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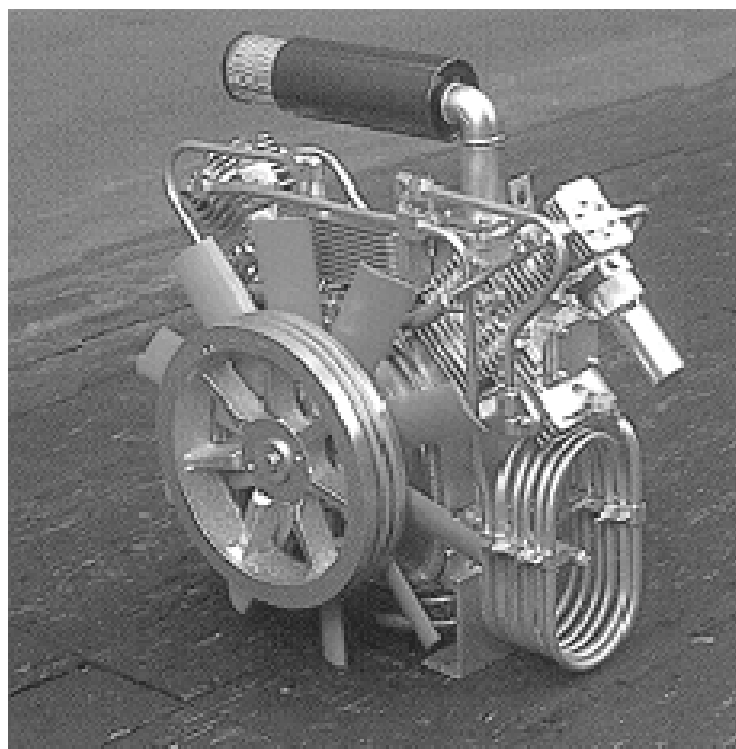
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OPERATOR HANDBOOK ***for*** ***H5406, H5406E, H5406EI & H5406EH*** ***Aircooled Air Compressors***



In any correspondence please quote: **JOB NUMBER:**
MACHINE NUMBERS: (on nameplate)
PUBLICATION NUMBER: 98407.1023
ISSUE DATE: AUGUST 1995
CUSTOMER ORDER NUMBER:



CompAir UK Ltd. Ranelagh Road IPSWICH ENGLAND IP2 0AQ

Telephone: +44 (0) 1473 602222 Fax: +44 (0) 1473 601704 Parts Fax: +44 (0) 1473 601282 Service +44 (0) 1473 556027
www.CompAir.com e-mail: ipswich@CompAir.com

**DECLARATION OF INCORPORATION****CERTIFICATE 'C' CATEGORY 1****98/37/EEC**

(Known as the 'Machinery Directive')

BS EN292:

(Safety of Machinery)

BS EN1012-1

(Compressors - Safety Requirements)

We **COMPAIR UK LIMITED**of **RANELAGH ROAD, IPSWICH, ENGLAND IP2 0AQ**

declare that under our sole responsibility for supply / manufacture, the machinery described below,

Machine Type **Rotary Compressor** ☐**Reciprocating Compressor** ☐
Other Pressure Equipment. ☐

Model No. _____

Serial No. _____

to which this declaration relates is in conformity with the essential Health and Safety Requirements identified in the above Directives.

This machine/equipment is exempt from 97/23/EC the Pressure Equipment Directive, reference Article 1 clauses 3.3 & 3.6

STATEMENT**This machinery must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the above Directives.****IPSWICH, ENGLAND***Signature and name of responsible person*

DATE _____

ENGINEERING DIRECTOR

Position

Notified Body:Lloyds Register
European Directive Services UK
Hiramford
Middlemarch Office Village
Coventry.
CV4 4FJ
(Notified Body Reference: 0038)**Conformity assessment procedure:** Module H (H1 where appropriate)**Language.**English.
French.
German.
Spanish.
Italian.
Dutch.

COMPRESSOR LOG SHEET

COMPRESSOR										PRIME MOVER		INSTALLED AT		REF. NO.	
TYPE:			TYPE:							OIL GRADE USED:					
SPEED:			B.H.P.							CHECK OIL LEVEL					
SERIAL NO:			DRIVE:			DATE INSTALLED:				CHECK WATER IN/OUT TEMPERATURE					
CHECK COOLING FAN BLADES															
DATE	TIME	*HOURS RUN	STAGE TEMP.°C	FINAL STAGE TEMP.°C	STAGE PRESSURES #(BAR - PSI)					FINAL AIR PRESSURE #(BAR - PSI)	SERVICE PLAN NUMBER	REMARKS SEE OVER FOR MORE	SIGNED		
		#50/100			1	2	3	4	5						
		500													
		1000													
		1500													
		2000													
		2500													
		3000													
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		11500													
		12000													
		12500													

*FILL IN HOURS RUN AS DETAILED ON SERVICE PLAN FOR PARTICULAR COMPRESSOR TYPE

DELETE AS NECESSARY - † FILL IN APPROPRIATE STAGE TRIP TEMPERATURE READING

SERVICE ENGINEER TO SIGN & FILL IN ANY OTHER COMMENTS IN REMARKS COLUMN

SERVICE TELEPHONE +44 (0) 1473 556027 - PARTS +44 (0) 1473 601282



OPERATOR MANUAL - 5000 SERIES AIR COMPRESSORS

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WARNING



The use of replacement parts or lubricating oils not supplied, recommended or approved by **CompAir UK Ltd Ipswich**, or the failure to maintain this equipment in accordance with the maintenance instructions, may invalidate the WARRANTY, cause equipment failure, create unsafe or hazardous conditions or result in damage to the equipment.

CompAir UK Ltd Ipswich cannot accept responsibility for damage, injury or failure caused by these situations.

USE ONLY



CompAir UK Ltd Ipswich

**GENUINE PARTS
AND
AUTHORISED SERVICE AGENTS**

OWNERSHIP DATA

TECHNICAL DATA

It is recommended that details taken from the compressor and motor nameplates are recorded below.

Model Type:	Motor Serial Number:
Serial Number	Motor RPM:
Year:	Motor kW:
Maximum Pressure:	Motor V. Ph. Hz:
Compressor Lubricant:	Motor Bearing Grease: (if applicable)
Capacity M³/hr - CFM	Notes:

CompAir UK Ltd Ipswich CONTACT DETAILS

Contact Name:	Sales Telephone: +44 (0) 1473 602222
Address: CompAir UK Ltd Ranelagh Road Ipswich IP2 0AQ ENGLAND	Notes:
Telephone: +44 (0) 1473 602222	Fax: +44 (0) 1473 601704
Contact Names:	Parts Telephone: +44 (0) 1473 602222 Parts Fax: +44 (0) 1473 601282
Contact Names:	Service: +44 (0) 1473 556027

For any comments or queries about the contents of this MANUAL please write to CompAir UK Ltd.
Ranelagh Road, Ipswich 1P2 0AQ. England marked for the attention of Mr. Dennis Beeton, Technical
Publications Engineer.

FOREWORD

CompAir UK Ltd Ipswich H5000 Series compressors are designed and manufactured to give optimum performance, with long life and reliability.

SPECIAL ATTENTION

The **STANDARD BUILD** of all CompAir UK Ltd (Ipswich Operations) products are not intended for use in either Explosive or Potentially Explosive Atmospheres as defined in Directive 95/9/EC.

An Explosive atmosphere is a mixture with air, under atmospheric conditions, of flammable gases, vapours, hazes or dusts in which, after ignition has occurred, combination propagates to the entire unburned mixture and may cause a hazard.

A Potential Explosive atmosphere is an atmosphere, which could become explosive due to local conditions.

This Manual will help you to obtain the best performance from your compressor. It provides the information required to install, commission and operate the compressor and carry out regular maintenance schedules, which will ensure the maximum satisfactory service life.

Included within the Manual is a comprehensive Parts List to allow the user to order spare parts for servicing. Servicing facilities and the supply of genuine replacement parts are provided through a world-wide network of CompAir Companies and CompAir UK Ltd Distributors, backed by the Service and Parts Departments at CompAir UK Ltd, Ipswich (UK) tel: +44 (0) 1473 602222. fax: +44 (0) 1473 601704. Customer Service +44 (0) 1473 556027 or Parts fax: +44 (0) 1473 601282.

