SERVICING

VARIABLE SPEED (ECM) MOTOR TEST
(Low Stage Heat Call)

THERMOSTAT HEAT INPUT(S): R, W1

First, low voltage readings are measured with the 16-pin wire harness disconnected from the motor. A diagram of the harness and pin locations is provided below. Voltage measurement is AC or DC as specified in the chart below under the (Volts) column. Set your voltage meter to the proper AC or DC reading as requested below.

Thermostat Input(s): R, W1			
Description	**Pin**	**Volts (5)**	**Signal Indicates**
Com, C1	1	0 VAC	Common
W/W1	2	≥ 13 VAC	W1 = ON
Com, C2	3	0 VAC	Common
Delay (4)	4	0 VAC	Delay Tap = A
		≥ 10 VDC	Delay Tap = B
		≤ -10 VDC	Delay Tap = C
		24 VAC	Delay Tap = D
Cool (4)	5	0 VAC	Cool Tap = A
		≥ 10 VDC	Cool Tap = B
		≤ -10 VDC	Cool Tap = C
		24 VAC	Cool Tap = D
Y1	6	0 VAC	Y1 = OFF
Adjust (4)	7	0 VAC	Adjust Tap = A
		≥ 10 VDC	Adjust Tap = B
		≤ -10 VDC	Adjust Tap = C
		24 VAC	Adjust Tap = D
Out - (3)	8	0 VDC	Common
O	9	0 VAC	O = OFF
Bk/PWM (2)	10	24 VAC	No Dehumidification
Heat (4)	11	0 VAC	Heat Tap = A
		≥ 10 VDC	Heat Tap = B
		≤ -10 VDC	Heat Tap = C
		24 VAC	Heat Tap = D
R	12	24 VAC	R = ON
EM/W2	13	0 VAC	EM/W2 = OFF
Y/Y2	14	0 VAC	Y/Y2 = OFF
G (1)	15	≥ 13 VAC	G = ON
Out + (3)	16	0-3.5 VDC	CFM LED

ECM Motor Not Coming On

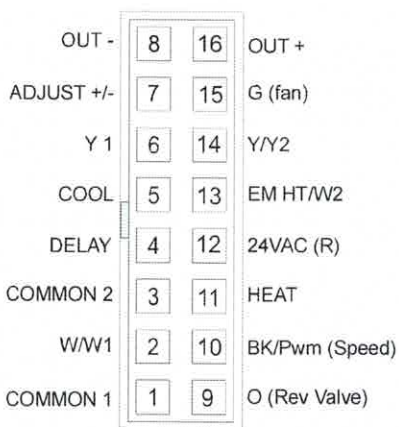
In order for the heating fan speed to operate, the integrated control board has to receive a low-stage (W1) call from the thermostat. The control board now starts the heat sequence, bringing on the burners. After the control board goes through its timing sequence, the following signals should be seen at the end of the 16 pin harness going to the motor while the burners are firing.

Unplug the 16-pin harness from the ECM motor. Set volt meter to read AC volts. Place your voltage meter on Pin 1(Common) and Pin 2 (W1), you should be reading 13 AC volts. Next, check between Pin 1 (Common) and Pin 12 (R), you should read 24 AC volts. Finally, check between Pin 1(Common) and Pin 15 (G), you should read 13 AC Volts.

You MUST have all of these low voltage readings before the ECM motor will come on. If you DO NOT have these readings you may have a 16-pin harness or integrated control board problem.

Make sure you have high voltage at the 5-pin connector going to the motor as discussed earlier.

We highly recommend using the GE TECMate XL™ or the GE TECMate PRO™ model ECM motor tester. This low cost test instrument will verify whether the motor itself is good.



CONTROL CONNECTOR
"Motor Half"
(Viewed from connector end)

(1) This input must be active for motor to operate.
(2) 0 VAC indicates humidistat is calling for dehumidification.
(3) These two pins form an output circuit that powers the CFM LED on the ignition control or interface board.
(4) Dipswitch settings determine measure voltage.
(5) Voltage is measured with 16-wire harness disconnected from motor. Voltage measurement is AC or DC as specified in the chart.

