

Installation Instructions

Fieldpiece LER / Concept 3™

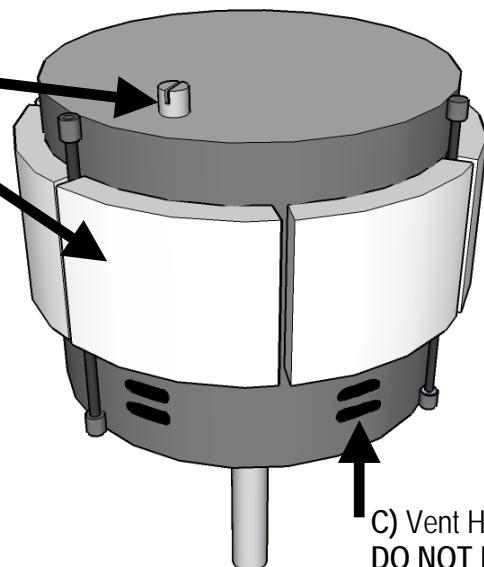
The Fieldpiece LER family of motors with Concept 3 technology are high efficiency variable speed Brushless Permanent Magnet (BPM) replacements for the permanent split capacitor (PSC) motors in residential and small commercial furnaces and air handlers.

Installation Procedure

- 1) **Before removing the old motor** - measure and record the static pressure in the supply plenum and the blower motor amp draw with the system in cooling mode.
- 2) Disconnect furnace power and remove the old motor. Remove the capacitor if you are replacing a PSC motor.
- 3) Mount motor using a 5 5/8" diameter belly band. Make sure the belly band is positioned over the plastic spacers (B).
IMPORTANT: Make sure spacers do not to cover the motor vent holes (C).
- 4) Connect motor power and ground wires according to the wiring diagram on page 2. Make sure the power is controlled by the blower access door switch.
- 5) Connect motor control wires according to the wiring diagram on page 2. After wiring is complete, reconnect furnace power.
- 6) Adjust the torque adjustment screw (A) so that the static pressure in the supply plenum when the system is in cooling mode matches the value measured in step 1. **Make sure the blower compartment is closed when measuring the static pressure.**
- 7) Verify the system responds correctly to all thermostat calls (cooling, heating, and continuous fan). Measure and record the motor amp draw in cooling mode.
- 8) Place the wiring diagram sticker on the furnace access panel (near the furnace wiring diagrams) for future reference. Remember to explain to the customer how their system will operate, including the time delays!

A) Torque Adjustment Screw

B) Spacers for 5 5/8" Belly Band Mount

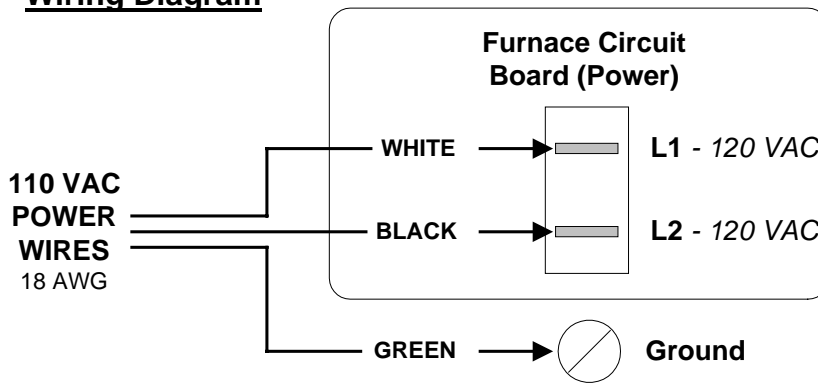


C) Vent Holes
DO NOT BLOCK

Warning BPM motors contain a powerful magnet. Exposing a BPM motor to metal filings, which are attracted to the magnet, may result in damage. Ensure the fan housing is free of metal filings prior to installing motor. Do not drill through sheet metal or perform other work that may generate metal filings near the motor.