The information in this Manual was correct at the time of printing but modifications to parts and procedures may be made without notice which could affect the servicing requirements of the compressor. Before any servicing or maintenance work is undertaken the user is advised to contact the local CompAir Company or CompAir UK Ltd Distributor for revised or up-dated information.

In any communication concerning the compressor it is essential to quote the MODEL, SERIAL No. and any CONTRACT Ref.

It is important this Manual is retained with the compressor for reference and should remain with the compressor if it is sold or transferred to another user. Ensure that the new user is made fully aware of the need to study the Safety Section and any Warnings for safe operation given throughout the text.

Protect the environment by using only approved method of disposal of condensates lubricating oil etc.

- Please note:**
- a. Throughout the Manual all pressures quoted are gauge pressures.
 - b. Whilst recyclable materials are used as far as possible, please ensure when disposing of condensate, spent oil, used filter elements and any discarded parts or waste material of any kind make sure that there is no pollution to any natural water-course, drain system and that no burning waste takes place which could cause pollution of the atmosphere.

CAUTION

Use only **CompAir UK Ltd Ipswich Genuine Parts** when carrying out routine maintenance or repair. The use of replacement parts or lubricating oils not supplied or recommended by **CompAir UK Ltd Ipswich** can lead to expensive failures, which will not be covered by warranty.

Substitution of parts not manufactured or approved by CompAir UK Ltd Ipswich can create a potential personnel hazard.

**This is a High Pressure Compressor, for safe and reliable operation use only
genuine CompAir UK Ltd Ipswich Parts**

To ensure continued trouble free operation it is important that periodic servicing is carried out in accordance with the information given in this manual - refer to the "Maintenance Section".

Conditions of CompAir UK Ltd Ipswich warranty are stated in our Conditions of Sale. Details of warranty for a particular unit may be obtained from the local CompAir Company or authorised Distributor.

SAFETY PROCEDURES

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SAFETY

- **WARRANTY**
The Conditions of the CompAir UK Ltd Ipswich Warranty are set out in the Standard Conditions of Sale.
- **MAINTENANCE**
To ensure continued trouble free operation of the compressor it is important that periodic maintenance and servicing are carried out in accordance with the information given in the "Maintenance" section of this Manual. If any replacement or repair is needed use genuine CompAir UK Ltd Ipswich parts.
- * **WARNING**
The use of replacement parts or lubricating oils not supplied or approved by CompAir UK Ltd Ipswich may lead to failures in service which would not be covered by warranty.

Any unauthorised modifications or failure to maintain this equipment in accordance with maintenance instructions may make it unsafe. ***The use of replacement parts not supplied by CompAir UK Ltd Ipswich may create hazardous conditions over which CompAir UK Ltd Ipswich has no control.***

Such hazardous conditions may lead to accidents that can be life threatening, cause substantial bodily injury or result in damage to the equipment. ***CompAir UK Ltd Ipswich can bear no responsibility for equipment for which unapproved replacement parts are included.***

SPECIAL NOTE:

THE FOLLOWING HEALTH AND SAFETY PRECAUTIONS MUST BE READ IN CONJUNCTION WITH ANY OTHER MANUFACTURERS EQUIPMENT SUPPLIED.

SAFETY

1. GENERAL

CompAir UK Ltd Ipswich compressor safety relates to the document BS EN1012-1 Compressors and Vacuum Pumps - Safety requirements and the UK Pressure Systems Health & Safety Regulations S.I. No. 128.

- Most accidents which occur during the operation and maintenance of machinery result of failure to observe basic safety rules or precautions. Recognising a situation that is potentially hazardous can often prevent an accident.
- When handling, operating or carrying out maintenance on the unit, personnel must observe safe engineering practices and all relevant local regulations. The attention of users is drawn to the Health and Safety at Work Act 1974, and the regulations of the Institution of Electrical Engineers.
- CompAir UK Ltd cannot anticipate every possible circumstance, which might represent a potential hazard. The WARNINGS in this manual are therefore not all inclusive. If the user employs an operating procedure, an item of equipment or a method of working which is not specifically recommended by CompAir UK Ltd then they must ensure that the unit will not be damaged or made unsafe and that there is no risk to persons or property.
- Failure to observe these precautions given under "Safety Precautions" may be considered dangerous practice or misuse of the compressor
- Read and understand all WARNINGS, CAUTION AND MANDATORY LABELS on the unit before operating or carrying out maintenance or servicing.

2. WARNINGS, CAUTIONS & NOTES

- The following details for this Safety Section relate to the **ESSENTIAL SAFETY REQUIREMENTS** referred to in Directive 89/392/EEC, Amended 91/286/EEC.



- Warnings call for attention to operation procedures involving specific hazards which could cause injury or death and are identified by the following:-



RISK OF DANGER



RISK OF ELECTRIC SHOCK



RISK OF HIGH PRESSURE



RISK OF HOT SURFACE



RISK OF GAS EXHAUST



CONSULT MANUAL

3. GENERAL SAFETY PRECAUTIONS

- When using cleaning solvents, local Health and Safety Regulations must be complied with. Provide good ventilation and use suitable protection such as a breathing filter mask, safety glass, protective apron and gloves.
- Safety footwear should be compulsory in all workshops. Safety helmets must be worn if there is any risk of falling objects.
- If using compressed air for cleaning purposes, ensure safety regulations are complied with and appropriate clothing worn.
- Never direct compressed air onto your skin or at other people. Never use compressed air to clean loose dirt from clothing.

3. GENERAL SAFETY PRECAUTIONS (Cont.)

- Before releasing compressed air through a hose make sure the free end is held securely so that it cannot whip and cause injury.
- Avoid injury by using a hoist to lift heavy loads. Check that all chains, hooks, shackles and slings are in good condition and are of the correct capacity. They must be tested and approved according to local safety regulations.
- Cables, chains or ropes should never be applied to lifting eyes. Always use an appropriate shackle or hook, properly positioned. Arrange lifting cables so that there are no sharp bends. Use a spreader bar to avoid side loads on hooks, eyes and shackles and never leave a heavy load unattended.
- When a load is on a hoist stay clear of the danger area beneath and around it. Keep lifting acceleration and speed within safe limits.

4. INSTALLATION PRECAUTIONS

- Competent personnel under a qualified supervisor must only carry out installation work.
- A fused isolator switch must be fitted between the main power supply and the compressor.
- Precautions must be taken to ensure that no injury is caused to passers-by through loose clothing being sucked into compressor intake.
- Ensure that the discharge pipe from the compressor to the user pipework, receiver or storage is free to expand and that no flammable material is within the vicinity. If any such material is close-by take steps to preclude ignition.
- A manual shut-off valve should be fitted in the discharge line to allow the compressor to be isolated. Non return valves cannot be relied upon for isolating parts from a pressure system. A safety valve must be installed between any compressor unit and the isolating valve.
- A pressure-relieving device must be fitted to every pressure vessel, or equipment containing air or gas above atmospheric pressure. Never remove or tamper with safety devices, guards or insulation fitted. In order to limit the risk of Legionnaires Disease, CompAir UK LTD advise caution with the use of cooling towers for water cooling the compressor. Closed circuit or direct mains cooling is preferred.
- Pipework or other parts with a surface temperature above 70°C, which may be accidentally touched in normal operation, must

be guarded or insulated. Other high temperature pipework should be clearly marked and all pipework should be clearly marked.

5. OPERATIONAL PRECAUTIONS

- Competent personnel under a qualified supervisor must only operate the compressor.

- *Do not operate compressor with any removable inspection cover removed e.g. crankcase doors, valve covers etc.*

- Never remove or tamper with safety devices, guards or insulation materials.
- The compressor must only be operated at the supply voltage and frequency for which it is designed. Always isolate power before maintenance or servicing.
- When mains power is ON, lethal voltages are present in the electrical circuits and extreme caution is need when essential work is carried out on the electrical system. **ALWAYS CONSULT A QUALIFIED ELECTRICIAN BEFORE ANY SUCH ESSENTIAL WORK.**
- Do not open starter compartment to touch electrical components while voltage is applied unless it is necessary for measurement, test or adjustment. Such work should always be carried out by a qualified. Electrician with appropriate tools and protection against an electrical hazard.
- If the unit is equipped with a Remote Control device, attach warning notices stating **"THIS UNIT CAN BE STARTED REMOTELY"** in prominent locations, one on the outside of the unit, the other inside the control compartment.
- As a further safeguard, take adequate precautions that no one is working or checking the unit before attempting to switch on remotely controlled equipment. Attach a **"CHECK THAT ALL PERSONNEL ARE CLEAR OF UNIT BEFORE STARTING"** or similar notice.
- Compressed air and gas piping, together with cooling water piping and other parts, with surface temperature greater than 70°C and may be accidentally touched, should be guarded or insulated.