SERVICING

VARIABLE SPEED (ECM) MOTOR TEST
(High Stage Heat Call)

THERMOSTAT HEAT INPUT(S): R, W1, W2

First, low voltage readings are measured with the 16-pin wire harness disconnected from the motor. A diagram of the harness and pin locations is provided below. Voltage measurement is AC or DC as specified in the chart below under the (Volts) column. Set your voltage meter to the proper AC or DC reading as requested below.

Thermostat Input(s): R, W1, W2			
Description	**Pin**	**Volts (5)**	**Signal Indicates**
Com, C1	1	0 VAC	Common
W/W1	2	≥ 13 VAC	W1 = ON
Com, C2	3	0 VAC	Common
Delay (4)	4	0 VAC	Delay Tap = A
		≥ 10 VDC	Delay Tap = B
		≤ -10 VDC	Delay Tap = C
		24 VAC	Delay Tap = D
Cool (4)	5	0 VAC	Cool Tap = A
		≥ 10 VDC	Cool Tap = B
		≤ -10 VDC	Cool Tap = C
		24 VAC	Cool Tap = D
Y1	6	0 VAC	Y1 = OFF
Adjust (4)	7	0 VAC	Adjust Tap = A
		≥ 10 VDC	Adjust Tap = B
		≤ -10 VDC	Adjust Tap = C
		24 VAC	Adjust Tap = D
Out - (3)	8	0 VDC	Common
O	9	0 VAC	O = OFF
Bk/PWM (2)	10	24 VAC	No Dehumidification
Heat (4)	11	0 VAC	Heat Tap = A
		≥ 10 VDC	Heat Tap = B
		≤ -10 VDC	Heat Tap = C
		24 VAC	Heat Tap = D
R	12	24 VAC	R = ON
EM/W2	13	24 VAC	EM/W2 = ON
Y/Y2	14	0 VAC	Y/Y2 = OFF
G (1)	15	≥ 13 VAC	G = ON
Out + (3)	16	0-3.5 VDC	CFM LED

ECM Motor Not Coming On

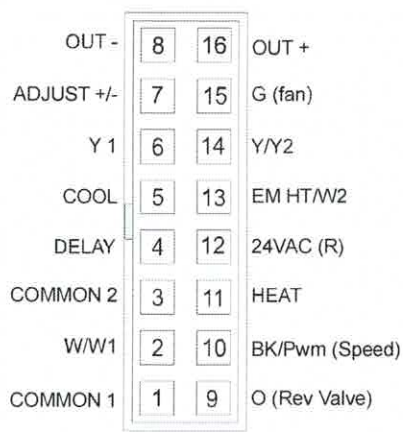
In order for the heating fan speed to operate, the integrated control board has to receive a low-stage (W1) and (W2) call from the thermostat. The control board now starts the heat sequence, bringing on the burners. After the control board goes through its timing sequence, the following signals should be seen at the end of the 16 pin harness going to the motor while the burners are firing.

Unplug the 16-pin harness from the ECM motor. Set volt meter to read AC volts. Place your voltage meter on Pin 1(Common) and Pin 2 (W1), you should be reading 13 AC volts, if the (W2) is calling you should see 24 AC volts. Next, check between Pin 1 (Common) and Pin 12 (R), you should read 24 AC volts. Finally, check between Pin 1(Common) and Pin 15 (G), you should read 13 AC Volts.

You MUST have all of these low voltage readings before the ECM motor will come on. If you DO NOT have these readings you may have a 16-pin wire harness or integrated control board problem.

Make sure you have high voltage at the 5-pin connector going to the motor as discussed earlier.

We highly recommend using the GE TECMate PRO™ model ECM motor tester. This low cost test instrument will verify whether the motor itself is good.



CONTROL CONNECTOR
"Motor Half"
(Viewed from connector end)

(1) This input must be active for motor to operate.
(2) 0 VAC indicates humidistat is calling for dehumidification.
(3) These two pins form an output circuit that powers the CFM LED on the ignition control or interface board.
(4) Dipswitch settings determine measure voltage.
(5) Voltage is measured with 16-wire harness disconnected from motor. Voltage measurement is AC or DC as specified in the chart.

