Hydrovane

User Handbook

HV04 - HV07 Models (ACS)

Stationary Air Compressors

GB ST 16048-00 Iss A 04/2003

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Contents

1 Introduction

1.1 Introducing your new Compair UK Limited compressor

Your new Hydrovane compressor has been designed and manufactured to the exacting standards necessary to ensure long-life, reliability and high performance. Compair UK Ltd are world leaders in compressed-air technology using the most modern techniques and plant available to give our customers the following benefits:

- Compact space saving design.
- Easy to position, install and operate.
- Economical to run, inexpensive and simple to service.
- Quiet, smooth unobtrusive operation.
- Proven reliability with the option of extended warranty periods.
- Full support available from world-wide Distributor network.

This user handbook should be used in conjunction with the parts/ service manual.

IMPORTANT !

BEFORE INITIAL START-UP ENSURE THAT THE COMPRESSOR OIL CHAMBER IS FILLED TO THE CORRECT LEVEL WITH A HYDROVANE APPROVED OIL.

DO NOT OVERFILL.

1.2 Customer warranty terms

All compressors, which are serviced by an authorised CompAir UK Ltd Distributor are guaranteed for twelve months from the date of commissioning or eighteen months ex works, whichever is the sooner.

The warranty excludes normal service parts, oil and wear items, dirt ingress, cleaning of filters and fluid drain devices and the tightening of electrical or other connections. Also excluded is the adjustment of pressure switches or the adjustment of any other control device shown in this handbook. Consequential damage of any nature is not covered by the warranty.

'Advance' Five Year Warranty may not be available in all markets. Please refer to your CompAir UK Ltd Distributor for details.

PLEASE NOTE:

Your CompAir UK Ltd Distributor is able to offer a wide range of compressors, dryers, filters and ancillary air-line system products. Their engineers are fully trained and competent in all aspects of compressor and air-system maintenance. If you need any specialist help or service please contact your Distributor quoting the MODEL TYPE and SERIAL NUMBER.

1.3 Product development

CompAir UK Ltd adopt a policy of continual product development. The information in this handbook, whilst fully up to date when issued, may be subject to change without notice.

1.4 Quality standards

CompAir UK Ltd Quality Management Systems are approved to BS EN ISO 9001.

Note: These instructions comply with the latest European Directives regarding content and are valid for machines carrying the CE mark.

1.5 Model range

This handbook relates to all HV04 - HV07 compressors, model types:

HV04 - HV07
V04ACS07-4035D000
V04ACS010-4035D000
V05ACS07-4035D000
V05ACS10-4035D000
V07ACS07-4035S000
V07ACS10-4035S000
V07ACS07-4035V000

This publication refers to compressors with serial numbers:

V04-000001
V05-000001
V07-000001

1.6 Terminology:

Serial Number Segment	Signifies
V	Vane
04, 05, 07	kW motor
AC	Air Centre
S	Standard Control
07, 10	Delivery pressure in bar
40	400, volt
3	3 phase
5	50 Hz
D, S, V	Direct On Line, Star/Delta, Variable Speed
100	European specification (50 Hz)

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2 Safety

2.1 General Health and Safety Precautions

Please read carefully and proceed in accordance with the following instructions before installation, operation, maintenance or repair of the compressor unit.

2.2 The Health and Safety at Work Act, 1974

- In order to comply with your responsibilities under the above act, it is essential that the compressor is transported, positioned, installed, operated and maintained by competent persons in accordance with the instructions in this handbook.
- The standard build of all Compair UK Ltd products are not intended for use in either Explosive or Potentially Explosive Atmospheres as defined in the ATEX Directive 94/9/EC.
- A potentially Explosive atmosphere is an atmosphere which could become explosive due to local and operational conditions.
- The compressor warranty will be invalidated if unapproved spare parts or lubricants are used. Using such items may cause the efficiency and service life of the compressor to be reduced and could create a hazardous condition over which Compair UK Ltd has no control.
- Failure to maintain the compressor correctly, or modifying it without prior approval from Compair UK Ltd, may also create a hazardous condition. This will also invalidate the warranty.
- Read and fully understand the contents contained in the user handbook.
- Ensure that the user Handbook is not permanently removed from the compressor.
- Check that there are no signs of damage and/or oil leaks from the air-end, cooler and associated pipework.
- After completing work, tools and foreign matter should be removed from the compressor and its surrounding area.
- In the unlikely event of a compressor fire, dry powder or carbon dioxide fire extinguishers should be used. Never use water.

2.3 Before Working on Compressor

- Potentially dangerous volt ages are used to power this machine. Do not carry out any work until the isolator is locked in the off position. Fit a safety notice to the isolator advising that work is being carried out and that the isolator must not be switched on. If in doubt then a qualified electrician may remove the fuses and keep in a secure place until work is complete.
- Ensure the compressor has been safely isolated from the main air system and cannot be re-introduced until all work has been completed. Fit a safety notice to the isolation valve advising that work is being carried out.
- Do not undertake any work until the compressor and receiver if fitted, have been relieved of all pressure.
- Wait until the compressors vent down cycle is complete.
- Release any pressure contained in the aftercooler or associated pipework.
- Check that the compressor pressure gauge reads zero. Do not proceed until it does.
- Carefully unscrew the compressor filler plug. If any air or oil escapes before the plug is fully removed stop! Do not remove the plug until all pressure is lost.
- Safety devices fitted to the compressor or air-line system should be checked at regular intervals and replaced if faulty. They should not be tampered with or modified. Non return valves should not be used as isolation devices.
- To ensure the compressor operates safely you must carry out the specified maintenance procedures.
- Only approved lubricants should be used for flushing purposes.
- Extreme caution should be taken if the compressor has been subjected to severe operating temperatures or fire. Certain components may contain fluoroelastomer materials and under these conditions can leave extremely corrosive residues. Severe burns and permanent skin and tissue damage can be a result of skin contact.
- The Health and Safety information contained in this Handbook is only intended to give general guidelines.

2.4 When Operating the Compressor

- When in automatic mode the compressor may re-start without warning.
- If an automatic re-start device is fitted (allowing the compressor to start when power is re-applied), or operation is controlled from a remote location, additional warnings will be required.
- Do not remove any plugs or release pipework when the compressor is running.
- Do not attempt to open the starter enclosure while the compressor is operating.
- Beware of hot surfaces, both the air-end and electric motor are designed to run at elevated temperatures.
- Compressed air is potentially dangerous and can be fatal if misused. Do not allow compressed air jets, discharged from any pipe or nozzle, to make contact with your body.
- Wear safety glasses and suitable clothing when using, or working in an area where compressed air is being used.
- Hazardous vapours/fumes can be produced if compressed air is used to remove chemicals, cleaning agents and lubricants from equipment and components. Suitable respiratory and extraction equipment may be required in these circumstances. Never use compressed air for cleaning personal clothing.
- Do not use air directly from compressors for breathing purposes. If the air is to be used for human consumption then it must be subjected to further treatment to ensure that the levels of contaminants, odour and moisture meet the requirements of BS 4275 1974.
- We recommend that the air supply to hand held air guns is regulated to a lower pressure (refer to local Health and Safety regulations).
- Do not insert any object or part of body through any opening of the compressor enclosure. Serious personal injury and/or damage may result.
- Never run the compressor when any covers or guards are missing, unless advised to do so in this handbook.

2.5 Potential Oil Health Hazards

This section relates to Fluid Force oil. For other lubricants refer to the Health and Safety Instructions issued with the relevant product.

- There are no significant hazards associated with this product when properly used and in the application for which it was designed. Frequent and/or prolonged skin contact may give rise to skin irritations and it is recommended that protective gloves are worn. The carcinogenic action of mineral oils should be brought to the attention of all users. *
- The oil may be hot so take care when carrying out oil changes.
- Do not keep oily rags in pockets or wear contaminated clothing. Do not inhale fumes or vapours. Do not swallow. Avoid eye contact.
- Always wash hands after use and before eating, drinking and smoking.
- Ingestion - Do not induce vomiting because of the risk of aspiration. Wash mouth out with water. Give 1/2 pint milk. Seek immediate medical attention.
- Skin Contact - *Mildly irritating. Remove by wiping. Wash with soap and water. Apply emollient cream.
- Eye Contact - *Mildly irritating. Flush with copious amounts of warm water. Seek medical advice if necessary.
- Aspiration - If there is any suspicion of aspiration into the lungs (for example during vomiting) admit to hospital immediately.
- Inhalation - Remove from exposure into fresh air. If necessary give artificial respiration or oxygen. Seek medical advice.
- Pressure injection - Obtain immediate medical attention, even if injury appears minor.
- Spillage - Soak up with absorbent clay.
- Waste Disposal - Oil, condensate, filter elements etc. should be disposed of in accordance with local regulations. Do not allow oil to contaminate water supplies.

*** See Cautionary Notice SHW 397 'Effects of Mineral Oil on the Skin' and MS(B) 5 'Skin Cancer Caused by Oil' published by the Health and Safety Executive.**

2.6 Warnings, Cautions and Notes

Warnings

WARNING ! is used in the text of this handbook to identify specific hazards which can cause injury or death. This type of hazard is identified below.


Risk of electric shock


Risk of hazard or danger


Risk of hot surfaces


Eye protection must be worn


Dust protection must be worn


Warning pressurised vessel


Warning pressurised component or system


Warning unit is remotely controlled and may start without warning


Read the instruction manual


Do not operate the machine without the guard being fitted


Warning do not start the machine without consulting handbook


Lifting point


Direction of rotation

Cautions

CAUTION ! is used in the text of this handbook to identify incorrect procedures which can cause damage to the compressor.

Notes

Note: is used in the text of this handbook to draw attention to specific points of importance.

Compair declines all liability in the event of material damage or bodily injury resulting from negligence in the application of these precautions, from non-observation or lack of elementary supervision in respect of handling, operation, servicing or repair, even if not expressly stated in this instruction notice.

3 Product Information

3.1 Technical Data

Model Number	HV04	HV05	HV07	HV07RS
PERFORMANCE				
F.A.D. litres/sec (cfm) @ 7 bar	11 (24)	15 (32)	21 (44)	0 - 20 (0 - 42.5)
F.A.D. litres/sec @ 10 bar	9 (20)	12 (25)	17 (35)	
Noise Level - dBA	66	66	67	
Power - kW (hp)	4 (5.5)	5.5 (7.5)	7.5 (10)	
Starter Type - Automatic	DOL	DOL	SD	
Starter Type - Inverter	N/A			Soft Start
Drive Type	Direct			
Operating Controls	Continuous Run, Automatic Stop/Start			Soft Start/ Variable
Compressor Rotation Speed - rev/min (60 Hz)	1460			1050 - 1980
Oil Capacity - litres	3			
Ambient Temperature Range °C	0 to 45			
Maximum Relative Humidity %	85 non-condensing			
Air Discharge Temp - °C (above ambient)	<6	<8	<10	
FACTORY SETTINGS				
Minimum Pressure Valve - bar	5.5 to 6.0			
Pressure Switch, Max - bar	7.5 or 10.5			
Pressure Switch, Differential - bar	1.0 to 1.5			
Pressure Switch, anti re-start, Max - bar			3.0	
Pressure switch, anti re-start differential- bar			2.0	
Servo Valve - bar	8.0 or 11.0			9.0
Vacuum Relief Valve	Half turn anti - clockwise			
INSTALLATION				
Air Outlet Size - Rp	¾			
Minimum Room Volume - m^3	15			
Air Inlet/Outlet Area - m^2	0.3			
Ventilation Rate - m^3/h	2000			
Cooling Air Flow m^3/h (cfm)	2209 (1300)			
Std Ambient Temp Range - °C	0 - 45			
Recommended Air Receiver Capacity - L	250			
ELECTRICAL				
Starter Panel IP Rating	5.5			
RS Inverter IP Rating				4.1
380 V 60 Hz				
Line Current - Amps	12.0		16.5	
Cable Size - mm	2.5		4	
Fuse Size - Amps	20M32		32	
Phase Current - Amps			9.5	
400 V 50 Hz				
Line Current - Amps	13.0		18	
Cable Size - mm (awg)	(12)		4(12)	4
Fuse Size - Amps	20M32		25	25
Phase Current - Amps			10.4	
440 V 60 Hz				
Line Current - Amps			20.5	
Cable Size - mm			4	
Fuse Size - Amps			32	
Phase Current - Amps			11.8	

Model Number	HV04	HV05	HV07	HV07RS
460 V 60 Hz				
Line Current - Amps				18
Cable Size - awg				12
Fuse Size - Amps				25
Phase Current - Amps				

4 Transportation and Handling

4.1 Introduction

Ensure that all means of transportation and/or lifting equipment are adequate for purpose and are rated to exceed the full load of the unit.