5. OPERATION PRECAUTIONS (Cont.)

- If there is any indication that the compressor is overheating it must be shutdown. (A high air or gas temperature switch is fitted as standard to guard against operating with excessive temperature). Beware of burns from hot oil and water when working on a unit recently shutdown.
- Do not operate the unit when guards provided for protection for all rotating and reciprocating parts have been removed for essential maintenance. Secure guards following any servicing or repair.
- Local noise regulations must be observed. Ear defenders are suggested by Noise at Work Regulations 1989 when the level is greater than 85 dB A at one meter. Be aware high noise levels can interfere with communication.

6. MAINTENANCE & REPAIR PRECAUTIONS

- Competent persons under qualified supervisor must carry out maintenance repair and modifications.
- The compressor will have a preserving oil applied to interior surfaces (Oil lubricated models). Oil free models will have desiccant bags in valve covers and distance pieces.
- Handling components such as seals, gaskets and diaphragms should not present a personnel hazard. Preservation oils again should not present a personnel hazard if handled under normal handling practices.
- Whilst compressors are asbestos free, treat all damaged gaskets as asbestos - when the Asbestos at work regulations apply.
- Viton 'O' seals under normal operating conditions are safe.
- However, should there be a fire within the compressor or these seals are likely to exceed a temperature of 300°C the material will decompose.

• **Degraded Viton gives off Hydrogen Fluoride fumes and if in contact with the skin an acid formed causes severe burns.**

- If Viton seals appear charred or gummy do not touch with unprotected hands: use neoprene or PVC gloves.

- Wash the area with limewater and avoid breathing any fumes. If contamination of the skin occurs washes with limewater and seeks medical advice.

Pre-Maintenance Operation

- 1. Isolate the compressor from the main electrical supply. Lock the isolator in the OFF position and remove fuses.

- 2. Attach a label "**WORK IN PROGRESS - DO NOT APPLY VOLTAGE**".

- 3. Close the isolating valve between the compression unit and user's pipework. Close the isolating valve in the cooling water inlet pipe. Attach a label "**WORK IN PROGRESS - DO NOT OPEN**".

- 4. Check that all pressurised gas trapped in the system is released to atmosphere or safely to gas storage. Check that all pressure gauges register zero.

- 5. Ensure that the cooling water system has been drained.

- 6. Check that the drain valve on the delivery manifold is clear and gas pressure has been released.

- 7. Check that all interstage drains are open to ensure any gas trapped between stages has been released.

- Stand clear of all valve covers when removing the securing screws.
- When removing valve covers for valve replacement, ensure a minimum of two threads is left engaged on the valve cover securing screws. Lever the valve cover until the 'O' seal is disengaged from the port in the cylinder head. Remove the securing screws and take out valve cover.

• **Use only lubricating oils and greases approved by CompAir UK LTD to avoid potential hazards especially the risk of explosion or fire and the possibility of decomposition or generation of hazardous gases.**

- Always clean oil spills from the surrounding floor before and after maintenance work.

6. MAINTENANCE & REPAIR (Cont.)

- Make sure all instructions concerning operation and maintenance are strictly followed and that the complete unit, with all accessories and safety devices, is kept in good order.
- The accuracy of pressure gauges and temperature switches should be regularly checked at least 13 month intervals and thoroughly examined at least every 48 months. They must be renewed or service exchanged when acceptable tolerances are exceeded.
- Protection devices should be tested at each regular service interval and replaced or service exchanged if not functioning correctly. The maximum pressure for safety valves under fault conditions is 1.10 times the set pressure, the set pressure being a minimum of 1.05 times the maximum operating pressure to ensure seat tightness.
- Never use a light source with an open flame for inspection.
- Before dismantling any part of the compressor be sure that all heavy movable parts are secure.
- After completion of any maintenance or repair ensure that no tools, loose items or rags are left on or inside the compressor.
- Do not use any flammable liquid to clean valves, filter elements, cooler passages, pipe bores or any component carrying a flow of air or gas during normal operation. If chlorinated hydrocarbon substances are used for cleaning, safety precautions must be taken against toxic vapours, which may be released.

DO NOT USE CARBON TETRACHLORIDE.

- Precautions must be taken against using acids, alkalis and chemical detergents for cleaning machined parts. These materials cause irritation and are corrosive to the skin, eyes, nose and throat. Avoid splashes and wear suitable protective clothing and safety glasses. Do not breathe mists. Ensure water and soap is readily available.
- When disposing of condensate, old oil, used filter elements and other parts and waste material of any kind make sure that there is no pollution to any drain or natural water course and that no burning of waste takes place which could cause pollution of the atmosphere.

- Keep the compressor clean at all times.
- Protect components and exposed openings by covering with a clean cloth or tape during repair or maintenance work.
- Protect the motor, intake, electrical and regulation components against the entry of moisture e.g. steam cleaning.
- Precautions must be taken when carrying out welding or any repair operation which generates flames or sparks. The adjacent components must be screened with non-flammable material and if oil present, the system must first be cleansed thoroughly by steam cleaning.
- Condensate (oil and water mixture from compression process) must be regarded as trade effluent and is therefore not suitable for discharge into a surface water sewer, soakaway or watercourse.

PROTECT THE ENVIRONMENT USE APPROVED METHODS OF DISPOSAL.

7. PRECAUTIONS IN THE EVENT OF FIRE

- Use extreme caution when handling components that have been subjected to fire or very high temperature. Some components may contain fluoroelastomer materials, which decompose under these conditions to form highly corrosive residues. Skin contact can cause painful and penetrating burns resulting in permanent skin and tissue damage.

***This is a high pressure Compressor
use only:
GENUINE
CompAir UK Ltd Ipswich
PARTS***

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CERTIFICATE OF INCORPORATION/CONFORMITY

SAFETY PRECAUTIONS

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SECTION 1

GENERAL DESCRIPTION AND OPERATION

1.1 GENERAL

The 5406/5406E/5406EH high pressure, reciprocating compressors are vee configuration, four cylinder machines cooled by a large pulley driven variable pitch fan.

Air for compression enters via the intake filter and passes to the first stage cylinder where it is compressed before passing through a heat exchanger to the second stage. On exit from the second stage it flows round a cooling system positioned in the fan airstream and then into a separator for condensate removal. On entering the third stage the air is further compressed before passing through the second cooling coil system and condensate removal separator. Final compression takes place in the fourth stage before passing through a finned final cooling system.

All stages are protected by safety valves but the fourth stage safety valve must be fitted in the system before any restriction occurs, i.e. non-return valve etc. On breathing air centres it is fitted to the base of the filtration chamber.

1.2 RUNNING GEAR

Main bearings are replaceable but big end and small end bearings are renewable as a connecting rod assembly.

1.3 VALVES

First and second stage valves are separator flat plate units for suction and delivery duties, whilst the third and fourth stages utilise integral cylinder head combined suction and delivery valve assemblies. All valves are easily accessible for maintenance and replacement when required.

1.4 LUBRICATION

A cam operated force feed oil pump pressurises the lubrication system for the final stage and delivers lubricant via an oil pressure regulator to the fourth stage cylinder plunger. Surplus lubricant is returned from the regulator to the crankcase sump. First, second and third stage cylinders, main, big and small end bearings are all oil mist lubricated. Lubricant returns to the sump for filtration and re-circulation.

The specified lubricant must be used at all times to ensure safe and efficient operation with minimum wear and maximum protection against moist air corrosion.

Recommendations are the result of extensive research at Reavell Works and all responsibility for the use of an oil other than that recommended is placed on the purchaser and his oil company.

THE NORMAL GUARANTEE WILL BE INVALIDATED SHOULD A FAILURE BE ATTRIBUTED, BY COMPAIR REAVELL, TO THE USE OF A LUBRICANT NOT RECOMMENDED.
--

1.5 GAUGES

Pressure gauges are fitted to these machines to monitor inter-stage pressures. A tapping in the oil regulator is connected to a pressure gauge which monitors oil pressure.

1.6 FILTRATION SYSTEM*

The system comprises two high tensile light alloy chambers with the smaller chamber being a separator and the larger filter unit containing a cartridge of chemicals.