SERVICING

VARIABLE SPEED (ECM) MOTOR TEST
(Fan Only Call)

THERMOSTAT CONTINUOUS FAN INPUT(S):
R, G

First, low voltage readings are measured with the 16-pin wire harness disconnected from the motor. A diagram of the harness and pin locations is provided below. Voltage measurement is AC or DC as specified in the chart below under the (Volts) column. Set your voltage meter to the proper AC or DC reading as requested below.

Thermostat Input(s): R, G			
Description	**Pin**	**Volts [5]**	**Signal Indicates**
Com, C1	1	0 VAC	Common
W/W1	2	0 VAC	W1 = OFF
Com, C2	3	0 VAC	Common
Delay [4]	4	0 VAC	Delay Tap = A
		≥ 10 VDC	Delay Tap = B
		≤ -10 VDC	Delay Tap = C
		24 VAC	Delay Tap = D
Cool [4]	5	0 VAC	Cool Tap = A
		≥ 10 VDC	Cool Tap = B
		≤ -10 VDC	Cool Tap = C
		24 VAC	Cool Tap = D
Y1	6	0 VAC	Y1 = OFF
Adjust [4]	7	0 VAC	Adjust Tap = A
		≥ 10 VDC	Adjust Tap = B
		≤ -10 VDC	Adjust Tap = C
		24 VAC	Adjust Tap = D
Out - [3]	8	0 VDC	Common
O	9	0 VAC	O = OFF
Bk/PWM [2]	10	24 VAC	No Dehumidification
Heat [4]	11	0 VAC	Heat Tap = A
		≥ 10 VDC	Heat Tap = B
		≤ -10 VDC	Heat Tap = C
		24 VAC	Heat Tap = D
R	12	24 VAC	R = ON
EM/W2	13	0 VAC	EM/W2 = OFF
Y/Y2	14	0 VAC	Y/Y2 = OFF
G [1]	15	≥ 13 VAC	G = ON
Out + [3]	16	0-3.5 VDC	CFM LED

ECM Motor Not Coming On

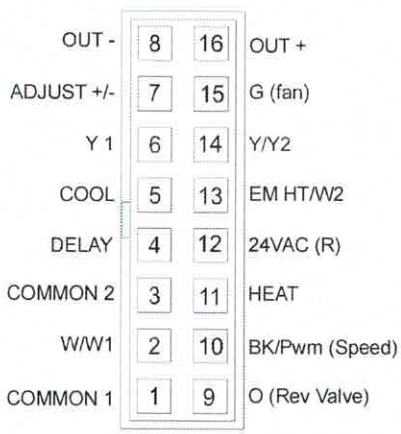
In order for the continous fan speed to operate, the integrated control board has to receive (G) signal from the thermostat. Turn the thermostat to the Fan On position. If the fan will not run, verify 24 volts on the integrated control boards low voltage terminal strip at (C) and (R) with your volt meter. If you have 24 volts, place a jumper wire between the (R) and (G) terminal on the control board. If the motor now operates then you have a problem in the thermostat cable from the thermostat or with the thermostat.

Unplug the 16-pin harness from the ECM motor. Set volt meter to read AC volts. Place your voltage meter on Pin 1(Common) and Pin 12 (R), you should read 24 AC volts. Finally, check between Pin 1(Common) and Pin 15 (G), you should read 13 AC Volts.

You MUST have all of these low voltage readings before the ECM motor will come on. If you DO NOT have these readings you may have a 16-pin wire harness or integrated control board problem.

Make sure you have high voltage at the 5-pin connector going to the motor as discussed earlier.

We highly recommend using the GE TECMate PRO™ model ECM motor tester. This low cost test instrument will verify whether the motor itself is good.



CONTROL CONNECTOR
"Motor Half"
(Viewed from connector end)

(1) This input must be active for motor to operate.
(2) 0 VAC indicates humidistat is calling for dehumidification.
(3) These two pins form an output circuit that powers the CFM LED on the ignition control or interface board.
(4) Dipswitch settings determine measure voltage.
(5) Voltage is measured with 16-wire harness disconnected from motor. Voltage measurement is AC or DC as specified in the chart.

SERVICING

VARIABLE SPEED (ECM) MOTOR TEST
(Cooling Low-Stage Call)

THERMOSTAT LOW INPUT(S): R, Y1, G

First, low voltage readings are measured with the 16-pin wire harness disconnected from the motor. A diagram of the harness and pin locations is provided below. Voltage measurement is AC or DC as specified in the chart below under the (Volts) column. Set your voltage meter to the proper AC or DC reading as requested below.

