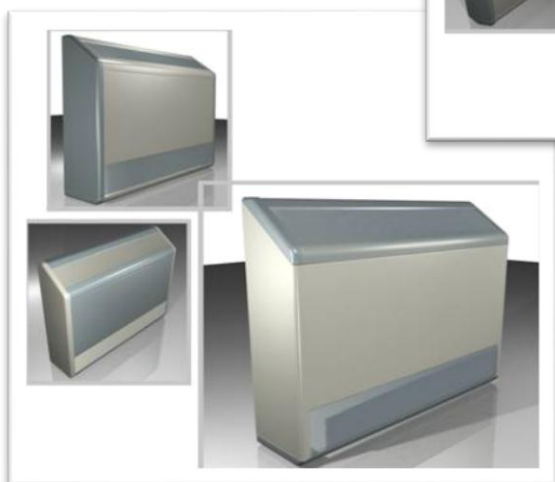
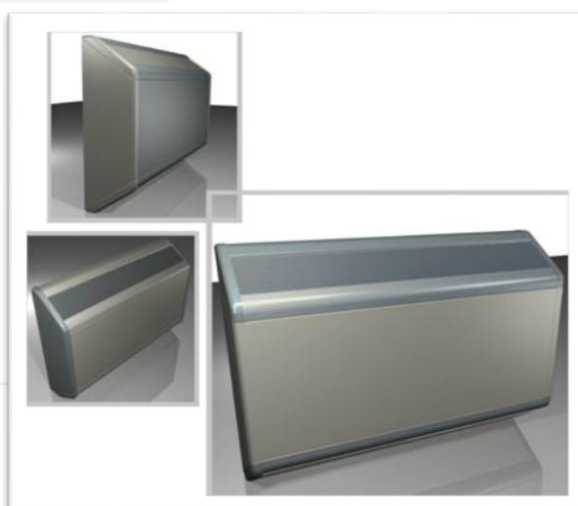


INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS



COPPERAD[®]

WITH EC MOTORS

Copperad[®]eco

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1. GENERAL DESCRIPTION

This manual covers the Copperad Fan Convactor range. These are cabinet type units intended for either vertical or horizontal mounting. Controls can be contained within the casing to give a clean outline or installed remote (on-site by the contractor) for easy customer control.

2. RECEIPT AND PREPARATION

The units are wrapped and display the serial number, model reference, site reference (where appropriate). Installation, operation and maintenance instructions, together with wiring and any special instructions are all supplied with the unit.

On receipt, check that all details are correct to the Customer Schedules prior to opening packaging. Damage should be reported to the supplying B S S branch immediately. It is recommended that packaging is kept in place and the units stored in a safe area until the necessary services are completed, in order to avoid the possibility of damage on site.

3. INSTALLATION

3.1. REMOVAL OF ACCESS PANEL

The panel should be affixed to the casing by means of the hook at the bottom of the front panel. Screw fixing through the top of the grille then ensures positive retention of the front panel to the case. Key locks may alternatively be provided—where key locks are fitted, the screw fixing at the top of the grille may also be carried out for additional safety.

