



# Trouble Shooting



FAULT	POSSIBLE CAUSE	CHECK	SOLUTION
<b>COMPRESSOR</b>			
Compressor will not start	Power supply	Phase(s) and neutral present?	Check/rectify
		Voltage within tolerance?	Check/rectify
		Is isolator switched on?	If not - switch on
	Compressor contactor not pulled in (where fitted)	Is there correct voltage to contactor coil?	If yes - coil faulty If no - check for break in control circuit or blown control fuse
		Has safety switch tripped out?	Check cause and reset
	Compressor contactor pulled in but compressor not running	Is voltage being switched across contactor?	If yes - check voltage at compressor terminals and compressor wiring If no - contactor faulty. Replace contactor
	Safety switch tripped (LP, HP, Overload)	Low & High pressure conditions and current draw on overload. Check settings of safety switches are correct	Reset and rectify any abnormal conditions or adjust switch settings if not set correctly
	Compressor internal overload tripped	Is the correct voltage at compressor terminals?	Compressor has overheated - allow time for reset (up to 3 hours) and rectify cause
	Control fuse blown in panel		Replace fuse and test - rectify fault
Compressor runs but no effect on suction/ discharge pressures	Starting kit faulty (single phase units only)	Check relay operation and contacts and inspect start/run capacitors	Replace as necessary
	Motor windings faulty	Check resistances of windings against manufacturer values	Windings that show open circuit could be due to internal overload trip. Wait for reset and recheck. If continually open circuit - motor faulty. Replace compressor
	Compressor seized	Does compressor attempt start but does not run correctly (makes humming sound)? Are amps equivalent to LRC rating?	If all electrical checks on components as above are OK - change compressor
	Mechanical failure	Are compressor motor amps lower than expected? If so - potentially valve reeds damaged or other internal wear/damage	Try pump test on compressor. If test fails - replace compressor
	(For three-phase scroll compressors only)	The compressor may be running backwards - the compressor will be noisier than normal	Swap any two of the incoming phases to the isolator switch and recheck

# Trouble Shooting

## COMMERCIAL CONDENSING UNITS

FAULT	POSSIBLE CAUSE	CHECK	SOLUTION
<b>COMPRESSOR</b>			
Compressor starts and stops too quickly	Operating on safety switches	Check LP & HP settings - is the LP differential too small or the HP setting too low?	Check and adjust switch settings. Check all valves are in open position
	Refrigerant levels	Is there too little refrigerant in the system causing rapid LP tripping or too much refrigerant in the system causing HP tripping?	Check refrigerant level and adjust accordingly
	Faulty contactor (if fitted)	Are the contacts chattering on the contactor?	Contacts may be dirty or worn. Check and replace contactor as necessary
	Loose/broken wiring connection		Make sure all electrical connections are sound
Compressor is noisy	Vibration	Rubber feet mountings worn or bolts are loose/missing	Replace mountings and tighten/replace bolts as necessary
	Lack of oil	Check oil sight glass to see if level below recommended level	Top up with oil as necessary
	Too much oil	Check oil sight glass to see if level above recommended level	Remove oil overcharge
	Liquid refrigerant	Does compressor 'knock' when starting up or running? Liquid refrigerant may be present in oil and compression chambers	Identify cause of liquid return to compressor and rectify
	Overloaded	Are suction and discharge pressures too high? There may be too much load on the compressor	Identify cause of increased load and rectify
	High discharge pressure	Blocked condenser/ faulty condenser fan	Check and rectify
		Refrigerant overcharge	Check and rectify
		Non-condensables in system	Reclaim refrigerant, evacuate & recharge
	Internal wear/damage	Noise is always present even if all operating conditions are OK?	Replace compressor
Compressor body too hot	System load too high	Are suction and discharge pressures high?	Reduce load at evaporator
	High discharge pressure	Blocked condenser/faulty condenser fan	Check and rectify
	Lack of compressor cooling	Suction superheat too high	Check refrigerant charge correct
			Check TEV superheat setting correct
			Is suction line correctly insulated?
	Compressor starting too frequently	Are controls set correctly - is the differential on thermostat or LP switch too small?	Check and adjust
		Is the liquid line solenoid valve allowing refrigerant to pass when closed?	Check valve and clean seat or replace as necessary if damaged?
	Discharge gas bleeding into suction side	Does suction pressure rise abnormally when compressor stops or compressor fails to pump down correctly?	Compressor valve reeds may be damaged - replace compressor

# Trouble Shooting

## COMMERCIAL CONDENSING UNITS

FAULT	POSSIBLE CAUSE	CHECK	SOLUTION
CONDENSER FAN			
Condenser fan will not run	Power supply	See compressor will not start section	See compressor will not start section
	Compressor contactor not pulled in	See compressor will not start section	See compressor will not start section
	Compressor contactor pulled in	Is voltage being switched across contactor?	If yes -check voltage to FSC and to fan motor. If correct voltage present at motor - fan faulty. Replace fan
			If no - contactor faulty. Replace contactor
	Being controlled by FSC (if fitted)	Is system operating pressure below FSC setting?	If yes - all OK (check fan operates when pressure rises)
	Fan capacitor fault	Check visual condition of capacitor and check uF reading with capacitor meter	Replace capacitor if required
	Motor fault	If FSC fitted - bypass FSC to test motor. If motor still does not run - motor is faulty	Replace motor
Condenser fan runs but only slowly	Is fan being controlled by FSC?	Is head pressure under control (~14/15 bar on R404A) and fan speed increases as head pressure rises?	All OK
	FSC faulty	If fan runs slowly even after adjusting FSC with head pressure rising - FSC may be faulty	Change FSC
SYSTEM			
Insufficient cooling	Lack of refrigerant	Is sight glass flashing continuously?	Leak test system and top up with refrigerant
	Condenser coil dirty	Visual check of coil condition	Clean condenser coil
	Lack of ventilation to unit	Any obstructions around unit?	Clear same to ensure good ventilation
	Compressor not pumping efficiently	Carry out pump test on compressor	Replace compressor if fails pump test
	System settings	Controls (inc. thermostat) set correctly?	Adjust as necessary
		T.E.V. superheat	Adjust as necessary
	Service valves not open correctly	Are valves fully open?	Adjust as necessary
	Restriction in piping/component	Is the filter drier blocked? Sweating/frosting on outlet of drier indicates a blockage	Replace filter drier
Damage to piping		Replace piping as required	
Head pressure too high	Condenser coil dirty	Visual check of coil condition	Clean condenser coil
	System overcharged with refrigerant	Is head pressure high but liquid line cool to touch?	Reclaim refrigerant/recharge correctly
	Condenser fan not running	See above (fan will not run)	See above
	FSC (if fitted) not set correctly	Check setting against gauge pressure	Adjust as necessary
	Lack of ventilation to unit	Any obstructions around unit?	Clear same to ensure good ventilation
	System load too high (overstocked, door open on cold room)		Reduce loading

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