



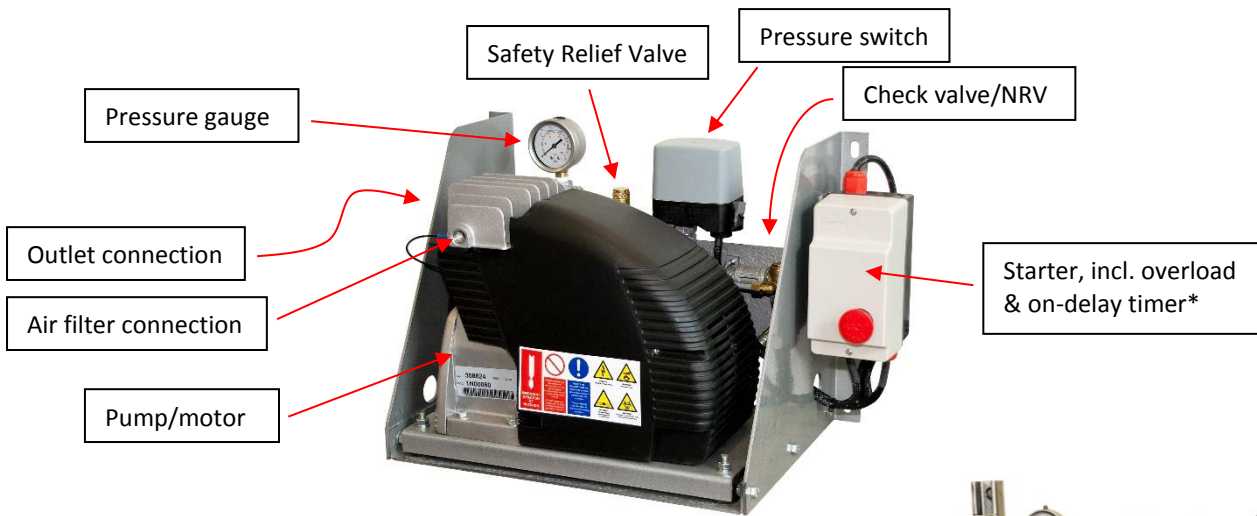
INSTALLATION & OPERATION INSTRUCTIONS

SEP standard 'LPC' compressors, including:

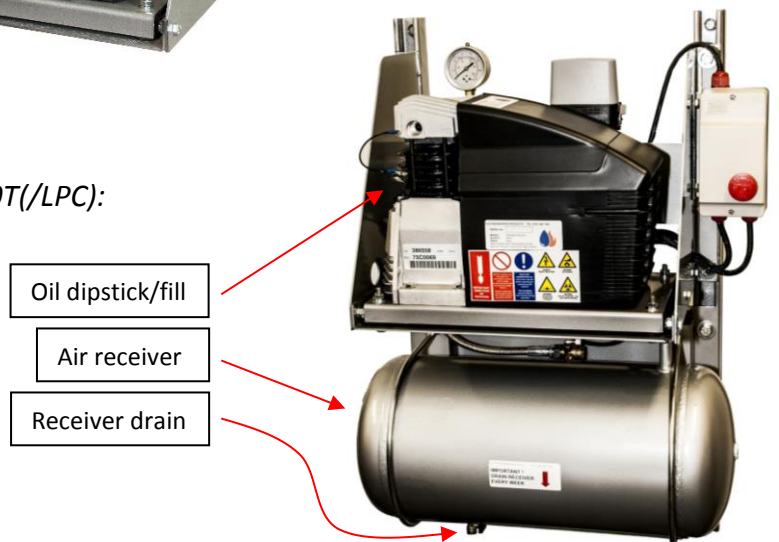
- Direct drive models: SEP550S (incl. oil-free)
SEP850S
SEP850T
- Belt-driven models: SEP10.3
SEP13.8
SEP17.0
SEP23.0
- *Includes variations of above models (e.g. low pressure, receiver etc)*
- *Excludes Duplex stations and other special compressors.*

