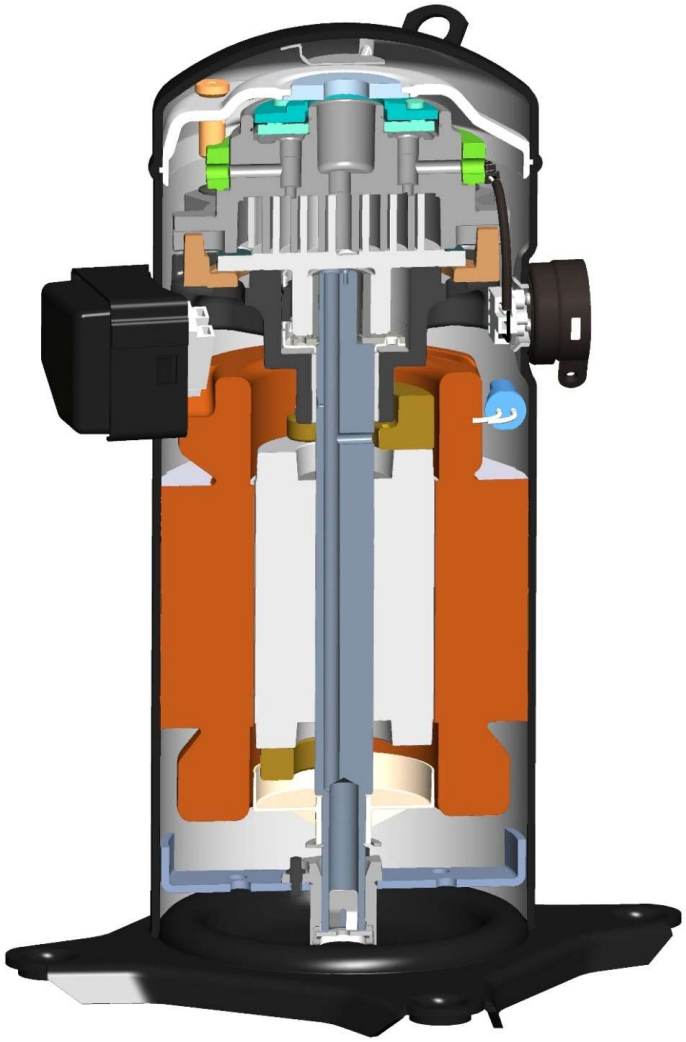
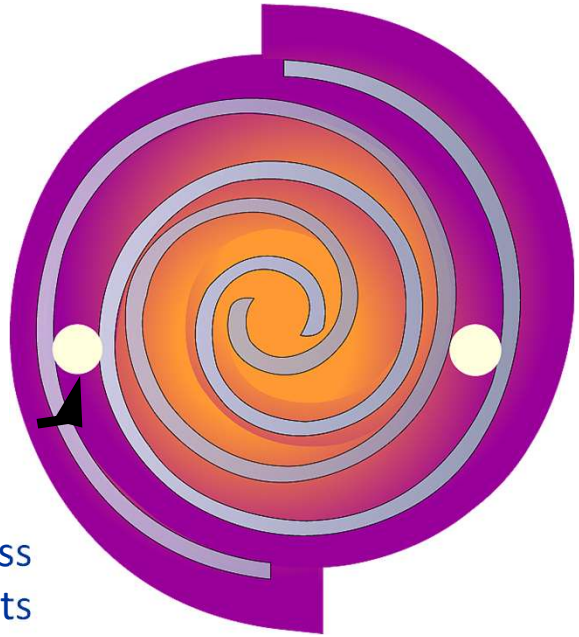
Troubleshooting 2-stage scroll

Why you'd get the call

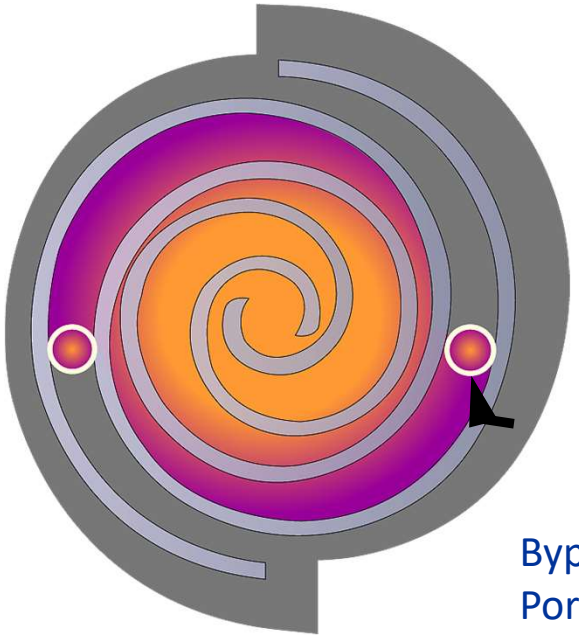
- Inability to keep up on warm days.
- Leaving air temp feels "warmer", "not as cold…"
- Erratic indoor fan operation.