The separator which is automatically drained when the compressor is stopped removes the oil and water droplets. A safety valve and bursting disc is fitted to the separator to prevent over-pressurisation. The air out from the separator flows through a non-return valve into the base of the filter chamber. A small separator in the base of the chamber removes some additional moisture. The air then flows through the cartridge containing silica gel, activated carbon, hopcalite and molecular sieve.

The chemicals will remove water, oil mist and odour, and convert CO to CO₂ to comply with BS.4275 but do not remove CO₂. The siting of the compressor intake in an area with low CO₂ levels is essential to fully meet BS.4275 and to ensure longest possible operational life of cartridges.

A bursting disc is fitted in the base of the filter unit.

A pressure maintaining valve on the filter outlet maintains the pressure in the chamber to a preset minimum which improves the efficiency of the separator and filter system.

A pressure switch is connected before the charge valve which automatically shuts the compressor down when the working pressure is reached and the compressor and separator is automatically drained.

A safety valve set for the working pressure and a vent valve are fitted between the charging valve and outlet hoses.

Various types of charging adaptors can be fitted to suit differing cylinders.

1.7 AUTOMATIC STOP/MANUAL START*

On initial starting the compressor is unloaded, but after a few seconds time delay, when full working speed is reached, the diaphragm unloaders close and the compressor delivers normally. Running normally the receiver pressure reaches the pre-determined setting and the pressure switch signals the compressor to stop. At the same time, the automatic motor starter in the control box signals the pilot unloading valve to cut off loader operating air ready for re-starting.

When connected to the cylinder delivery, the diaphragm drain/unloader valve functions as an unloader and as a drain valve also if connected to an oil and moisture separator.

Servo air pressure activates a flexible diaphragm which seats a small diameter valve sealing off any escape of high pressure air. Absence of servo air pressure allows high pressure air to vent.

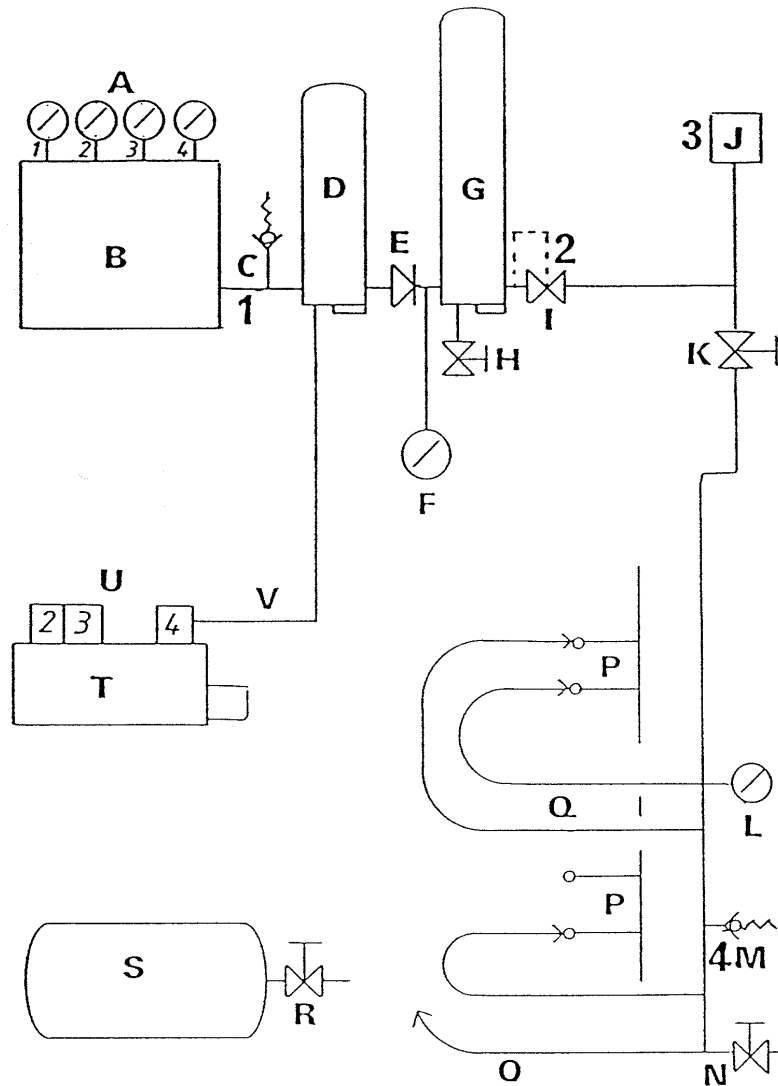
Activating servo air pressure is controlled by a solenoid pilot unloading valve which may be connected to allow the diaphragm valve(s) to automatically unload the compressor on compressor shut down. Low/medium stage air is utilised for the servo actuation.

1.8 PILOT UNLOADER VALVE (SOLENOID OPERATED)*

This valve comprises a three-way air valve operated by a solenoid in one direction and a combination of air and spring pressure in the opposite direction.

*** Optional**

1.9 FILTER FLOW DIAGRAM



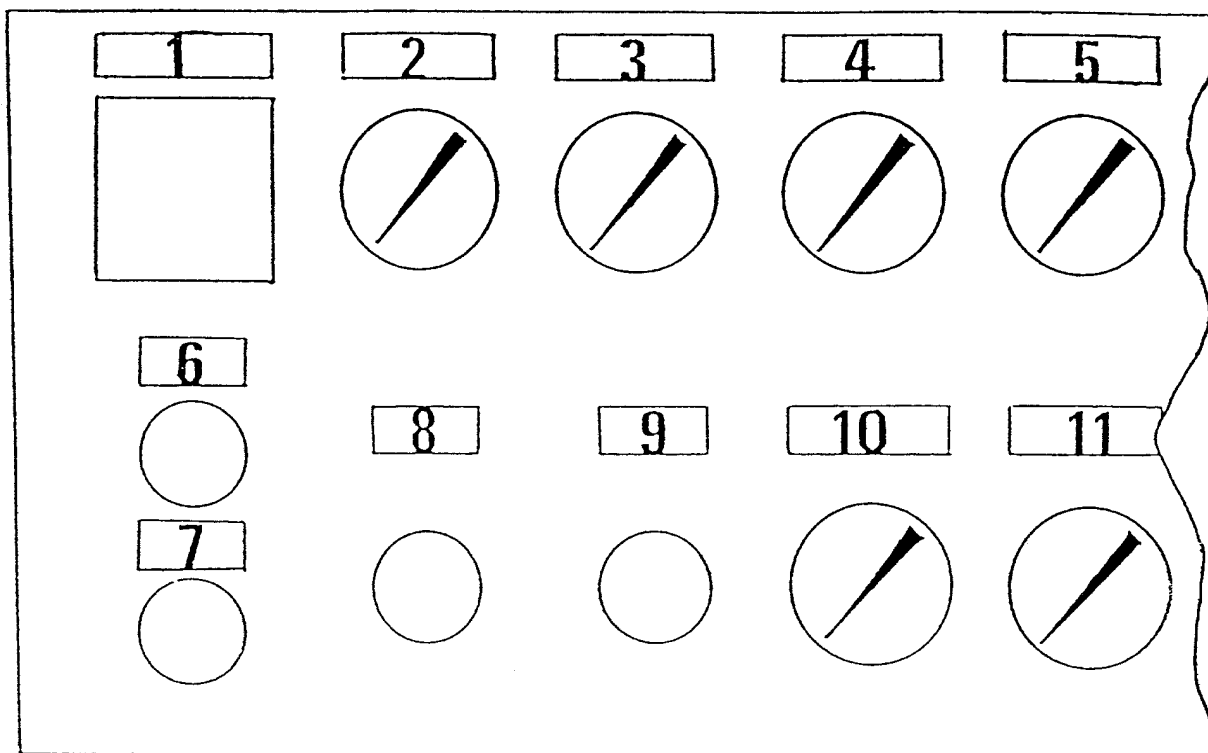
A. Compressor Pressure Gauges	H. Drain valve	P. Hose Plug
B. Compressor	I. Pressure Maintaining Valve	Q. Charging Hoses
C. Safety Valve	J. Pressure Switch	R. Cylinder Valve
D. Separator	K. Charge Valve	S. Breathing Air Cylinder
E. Non-return valve	L. Charge Pressure Gauge	T. Surge Vessel
F. Filtration Pressure Gauge	M. Safety Valve	U. Diaphragm Drain Valves
G. Purification Filter	O. Hose	V. Drain

SETTING

1. SAFETY VALVE. Compressor Pressure +10% - 379 bar MAX.
2. PRESSURE MAINTITING VALVE - 244 bar NORIMAL – 241 bar MAXIMUM.
3. PRESSURE SWITCH – Breathing Air Cylinder Pressure.
4. SAFETY VALVE – Cylinder Pressure +5%.