Typical compressor models applicable

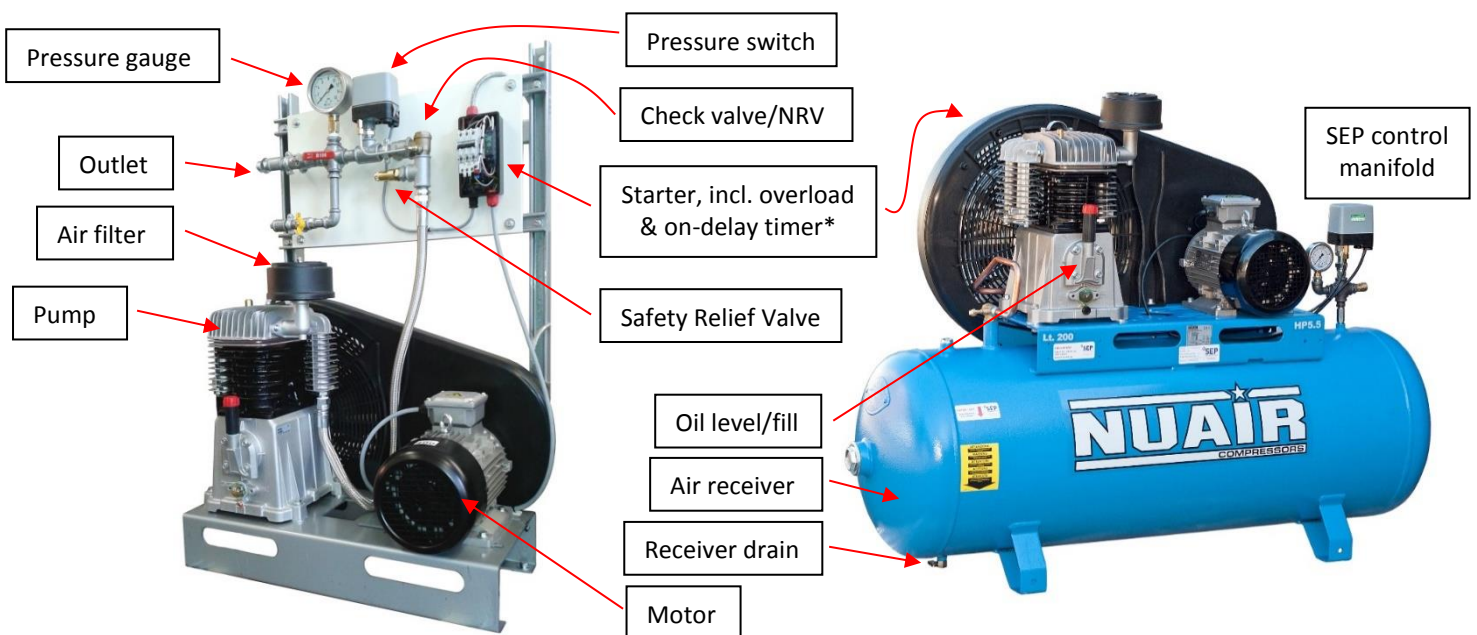
Wall-mounted, without air receiver e.g. SEP550S/LPC, SEP550S/OF, SEP850S/LPC, SEP850T(/LPC):



Wall-mounted, with receiver
e.g. SEP550S.AR/LPC, SEP850S/LPC, SEP850T(/LPC):



Belt-driven, base- or receiver-mounted
e.g. SEP10.3, SEP17.0, SEP23.0:



GENERAL DESCRIPTION

The compressors comprise an air cooled reciprocating air compressor pump unit which is 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, although floor- and riser-mounting kits are available for these models. Our belt-driven models may be base- or receiver-mounted depending on the model selected.