A fork lift or pallet truck are the most suitable means of transportation, pay particular attention to ensure stability to prevent the unit tilting over.

4.2 Packing Methods Fig. 1 & 2

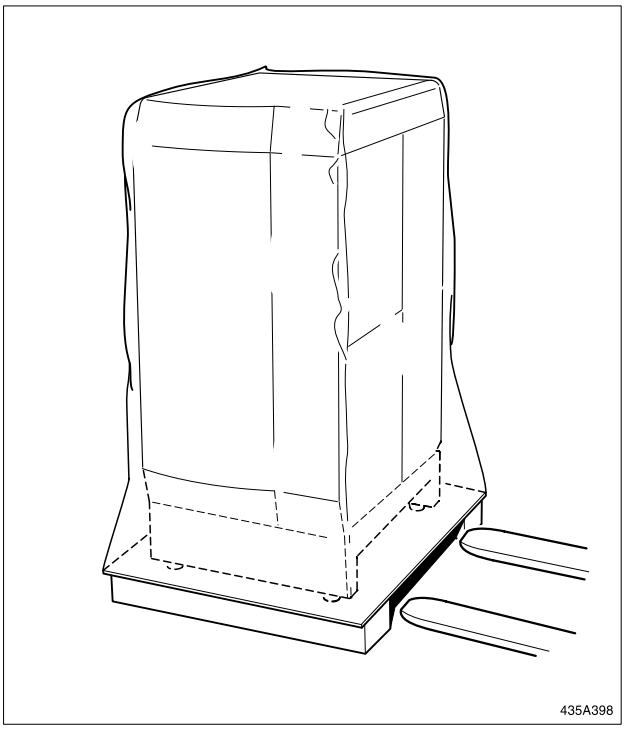


Fig. 1 - UK Packing

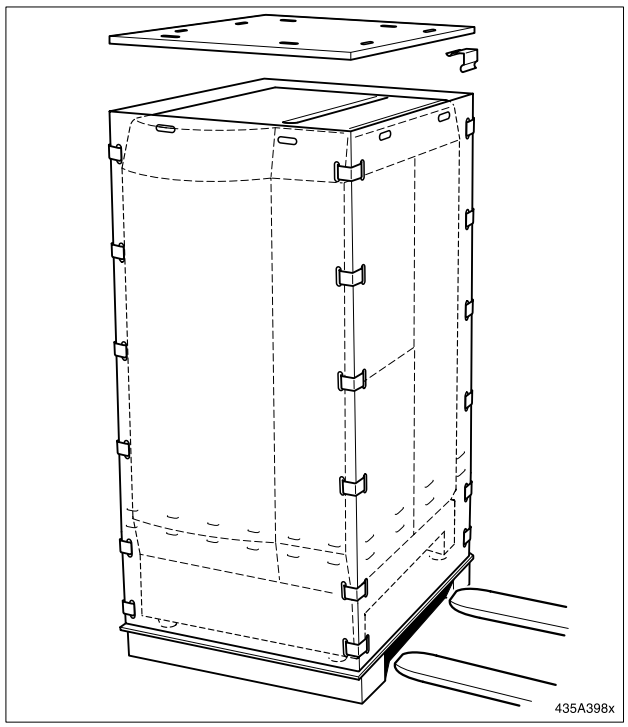


Fig. 2 - Export Packing

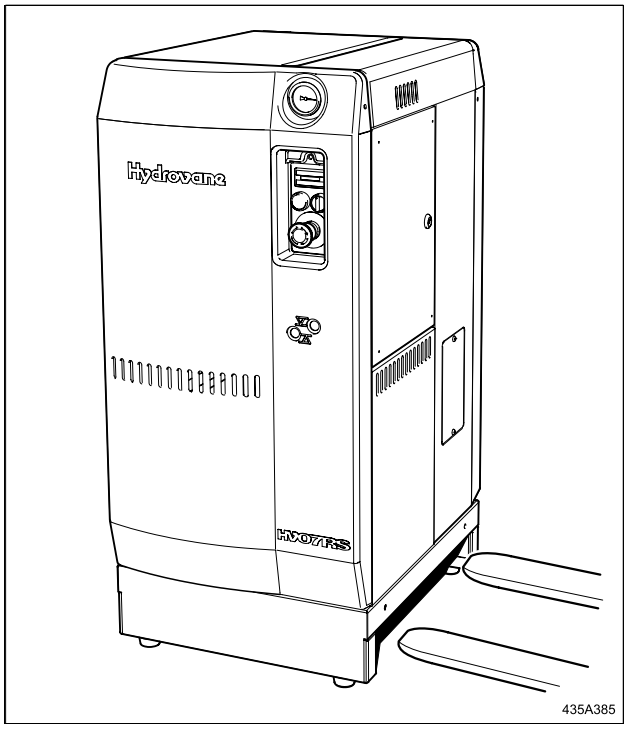


Fig. 3 - Lifting

4.3 Lifting and Transportation Fig. 3

Units are supplied in recyclable packaging, either remove the clear polythene sheeting or clips that retain the wooden upper sections to gain access.

The specialised base pallet can be used to transport the unit to the point of installation before removal, we recommend that two people should carry out this operation.

Remove four bolts from the underside of the base pallet, slide the unit sideways just sufficiently to allow two resilient mountings to be fitted to the base members front and rear.

With care, slide the unit gently from the pallet until the resilient mountings rest on the floor, with the unit tilted slightly slide the pallet from the underside and remove.

While the unit is held in this position fit the other two resilient mountings to the other side of the front and rear base members.

Damage to the mountings may occur if you attempt to slide the unit into position, lift and place the compressor in the desired location.

4.4 Weights and Dimensions Fig. 4

Table 1 - Significant Dimensions

Compressor			
Ref.	**Feature**	**Unit**	**HV04-07**
A	Width	mm	470
B	Length (overall)	mm	680
C	Height (overall)	mm	1050
W4	Weight (VO4 & V05)	kg	152
W5	Weight (VO7)	kg	156
W7	Weight (VO7RS)	kg	160

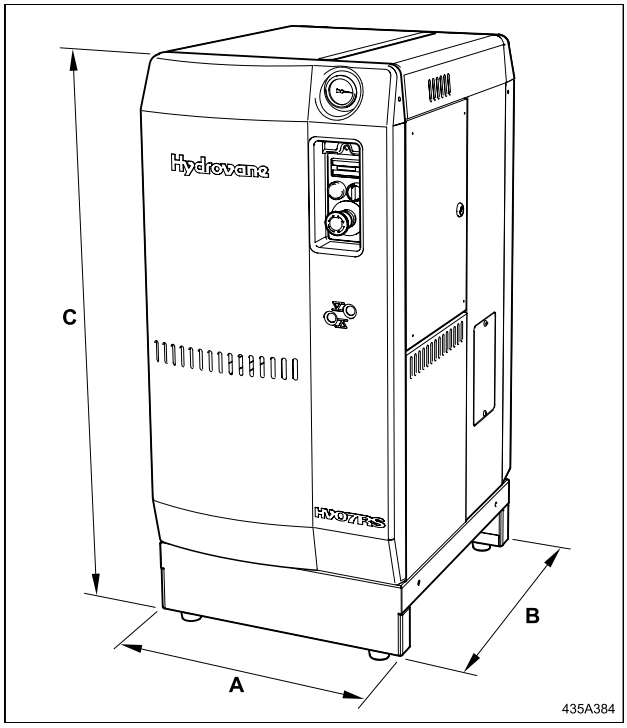


Fig. 4 - Dimensions

4.5 Air Dryer Unit Fig. 5

Available as an optional extra is an integrated thermal mass refrigerant dryer and filter module, designed so that any of the models can bolt onto it, creating a self contained air centre retaining the footprint, ensuring a supply of high quality air.

Consult your local dealer for details.

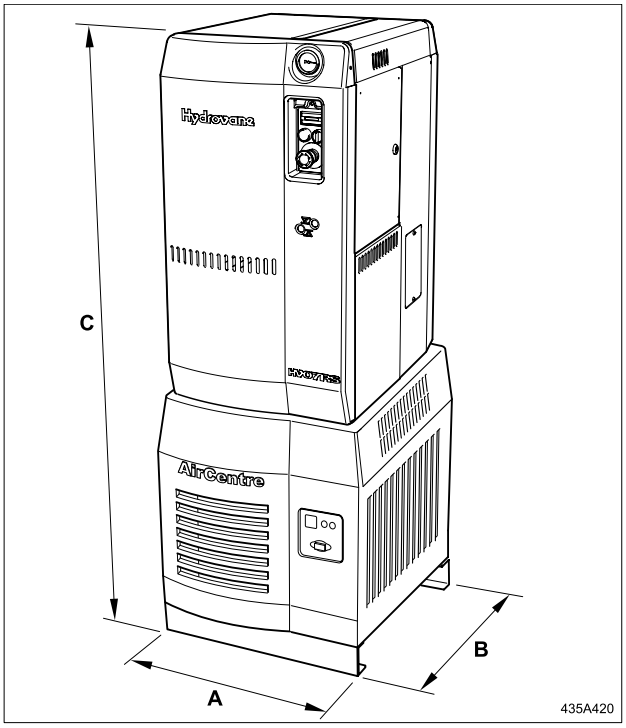


Fig. 5 - Unit Mounted on to Air Dryer (Aircentre)

Table 2 - Aircentre Dimensions

Compressor			
Ref.	**Feature**	**Unit**	**HV04-07**
A	Width	mm	520
B	Length (overall)	mm	800
C	Height (overall)	mm	1620
W4	Weight (VO4 & V05)	kg	242
W5	Weight (VO7)	kg	246
W7	Weight (VO7RS)	kg	250

5 Installation and Commissioning

5.1 Positioning Your Compressor - Basic Requirements

Position the compressor in a room of adequate size on a firm surface, level in both planes within five degrees of the horizontal. Ensure the area has sufficient load-bearing capacity, normally it is not necessary to bolt the unit down.

Sufficient access for all routine service procedures should be provided around the unit that allows easy viewing of the control panel and pressure gauge.

Site the compressor as far as possible from sources of dirt, coarse solids, abrasive particles, steam, liquids and gaseous impurities. Ensure adequate weather protection is provided if sited outdoors.

Any air connection made to the compressor outlet must be flexible as the base incorporates resilient mountings.

5.2 Ventilation Fig. 6

Position the compressor in a well ventilated location. Do not restrict the air-flow around the compressor. Do not allow the hot air discharge to re-circulate into the compressor or cooler intake.

Any cooling-air inlet (A) should be positioned low allowing unrestricted air-flow to the compressor intake. The warm-air outlet (B) should be positioned high, and well away from the inlet, to ensure a positive cooling air-flow through the compressor.

To achieve this, ensure the compressor is installed in a room of the correct size and with sufficient ventilation. The compressor must not be operated in ambient conditions other than indicated in section “Technical Data” on page 9.

For maximum efficiency and reliability, the compressor should be operated in a moderate ambient temperature.

If the ambient temperature frequently falls below 0°C consult your CompAir UK Ltd Distributor. A different grade of oil may be required.

Air ducting, if fitted, must not cover or restrict the cooling air flow of the compressor. Total resistance of the system must not exceed 5mm w.g. (0.2in. water gauge). If the resistance is expected to be greater than 5mm w.g. then fan assistance will be required.