Bypass Ports Closed

High Stage



Bypass Ports Open

Low Stage

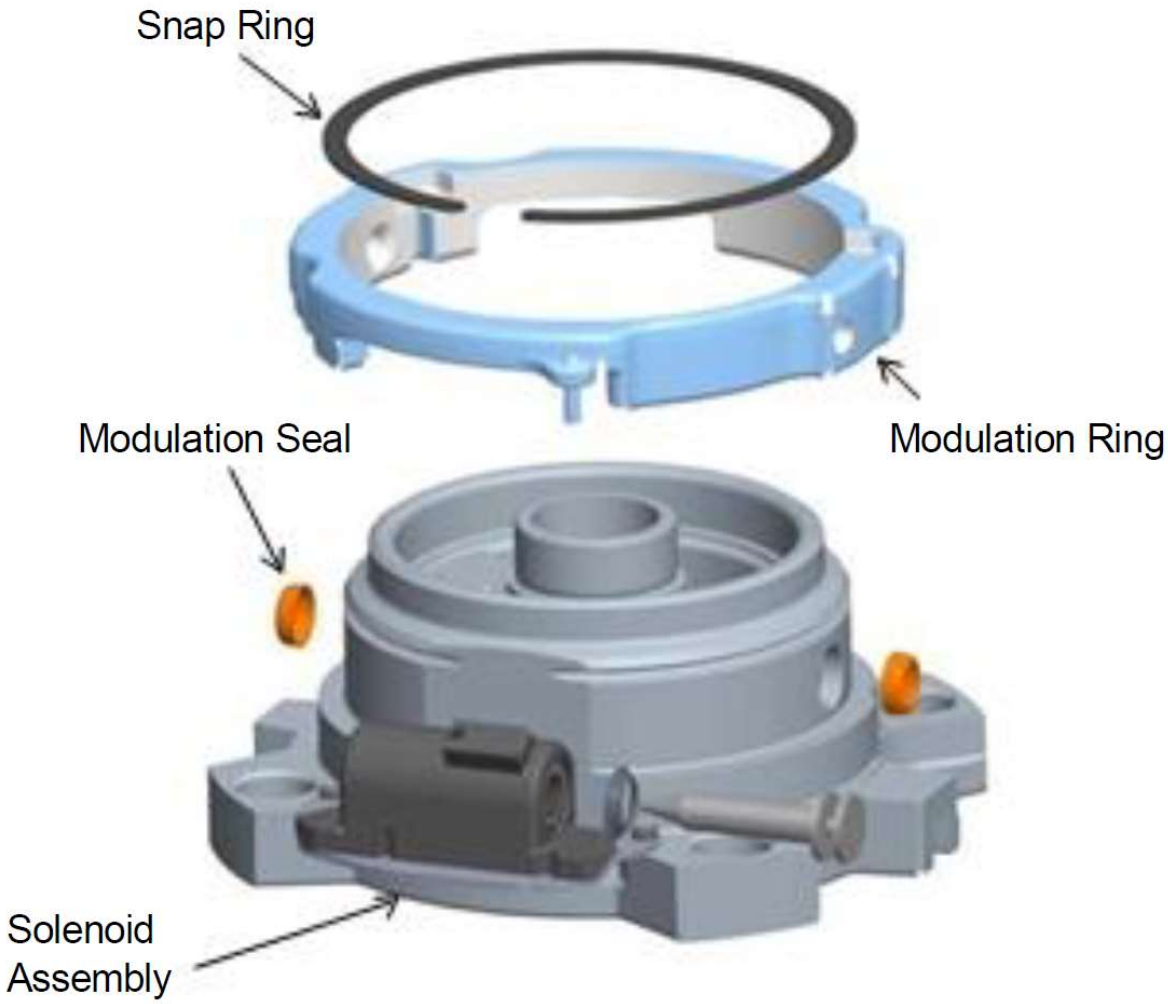