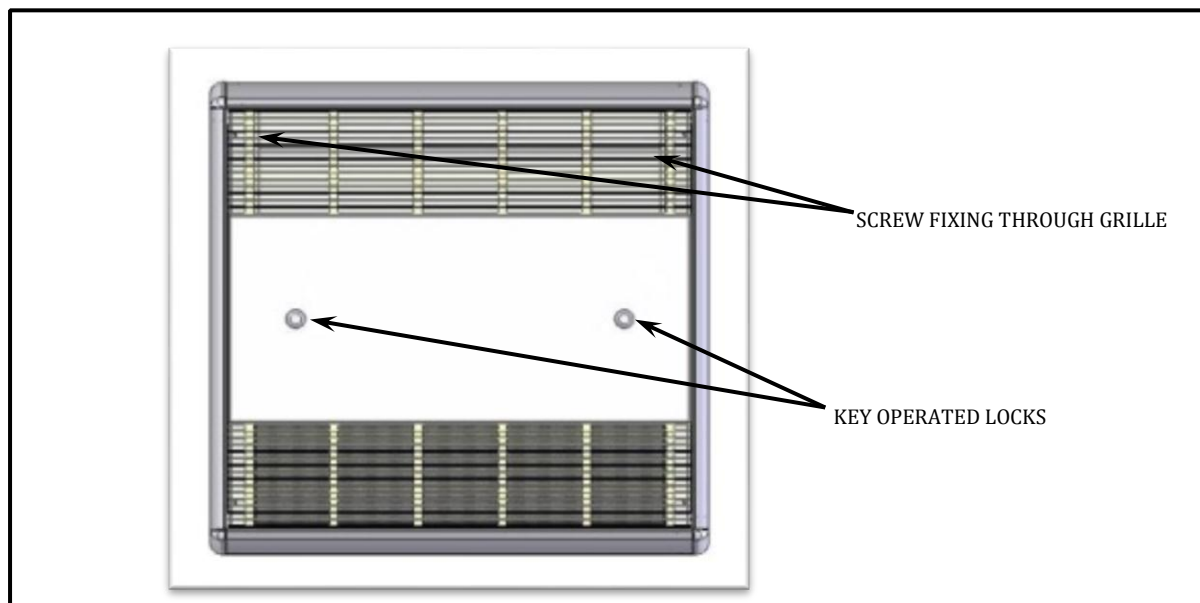


Figure 1: Access panel

3.2. FIXING A PLINTH

To fix a plinth, which will be in a separate package, line it up to the casing with the long side flange to the front. Mark the hole positions on the bottom casing panels and drill no 30 holes for the self tapping screws.

3.3. REMOVING MOTOR PLATE

IMPORTANT: Isolate unit electrically at mains controls!

- Remove front access panel.
- Disconnect the section of the terminal block marked LTC. Disconnect casing earthwire.
- Remove the front seal plate by loosening the two M5 bolts
- Slide out the motor-plate

IMPORTANT NOTE

On ceiling mounted units ensure that the motor plate and seal plate are adequately supported before releasing the transit bolts.

3.4. CHANGE OF HANDING

Unless otherwise specified all units will be supplied with heat exchangers having 3/4" connections at the Right Hand end. If it is necessary to reverse this handing on site this is easily achieved by following these instructions:

- Ensure unit has been isolated from mains power supplies.
- Remove the front access panel and slide out the motor plate as 3.3 above.
- Unscrew the two M6.0 hex head screws securing the heat exchanger, plus the M5 screw holding the connection blanking plate, and lift clear, taking care that no damage occurs to the fins of the heat exchanger fin block
- Undo the M5 screw holding the LTC blanking plate in place, turn the coil around and switch the blanking plate positions.
- Swap the LTC location around.
- Reverse actions above to re-fit motor-plate.

