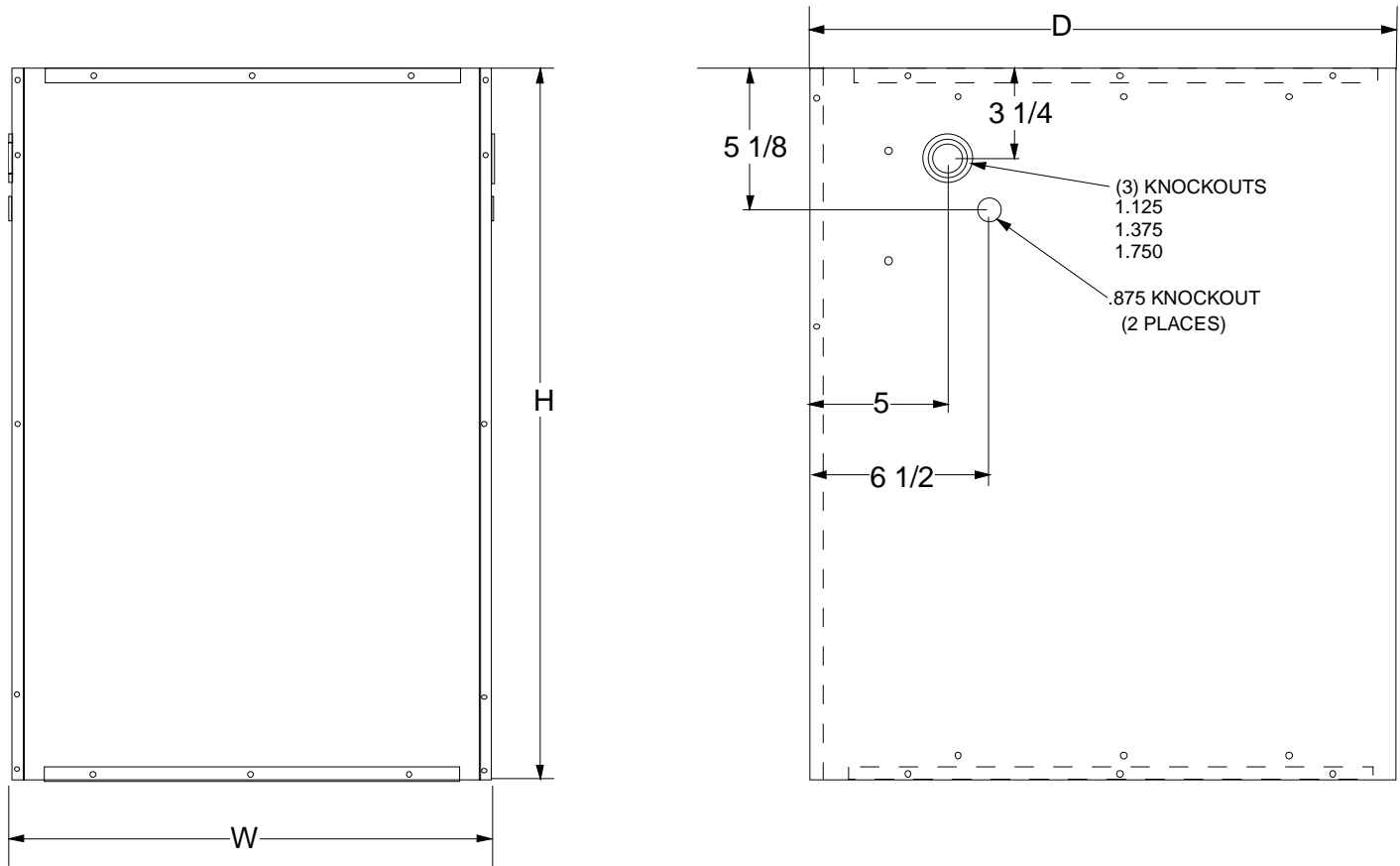
The MBR/MBE blower cabinets are intended to be used with a cased evaporator coil and a condensing unit or heat pump. The blower section of the cabinet can also be used as an electric furnace. The electric heating elements are field-installed. Electric heater kits (HKR) are available as sales accessories for supplemental electric heat.

The MBR/MBE blower cabinets with proper coil matches can be positioned for upflow, counterflow, horizontal right or horizontal left operation. All units are constructed with R-4.2 insulation. In areas of extreme humidity (greater than 80% consistently), insulate the exterior of the blower with insulation having a vapor barrier equivalent to ductwork insulation, providing local codes permit.

The CAPX/CHPX coils are equipped with a thermostatic expansion valve that has a built-in internal check valve for refrigerant metering. The CACF/CAPF/CHPF coils are equipped with a fixed restrictor orifice.

The coils are designed for upflow, counterflow, or horizontal application, using two speed direct drive motors on the CACF/CAPX/CAPF/CHPF/CHPX models, and BPM (Brushless Permanent Magnet) or ECM motor on the MBE models.

# MBR/MBE BLOWER SPECIFICATIONS



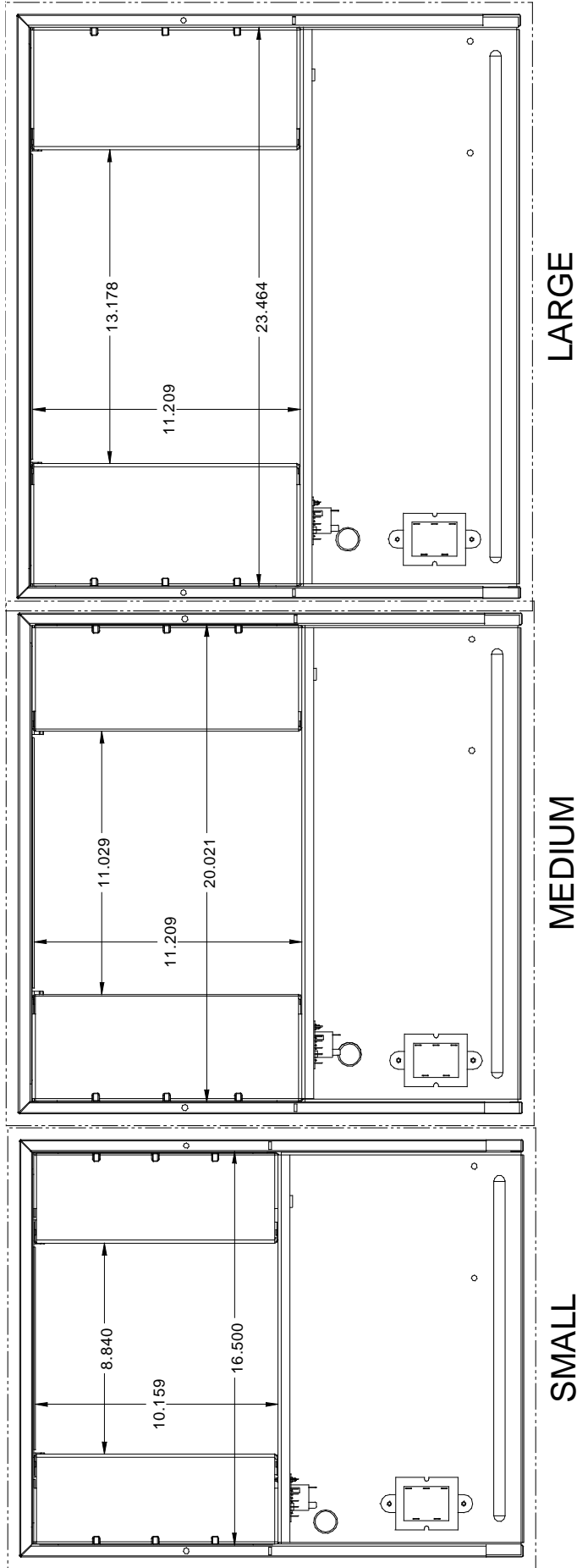
MBR800/1200/1600/2000 & MBE1200/1600/2000

MODEL	Physical Information				Dimensions, inches (mm)			Shipping Weight lbs.(kg)
	Blower Wheel (D x W)	Blower Motor (HP)	MCA <sup>1</sup>	MOP <sup>1</sup>	W	H	D	
MBR800	9X6	1/4	1.9	15	17½ (445)	26 (660)	21 (533)	72 (32.6)
MBR1200	9x8	1/3	3.0	15				
MBE1200	10X8	1/2	3.2	15				
MBR1600	10X8	1/3	3.8	15	21 (533)	30 (762)	21 (533)	82 (37.2)
MBE1600	10X8	3/4	5.7	15				
MBR2000	10X10	1/2	4.9	15	24½ (622)	30 (762)	21 (533)	94 (42.6)
MBE2000	11X10	3/4	4.4	15				

<sup>1</sup>Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed. Refer to unit nameplate for MCA and MOP with approved accessory heaters installed.

# MBR/MBE BLOWER SPECIFICATIONS

## BLOWER OPENING DIMENSIONS (TOP VIEW)



MBR800/1200/1600/2000 & MBE1200/1600/2000

# MBR/MBE BLOWER SPECIFICATIONS

## HKR HEATER DATA

BLOWER	ELECTRIC HEATER KIT					
	NO HEAT KIT	HKR-03*	HKR05-(C)'	HKR-06*	HKR-08(C)*	HKR-10(C)*
<b>MBR</b>						
0800AA-1AA	X	X	X	X	X	X
1200AA-1AA	X	X	X	X	X	X
1600AA-1AA	X	X	X	X	X	X
2000AA-1AA	X	X	X	X	X	X
<b>MBE</b>						
1200AA-1AA	X	~	~	~	X	X
1600AA-1AA	X	~	~	~	~	X
2000AA-1AA	X	~	~	~	~	X
1200AA-1BA	X	X	X	X	X	X
1600AA-1BA	X	X	X	X	X	X
2000AA-1BA	X	X	X	X	X	X

^ = Circuit 1: Single Phase for Air Handler Motor  
Circuit 2: 3-Phase for HKR3 Heater Kits

\* = Revision level that may or may not be designated  
C = Circuit Breaker option

X = Allowable combinations  
~ = Restricted combinations

BLOWER	ELECTRIC HEATER KIT				
	HKR-15C*	HKR-20C*	HKR-21C*	^HKR3-15*	^HKR3-20*
<b>MBR</b>					
0800AA-1AA	~	~	~	~	~
1200AA-1AA	X	X	X	X	X
1600AA-1AA	X	X	X	X	X
2000AA-1AA	X	X	X	X	X
<b>MBE</b>					
1200AA-1AA	X	~	~	~	~
1600AA-1AA	X	~	~	~	~
2000AA-1AA	X	X	~	~	~
1200AA-1BA	X	~	~	~	~
1600AA-1BA	X	~	~	~	~
2000AA-1BA	X	X	~	~	~

^ = Circuit 1: Single Phase for Air Handler Motor  
Circuit 2: 3-Phase for HKR3 Heater Kits

\* = Revision level that may or may not be designated  
C = Circuit Breaker option

X = Allowable combinations  
~ = Restricted combinations

# BLOWER PERFORMANCE DATA

## MBR BLOWER PERFORMANCE SPECIFICATIONS

SPEED	STATIC	MBR0800**.* SCFM	MBR1200**.* SCFM	MBR1600**.* SCFM	MBR2000**.* SCFM
HIGH	0.1	1240	1500	1800	2160
	0.2	1170	1460	1740	2080
	0.3	1120	1360	1680	1990
	0.4	1060	1280	1610	1890
	0.5	980	1200	1520	1790
	0.6	900	1110	1430	1690
MEDIUM	0.1	900	1380	1540	1730
	0.2	850	1320	1490	1670
	0.3	790	1270	1450	1590
	0.4	740	1200	1400	1520
	0.5	680	1140	1350	1420
	0.6	605	1040	1280	1320
LOW	0.1	650	1170	1130	1520
	0.2	590	1130	1100	1450
	0.3	540	1080	1070	1360
	0.4	500	1020	1030	1290
	0.5	430	950	990	1200
	0.6	330	830	930	1090

External static is for blower @ 230 volts, it does not include coil, air filter or electric heaters.

