

User Handbook

V05, V07 Models (PSAS, PSRS)

Stationary Air Compressors

ST 15924-00

Iss C 06/2002



This page is intentionally left blank

Introducing your new CompAir UK Limited compressor

Your new CompAir UK Ltd 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 award-winning 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 COMPAIR UK LIMITED APPROVED OIL.

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.

Note: '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.

OWNERSHIP RECORDS

Model Number:	.....	Serial Number:	.....
R.P.M:	.....	kW:	.....
Maximum Bar:	.....	

Local CompAir UK Limited Distributor

Name:	.....	Contact:	.....
Address:	.....	Telephone:	.....
	.....	Fax:	.....
	.....	Email:	.....

Introduction

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.

Quality standards

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

Note: These operating instructions comply with the stipulation of European directive 98 / 37 / EEC concerning machine safety and are valid for machines carrying the CE label.

Model range

This handbook relates to all V05/V07 kW 50/60 Hz compressors, model types:

V05	V07
705PSAS07-2036D105	707PSAS07-2036D105
705PSAS07-2335D100	707PSAS07-2335S100
705PSAS07-2336D105	707PSAS07-2336D105
705PSAS07-3836D105	707PSAS07-2336S105
705PSAS07-4035D100	707PSAS07-3836S105
705PSAS07-4035S100	707PSAS07-4035S100
705PSAS10-2036D105	707PSAS07-4035V100
705PSAS10-2336D105	707PSAS10-2036D105
705PSAS10-3836D105	707PSAS10-2335S100
705PSAS10-4035D100	707PSAS10-2336D105
705PSAS10-4035D100	707PSAS10-2336S005
705PSRS10-4035D100	707PSRS10-2336S100

This publication refers to compressors with serial numbers:

705-003021-0204 onwards

707-006261-0204 onwards

Terminology:-

7	=	Series type
05 & 07	=	05 & 07 kW motor size
P	=	Package
S	=	Standard control
A,R	=	Aftercooler, Receiver
S	=	Starter
07 & 10	=	7 & 10 bar delivery pressure
20, 23, 38 & 40	=	200, 230, 380 & 400 volt motors
3	=	3 phase
5, 6	=	50 Hz, 60 Hz
D, S & V	=	DOL, Star/Delta, Variable Speed
100	=	European specification (50 Hz)
105	=	US specification (60 Hz)

Technical Data

Description/Units	V05	V05RM	V07	V07RM	V07RS
PERFORMANCE					
F.A.D. litres/sec (cfm) @ 7 bar	14.9 (31.5)	N/A	20.5 (43.3)	N/A	0-20 (0-42.5)
F.A.D. litres/sec (cfm) @ 10 bar	11.8 (25.0)	11.8 (25.0)	16.7 (35.3)	16.7 (35.3)	0-16 (0-34)
Noise Level - dBA (Open/Enclosed)	70/67	70/67	71/68	71/68	71/68
Power - kW (hp)	5.5 (7.5)	5.5 (7.5)	7.5 (10)	7.5 (10)	7.5 (10)
Starter Type - Automatic	DOL		Star Delta		
Starter Type - Inverter	N/A				Soft Start
Drive Type	Direct				
Operating Controls	Stop/Start Continuous Run				Soft Start/ Variable
Air End Rotation Speed - rev/min (60Hz)	1460 (1760)				1050 - 2100
Oil Capacity - litres	4.3				
Air Discharge Temp - °C (above ambient)	<5		<8		
INSTALLATION					
Air Outlet Size - G	¾				
Minimum Room Volume - m³	15				
Air Inlet/Outlet Area - m²	0.3				
Ventilation Rate - m³/h	2000				
Std Ambient Temp Range - °C	0-45				
Recommended Air Receiver Capacity - L	350				
ELECTRICAL					
200V 60Hz	DOL		DOL		-
Line Current - Amps	23.8-23.0		32.2-30.9		-
Cable Size - awg	12		10		-
230V 50Hz	DOL		Star/Delta		-
Line Current - Amps	22.6		34.3		-
Cable Size - mm	4		6		-
Fuse Size - Amps	63		40A or 32M40		-
Phase Current - Amps	-		19.8		-
230V 60Hz UL	DOL		DOL		-
Line Current - Amps	20.8		28		-
Cable Size - awg	12		10		-
230V 60Hz	-		Star/Delta		-
Line Current - Amps	-		32		-
Cable Size - mm	-		6		-
Fuse Size - Amps	-		40A or 32M40		-
Phase Current - Amps	-		18.5		-

Introduction

Description/Units	V05	V05RM	V07	V07RM	V07RS
ELECTRICAL					
380V 60Hz	DOL		Star/Delta		-
Line Current - Amps	12		17.6		-
Cable Size - mm	2.5		4		-
Fuse Size - Amps	-		32		-
Phase Current - Amps	-		10.2		-
400V 50Hz	DOL	Star/Delta	Star/Delta		-
Line Current - Amps	13	13	18		18
Cable Size - mm	2.5	2.5	4		4
Fuse Size - Amps	-	20	32		25
Phase Current - Amps	-	7.5	10.4		-
440V 60Hz	DOL		Star/Delta		-
Line Current - Amps	11.1		21.5		-
Cable Size - mm	2.5		4		-
Fuse Size - Amps	20M32		32		-
Phase Current - Amps	-		12.4		-
460V 60Hz	DOL		DOL		-
Line Current - Amps	10.4		14		18
Cable Size - awg	14		12		12
Fuse Size - Amps	-		-		25
DIMENSIONS					
A Overall Length - mm (Open/Enclosed)	1252/1272	1595	1252/1272	1595	1252/1272
B Overall Width - mm	480	670	480	670	490
C Overall Height - mm	751	1289	751	1289	751
Overall Weight - kg (Open/Enclosed)	155/177	210	160/182	215	170/192
OPTIONS					
Enclosure Kit	34582				
Refrigerant Dryer	F9		F13		
Dryer Connection Kit (electronic control)	N/A				
Dryer Connection Kit (automatic control)	34445				
Dryer By-pass Kit	34447				

Contents

Introduction

Section 1 - Health and Safety

General Health and Safety Precautions	7
---------------------------------------	---

Section 2 - Transportation and Handling

A - Introduction	9
B - Weights and Dimensions	9
C - Lifting and Transportation	9

Section 3 - Installation and Commissioning

A - Positioning Your Compressor - Basic Requirements	11
B - Ventilation	11
C - Accessibility	11
D - Electrical Connections	11
E - Electrical Installation Procedure	11
F - Check Direction of Motor Rotation	13
G - Wiring Diagrams	13
H - Operation with Other CompAir Vane Compressors	13
I - Positioning of Pressure Transducer	13
J - Wiring Diagrams	14

Section 4 - General Description

A - Compressor Assembly	19
B - Control Systems	20
C - Warnings, Cautions and Notes	20

Section 5 - Operating Parameters

A - Ambient Temperature	21
B - Operating Temperatures	21
C - High Operating Temperatures	21
D - Oil Life of Fluid Force	21
E - Oil Level	21
F - Noise Level	21
G - Pressure Readings	21
H - Air Delivery Temperature	21

Section 6 - Operating Instructions

A - Introduction	23
B - Checking Procedure Before Starting	23
C - Select Operating Mode	23
D - Starting Procedure - Automatic Mode	23
E - Starting Procedure - Manual Mode	23
F - Starting Procedure - Regulated Speed	24
G - Stopping Procedure	24
H - Emergency Stop Procedure	24
I - Compressor Vent Down Time	24

Section 7 - Adjustments

A - Pressure Switch - Automatic Control	25
B - Pressure Control - RS Compressors	25

Section 8 - Servicing

A - Introduction	27
B - Routine Service Schedule	27
C - Check Compressor Operation	27
D - Basic Service Procedures	27

Introduction

This page is intentionally left blank

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.

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.

Before Working on Compressor

1. Potentially dangerous voltages 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 them in a secure place until work is complete.
2. 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.
3. Do not undertake any work until the compressor and receiver if fitted, have been relieved of all pressure.
4. Wait until the compressors vent down cycle is complete.
5. Release any pressure contained in the aftercooler or associated pipework.
6. Check that the air-end pressure gauge reads zero. Do not proceed until it does.
7. Carefully unscrew the compressor filler plug. If any air or oil escapes before plug is fully removed stop! Do not remove the plug until all pressure is lost.
8. 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.

9. To ensure the compressor operates safely you must carry out the specified maintenance procedures.

10. Only approved lubricants should be used for flushing purposes.

11. 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.

12. The Health and Safety information contained in this Handbook is only intended to give general guidelines.

When Operating the Compressor

1. When in automatic mode the compressor will re-start without warning.
2. 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.
3. Do not remove any plugs or release pipework when the compressor is running.
4. Do not attempt to open the starter enclosure while the compressor is operating.
5. Beware of hot surfaces, both the air-end and electric motor are designed to run at elevated temperatures.
6. 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.
7. Wear safety glasses and suitable clothing when using, or working in an area where compressed air is being used.
8. 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.
9. 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.
10. We recommend that the air supply to hand held air guns is regulated to a lower pressure (refer to local Health and Safety regulations).
11. Do not insert any object or part of body through any opening of the compressor enclosure. Serious personal injury and/or damage may result.
12. Never run the compressor when any covers or guards are missing, unless advised to do so in this handbook.

GENERAL HEALTH AND SAFETY PRECAUTIONS

(continued)

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.

1. 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. *
 2. The oil may be hot so take care when carrying out oil changes.
 3. Do not keep oily rags in pockets or wear contaminated clothing. Do not inhale fumes or vapours. Do not swallow. Avoid eye contact.
 4. Always wash hands after use and before eating, drinking and smoking.
 5. **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.
 6. **Skin Contact** - *Mildly irritating. Remove by wiping. Wash with soap and water. Apply emollient cream.
 7. **Eye Contact** - *Mildly irritating. Flush with copious amounts of warm water. Seek medical advice if necessary.
 8. **Aspiration** - If there is any suspicion of aspiration into the lungs (for example during vomiting) admit to hospital immediately.
 9. **Inhalation** - Remove from exposure into fresh air. If necessary give artificial respiration or oxygen. Seek medical advice.
 10. **Pressure injection** - Obtain immediate medical attention, even if injury appears minor.
- * 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.**
11. **Spillage** - Soak up with absorbent clay.
 12. **Waste Disposal** - Oil, condensate, filter elements etc. should be disposed of in accordance with local regulations. Do not allow oil to contaminate water supplies.