All of our 'LPC' 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 (not adjustable) 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 and 400v-with-neutral installations – unless requested otherwise); and
- certain models are fitted with an air receiver – generally 24 litre for direct-drive models, or 100-200 litre for belt-driven models.

All compressors are despatched with a flexible stainless braided hose (with pipe adaptor), and a bottle of oil for top-up (not oil-free models).

*** SAFETY ***

COMPRESSED AIR CAN BE DANGEROUS, AND POTENTIALLY LETHAL.

ELECTRICITY CAN BE DANGEROUS, AND POTENTIALLY LETHAL.

DO NOT INSTALL this compressor unless you are satisfied that you have the knowledge and experience to do so. If you are NOT SURE, ASK.

Take special care because ALL compressors are heavy – ~30kg for direct-drive model without receiver, ~50kg for direct-drive model with receiver, ~80-150kg for belt-driven models.

DO NOT OPERATE this compressor until you have read and fully understand the contents of these operation & maintenance instructions, particularly with regard to stopping, starting, maintenance and 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 1974, the electrical engineers regulations and any other current, pending or future safety requirements.

MECHANICAL INSTALLATION

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 closely situated restricted orifice then you should have (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 or operate the compressor in a cool, clean and dry location. This will provide enhanced performance, reliability and better 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. 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 evidently vibrate.
3. For floor-mounted models, use the holes in the bottom of the baseplate, or the air receiver struts, to bolt the unit securely to the floor using the appropriate anchors.
4. Connect the compressor outlet to the system pipework using the flexible hose and adaptor provided.

ELECTRICAL CONNECTIONS

5. 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.

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

6. 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

7. Check and ensure that all valves and open ends on the pipework system are closed.
8. 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.
9. IMPORTANT CHECK: cooling air flow must be over the motor pump.
 - For direct-drive machines, this will be into the cover at the right, and towards the left over the motor and pump.
 - For belt-driven machines, this will be into the belt assembly at the rear, and forwards over the motor and pump.
 - In both cases 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

Press the stop button on the starter, turn the isolator to '0'/Off, or turn the pressure switch to '0'.

DO NOT switch machine ON or OFF using the mains switch.

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.

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 standby, you should ensure that the timer is set to between 3-10 minutes (e.g. 3 minutes: top dial pointing to '3m', bottom dial pointing to '1'...10 minutes: top dial pointing to '30m', bottom dial pointing to '.3').

The timer will only allow the compressor to start after the time delay specified, which prevents the compressor pushing back water in the event of a sprinkler activation; it also prevents the compressor hunting and overheating. Refer to wiring diagram for further details.

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' – if it is pointing to 'O' then it is switched off.

1. Switch the compressor off and isolate from the electrical supply.
2. Remove pressure switch cover.
3. Locate the adjusting screw (usually the large screw in the top centre of the switch, or the turn-handle on the low pressure model), and turn clockwise to increase pressure or anti-clockwise to decrease pressure.
4. The differential may also be adjusted. Locate the small adjusting screw (usually in the top left of the switch, or the bottom turn-knob inside switch), and turn clockwise to increase, or anti-clockwise to reduce, the 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 attempt to increase the pressure beyond the specified maximum, or decrease the pressure below the specified minimum.

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.

Recommended lubricants for the above compressors in temperate climatic conditions: AC2100/ISO100 dedicated compressor oil. The capacity of oil in the crankcase is approximately 0.2 litres for direct-drive models, and up to double this for belt-driven models.

Conditions of warranty are specified by the manufacturer.

MAINTENANCE

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

1. Isolate the compressor from the mains power supply. Electricity can be dangerous.
2. Some components of the compressor may be hot and therefore could cause harm, so please ensure that the compressor is fully cooled 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.
4. Isolate from pipework system, flexible hoses etc.
5. Attach "DO NOT OPERATE" signs to the compressor and power supply.

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.
- *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.
- *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.

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.