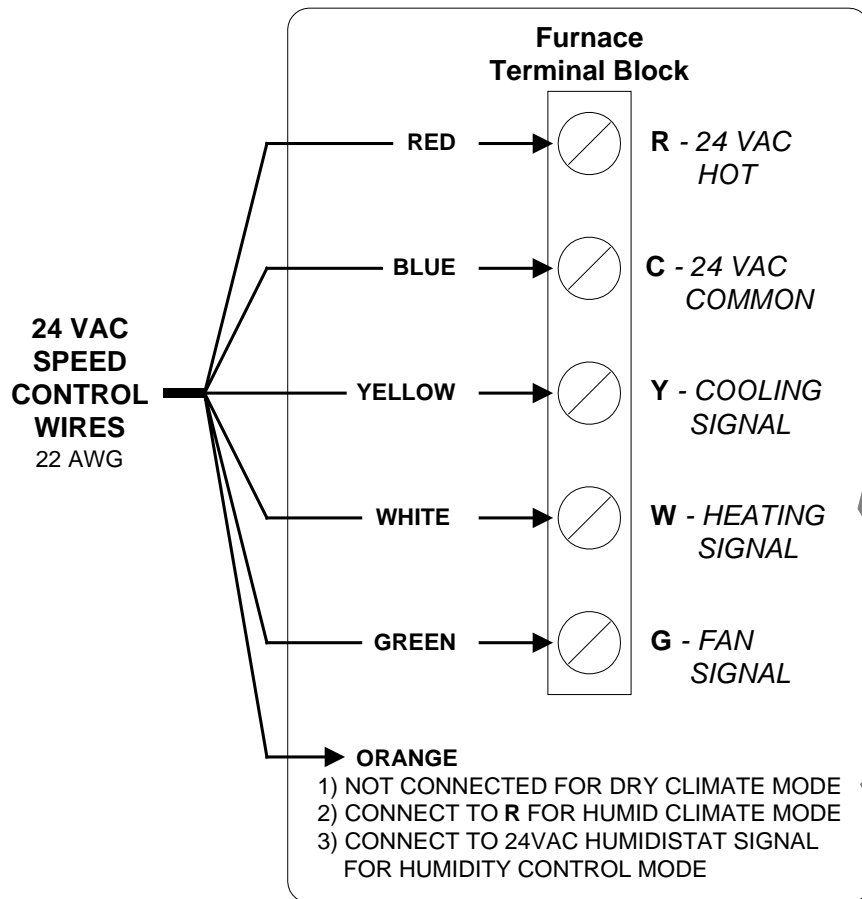
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Wiring Diagram



Power Lead Connection

Power leads connect to the 120V input to the furnace circuit board (not to the terminals controlled by the fan relay, where the PSC motor was connected).



Heat Pumps

Connect the white lead to the thermostat signal that indicates heating mode if the system does not use the W terminal to indicate heating. 24 V must be present on the white Concept 3 lead when the system is in heating mode.

Dry Climate Mode

Provides a variable length fan off time delay during cooling for super efficient cooling in dry climates.

Variable fan speed adjustment

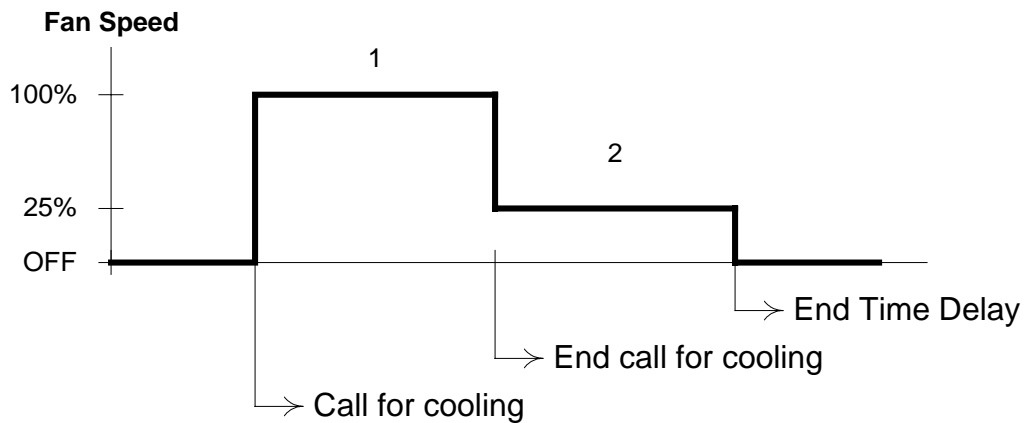
Use torque screw on back of motor to adjust blower reference speed. Fan speeds relative to the reference are shown in Table 1.