Warnings, Cautions and Notes - Refer to Section 4 Page 20.

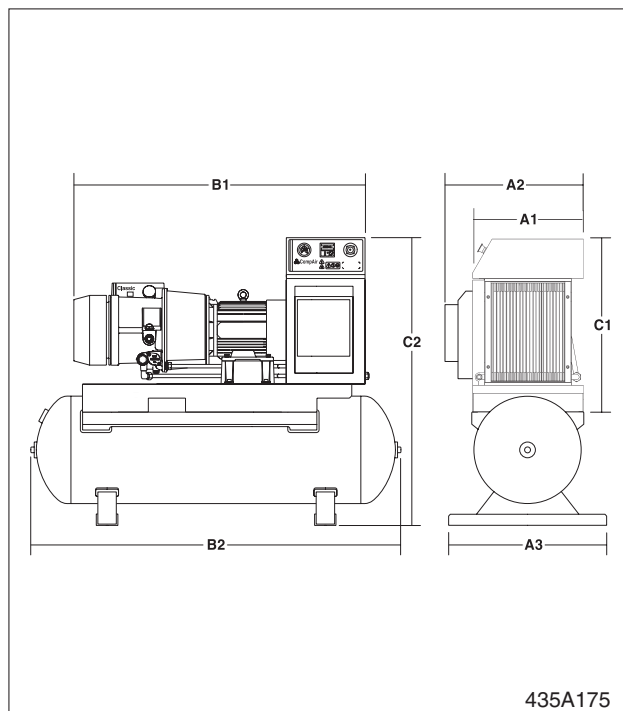
A - Introduction

Ensure all lifting equipment and means of transportation are securely located and rated to accept the full load. Inspect all lifting equipment for signs of wear. Do not use if wear is evident.

B - Weights and Dimensions

Table 2.1

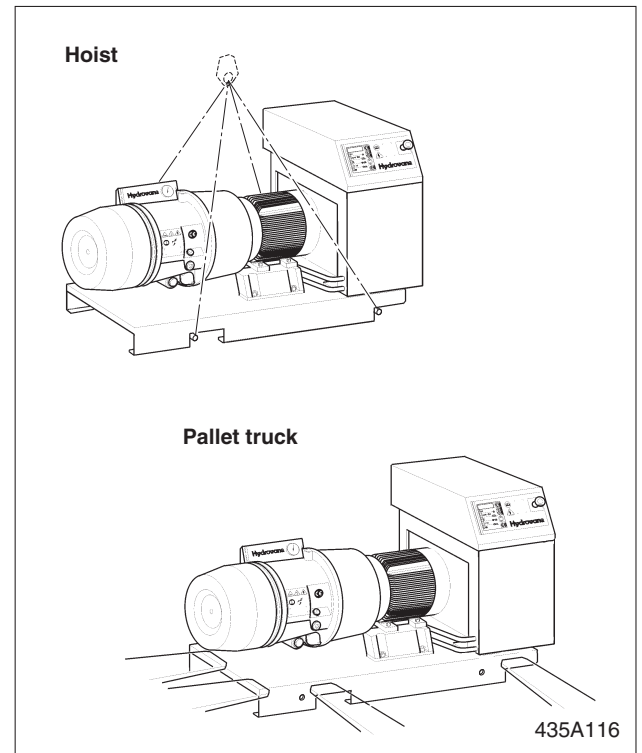
Compressors				
Ref.	Feature	Unit	V05	V07
A1	Width	mm	480	480
A2	Width (inverter)	mm	490	490
A3	Width (receiver)	mm	690	670
B1	Length (overall)	mm	1279	1279
B2	Length (receiver)	mm	1595	1595
C1	Height (overall)	mm	751	751
C2	Height (receiver)	mm	1289	1289
W1	Weight (basic)	kg	155	160
W2	Weight (receiver)	kg	210	215



C - Lifting and Transportation (Fig 2.2)

Before transporting, secure the compressor to a suitable pallet. Use a Fork Lift or Pallet Truck to transport the compressor.

A suitable lifting platform will be required when positioning the compressor. For normal lifting a hoist may be used.



This page is intentionally left blank

A - Positioning Your Compressor - Basic Requirements

Position the compressor in a room of adequate size on a firm level surface of sufficient load-bearing capacity. Normally, it is not necessary to bolt the unit down.

The compressor must be level, in both planes, within five degrees of horizontal.

Position the compressor allowing sufficient access for all routine service procedures and for easy viewing of pressure and temperature gauges.

Position the compressor in a dry, dust-free non-explosive location, with adequate weather protection.

The compressor should be sited as far as possible from sources of dirt, coarse solids, abrasive particles, steam, liquids and gaseous impurities.

B - Ventilation (Fig. 3.1)

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

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

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 temperatures greater than 45°C.

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

If air ducting is fitted it must not cover or restrict in any way the cooling air flow of the compressor. The total resistance of the complete system must not exceed 5mm w.g. (0.2in. water gauge). If the resistance is expected or found to be greater than 5mm w.g. then a fan will be required.

C - Accessibility (Fig 3.2)

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

D - 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 (ref to technical data).

Fuses to BS 88 (e.g. GEC type gG) must be used to protect the compressor starter. The fuse size must be as specified in technical data.

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

E - Electrical Installation Procedure (Fig. 3.3)

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.

- The starter must be connected to the mains electrical supply via a lockable, switched and fused isolator.
- The isolator should be positioned near to the compressor with clear unrestricted access.
- Firmly secure cable lugs to the supply and earth cables.
- Pass the mains cable through entry hole (B) and secure with a suitable cable gland. Connect the three mains supply cables to the contactor terminals marked L1, L2 and L3. Connect the earth cable to the earth pin (E).

Note: Cable sizes specified are the minimum size to suit typical installation. If the compressor is located a long way away from the isolator or the ambient temperature normally exceeds 35° C, then cable size may need to be increased. Refer to IEE Regulations for Electrical Equipment in Buildings to determine the size required.

- Check transformer fuse is positioned to suit the supply voltage.
- Ensure that ALL electrical connections are tight. High voltage connections to contactors and incoming terminals are critical.
- Switch isolator ON.

Section 3

Installation and Commissioning

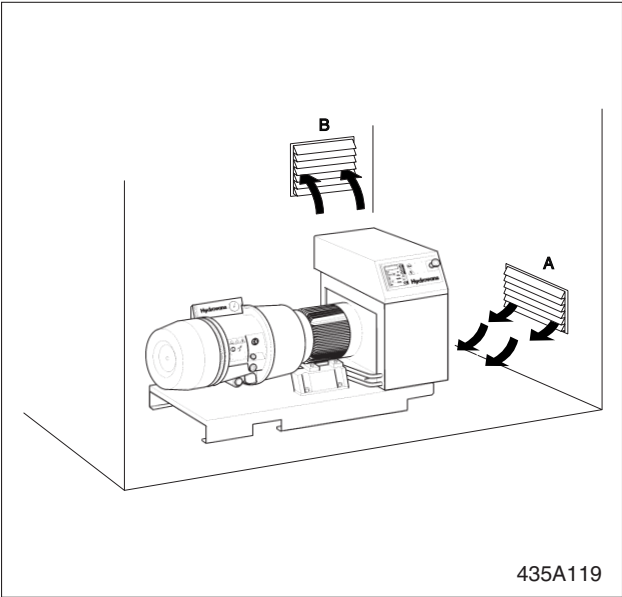


Figure 3.1 - Ventilation

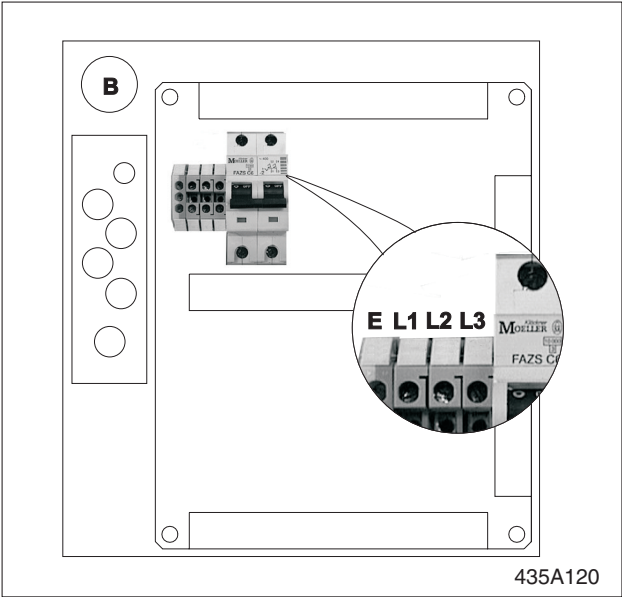


Figure 3.3 - Starter

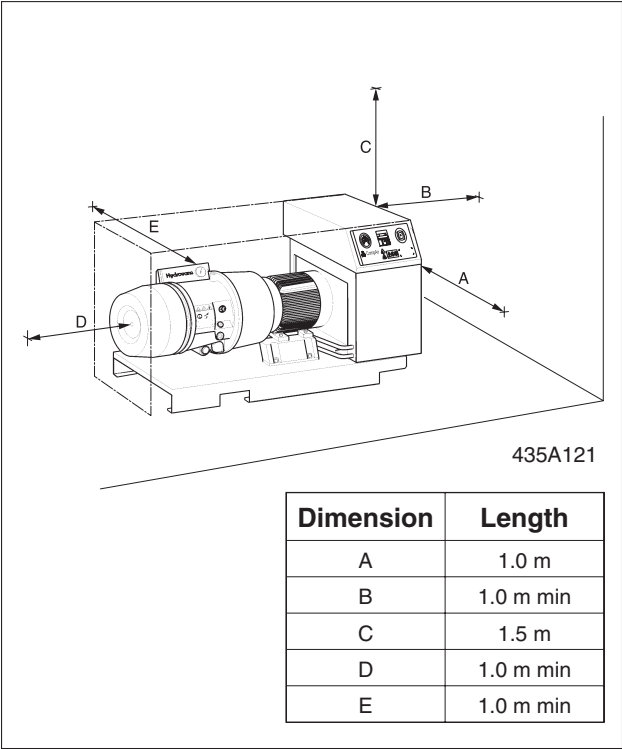


Figure 3.2 - Accessibility

F - Check Direction of Motor Rotation

WARNING ! 