SPARE PARTS

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

N.B. 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 which 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. 	<ul style="list-style-type: none"> Check external power supply; check each phase if 3-phase; check neutral circuit.
	<ul style="list-style-type: none"> External isolator switched off. 	<ul style="list-style-type: none"> Trace back external power feed, ensure switched on.
	<ul style="list-style-type: none"> Emergency stop on contactor box pressed. 	<ul style="list-style-type: none"> Check contactor box and ensure that stop button is out.
	<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 noisy) but there is no pressure	<ul style="list-style-type: none"> Con-rod may be broken (probably bad oil or run 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? May be problem with pressure switch 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'.

WIRING DIAGRAM – 230v MODELS WITH ON-DELAY TIMER

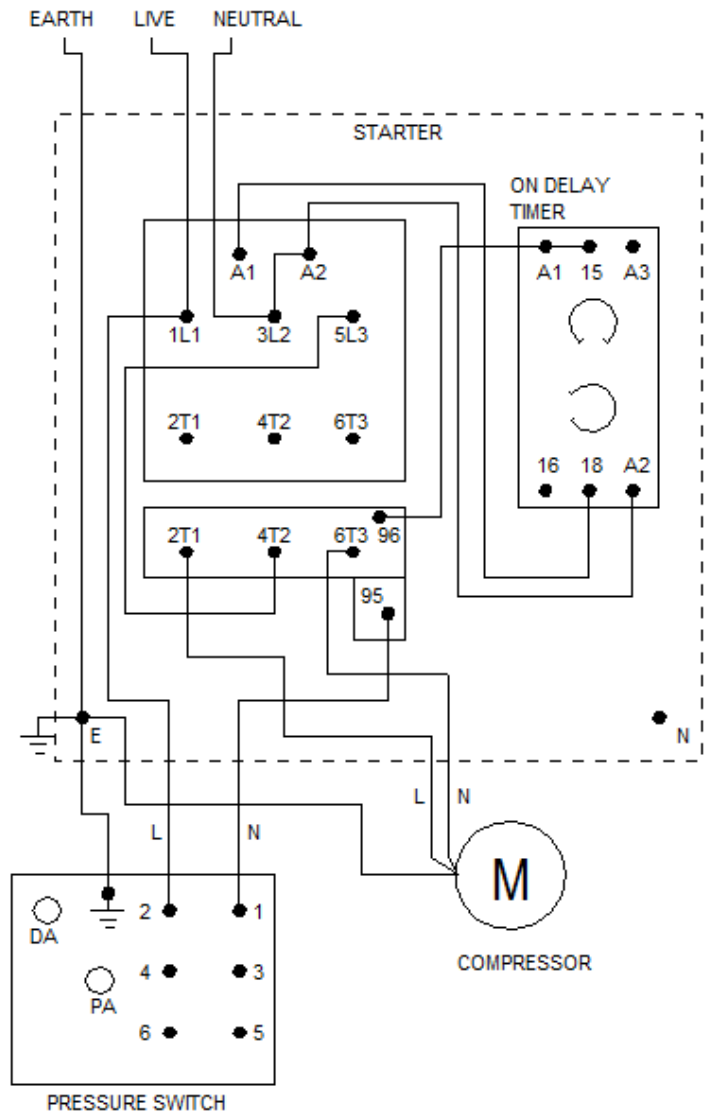
WIRING DIAGRAM 230 VOLT

220-240v COIL & ON-DELAY TIMER
 INCOMING SUPPLY LIVE TO 1L1
 NEUTRAL TO 3L2

LINKS

3L2 TO A2 CONTACTOR (SOLID BLACK WIRE)
 A2 TIMER TO A2 COIL (PINK 0.5mm)
 A1 TIMER TO 96 CONTACTOR (VOILET 0.5mm)
 18 TIMER TO A1 CONTACTOR (GREY 0.5mm)
 5L3 TO 4T2 (SOLID BLACK)
 A1 TIMER TO 15 TIMER (VIOLET 0.5mm)