## MBE BLOWER PERFORMANCE SPECIFICATIONS

DIPSWITCH FUNCTIONS	
DIPSWITCH NUMBER	FUNCTION
1	Electric Heat
2	
3	N/A
4	Indoor Thermostat
5	Cooling & Heat Pump CFM
6	
7	CFM Trim Adjust
8	

MODEL	SWITCH 5	SWITCH 6	CFM
MBE1200	OFF	OFF	1200
	ON	OFF	1000
	OFF	ON	800
	ON	ON	600
MBE1600	OFF	OFF	1600
	ON	OFF	1400
	OFF	ON	1200
	ON	ON	1000
MBE2000	OFF	OFF	2000
	ON	OFF	1800
	OFF	ON	1600
	ON	ON	1200

MODEL	SWITCH 1	SWITCH 2	CFM
MBE1200	OFF	OFF	1200
	ON	OFF	1000
	OFF	ON	800
	ON	ON	600
MBE1600	OFF	OFF	1600
	ON	OFF	1400
	OFF	ON	1200
	ON	ON	1000
MBE2000	OFF	OFF	2000
	ON	OFF	1800
	OFF	ON	1600
	ON	ON	1200

### Thermostat "Fan Only" Mode

During "Fan Only" operations, the CFM output is 30% of the cooling setting.

### CFM Trim Adjust

Minor adjustments can be made through the dipswitch combination of 7-8.

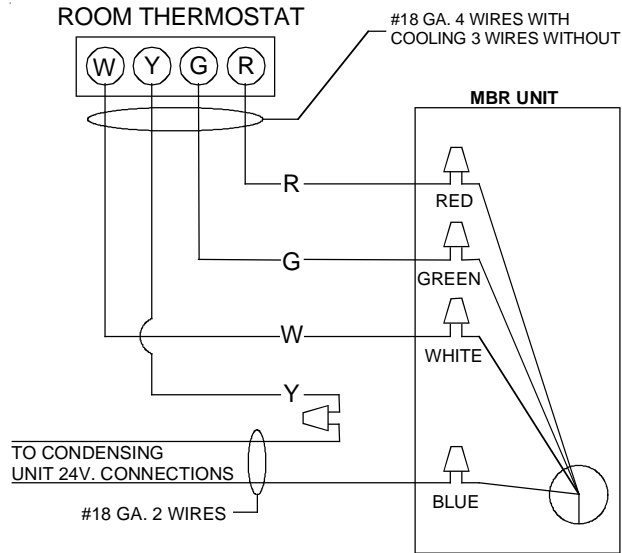
CFM	SWITCH 7	SWITCH 8
+10%	ON	OFF
-15%	OFF	ON



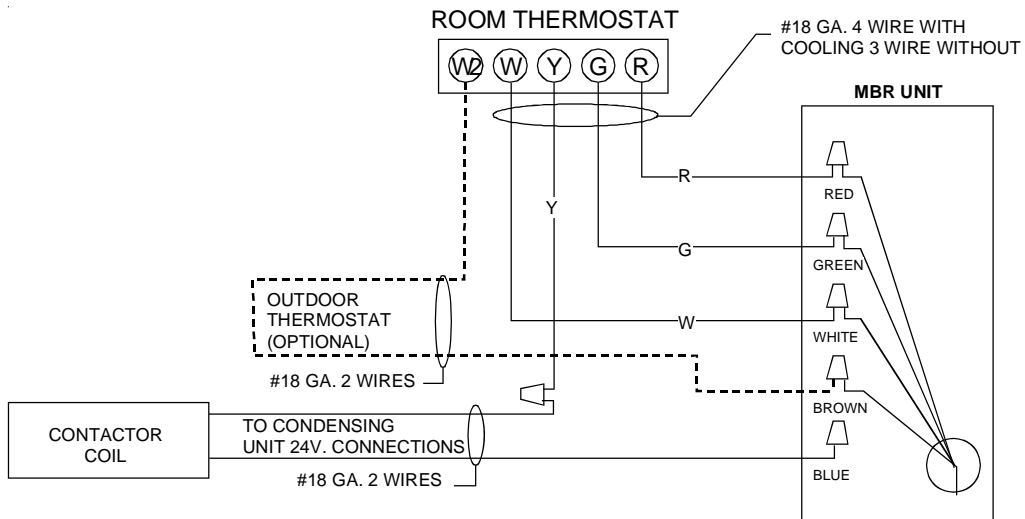
# WIRING DIAGRAMS

**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



**Low Voltage Wiring Diagram for Cooling Unit with optional heat kit 10KW and below**



**Low Voltage Wiring Diagram for Cooling Unit with optional heat kit 15KW and above**

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

# WIRING DIAGRAMS

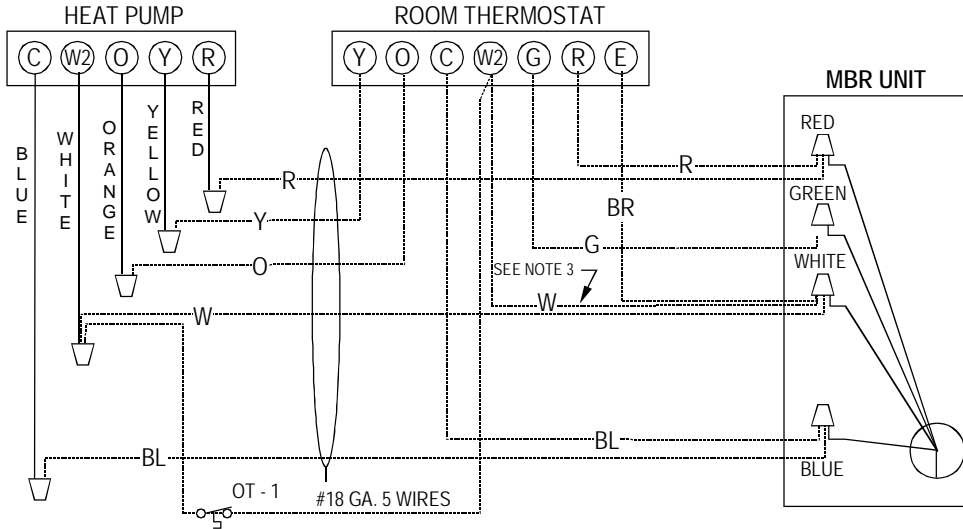


**WARNING**

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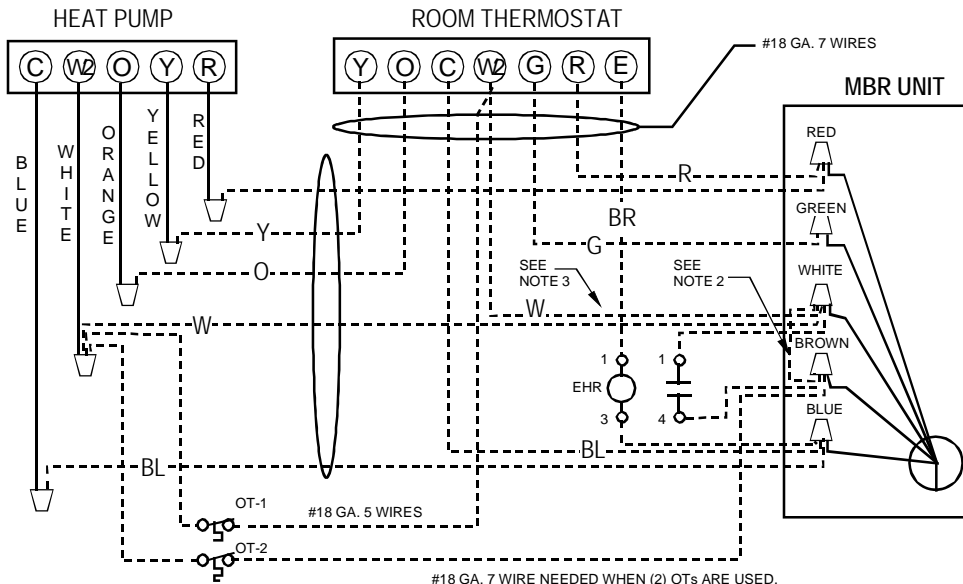


SYSTEM COMPOSITE DIAGRAM  
 MBR0800  
 10kW & BELOW



OUTDOOR THERMOSTATS  
 (OPTIONAL) MAKE ON FALL  
 #18 GA. 6 WIRE NEEDED WHEN OT IS USED

SYSTEM COMPOSITE DIAGRAM  
 MBR1200-2000  
 ABOVE 10kW



**NOTES**

- 1) OUTDOOR THERMOSTAT (OT-1) SHOULD BE THE FIRST TO CLOSE AND THE FIRST TO OPEN.
- 2) IF OUTDOOR THERMOSTAT IS NOT USED, TIE WHITE AND BROWN WIRES FROM AIR HANDLER TOGETHER.
- 3) REMOVE WIRE WHEN USING OUTDOOR T-STAT.  
 #18 GA. 7 WIRE NEEDED WHEN (2) OTs ARE USED.