READ HEALTH AND SAFETY PRECAUTIONS BEFORE STARTING COMPRESSOR.

- Ensure that the compressor air-end is filled correctly with an approved oil and that all plugs are fitted securely.
- Switch mains electrical supply ON. Select manual (continuous run mode).
- Press green start button.
- Check direction of rotation of compressor drive motor. The correct direction of rotation is clockwise when viewed from the drive end (i.e. Rear of motor).

If **correct**, the pressure displayed on the air-end pressure gauge will immediately rise to 5.5 bar.

If **not correct**, pressure will not rise and the pressure gauge will read zero.

CAUTION ! If direction of rotation is incorrect.

Stop the compressor immediately: serious damage to the air-end will result if the motor is allowed to run in reverse!

WARNING ! 

IF 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.

- Change over any two of the incoming cables connected to the starter terminals L1, L2 & L3 (**Qualified person only**).
- Ensure that all covers and panels have been securely reinstated.
- Switch the mains electrical supply on.
- Restart compressor and verify that direction of rotation is correct.

G - 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.

Mechanical and pneumatic installation is as instructed for the standard fixed speed compressor of the same power (kW) rating.

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.

H - Operation with Other CompAir Vane Compressors

- CompAir RS compressors may be operated efficiently in conjunction with other CompAir vane compressors fitted with automatic stop-start control.
- 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.
- The use of the CompAir 'Smartbox' is recommended when operating together with two or more, CompAir vane compressors.

Important Note: If the RS compressor is operated with other CompAir vane standard single speed compressors feeding into 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).

I - Positioning of Pressure Transducer

- The pressure transducer is located in the Minimum Pressure Valve Housing adjacent to the outlet from the compressor; this position is suitable for the majority of installations.
- If the pipework from the compressor to the system is restricted or prone to pressure fluctuation the pressure transducer signal may create extensive response from the speed control unit leading to rapid speed changes and/or rapid stopping and starting of the motor.
- 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.

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

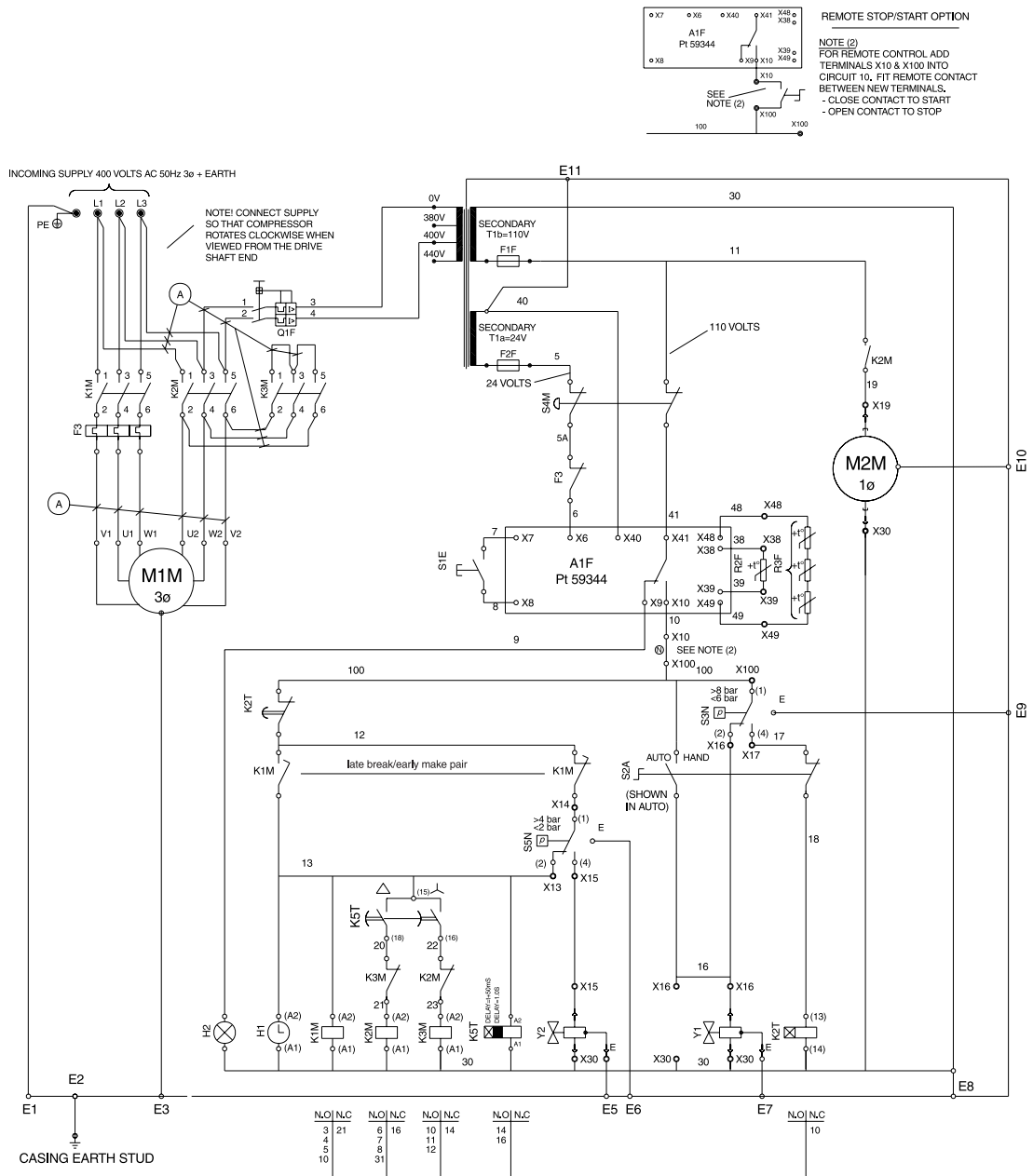
Installation and Commissioning



T1a	Transformer - 24V secondary.
F1F	Fuse - IEC127 - 1.6A
F2F	Fuse - IEC127 - 1.6A
H2	Indicator lamp
K2T	Run on timer
Q1F	Circuit breaker - 2 pole 6 Amp
R3F	Motor over temperature thermistors
S2A	Auto/manual selector switch
S4M	Emergency stop/stop switch
Y1	Vent solenoid valve
H1	Hours counter

F3	Thermal Overload
M1M	Drive Motor
A1F	Over temperature control PCB
K1M	Drive motor contactor
M2M	Cooling fan motor
M3M	Refrigerant dryer - 230V 1Ø
R2F	Compressor overtemperature thermistor
S1E	Start/Reset pushbutton switch
S3N	Line pressure switch
T1b	Transformer - 110V secondary.

Circuit Diagram - V05 - 400V 3Ø 50Hz Standard Control / 380/440 3Ø 60Hz Standard Control



435A123

74065 Issue P

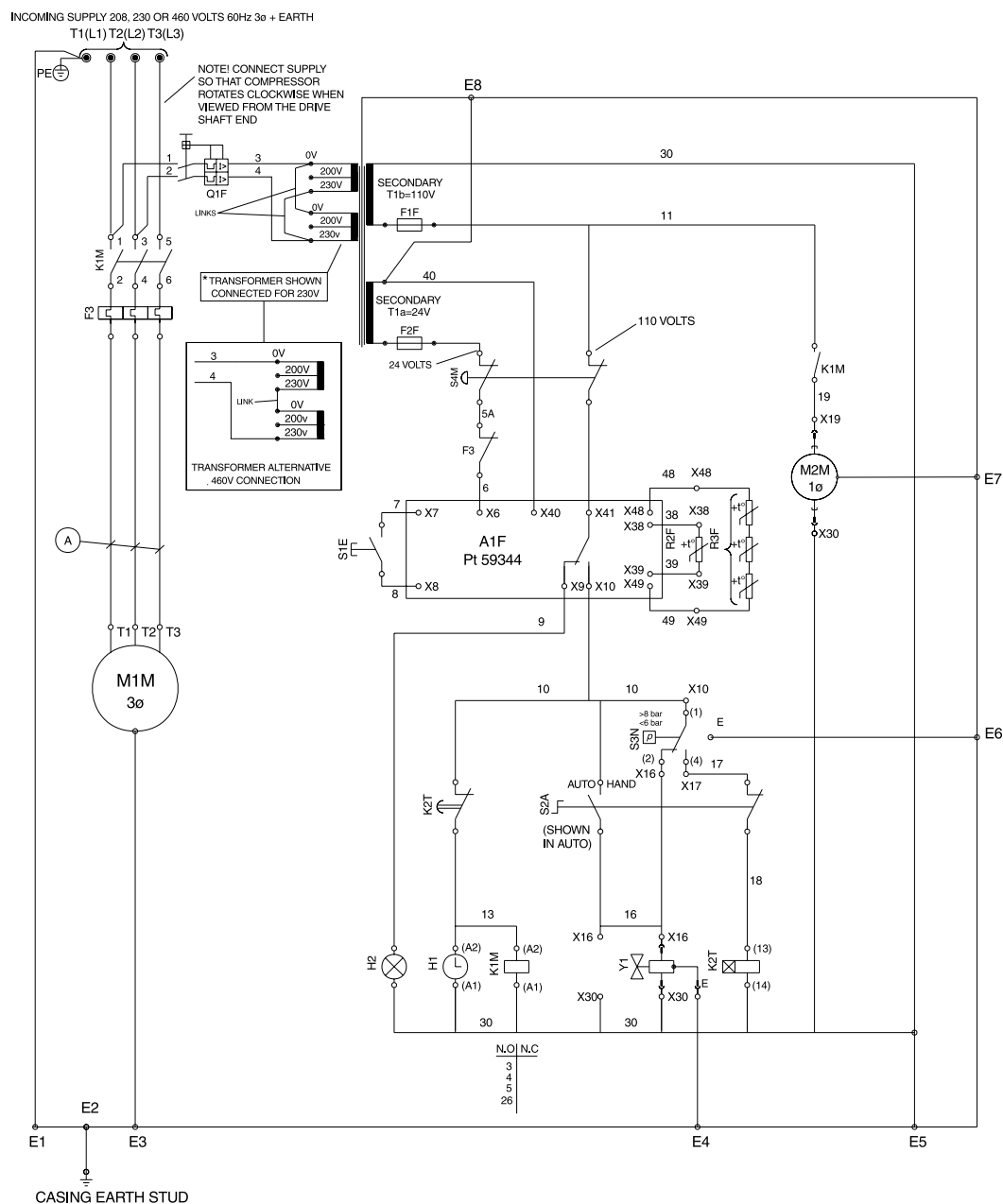
A1F Over temperature control PCB
 F1F Fuse - 1.6A(T) - IEC127
 F2F Fuse - 1.6A(T) - IEC127
 F3 Thermal overload
 H1 Hours counter
 H2 Indicator lamp 'r' (amber neon)
 K1M Line contactor
 K2M Delta contactor
 K3M Star contactor
 K5T Star-delta timer
 M1M Main drive motor
 M2M Cooling fan motor (if fitted)