PRESSURE SWITCH BROWN TO 1L1
 PRESSURE SWITCH BLUE TO 95



PRESSURE SWITCH

DA = DIFFERENTIAL ADJUSTMENT
 TURN CLOCKWISE TO INCREASE

PA = PRESSURE ADJUSTMENT
 TURN CLOCKWISE TO INCREASE

ON DELAY TIMER

SET AT MINIMUM WHEN
 COMMISSIONING A SYSTEM, THEN
 ADJUST TO 10 MINUTES ONCE SYSTEM
 IS AT PRESSURE

Notes: Wiring colours may be different from those stated for older models

Based on Danfoss CS-type pressure switch

On-delay timer setting is a suggestion – this may vary across different sprinkler systems

WIRING DIAGRAM – 400v MODELS WITH ON-DELAY TIMER (requires neutral)

**WIRING DIA GRAM 400v WITH NEUTRAL
(220-240v COIL & ON-DELAY TIMER)**

INCOMING SUPPLY LIVE
TO 1L1, 3L2, 5L3, NEUTRAL & EARTH

LINKS

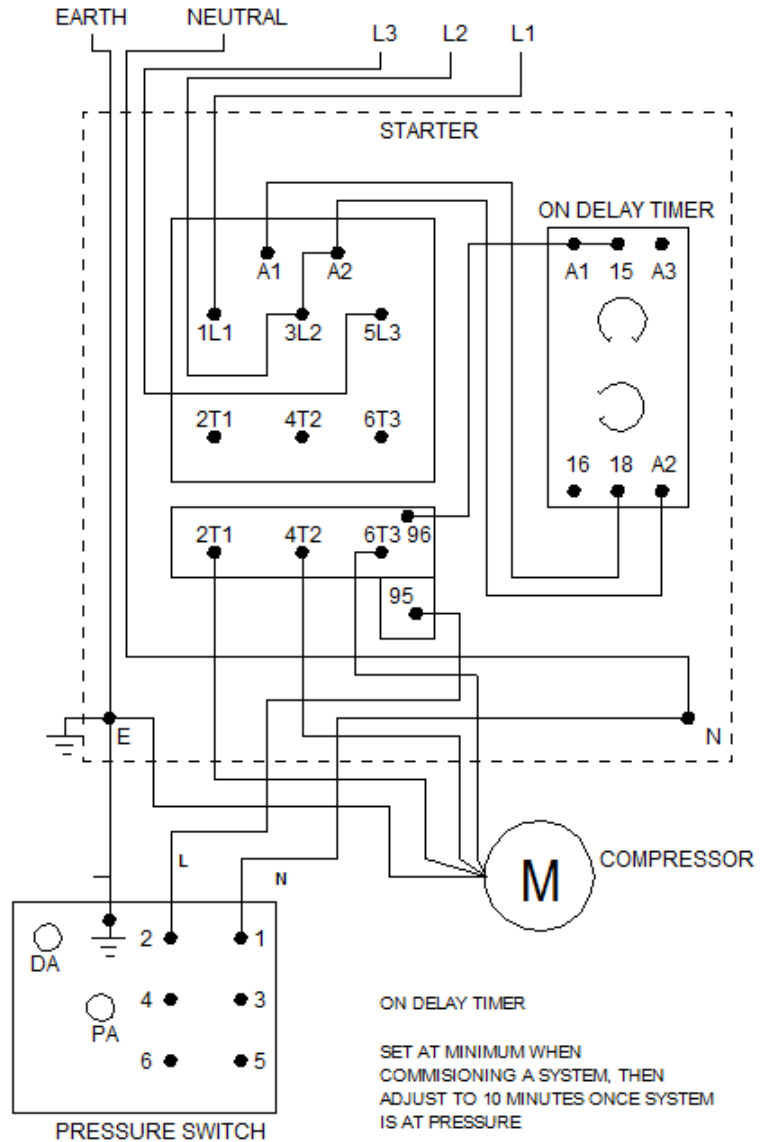
- 3L2 TO A2 CONTACTOR (SOLID BLACK WIRE)
- A2 TIMER TO A2 COIL (PINK 0.5mm)
- A1 TIMER TO 96 CONTACTOR (VIOLET 0.5mm)
- 18 TIMER TO A1 CONTACTOR (GREY 0.5mm)
- A1 TIMER TO 15 TIMER (VIOLET 0.5mm)

