



INSTALLATION & OPERATION INSTRUCTIONS

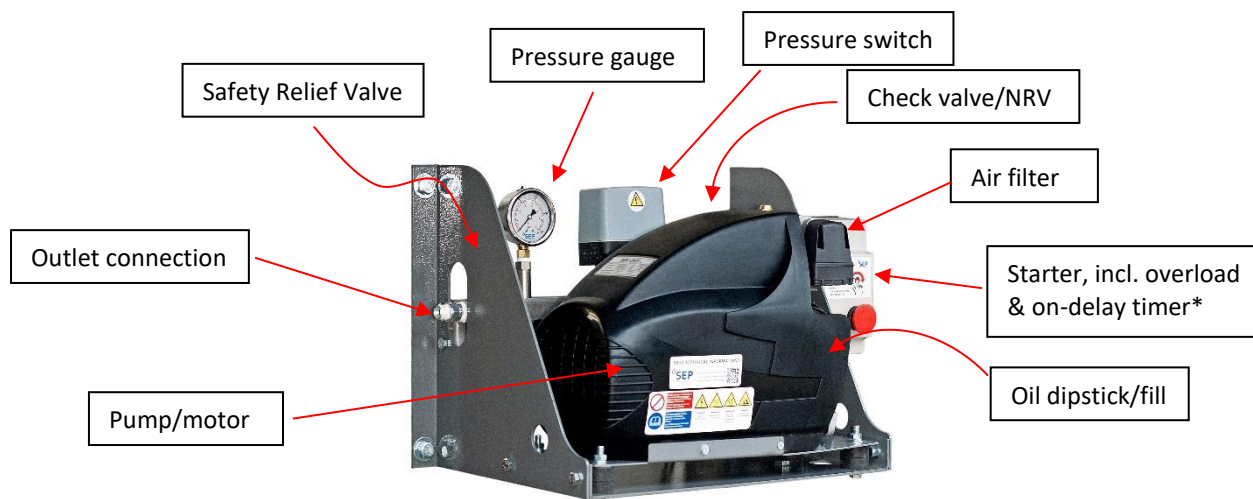
SEP Fire Sprinkler compressors, including:

- Direct drive lubricated: 230v: SEP1.5S | SEP1.8S | SEP2.2S
400v: SEP1.8T
- Direct drive oil-free: 230v: SEP0.7S/OFQ & SEP1.5S/OFQ & OFS
- Belt-driven models: 230v: SEP10.3S | SEP13.8S
400v: SEP10.3T | SEP17T | SEP23T | SEP27T
- Includes variations of above models (e.g. low pressure, receiver etc)
- Excludes Duplex stations and other special compressors.

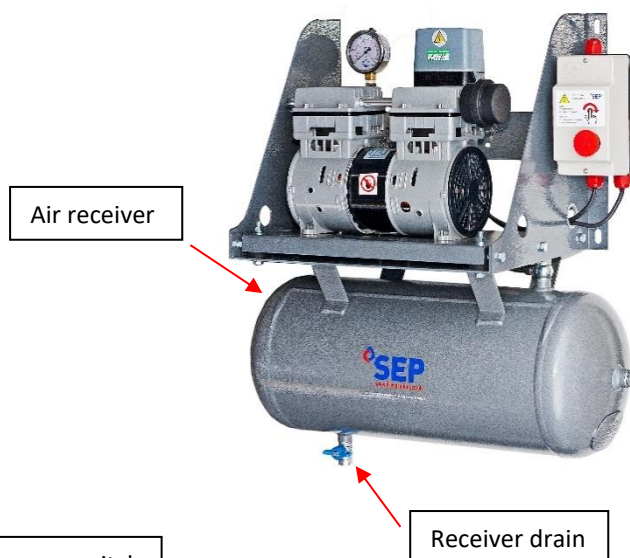
*AIR COMPRESSORS ONLY FOR FIRE SPRINKLER SYSTEMS.
THIS BOOKLET MUST BE KEPT WITH THE COMPRESSOR FOR REFERENCE PURPOSES.*