Q1F Circuit breaker - 2 pole, 6 Amp
 R2F Compressor overtemperature thermistor
 R3F Motor overtemperature thermistors
 S1E Start/reset pushbutton switch
 S2A Auto/manual selector switch
 S3N Line pressure switch
 S4M Emergency stop/stop switch
 S5N Compressor pressure switch
 T1a Control transformer - 24V secondary
 T1b Control transformer - 110V secondary
 Y1 Vent solenoid valve - n.o.
 Y2 Rapid vent solenoid valve - n.c.

Circuit Diagram - 5.5/7.5kW 400V 50Hz and 7.5kW 380/440V 60Hz Star/Delta (Standard)

Section 3

Installation and Commissioning



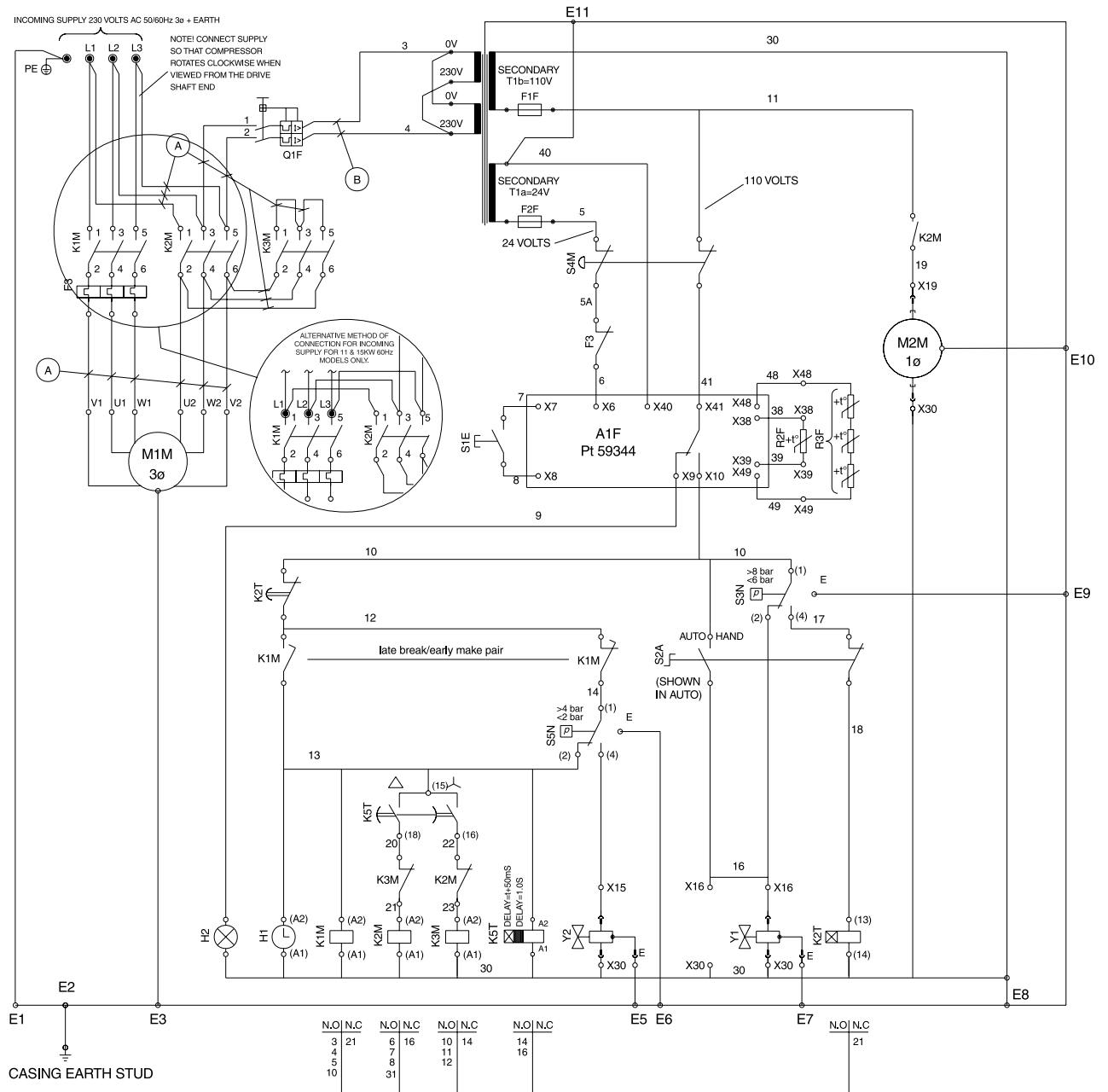
435A124

74069 Issue K

A1F Over temperature control PCB
 F1F Fuse - 1.6A(T) - IEC127
 F2F Fuse - 1.6A(T) - IEC127
 F3 Thermal overload
 H1 Hours counter
 H2 Indicator lamp 'r' (amber neon)
 K1M Main motor contactor
 K2T Run on timer
 M1M Main drive motor
 M2M Cooling fan motor

Q1F Circuit breaker - 2 pole, 6 Amp
 R2F Compressor overtemperature thermistor
 R3F Motor overtemperature thermistors
 S1E Start/reset pushbutton switch
 S2A Auto/manual selector switch
 S3N Line pressure switch
 S4M Emergency stop/stop switch
 T1a Control transformer - 24V secondary
 T1b Control transformer - 110V secondary
 Y1 Vent solenoid valve - n.o.

Circuit Diagram - 5.5-15kW DOL 60Hz.UL (Standard Control)



435A126

74103 Issue G

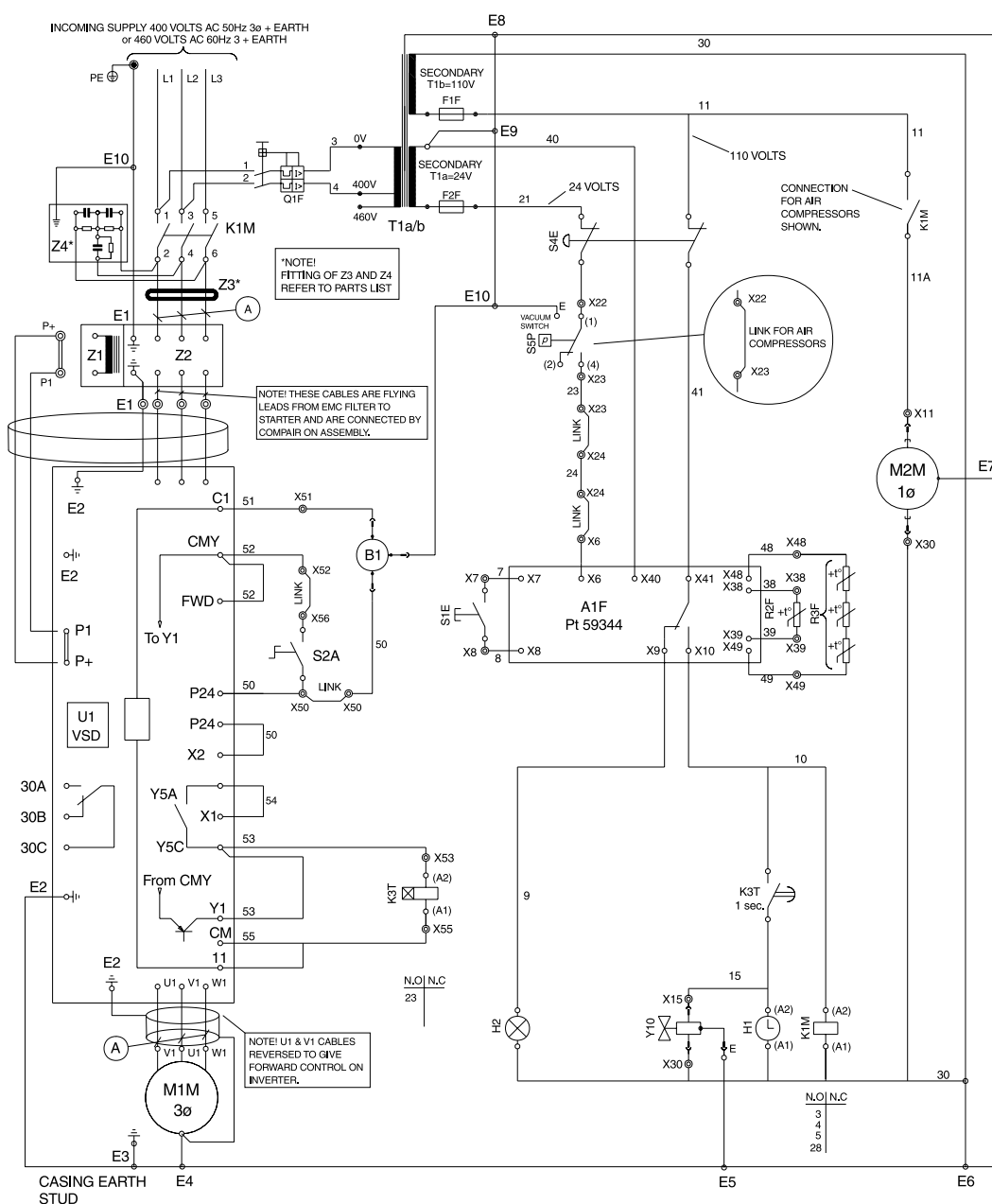
A1F Over temperature control PCB
 F1F Fuse - 1.6A(T) - IEC127
 F2F Fuse - 1.6A(T) - IEC127
 F3 Thermal overload (optional)
 H1 Hours counter
 H2 Indicator lamp 'r' (amber neon)
 K1M Line contactor
 K2M Delta contactor
 K3M Star contactor
 K2T Run on timer
 K5T Star-delta timer
 M1M Main drive motor
 M2M Cooling fan motor