**NOMENCLATURE**

- OT - OUTDOOR TEMPERATURE (OPTIONAL)  
 MOF - MAKE ON FALL  
 EHR - EMERGENCY HEAT RELAY (OPTIONAL)

**COLOR CODES**

- |            |            |
|------------|------------|
| R - RED    | O - ORANGE |
| Y - YELLOW | W - WHITE  |
| BL - BLUE  | G - GREEN  |
| V - VIOLET |            |
| BR - BROWN |            |

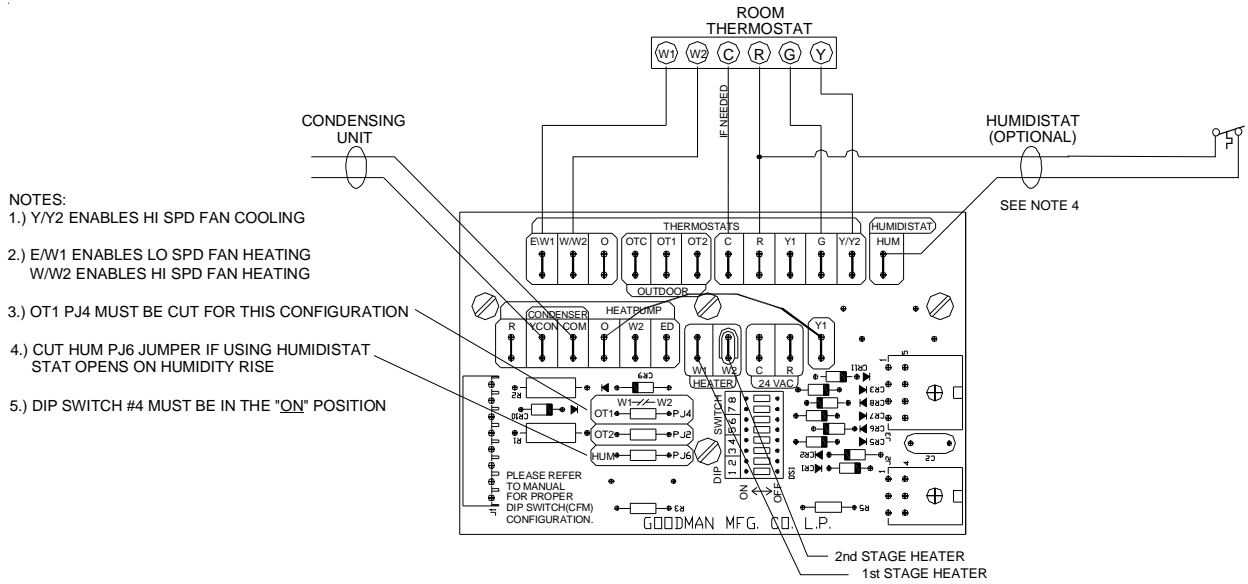
Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

# WIRING DIAGRAMS

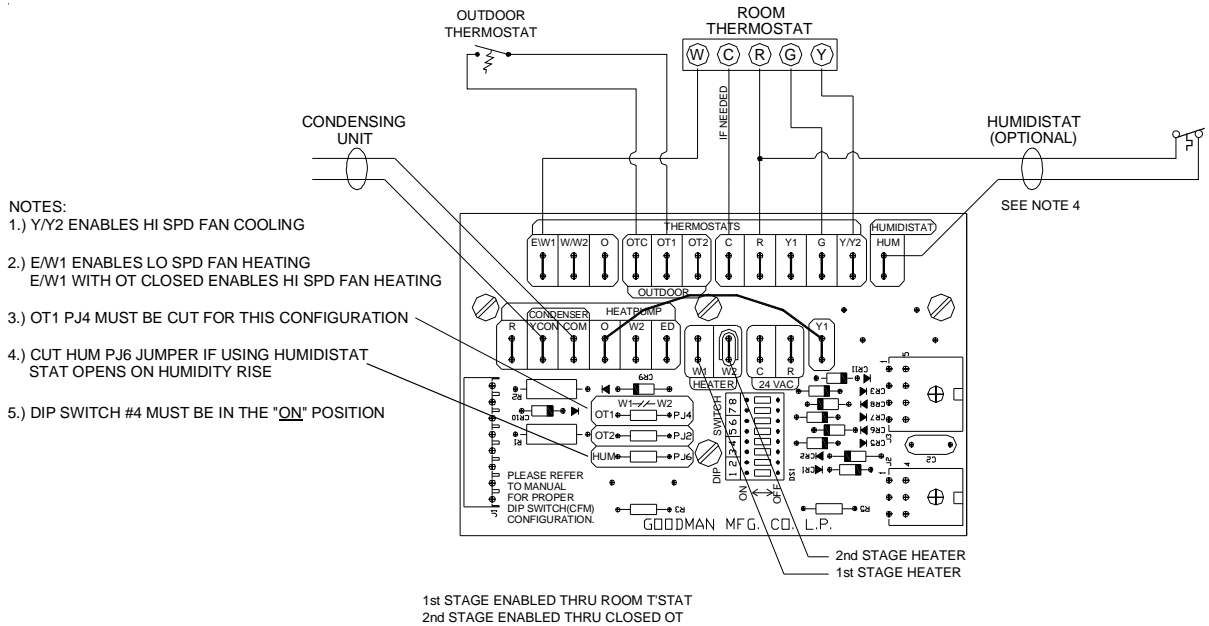
**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**

## Single Stage Cooling with Single or Two-Stage Heating



## COOLING ONLY - 2 STAGE HEAT THERMOSTAT



## COOLING ONLY - 2 STAGE HEAT (1st ROOM T'STAT & 2nd OT)

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

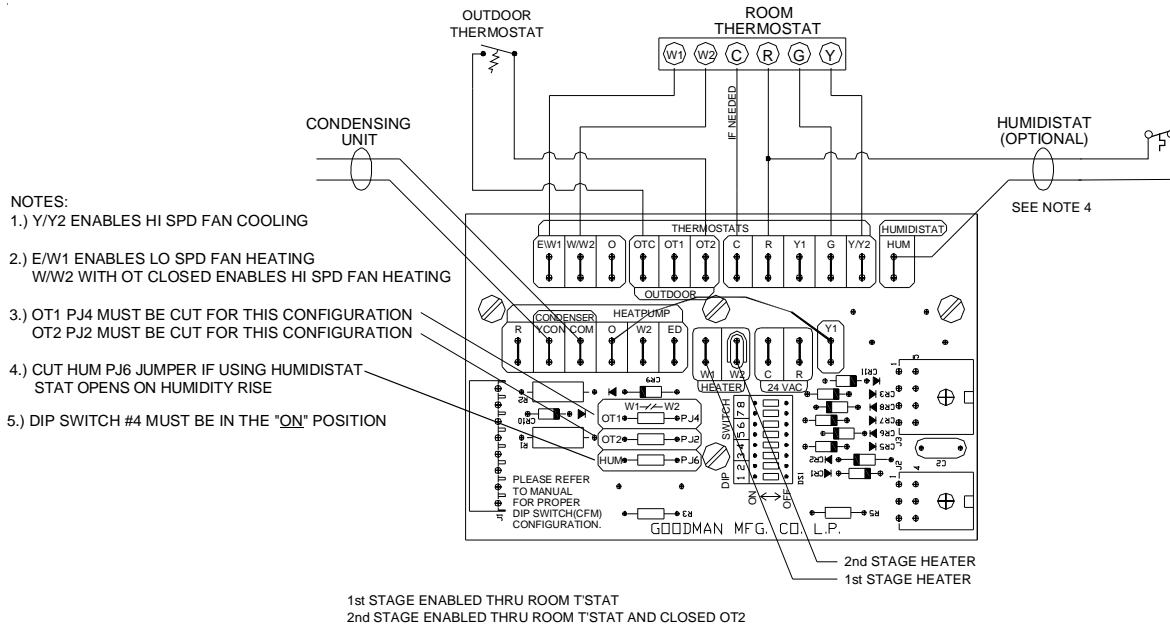
# WIRING DIAGRAMS



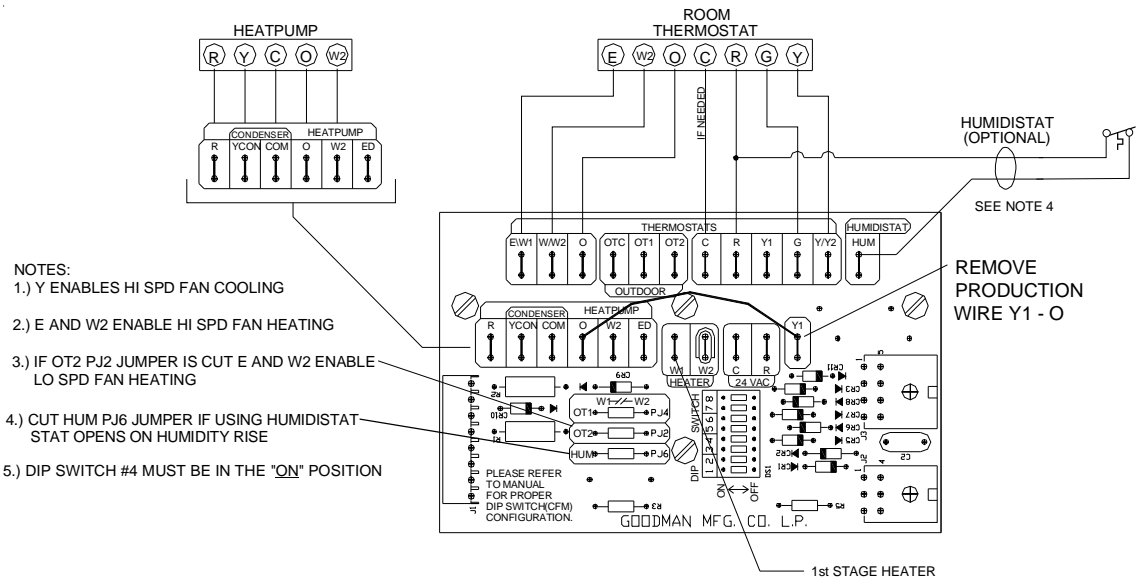
**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