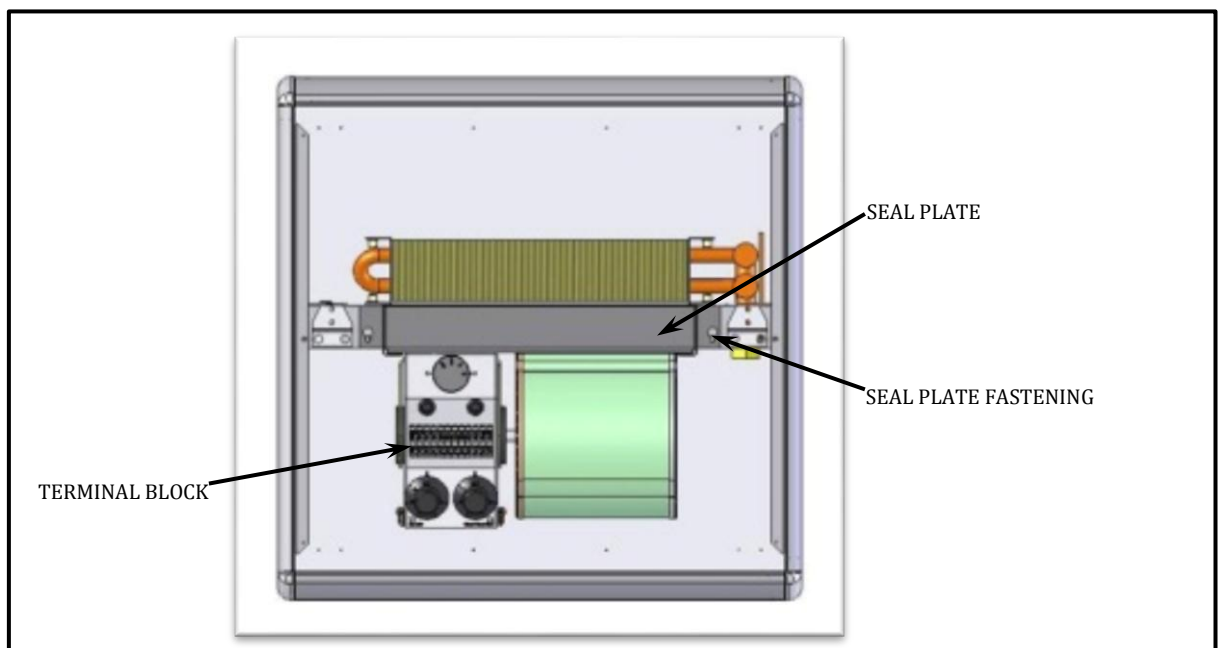


Figure 2: Seal plate & Terminal Box

3.5. CHANGE OF CONNECTION ORIENTATION

Units are supplied, as standard with water connections pointing downwards. If required these can be reversed by turning the coil upside down. Remove the access panel, unscrew the M6 screws holding the heat exchanger and turn over. Replace the screws and access panel.