Q1F Circuit breaker - 2 pole, 6 Amp
 R2F Compressor overtemperature thermistor
 R3F Motor overtemperature thermistors
 S1E Start/reset pushbutton switch
 S2A Auto/manual selector switch
 S3N Line pressure switch
 S4M Emergency stop/stop switch
 S5N Compressor pressure switch
 T1a Control transformer - 24V secondary
 T1b Control transformer - 110V secondary
 Y1 Vent solenoid valve - n.o.
 Y2 Rapid vent solenoid valve - n.c.

Circuit Diagram - V07 - 230V 3Ø 50/60Hz Standard Control

Section 3

Installation and Commissioning



435A128

74480 Issue J

A1F	Over temperature control PCB
B1	Pressure transducer, 4-20mA, 10-36Vdc
F1F	Fuse - 1.6A(T) - IEC127
F2F	Fuse - 1.6A(T) - IEC127
H1	Hours counter
H2	Indicator lamp 'r' (amber neon)
K1M	Isolating contactor
K3T	Timer 24Vdc, 0 to 5 seconds
M1M	Main drive motor
M2M	Cooling fan motor (if fitted)
Q1F	Circuit breaker - 2 pole, 6 Amp
R2F	Compressor overtemperature thermistor
R3F	Motor overtemperature thermistors

S1E	Start/reset pushbutton switch
S2A	On/off selector switch
S4E	Emergency stop/stop switch
S5P	Intake vacuum switch
S6P	High pressure switch (if fitted)
T1a	Control transformer - 24V secondary
T1b	Control transformer - 110V secondary
U1	Variable speed drive
Y10	Vent solenoid valve - n.o.
Z1	D.C. reactor (choke) (if fitted).
Z2	EMC filter assembly
Z3	Ferrite core (15kW models only)
Z4	Capacitor assembly (15kW models only)

Circuit Diagram - 5.5, 7.5, 400V 50Hz/460V 60Hz Variable Speed

A - Compressor Assembly (Fig 4.1)

The compressor comprises a single stage, oil sealed, rotary, sliding vane compressor air-end driven by an electric motor mounted on a base. It is supplied with control panel, starter, and combination oil cooler/air aftercooler with all accessories piped in and electrically connected.

The compressor air-end (A) is assembled via bell housing (B) to the flange face of drive motor (C). The rotor of the air-end is directly coupled to the drive shaft of the motor. The motor is mounted directly to the compressor base (D).

A fan (E) is assembled to the end of the motor shaft to force a cooling airflow through the combination oil cooler/air aftercooler (F). The compressor controls (G) are located on top of starter panel (H). For RS models the inverter drive (W) with keypad control is mounted in the front trim panel.

The compressor air intake is protected by air intake filter (J) and the oil system by oil filter (K).

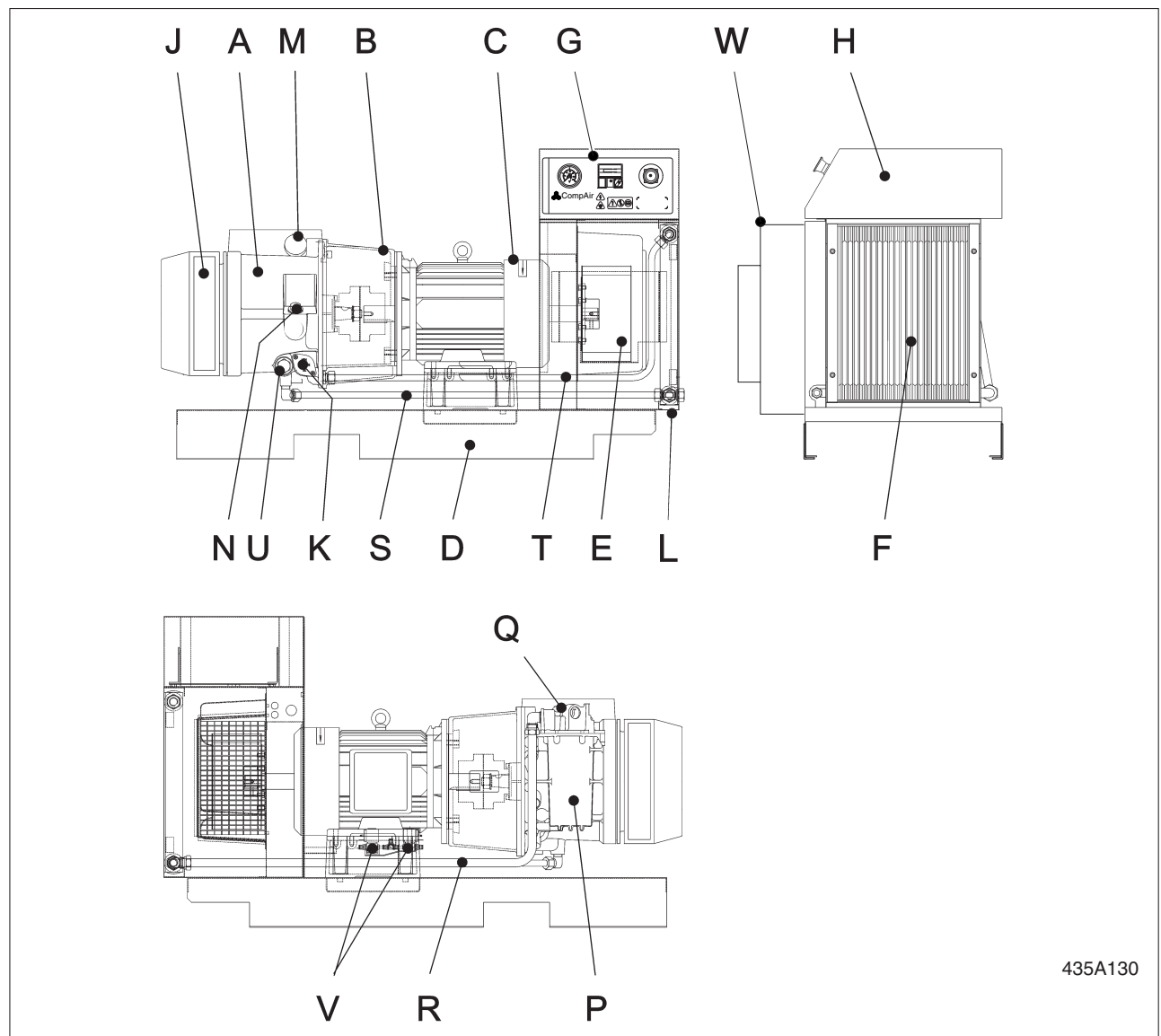
Oil is drained from the air-end and cooler by removing drain plug (L).

Figure 4.1 also shows the location of the compressor air-end pressure gauge (M), and oil filler plug (N).

The separator (P) is located at the rear of the compressor and ensures that the air delivered through the minimum pressure valve (Q) has an oil cleanliness of less than 3 ppm (parts per million by weight). The air is delivered through the air delivery pipe (R) to the aftercooler.

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

The blowdown solenoid (V) allows the air-end pressure to fall before compressor restarts.



435A130

Figure 4.1 - Compressor Assembly

Section 4

General Description

B - 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 but can be configured for continuous running when excessive stop/starts occur.

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.

C - 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.

A - 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.

B - Operating Temperatures

Your compressor is designed to give optimum performance and trouble free service life when the bulk oil temperature is between 80°C and 90°C.

The temperature can be measured by placing a thermometer into the thermometer pocket located in the oil filler plug.

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

If your compressor frequently operates in high ambient temperatures the oil life will be reduced.

C - High Operating Temperatures

Some of the reasons for high compressor oil temperatures are:

- a) Low oil level.
- b) Blocked oil cooler or cooler flow restrictions.
- c) Wrong type or grade of oil.
- d) High ambient temperature.

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.

D - Oil Life of Fluid Force (See tables below)

Fluid Force Clear	
Bulk Oil Temperature (Degree Celcius)	Maximum Oil Change Period (Hours Run)
Up to 90	1000
90 - 100	500
Over 100	No guaranteed service life
Over 100	No guaranteed service life

Fluid Force 2000	
Bulk Oil Temperature (Degree Celcius)	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

Fluid Force HPO	
Bulk Oil Temperature (Degree Celcius)	Maximum Oil Change Period (Hours Run)
Up to 90	4000
90 - 95	3000
95-100	2000
100 - 105	1500
105-110	1000
Over 110	No guaranteed service life

E - Oil Level

The oil level should be checked by removal of the filler plug, follow the procedure for oil top up.