## COOLING ONLY - 2 STAGE HEAT (T'STAT ENABLED OT)



## HEATPUMP - WITH 1 STG EMHT 1 STG AUX HEAT

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

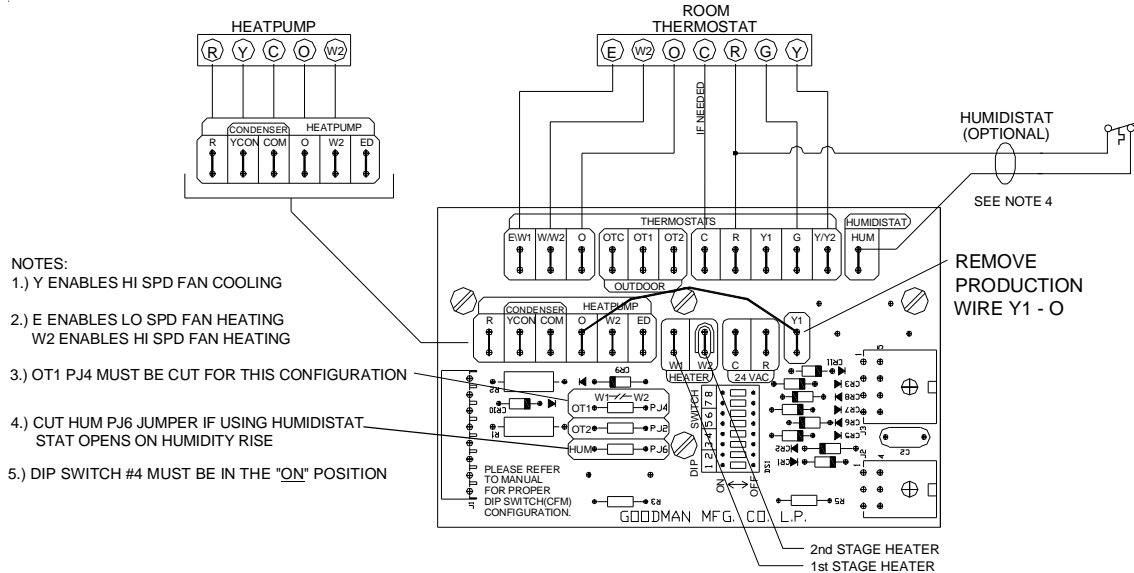
# WIRING DIAGRAMS



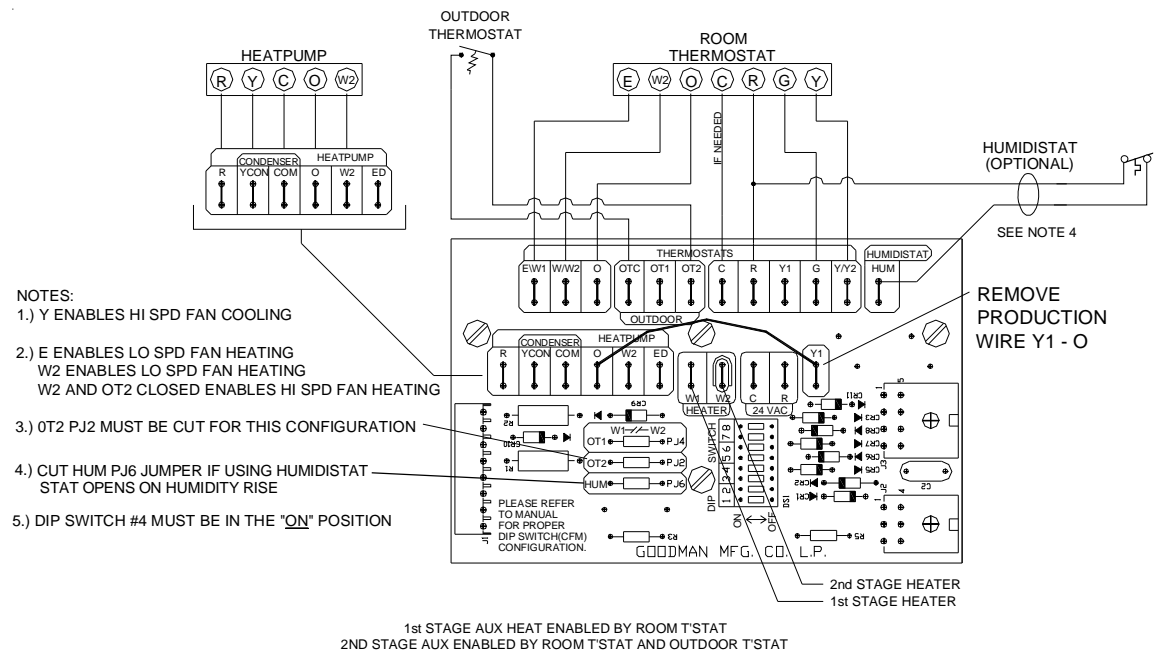
**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**






## HEATPUMP - 2 STG EMHT 1 STG AUX HEAT



## HEATPUMP - 2 STG EMHT 2 STG AUX - 1 OUTDOOR T'STAT

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

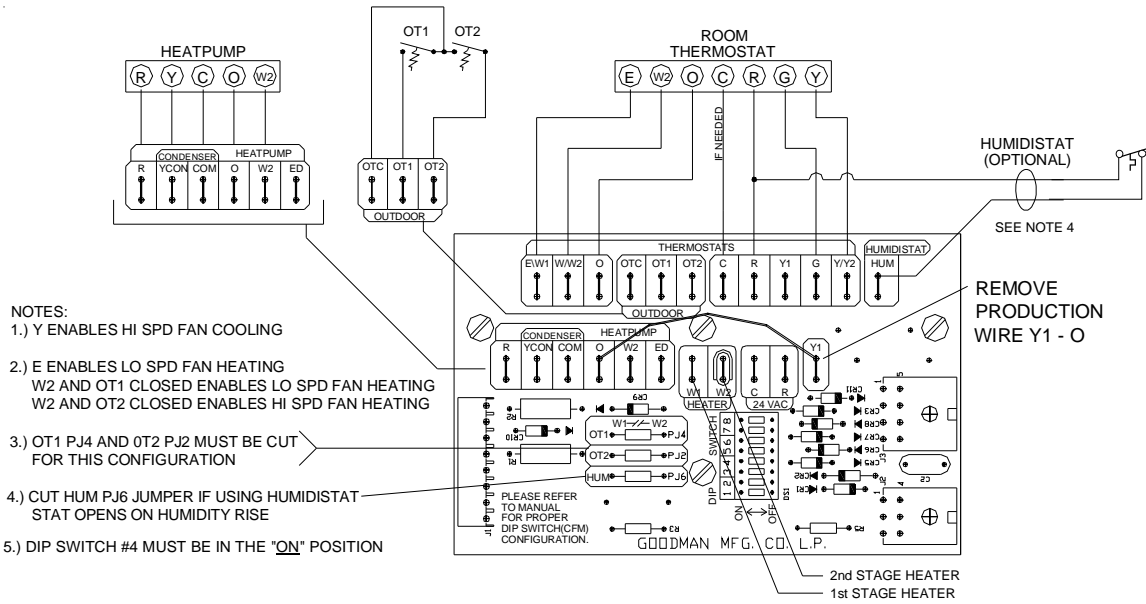
# WIRING DIAGRAMS



**WARNING**

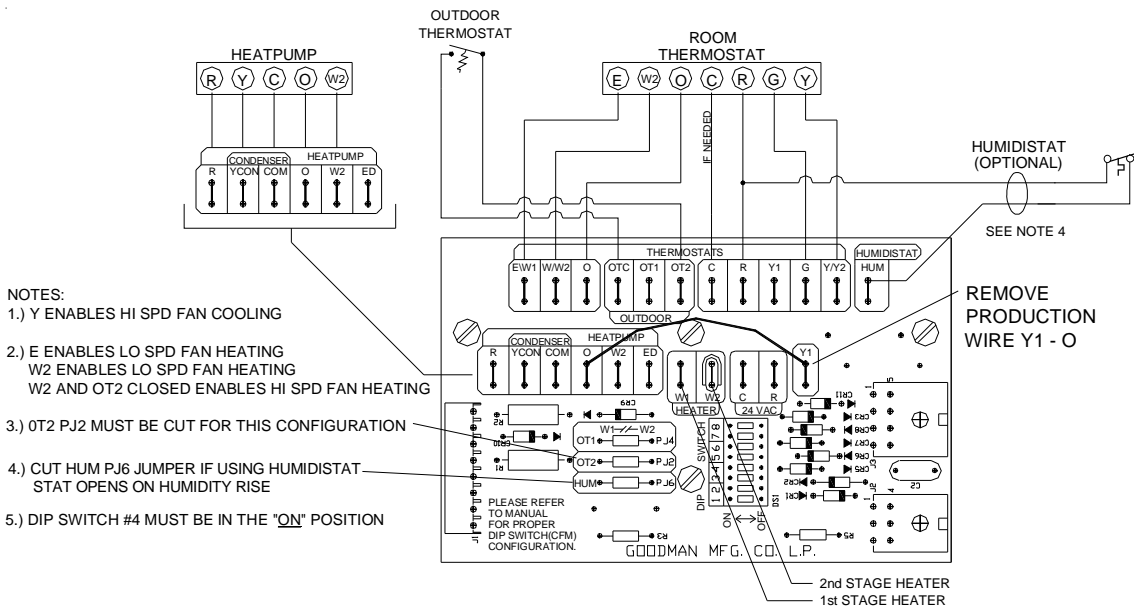
**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





NO AUX HEAT IN HEATPUMP MODE UNTIL OUTDOOR T'STAT CLOSES

## HEATPUMP - 2 STG EMHT 2 STG AUX - 2 OUTDOOR T'STATS



1st STAGE AUX HEAT ENABLED BY ROOM T'STAT  
2ND STAGE AUX ENABLED BY ROOM T'STAT AND OUTDOOR T'STAT

## HEATPUMP - 2 STG EMHT 2 STG AUX - 1 OUTDOOR T'STAT

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

# WIRING DIAGRAMS

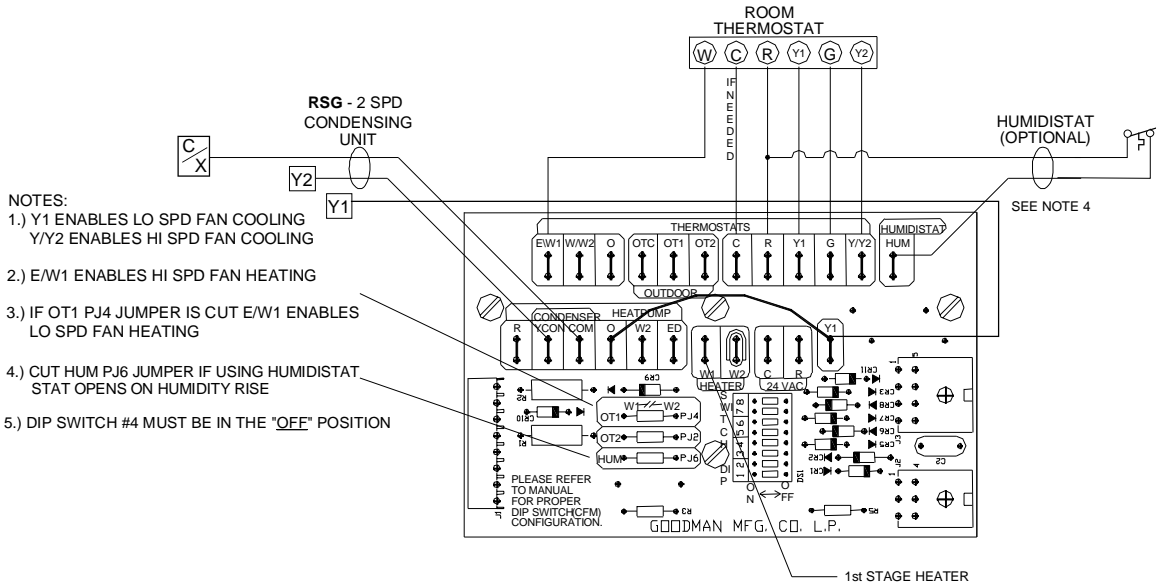


**WARNING**

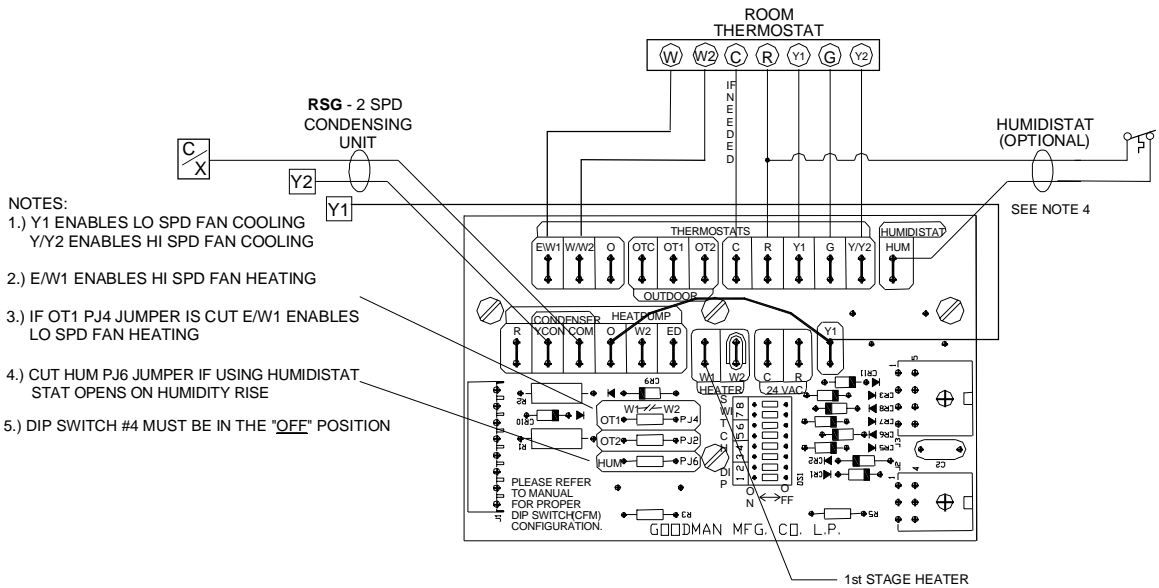
**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