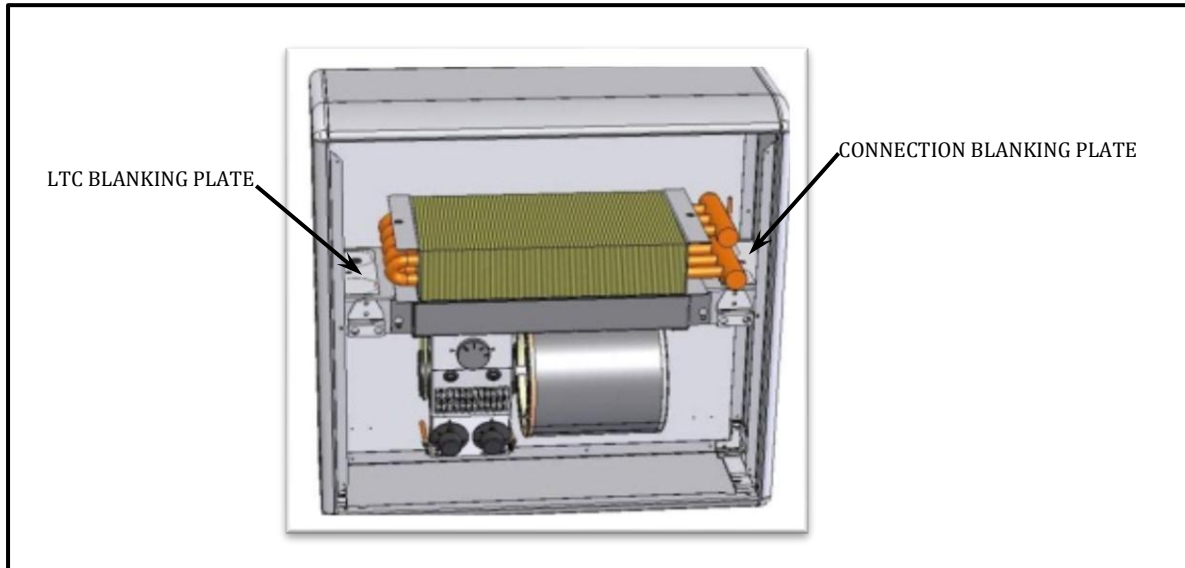


Figure 3: LTC & Connection blanking plate

3.6. FIXING THE UNIT

All units have pilot holes in the back plate for attaching to a wall or ceiling. Mark as required from the casing, then drill and plug to suit No 10 wood screws for vertical applications. For suspended horizontal applications, bolts or hanger rods should be used through the strengthening strips attached to the inside back of the case.

3.7. BUILDER'S WORK

When using cased models for concealed applications, the builder's work surrounding the unit must have adequate provision for removing the front access panel of the unit, by providing a removable section of panelling. This is to provide access for filter cleaning etc.

A similar provision must be made for Hideaway units, although in this case the removable panelling must be large enough to pull out the complete fan tray assembly and provide access to the valves and air vent, etc.

If ducting is not fitted between the Hideaway's spigotted outlet and the air outlet grille, a suitable baffle must be provided around the spigot, to seal off the unit within the enclosure and prevent re-circulation of the discharged air.

3.8. WIRING

Unit length (mm)	Speed	Power drawn (W)	Current (A)	SFP (W/l/s)
600	Low	14	0.11	0.26
	Medium	18	0.14	0.28
	High	27	0.21	0.36
900	Low	21	0.16	0.18
	Medium	29	0.19	0.21
	High	40	0.25	0.25
1200	Low	25	0.15	0.14
	Medium	35	0.21	0.16
	High	46	0.28	0.19

Table 1: Electrical Data

All electrical work should be carried out in accordance with current I.E.T regulations. The basic wiring diagram is as shown in Diagram no 1. Unless a switched fused spur box is to be fitted to the unit the mains lead is connected to the left hand side of the terminal block where marked “mains”. The casing rear or side panels should be drilled for the mains lead entry.

When supplied, the switched fused spur box will be secured for transit within the unit together with it's cable gland entry bush. This box may be fixed to the outside of the casing with the entry bush, in a suitable position (drill casing to suit). The leads coming from the spur box should be connected into the terminal block section marked mains and the incoming mains supply connected into the spur box. If remote controls are to be used, wire into the lower left hand section of the terminal block as shown in diagram no 2. The remote thermostats should be mounted on the wall in accordance with the manufacturer's instructions (supplied with each thermostat). Connect the upper left hand section of the terminal block and replace the terminal block cover plate. If the handing has been changed on site, disconnect the casing earth lead at its casing end and reconnect at the non-pipe work end. Make sure the unit is protected by a 3 amp fuse.

Two types of wire are used; solid coloured indicates 230Vac, twin coloured is 10Vdc control wiring.

The basic wiring shown in Figure 4 is for a unit without optional control equipment fitted—as such it is set to run continuously at the medium speed setting. Note that the wires in a single solid colour are subject to 230V ac while the twin colour cables and yellow links are the 10V dc control wires.

The optional switch and thermostats which can be inbuilt are shown together with the arrows and numbers indicating the connecting wire and terminal block positions that they would occupy if fitted.

If any of these options are inbuilt, then some of the dotted links shown numbered 1 to 5 are removed as follows.

- If on/off thermostat (T1) is required, then link 1 would not be fitted.

- If speed change thermostat medium to low (T2) is required, then link 3 would not be fitted.
- If speed change thermostat high to medium (T3) is required, then link 4 would not be fitted and link 2 must be fitted between 5 and 6.
- If speed control switch is required, then link 2 would not be fitted.
- If summer/winter switch is required, then link 5 would not be fitted.
- If fan enable relay is required, then terminals 10 and 11 would be fitted.