NOTE: > Can be found on other pages
* Spares item only

1.10 OPERATING AND CHARGING PANEL



1. Hours Run Meter
2. Filtration Pressure Gauge
3. Charging Pressure Gauge
4. First Stage Pressure Gauge
5. Second Stage Pressure Gauge
6. Start Button (Green)
7. Stop Button (Red)
8. Vent Valve
9. Charging Valve
10. Third Stage Pressure Gauge
11. Fourth Stage Pressure Gauge

SECTION 2

LEADING PARTICULARS

2.1 UNIT DESIGNATION

A belt driven, high pressure, air cooled compressor.

2.2 TECHNICAL DATA

5406 5406E 5406EH

Type ----- Four stage, four cylinder
- v configuration

Cooling ----- Fan activated air

Direction of rotation viewed from drive end ----- Anti-clockwise

Type of valves ----- Single & combined
multi-ported

Intake silencer/air filter ----- Dry

Preferred method of control ----- Auto stop/start

2.3 STAGE PRESSURES

	DELIVERY bar	1st STAGE bar	2nd STAGE bar	3rd STAGE bar
5406	68.9	2.5-2.8	10.7-12.4	37.9-44.8
	137.8	2.6-2.8	11.7-13.4	48.3-55.2
	206.8	2.6-2.9	13.1-14.8	56.5-63.4
	275.8	2.7-3.0	14.1-15.9	62.7-69.6
	350.0	3.0-3.2	14.8-16.5	68.9-76.5
5406E	68.9	2.8-3.0	13.0-14.4	44.1-50.7
	137.8	2.8-3.1	13.3-14.8	49.9-56.8
	206.8	2.8-3.1	13.7-15.1	56.3-63.2
	275.8	2.9-3.2	14.1-15.6	62.9-69.4
	350.0	2.9-3.2	14.7-16.1	68.0-74.9
5406EH	414.0	3.0-3.3	15.5-17.6	73.7-81.4

Minimum working pressure ----- 140 bar

Oil pressure ----- 69 bar

Maximum inlet pressure ----- 400 mbar

BAC inlet pressure ----- Atmospheric

2.3 SAFETY VALVE SET PRESSURES

1st Stage ----- bar 4.1 4.1 4.1
2nd Stage ----- bar 21 21 21
3rd Stage ----- bar 97 97 97
4th Stage ----- Supply + 10%

NOTE: > Can be found on other pages
* Spares item only

2.4 GENERAL

	5406	5406E	5406EH
Charging rate (6 litre bottle zero to max press)-----m ³ /hr	18.0	22.0	19
First stage piston displacement-----m ³ /hr	25.5	29.8	29.8
Compressor power.-----@ 350 bar ---kw	6.6	7.3	-
Compressor power.-----@ 414 bar ---kw	-	-	7.5
-----@ 150bar ---kw	6.0	6.45	-
Volume free air delivered-----@ 350 bar ---m ³ /hr	13.9	17.5	-
Volume free air delivered-----@ 414bar ---m ³ /hr	-	-	17
-----@ 150 bar ---m ³ /hr	15.6	18.7	-
Noise level at 3 metres -----db(A)	80	78	78
Cooling air flow rate (approx) at 1800 rpm-----m ³ /hr	3400	5000	5000

2.5 INCLINATION

Maximum permissible inclination of machine:-

Inline with crankshaft -----	10°	10°	10°
90° TO CRANKSHAFT -----	20°	20°	20°

2.6 DIMENSIONS

First stage cylinder bore -----mm	80	80	80
Second stage cylinder bore -----mm	50	50	50
Third stage cylinder bore -----mm	22	22	22
Fourth stage cylinder -----mm	11	11	11
Stroke -----mm	48	56	56
Final delivery O/D pipe connection -----mm	8	8	8
First stage suction connection (Bare M/C) -----Rp	1	1	1
Compressor height (Bare M/C) -----mm	636	685	685
Compressor width -----mm	608	559	559
Compressor length -----mm	401	483	483

2.7 WEIGHT

Bare machine with pulley (approx.)-----kgs	68	72	72
BAC set (approx.)-----kgs	230	230	230

2.8 SPEED

Compressor speed Maximum.-----rpm	1800	1800	1800
Compressor speed Minimum.-----rpm	900	900	900

2.9 TEMPERATURES (Normally recommended)

Ambient and air inlet temperature----- Min.	°C	-10	-10	-10
----- Max.	°C	45	45	45

NOTE:

It is extremely difficult to accurately record air temperatures by the surface metal temperature, due to air flow from the fan cooling down the reading. However, as a general guide, no metal surface temperature should exceed 160°C.

2.10 LUBRICANTS

Recommended oil - synthetic only -----	Reavellite		
Recommended oil alternative -----	Anderol 555		
Sump capacity ----- litres	1.4	1.4	1.4
Recommended grease (for assembly)-----	Shell Alvania R3		

NOTE: > Can be found on other pages

* Spares item only

2.11 CLASS A - CRITICAL TORQUE SETTINGS

All figures $\pm 5\%$

For non lubricated fasteners

ASSEMBLY OPERATION	SIZE	NEWTONS METRE (Nm)
First Stage Valve Covers	M6	5.4
First Stage Valves	M6	4
Second Stage Valve Covers	M6	5.4
Second Stage Valves	M6	4
Third Stage Valve to Cylinder Cover	M8	16
Third Stage Valve	M5	6
Fourth Stage Valve to Cylinder Cover	M8	16
Fourth Stage Valve	M4	4
Flywheel	M10 LH	54
Oil Pump Cam	M10 LH	54
Balance Weight	M8	27
Bursting Disc Plug (Filtration)	1/8" BSP	6.8

CLASS B - ADVISED TORQUE SETTINGS

All figures +5% -15%

ASSEMBLY OPERATION	SIZE	NEWTONS METRE (Nm)
ALL OTHER FASTENERS	M6	8
	M8	20
	M10	40
	M12	71

NOTE: > Can be found on other pages
* Spares item only

SECTION 3

INSTALLATION

3.1 GENERAL

Compressor must be situated in a level, well ventilated position clear of fumes, heat or high humidity to ensure efficient performance and also to prevent over temperature problems. If sited in a large building there should be few problems, provided there is a reasonable air gap between the front and back of the compressor and any obstructions. If positioned in a small or confined building, clean cooling air must be directed or ducted towards the compressor fan ensuring that there is also no air flow short circuit. As all motor power is dissipated in heat to the cooling air, it is essential that expired cooling air has an unobstructed passage and exit. Another important factor is that all coolers, and in particular the delivery air finned tubing, should be maintained in a clean condition to attain maximum dissipation of compression heat.

It is essential to ensure that fumes from engines, toxic gases or exhaust from nearby factories or sites cannot be drawn into the compressor air intake.

In a cold climate the compressor should be installed in a heated location.

Allow sufficient space around the installation to enable safe maintenance working conditions.

Suitable lifting equipment should be readily available.

Protection from severe weather conditions is desirable.

3.2 PACKING AND HANDLING - SETS

Unpacking - Unless the compressor set is delivered uncrated, certain components, e.g. anti-vibration mounts, switches etc. will be packed loose within the crate. To avoid the loss of these items they should be located and removed first.

After unpacking, fit any items which were loose in the crate and are now required for installing the set. To refit anti-vibration mounts, first read the information under 'Handling' then raise the set onto suitable supports and fit mounts by means of attached stud or setscrew.

Any protective blanks fitted to the compressor ports should not be removed until making the pipework connections.

3.3 HANDLING

A guide to the weight of the unit is given in Technical Data and before attempting to lift the set, ensure that the available lifting equipment is of suitable capacity. When lifting by crane or hoist, sling the unit with ropes or chains under the compressor baseplate and ensure by use of a spreader that lifting tackle is held clear of any compressor components such as switches and belt guard etc.

3.4 MOUNTING

For permanent installation seating must be flat, level and designed to support the weight any any out of balance forces.

3.5 BELT DRIVE

Banded belts must be used at all times.

Ensure that driving and driven pulley grooves are in line and shafts are parallel before and after fixing. Tensioning procedures follow normal practise.

