xL8/xL9 troubleshooting

Step 1: Check compressor

- The normal resistances of the inverter compressor are 0.1-5Ω among U V W and infinite between each of U V W and ground. If any of the resistances differ from these specifications, the compressor has malfunctioned.
- Refer to “xL0 troubleshooting”. If the resistance values are normal, go to Step 2.

Step 2: Check compressor and main PCB

- If there is another unit nearby (either in the same system or another system) that is operating normally, its electric control box can be used to determine whether the xL8/xL9 error is being caused by a compressor fault or a main PCB fault:
  - If using another unit in the same system as the unit with the error to perform the test, set it as the master unit (address 0); if using a unit in another system, use the master unit.
  - Disconnect the power wires of the compressor referenced in the xL8/xL9 error code.
  - In the unit that is operating normally, disconnect the power wires that connect a compressor to the electric control box and use them to connect the compressor with the xL8/xL9 error to the electric control box of the unit that is operating normally. Ensure that the U, V, W terminals are connected in the right order, and then start the system that is operating normally.
  - If the compressor with the xL8/xL9 error runs normally, replace the main PCB of the unit with the xL8/xL9 error and ensure the wiring is correct; if the compressor with the xL8/xL9 error still does not run normally, it needs to be replaced. Refer to “Compressor replacement procedure”.

Figure 1: Connecting compressor to an error-free unit

- If there is no error-free unit nearby:
  - Replace the main PCB of the unit with the xL8/xL9 error and ensure the wiring is correct. If the compressor with the xL8/xL9 error runs normally, a fault with the main PCB was causing the xL8/xL9 error; if the compressor with the xL8/xL9 error still does not run normally, it needs to be replaced. Refer to “Compressor replacement procedure”.

Compressor replacement procedure

Step 1: Remove faulty compressor and remove oil

- Remove the faulty compressor from the outdoor unit.
- Before removing the oil, shake the compressor so as to not allow impurities to remain settled at the bottom.
- Drain the oil out of the compressor and retain it for inspection. Normally the oil can be drained out from the compressor discharge pipe. Refer to Figure 2.

Figure 2: Draining oil from a compressor

Step 2: Inspect oil from faulty compressor

- If the oil is clear and transparent, go to Step 6. Slightly yellow oil is not an indication of any problems.
- If the oil is dark, black or contains impurities, the system has problems and the oil needs to be changed and go to Step 3. (If the compressor oil has been spoiled, the compressor will not be being lubricated effectively. The moving parts will wear. Abrasion will lead to a larger load and higher current. More electric energy will get dissipated as heat and the temperature of the motor will become increasingly high. Finally, compressor damage or burnout will result)

Figure 3: Inspecting compressor oil

Step 3: Replace oil separator, accumulator and high pressure tank

- If the oil from a compressor is spoiled, replace oil separator, accumulator and high pressure tank.

Step 4: Check filter

- If the oil from a compressor is spoiled, check filters in the unit. If it is blocked, clean with nitrogen or replace.

Step 5: Clear the oil in the system

- If the oil from a compressor is spoiled, clear the oil in the system by nitrogen to ensure there is no spoiled oil in it.

Step 6: Replace compressor

- If the oil drained from the faulty compressor is clean and transparent in Step 2, replace the faulty compressor.

- If the oil drained from the faulty compressor is spoiled in Step 3, replace the faulty compressor and other compressor in the system. (30kW unit has one compressor; 60kW unit has two compressors)

Step 7: Vacuum drying and refrigerant charging

- Once all the compressors and other components have been fully connected, vacuum dry the system and recharge refrigerant.