Thermostat Input(s): R, Y1, G			
Description	**Pin**	**Volts [5]**	**Signal Indicates**
Com, C1	1	0 VAC	Common
W/W1	2	0 VAC	W1 = OFF
Com, C2	3	0 VAC	Common
Delay [4]	4	0 VAC	Delay Tap = A
		≥ 10 VDC	Delay Tap = B
		≤ -10 VDC	Delay Tap = C
		24 VAC	Delay Tap = D
Cool [4]	5	0 VAC	Cool Tap = A
		≥ 10 VDC	Cool Tap = B
		≤ -10 VDC	Cool Tap = C
		24 VAC	Cool Tap = D
Y1	6	24 VAC	Y1 = ON
Adjust [4]	7	0 VAC	Adjust Tap = A
		≥ 10 VDC	Adjust Tap = B
		≤ -10 VDC	Adjust Tap = C
		24 VAC	Adjust Tap = D
Out - [3]	8	0 VDC	Common
O	9	0 VAC	O = OFF
Bk/PWM [2]	10	24 VAC	No Dehumidification
Heat [4]	11	0 VAC	Heat Tap = A
		≥ 10 VDC	Heat Tap = B
		≤ -10 VDC	Heat Tap = C
		24 VAC	Heat Tap = D
R	12	24 VAC	R = ON
EM/W2	13	0 VAC	EM/W2 = OFF
Y/Y2	14	0 VAC	Y/Y2 = OFF
G [1]	15	≥ 13 VAC	G = ON
Out + [3]	16	0-3.5 VDC	CFM LED

ECM Motor Not Coming On

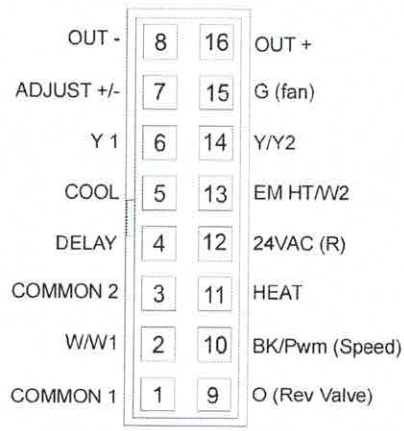
In order for the cooling fan speed to operate, the integrated control board has to receive (Y1) signal from the thermostat. Turn the thermostat to the Cooling 1st stage position. If the fan will not run, verify 24 volts on the integrated control boards low voltage terminal strip at (C) and (R) with your volt meter. If you have 24 volts, place a jumper wire between the (R), (YL0) and (G) terminal on the control board. If the motor now operates then you have a problem in the thermostat or thermostat cable. If the motor does not operate, check for high voltage at the 5-pin connector on the motor.

You should have approximately 120 volts all the time to the motor. Failure to receive power could be faulty harness, loose connection or faulty inductor.

Unplug the 16-pin harness from the ECM motor. Set volt meter to read AC volts. Place your voltage meter on Pin 1(Common) and Pin 12 (R), you should read 24 AC volts. Finally, check between Pin 1(Common) and Pin 15 (G), you should read 13 AC Volts. Next, check between Pin 1 (Common) adn Pin 6 (Y1), you should read 24 AC volts.

You MUST have all of these low voltage readings before the ECM motor will come on. If you DO NOT have these readings you may have a 16-pin wire harness or integrated control board problem.

We highly recommend using the GE TECMate PRO™ model ECM motor tester. This low cost test instrument will verify whether the motor itself is good.



CONTROL CONNECTOR
"Motor Half"
(Viewed from connector end)

(1) This input must be active for motor to operate.
(2) 0 VAC indicates humidistat is calling for dehumidification.
(3) These two pins form an output circuit that powers the CFM LED on the ignition control or interface board.
(4) Dipswitch settings determine measure voltage.
(5) Voltage is measured with 16-wire harness disconnected from motor. Voltage measurement is AC or DC as specified in the chart.