5.3 Accessibility Fig. 7

Sufficient clearance must be allowed on all sides of the compressor for servicing purposes. The minimum clearances required are shown on the diagram.

5.4 Electrical Connections

WARNING ! 

CONNECTION TO, OR INSTALLATION OF, AN ELECTRICAL POWER SUPPLY MUST ONLY BE CARRIED OUT BY AUTHORISED AND QUALIFIED ELECTRICIANS. THEY MUST FULLY UNDERSTAND AND ADOPT CORRECT AND SAFE WORKING PRACTICES. ALL ASPECTS OF THE INSTALLATION MUST MEET THE WIRING REGULATIONS PRESENTLY IN PLACE.

Before connecting to the mains electrical supply ensure that the system can sustain the additional electrical load. To ensure reliable low resistance joints, make sure that your incoming supply cables are firmly secured to the starter terminals and that they are of the correct cross sectional area.

Refer to starter and circuit diagrams before starting work. Note carefully the instructions relating to earthing, fuses and size of cable (refer to technical data).

Fuses to BS 88 (Type gG) must be used to protect the compressor starter, refer to the sizes specified in “Technical Data” on page 9 .

Circuit breakers are not recommended since they may not fully protect the starter contacts in an overload condition.

5.5 Electrical Installation Fig. 8

WARNING ! 

BEFORE STARTING WORK, ENSURE THAT THE MAIN-LINE FUSES HAVE BEEN REMOVED FROM THE DISTRIBUTION BOARD. PRECAUTIONS SHOULD BE TAKEN TO PREVENT THEM BEING REFITTED UNTIL THE INSTALLATION IS COMPLETE.

(a) The starter must be connected to the mains electrical supply via a lockable, switched and suitably rated fused isolator. The isolator should be positioned as near as possible to the compressor with clear unrestricted access.

(b) To access the starter remove the top panel, release two quarter turn fasteners mounted horizontally at each side of the front panel. Release another two fasteners mounted vertically at the rear of the top panel and lift clear of the unit.

(c) Pass the incoming cable through the entry hole on the rear left hand side of the vertical plate, continue through the bulkhead to enter the rear of the starter enclosure using suitable cable glands.

(d) Alternatively and essential for RS units, cable entry can be made through the base and vertically upwards into the underside of the starter enclosure.

(e) Unlock the starter door with the key provided and connect the three mains supply cables to the contactor terminals marked L1, L2 and L3, connect the earth cable to the earth pin E.

(f) Cable sizes specified are the minimum cross section “Technical Data” on page 9 to suit a typical installation. If the compressor is located a long way from the isolator and/or the ambient temperature exceeds 35°C then the cable size should be increased.

(g) Refer to IEE Regulations for electrical equipment installed in buildings to determine the size required, pay particular attention to the circuit diagrams provided.

(h) Check that the transformer fuse is positioned to suit the supply voltage of the installation.

(i) Ensure all electrical connections are tight, high voltage supply to contactors and incoming terminals are critical.

(j) Close the starter door, replace the top panel, switch the isolator on.

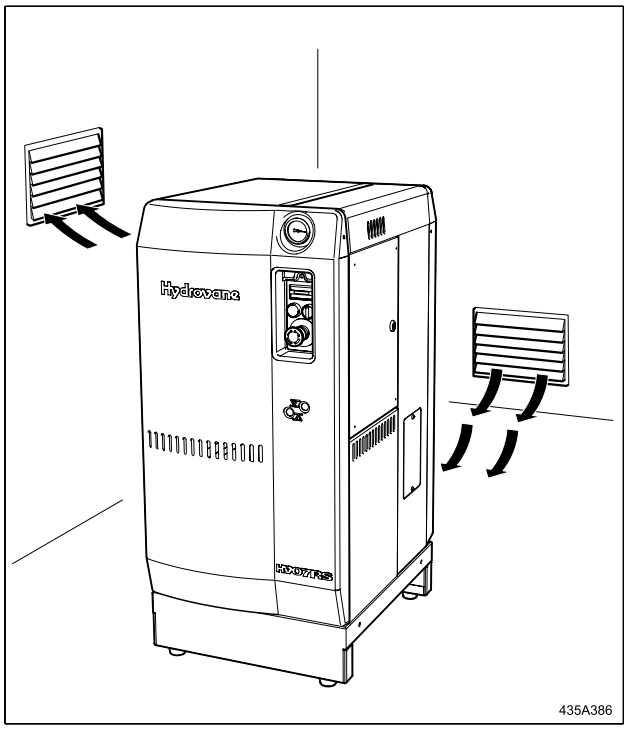


Fig. 6 - Ventilation

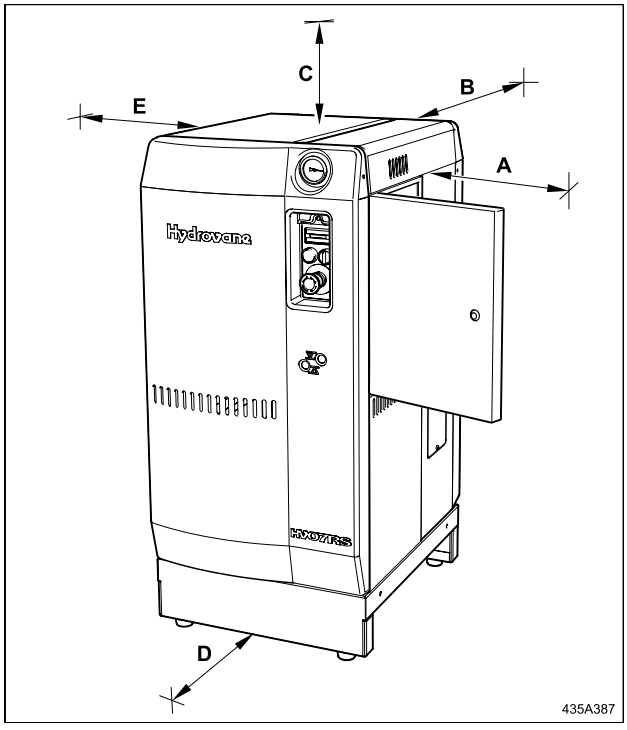


Fig. 7 - Accessibility

Table 3 - Accessibility

Dimension	Units	Distance
A	mm	1000
B	mm	1000
C	mm	1500
D	mm	1000
E	mm	1000

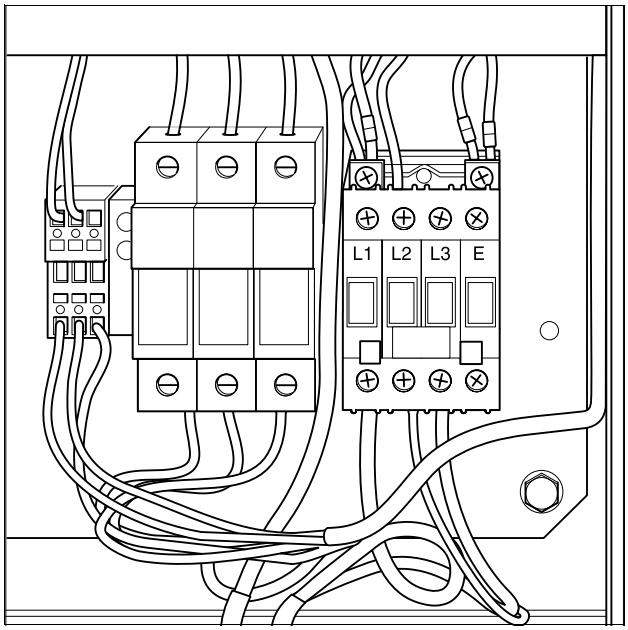


Fig. 8 - Starter

5.6 Check Direction of Motor Rotation

WARNING !

READ HEALTH AND SAFETY PRECAUTIONS BEFORE STARTING COMPRESSOR.

(a) Ensure that the compressor is filled correctly with approved oil (Fluid Force Red 2000) and that all plugs are re-fitted securely.

(b) With the mains isolator on, select either manual (continuous run) mode position (i) or the off position (o) for variable speed (RS) machines.

(c) The cooling fan in the rear of the unit can be used as a visual aid to determine the correct rotation of the compressor.

(d) To view the cooling fan remove the cabinet filter from the lower half of the rear panel, the cooling fan can be viewed through the mesh grill.

(e) Press the illuminated amber reset/start button mounted in the control panel, compressor rotation is correct if the cooling fan rotates in a clockwise direction.

(f) Rotation of the compressor is clockwise as viewed from the intake end, this is in the opposite direction to the normal clockwise rotation when viewed from the drive end.

If rotation is **correct**, the compressor pressure gauge will immediately rise, for RS machines a momentary power supply will rotate the cooling fan.

If rotation is **not correct** the compressor pressure gauge will not rise, for RS machines the momentary power supply will rotate the cooling fan in an anti-clockwise direction.

CAUTION ! If direction of rotation is incorrect.

Stop the compressor immediately, serious damage will occur if the motor is allowed to run in reverse!

WARNING ! 

IF DIRECTION OF ROTATION IS INCORRECT, STOP THE COMPRESSOR AND LOCK THE ISOLATOR IN THE OFF POSITION. FIT A SAFETY NOTICE TO THE ISOLATOR ADVISING THAT WORK IS BEING CARRIED OUT ON THE COMPRESSOR.

- Open the starter door with the key provided to gain access to the starter terminals.
- Change over any two of the incoming cables connected to the starter terminals L1, L2 & L3 (Qualified person only).
- Close the starter enclosure door and lock with the key provided to prevent unauthorised access.
- Remove the safety notice and switch the mains electricity supply on.
- Restart the compressor and verify that direction of rotation of both the compressor and cooling fan are correct.
- Replace the cabinet filter in the rear panel with the direction arrow pointing inwards towards the cooling fan.

5.7 Regulated Speed Compressor Installation

The compressor should be installed generally as instructed for a standard fixed speed compressor of the same power (kW) rating.

The installation should be completed by a Compair authorised distributor and must comply with current wiring regulations.

Electrical supply fuse sizes are the same as for standard fixed speed compressors of the same power (kW) rating. Alternatively, a circuit breaker of suitable size and with motor starting characteristics may be used to protect the installation.

The maximum starting current under all starting conditions will not exceed 150% motor full load current and will generally be no more than 100% full load current.

The installation must be earthed in accordance with local regulations. The use of RCD's is not recommended.

Water drain, filters or dryers fitted downstream of the compressor discharge must be correctly sized to avoid excessive flow restrictions to ensure stable operation of the speed control system.

5.8 RS Operation with Other Compair Vane Compressors

(a) Compair RS compressors may be operated efficiently in conjunction with other Compair vane compressors fitted with automatic stop-start control.

(b) Operation in conjunction with one other Compair vane compressor is simply achieved by adjusting the RS target pressure to midway between the maximum and minimum pressure settings of the other compressor. The RS compressor will automatically assume the lead compressor role.

(c) The use of the Compair 'SmartBox' is recommended when operating with more than two Hydrovane compressors.

Important Note: If the RS compressor is operated with other Hydrovane standard single speed compressors feeding a common pressure system the maximum target pressure of the RS compressor must be limited to the lowest maximum pressure of the single speed machine(s).

No attempt must be made to increase the operating pressure of the single speed machine(s).