Figure 1 - ZPS*K4

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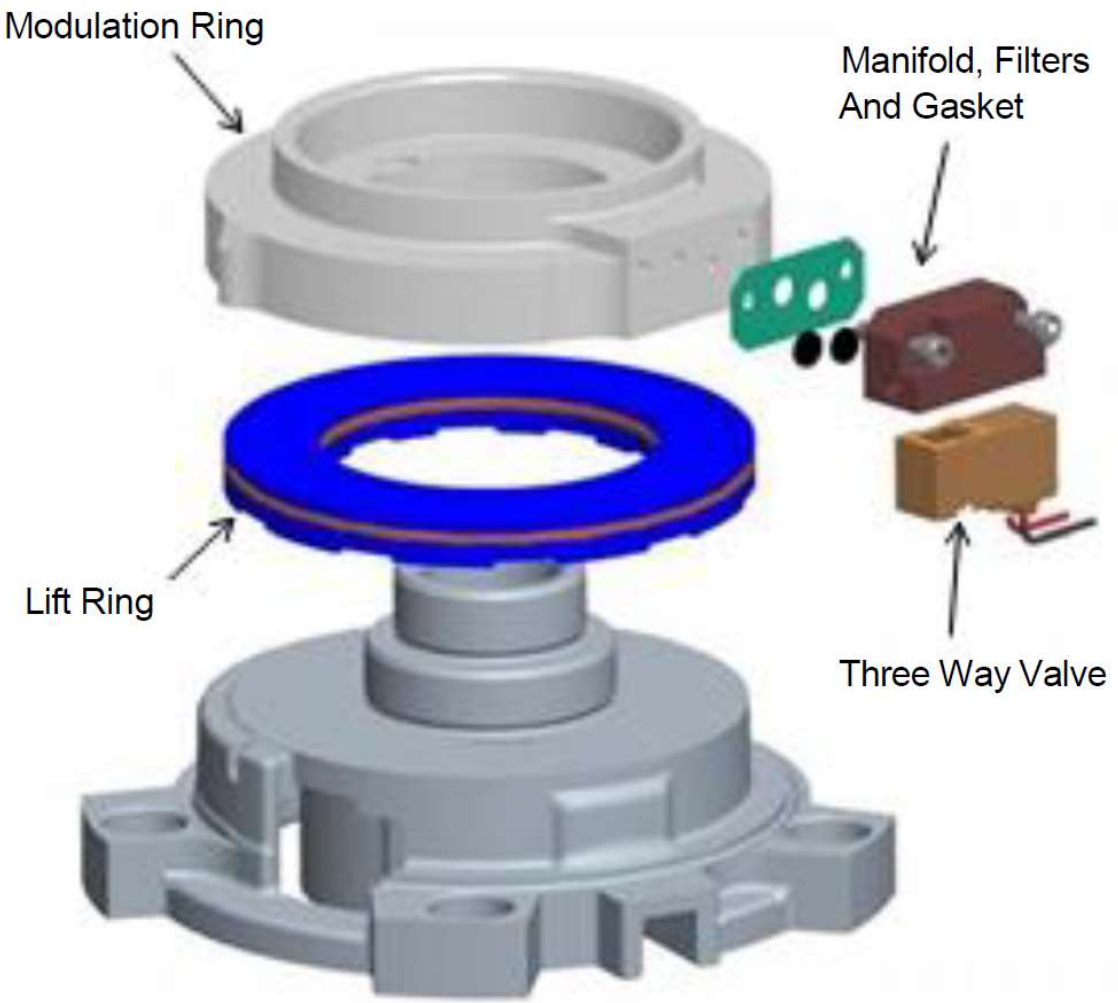