3.6 CONNECTIONS, PIPEWORK AND FITTINGS

3.6.1 All piping and connections must be suitable for the pressures and capacities involved.

3.6.2 Ensure all port protection plugs and blanks are removed and that all pipes, especially suction piping, are free from jointing compound, pipe scale, swarf, dirt or other foreign matter before final pipe assembly.

3.6.3 A suction filter must always be fitted to prevent damage and excessive wear.

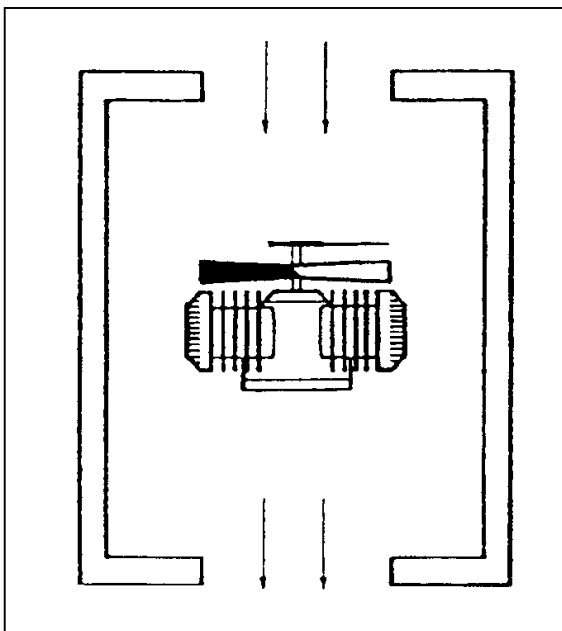
3.6.4 Safety valves are fitted on all stages as standard equipment. However, safety valves must also be fitted to the receiver and pipework system to protect from excess pressure build up.

3.7 ELECTRICAL

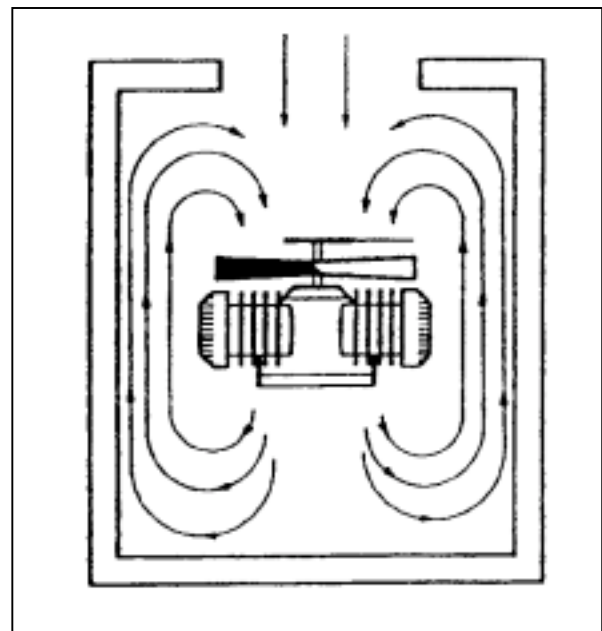
The electrical connections to the set must always comply with any local regulations which are applicable, and be suitable for the loads involved. Wiring must be installed by an electrician competent to work with hazardous area stipulations when appropriate.

As the maintenance periods for the compressor are determined on an hours run basis, some accurate method of operation time recording should be employed to indicate when routine maintenance becomes due. For this purpose, it is recommended that an hours run meter is fitted to the unit.

3.8



RECOMMENDED INSTALLATION
COOLING AIR ENTERS, PASSES OVER MACHINE AND AS HEATED AIR, IT IS EXHAUSTED FROM THE MACHINE ENVIRONMENT.



INCORRECT INSTALLATION
COOLING AIR ENTERS, PASSES OVER MACHINE AND AS HEATED AIR, RE-CIRCULATES IN THE MACHINE ENVIRONMENT.

SECTION 4

COMMISSIONING

COMMISSIONING OR STARTING A NEW OR OVERHAULED UNIT

4.1 LUBRICATION

Important:

The recommended lubricant is REAVELLITE a synthetic oil.

There are some materials, e.g. certain rubbers, paints, plastics, and metals which are not compatible with synthetic oils. Components on these compressors are synthetic oil compatible but a problem may exist with ancillary equipment. Consult equipment manufacturer to determine compatibility.

4.2 BEFORE STARTING

BAC SETS ARE DESPATCHED WITHOUT THE FILTER CARTRIDGES FITTED. TO FIT THE CARTRIDGES FOLLOW INSTRUCTIONS GIVEN IN SERVICE PROCEDURE.

- 4.2.1 Check complete installation, including pipework and alignment of compressor with driving unit. Ensure driving belt tension is correct.
- 4.2.2 Remove dry type suction filter element, blow over with low pressure and re-insert in casing.
- 4.2.3 Ensure silencer bore and pipework is clean.
- 4.2.4 Ensure crankcase is filled to middle of sight glass with REAVELLITE synthetic oil. Do not overfill - over lubrication is harmful.
- 4.2.5 If machine has been idle for six months or more, remove oil pump bearing cover and lubricate the bearing before starting up

ENSURE FOURTH STAGE PLUNGER IS WELL LUBRICATED WITH RECOMMENDED OIL.

4.3 START-UP PROCEDURE

- 4.3.1 Rotate the compressors at least twice by hand to ascertain free movement. If any restrictions to movement are discovered the cause must be investigated and rectified before attempting to start the compressor.
- 4.3.2 Operate starter and immediately check rotation, check pressure gauge for stage gas flow. Correct rotation, i.e. anti-clockwise when viewed on driving end, is essential to achieve cooling air flow through fan to compressor.
- 4.3.3 Check that all pipework and electrical cables are secure and connections are tight. Visually check for any oil leaks. Use soapy water when checking for air leaks.

Solenoid valve will be closed as soon as the compressor has attained running speed. This should be reached in less than 2 seconds for direct-on-line starting and 8 seconds for star delta.

- 4.3.4 Check oil is flowing in regulator sight glass.

BAC SETS

- 4.3.5 Moisture will be trapped within the system and therefore it is recommended that the system is purged out prior to charging cylinders. Open the vent valve and check that the charging pressure gauge reads 0, disconnect cylinder charging adaptors from their blanks on the panel and lay them in a clean position. Open the charge valve, close the vent valve and run the compressor for 30 minutes in this condition. Do not run the compressor for longer than 30 minutes without stopping and automatically draining.

To check the charging operation and pressure switch setting connect the charging hoses back onto their blanks on the charging panel. With the vent valve and charging valve open, start the compressor and allow the filtration pressure to build up to the PMV setting of 200-250 bar. Air will then escape from the vent valve. Partially close vent valve to slowly increase charging pressure and then note the charging pressure when the compressor stops. This should relate to the pressure of the cylinder being used. The maximum compressor pressure is 350 bar.

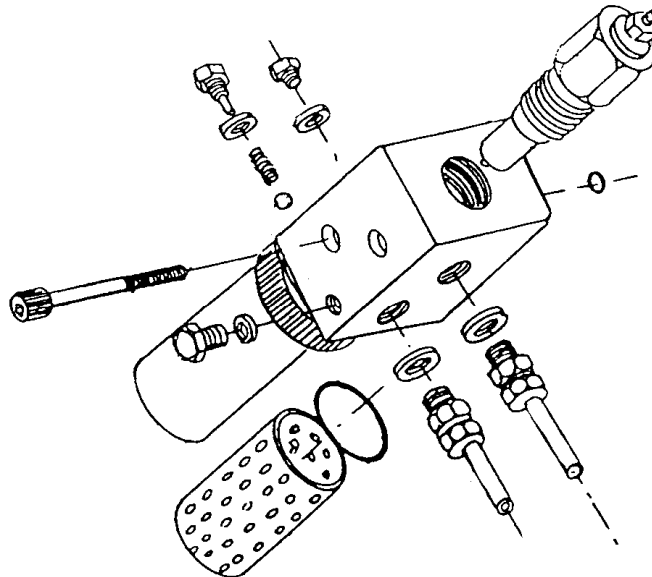
ALL MACHINES

- 4.3.6 Check oil regulator setting if re-commissioning machine.
- 4.3.7 Check and adjust, if necessary, the air governor or pressure switch setting, if appropriate.
- 4.3.8 After 30 minutes operation, check valve heads. Intake pipe to valve heads should be hand warm and outlet pipes hot. This indicates valves are functioning correctly.