Typical compressor models applicable

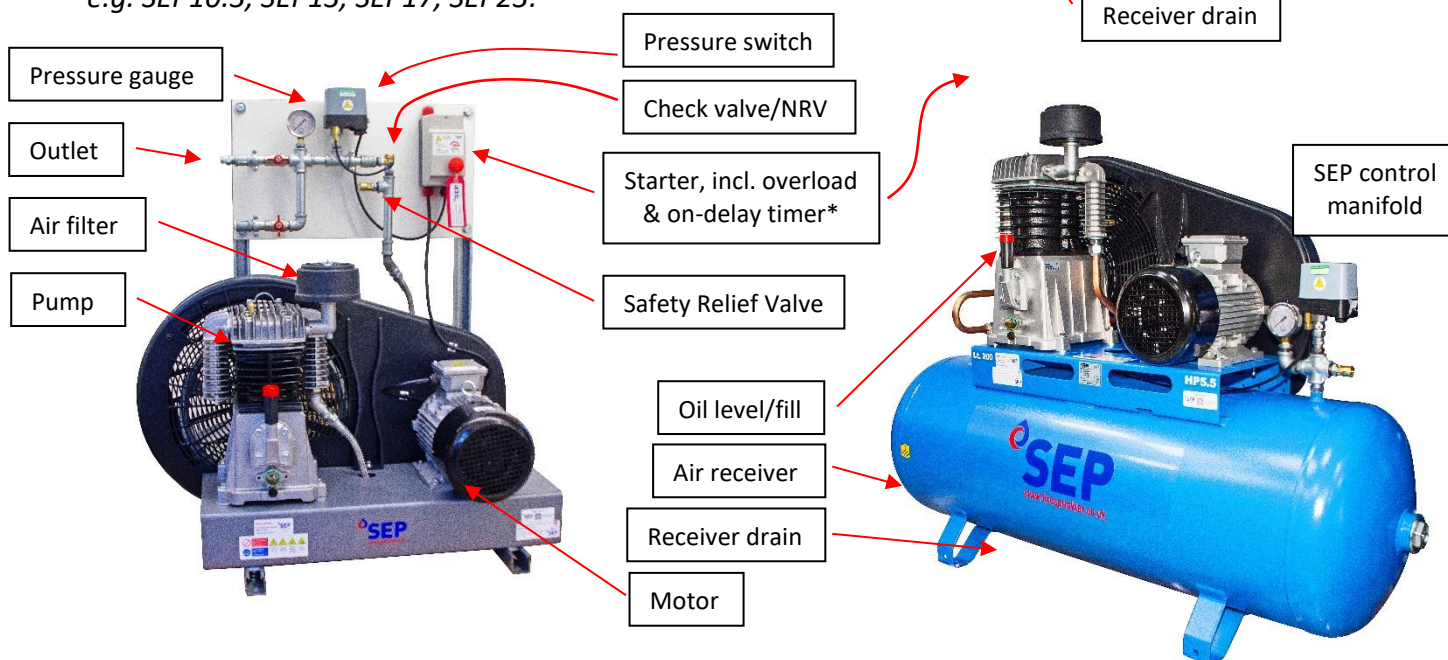
Wall-mounted, without air receiver e.g. SEP0.7S, SEP1.5S, SEP1.8S or SEP1.8T:



Wall-mounted, with receiver e.g. x.AR or x.AR.LP:



Belt-driven, base- or receiver-mounted e.g. SEP10.3, SEP13, SEP17, SEP23:



GENERAL DESCRIPTION

These compressors comprise an air-cooled reciprocating pump unit driven directly by a standard electric motor, or indirectly via a motor-driven belt. Our direct-drive compressors are mounted on rubber buffers within a steel frame for wall fixing (floor- and riser-mounting kits available). Our belt-driven compressor may be base- or receiver-mounted depending on the model selected.

All of our fire sprinkler compressors are fitted with:

- a high-quality **pressure switch** to enable automatic "stop/start" control (low pressure models have a different pressure switch to standard pressure models);
- an **unloading valve** and **non-return valve** to release pressure once the compressor stops;
- a **safety relief valve** and thermal **overload** for both air pressure and electrical protection;
- a glycerine-filled **pressure gauge** which is been accuracy-checked during our test process;
- an **on-delay timer** (where fitted – standard for 230v/400v-with-neutral installations); and
- certain models are fitted with an **air receiver** (tank) – generally 24 litres for direct-drive models, or 100-270 litre for belt-driven models.

All compressors are despatched with a flexible stainless braided hose, pipe adaptor, and top-up oil.

IMPORTANT: a maximum duty cycle of 50% is advised; running for long periods (due to small compressors on large systems, major leaks etc) will cause overheating and rapid failure of internal components.

*** SAFETY ***

THESE AIR COMPRESSORS ARE DESIGNED AND BUILT ONLY FOR FIRE SPRINKLER SYSTEMS.

COMPRESSED AIR CAN BE DANGEROUS, AND POTENTIALLY LETHAL.

ELECTRICITY CAN BE DANGEROUS, AND POTENTIALLY LETHAL.

DO NOT INSTALL OR MAINTAIN this compressor unless you are satisfied that you have the knowledge and experience to do so. If you are NOT SURE, ASK. Unless all instructions are followed, the Warranty is void.

Take special care because ALL compressors are heavy – ~30kg for direct-drive model without receiver, ~45kg for direct-drive model with receiver, ~80-150kg for belt-driven models.

DO NOT OPERATE this compressor until you have read and understand the contents of these instructions, particularly with regard to stopping, starting and general safety.

It is required that users employ safe working practices when using this equipment and your attention is drawn to the Health and Safety at Work Act, the latest electrical and pressure equipment regulations and any other current, pending or future safety requirements.

This booklet must be kept with the compressor for reference purposes. An electronic version is also available from the 'Downloads' page of our website.

The following safety signs and symbols may be used:



Read instructions before use



Automatic control – may start without warning



Dangerous voltage may be present



Danger – contents may be under pressure



Surfaces may be hot



General safety information

INSTALLATION - MECHANICAL

Before you start, CHECK for any damage in transit and advise the sender immediately if this is the case.