5.9 Positioning of Pressure Transducer

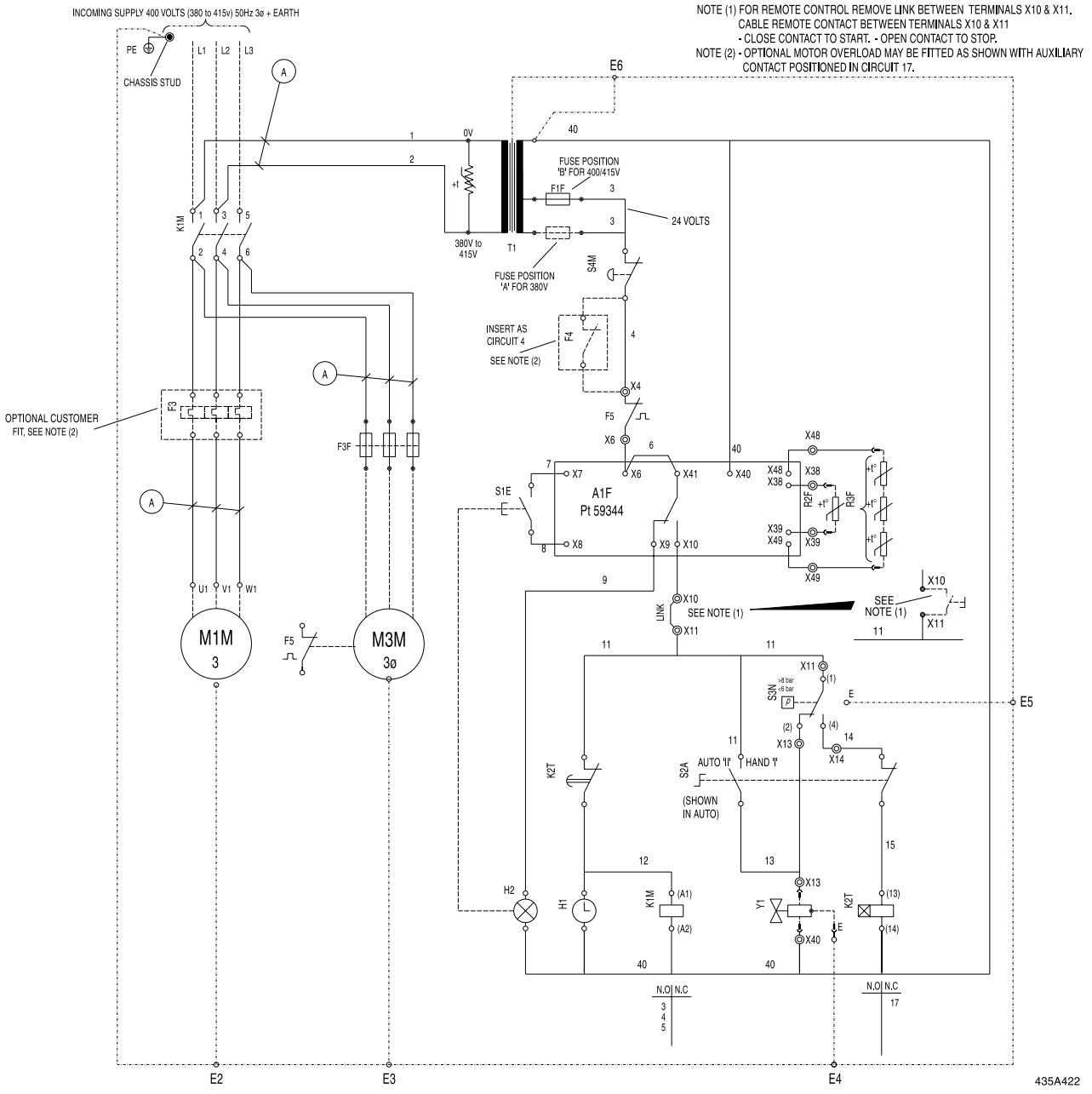
(a) The pressure transducer sensing point is located in the MInimum Pressure Valve Housing adjacent to the outlet from the compressor; this position is suitable for the majority of installations.

(b) If the pipework from the compressor to the system is restricted or prone to pressure fluctuation the pressure transducer signal may create excessive response from the speed control unit leading to rapid speed changes and/or rapid stopping and starting of the motor.

(c) Should this condition occur re-locate the pressure transducer sensing point further downstream (e.g. to a manifold or ring main) where restriction/pressure fluctuations are at a minimum.

(d) If the installation includes a receiver, consideration should be given to piping the receiver pressure to the transducer.

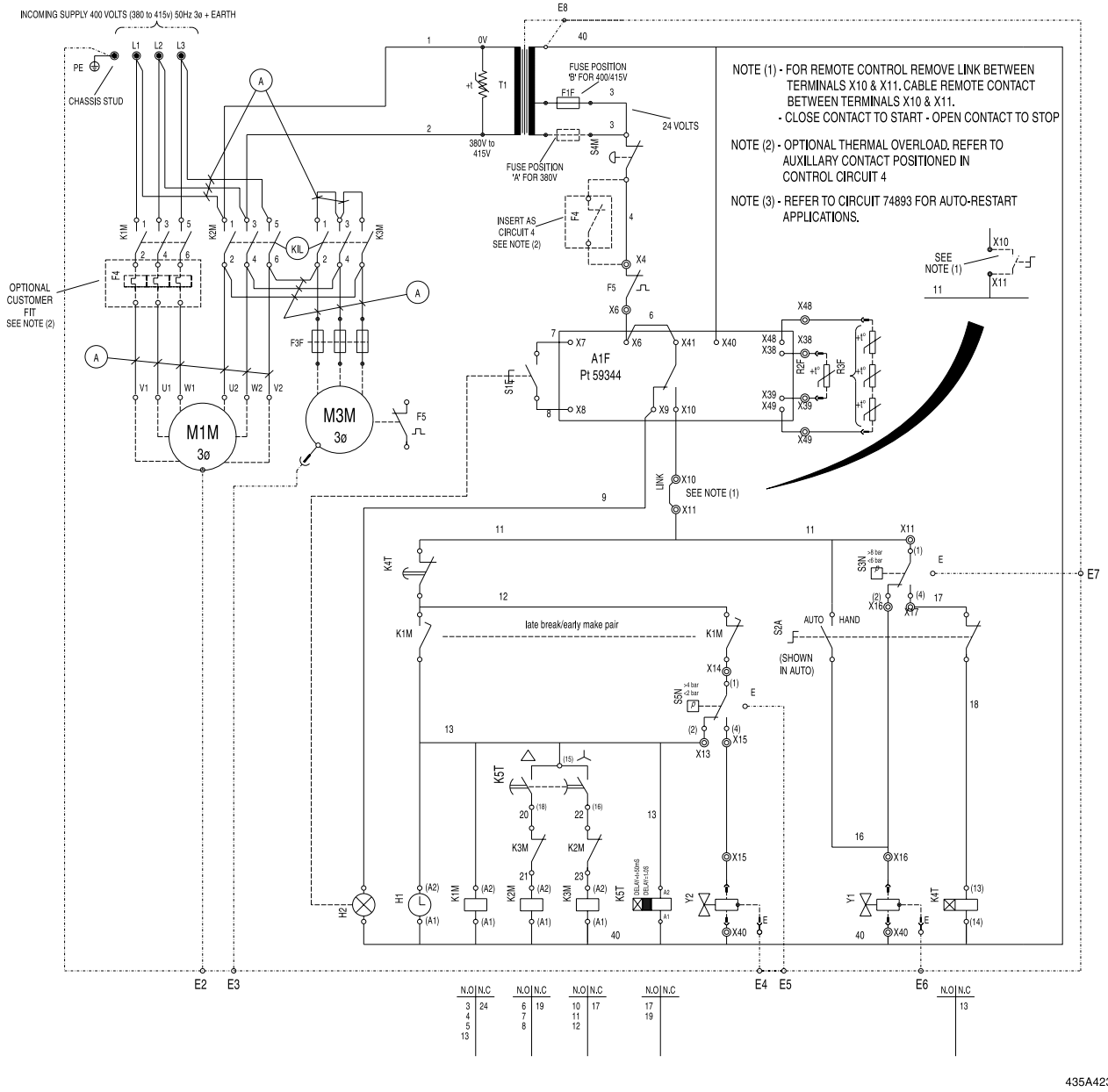
5.10 Wiring Diagrams



Starter type: 34687. Cct diagram 75049 Iss D

A1F	Over Temperature Control PCB	M3M	Cooling Fan Motor
F1F	Fuse - 1A(T) 250V - IEC127	R2F	Compressor Over-temp Thermistor
F3F	Fuse - 2A(T) 500V - EN 60269	R3F	Motor Over-temp Thermistors
F4	Thermal Overload	S1E	Start/reset Push button
F5	Fan Thermal Switch	S2A	Auto/manual Selector Switch
H1	Hours Counter	S3N	Line Pressure Switch
H2/S1E	Combined Ind Lamp ‘r’(Amber) / Start/reset Push button	S4M	Emergency Stop / Stop Switch
K1M	Main Motor Contactor	T1	Control Transformer 24v secondary
K2T	Run On Timer	Y1	Vent Solenoid Valve N.O.
M1M	Main Drive Motor		

Fig. 9 - Circuit Diagram - Up to 5.5kW 400V 50Hz DOL



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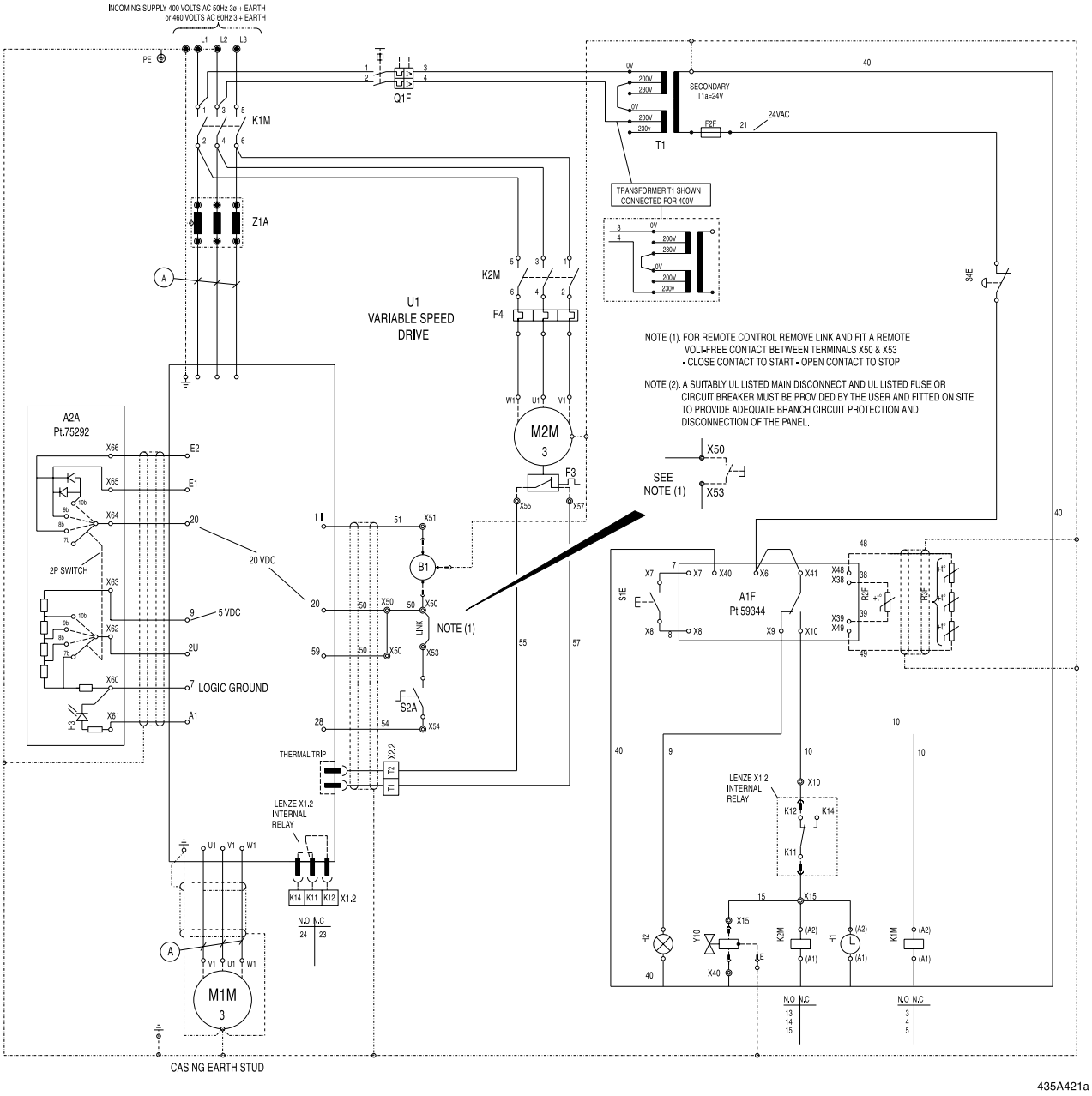
Starter Type 34682. Cct Diag 74904 Issue C