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Figure 2 - ZPS*K5

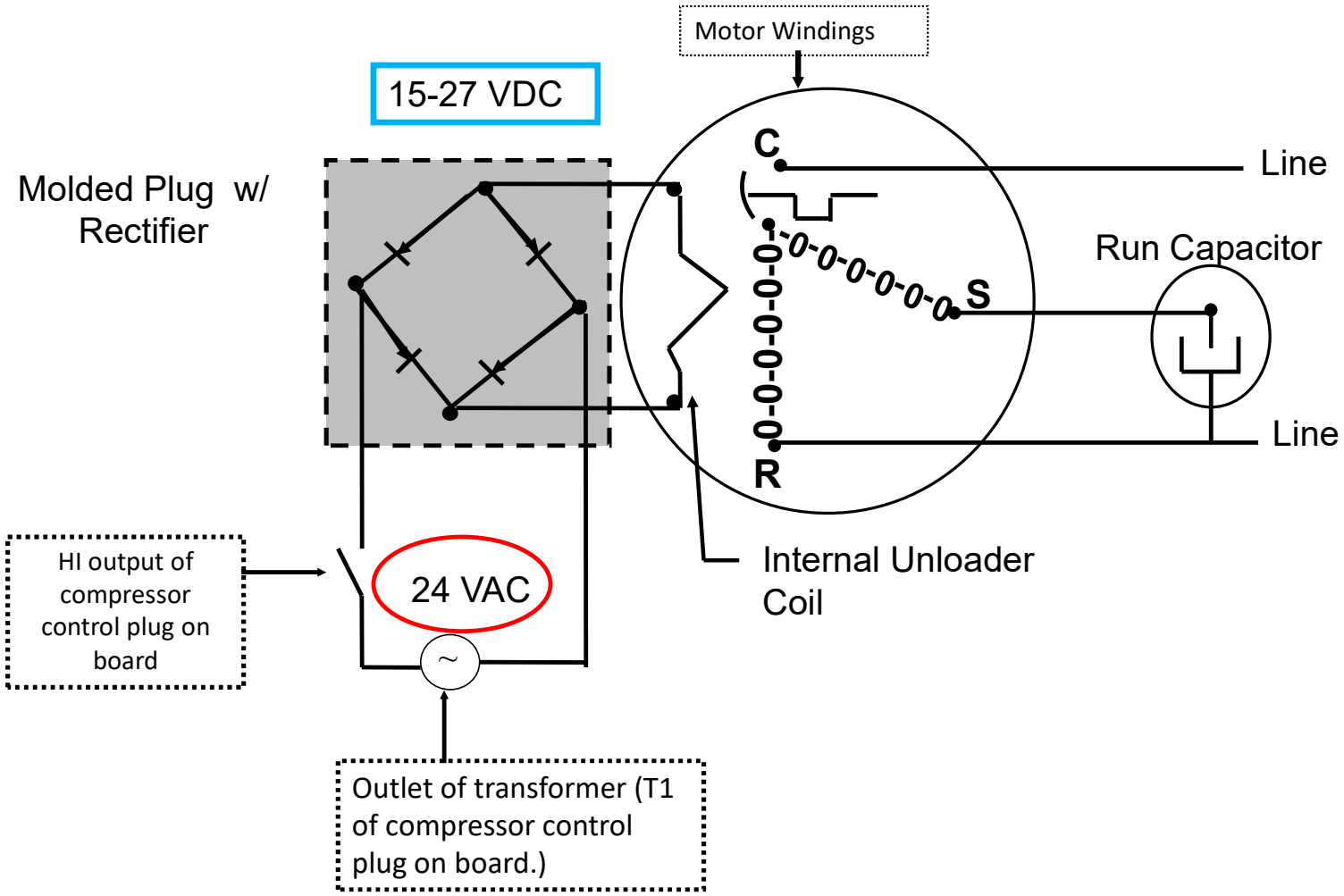
2 Stage Outdoor

- Suction pressure should drop when switching from low to high.
- Compressor current should increase when switching from low to high.

- 24 volts to the rectifier plug will activate the loader mechanism which CLOSES the by-pass ports and causes the compressor to operate **fully loaded**.

  (Solenoid energizes to LOAD the compressor.)

- Compressor Solenoid will allow it to fail UNLOADED.


Motor Windings
15-27 VDC
Molded Plug w/ Rectifier
C
Line
Run Capacitor
S
R
Line
HI output of compressor control plug on board
24 VAC
Internal Unloader Coil
Outlet of transformer (T1 of compressor control plug on board.)