F - Noise Level

The sound pressure level is less than 85 dB(A) on a surface 1 metre from the machine. However the compressor should be positioned where noise will not be a problem. We recommend ear protection is used, when near the compressor for extended periods.

When measured to the test code Pneurop PN 8NTC 2.3.

G - Pressure Readings

The compressor air-end pressure is displayed by the pressure gauge located in the oil chamber.

H - Air Delivery Temperature

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

This page is intentionally left blank

A - 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'.

B - Checking Procedure Before Starting

- Check oil level.
- Check filler and drain plugs are fitted securely.
- Check for any signs of oil or water leaks.
- Check air-outlet valve is open and test-valve is closed.
- Check that the stop/emergency stop button is released.
- Turn mains electricity supply on.

C - Select Operating Mode

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

Automatic Control (Fig 6.1)

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

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

If the amber reset lamp (B) is illuminated press to reset.

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

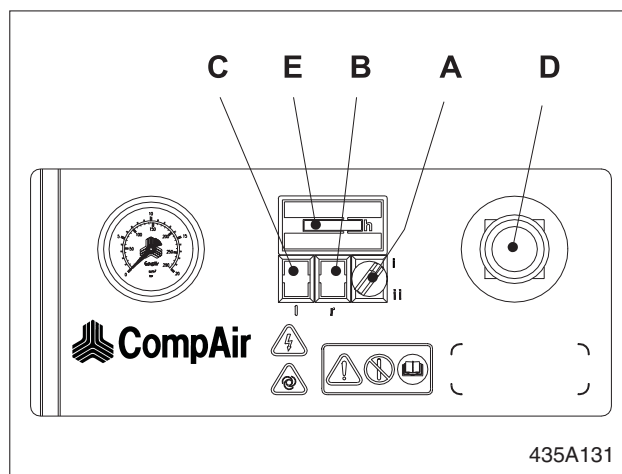


Figure 6.1 - Control Panel Automatic

D - Starting Procedure - Stop/Start Mode

WARNING !  

WHEN IN AUTOMATIC MODE THE COMPRESSOR WILL RESTART WITHOUT WARNING.

Note: Figures in brackets refer to 10 bar machines.

- Complete checking procedure.
- Select automatic (see section C). The compressor is ready to be started in the automatic stop/start mode.
- Press green start button (C), motor will start.

On initial start-up, with no pressure in the air-line system, the air-line pressure displayed on the pressure gauge will rise slowly and should not exceed the high pressure setting of 7.2/7.4 bar (10.2/10.4 bar).

Once the system is fully charged the pressure gauge will vary with fluctuations in the air demand. If a pressure gauge is fitted in the air-line system it should normally read between 6.0 and 7.4 bar (6.0 and 10.4 bar).

If the pressure of the air-line system rises to high pressure setting of 7.2/7.4 bar (10.2/10.4 bar) the automatic stopping sequence begins, the run-on timer starts and the machine begins to "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 a demand for air which allows the air-line system pressure to fall to low pressure setting, typically 6.0 bar. The compressor will not restart until its internal pressure has fallen to below 2 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 and does not stop.

E - Starting Procedure - Continuous Mode (Fig 6.1)

- Complete checking procedure.
- Select continuous run mode (see section C). The compressor is ready to be started in continuous run mode.
- Press green start button (C), motor will start.

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

On initial start-up, with no pressure in the air-line system, the air-line pressure gauge will rise slowly and should not exceed the servo valve setting of 7.5/7.8 bar (10.5/10.8 bar).

Once the air-line system is fully charged the pressure gauge will vary with fluctuations in air demand. The display should normally read between 7.0 and 7.8 bar (10.0 and 10.8 bar).

Section 6

Operating Instructions

F - Starting Procedure - Regulated Speed (Fig 6.2)

- Apply electrical power to the compressor. When power is available the amber reset light 'B' will be illuminated.
- Press the green push button (C). The amber light (B) will extinguish and the speed control unit keypad display will illuminate.
- Rotate the compressor selector switch (A) from position '0' to position '1'. The compressor is now in running mode and will commence rotation when the system pressure is below the target pressure.

During operation the compressor speed will vary automatically to suit flow requirements.

If air demand reduces to a low level and the system pressure rises above the target pressure the speed control unit will automatically stop the compressor after a short time delay; this saves even more energy. Re-starting will occur automatically when the system pressure drops below the target pressure.

During operation of the compressor the hours counter (E) will register total running hours.

G - Stopping procedure

To stop the compressor in either continuous run or automatic stop/start:

Automatic Control

- Press the stop/emergency stop button (D).

The compressor will stop after 1 second. The off-load solenoid will de-energise, allowing air-end pressure to fall to zero in about 3 mins.

The airline pressure display will be high indicating that pressure remains in the air-line system.

Regulated Speed Control

- To manually stop the compressor, rotate the selector switch (A) from position '1' to position '0'. Do not operate the emergency stop button unnecessarily.

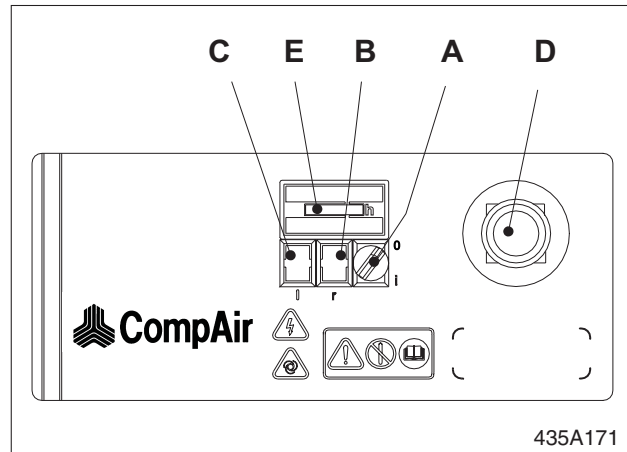


Figure 6.2 - Control Panel RS

H - Emergency Stop Procedure

If an emergency occurs:

- Hit the EMERGENCY STOP button (D).
- The button will lock in the depressed position and stop the compressor immediately. Clear any faults which may have occurred. Do not reset until it is safe to do so.
- Reset by twisting it clockwise.

I - Compressor Vent Down Time

After stopping the air-end must be allowed to vent down naturally. Speeding up the de-pressurisation may cause separator flooding.

A - Pressure Switch - Automatic Control (Fig 7.1)

The compressor is fitted with two pressure switches. Switch A for cut-in and cut-out line pressure and switch B for reading oil chamber pressure which prevents pressurised restart (factory set - do not alter). These are mounted behind the front trim 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.

Adjustment (Fig 7.2)

- Remove trim panel.
- Remove screw (A) and keyplate (B).

Maximum Pressure Adjustment

- Adjust screw (C) until the 'MAX' scale indicates 7.2 bar (on 7 bar compressors) or 10.2 bar (on 10 bar compressors). These pressures should not be exceeded.

Differential Pressure Adjustment

- 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 2.0 bar.

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

- Refit keyplate (B) and screw (A).
- Replace trim panel.
- Switch mains electrical supply on.
- Start compressor and check switch settings for accuracy. If further adjustments are required repeat setting procedure.

B - Pressure Control - RS Compressors

The RS compressor has default factory settings for speed control unit target pressure, compressor servo valve pressure, and motor speed as follows:-

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 6 bar to 10 bar for air compressors.

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

User warning

The compressor and speed control unit 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.

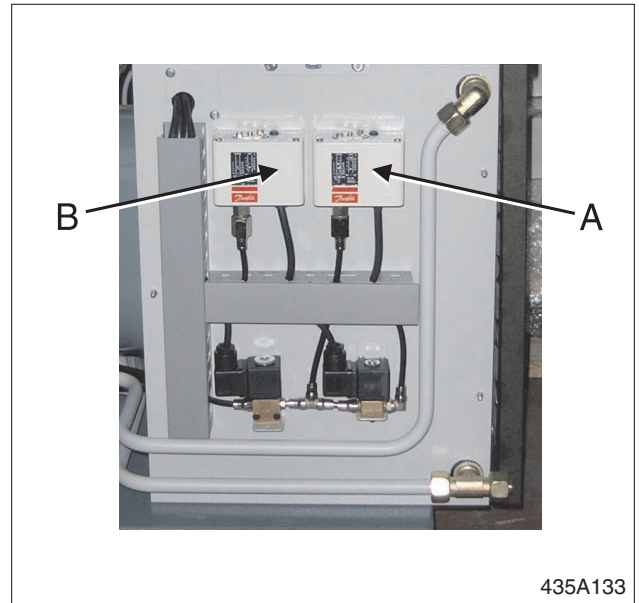


Figure 7.1 - Pressure Switch Location

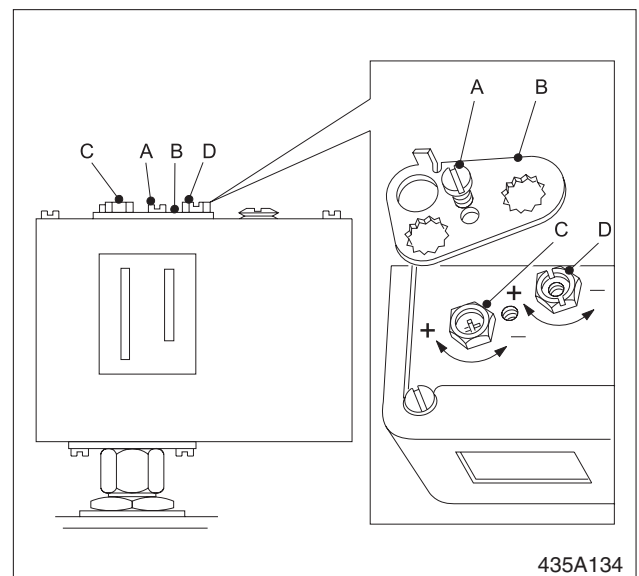


Figure 7.2 - Adjustment Pressure Switch

This page is intentionally left blank

A - 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.

B - 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.

C - Check Compressor Operation

Check compressor operating temperature

Wait until air-end vent down cycle is complete.