Table 1	
Cooling	100%
Dehumidify	85%
Heating	85%
Fan	25%

Fan Control Detail

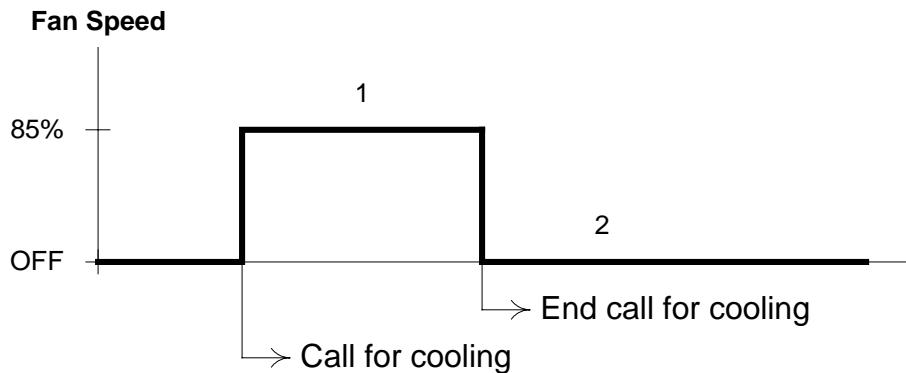
Cooling - Dry Climate Mode (Orange lead not connected)

- 1) Fan runs at 100% during call for cooling
- 2) Fan runs 4 to 10 minute variable time delay at 25%
The time delay increases the sensible efficiency of air conditioners in dry climates.



Cooling - Humid Climate Mode (Orange lead connected to R)

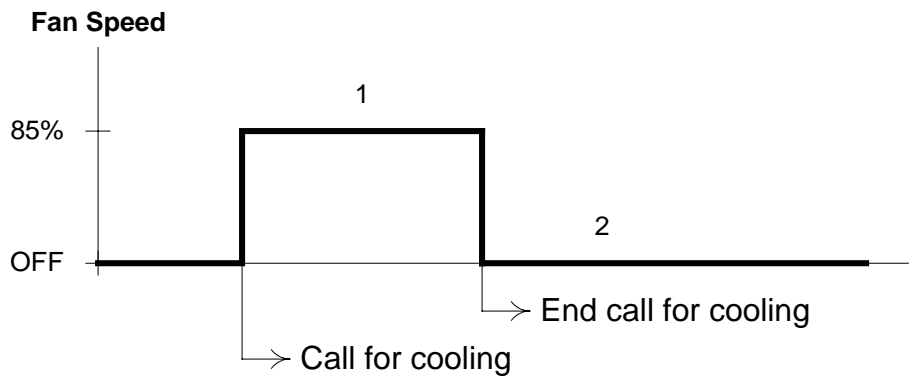
- 1) Fan runs at 85% during call for cooling
- 2) Fan turns off when call for cooling ends
Continuous fan operation is disabled for 20 minutes following each cycle to promote condensate drainage



Cooling - Dehumidification Mode (Orange lead connected to 24 VAC signal from dehumidifying thermostat)

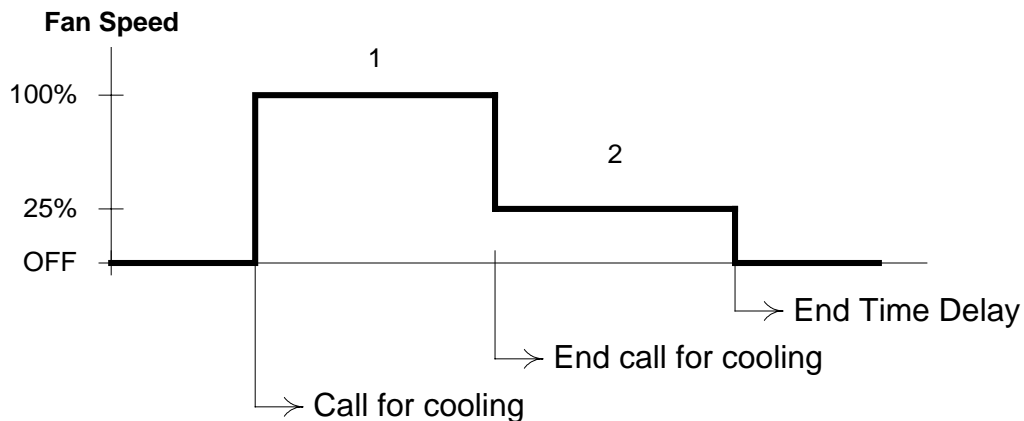
A) Thermostat calling for dehumidification

- 1) Fan runs at 85% during call for cooling
- 2) Fan turns off when call for cooling ends
Continuous fan mode is disabled for 20 minutes following each cycle to promote condensate drainage