BAC SETS

The set must be run for at least one hour before any cylinder charging operation are undertaken in order to allow the filters to obtain this operational dewpoint level. Check air purity.

4.4 OIL REGULATOR PRESSURE ADJUSTMENT (Refer to diagram below)



4.4 OIL REGULATOR PRESSURE ADJUSTMENT (Cont.)

- 4.4.1 Isolate machine from electric supply and release all pressures from machine, pipework and receivers.
- 4.4.2 remove 1/8" BSP plug (A) from oil regulator body and fit in its place a 0-140 bar certified oil pressure gauge.
- 4.4.3 Reconnect electric supply and run up to working pressure.
- 4.4.4 Observe gauge reading, this should be 69 bar. Adjust pressure if necessary by slackening locknut (B) and turning adjusting screw (C) clockwise to increase pressure or anti-clockwise to reduce.
- 4.4.5 When the oil pressure has been adjusted re-tighten locknut (B).
- 4.4.6 Re-check oil pressure setting.
- 4.4.7 Finally, stop the compressor ensuring all pressure is released and machine is electrically isolated. Remove oil pressure gauge and replace 1/8" BSP plug (A).

4.5 MAINTENANCE

4.5.1 After First 15 Hours Running Time

Ensure that alignment and belt tensioning is correct.

4.5.2 After First 50 Hours Running Time

Change oil in crankcase. Fit new oil filter. When changing oil drain whilst warm. Fill crankcase with recommended oil to middle of sight glass. Do not overfill – over lubrication is harmful. Start compressor and check oil is flowing in sight glass. With machine still running, loosen vent screw in bottom of oil pump and bleed until bubble free oil emerges. Stop machine and top-up crankcase.

Examine compressor valves.

4.5.3 the next oil change will be after 1200 hours running time.

SECTION 5

OPERATION AND ROUTINE MAINTENANCE

5.1 OPERATION AND DAILY MAINTENANCE

Commissioning procedure should be used:

- (a) For first commissioning run
- (b) Following overhaul
- (c) After standing idle for a long period

Crankcase oil needs to be changed after major overhaul. Starting procedure should be observed after valve overhaul.

Keep exterior of the compressor clean, especially pipe connections and joints, as this will assist in detecting any leaks. Ensure finned final stage cooler coil is clean at all times.

5.2 STARTING UP

Check crankcase oil level, top up, if necessary, with recommended oil to middle of sight glass.

Check the filter cartridge is within its service life, (BAC Sets).

Check the cylinders are approved and certified for the desired operating pressure (BAC Sets).

Operate starter and bring onto load. Check machine rotates anti-clockwise when viewed from drive end. Oil level will drop in glass when machine is running.

Whilst the compressor is running, listen for any noises indicative of mechanical failure. Stop and investigate if:-

1. Any uncharacteristic noises commence.
2. Any safety valve opens.

**THE CAUSE OF A SAFETY VALVE OPENING MUST BE INVESTIGATED AND RECTIFIED.
DO NOT ATTEMPT TO PREVENT A VALVE OPENING BY TAMPERING WITH ITS SETTING.
THIS IS EXTREMELY DANGEROUS.**

5.3 RUNNING ON LOAD

Stop machine at 30 minute intervals to automatically drain condensate from separators if compressor has not automatically stopped prior to this due to action of bottle charging pressure switch.

When auto drains are not fitted, operate manual operators drains at 30 minute intervals.

5.4 STOPPING

Stop compressor from panel (BAC) or by push to stop button on starter.

5.5 STANDING IDLE - INHIBITION PROCEDURE

If machine is to stand idle for more than five weeks (or shorter period if ambient conditions are unfavourable) it is advisable to carry out recommended inhibition procedure:-

- 5.5.1 Fill to the required level with Shell Ensio 20.
- 5.5.2 Run the compressor.
- 5.5.3 Switch off machine.
- 5.5.4 Release separator drain screws.
- 5.5.5 Remove first and second stage valve covers and valves.
- 5.5.6 Clean all valves, valve covers and valve chambers, dry with lint free cloth.
- 5.5.7 Spray valves, valve cover, valve chambers and cylinders with PX.4. Shake valves to remove excess.
- 5.5.8 Fit valves, examine 'O' rings of valve covers before assembly and replace if necessary. Tighten valve covers to correct torque setting.
- 5.5.9 Release third stage suction pipe.
- 5.5.10 Spray PX.4 into suction side of third stage and rotate machine by hand.
- 5.5.11 Reassemble third stage suction pipe.
- 5.5.12 Drain sump of oil.
- 5.5.13 Seal all openings with threaded plastic plugs.

5.6 CHARGING PROCEDURE - BAC SETS

Open the vent valve and check the charging pressure gauge reads zero.

Disconnect the charging hose adaptors from their blanks on the panel and connect onto the air cylinders. It is recommended that four cylinders should be used to give a reasonable charging time and hence keep the cylinders cool during charging.

Close the vent valve and open the charging and all cylinder valves. A reasonable charging rate is 30 bar/min.

Check that the stop button is not locked in (release by turning anti-clockwise).

Press the start button. Monitor pressure gauges during charging. The compressor stage pressure gauges will rise up to the levels given in the Leading Particulars Section and the 4th stage and filtration pressures should steady out at 200-250 bar before the charging pressure starts to rise from zero.

The cylinders will be charged to the pressure switch setting and then the compressor will automatically stop and drain.

Close the cylinder valves and the charge valve.

Open the vent valve and check that the charging pressure gauge reads zero.

Disconnect the charging hoses from the cylinders and connect back onto the panel.

No timed drainage is fitted to these sets and therefore the set should not be run for more than 30 minutes without stopping in normal conditions and 20 minutes in high humidity and temperature conditions.

The manual drain valve on the first filter base should be cracked open to eject condensate every 4-6 charges or at the end of the days use, whichever is the sooner, to maximise filter cartridge life.

5.7 TOPPING UP

As the temperature of the air in the cylinder rises slightly during the charging operation, the pressure in the cylinders will decrease with time after being filled. To top the cylinders back up to the full pressure the following procedure can be followed.

When compressor has stopped after filling close the cylinder valves and leave in position until the cylinders reach ambient temperature. The compressor cannot be re-started until the charging pressure has been reduced by approximately 50 bar to reset the pressure switch, so open the vent valve until this pressure reduction is achieved.

Open cylinder valves, start compressor and allow the cylinders to be charged up to the pressure switch setting again.

Remove the cylinders as described in the Charging Procedure.

5.8 CARTRIDGE SERVICE LIFE

The cartridge life will depend upon the ambient temperature, humidity, operating pressure and frequency of use. The following table is a guide to the cartridge change interval to maintain air quality but it is recommended that the quality of air in the cylinders is analysed on a regular basis to confirm that it is to an acceptable standard.

RECOMMENDED FILTER CARTRIDGE SERVICE INTERVALS

AMBIENT TEMPERATURE °C	10	20	30	40
5406 Cartridge Life Hours	67	42	25	16
5406E Cartridge Life Hours	53	33	20	13

If the use is infrequent then the cartridge should be changed after 6 months even if the above times have not been reached.

5.9 FILTER SERVICE PROCEDURE

- Open the drain valve on the base of the 1st filter chamber (see diagram). Check that all the air is expelled and the filtration pressure gauge reads zero.
- Remove the filter bodies by turning anti-clockwise and lift over the cartridges. Use a webbing type strap wrench if it cannot be turned by hand.
- Remove spring and spring pad from top of old cartridges.
- Remove old cartridges and dispose of carefully. **Do not burn.**
- Wipe all internals of filter bodies with a clean dry cloth. If further cleaning is required use a solution of detergent (washing up liquid) in warm water and dry with a clean cloth.

Do not use a degreasing agent.

- Take the new cartridge out of its protective packing ensuring the plastic wrapping has not been damaged as this will shorten cartridge life. Remove the plastic caps from the ends of the new cartridge.

NOTE: > Can be found on other pages
* Spares item only

- g. Smear silicon grease onto the filter base stems and onto the 'O' rings in one end of the new cartridges.
- h. Carefully fit the new cartridge sliding it out of the wrapping without handling, onto the filter base stems checking that the cartridge is the correct way up. (The 'O' rings should be at the base of the cartridge).
- j. replace spring and spring pads on top of the cartridges with the pad upwards and smear the spring pads with grease.
- k. Check the 'O' ring and anti-extrusion rings on the filter bases and replace both items if they are damaged. (Helix on anti-extrusion rings should be left handed). Smear the 'O' rings with silicon grease.
- l. Screw down the filter chambers hand tight only (no other means is necessary) and make sure there is no gap between the base and chamber face.
- m. Close the drain valve, pressurise and test for leaks.
- n. Record hours run and date to establish next service time.