CHECK the power supply required by the compressor, and the power supply available (particularly a 3-phase supply and whether or not it is 3-wire or 4-wire + earth).

CHECK you have the correct compressor – for instance, if the feed is into an air maintenance device (as opposed to an open system) or through a restricted orifice then you MUST only use (or may require) a compressor with air receiver.

1. Remove all packing materials from the compressor, including the packing piece of polystyrene in the contactor box. Take care to install and operate the compressor in a clean, dry and cool (ambient temperature 5-40°C) to provide enhanced performance, reliability and quality compressed air.
2. For wall-mounted models, use the four mounting holes in the frame or Unistrut, securely bolting the compressor to the wall with M10 bolts. Use ALL four mounting holes, and ensure the bolts are tight. The compressor must be level on both planes once installed.
3. Vibration may be transmitted from the motor, despite the buffers used, if the frame is not entirely secure – you can check this later by running the unit with the contactor box cover removed and observing that the electrics do not vibrate.
4. For floor-mounted models, use the holes in the bottom of the baseplate to bolt the unit securely to the floor using the appropriate anchors. Do not run the compressor unsecured since it may ‘walk’ with the vibration.
5. Connect the compressor outlet to the system pipework using the flexible hose and adaptor provided.

INSTALLATION - ELECTRICAL

6. This fire sprinkler compressor **must** be wired into an appropriate isolation device and protected by an appropriate circuit-breaking device (Type C or even D), as per the requirements of the current version of BS EN 60204-1. A simple ‘fused spur’ without an isolation switch should not be used.
7. For electrical data, please refer to the product label and the table on the back cover of this manual.
8. Locate the electrical supply compatible with the compressor, and connect to the supply in accordance with the enclosed wiring diagrams. These are provided for information only – the power cable from the top of the contactor box is prepared for direct connection to your power supply. This power cable, or an equivalent of at least the same rating, must be used.

Dangerous, potentially lethal voltages are present within this equipment; therefore, care should be taken to ensure that all electrical connections remain firm and that cables do not wear, nor allowed to be in contact with excessive heat or vibration etc.

BEFORE YOU START THE COMPRESSOR

9. Lubricated models: CHECK OIL level with the sight glass or dipstick (remove, wipe clean, re-insert and remove to check). If required, fill or top up with the correct grade of oil (some of which is supplied) to the oil level mark on the dipstick then replace filler plug/dipstick AND RETAINING CLIP if provided.

TO START THE COMPRESSOR

10. Check and ensure that all valves and open ends on the pipework system are closed/sealed.
11. Turn on unit at the local isolator (the contactor box has emergency STOP button only). Please refer to the below section on the on-delay timer, if this control feature is fitted, because in this case the compressor will intentionally not start immediately.
12. IMPORTANT CHECK: cooling airflow must be over the motor pump. Do NOT block the air inlet.
 - For direct-drive machines, this will be into the cover at one end, and over the motor/pump opposite.
 - For belt-driven machines, this will be into the rear of the belt assembly, forwards over the motor/pump.

- A piece of paper can be used to check the direction. This is especially important for 3-phase models – *incorrect airflow direction will result in overheating and subsequent damage.*

TO STOP THE COMPRESSOR

If the pressure switch fitted to your compressor has a toggle switch, then firstly turn this to '0' to ensure firstly that any air pressure is released from the piston line.

If not, or following the above, push the STOP button on the contactor enclosure (for the newer Lovato electrics, this will lock closed, twist to release; for the older Danfoss electrics, you will need to turn clockwise to lock).

In an EMERGENCY, use the STOP button on the contactor enclosure, or the electrical isolation switch that the compressor is wired into.

ON DELAY TIMER (WHERE FITTED*)

* On-delay timers are fitted as standard unless we have been informed that your 400v supply does not have a neutral connection OR we have been specifically requested not to install. The 400v supply for 3-phase compressors MUST have a neutral for an on-delay timer can be used.

The purpose of the timer is to delay the compressor starting, to prevent it impeding water flow in the event of a sprinkler activation; it also prevents the compressor hunting and overheating but it will not affect normal low-level pressure maintenance. Refer to wiring diagram for further details.

During commissioning, the starter cover should be removed and the timer should be adjusted to the minimum setting (both dials turned completely anti-clockwise).

For normal operation, the timer should be set to at least 3 minutes (i.e. top dial pointing to '3m', bottom dial pointing to '1'). For, say, 10 minutes: top dial pointing to '30m', bottom dial pointing to '.3'

The light pattern for the on-delay timer is as follows:

Both lights out	System at pressure (no circuit via pressure switch) or power off or faulty
Green light flashing	Pressure switch circuit closed (i.e. system at low pressure) and timer in 'delay' phase pending start-up of pump
Both lights on	Pressure switch circuit closed (i.e. system at low pressure) and timer in 'operation' phase, pump should now be running

PRESSURE SWITCH ADJUSTMENT

The pressure switch should NOT be adjusted from factory settings unless you have read and understood the supplied instructions – the compressor could have one of several switches depending on the specification. On the Danfoss 'CS' switch, the lever on the side of the unit should be pointing to 'AUT' ('0' = off).