SERVICING

VARIABLE SPEED (ECM) MOTOR TEST
(Cooling Two-Stage Call)

THERMOSTAT HEAT INPUT(S): R, Y1, Y2, G

First, low voltage readings are measured with the 16-pin wire harness disconnected from the motor. A diagram of the harness and pin locations is provided below. Voltage measurement is AC or DC as specified in the chart below under the (Volts) column. Set your voltage meter to the proper AC or DC reading as requested below.

Thermostat Input(s): R, Y1, Y2, G			
Description	**Pin**	**Volts [5]**	**Signal Indicates**
Com, C1	1	0 VAC	Common
W/W1	2	0 VAC	W1 = OFF
Com, C2	3	0 VAC	Common
Delay [4]	4	0 VAC	Delay Tap = A
		≥ 10 VDC	Delay Tap = B
		≤ -10 VDC	Delay Tap = C
		24 VAC	Delay Tap = D
Cool [4]	5	0 VAC	Cool Tap = A
		≥ 10 VDC	Cool Tap = B
		≤ -10 VDC	Cool Tap = C
		24 VAC	Cool Tap = D
Y1	6	24 VAC	Y1 = ON
Adjust [4]	7	0 VAC	Adjust Tap = A
		≥ 10 VDC	Adjust Tap = B
		≤ -10 VDC	Adjust Tap = C
		24 VAC	Adjust Tap = D
Out - [3]	8	0 VDC	Common
O	9	0 VAC	O = OFF
Bk/PWM [2]	10	24 VAC	No Dehumidification
Heat [4]	11	0 VAC	Heat Tap = A
		≥ 10 VDC	Heat Tap = B
		≤ -10 VDC	Heat Tap = C
		24 VAC	Heat Tap = D
R	12	24 VAC	R = ON
EM/W2	13	0 VAC	EM/W2 = OFF
Y/Y2	14	24 VAC	Y/Y2 = ON
G [1]	15	≥ 13 VAC	G = ON
Out + [3]	16	0-3.5 VDC	CFM LED

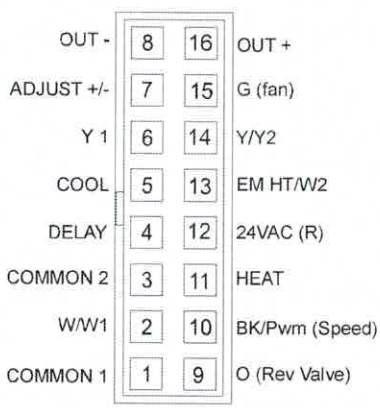
ECM Motor Not Coming On

In order for the cooling fan speed to operate, the integrated control board has to receive a (Y1) and (Y2) signal from the thermostat. Turn the thermostat to the Cooling two-stage position. If the fan will not run, verify 24 volts on the integrated control boards low voltage terminal strip at (C) and (R) with your volt meter. If you have 24 volts, remove thermostat wires from the integrated control boards terminal strip. Now place a jumper wire between the (R), (Y1), (Y2) and (G) terminal on the control board. If the motor now operates then you have a problem in the thermostat or thermostat cable. If the motor does not operate, with the terminals above jumped out, unplug the 16-pin harness from the ECM motor. Set volt meter to read AC volts. Place your voltage meter on Pin 1(Common) and Pin 12 (R) should read 24 AC volts, Pin 1(Common) and Pin 6 (Y1) and to Pin 14 (Y/Y2) should read 24 AC volts. Finally, check between Pin 1(Common) and Pin 15 (G), you should read 13 AC volts.

You MUST have all of these low voltage readings before the ECM motor will come on. If you DO NOT have these readings you may have a 16-pin wire harness or integrated control board problem.

Make sure you have high voltage at the 5-pin connector going to the motor as discussed earlier.

We highly recommend using the GE TECMate PRO™ model ECM motor tester. This low cost test instrument will verify whether the motor itself is good.



CONTROL CONNECTOR
"Motor Half"
(Viewed from connector end)

(1) This input must be active for motor to operate.
(2) 0 VAC indicates humidistat is calling for dehumidification.
(3) These two pins form an output circuit that powers the CFM LED on the ignition control or interface board.
(4) Dipswitch settings determine measure voltage.
(5) Voltage is measured with 16-wire harness disconnected from motor. Voltage measurement is AC or DC as specified in the chart.