## Two-Stage Cooling with Conventional Two-Stage Thermostat



## 2 SPD COOLING ONLY - WITH 1 STAGE ELECTRIC HEAT



## 2 SPD COOLING ONLY - WITH 2 STAGE HEAT THERMOSTAT

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

# WIRING DIAGRAMS

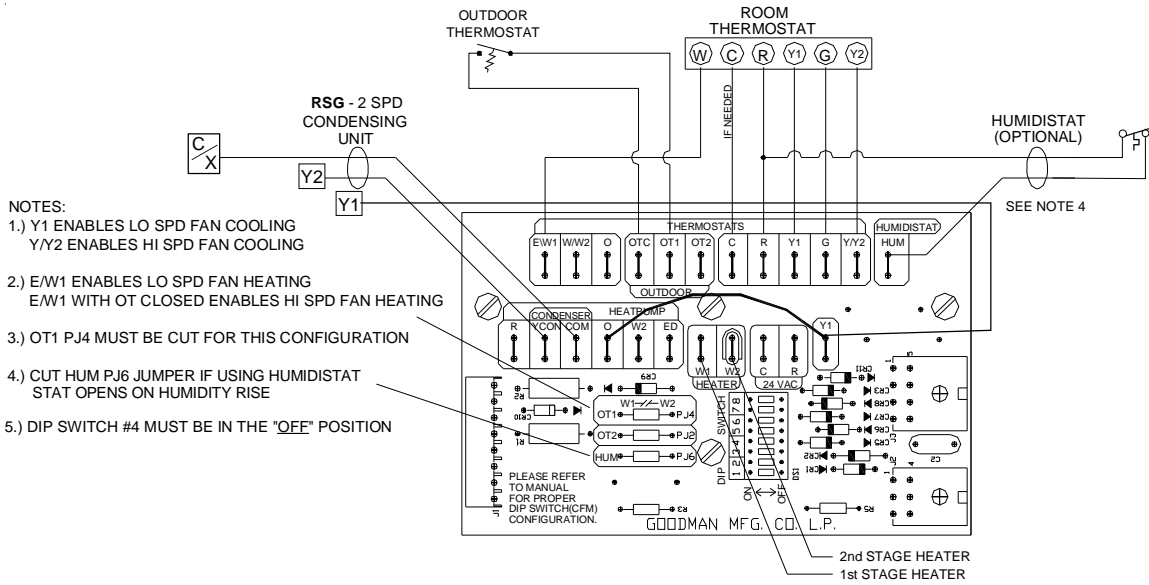


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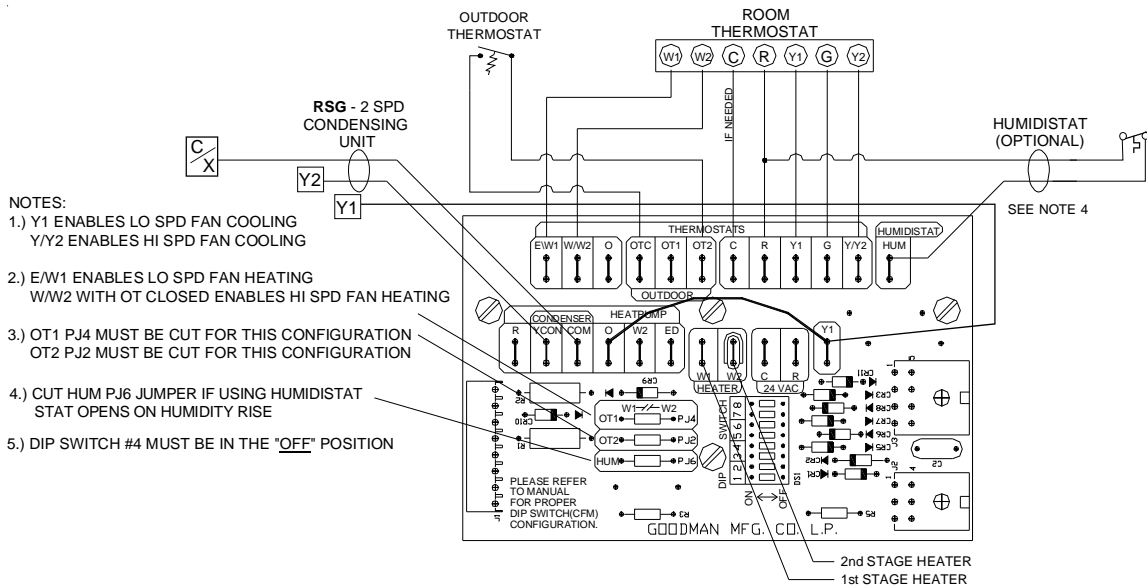
**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



## Two-Stage Cooling with Conventional Two-Stage Thermostat



**2 SPD COOLING ONLY - 2 STAGE HEAT (1st T'STAT 2nd OT)**



**2 SPD COOLING ONLY - 2 STAGE HEAT (T'STAT ENABLED OT)**

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.



# WIRING DIAGRAMS

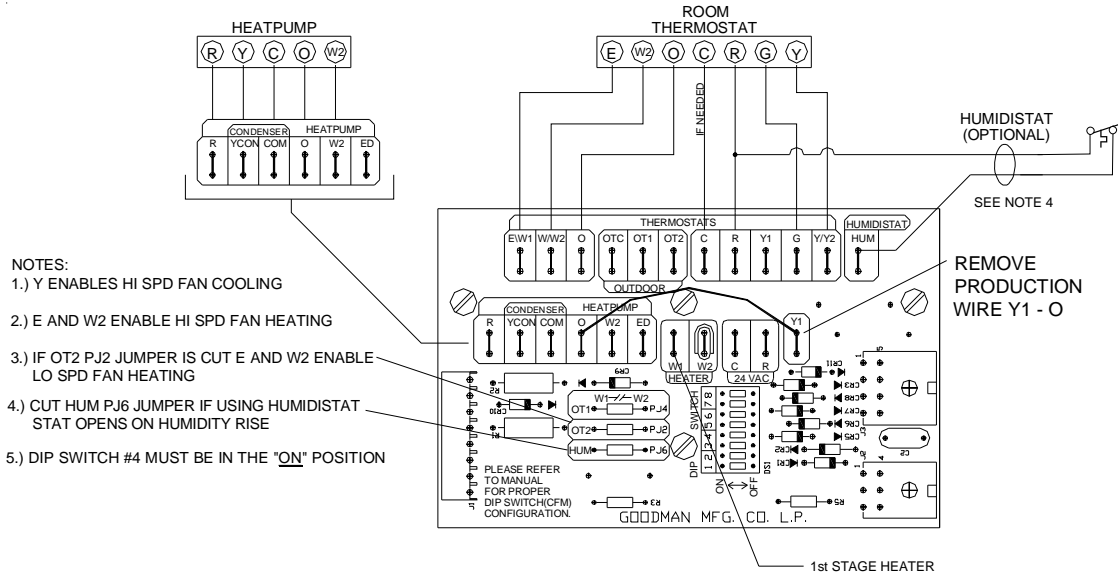


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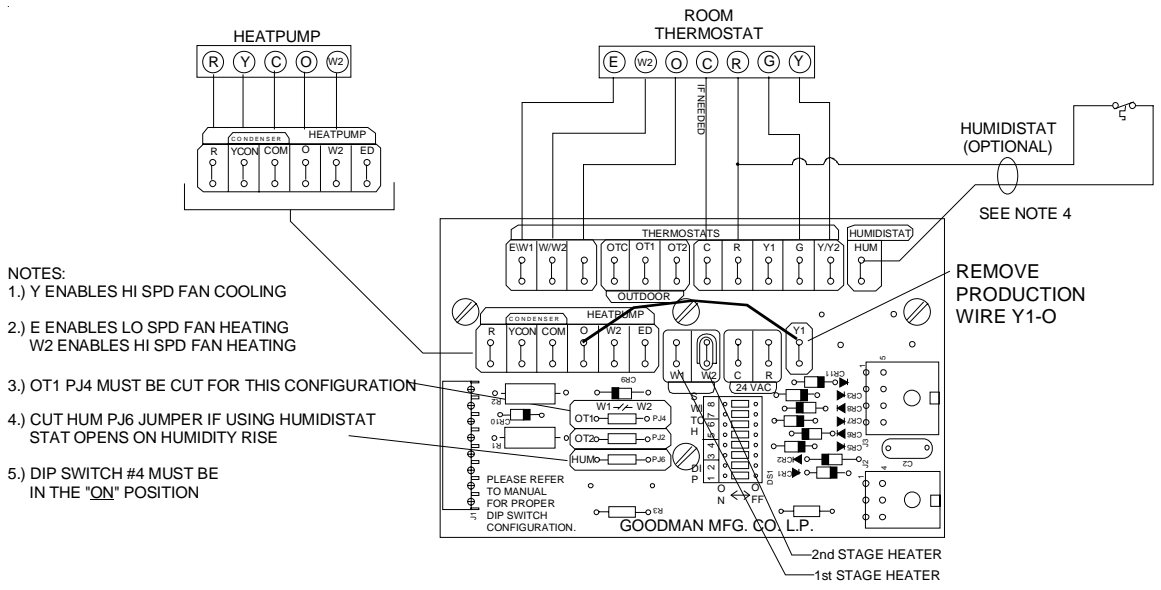
**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