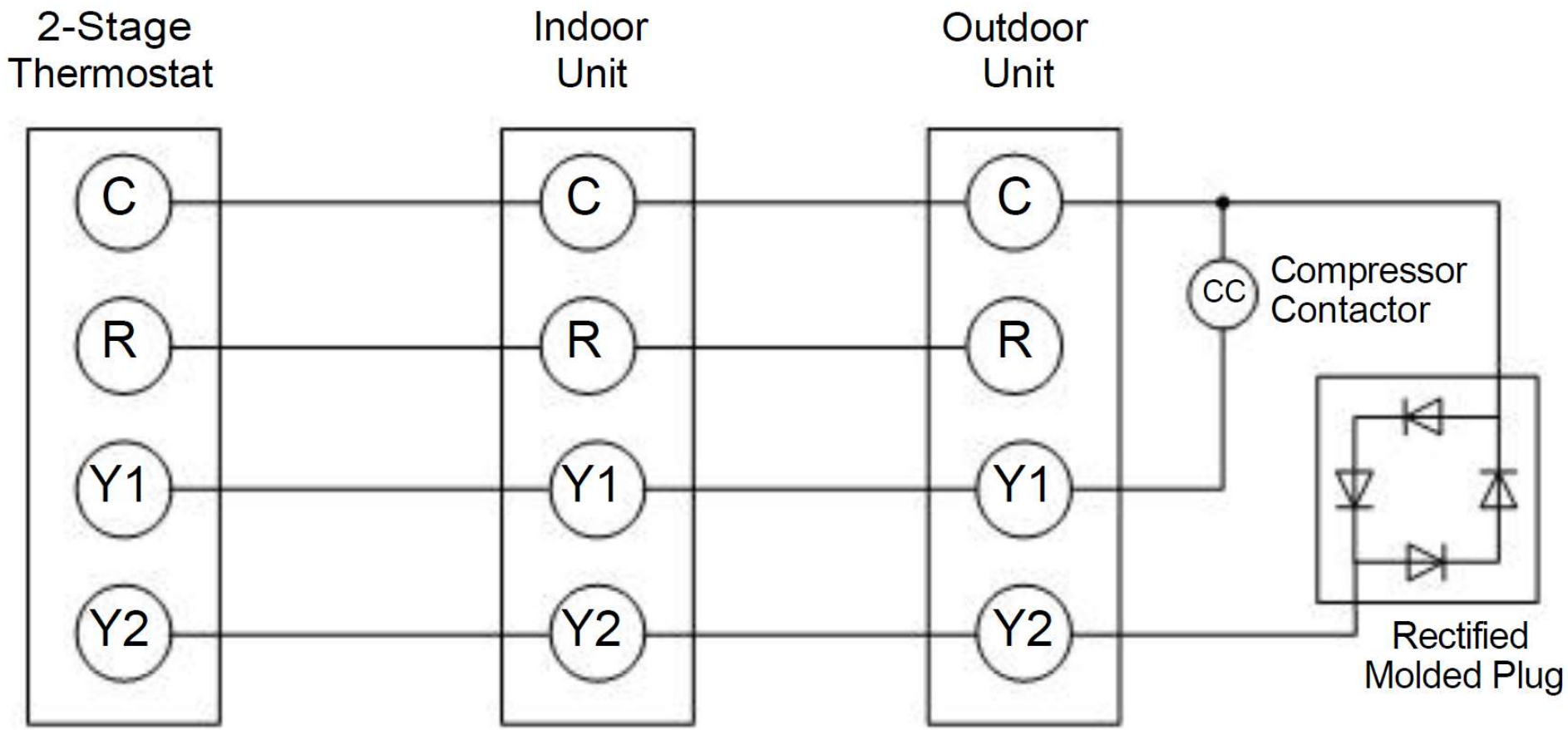
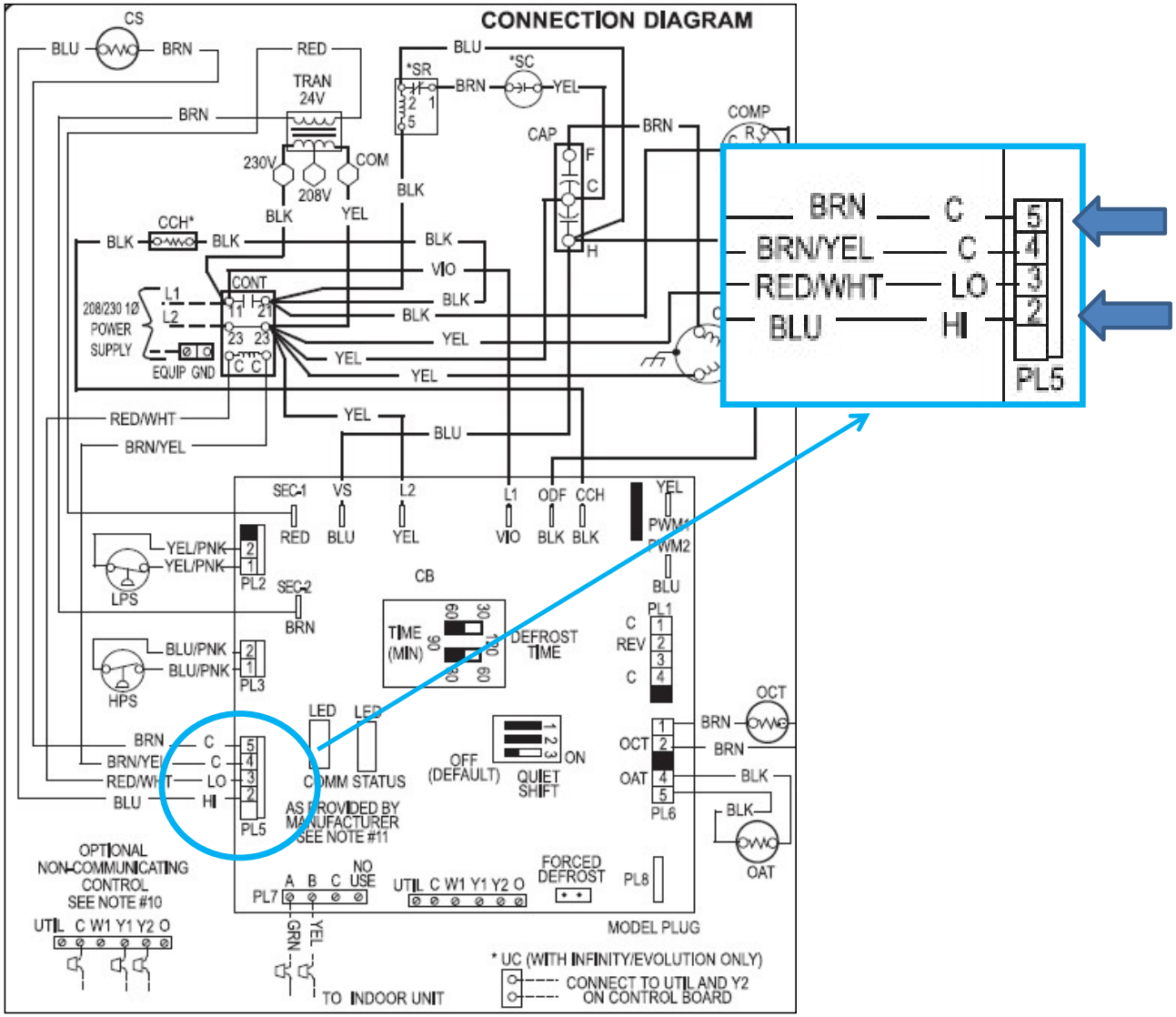