Notes

1. The LTC is factory fitted as shown in diagram no 1. If LTC is not required, link terminals 2 and 3.
2. T1, T2 and T3 cannot all be inbuilt and wired in together as indicated in the diagram. They must be fitted in combinations of T1 and T2, T1 and T3 or T2 and T3. If however, a control system involving all three is required, then it is recommended that the T1 thermostat is remotely mounted.
3. If summer/winter switch and fan enable relay are required, terminal 12 would be fitted. The fan enable relay will be linked between terminals 1 and 12 and the summer/winter switch linked between terminals 12 and 2.
4. 0-10v direct BMS control is possible using the incoming 0-10v on terminal 10 and incoming 0v on terminal 11. Link 5 should then be removed, terminal 10 wired to 0-10v on the board and terminal 11 wired to 0v on the board.
5. If a unit wired for single speed running is required to operate at low speed, then alter link 2 to connect between positions 5 and 7 on the terminal block. Similarly, for high speed re-connect link 2 between positions 5 and 9.

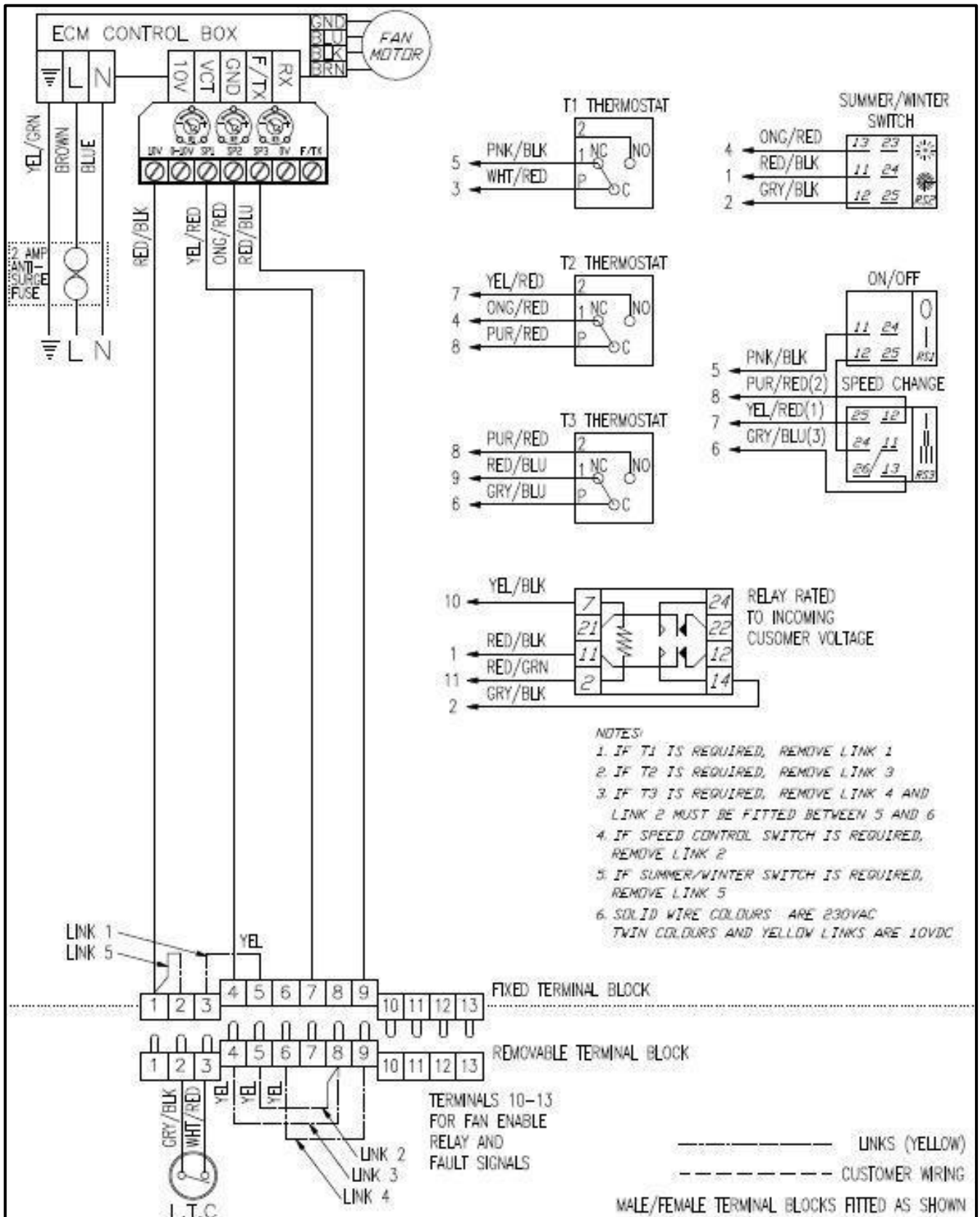


Figure 4 : Wiring Diagram 1

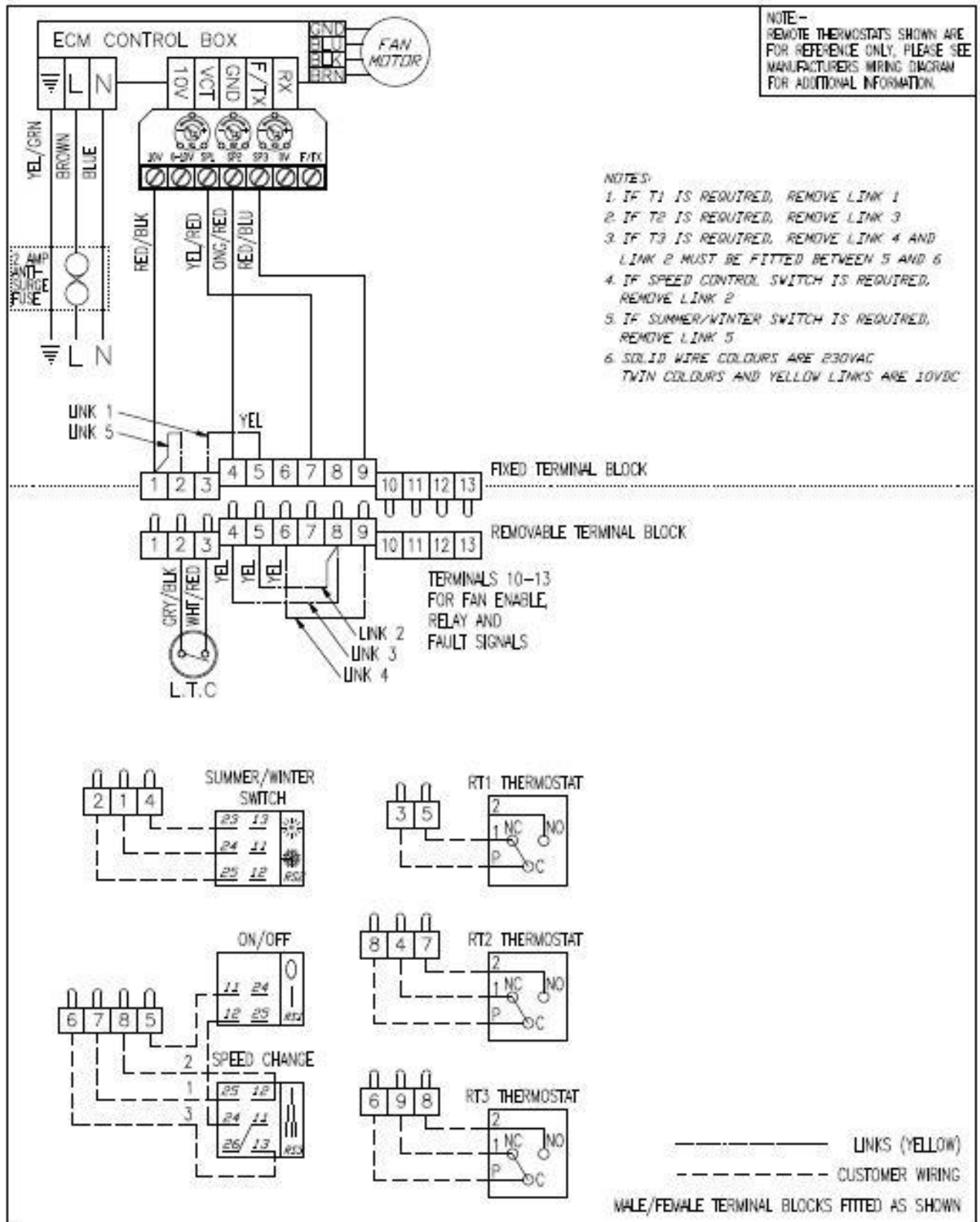


Figure 5: Wiring Diagram 2

When required to operate with remotely mounted controls, units will be supplied wired for medium speed running as shown in Figure 5.

Remote options are wired using the same rules as internal options. For all units, we recommend a 3 amp fuse is fitted.