A1F	Over-temp Control PCB	M1M	Main Drive Motor
F1F	Fuse - 2A(T) 250V - IEC127	M3M	Cooling Fan Motor
F3F	Fuse - 2A(T) 500V - EN 60269	R2F	Compressor Over-temp Thermistor
F4	Thermal Overload	R3F	Motor Over-temp Thermistor
F5	Cooling Fan Motor Thermostat	S1E	Start/Reset Push button
H1	Hours Counter	S2A	Auto/Manual Selector Switch
H2/S1E	Combined Ind Lamp 'r'(Amber) / Start/reset Push button	S3N	Line Pressure Switch
K1M	Line Contactor	S4M	Emergency Stop/Stop Switch
K2M	Delta Contactor	S5N	Compressor Pressure Switch
K3M	Star Contactor	T1	Control Transformer - 24V Secondary
K1L	Mechanical Interlock (K2M to K3M)	Y1	Vent Solenoid Valve N.O.
K4T	Run-On Timer	Y2	Rapid Vent Solenoid Valve N.C.
K5T	Star-Delta Timer		

Fig. 10 - Circuit Diagram - 5.5/7.5kW 400V 50Hz S/D



435A421a

Starter Type 34756. Cct Diag 75263 Issue B

A1F	Over-temp Control PCB	M1M	Main Drive Motor
A2A	Pressure selector/alarm PCB	M2M	Cooling Fan Motor
B1	Pressure Transducer 4-20mA, 10--36Vdc	Q1F	Circuit Breaker - 2 Pole, 6A
F2F	Fuse 2A(T) IEC127	R2F	Compressor Over-temp Thermistor
F3	Fan Over-temp Switch	R3F	Motor Over-temp Thermistors
F4	Overload Fan Motor	S1E	Reset Push button Switch
H1	Hours counter	S2A	On/Off Selector Switch
H2	Indicator Lamp ‘r’(Amber neon)	S4E	Emergency Stop Switch
H3	Alarm Lamp (red LED) on A2A	S5P	compressor Control Pressure Switch
K1M	Isolating Contactor	T1	Control Transformer - 24V Secondary
K2M	Fan Motor Contactor	U1	Variable Speed Drive. Lenze E82V752K4B
K2A	Relay Module - MURR 52001, 24VAC, 17mA	Y10	Vent Solenoid Valve - N.O.
		Z1A	3 Phase AC input Choke (Optional)

Fig. 11 - Circuit Diagram - 7.5kW 400V 50Hz Variable speed

6 General Description

6.1 Compressor Assembly Fig. 12

The unit comprises of a vertical single stage, oil flooded, rotary, sliding vane compressor driven by an electric motor mounted to a base. It is supplied with control panel, starter, and combination oil cooler/air after cooler with all accessories piped in and electrically connected.

The intake cover (A) is assembled directly to the compressor (B) which is fitted to the flange face (C) of drive motor (D). The rotor of the compressor is mounted on the drive shaft of the motor. The motor is bolted to the vertical column supported by the base.

An electrically driven, impellor type, horizontally mounted fan (S) is located below the cooler matrix. (Q). This forces cooling air through the combination oil cooler/air after cooler matrix. The compressor controls (G) are mounted on the end of the starter enclosure (H), and are visible through an aperture in the front panel.

For RS models the inverter drive (L) with the optional extra keypad control is mounted in the top of the vertical column, underneath the top trim panel.

The compressor air intake is protected by an air intake filter (U) and the oil system by oil filter (J). An oil level sight glass assembly (V) is mounted on the end of the starter unit (H)

Oil is drained from the air-end and cooler by removing drain plug (K) and opening the drain tap.

The compressor pressure gauge (F) is visible through an aperture in the front panel.

The oil separator (E) is located on the top of the machine and ensures that the air delivered through the minimum pressure valve has an oil cleanliness of less than 2 ppm (parts per million by weight). The air is delivered through the air delivery pipe (P) to the after cooler.

The oil supply to the cooler is through oil feed pipe (R) with the cool oil return via oil return pipe (M). To ensure the compressor reaches the optimum operating temperature quickly a thermal by-pass valve (N) allows the oil supply to by-pass the cooler on initial start up.

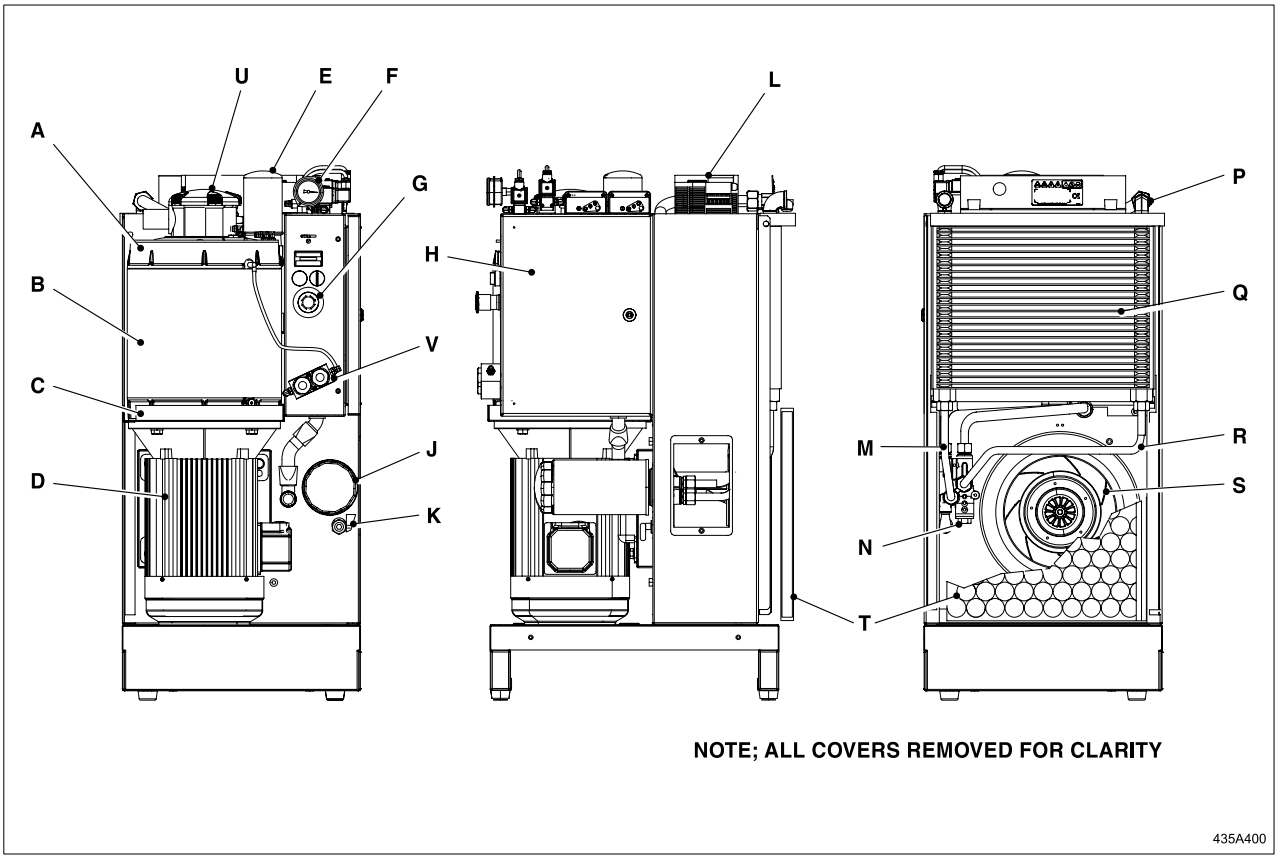


Fig. 12 - Compressor Assembly

6.2 Control Systems

Compressors can be operated either in automatic Stop/Start mode or in continuous run mode.

Automatic Stop/Start Mode

This is the normal mode of operation giving maximum efficiency and economy. Recommended for applications with fluctuating air demands. With the auto mode selected the compressor will load/unload and stop/start automatically in response to air demand.

If the motor restarts more than ten times per hour or continually restarts within thirty seconds of stopping then the run-on timer may be increased to reduce frequency. If after adjustment the condition persists, switch to continuous run mode.

Continuous Run Mode

Recommended where excessive stop/starts occur and/or when there are rapid changes of pressure in the air-line system. When the continuous run mode is selected the compressor will continue to operate, supplying air from full to zero flow rates.

Regulated Speed Operation

Regulated speed compressors are automatic stop/start operation only. If the unit is subject to excessive stop/starts, consult Compair for the possibility of fitting a continuous running option.

The Compair Regulated Speed Vane Compressor has been designed to save energy and operating cost when compared with a fixed speed compressor of similar size. The saving is achieved by automatically regulating the compressor speed to precisely match the compressor output to the system flow and pressure requirements.

The system pressure is measured and converted into an electrical signal by an integral pressure transducer. The compressor Variable Speed Drive (VSD) unit senses the transducer signal and adjusts the electric motor speed to maintain a constant ‘target’ pressure. If the system pressure rises above the target pressure the electric motor speed will decrease, conversely, if the system pressure falls below the target pressure the motor speed will increase. The speed will vary between minimum and maximum limits dependent upon flow requirements.

7 Operating Parameters

7.1 Ambient Temperature

The compressor is designed to operate within a temperature range of 0°C and 45°C.

If the ambient temperature frequently falls below 0°C then consult your CompAir UK Ltd Distributor.

7.2 Operating Temperatures

Your compressor is designed to give optimum performance and trouble free service life when the bulk oil temperature is maintained between 65°C and 85°C.

Certain operating conditions sustained over a period of time may cause problems that effect the performance and reliability of this compressor.

Problems may occur when compressors run for short periods on low air demand where they don't reach normal operating temperatures.

Prolonged use under these conditions can cause condensation build up within the compressor and may eventually lead to emulsification of the oil.

Normal operating temperatures are reached in typically 15/20 minutes, to purge condensate from the compressor a longer running period with a high air , usually a minimum of 60 minutes, will be required.

Conditions or applications which prevent the compressor temperature stabilising between these parameters should be avoided.

Consult your local distributor or CompAir UK Redditch if you have any particular concerns about operational characteristics of your compressor.

7.3 High Operating Temperatures

Some of the reasons for high compressor oil temperatures are:

- Low oil level.
- Blocked oil cooler or cooler flow restrictions.
- Wrong type or grade of oil.
- High ambient temperature.
- Cooling fan stopped or operating incorrectly.

If the bulk oil temperature frequently reads between 90°C -100°C then Fluid Force HPO should be used.

Note: Compressor will stop automatically if temperature rises above 110°C.

7.4 Oil Life of Fluid Force Red 2000

The standard oil is Fluid Force Red 2000, other Compair oils (Fluid Force Clear and Fluid Force HPO) are available.

Consult your local Compair dealership for technical information.

Fluid Force Red 2000	
Bulk Oil Temperature (Degree Celsius)	**Maximum Oil Change Period (Hours Run)**
Up to 90	2000
90 - 95	1500
95-100	1000
100 - 110	500
Over 110	No guaranteed service life

7.5 Oil Level Fig. 13

The oil level should be checked by viewing the oil level in the sight glass.