## Heat Pump with Single or Two-Stage Heating (Options for Emergency Heat) with Conventional Thermostat



### HEATPUMP - WITH 1 STG EMHT 1 STG AUX HEAT



### HEATPUMP - 2 STG EMHT 1 STG AUX HEAT

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

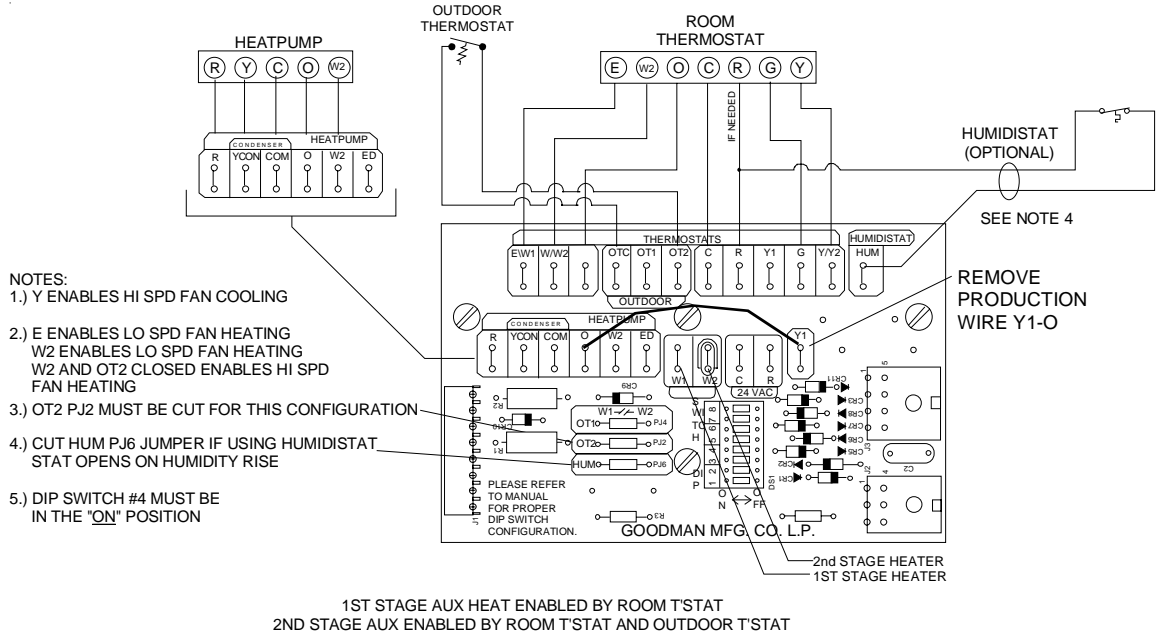
# WIRING DIAGRAMS



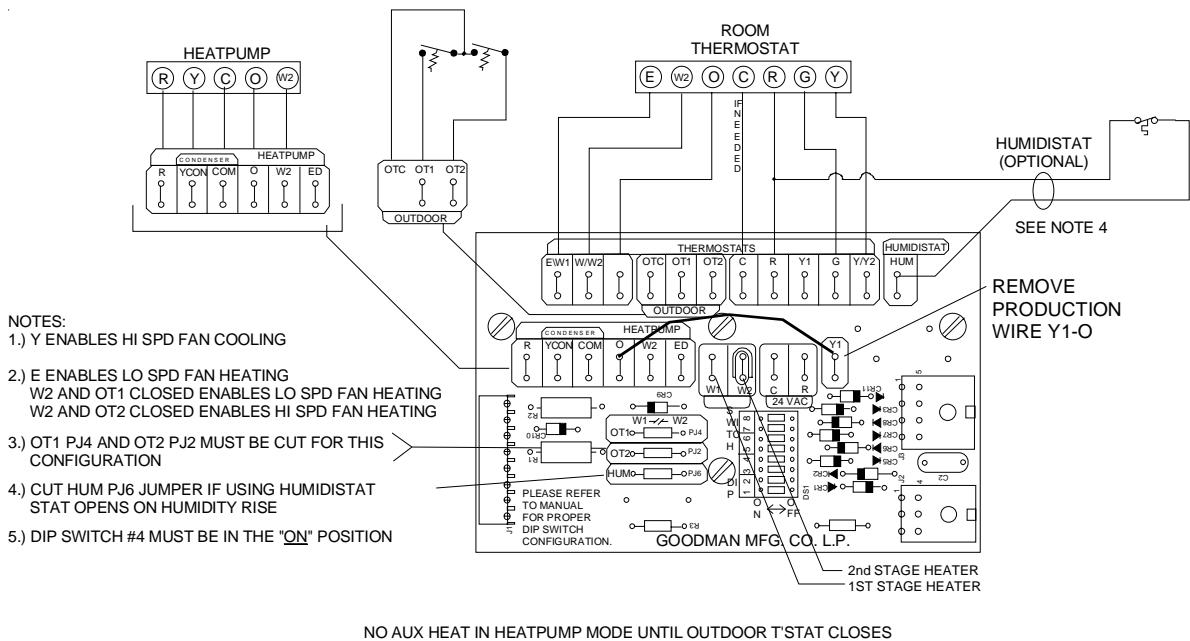
**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





**HEATPUMP - 2 STG EMHT 2 STAG AUX - 1 OUTDOOR T-STAT**



**HEATPUMP - 2 STG EMHT 2 STAG AUX - 2 OUTDOOR T-STATS**

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

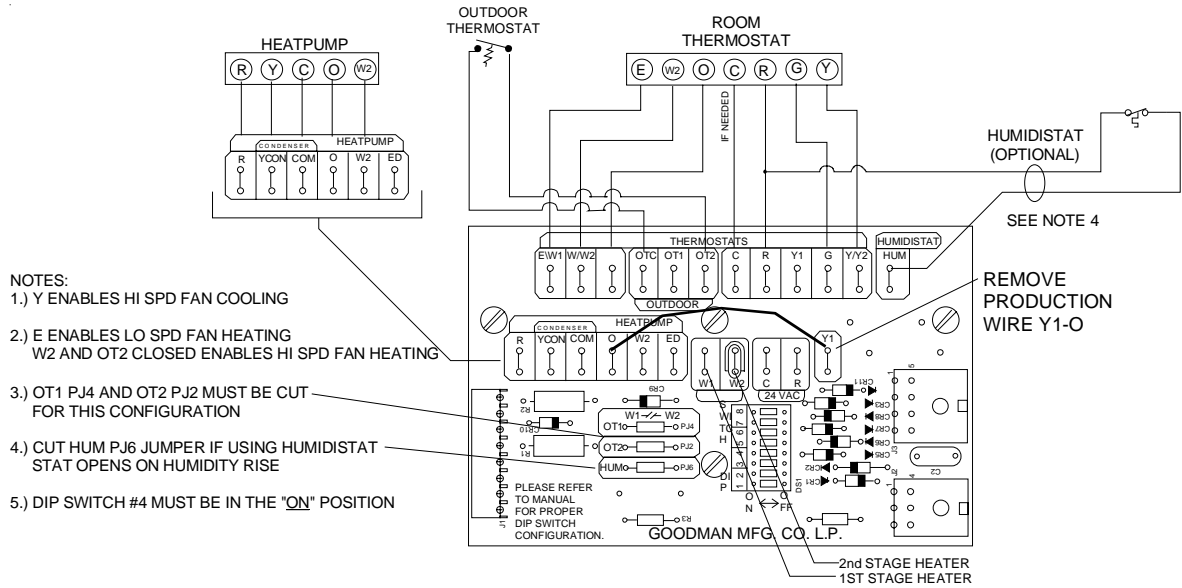
# WIRING DIAGRAMS



**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





NO AUX HEAT IN HEATPUMP MODE UNTIL OUTDOOR T'STAT CLOSES

**HEATPUMP - 2 STG EMHT 1 STG AUX - 1 OUTDOOR T'STAT**

# WIRING DIAGRAMS

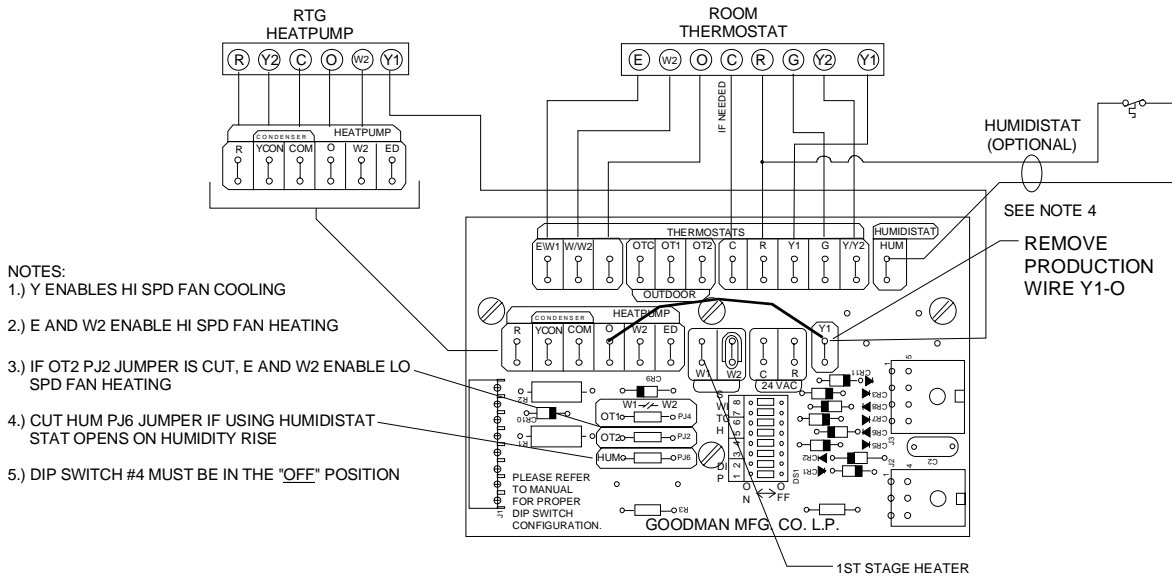


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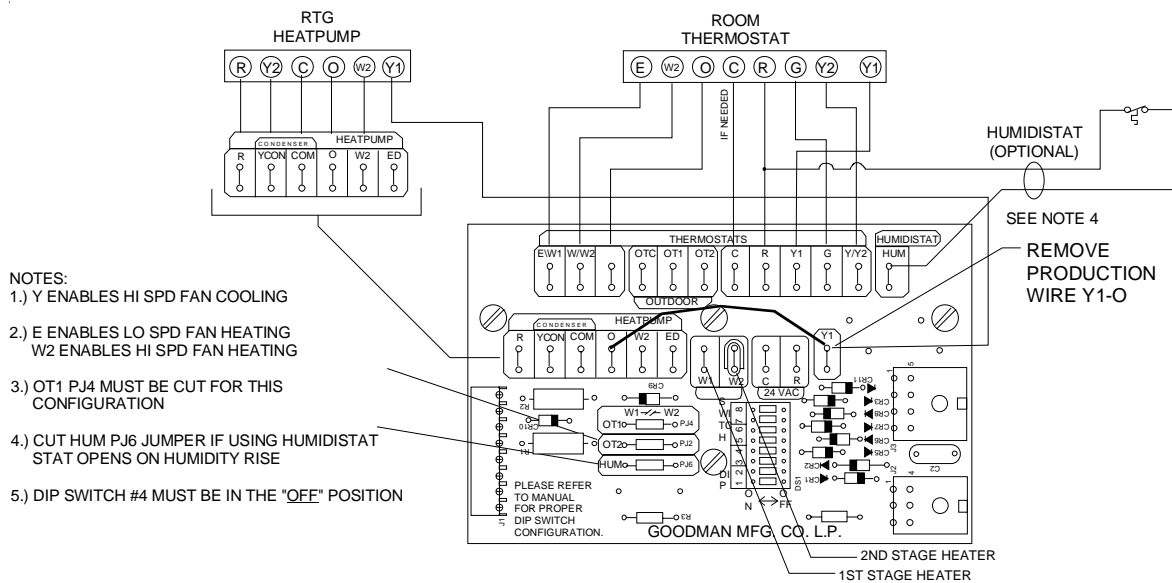
**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



## Two Speed Heat Pump with Single or Two-Stage Heating (Options for Emergency Heat) with Conventional Two-Stage Thermostat