PRESSURE SWITCH BROWN TO 96
PRESSURE SWITCH BLUE TO
NEUTRAL TERMINAL

PRESSURE SWITCH

DA = DIFFERENTIAL ADJUSTMENT
TURN CLOCKWISE TO INCREASE

PA = PRESSURE ADJUSTMENT
TURN CLOCKWISE TO INCREASE



Notes: Wiring colours may be different from those stated for older models

Based on Danfoss CS-type pressure switch

On-delay timer setting is a suggestion – this may vary across different sprinkler systems

WIRING DIAGRAM – 400v MODELS WITHOUT ON-DELAY TIMER

WIRING DIAGRAM 400 VOLT

415v COIL, NO ON-DELAY TIMER
 INCOMING SUPPLY LIVE
 TO 1L1, 3L2, 5L3 & EARTH

LINKS
 3L2 TO A2 CONTACTOR (SOLID BLACK WIRE)
 A1 CONTACTOR TO 96 OVERLOAD (VIOLET 0.5mm)

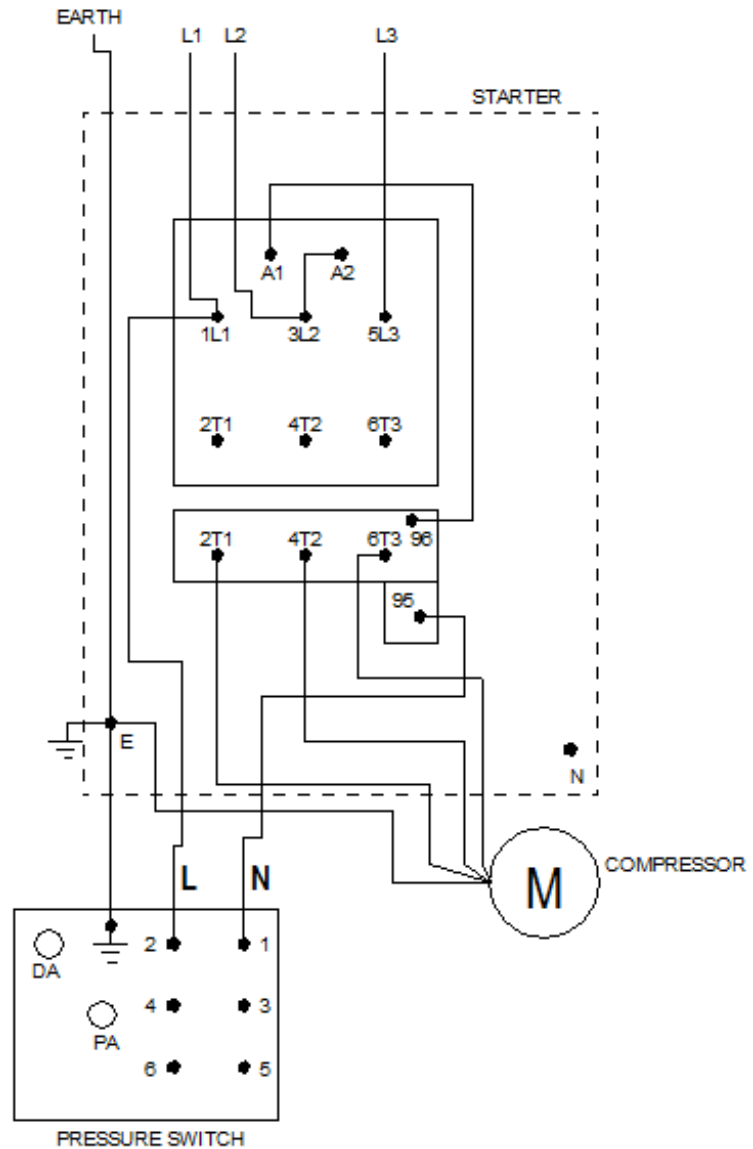
PRESSURE SWITCH BLUE TO 95
 PRESSURE SWITCH BROWN TO 1L1

PRESSURE SWITCH

DA = DIFFERENTIAL ADJUSTMENT
 TURN CLOCKWISE TO INCREASE

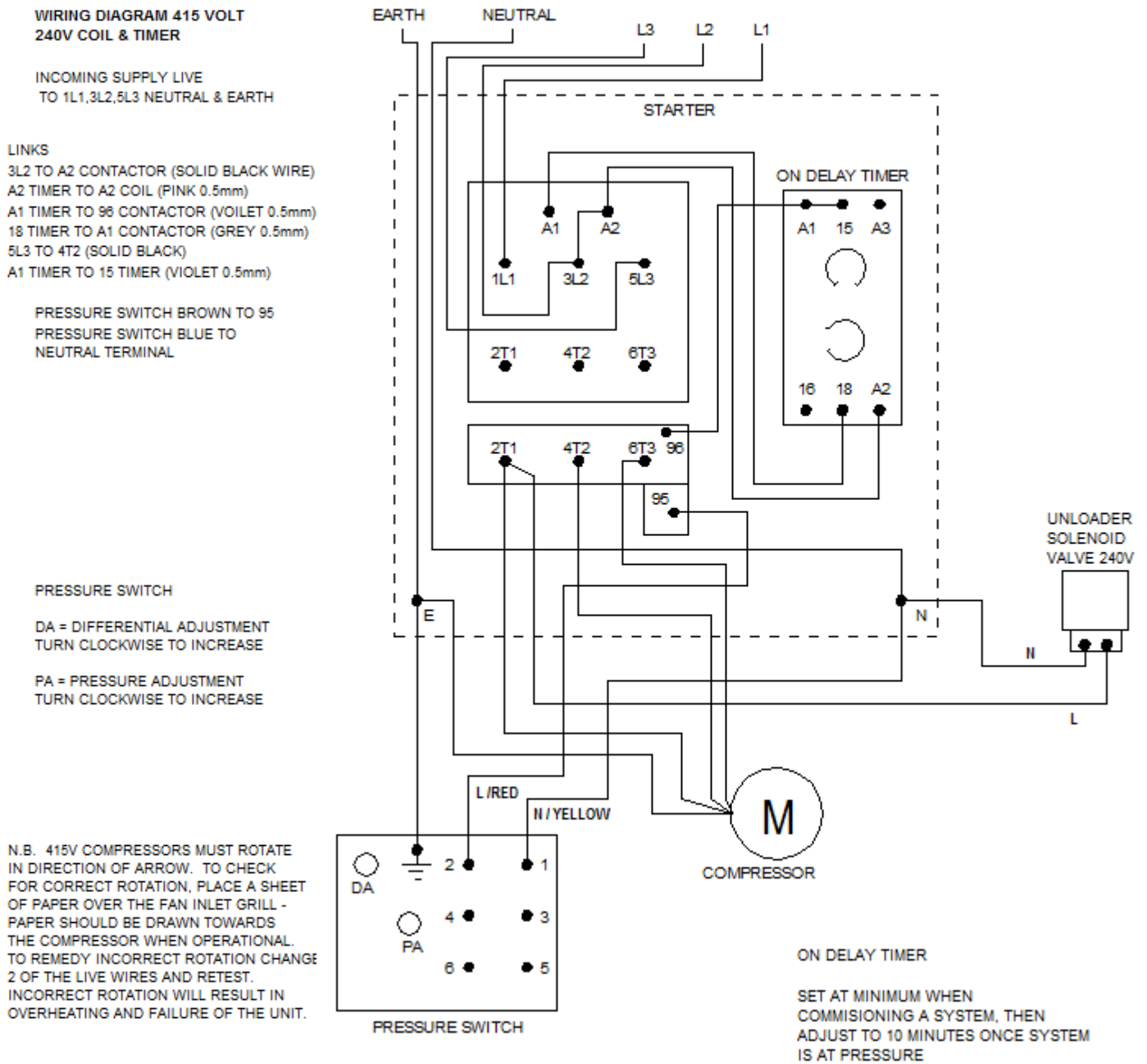
PA = PRESSURE ADJUSTMENT
 TURN CLOCKWISE TO INCREASE

NB: 400v COMPRESSORS MUST ROTATE
 TO PUSH AIR IN DIRECTION OF ARROW.