IMPORTANT: Isolate unit electrically at mains controls before carrying out any work.

The remote switch and thermostats required should be fitted to the removable sections of the terminal block as shown above.

4. OPERATION & MAINTENANCE

4.1. ELECTRIC MOTOR PROTECTION

On ceiling mounted and reverse airflow applications where the fan motor is switched off for long periods, with hot water still circulating through the heat exchanger in excess of 82°C (180°F), it is recommended that a system be employed which automatically closes the hot water supply valve to prevent damage to the electric motor due to overheating.

4.2. THERMOSTATIC OPERATION

The T1 and T2 thermostats both have graduated scales to cover their range of operation. Since the thermostatic bulb is frequently unit mounted, it may be offset by various amounts from the measured room temperature. Set the knob at mid-range and adjust to suit comfort conditions within the room. The range corresponds to a sensed temperature range of 10°C to 30°C.

T1 and T2 are adjustable and determine the comfort room temperature range. Set T2 for the low and T1 for the high point. Example T2 16°C and T1 20°C.

The standard LTC is not adjustable (45°C) and provides a fan cut-off for the situation where the water temperature is not sufficiently high to provide warm blown air from the fan convector.. The LTC is mounted at the non-void end of the unit, and is clipped on to a return bend of the coil.

To electrically test a unit to confirm operation before heat is available, short circuit terminal 2 and 3 on the terminal block.