1. Switch the compressor off and isolate from the electrical supply. The switch contains potentially live wires.
2. Remove pressure switch cover.
3. Locate the adjuster (the large screw in the top **centre** of the standard switch, or the turn-handle on the low-pressure model), and turn *clockwise to increase pressure, anti-clockwise to decrease* cut-out pressure.
4. The differential (difference between cut-in and cut-out pressures) may be adjusted using the small screw in the **corner** of the CS switch, or the bottom wheel in the low-pressure switch: turn *clockwise to increase, anti-clockwise to reduce*, differential.
5. Replace pressure switch cover. Ensure switch is on (lever to 'AUT') before attempting operation.
6. Test for correct pressure by starting and operating in the normal manner.

WARNING: DO NOT try to set the cut-out pressure above 0.5 bar under the pressure safety valve setting, see label) i.e. if you have a 2.5 bar safety relief valve, do not set cut-out pressure above 2.0 bar – irreparable damage may occur, since this may cause the pump to run constantly and overheat/seize.

LUBRICATION

Lubrication for the compressor is achieved by a simple splash system, periodic checking of the dipstick (or sight glass) level is required as per the maintenance schedule.

The recommended lubricant in temperate conditions: VGE/ISO100-150 dedicated compressor oil. The crankcase capacity is approximately 0.2 litres for direct-drive models, and up to double this for belt-driven models.

MAINTENANCE

SAFETY WARNING: Before carrying out any maintenance, observe all standard safety factors:

1. Isolate the compressor from the mains power supply. Electricity is dangerous, and potentially fatal.
2. Some components of the compressor may be hot and therefore could cause harm, so please ensure that the compressor and components are cool before handling or attempting any maintenance.
3. Check that all air pressure has been released from the compressor and delivery line. Compressed air can be dangerous, and potentially fatal.
4. Isolate the compressor from the fire sprinkler pipework system, if such a valve has been installed.
5. Attach "DO NOT OPERATE" signs to the compressor and electrical isolator (if not immediately close by).

Regular Maintenance

To ensure continued reliability and efficiency, it is important that regular maintenance is carried out. The condition of lubricants, the general cleanliness of the machine and the prevention of the ingress of dirt or water into the working components of the compressor are all important factors.

EVERY 1-2 WEEKS:

- *Air receiver?* Drain the receiver every week using the valve underneath the vessel. Ensure that any condensate is disposed of properly, since it may contain oil and other contaminants.
- *Lubricated?* Check oil level (dipstick or sight glass) and top up if required.

EVERY 6 MONTHS:

- Check, and clean (or replace) if necessary, the air intake filter (most models split for inspection).
- *Lubricated?* Drain old oil into a suitable container and dispose of according to local requirements and environmental restrictions. Replace drain plug and refill the compressor with fresh oil. Replace filler plug/dip stick and any retaining clip once the level has been checked.
- Clean external surfaces of the compressor removing any dirt from the compressor cylinder, cylinder head, motor fins and motor cowl to maintain efficient cooling.
- Check that any enclosures, covers, casings, guards and other protective equipment (including their fixings) are securely in place and not damaged. If damaged, they must be replaced for safety reasons.

EVERY YEAR:

- Check safety and non-return valves; replace if worn or damaged.
- Check all joints and gaskets; replace if leaking or damaged.
- Replace air intake filter or element.

SPARE PARTS

Only use genuine spare parts, service kits or lubricants purchased from SEP or your maintainer. The use of non-genuine spare parts may affect the reliability and service life of the compressor and will invalidate the warranty.

In the event of any difficulty understanding these instructions, or operating the compressor, contact your installer or maintainer immediately.

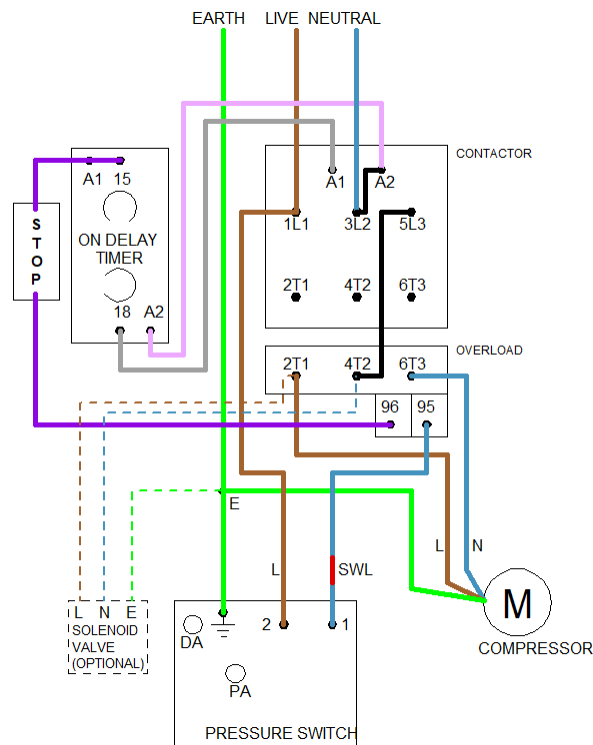
Alternatively, please contact Sale Engineering Products: +44 161 428 1180 or info@saleengineering.co.uk