Check that the air-end pressure gauge reads zero.

Pour a small amount of oil into the thermometer pocket of the oil filler plug. Screw a temperature gauge or thermometer into the thermometer pocket.

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 the oil temperature displayed on the panel should be typically 90°C.

Check oil temperature. 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 System Pressure

Check the air-line system pressure by using a pressure gauge installed within the system pipework.

If the correct size of compressor has been installed reading should be as follows:

Condition	7 bar	10 bar
When compressor is stopped	0-7.7	0-10.8
Normal working pressure (continuous run mode)	7.0-7.8	10.0-10.8
Stop compressor and see fault finding if	7.8	10.8

Check Compressor Pressure

To check the air-end pressure, use the pressure gauge located in the air-end.

Condition	7 bar	10 bar
Pressure when stopped	After vent down air-end pressure should read 0	
Initial start up (3 seconds approx.)	0-5.5	0-5.5
When charging the air-line	5.5-7.8	5.5-10.8
Normal working pressure (continuous run)	7.0-7.8	10.0-10.8
Compressor offload	7.5-8.00	10.5-11.00

Check Oil Level

The oil level should be checked by removal of the filler plug, follow the procedure for oil top up.

D - Basic Service Procedures

WARNING !  

STOP THE COMPRESSOR AND ISOLATE FROM 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 AIR-LINE SYSTEM. FIT A SAFETY NOTICE TO THE VALVE ADVISING THAT IT IS NOT TO BE OPENED.

DO NOT PROCEED UNTIL GAUGE READS ZERO!

WHEN CHANGING RECOMMENDED OIL TYPES IT IS ADVISABLE TO FLUSH THE COMPRESSOR.

WHEN CHANGING TO FLUID FORCE CLEAR THE COMPRESSOR MUST BE FLUSHED OUT WITH FLUID FORCE PRIME.

Section 8

Servicing

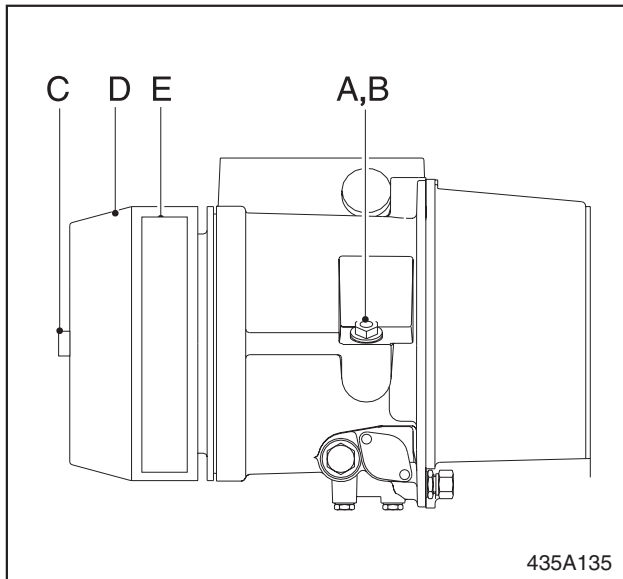



Figure 8.1 - Filler Plug Location

Oil Top-up Procedure (Fig 8.1)

- Wait until air-end vent down cycle is complete.
- Vent pressure from the air aftercooler and associated pipework.
- Check that the air-end pressure gauge reads zero.
- Carefully unscrew compressor filler plug (A).
- Remove filler plug (A). Retain bonded seal (B).
- Top-up to overflow with an approved oil (e.g. Fluid Force).
- Examine bonded seal, if not damaged refit to oil filler plug.
- Refit seal and filler plug, tighten to 25Nm.
- Remove safety notices.

Check Compressor Air Filter (Fig 8.2)

WARNING ! 

IF COMPRESSED AIR IS USED FOR CLEANING, THEN EYE PROTECTION MUST BE WORN AND COMPRESSED AIR SAFETY PRECAUTIONS OBSERVED.

The air filter is located on the intake end of the compressor.

- Unscrew retaining nut (C) and remove the filter cover (D) and seal.
- Remove filter element (E).
- Vacuum clean or blow dust out of filter using **low pressure**, clean dry air. Renew the filter if it cannot be cleaned satisfactorily.
- Wipe clean the area inside the filter cover and its support.
- Refit/replace air filter element (E).
- Reinstall the air filter, sealing washer and cover. Secure the assembly.
- The air filter may contain oil and must be disposed of in an approved manner.

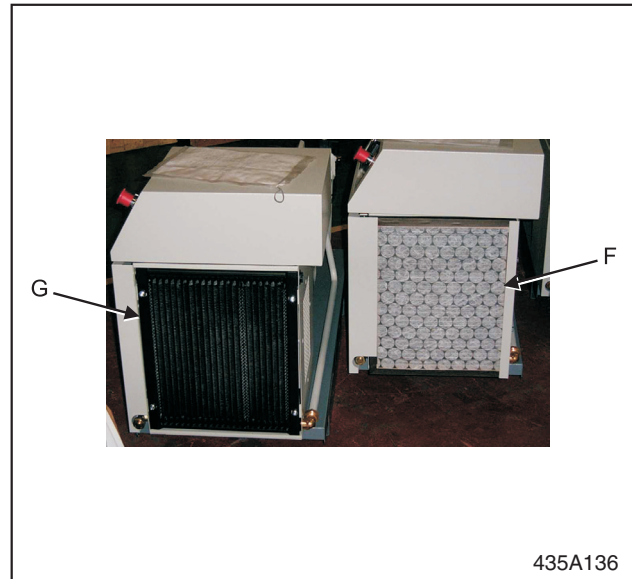


Figure 8.2 - Cleaning Cooler

Clean Cooler/Aftercooler (Fig 8.2)

The combination cooler is located vertically. The matrix face of the cooler is protected by a removeable dust filter.

- Remove trim panel.
- Remove dust filter and dispose (F).
- Using low pressure air, carefully blow out any dust or dirt from cooler matrix (G).
- Fit a new dust filter.
- Replace trim panel.

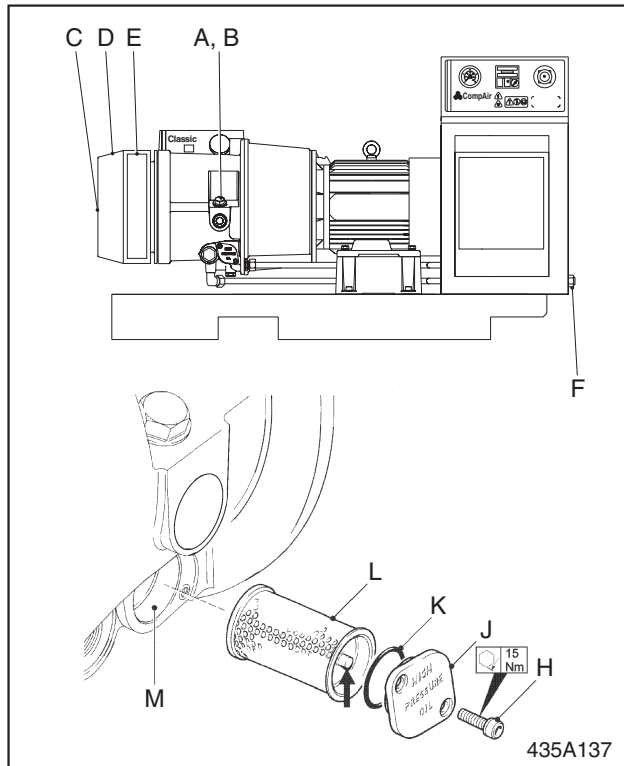


Figure 8.3 - Filters and Drain Plug Location

Oil Draining Procedure (Fig 8.3)

WARNING !

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

- Wait until air-end vent down cycle is complete.
- Vent pressure from air aftercooler and associated pipework.
- Check that compressor air-end pressure gauge reads zero.
- Carefully unscrew compressor filler plug (A).
- Remove plug (A), discard bonded seal (B).
- Place a suitable container below the oil drain plug (F).
- Carefully remove drain plug (F).
- Collect all oil drained from the compressor.

Oil Filter Cleaning Procedure (Fig 8.3)

- Unscrew and remove screws (H).
- Prise out filter cover (J) taking care not to damage 'O' ring groove. Discard 'O' ring (K).
- Remove filter element (L).
- Wash filter element in a suitable cleaning agent and blow dry with low pressure compressed air. Clean out the oil filter bore (M).
- Refit element (L) ensuring centre boss (arrowed) is facing outwards.
- Fit new 'O' ring (K) to filter cover (J).
- Refit filter cover (J) and secure with screws (H). Tighten to 15Nm.
- Refit oil drain plugs (F) using new bonded seals (G). Tighten to 25Nm.

Oil Filling Procedure (Fig 8.3)

- Fill to overflow with an approved oil (e.g. Fluid Force).
- Refit filler plug (A) using a new bonded seal (B). Tighten to 25Nm.
- Check that air outlet is closed.
- Ensure that all covers, guards and plugs are securely fitted.
- Remove safety notices.
- Start the compressor in manual mode and run for 15 seconds only, then stop. Top up oil level as per oil top up procedure.
- Reinstall all panels and covers.
- Test run the compressor and check pressure, temperature. Inspect for oil leaks.
- Ensure panels are fitted and secured, and that air outlet valve is open before leaving.

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

Check drive shaft oil seal and drive end cover bonded seals

The drive shaft oil seal is located in the drive end cover of the compressor air-end. The clamping bolts securing the rotor stator unit pass through the drive end cover and are sealed by bonded seals. The drive end cover is located inside the bell housing and is not directly visible.

- Stop compressor and isolate from mains electrical supply.
- Remove rubber blanking plug located in the bell housing.
- Using a flash light, check for traces of oil around drive shaft oil seal, bonded seals and inside bell housing.
- If no oil is found, refit rubber blanking plug.
- If oil is found, identify location of leak and renew seal.

Note: This is a major service task and should be carried out by fully trained service engineers following procedures described in separate Service Manual. If in doubt contact your CompAir UK Ltd Distributors.