SERVICING

VARIABLE SPEED (ECM) MOTOR TEST
(Heat Pump Cooling Single-Stage Call)

THERMOSTAT HEAT INPUT(S): R, Y1, O, G

First, low voltage readings are measured with the 16-pin wire harness disconnected from the motor. A diagram of the harness and pin locations is provided below. Voltage measurement is AC or DC as specified in the chart below under the (Volts) column. Set your voltage meter to the proper AC or DC reading as requested below.

Thermostat Input(s): R, Y1, O, G			
Description	**Pin**	**Volts [5]**	**Signal Indicates**
Com, C1	1	0 VAC	Common
W/W1	2	0 VAC	W1 = OFF
Com, C2	3	0 VAC	Common
Delay [4]	4	0 VAC	Delay Tap = A
		≥ 10 VDC	Delay Tap = B
		≤ -10 VDC	Delay Tap = C
		24 VAC	Delay Tap = D
Cool [4]	5	0 VAC	Cool Tap = A
		≥ 10 VDC	Cool Tap = B
		≤ -10 VDC	Cool Tap = C
		24 VAC	Cool Tap = D
Y1	6	24 VAC	Y1 = ON
Adjust [4]	7	0 VAC	Adjust Tap = A
		≥ 10 VDC	Adjust Tap = B
		≤ -10 VDC	Adjust Tap = C
		24 VAC	Adjust Tap = D
Out - [3]	8	0 VDC	Common
O	9	24 VAC	O = ON
Bk/PWM [2]	10	24 VAC	No Dehumidification
Heat [4]	11	0 VAC	Heat Tap = A
		≥ 10 VDC	Heat Tap = B
		≤ -10 VDC	Heat Tap = C
		24 VAC	Heat Tap = D
R	12	24 VAC	R = ON
EM/W2	13	0 VAC	EM/W2 = OFF
Y/Y2	14	0 VAC	Y/Y2 = OFF
G [1]	15	≥ 13 VAC	G = ON
Out + [3]	16	0-3.5 VDC	CFM LED

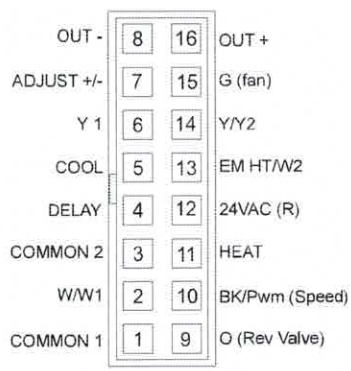
ECM Motor Not Coming On

In order for the cooling fan speed to operate with a heat pump, the integrated control board has to receive a (Y1) and (O) signal from the thermostat. Turn the thermostat to the Cooling position. If the fan will not run, verify 24 volts on the integrated control boards low voltage terminal strip at (C) and (R) with your volt meter. If you have 24 volts, remove thermostat wires from the integrated control boards terminal bar. Now place a jumper wire between the (R), (Y1), (O) and (G) terminal on the control board. If the motor now operates then you have a problem in the thermostat or thermostat cable. If the motor does not operate, with the terminals above jumped out, unplug the 16-pin harness from the ECM motor. Set volt meter to read AC volts. Place your voltage meter on Pin 1(Common) and Pin 12 (R) should read 24 AC volts, Pin 1(Common) and Pin 6 (Y1) or to Pin 9 (O) should ready 24 AC volts. Finally, check between Pin 1(Common) and Pin 15 (G), you should read 13 AC volts.

You MUST have all of these low voltage readings before the ECM motor will come on. If you DO NOT have these readings you may have a 16-pin wire harness or integrated control board problem.

Make sure you have high voltage at the 5-pin connector going to the motor as discussed earlier.

We highly recommend using the GE TECMate PRO™ model ECM motor tester. This low cost test instrument will verify whether the motor itself is good.



CONTROL CONNECTOR
"Motor Half"
(Viewed from connector end)

(1) This input must be active for motor to operate.
(2) 0 VAC indicates humidistat is calling for dehumidification.
(3) These two pins form an output circuit that powers the CFM LED on the ignition control or interface board.
(4) Dipswitch settings determine measure voltage.
(5) Voltage is measured with 16-wire harness disconnected from motor. Voltage measurement is AC or DC as specified in the chart.