

BHK ECM

1.1 Continuous Fan (Soft Fan)

1.1.1 Daughter Board Terminal Strip

Set the thermostat for continuous fan, or jumper “R” to “G” at the control board terminal strip. Dip Switch #4 should be in the “OFF” position. Use a volt meter to check from terminal “G” to terminal “C.” The meter should read 24 VAC.

If there is no 24 VAC from “G” to “C” check:

- Is power supplied to the unit?
- Is the thermostat set properly?
- Is the associated wiring correct?
- Has the transformer failed?

1.1.4 Daughter Board Wiring Harness

With the system set for continuous fan, use a volt meter to check from pin 15 of the 15 pin connector on the daughter board to the “COM” terminal on the daughter board. The meter reading should be approximately 24 VAC.

If the voltage from Pin 15 to “COM” isn’t 24 VAC, check:

- Is the wire and pin properly seated.
- If the wiring and pins are correct, replace the daughter board.

IMPORTANT: MEASURE THE VOLTAGE FROM PIN 15 TO “COM” WITH THE MOLEX PLUG CONNECTED. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 15 PIN MOLEX PLUG. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PIN ON THE BOARD ITSELF.

1.1.5 Motor Wiring Harness

With the system set for continuous fan, use a volt meter to check from pin 15 of the 16 pin motor harness connector plug to the “COM” terminal on the daughter board. Also check from pin 15, to pin 1, or pin 3, of the 16 pin motor wiring harness connector plug. The meter reading should be approximately 24 VAC.

If the voltage isn’t 24 VAC, check:

- For continuity from pin 15 on 15 pin plug to pin 15 on 16 pin plug
- If there is no continuity, replace the wiring harness.

IMPORTANT: MEASURE THE VOLTAGE FROM MOTOR WIRING HARNESS PIN 15 TO “COM” WITH THE MOLEX PLUG CONNECTED TO THE MOTOR. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS

NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 16 PIN MOLEX PLUG FROM THE MOTOR. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PIN IN THE PLUG ITSELF.

1.2 Continuous Fan (High Fan)

1.2.1 Daughter Board Terminal Strip

Set the thermostat for continuous fan, or jumper “R” to “G” at the control board terminal strip. Dip Switch #4 should be in the “ON” position. Use a volt meter to check from terminal “G” to terminal “C.” The meter should read 24 VAC.

If there is no 24 VAC from “G” to “C” check:

- Is power supplied to the unit?
- Is the thermostat set properly?
- Is the associated wiring correct?
- Has the transformer failed?

1.2.2 Daughter Board Wiring Harness

With the system set for continuous fan, use a volt meter to check from pin 5 of the 15 pin connector on the daughter board to the “COM” terminal on the daughter board. The meter reading should be approximately 24 VAC.

If the voltage from Pin 5 to “COM” isn’t approximately 24 VAC check:

- Is the wire and pin properly seated.
- If the wiring and pins are correct, replace the daughter board.

IMPORTANT: MEASURE THE VOLTAGE FROM PIN 5 TO “COM” WITH THE MOLEX PLUG CONNECTED. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 15 PIN MOLEX PLUG. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PIN ON THE BOARD ITSELF.

1.2.3 Motor Wiring Harness

With the system set for continuous fan, use a volt meter to check from pin 2 of the 16 pin motor harness connector plug to the “COM” terminal on the daughter board. Also check from pin 2, to pin 1, or pin 3, of the 16 pin motor wiring harness connector plug. The meter reading should be approximately 24 VAC.

If the voltage isn’t approximately 24 VAC, check:

- For continuity from pin 5 on 15 pin plug to pin 2 on 16 pin plug
- If there is no continuity, replace the wiring harness.

IMPORTANT: MEASURE THE VOLTAGE FROM MOTOR WIRING HARNESS PIN 2 TO “COM” WITH THE MOLEX PLUG CONNECTED TO THE MOTOR. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 16 PIN MOLEX PLUG FROM THE MOTOR. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PIN IN THE PLUG ITSELF.

1.3 Cooling Speed

1.3.1 Terminal Strip

Set the system for cooling, or jumper from terminal “Y” to terminal “R” on the control board. Use a volt meter to check from terminal “Y” to terminal “C.” The meter should read approximately 24 VAC.

If there is no 24 VAC from “Y” to “C” check:

- Is power supplied to the unit?
- Is the thermostat set properly?
- Is the associated wiring correct?
- Has the transformer failed?

1.3.2 Daughter Board Wiring Harness

With the system set for cooling, use a volt meter to check from pin 6 of the 15 pin connector on the daughter board to the “COM” terminal on the daughter board. The meter reading should be approximately 24 VAC.

If the meter doesn’t read approximately 24 VAC, check:

- Is the wire and pin properly seated.
- If the wiring and pins are correct, replace the daughter board.

IMPORTANT: MEASURE THE VOLTAGE FROM PIN 6 TO “COM” WITH THE MOLEX PLUG CONNECTED. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 15 PIN MOLEX PLUG. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PIN ON THE BOARD ITSELF.