4.3. FILTER

Air filters will be fitted on either the air inlet grille or between the motor plate and coil (behind the seal plate). Filters should be gently tapped to remove most of the accumulated dust and either vacuumed clean or washed in lukewarm water with detergent. Rinse in clean water and allow to dry naturally before replacement.

4.4. COIL

Remove the access panel and clean the coil with a brush or by vacuuming, taking care not to damage the coil surfaces.

4.5. FAN SET

The motor has sealed for life sleeve bearings, which under normal circumstances require no

user maintenance. The motor deck is accessed by means of the access panel and is readily removed if required. Occasional vacuuming or cleaning of the motor plate is recommended.

4.6. SPARES

For spare parts, quote the model reference and code given on the product label attached within the unit. Give a complete description, voltage and/or dimensions of the part(s) required.

5. FAULT FINDING

5.1. NO FAN OPERATION

- Check fuse on motor plate.
- Check power supply to unit.
- Check loose wiring and breaker plugs or damage to wiring.
- Check switches or bypass the switches.
- Check impellers run freely.

5.2. NO HEATING

- Check thermostat operation (change set point to maximum) where fitted.
- Check integrity of wiring.
- Check coil vented.
- Check hot water to unit.
- Check thermostat bulb in air stream.
- Check LTC contact on pipe-work or return bend.