### HEATPUMP - WITH 1 STG EMHT 1 STG AUX HEAT



### HEATPUMP - 2 STG EMHT 1 STG AUX HEAT

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

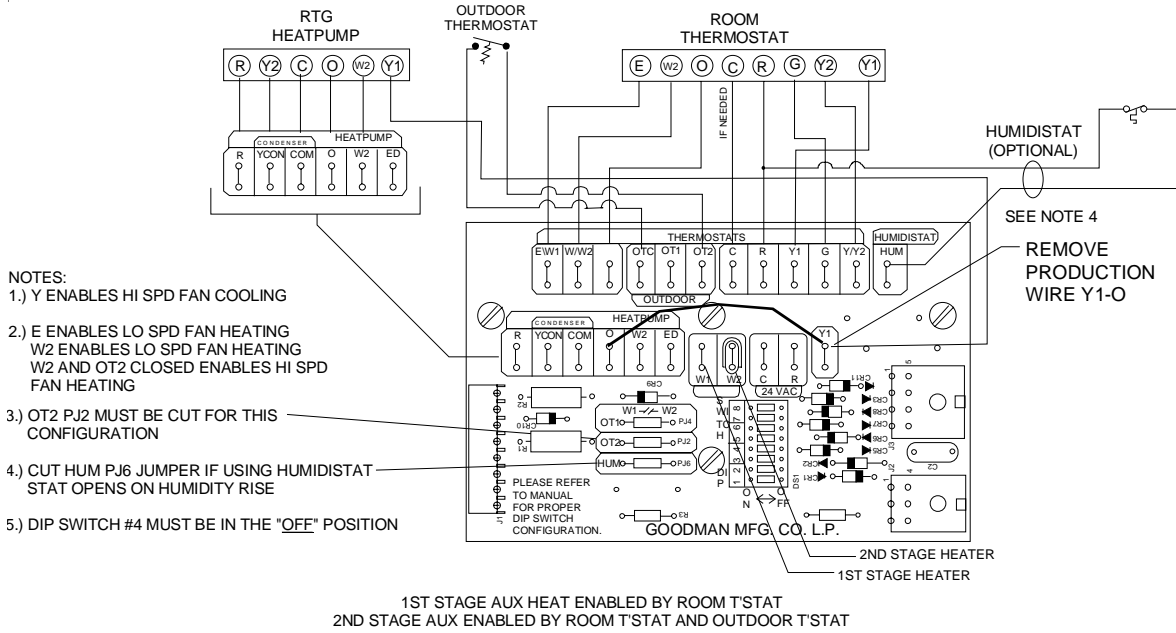
# WIRING DIAGRAMS



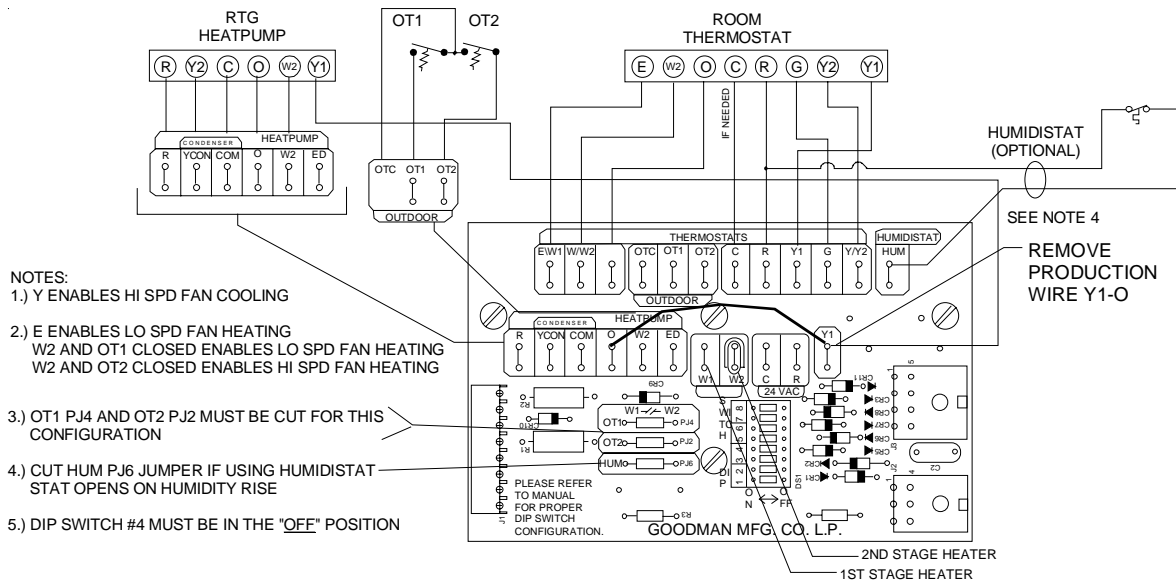
**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





## HEATPUMP - 2 STG EMHT 2 STG AUX - 1 OUTDOOR T'STAT



## HEATPUMP - 2 STG EMHT 2 STG AUX - 2 OUTDOOR T'STATS

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

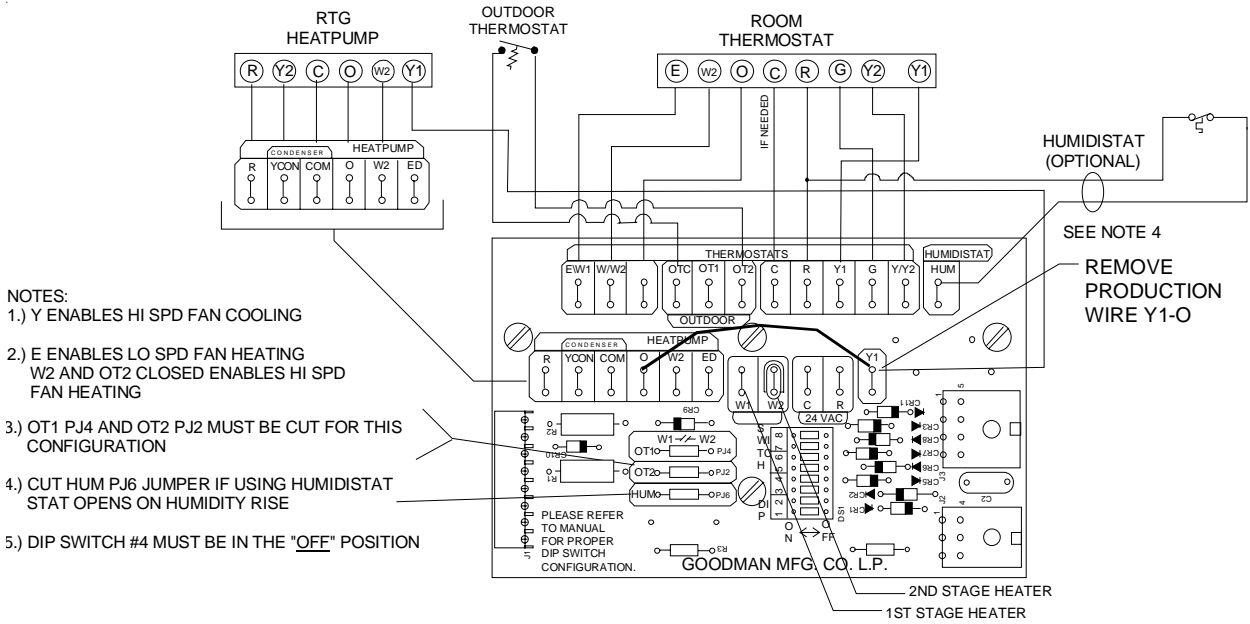
# WIRING DIAGRAMS



**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





- NOTES:
- 1.) Y ENABLES HI SPD FAN COOLING
  - 2.) E ENABLES LO SPD FAN HEATING  
W2 AND OT2 CLOSED ENABLES HI SPD FAN HEATING
  - 3.) OT1 PJ4 AND OT2 PJ2 MUST BE CUT FOR THIS CONFIGURATION
  - 4.) CUT HUM PJ6 JUMPER IF USING HUMIDISTAT STAT OPENS ON HUMIDITY RISE
  - 5.) DIP SWITCH #4 MUST BE IN THE "OFF" POSITION

NO AUX HEAT IN HEATPUMP MODE UNTIL T'STAT CLOSES

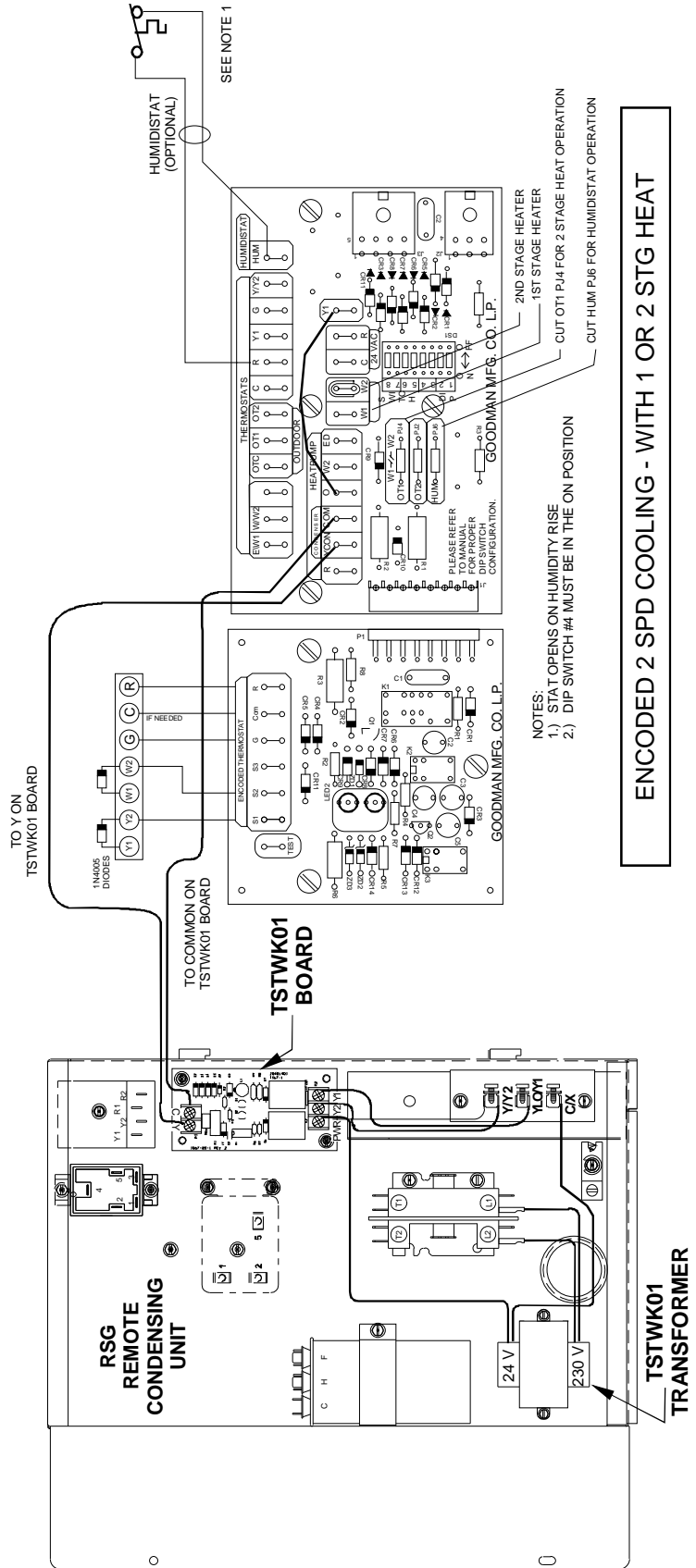
**HEATPUMP - 2 STG EMHT 1 STG AUX - 1 OUTDOOR T'STAT**