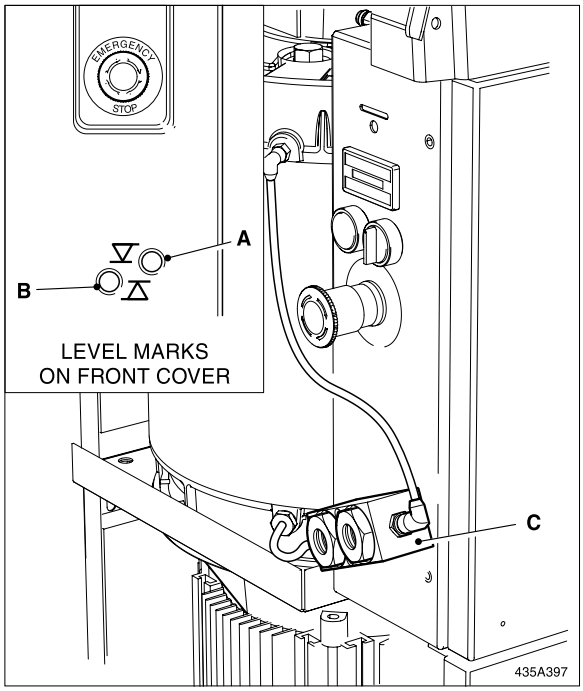


Fig. 13 - Oil Level Sight Glass and Levels

The sight glass assembly (C) is mounted on the end of the starter panel, and is viewable through an aperture in the front trim panel.

The two glass windows show the oil level for different states of operation with the level marks on the trim panel indicating as follows:

A. This indicates the maximum oil level when the machine is stopped and the oil allowed to settle.

B. This indicates the minimum oil level when the machine is running.

7.6 Noise Level

Although the sound pressure level for these units is relatively low, see"Technical Data" on page 9, they should be positioned where noise will not be a problem. The use of ear defenders is

recommended above 85dBA or when working in close proximity to compressors for extended periods.

7.7 Pressure Readings

The compressor pressure is displayed by the pressure gauge located in the front panel.

7.8 Air Delivery Temperature

The air delivery temperature after it has passed through the air aftercooler is typically 8°C above ambient.

8 Operating Instructions

8.1 Introduction

WARNING !

THE COMPRESSOR SHOULD ONLY BE OPERATED BY AUTHORISED PERSONS FULLY TRAINED IN:- THE STARTING, STOPPING AND EMERGENCY STOP PROCEDURES.

BEFORE STARTING THE COMPRESSOR, READ THE 'HEALTH AND SAFETY PRECAUTIONS'.

8.2 Checking Procedure Before Starting

(a) Check lower sight glass is full.

(b) Check filler and drain plugs are fitted securely.

(c) Check for any signs of oil or water leaks.

(d) Check air-outlet valve is open and test-valve is closed.

(e) Check that the stop/emergency stop button is released.

(f) Turn mains electricity supply on.

8.3 Operating Mode

The CONTROL allows two operating modes: Continuous run or automatic Stop/Start.

8.4 Compressor operation Fig. 14

For **continuous run**, turn selector switch (A) to hand mode (i).

For **automatic Stop/start**, turn selector switch (A) to auto (ii).

Note: The operating mode may be altered either when the compressor is running, or when it has stopped.

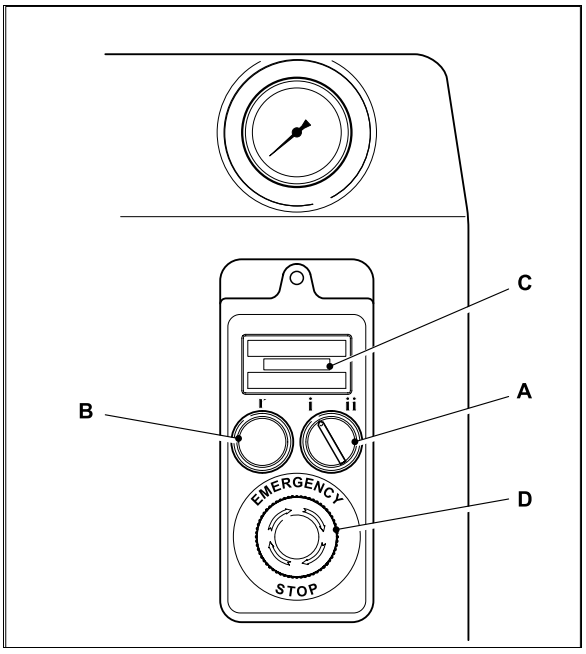


Fig. 14 - Compressor Operation

8.5 Starting - Continuous Mode Fig. 14

Complete the checking procedure before starting.

Select continuous run mode, (section 8.4) the compressor is now ready to run.

Press the amber reset/start button (B) and the motor will start.

The compressor will now run continuously irrespective of either the system pressure or system air demand.

On initial start with no pressure in the system, the compressor gauge will quickly rise but will not exceed the servo valve pressure.

Once the system is fully charged the compressor gauge will vary with fluctuations in the system air demand.

8.6 Starting - Automatic Mode

WARNING !

WHEN IN AUTOMATIC MODE THE COMPRESSOR WILL RESTART WITHOUT WARNING.

(a) Complete checking procedure before starting.

(b) Select automatic (see section 8.4). The compressor is ready to run.

(c) Press the amber reset/start button (B), and the motor will start.

On initial start-up, with no pressure in the air-line system, the line pressure displayed on the pressure gauge will rise quickly to the minimum pressure valve setting

Once the system is fully charged the compressor gauge will vary with fluctuations in the system air demand.

If the system pressure rises to the compressor high pressure setting then the automatic stopping sequence will begin. The run-on timer starts and the compressor begins to run "off load", if there is no demand for air during the run-on time the compressor will stop.

The compressor will remain stopped until there is an air demand that allows the system pressure to fall to the compressor low pressure setting. For V07 models the compressor will not restart until its internal pressure has fallen to below 1.5 bar.

If there is a demand for air during the run-on time, the stopping sequence is cancelled and the compressor returns to full "on-load" running.

8.7 Starting - Regulated Speed Fig. 15

Complete the checking procedure before starting.

Press the amber reset/start button (B) the compressor is now ready to run.

Turn the selector switch (A) from position (0) to position (1) the compressor is now in running mode and will commence rotation if the system pressure is below the target pressure.

On initial start with no pressure in the system, the compressor gauge will quickly rise but will not exceed the servo valve pressure.

The compressor speed will change automatically to suit the pressure and flow demands of the system, the compressor gauge will vary with fluctuations in the system air demand.

If system flow demand reduces and the system pressure rises above the compressor target pressure the inverter speed control will automatically stop the compressor after a short time delay.

Re-starting will occur automatically when the system pressure drops below the compressor target pressure.

During operation of the compressor the hour's counter (C) will record the total running hours.

8.8 Stopping - Single Speed

To stop the compressor in either continuous run or automatic stop/start, press the stop/emergency stop button (D).

The button will lock in the depressed position and stop the compressor immediately, the offload solenoid will de-energise allowing the compressor pressure to fall to zero in about 2 to 5 minutes.

System pressure will remain high initially but will eventually fall, the rate of decay will depend on equipment usage and the time period the system remains idle.

Reset the stop/emergency stop button by twisting it clockwise before re-start.

8.9 Stopping - Regulated Speed

To manually stop the compressor, rotate the selector switch (A) from position (i) to position (ii), do not use the stop/emergency stop button (D) unnecessarily.

System pressure will remain high initially but will eventually fall, the rate of decay will depend on equipment usage and the time period the system remains idle.

8.10 Emergency Stop

If an emergency occurs:

(a) Press the stop/emergency stop button (D in Fig. 14 and Fig. 15).

(b) The button will lock in the depressed position and stop the compressor immediately, the offload solenoid will de-energise allowing the compressor pressure to fall to zero in about 2 to 5 minutes.

(c) Clear any faults which may have occurred. Do not reset until it is safe to do so.

(d) Reset the stop/emergency button by twisting it clockwise before re-start.

8.11 Compressor Vent Down

After stopping, the compressor must be allowed to vent down gradually, speeding up the de-pressurisation may cause oil carry over or separator flooding.

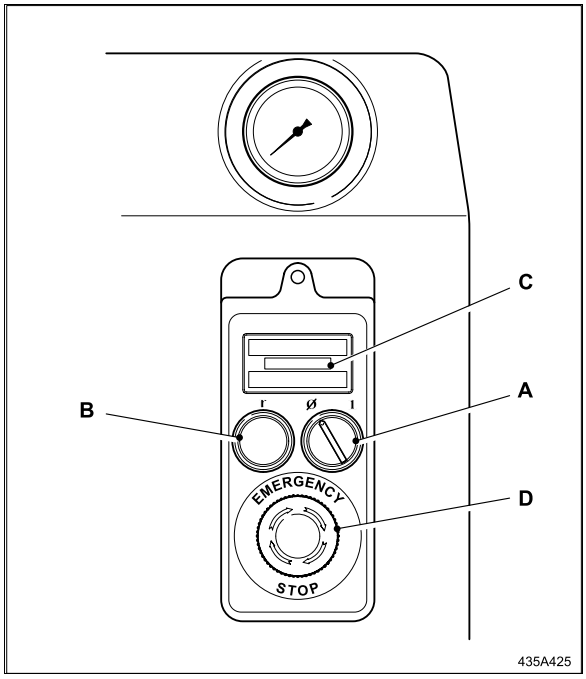


Fig. 15 - Regulated Speed Control TBA

9 Adjustments

9.1 Standard Compressor Control Fig. 16

The compressor is fitted with one or two pressure switches, one for cut-in and cut-out of line pressure (A), the other (B) (if fitted) reads oil chamber pressure (factory set do not alter) which prevents pressurised restart.

Adjacent to the pressure switch(es) are one or two solenoid valves, the single valve (C) vents down the compressor gradually within 2 to 5 minutes when stopped.

The solenoid valve mounted closest to the front (D) will rapidly vent the compressor within 2 to 5 seconds if the reset button is pressed before gradual venting has occurred.

Pressure switches and solenoid valves are mounted on top of the starter enclosure this is on the right hand side under the top panel cover.

WARNING !

ISOLATE THE COMPRESSOR FROM THE MAINS ELECTRICAL SUPPLY. LOCK THE ISOLATOR IN THE OFF POSITION. FIT A SAFETY NOTICE TO THE ISOLATOR ADVISING THAT WORK IS BEING CARRIED OUT ON THE COMPRESSOR.

9.2 Pressure Switch Fig. 17

(a) To access the starter remove the top panel, release two quarter turn fasteners mounted horizontally at each side of the front panel. Release another two fasteners mounted vertically at the rear of the top panel and lift clear of the unit.

(b) If necessary remove the front panel, release a single fastener from the left-hand side and a single screw just above the hour counter in the controls area. Disconnect the pipe from the rear of the pressure gauge (push fitting) and remove the front panel.

(c) Remove screw (A) and keyplate (B), for maximum line pressure adjust screw (C) until the scale indicates 7.5 or 10.5 bar, this is the high or cut out pressure. For differential pressure adjust screw (D) until the scales indicates between 1.0 and 1.5 bar (factory setting), this is the minimum, low or cut in pressure.

(d) Note that the maximum pressure (cut out) minus the differential pressure equals the minimum (cut in) pressure, high cut in pressures will increase the frequency of start up.

(e) Adjust screw (C) until the ‘MAX’ scale indicates 7.2 bar. This pressure should not be exceeded.

(f) Adjust screw (D) until the ‘DIFF’ scale gives required differential.

Note: MAX pressure minus DIFF pressure equals MINIMUM (cut-in) pressure.

Note: The differential pressure is factory preset to 1 bar to 1.5 bar.

Note: High cut-in pressures will increase frequency of start-up.

(g) Refit keyplate (B) and screw (A).

(h) Re-connect the pressure gauge and replace front and top panels.

(i) Switch mains electrical supply on.

(j) Start compressor and check switch settings for accuracy. If further adjustments are required repeat setting procedure.

