SERVICE AND APPLICATION NOTES

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Replacement Instructions for Energence 3 to 5-Ton, 575 & 460-Volt, Two-Speed Indoor Blower Motors with External Overload

Model: Energence LGH/LCH036-060S4T

Work in conjunction with the motor manufacturer has developed a new indoor blower motors with an attached overload, that will allow for the removal of the units factory installed external S135 and S42 overloads. It is still recommended to check for insulation tucks, described further down in this note, on areas that are not affected by the installation of the new style motor. If a new repair part motor is ordered from the list of part numbers below the new motor will come with instructions on how to remove the factory external overloads and how to install the new motor.

Catalog Number	Motor Description – high speed horsepower
86W84	3/4hp 208-230v
86W86	3/4hp 460v
91W03	3/4hp 575v
86W86	1hp 208-230v
86W87	1hp 460v
91W04	1hp 575v
86W88	2hp 208-230v
86W89	2hp 460v
91W02	2hp 575v

The following procedures have been developed for Energence 3 to 5-ton units with an integral two-speed, belt-driven indoor blower motor that has experienced multiple failures. Following these procedures will significantly reduce the likelihood of more failures. It is recommended to replace both motor overloads (S135 and S42) when replacing the motor.

If there are multiple units with the two-speed integral motor on the job site, Lennox recommends checking each unit and performing the steps below for all units with this motor.

1) Motor Makeup Box

A. Open the electrical cover over the make-up box.

B. Trim and strip leads if needed. Some repair part motors may have had leads shortened previously. Trim excess lead wire to approximately 4 inches outside the motor. This will provide more room in makeup box. Strip motor leads and lead wiring to 5/8 in.

C. Wire Termination
Re-terminate using wire nuts and electrical tape. Be sure to provide adequate torque to secure wires in wire nuts. Always use electrical tape.

D. Strain Relief
It is best if two wire ties are used. Separate into two wire bundles and place wire tie 1 inch from wire nuts.

E. Coil each of the two wire bundles into make-up box. Reinstall the make-up box cover.

2) Main Blower Harness. Trace wire harness back into control section.

The leads run from the blower motor to overloads. Look for any wires with damaged wire insulation or potential electrical shorts. These are routed adjacent to the copper plumbing traveling through the divider wall. Make sure wire insulation plug seals the hole through divider wall.

Low speed wires are pink marked with B3-1 / S42-1, B3-2 / S42-2, B3-3 / S42-3
High speed wires are orange marked with B3-11 / S135-11, B3-12 / S135-12, B3-13 / S135-13

3) Motor Overloads (S135 and S42)

A. Check for loose wires.

B. Check screw torque of terminal lugs including center screws. Torque screws to approximately 15 In.lbs. (snug plus another 1/3 turn).

C. Check for voltage drop across each phase from line to load (L1-T1, L2-T2, L3-T3). This must be done with unit running. No voltage drop should be present. If voltage drop is indicated, shut down power to the units and remove wiring from overload. Test again, checking the ohm value across the legs of the overload. Open circuit or resistance value in kOhms indicates overload is faulty and should be replaced. If control is replaced, check torque of all screws including center lugs.

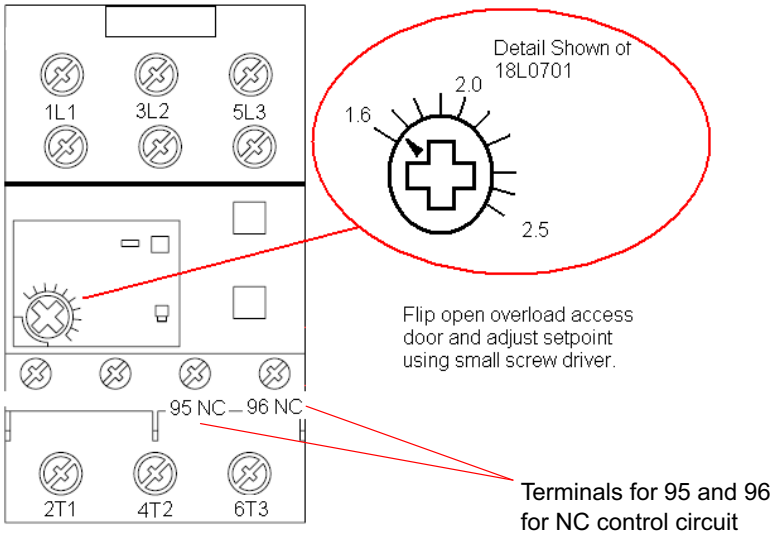
D. Check for inadequately terminated wiring. Check for insulation caught under lugs (L1, L2, L3, T1, T2, T3). It will be necessary to remove overload from DIN rail to observe wire insertion into lugs. This can be done by grasping control by hand, pulling overload downward while rotating bottom half up to disengage from DIN rail. Reverse these steps to re-insert overload into DIN rail.

E. Check overloads' NC control circuit wires (terminals 95 and 96) for to make sure that wires are secure and that insulation is not tucked behind lugs.

F. Open window of overload and use small screw driver to check and adjust overload setting, if needed.

Unit Nameplate Motor Description	Description	High Speed (FLA) (S135)	Low Speed (FLA) (S42)
¾ HP 460V	0.33/0.75HP 460V	1.4	1.0
¾ HP 575V	0.33/0.75HP 575V	1.2	0.7
1 HP 460V	0.44/1.00HP 460V	1.9	1.0
1 HP 575V	0.44/1.00HP 575V	1.3	0.9
2 HP 460V	0.89/2.00HP 460V	2.6	1.8
2 HP 575v	0.89/2.00HP 575V	2.4	1.5

Typical Overload



G. Test overload function after power is restored. Corresponding cooling call (Y1 for low speed or Y2 for high speed). Open overload cover. Using small screw driver to slide black square to left. Main unit control (M2) should remove power to blower contactor. To reset the overload, press the adjacent blue post. Main unit control should return power to blower contactor.

4) Power Harness (Low Speed K3-1 to S42, High Speed K37-1 to S135)
Check wiring between contactor and overload.

A. Look for crossed wires.

B. Look for wire insulation tucked behind line and load side terminals.

5) Motor Contactors (Low Speed K3-1, High Speed K37-1)

A. Check for loose wires or insulation tucked behind terminal lugs. Torque all screws to approximately 40 In.lbs. or tighten to the point that wires cannot be hand-pulled from under the lugs.

B. Check low speed and high speed operation. Contactors K3 and K37 should never be simultaneously energized.

Component locations