TROUBLESHOOTING

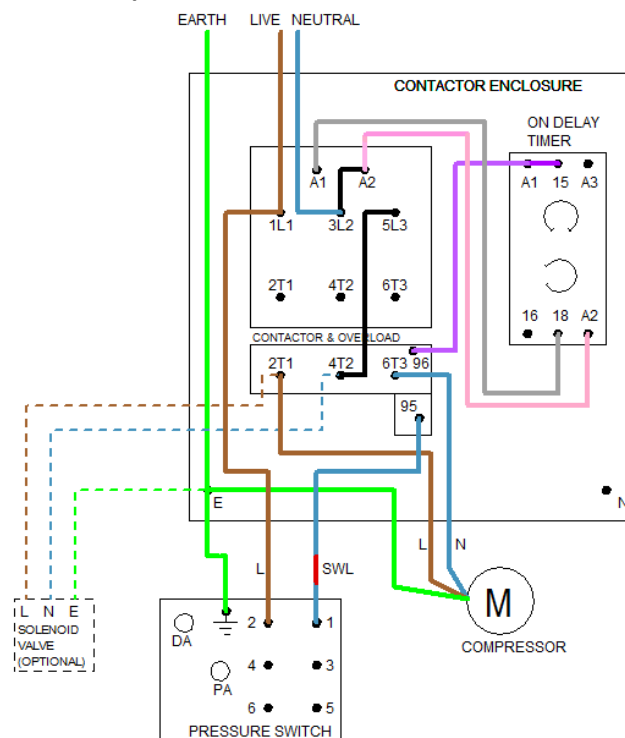
The following is provided as a guide to possible problems that may be encountered at any time; it cannot be comprehensive BUT please consider these matters before calling your maintainer for assistance.

Problem	Possible Cause/s	Possible Resolution/s
Nothing at all is happening	<ul style="list-style-type: none"> Power supply missing or faulty. External isolator switched off. 	<ul style="list-style-type: none"> Check isolator switch; check external power supply; check each phase if 3-phase; check neutral circuit.
	<ul style="list-style-type: none"> Emergency stop on contactor box pressed/locked. 	<ul style="list-style-type: none"> Check contactor box and ensure that stop button is out (turn anti-clockwise).
	<ul style="list-style-type: none"> Pressure switch turned off. 	<ul style="list-style-type: none"> Check pressure switch set to AUT/1/ON.
	<ul style="list-style-type: none"> Loose wiring connection. 	<ul style="list-style-type: none"> Check wiring against diagram; check for loose wires.
Compressor running (very quiet or very noisy) but no pressure	<ul style="list-style-type: none"> Con-rod may be broken (most likely cause is running dry). 	<ul style="list-style-type: none"> Remove compressor head, check piston/con-rod – if broken, pump needs replacing.
	<ul style="list-style-type: none"> Valve plate may be worn/damaged. 	<ul style="list-style-type: none"> Remove compressor head, check valve plate – if broken, replace.
Compressor running (sounds normal) but there is no pressure	<ul style="list-style-type: none"> Valve plate may be worn/damaged. 	<ul style="list-style-type: none"> See above.
	<ul style="list-style-type: none"> May be leak from compressor head, hoses or pipework. 	<ul style="list-style-type: none"> Check joints and hoses, repair or replace if any leaks.
	<ul style="list-style-type: none"> Safety relief valve may be passing. 	<ul style="list-style-type: none"> Check safety relief valve.
Compressor trying to run but sounds 'jammed'	<ul style="list-style-type: none"> Piston and/or con-rod may be seized (probably bad oil or run dry). 	<ul style="list-style-type: none"> Remove compressor head, check piston/con-rod – if seized, pump needs replacing.
	<ul style="list-style-type: none"> Restricted orifice or air maintenance device (AMD) close to outlet of non-receiver model. 	<ul style="list-style-type: none"> If using restricted orifice or air maintenance device, receiver model is probably required.
	<ul style="list-style-type: none"> Motor may be faulty. 	<ul style="list-style-type: none"> If above checked, consider replacing compressor pump.
Compressor won't start – pressure switch connecting	<ul style="list-style-type: none"> Problem with power supply. 	<ul style="list-style-type: none"> See 'Nothing at all is happening'.
	<ul style="list-style-type: none"> Timer may be 'on-delay'. 	<ul style="list-style-type: none"> Carefully remove contactor box cover; if timer is flashing then it's 'on-delay' and should start soon.
	<ul style="list-style-type: none"> Timer may be faulty. 	<ul style="list-style-type: none"> If incoming power supply is OK, check wiring continuity; if power is entering timer but no lights, then replace timer.
Compressor won't stop	<ul style="list-style-type: none"> Pressure rising? Possibly pressure switch fault or blocked orifice. 	<ul style="list-style-type: none"> If confident, remove pressure switch and check orifice; if OK then switch may be faulty.
	<ul style="list-style-type: none"> Pressure stable? Safety relief valve may be passing early, or because pressure switch set too high. 	<ul style="list-style-type: none"> Check if safety relief valve passing; check pressure switch settings.
Compressor starting/stopping quickly (hunting or juddering)	<ul style="list-style-type: none"> Outlet valve may be closed. 	<ul style="list-style-type: none"> Check outlet valves are open.
	<ul style="list-style-type: none"> Restricted orifice or AMD close to outlet of non-receiver model. 	<ul style="list-style-type: none"> If using restricted orifice or air maintenance device, receiver model is probably required.
	<ul style="list-style-type: none"> May be worn/faulty contactor. 	<ul style="list-style-type: none"> Check operation of pressure switch and contactor during observed 'juddering'.
Compressor stops (with no audible unload) before pressure reached	<ul style="list-style-type: none"> Cutting out with no unloading usually indicates 'electrical' stoppage such as thermal overload, circuit breaker tripping etc 	<ul style="list-style-type: none"> Check thermal overload setting (dial at right-hand side at bottom of contactor) – seek advice from SEP if unsure. Check circuit breaker is of correct rating.