1.2.3 Motor Wiring Harness

With the system set for cooling, use a volt meter to check from pin 14 of the 16 pin motor harness connector plug to the “COM” terminal on the daughter board. Also check from pin 14 to pin 1, or pin 3, on the 16 pin motor wiring harness connector plug to “COM” on the daughter board. The meter reading should exceed 12 volts.

If the voltage from “COM” to those pins isn’t approximately 24 VAC: check:

- For continuity from pin 5 on 15 pin plug to pin 2 on 16 pin plug
- If there is no continuity, replace the wiring harness.

IMPORTANT: MEASURE THE VOLTAGE FROM MOTOR WIRING HARNESS PIN 14 TO PIN 1, OR PIN 3, OR “COM” WITH THE MOLEX PLUG CONNECTED TO THE MOTOR. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 16 PIN MOLEX PLUG FROM THE MOTOR. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PIN IN THE PLUG ITSELF.

1.4 First Stage Heating

1.4.1 Terminal Strip

Set the system for first stage heat, or jumper the from “R” to “W” on the main control board terminal strip. Use a volt meter to check from “W1” to “C” on the main control board. The meter should read 24 VAC.

If there is no 24 VAC from “W1” to “C” check:

- Is power supplied to the unit?
- Is the thermostat set properly?
- Is the associated wiring correct?
- Has the transformer failed?

1.4.2 Daughter Board Wiring Harness

With the system set for first stage heat only, use a volt meter to check from pin 1 on the 15 pin molex plug of the daughter board to the “COM” terminal on the daughter board. The meter read approximately 24 VAC.

If the voltage doesn’t read approximately 24 VAC at either location, check:

- For correct wiring.
- For wire continuity from the main IFC to the daughter board.
- Replace the wires if there is no continuity.

IMPORTANT: MEASURE THE VOLTAGE FROM PIN 1 TO “COM” WITH THE MOLEX PLUG CONNECTED. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 15 PIN MOLEX PLUG. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PINS ON THE BOARD ITSELF.

1.4.3 Motor Wiring Harness

With the system set for first stage heat only, use a volt meter to check from pin 13 on the 16 pin wiring harness connected at the motor to the

“COM” terminal on the daughter board. The meter reading should be approximately 24 VAC.

If the voltage doesn't be approximately 24 VAC at either location, check:
For continuity from pin 1 on 15 pin plug to pin 13 on 16 pin plug
If there is no continuity, replace the wiring harness.

1.4.4 Motor Wiring Harness

Also check from pin 13 on the 16 pin wiring harness connected at the motor to the “COM” terminal on the daughter board. Measure from pin 13 to pin 1, or to pin 3, on the 16 pin wiring harness. The meter should read 24 volts.

If the voltage doesn't exceed 12 VAC at either location, check:
For 24 volt power from the transformer.

IMPORTANT: MEASURE THE VOLTAGE FROM MOTOR WIRING HARNESS PIN 13 TO PIN 1, OR TO PIN 3, OR TO “COM” WITH THE MOLEX PLUG CONNECTED TO THE MOTOR. SLIDE THE METER PROBE ALONGSIDE THE WIRE TO CONTACT THE PIN ITSELF. IF THIS IS NOT POSSIBLE, **DISCONNECT MAIN POWER**, AND REMOVE THE 16 PIN MOLEX PLUG FROM THE MOTOR. RECONNECT POWER AND MEASURE VOLTAGE FROM THE PINS IN THE PLUG ITSELF.

1.5 General Voltage Checks

1.5.1 A continuous 24 VAC supply power must be at the following locations.
To the motor.

“24 VAC” to “C” on daughter board.

”R” to “C” on daughter board.

Pin 2 to pin 3, or pin 8 , on the 15 pin molex connector on the daughter board or to “COM” on the daughter board. 24 VAC should be present.

Pin 12 on the 16 pin connector to pin 1 or pin 3 on the 16 pin connector.

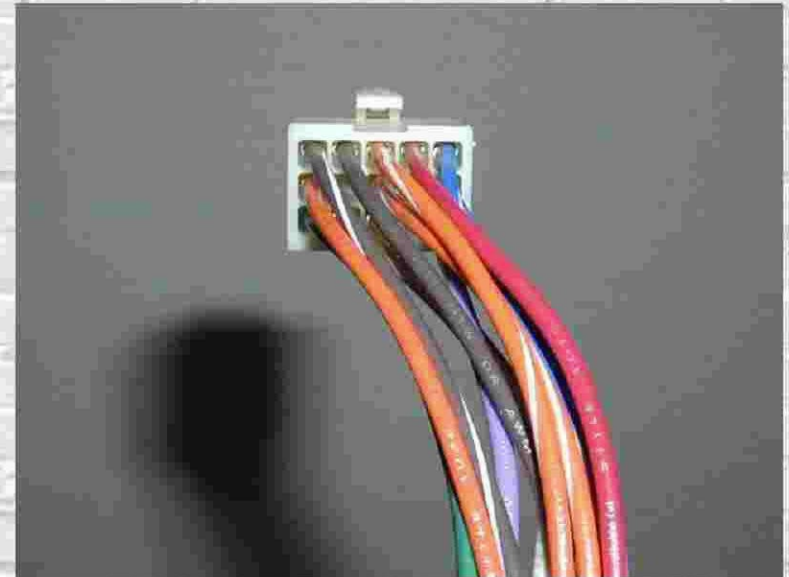
	Pin		Terminal	Voltage
Continuous Fan Soft Dip Switch #4 OFF AG@ Input				
Board	AG@	to	Com	24 VAC