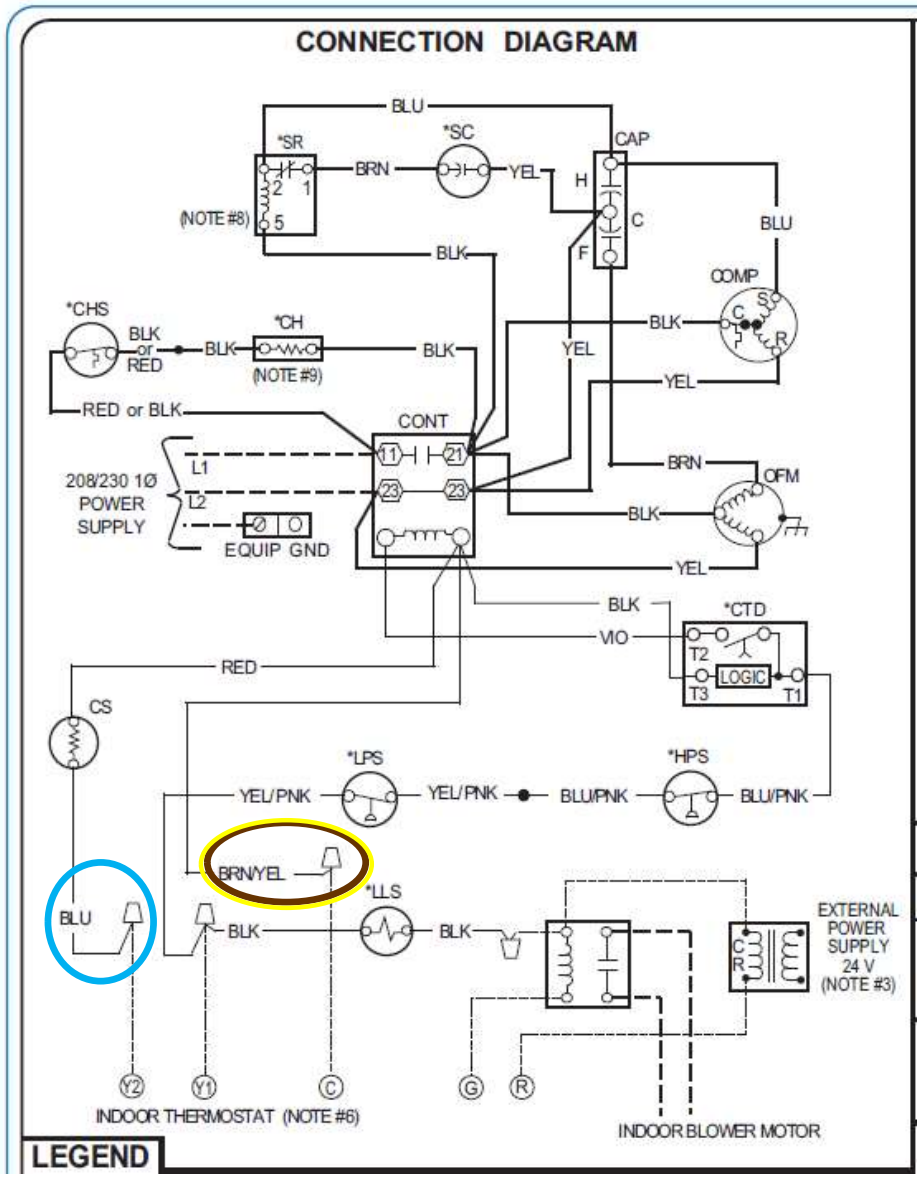