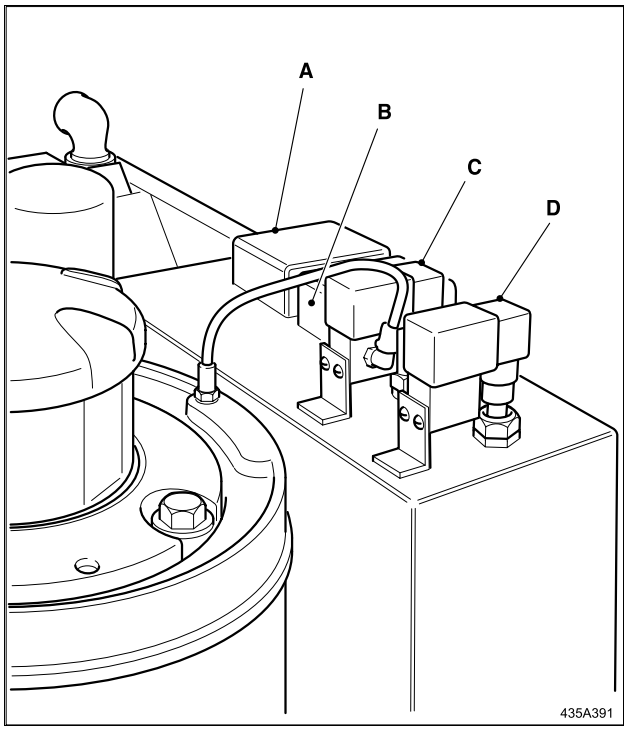


Fig. 16 - Pressure Switch Locations (7.5kW machine illustrated)

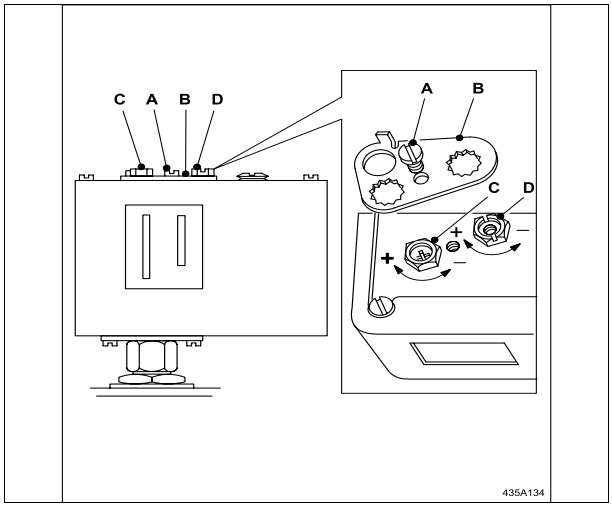


Fig. 17 - Differential Pressure Switch Adjustment

9.3 Pressure Control - RS compressors

Compressors have default factory settings for inverter speed control target pressure, compressor servo valve pressure and motor speed.

V07RS operating pressure 8 bar, servo 9 bar, frequency 66 Hz, maximum speed 1980 rpm, minimum speed 1050 rpm

The target pressure may be adjusted from the default setting in the range of 6 to 10 bar for air compressors.

When operating at other than factory set pressures adjustments to the compressor servo valve pressure setting and inverter speed control unit frequency setting will be required.

A rotary selector switch is provided inside the starter to select the required speed and frequency settings for the inverter drive to match servo pressures that must be adjusted manually

User Warning

Compressor and inverter speed control adjustments should not be attempted by the user and must be carried out by a CompAir authorised service engineer. Failure to comply with this requirement may invalidate the compressor warranty.

10 Servicing

10.1 Introduction

WARNING !

READ HEALTH AND SAFETY PRECAUTIONS BEFORE YOU START ANY SERVICE WORK.

SERVICING OF THE COMPRESSOR MUST ONLY BE CARRIED-OUT BY AUTHORISED PERSONS FULLY TRAINED AND COMPETENT IN THE MAINTENANCE, MAINS ELECTRICAL SUPPLY AND STARTER CONTROL EQUIPMENT OF COMPAIR COMPRESSORS. THEY MUST FULLY UNDERSTAND AND ADOPT CORRECT AND SAFE WORKING PRACTICES.

If you are unable to carry-out the work safely in the required manner then your CompAir UK Ltd distributor will be pleased to help.

Ensure genuine CompAir UK Ltd parts and approved oils are used.

To ensure the use of genuine parts during routine servicing, Compair UK have the following service kits available:

1	KO 457	2000 hr/1 yr oil change kit
2	KM 457	4000 hr/ 2 yr maintenance kit
3	KT 457	Top - up kit

Contact your local distributor for availability.

10.2 Routine Service Schedule

The work listed in this section must be carried-out at the indicated running-hours which must be regarded as a maximum. In dusty, hot or humid conditions more frequent servicing may be necessary.

This section shows the minimum service requirements for your compressor. To ensure that the full compressor maintenance programme is carried out, we recommend that your compressor is regularly serviced by an authorised CompAir UK Ltd distributor.

Servicing (RS)

Servicing intervals and procedures are the same as specified for the standard fixed speed compressor of the same power (kW) rating.

In addition the metal cover surrounding the speed control unit should be detached and any dirt or dust collected around the control unit ventilator fan grille removed.

The speed control unit does not require any routine servicing.

After very long periods it is recommended that the speed control unit capacitors and cooling fan(s) be replaced to ensure continued reliability of the unit. Refer to CompAir Redditch Service Department for details.

10.3 Check Compressor Operation

The drive end cover of the compressor has a facility to accept a thermal probe to record the operating temperature of the unit. With the need for specialised equipment we suggest that this task should be conducted by your local Distributor.

Assuming the compressor is serviced correctly the machine is capable of operating in ambient temperatures up to a maximum of 45°C. At this ambient temperature the oil temperature will be typically 85°C to 90°C.

When the compressor is working the temperature should be:-

Initial start-up and warm-up period.	< 70°C
Optimum working temperature.	80 - 90°C
High temperature.	90 -100°C
Stop ! Consult your distributor.	> 100°C

Check Compressor Pressure

To check the compressor pressure, use the pressure gauge located in the front panel.

Check oil level

Check the oil level using the compressor oil level sight-glass fitted to the end of the starter box, visible through the front panel. Refer to Fig. 13 for a view and description of the oil level manifold and indicator marks.

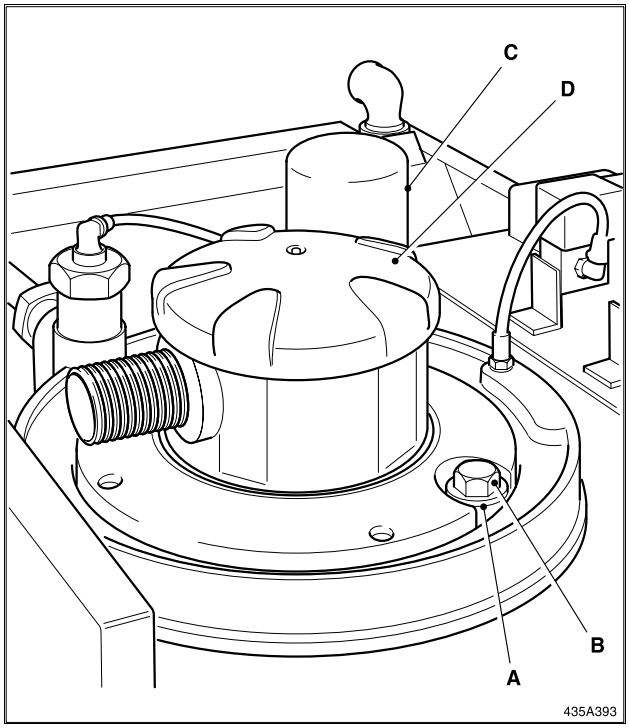


Fig. 18 - Oil Filler Plug, Air Filter and Separator Element Location

10.4 Basic Service Fig. 18 and 19

WARNING !

STOP THE COMPRESSOR AND ISOLATE FROM THE MAINS ELECTRICAL SUPPLY. LOCK THE ISOLATOR IN THE OFF POSITION. FIT A SAFETY NOTICE TO THE ISOLATOR ADVISING THAT WORK IS BEING CARRIED OUT ON THE COMPRESSOR.

CLOSE THE AIR OUTLET VALVE TO ISOLATE THE COMPRESSOR FROM THE AIRLINE SYSTEM. FIT A SAFETY NOTICE TO THE VALVE ADVISING THAT IT IS NOT TO BE OPENED.

DO NOT PROCEED UNTIL THE AIR PRESSURE GAUGE READS ZERO !

CAUTION !When changing recommended oil types it is advisable to flush the compressor.

CAUTION !When changing to fluid force clear the compressor must be flushed out with fluid force prime.

10.5 Panel Removal

Wait until the compressor vent down cycle is complete, vent pressure from the air aftercooler and associated pipework.

Check that the compressor pressure gauge reads zero before carefully removing the filler plug and bonded seal.

To conduct the following routine tasks it is necessary to remove the top and front panels including the lower right hand side steel panel.

Remove the top panel by releasing two quarter turn fasteners mounted horizontally at each side of the front panel. Release another two fasteners mounted vertically at the rear of the top panel and lift clear of the unit.

Remove the front panel by releasing a single fastener from the left-hand side and a single screw just above the hour counter in the control area. Disconnect the pipe from the rear of the pressure gauge (push fitting) and remove the front panel.

Remove two hexagon headed screws mounted vertically upwards into the bottom of the starter enclosure that secure the lower right hand side steel panel (Fig. 20(F))

Remove the two screws that retain the small cover plate on the right hand side of the unit (Fig. 20(E)) to gain access to the bypass filter and impellor area behind the intake filter for cleaning.

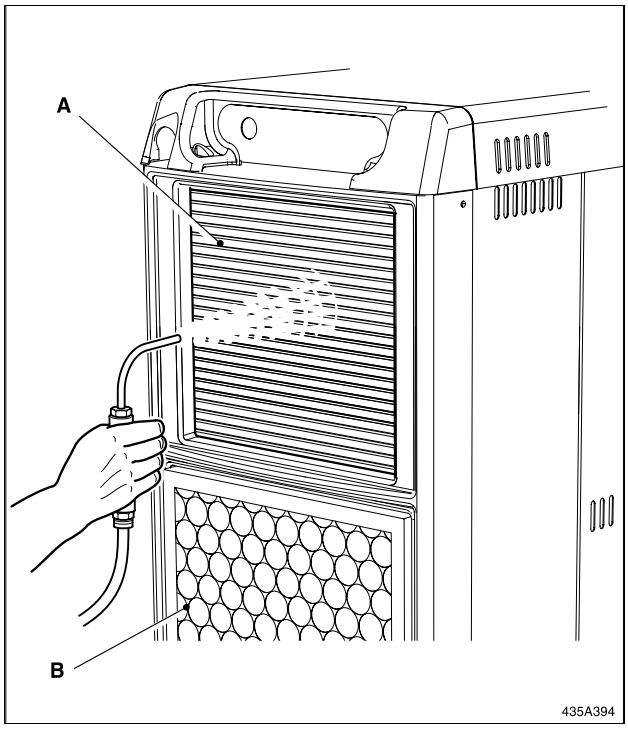


Fig. 19 - Matrix Cleaning

10.6 Oil Draining & Filter Replacement Fig. 18 and 20

WARNING !

AVOID UNNECESSARY CONTACT WITH HOT OIL AND COMPONENTS. GLOVES ARE RECOMMENDED IF DRAINING OIL WHEN THE COMPRESSOR IS HOT!

10.7 Oil Draining Fig. 20

(a) Remove the filler plug Fig 18 (B) and bonded seal (A) to allow air to enter the compressor to aid drainage.

(b) Place a suitable container below the drain point and remove the drain plug from the end of the tap (D), turn the tap and allow the oil to drain from the compressor.

(c) When draining is complete turn the drain tap to the off position and replace the drain plug in the tap.

10.8 Oil Filter Replacement Fig. 20

(a) Unscrew the filter (C) in an anti-clockwise direction quickly to avoid oil spillage from the canister, wipe up any spillage and discard the old filter in a safe manner.