Board	15	to	Com	24 VAC
Motor	15	to	Com on Board	24 VAC
Motor	15	to	1	24 VAC
Motor	15	to	3	14 VAC
Continuous Fan High Dip Switch #4 ON AG@ Input				
Board	AG@	to	Com	24 VAC
Board	5	to	Com	24 VAC
Motor	2	to	Com on Board	24 VAC
Motor	2	to	1	24 VAC
Motor	2	to	3	24 VAC
Cooling Speed AY@ Input				
Board	AY@	to	Com	24 VAC
Board	6	to	Com	24 VAC
Motor	14	to	Com on Board	24 VAC
Motor	14	to	1	24 VAC
Motor	14	to	3	24 VAC
Heating Speed AW1@ Input				
Board	AW1@	to	Com	24 VAC
Board	1	to	Com	24 VAC
Motor	13	to	Com on Board	24 VAC
Motor	13	to	1	24 VAC

General Checks				
Board	AR@	to	AC@	24 VAC
Motor	12	to	1	24 VAC
Motor	12	to	3	24 VAC

BHK/ECM Motor & Controls

- Ensure It Connects Securely Into Board
- 15 Pin Daughter Board Molex Connector
- Ensure Pins Fit Firmly In Socket

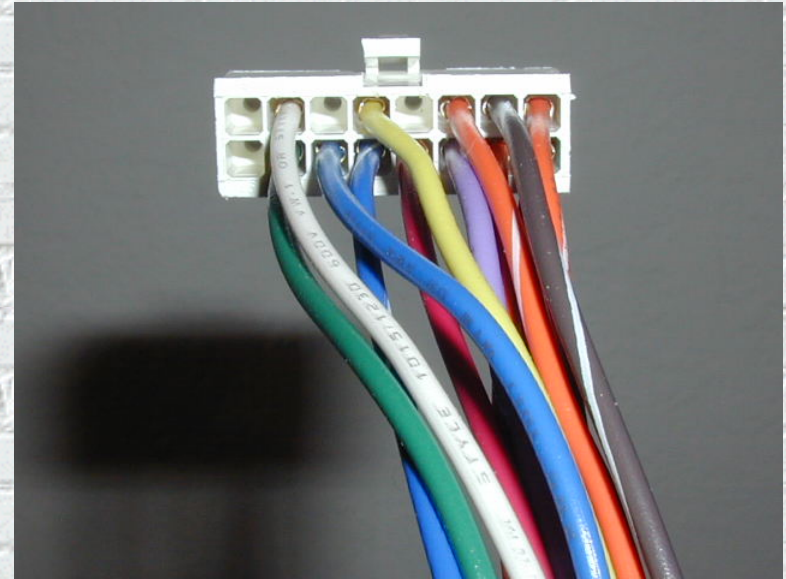


15 PIN MOTOR CONNECTOR (VIEWED FROM WIRE END) CLIP/UP

5/15 Br&Wh to 5/15	4/15 Br to 9/16	3/15 Or&Wh to 1/16	2/15 Rd to 12/16	1/15 Bl&Wh to 13/16
10/15 Or to 10/16	9/15 Unused	8/15 Or&Wh to 3/16	7/15 Unused	6/15 Bl to 14/16
15/15 Gr to 15/16	14/15 Wh to 7/16	13/15 Yl to 5/16	12/15 Unused	11/15 Pu to 11/16

BHK/ECM Motor & Controls

- BHK Motor End 16 Pin Molex Connector
- Ensure It Connects Securely Into Motor
- Ensure Pins Fit Firmly In Socket



16 PIN MOTOR CONNECTOR (VIEWED FROM WIRE END) CLIP/UP

8/16 Unused	7/16 Wh to 14/15	6/16 Unused	5/16 Yl to 13/15	4/16 Unused	3/16 Or&Wh to 8/15	2/16 Br&Wh to 5/15	1/16 Or&Wh to 3/15
16/16 Unused	15/16 Gr to 15/15	14/16 Bl to 6/15	13/16 Bl&Wh to 1/15	12/16 Rd to 2/15	11/16 Pu to 11/15	10/16 Or to 10/15	9/16 Br to 4/15