Electrical checks**WARNING !**

- Open the starter panel door.
- Remove any terminal covers fitted to contactors and incoming supply terminals.
- 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.

- Close starter cover and replace the bolt to prevent unauthorised access.

Clean and check electric motors**WARNING !**

- Remove any dust or dirt from motor bodies and motor air intake grill located under the compressor base.
- Reinstate all covers.
- Remove safety notices.

Servicing requirements

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

Read health and safety precautions before starting any work.

Service schedule: Fluid Force Clear Oil (1000 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.

Preventative Maintenance Schedule	Fluid Force Clear							
Maintenance Actions	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Suitable sited	✓							
Adequate ventilation	✓			✓	✓	✓	✓	✓
Ambient temperature	✓		✓	✓	✓	✓	✓	✓
Sufficient access	✓							
Clear of airborne contaminants	✓		✓	✓	✓	✓	✓	✓
Torque electrical connections	✓				✓	✓	✓	✓
Check oil level at filler plug	✓		✓	✓	✓	✓	✓	✓
Check correct drive rotation	✓							✓
Check for air leaks	✓			✓	✓	✓	✓	✓
Check for oil leaks	✓			✓	✓	✓	✓	✓
Check air filter	✓							
Check power on load	✓			✓	✓	✓	✓	✓
Check power off load	✓			✓	✓	✓	✓	✓
Check oil temperature	✓		✓	✓	✓	✓	✓	✓
Check RSU temperature	✓		✓	✓	✓	✓	✓	✓
Check servo pressure off load	✓			✓	✓	✓	✓	✓
Check motor cable glands secure	✓				✓	✓	✓	✓
Check motor for damage	✓			✓	✓	✓	✓	✓
Check motor for loose connections	✓			✓	✓	✓	✓	✓
Check motor cables and earth	✓			✓	✓	✓	✓	✓
Check motor for vibration	✓			✓	✓	✓	✓	✓
Check flexible pipes								
Check oil seal					✓	✓	✓	
Check drive media						✓	✓	✓

Section 8

Servicing

Preventative Maintenance Schedule		Fluid Force Clear						
Maintenance Actions	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Check starter contactors						✓	✓	✓
Check motor insulation resistance								✓
Clean air/oil radiator external			✓	✓	✓	✓	✓	✓
Clean external dirt from motor			✓	✓	✓	✓	✓	✓
Clean cooler filter			✓	✓				
Clean solenoids				✓	✓	✓	✓	✓
Clean external dirt from compressor					✓	✓	✓	✓
Clean oil return filter					✓	✓	✓	
Clean air filter			✓					
Grease motor bearings (if applicable)							✓	
Change Fluid Force Clear oil				✓	✓	✓	✓	✓
Clean oil filter				✓	✓	✓	✓	✓
Change air filter				✓	✓	✓	✓	✓
Change separator element						✓	✓	✓
Change cooler filter					✓	✓	✓	✓
Change unloader valve seals					✓	✓	✓	✓
Change MPV seals					✓	✓	✓	✓
Change vacuum valve seals					✓	✓	✓	✓
Change flexible pipes								
Change thermal motor						✓	✓	✓
Change drive media								✓
Change oil return filter								✓
Change oil seal								✓
Change pressure gauge								✓
Replace motor bearings								✓
Test vacuum valve	✓			✓	✓	✓	✓	✓
Test minimum pressure valve	✓			✓	✓	✓	✓	✓
Test air delivery	✓			✓	✓	✓	✓	✓

Service schedule: Fluid Force 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 recommended oil types it is advisable to flush the compressor.

Preventative Maintenance Schedule	Fluid Force 2000							
	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Suitable sited	✓							
Adequate ventilation	✓			✓	✓	✓	✓	✓
Ambient temperature	✓		✓	✓	✓	✓	✓	✓
Sufficient access	✓							
Clear of airborne contaminants	✓	✓	✓	✓	✓	✓	✓	✓
Torque electrical connections	✓				✓	✓	✓	✓
Check oil level at filler plug	✓		✓	✓	✓	✓	✓	✓
Check correct drive rotation	✓							✓
Check for air leaks	✓			✓	✓	✓	✓	✓
Check for oil leaks	✓			✓	✓	✓	✓	✓
Check air filter	✓			✓				
Check power on load	✓				✓	✓	✓	✓
Check power off load	✓				✓	✓	✓	✓
Check oil temperature	✓		✓	✓	✓	✓	✓	✓
Check RSU temperature	✓		✓	✓	✓	✓	✓	✓
Check servo pressure off load	✓			✓	✓	✓	✓	✓
Check motor cable glands secure	✓				✓	✓	✓	✓
Check motor for damage	✓				✓	✓	✓	✓
Check motor for loose connections	✓				✓	✓	✓	✓
Check motor cables and earth	✓				✓	✓	✓	✓
Check motor for vibration	✓				✓	✓	✓	✓
Check flexible pipes								
Check oil seal					✓	✓	✓	
Check drive media					✓	✓	✓	
Check starter contactors						✓	✓	✓
Check motor insulation resistance								✓
Clean air/oil radiator external			✓	✓	✓	✓	✓	✓
Clean external dirt from motor	✓		✓	✓	✓	✓	✓	✓
Clean cooler filter			✓	✓				
Clean solenoids				✓	✓	✓	✓	✓

Section 8

Servicing

Preventative Maintenance Schedule		Fluid Force 2000						
Maintenance Actions	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Clean external dirt from compressor			✓	✓	✓	✓	✓	✓
Clean oil return filter					✓	✓	✓	
Clean air filter			✓	✓				
Grease motor bearings (if applicable)							✓	
Change Fluid Force 2000 oil					✓	✓	✓	✓
Clean oil filter					✓	✓	✓	✓
Change air filter					✓	✓	✓	✓
Change separator element						✓	✓	✓
Change cooler filter					✓	✓	✓	✓
Change unloader valve seals					✓	✓	✓	✓
Change MPV seals					✓	✓	✓	✓
Change vacuum valve seals					✓	✓	✓	✓
Change flexible pipes								
Change thermal motor						✓	✓	✓
Change drive media								✓
Change oil return filter								✓
Change oil seal								✓
Change pressure gauge								✓
Replace motor bearings								✓
Test vacuum valve	✓				✓	✓	✓	✓
Test minimum pressure valve	✓				✓	✓	✓	✓
Test air delivery	✓				✓	✓	✓	✓

Service schedule: Fluid Force HPO (4000 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 recommended oil types it is advisable to flush the compressor.

Preventative Maintenance Schedule		Fluid Force HPO							
Maintenance Actions	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 4000 hrs	Every 8000 hrs	Every 12000 hrs	Every 24000 hrs
Suitable sited	✓								
Adequate ventilation	✓			✓	✓	✓	✓	✓	✓
Ambient temperature	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sufficient access	✓								
Clear of airborne contaminants	✓	✓	✓	✓	✓	✓	✓	✓	✓
Torque electrical connections	✓				✓	✓	✓	✓	✓
Check oil level at filler plug	✓		✓	✓	✓	✓	✓	✓	✓
Check correct drive rotation	✓								✓
Check for air leaks	✓			✓	✓	✓	✓	✓	✓
Check for oil leaks	✓			✓	✓	✓	✓	✓	✓
Check air filter	✓			✓					
Check power on load	✓				✓	✓	✓	✓	✓
Check power off load	✓				✓	✓	✓	✓	✓
Check oil temperature	✓		✓	✓	✓	✓	✓	✓	✓
Check RSU temperature	✓		✓	✓	✓	✓	✓	✓	✓
Check servo pressure off load	✓		✓	✓	✓	✓	✓	✓	✓
Check motor cable glands secure	✓				✓	✓	✓	✓	✓
Check motor for damage	✓				✓	✓	✓	✓	✓
Check motor for loose connections	✓				✓	✓	✓	✓	✓
Check motor cables and earth	✓				✓	✓	✓	✓	✓
Check motor for vibration	✓				✓	✓	✓	✓	✓
Check flexible pipes									
Check oil seal					✓	✓	✓	✓	
Check drive media							✓	✓	
Check starter contactors							✓		✓
Check motor insulation resistance									✓
Clean air/oil radiator external			✓	✓	✓	✓	✓	✓	✓
Clean external dirt from motor		✓	✓	✓	✓	✓	✓	✓	✓
Clean cabinet air filter		✓	✓						✓
Clean solenoids			✓	✓	✓	✓	✓	✓	✓

Section 8

Servicing

Preventative Maintenance Schedule		Fluid Force HPO							
Maintenance Actions	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 4000 hrs	Every 8000 hrs	Every 12000 hrs	Every 24000 hrs
Clean external dirt from compressor			✓	✓	✓	✓	✓	✓	✓
Clean oil return filter				✓	✓	✓	✓	✓	
Clean air filter			✓	✓					
Grease motor bearings (if applicable)								✓	
Change Fluid Force HPO oil						✓	✓	✓	✓
Clean oil filter						✓	✓	✓	✓
Change air filter					✓	✓	✓	✓	✓
Change separator element						✓	✓	✓	✓
Change cooler filter					✓	✓	✓	✓	✓
Change unloader valve seals					✓	✓	✓	✓	✓
Change MPV seals					✓	✓	✓	✓	✓
Change vacuum valve seals					✓	✓	✓	✓	✓
Change flexible pipes									
Change thermal motor							✓		✓
Change drive media									✓
Change oil return filter									✓
Change oil seal									✓
Change pressure gauge									✓
Replace motor bearings									✓
Test vacuum valve		✓			✓	✓	✓	✓	✓
Test minimum pressure valve		✓			✓	✓	✓	✓	✓
Test air delivery		✓			✓	✓	✓	✓	✓

Copyright © 2000

All rights reserved. The copyright of this document is the property of CompAir UK Limited. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of the Technical Publications Department, CompAir UK Limited.

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

E-mail:
Telephone:
Fax:

Sales@CompAir.co.uk
Redditch (01527) 525522
(01527) 521140

(AN INVENSYS COMPANY)