LOVATO ELECTRICS (from late 2022)



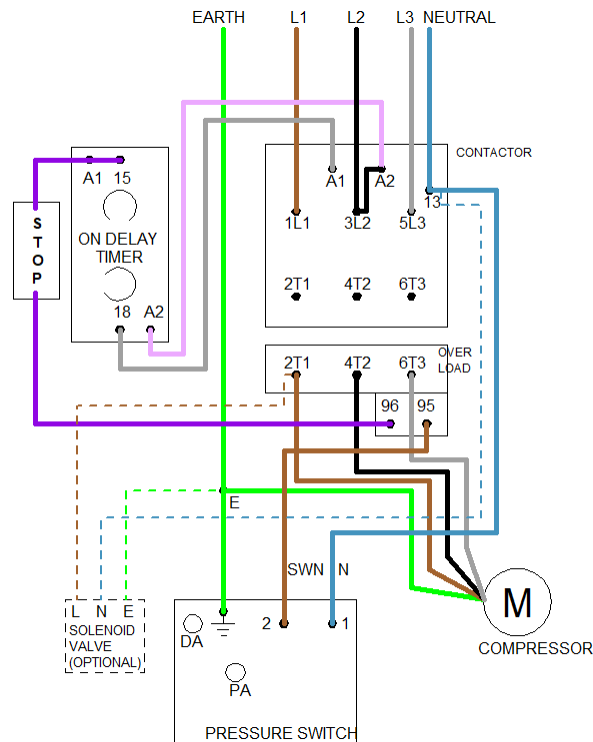
DANFOSS ELECTRICS (to late 2022)



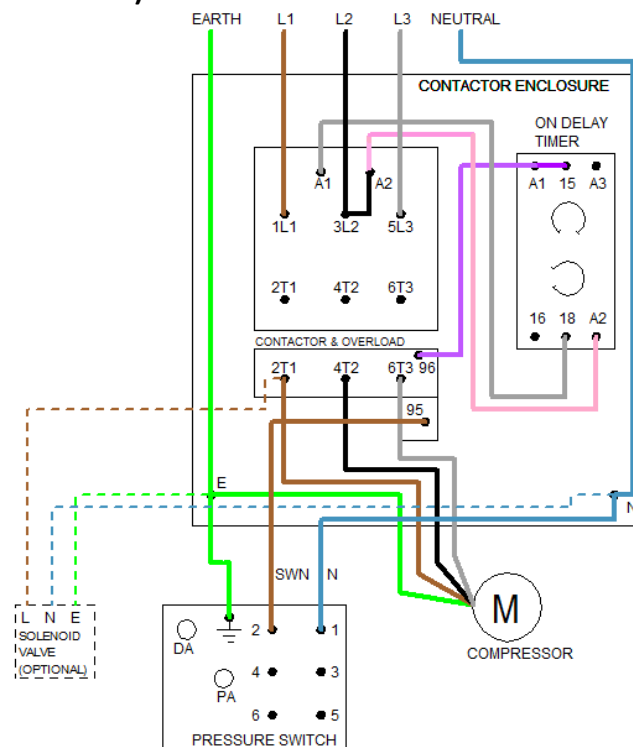
Notes: Solenoid unloader valve is optional (standard with low pressure switches)
Wiring colours may be different from those stated for older models
Based on Danfoss CS-type pressure switch (your switch may be different)

WIRING DIAGRAM – 400v MODELS (WITH NEUTRAL AND ON-DELAY TIMER)

LOVATO ELECTRICS (from late 2022)