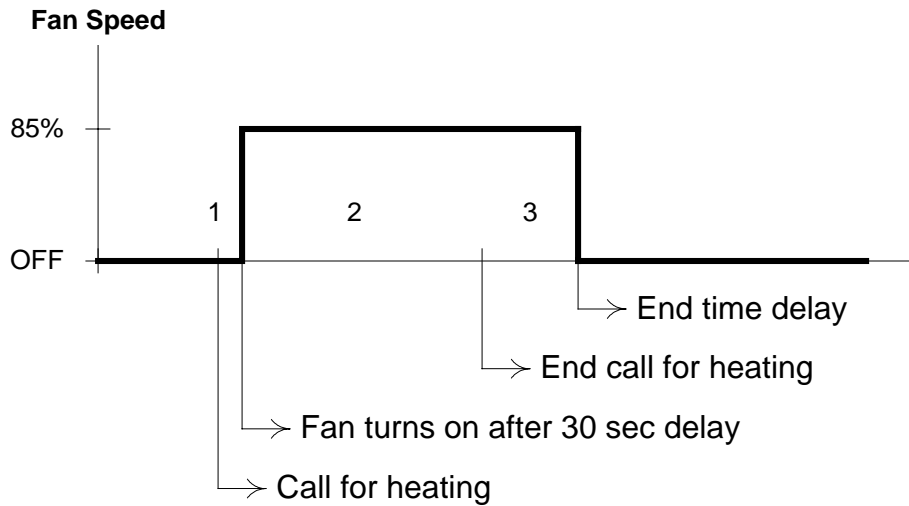
B) Thermostat NOT calling for dehumidification

- 1) Fan runs at 100% during call for cooling
- 2) Fan runs 4 to 10 minute variable time delay at 25%
The time delay increases sensible efficiency



Heating

- 1) 30 second fan on time delay following call for heating
- 2) Fan runs at 85% during call for heating
- 3) Fan runs 180 second time delay at 85%



Continuous Fan

The fan runs at 25% when the thermostat calls for continuous fan.

Continuous fan is disabled for 20 minutes following each cooling cycle if:

- The motor is wired in humid climate mode, or
- The motor is wired in dehumidification mode and the thermostat is calling for dehumidification

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Installation Troubleshooting:

Problem	Possible Solutions
Motor is ramping up and down or operating in a way that isn't consistent with calls from the thermostat	1) Check all 24V connections. Make sure that the blue wire is connected to 24V common and the red wire is connected to 24V hot. Measure the voltage between the blue lead and the red lead, and verify 24V is present. The motor control board requires 24V power to properly control the motor. Incorrect 24V wiring is the #1 cause of installation problems.
Fan vibrates excessively	1) Fan or motor is mounted incorrectly. Make sure belly band and mounting legs are secure. Make sure fan is for single flat shafted motors and is secured on flat part of motor shaft. 2) Verify the blower wheel is not bent.
Motor Doesn't Run	1) Verify the fan is free to spin. 2) Motor may be in a time delay mode. Cycle off power for 20 seconds and try again. 3) Make sure line voltage to motor is 120V AC. 4) Make sure line voltage is NOT coming from PSC speed tap wires. 5) Verify thermostat signals are 24 VAC.
Motor is running with no call from thermostat	1) Motor may be in a time delay mode. Cycle off power for 20 seconds and try again. 2) Verify the 24V wiring is correct. 3) Measure the voltage at each 24V motor lead to verify there is 24V at the Red lead and 0V at the Blue, Green, Yellow, and White leads.
Static pressure is higher with new motor than with the original motor	1) Adjust Torque adjustment screw counter clockwise to meet original motor static pressure.
Static pressure is lower with new motor than with the original motor	1) Adjust Torque adjustment screw clockwise to match original motor static pressure.
If adjustment screw is set to maximum and static pressure is still lower than original motor	1) Verify the fan is spinning in the correct direction. If the fan is spinning backwards then move the motor mount to the opposite side of the fan housing. 2) Verify new motor Hp is greater than or equal to the old motor. Measure and verify proper temperature split in cooling and temperature rise in heating. 3) Perform Checkme!® on system to verify proper refrigerant charge for airflow with the new motor.
Original motor doesn't run, so static pressure cannot be matched	1) If original motor was the same rated Hp as new motor, adjust torque adjustment screw to maximum. 2) Measure and verify correct airflow with airflow measuring device. 3) Adjust motor speed to obtain the correct cooling temperature split. If the air conditioner cannot be operated, adjust speed to obtain the correct heating temperature rise. 4) Perform Checkme!® on system to verify proper refrigerant charge for airflow with the new motor.