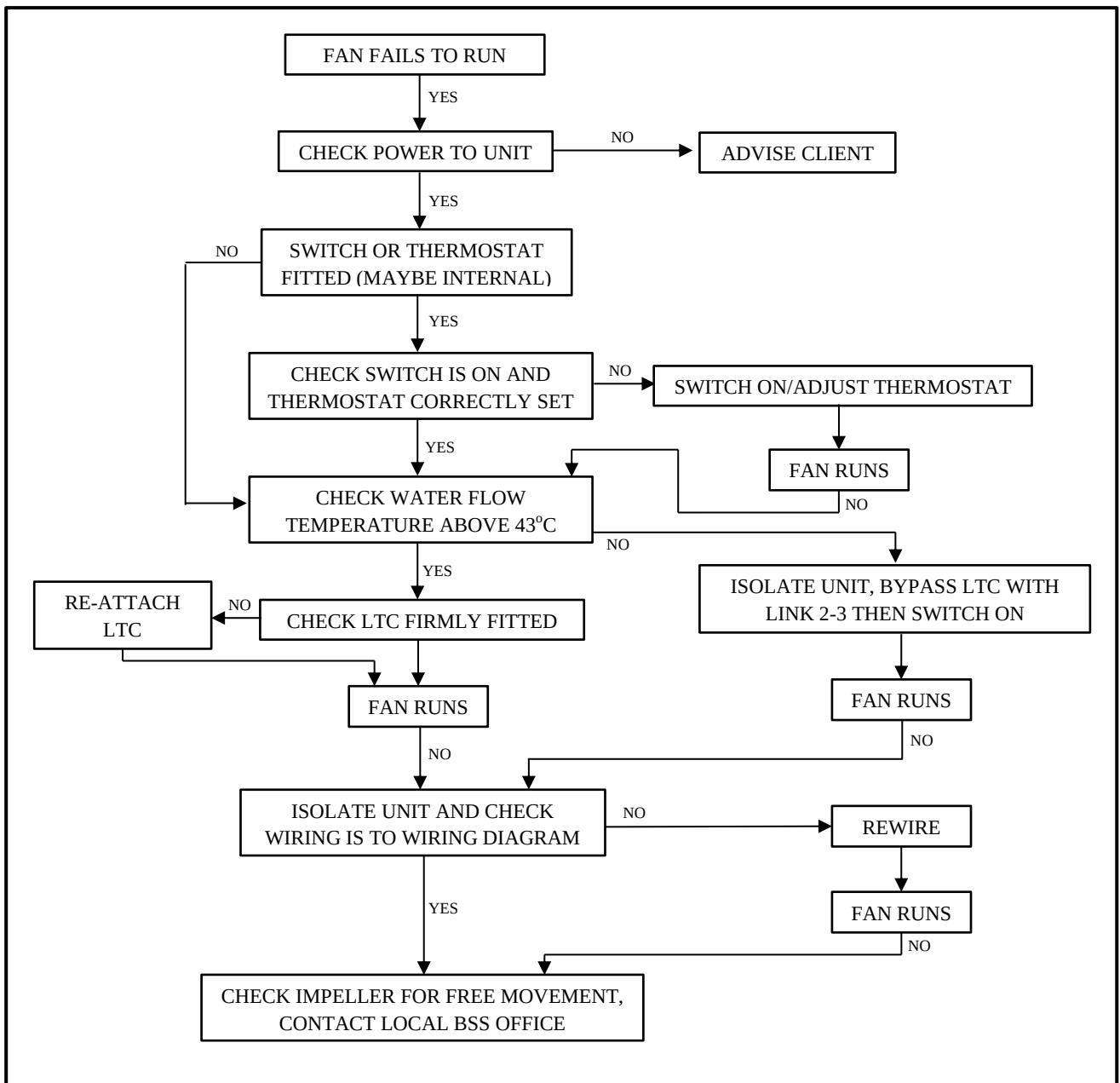


Figure 6 : Fault finding

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