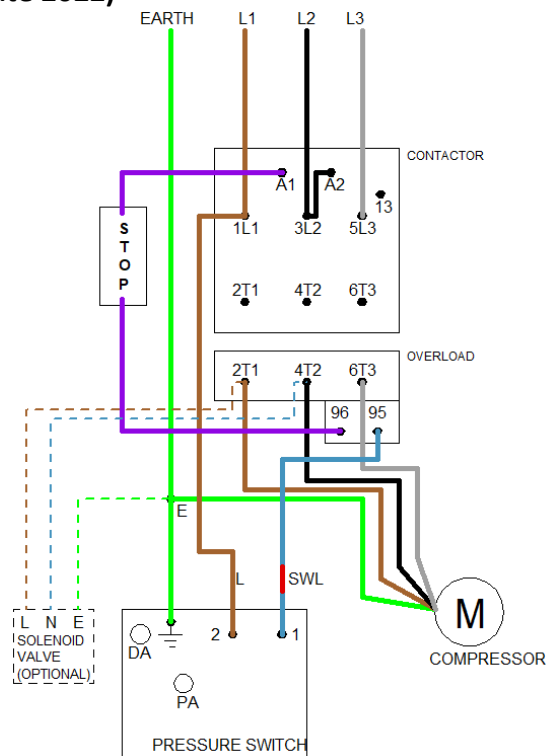
DANFOSS ELECTRICS (to late 2022)



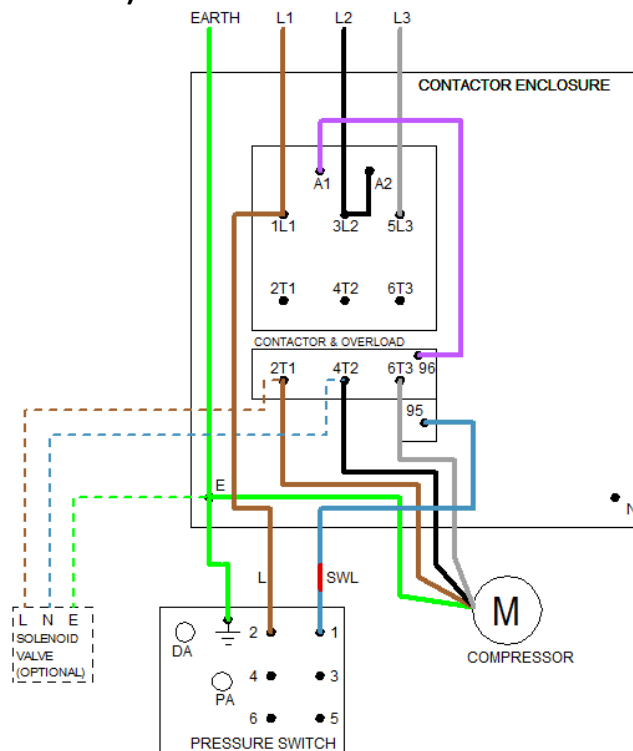
Notes: Solenoid unloader valve is optional (standard with low pressure switches)
Wiring colours may be different from those stated for older models
Based on Danfoss CS-type pressure switch (your switch may be different)

WIRING DIAGRAM – 400v MODELS (WITHOUT NEUTRAL, NO ON-DELAY TIMER)

LOVATO ELECTRICS (from late 2022)



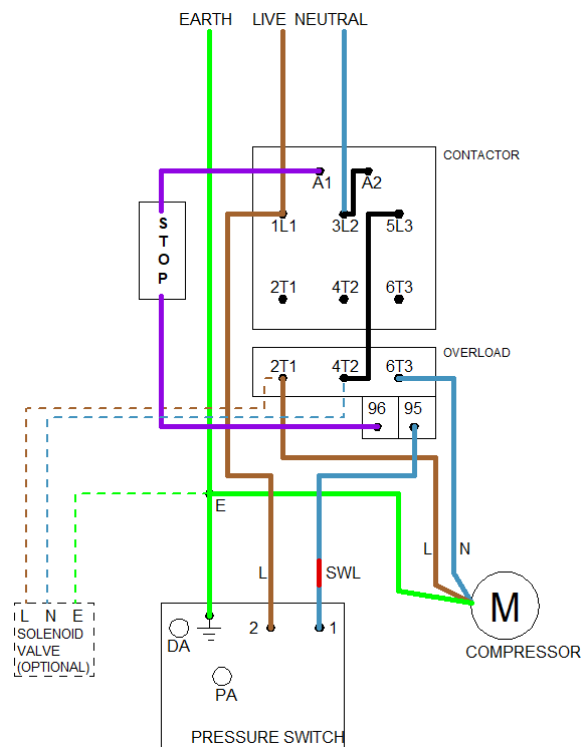
DANFOSS ELECTRICS (to late 2022)