(b) Using a new filter smear a small amount of oil onto the seal, screw in clockwise to tighten, hand tight only.

10.9 Oil filling / Top-up

(a) Fill to the correct level shown for the top sight glass with approved oil, use Fluid Force Red 2000 as the standard oil, do not overfill.

(b) Allow the oil level to stabilise, the oil filter holds about 1 litre, total capacity is 3 litres, drain a small amount of oil if above the maximum fill line.

(c) Refit the filler plug Fig 18 (B) and bonded seal Fig 18 (A), renew the bonded seal if damaged and tighten using a spanner, do not over tighten.

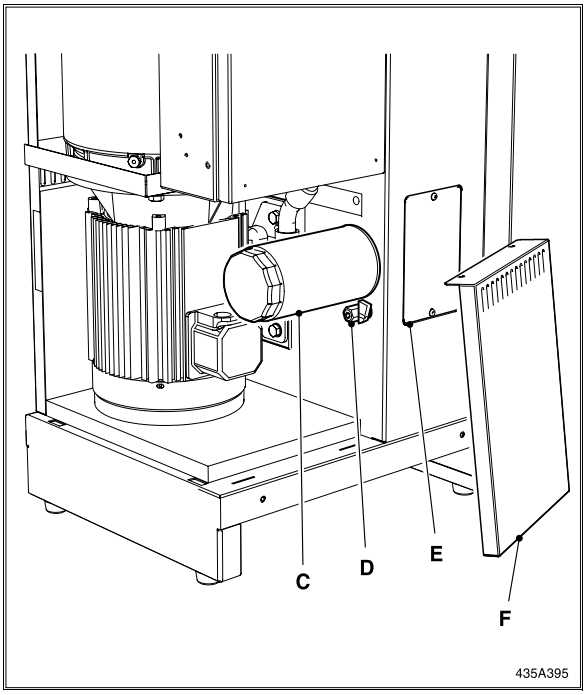


Fig. 20 - Oil Drain and Filter Location

10.10 Air Filter Replacement Fig. 18

To change the air filter element twist the cap of the air filter container (D) anti-clockwise then lift vertically to expose the element (Part No. 75155) inside.

Remove the old element and discard in a safe manner and replace with a new element before replacing the cap.

10.11 Oil Separator Replacement Fig. 18

(a) Unscrew the oil separator (C) in an anti-clockwise direction and discard in a safe manner.

(b) Using a new separator smear a small amount of oil onto the seal, screw in clockwise to tighten, hand tight only.

10.12 Clean Oil Cooler/After cooler Fig. 19 and 20

(a) The cooler matrix airflow is from the inside to outside, cleaning is best achieved by reversing the airflow to dislodge any accumulation of dirt.

(b) Using a low pressure air line, less than 2 bar pressure, blow a jet of air over the whole area of the matrix (A). Dirt dislodged can be removed using a vacuum cleaner placed through the access to the bypass filter and impellor area behind the cabinet filter (B) (Part No. 74695).

(c) Gain access to the rear of the cooling fan filter by means of removable panel (E).

(d) Using a standard household vacuum cleaner, remove any dislodged debris through the access hole (E).

Note: All discarded items and waste oil must be disposed of in an approved manner.

10.13 Panel Refitting

Re-connect the pressure gauge and refit the panels in reverse order (See “Panel Removal” on page 28.), test run the compressor and check operation as in 10.3.

10.14 Electrical checks

WARNING !

WARNING !ISOLATE THE COMPRESSOR FROM THE MAINS ELECTRICAL SUPPLY. LOCK THE ISOLATOR IN THE OFF POSITION. FIT A SAFETY NOTICE TO THE ISOLATOR ADVISING THAT WORK IS BEING CARRIED OUT ON THE COMPRESSOR.

(a) Open the starter panel door.

(b) Remove any terminal covers fitted to contactors and incoming supply terminals.

(c) Check for any signs of overheating and ensure that all electrical connections are tightened to correct torque settings, as per label on inside face of starter.

Note: Pay special attention to power connections and cables connected to contactors and incoming terminals.

(d) Close the starter panel door and lock with the key provided to prevent unauthorised access.

Clean and check electric motors

WARNING !

(a) Remove any dust or dirt from motor bodies and motor air intake grill located under the compressor base.

(b) Reinstate all covers.

(c) Remove safety notices.

10.15 Check operation of over-temperature control unit Fig. 21

WARNING !

THE FOLLOWING FAULT FINDING PROCEDURE SHOULD BE CARRIED OUT BY QUALIFIED AND COMPETENT PERSONS ONLY.

THIS PANEL CONTAINS POTENTIALLY LETHAL VOLTAGES. UNDER NO CIRCUMSTANCES SHOULD YOU ATTEMPT TO TOUCH ANYTHING INSIDE THE PANEL, OR ON THE CONTROL PANEL DOOR UNLESS INSTRUCTED TO DO SO IN THE FOLLOWING PROCEDURE.

(a) Isolate from the main power supply, for RS machines with inverters, wait at least 10 minutes for capacitors to discharge before starting work.

(b) Open the starter door with the key provided.

(c) Unscrew terminal 38 and remove the connecting wire.

(d) Re-instate the power supply.

(e) Yellow reset lamp should be illuminated.

(f) With the selector switch in the run position, press the start button. The compressor should not start, the yellow reset lamp should remain illuminated, but the green LED marked COMP should be extinguished.

(g) Isolate from the main power supply, for RS machines with inverters, wait at least 10 minutes for capacitors to discharge before starting work.

(h) Re-connect the wire back in to terminal 38 and remove wire from terminal 48.

(i) Re-instate the power supply.

(j) Yellow reset lamp should be illuminated.

(k) With the selector switch in the run position, press the start button. The compressor should not start, the yellow reset lamp should remain illuminated, but the green LED marked MOTOR should be extinguished.

(l) Isolate from the main power supply, for RS machines with inverters, wait at least 10 minutes for capacitors to discharge before starting work.

(m) Re-connect the wire back to terminal 48.

CAUTION !

If the above sequence is not achieved then a fault may have occurred which has damaged the OTC. The compressor must not be operated until a replacement OTC has been fitted and the above procedure repeated.

(a) Close the starter door and lock with key provided.

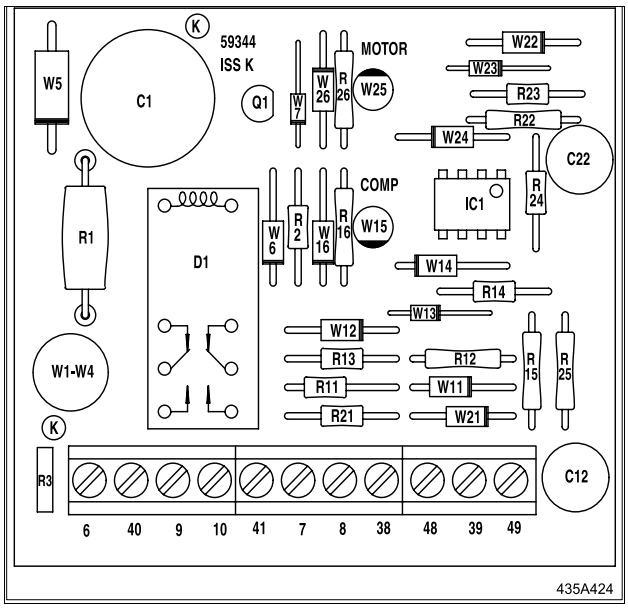


Fig. 21 - Over-Temperature Control Unit

10.16 Servicing Requirements

Note: The following preventive maintenance charts cover all Compair compressors using Compair Fluid Force Red 2000 oil. The work to be carried out must be done on or before the hours shown for this action, or yearly, whichever is soonest.

Note: For service schedules using Compair Fluid Force Clear and Compair Fluid Force HPO, consult you local dealer, or contact CompAir UK Redditch.

Read health and safety precautions before starting any work.

Service Schedule: Fluid Force Red 2000 (2000 hour oil change)

The bulk oil temperature must not exceed 90°C. If the oil is working above this temperature, the oil life will be reduced.

Note: When changing to Fluid Force Clear the compressor must be flushed out with Fluid Force Prime in order to comply with USDA H1 standard.

Note: The service life of the air filter and cabinet filter are an indication only, actual life durability will be dependant on the operating conditions.

Preventative Maintenance Schedule	Fluid Force Red 2000							
Maintenance Actions	Start up	Daily	Weekly	First 1000 hrs	Every 2000 hrs	Every 4000 hrs	Every 12000 hrs	Every 24000 hrs
Check sufficient access	✓							
Check correct drive rotation	✓							✓
Check torque electrical connections	✓				✓	✓	✓	✓
Check power on-load	✓				✓	✓	✓	✓
Check power off-load	✓				✓	✓	✓	✓
Check operation of over temperature unit	✓				✓	✓	✓	✓
Check operation of non-return valve (purs)								
Check electrical motor for damage	✓				✓	✓	✓	✓
Check for loose electrical connections	✓				✓	✓	✓	✓
Check cables and earth are sound	✓				✓	✓	✓	✓
Check for motor vibration	✓				✓	✓	✓	✓
Check for secure cable glands	✓				✓	✓	✓	✓
Test unloader valve for operation	✓				✓	✓	✓	✓
Test vacuum relief valve for operation	✓				✓	✓	✓	✓
Test mpv for operation	✓				✓	✓	✓	✓
Test air delivery	✓				✓	✓	✓	✓
Check oil level at filler plug								
Check for air leaks	✓			✓	✓	✓	✓	✓
Check for oil leaks	✓			✓	✓	✓	✓	✓
Check air filter	✓			✓				
Check servo pressure off-load	✓					✓	✓	✓
Check clear of airborne contaminants	✓	✓	✓	✓	✓	✓	✓	✓
Check oil temperature	✓	✓	✓	✓	✓	✓	✓	✓
Check rsu temperature (ACE)	✓	✓	✓	✓	✓	✓	✓	✓
Check ambient temperature	✓	✓	✓	✓	✓	✓	✓	✓
Check oil level at sight glass			✓	✓	✓	✓	✓	✓
Clean oil cooler			✓	✓	✓	✓	✓	✓
Clean after cooler			✓	✓	✓	✓	✓	✓

Preventative Maintenance Schedule	Fluid Force Red 2000							
Maintenance Actions	**Start up**	**Daily**	**Weekly**	**First 1000 hrs**	**Every 2000 hrs**	**Every 4000 hrs**	**Every 12000 hrs**	**Every 24000 hrs**
Clean external dirt from compressor			✓	✓	✓	✓	✓	✓
Clean external dirt from motor			✓	✓	✓	✓	✓	✓
Clean air filter								
Clean cabinet filter (air logic)			✓	✓				
Clean servo valve						✓		
Clean oil return plug (where able)				✓	✓	✓	✓	
Clean condensate drains								
Clean solenoids				✓	✓	✓	✓	✓
Change air filter					✓	✓	✓	✓
Change cabinet filter					✓	✓	✓	✓
Drain and re-fill with oil					✓	✓	✓	✓
Change oil filter (where applicable)					✓	✓	✓	✓
Change mpv seals						✓	✓	✓
Change unloader valve seats						✓	✓	✓
Change vacuum valve seats						✓	✓	✓
Change pre-filter disc's (955-975)								
Check oil seal							✓	✓
Check drive media								
Check perishable oil pipes on top of compressor						✓	✓	✓
Change separator element(s) / cartridge						✓	✓	✓
Change thermal motor						✓	✓	✓
Change perishable oil pipes							✓	✓
Check starter contactors						✓	✓	✓
Grease motor bearings if applicable							✓	
Change drive media								
Check motor insulation resistance								✓
Replace motor bearings								✓
Change oil return plug							✓	✓
Change oil seal								✓
Change pressure gauge								✓

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CompAir UK Limited
Claybrook Drive
Washford Industrial Estate
Redditch
Worcestershire
England
B98 0DS

E-mail: Sales@CompAir.co.uk
Telephone: (01527) 525522
Fax: (01527) 521140