Figure 4
Example of 24 Volt Modulation Control Wiring


CONNECTION DIAGRAM
CS
BLU
BRN
RED
TRAN
24V
230V
208V
COM
BLK
YEL
*SR
*SC
CAP
COMP
CCH*
CONT
208/230 1Ø
POWER
SUPPLY
L1
L2
EQUIP GND
VIO
RED/WHT
BRN/YEL
SEC-1
VS
L2
L1
ODF
CCH
PWM1
PWM2
YEL/PNK
PL2
LPS
SEC-2
CB
TIME
(MIN)
DEFROST
TIME
BLU/PNK
PL3
HPS
LED
COMM STATUS
OFF
(DEFAULT)
QUIET
SHIFT
ON
REV
OCT
OAT
PL6
PL1
AS PROVIDED BY
MANUFACTURER
SEE NOTE #11
PL5
OPTIONAL
NON-COMMUNICATING
CONTROL
SEE NOTE #10
UTIL C W1 Y1 Y2 O
PL7
A B C NO USE
GRN
YEL
TO INDOOR UNIT
FORCED
DEFROST
PL8
MODEL PLUG
* UC (WITH INFINITY/EVOLUTION ONLY)
CONNECT TO UTIL AND Y2
ON CONTROL BOARD
BRN C
BRN/YEL C
RED/WHT LO
BLU HI
PL5


CONNECTION DIAGRAM
BLU
*SR
*SC
CAP
BRN
YEL
H
C
F
(NOTE #8)
BLK
BLU
COMP
*CHS
BLK or RED
*CH
(NOTE #9)
BLK
YEL
RED or BLK
CONT
208/230 1Ø POWER SUPPLY
L1
L2
EQUIP GND
BRN
OFM
*CTD
VIO
T2
T3
LOGIC
T1
RED
CS
*LPS
*HPS
YEL/PNK
BLU/PNK
BRN/YEL
*LLS
EXTERNAL POWER SUPPLY 24 V (NOTE #3)
Y2
Y1
C
G
R
INDOOR THERMOSTAT (NOTE #6)
INDOOR BLOWER MOTOR
LEGEND

Test procedure

- Operate the system and measure compressor amperage.
- Cycle the unloader on and off at ten second intervals.
- An increase in compressor amperage should be observed when switching from part-load to full-load.
- Reduction in compressor amperage should be observed when changing from full-load to part load.
- The percent change in current depends on the operating conditions and voltage.