 TO CHECK, PLACE SHEET OF PAPER OVER
 THE FAN INLET GRILL - PAPER SHOULD BE
 DRAWN TOWARDS COMPRESSOR BODY.
 TO REMEDY INCORRECT ROTATION CHANGE
 2 OF THE LIVE PHASE WIRES AND RETEST.
 INCORRECT ROTATION WILL RESULT IN
 OVERHEATING AND FAILURE OF THE UNIT.



Notes: Wiring colours may be different from those stated for older models
 Based on Danfoss CS-type pressure switch

WIRING DIAGRAM – 400v MODELS WITH ON-DELAY TIMER AND SOLENOID UNLOADER (usually with low pressure Danfoss pressure switch)



Notes: Wiring colours may be different from those stated for older models
 Based on Danfoss CS-type pressure switch
 On-delay timer setting is a suggestion – this may vary across different sprinkler systems

Compressor Specifications (most common models)

	SEP550S	SEP550S/OF	SEP850S	SEP850T	SEP850T.LP	SEP10.3S	SEP10.3T	SEP17.0T	SEP23.0T
Power (Volt)	230	230	230	400	400	230	400	400	400
Motor (kW)	1.5	1.5	1.8	2.2	2.2	2.2	2.2	4.0	5.5
Motor (HP)	2.0	2.0	2.5	3.0	3.0	3.0	3.0	5.5	7.5
Displacement (cfm)	8.5	7.7	9.2	11.1	11.1	14.0	14.0	23.0	29.7
Displacement (lpm)	240	220	260	315	315	400	400	650	820
Est FAD 2 bar (cfm)	5.5	4.2	8.0	8.5	8.5	10.1	10.1	17.7	23.0
Est FAD 2 bar (lpm)	155	125	225	240	240	285	285	500	650
Noise (dB(A))	76	75	76	80	80	77	77	77	77
Without receiver:									
Length (cm)	57	57	57	57	57	80	80	90	90
Width/depth (cm)	31	31	31	31	31	40	40	45	45
Height (cm)	36	36	36	36	36	85	85	90	90
Net weight (kg)	26	25	28	28	28	60	60	65	70
Packed weight (kg)	28	27	30	30	30	75	75	80	85
With receiver:									
Receiver size (litres)	24	24	24	24	24	150	150	200	270
Length (cm)	62	62	62	62	62	139	139	145	150
Width/depth (cm)	36	36	36	36	36	43	43	55	55
Height (cm)	82	82	82	82	82	95	95	98	110
Net weight (kg)	50	50	50	50	50	90	90	120	150
Packed weight (kg)	55	55	55	55	55	110	110	140	170

All information in this table is provided in good faith and may be estimated, approximate and 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 it must be checked before installation.

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