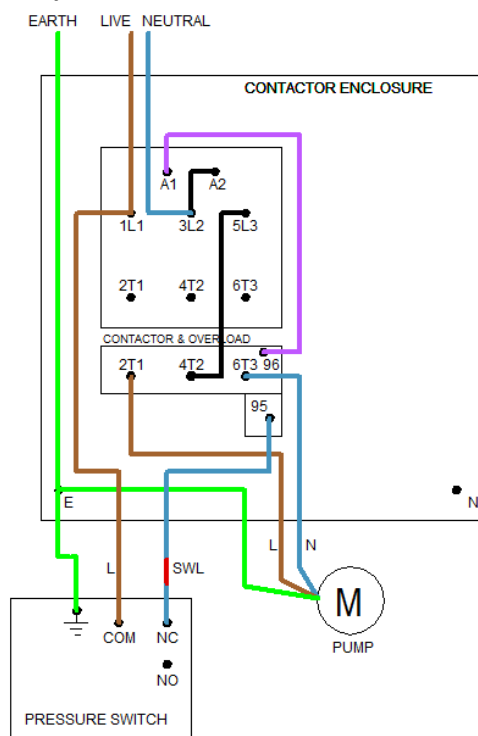
Notes: Solenoid unloader valve is optional (standard with low pressure switches)
Wiring colours may be different from those stated for older models
Based on Danfoss CS-type pressure switch (your switch may be different)

WIRING DIAGRAM – 230v MODELS WITHOUT ON-DELAY TIMER

LOVATO ELECTRICS (from late 2022)



DANFOSS ELECTRICS (to late 2022)



Notes: Solenoid unloader valve is optional (standard with low pressure switches)
Wiring colours may be different from those stated for older models
Based on Danfoss CS-type pressure switch (your switch may be different)

Compressor Specifications (standard models)

Compressors are listed in order of FAD Output	SEP0.7S OF Quiet	SEP1.5S OF Std	SEP1.5S	SEP1.8S	SEP1.8T	SEP1.5S OF Quiet	SEP2.2S	SEP10S	SEP10T	SEP13S	SEP17T	SEP23T	SEP27T
Est FAD 2 bar (cfm)	3.8	6.0	6.4	7.2	7.2	7.6	9.7	10.1	10.1	13.5	17.7	23.0	27.0
(lpm)	108	170	180	205	205	215	275	285	285	380	500	650	760
Displacement (cfm)	5.8	7.7	7.6	8.7	8.7	8.2	11.9	14.0	14.0	18.0	23.0	29.7	38.1
(lpm)	165	220	220	250	250	232	336	400	400	495	650	820	1,080
Power (VAC) / Phase	230/1	230/1	230/1	230/1	400/3	230/1	230/1	230/1	400/3	230/1	400/3	400/3	400/3
Motor (Kw/HP)	0.75/1	1.5/2	1.5/2	1.8/2.5	1.8/2.5	1.5/2	2.2/3	2.2/3	2.2/3	3/4	4/5.5	5.5/7.5	7.5/10
Amps (RLC/FLC)	4/5	7/8	7/8	7.5/9	3.2/5	8/10	9/11	8/15	4/6	15/20	7/10	8/12	10/16
Safety Relief (bar) *	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Noise (dB(A))	58	75	76	77	77	58	76	77	77	77	77	77	77
NO AIR RECEIVER:													
Footprint LxW (cm)	57x31	57x31	57x31	57x31	57x31	57x31	-	80x40	80x40	90x45	90x45	90x45	-
Height (cm)	36	36	36	36	36	36	-	85	85	90	90	90	-
Net weight (kg)	25	25	26	26	27	31	-	60	60	60	65	70	-
WITH AIR RECEIVER:													
Receiver size (litres)	24	24	24	24	24	24	50	150	150	200	200	270	270
Footprint LxW (cm)	62x36	62x36	62x36	62x36	62x36	62x36	89x39	139x43	139x43	146x56	146x56	150x55	150x55
Height (cm)	67	67	67	67	67	67	70	95	95	99	98	110	110
Net weight (kg)	37	37	40	40	41	45	45	90	90	90	120	150	180

UK & EU DECLARATION OF CONFORMITY



WE DECLARE THAT THE FOLLOWING PRODUCT:

Per above table (✓)													
Serial No:	Year:			Order No:						Batch Ref:			
Safety Relief Valve		bar		Pressure Switch max:			bar			Air receiver vol (L):			

WAS BUILT IN COMPLIANCE WITH THE FOLLOWING EUROPEAN DIRECTIVES AND STANDARDS:

- 2006/42/EC (Machinery)
- 2014/29/EU (Simple pressure vessels)
- 2014/68/EU (formerly 97/23/EC) (Pressure Equipment Directive)
- EN 60204-1:2018 (Safety of machinery - electrical equipment of machines)
- 2014/35/EU (Electrical equipment)
- 2014/30/EU (Electromagnetic compatibility)
- EN 1012-1:2010 (Compressors and vacuum pumps)

This declaration of conformity is issued under the sole responsibility of the manufacturer.

S Robert Bell, Managing Director
Stockport, from October 2024

All information in this table is provided in good faith and may be estimated or approximate, and only correct at the time of publication. Exact specifications may change at any time for any reason without liability; if any data is critical to your application then please check with us before installation.

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British Automatic Fire Sprinkler Association