Not sold on your findings?

- Shut unit off.
- Apply 18 to 28 VAC to the unloader molded plug leads and listen for a click as the solenoid pulls in.
- Remove power and listen for another click as the unloader returns to its original position.
- If clicks can’t be heard…

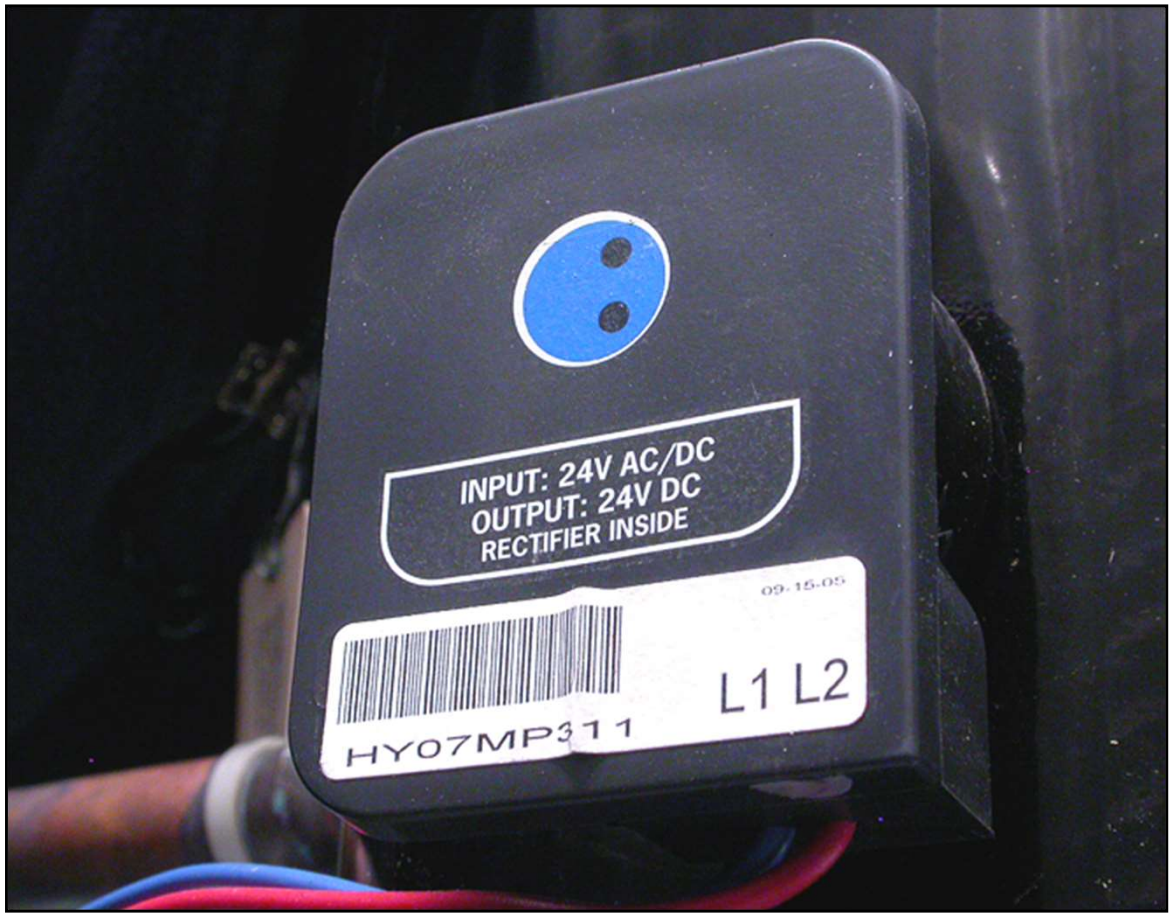
Simple checks

- 24 VAC to plug
- 17 to 24 VDC at plug connector
- 34, 350 or 1640 ohms on pins (solenoid coil)

Older products

Table 3 – Solenoid Resistance Values

Compressor Family	Compressor Models	Solenoid Resistance	
ZPS*K4	All Models	33.6 Ω	
ZPS*K5	All Models	Source "A"	1640 Ω
		Source "B"	350 Ω


INPUT: 24V AC/DC
OUTPUT: 24V DC
RECTIFIER INSIDE
09-15-05
L1 L2
HY07MP311