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

# WIRING DIAGRAMS

WARNING

HIGH VOLTAGE! DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



**ENCODED 2 SPD COOLING - WITH 1 OR 2 STG HEAT**

## Two-Stage Cooling with Conventional Two-Stage Thermostat (Encoded with add on 1N006 Diodes) (TSTWK01 Kit Required)

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

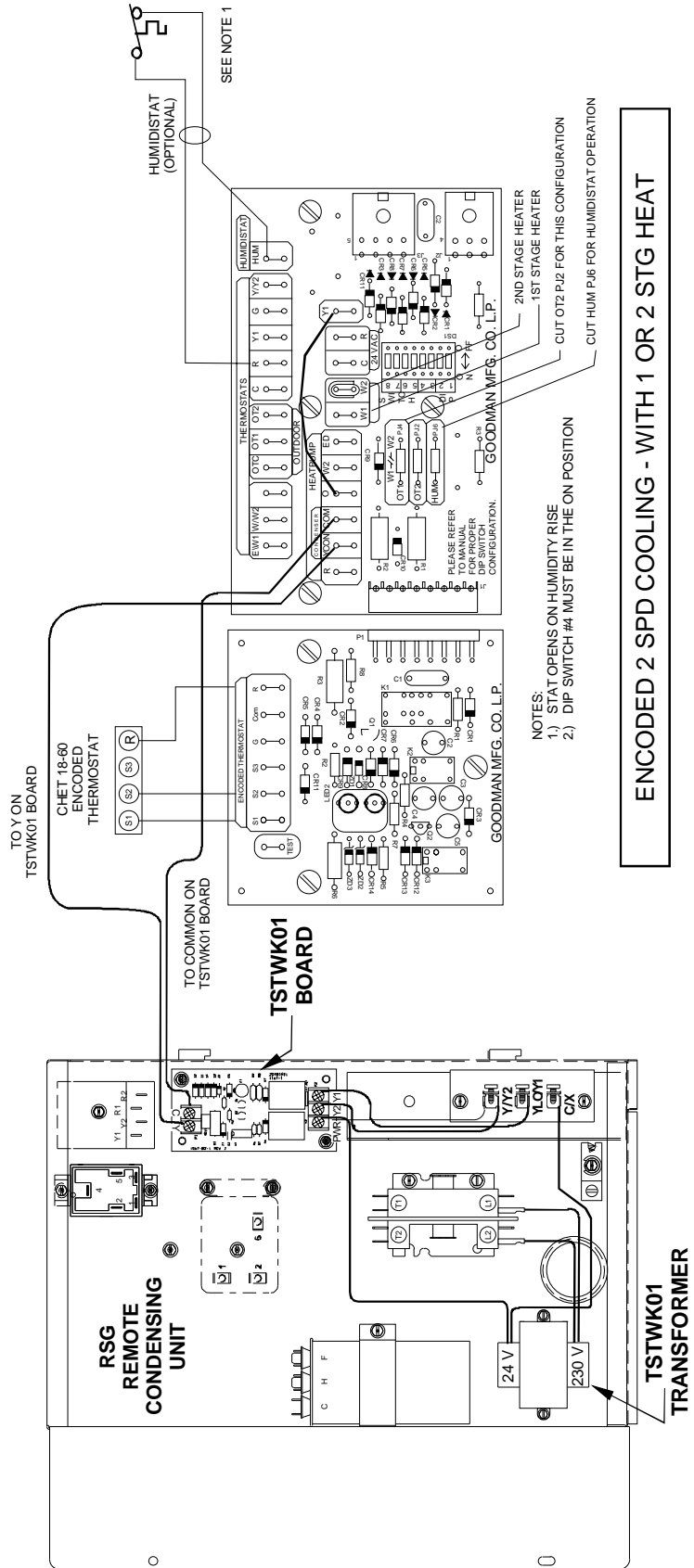




# WIRING DIAGRAMS

**WARNING**

**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**



**Encoded Two-Stage Cooling with GMC Thermostat Part # CHET18-60  
(TSTWK01 Kit Required)**

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

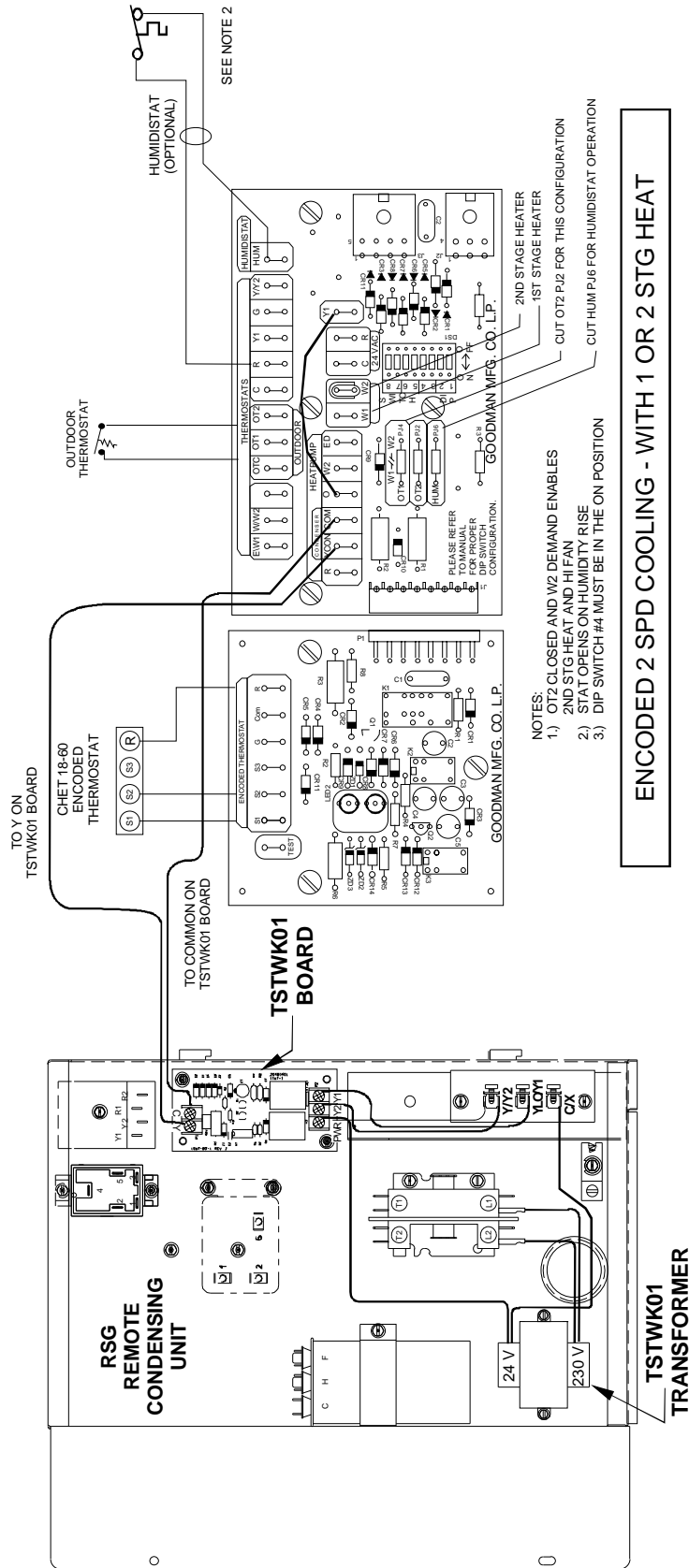
# WIRING DIAGRAMS



**WARNING**

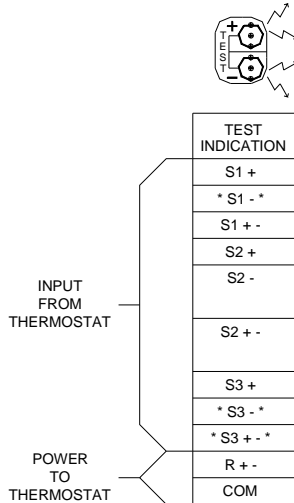
**HIGH VOLTAGE!**  
**DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**





Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

**Table 5. - Troubleshooting Encoded Two Stage Cooling Thermostats Options**



TEST INDICATION	FUNCTION	SIGNAL OUT	SIGNAL FAN	
S1 +	LOW SPEED COOL	YCON +	Y1	
* S1 - *	* LO SPEED COOL *	* YCON - *	* Y / Y2 HI *	* ERROR CONDITION ( DIODE ON THERMOSTAT BACKWARDS )
S1 + -	HI SPEED COOL	YCON + -	Y / Y2	
S2 +	LO SPEED HEAT	W1 HEATER	W / W1	SEE NOTE 3
S2 -	O	ED - ( FUTURE USE )	O	
S2 + -	LO SPEED HEAT HI SPEED HEAT	W1 HEATER W2 HEATER	W / W1 EM / W2	SEE NOTE 3
S3 +	G	NONE	G	
* S3 - *	N/A	N/A	N/A	* ERROR CONDITION ( S3 CAN ONLY READ + )
* S3 + - *	N/A	N/A	N/A	* ERROR CONDITION ( S3 CAN ONLY READ + )
R + -	24 VAC	R TO T'STAT	R	
COM	GND	COM TO T'STAT	C1 , C2	

**NOTES:**

- 1.) THE TEST SPADE CAN BE CONNECTED TO ANY OTHER TEST SPADE ON EITHER BOARD.
- 2.) THE + LED WILL BE RED AND WILL LIGHT TO INDICATE + HALF CYCLES.  
THE - LED WILL BE GREEN AND WILL LIGHT TO INDICATE - HALF CYCLES.  
BOTH RED AND GREEN ILLUMINATED WILL INDICATE FULL CYCLES DENOTED BY + - .
- 3.) SIGNAL OUT CONDITION FOR W1 , W2 HEATER WILL BE AFFECTED BY OT1 PJ4 AND OT2 PJ2 JUMPERS AND OUTDOOR THERMOSTATS ATTACHED. THE TABLE ABOVE ASSUMES OT1 PJ4 IS REMOVED AND OT2 PJ2 IS MADE WITH NO OUTDOOR THERMOSTATS ATTACHED.

The chart above provides troubleshooting for either version of the encoded thermostat option. This provides diagnostic information for the GMC CHET18-60 or a conventional two cool / two stage heat thermostat with IN4005 diodes added as called out in the above section.

A test lead or jumper wire can be added from the test terminal to any terminal on the B13682-74 or B13682-71 variable speed terminal board and provide information through the use of the LED lights on the B13682-71 VSTB control. Using this chart, a technician can determine if the proper input signal is being received by the encoded VSTB control and diagnose any problems that may be relayed to the output response of the B13682-74 VSTM control.

**Example:**

*The system is calling for 1<sup>st</sup> stage cooling operation. The proper input signal from either thermostat option will cause the red “+” LED light to illuminate when the test terminal and the “S1” terminal are connected using a test lead or jumper wire. This verifies proper*

*input from the thermostat. The proper output is a “YCON” signal to the RSG condensing unit. When a test lead or jumper is connected between Test and YCON, the red “+” LED will illuminate. The corresponding response from the CKTS control will be an illuminated “LOW” LED light and 24V applied to the Low capacity contactor through the “LOW” terminal output.*

*This similar procedure can be utilized on any terminal on the VSTB controls. The chart above indicates the proper input and LED status as well as the corresponding out signal. Each mode of operation must be verified during the check out procedure when the units are installed. The LED light provides a easy method to verify operation without the use of a multi-meter.*