5.10 MAINTENANCE SCHEDULE - ALL MACHINES SEE SECTION AT BACK OF THIS MANUAL FOR RECOMMENDED SERVICE PLANS

BEFORE CARRYING OUT ANY MAINTENANCE WORK ENSURE ALL PRESSURE IS RELEASED AND INSTALLATION IS ELECTRICALLY ISOLATED. NEVER ATTEMPT TO STRAIGHTEN BADLY BENT PIPEWORK OR RE-USE DAMAGED UNION FITTINGS.

NOTE: Regular servicing is essential if the design performance of the compressor is to be maintained. Maintenance intervals will depend on operating conditions and the following intervals can be used as a guide when the machine is operated under normal conditions. These may be extended with operating experience. Examination and monitoring during commissioning will give a good indication of the machine's anticipated maintenance requirements.

Observe the following points:-

- a. If pressure gauges are fitted, check stage pressures are within stated limits - if not fitted, check that safety valves are not operating. The stage pressures give an indication of any valve problems. If a stage pressure increases, investigate the valves in the next stage. For a lower pressure than required, check valve on that stage.
Always stop machine if a safety valve opens.

TAMPERING WITH SAFETY VALVES INVALIDATES THE GUARANTEE.

- b. Check that oil is visible in sight feed unit.
- c. Examine for oil or air leaks which must be rectified immediately.

NEVER TIGHTEN ANY FITTING WHEN IT IS UNDER PRESSURE.

NOTE: Valve plates and springs should be replaced at valve inspection periods.

5.10.1 Weekly

In addition to operational checks, inspect all nuts, screws and fittings for tightness. Inspect for oil or air leaks, which must be rectified immediately.

5.10.2 Periodically

Remove and renew suction filter element as necessary.

5.10.3 Every 600 Hours Running Time

Check alignment and belt tension is correct.

Remove and service all suction and delivery valves.

It is recommended that valve plates and springs are renewed.

5.10.4 Every 1200 Hours Running Time

Drain crankcase oil after compressor has been running and oil is still warm. Change filter. Replace plug and refill crankcase to middle of sight glass using recommended oil. Re-check level after oil has had time to settle.

Change piston rings on fourth stage plunger.

Change plates and springs on all stage valves.

Clean out all coolers, especially the first stage unit and finned area of final deliver cooler. Ensure fan blades are clean.

5.10.5 Every 1800 Hours Running Time

Refurbish or replace all valves.

5.10.6 Every 2400 Hours Running Time

Fit new 4th stage plunger and liner.

5.10.7 Every 3000 Hours Running Time

The compressor should be given a full mechanical check.

Replace all valves.

Check pressure gauges, for correct reading.

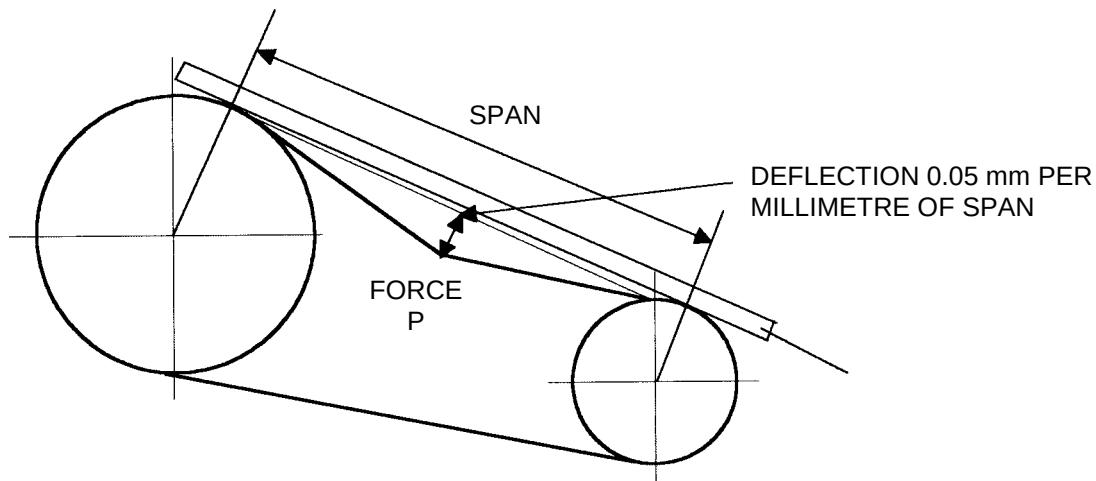
Intercooler and aftercooler (if fitted) should be water tested to ensure there is no risk of tube failure.

5.11 BELT ADJUSTMENT

5.11.1 Remove belt guard.

5.11.2 Loosen drive motor securing bolts and slide towards compressor. Examine belt for wear and replace if necessary. Banded belts must be used at all times. If oily or greasy, clean before replacing on pulleys.

- 5.11.3 Slide drive unit away from compressor and tension belt to achieve correct deflection when pressed down at a point midway between pulleys. A pencil type belt tension indicator will greatly assist in this procedure.
- 5.11.4 Secure drive unit fixing bolts and replace belt guard.



SECTION 6

DISMANTLING AND REASSEMBLY OF VALVES

SERVICING VALVE ASSEMBLIES

Keep a spare oiled and maintained set of valves in store for quick compressor servicing.

6.1 GENERAL

Valves should have a thin carbon layer and be slightly moist with oil.

Valve removal is a simple procedure but the following guidelines should be observed.

6.2 CLEANING - ALL STAGES

Valve components should be cleaned using a suitable solvent and a stiff bristle brush. Carbon deposits may be removed by scraping with a soft, blunt instrument, e.g. a piece of wood.

WARNING:- *Great care should be taken when removing carbon deposits to ensure that the sealing faces of the valve components are not damaged.*

These faces should be clean and bright over their whole area with no evidence of uneven contact. Renew the plate if cracked, indented, warped or if the wear exceeds 10% of the plate thickness. If the seat shows severe wear or indentation the complete valve assembly must be renewed. The remaining components should be checked for cracks, distortion or other damage liable to impair valve operation.

6.3 a) FIRST STAGE SUCTION VALVE

i) Removal

Isolate gas supply and remove relevant suction pipework. Remove the four nuts securing the valve cover and lift cover clear of studs. The valve is now accessible and can be removed from cylinder cover.

ii) To Dismantle

Holding base of stud (8) with a suitable Allen key, unscrew and remove nut (1) and washer (2). Seat (3), valve plate (4), spacer (5), valve springs (6) and guard (7) can then be lifted clear of stud.

iii) To Assemble

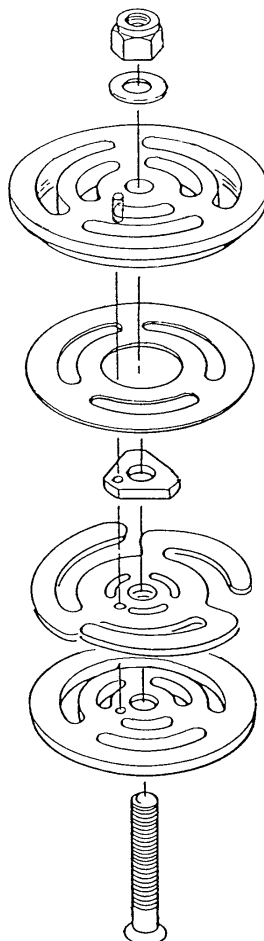
Stand stud (8) upright on a flat, clean surface and lower guard (7) over it ensuring hole for location peg is uppermost. Fit springs (6) ensuring that spring fingers are pointing upwards and that location peg holes align with hole in guard. Fit spacer (5) ensuring that location peg hole aligns with holes in springs and guard. Fit valve plate (4) over washer. Lower valve seat (3) over stud ensuring that location peg (9) passes through holes in spacer and springs and locates in hole in guard. Fit washer (2) and nut (1) and tighten to correct torque. Check freedom of operation of valve plate.

iv. Refitting

Check valve pocket and seat for cleanliness before refitting valve. Fit valve and ensure it is correctly seated by checking that it is free to rotate on its seat. Replace 'O' ring on valve cover if damaged and apply a smear of silicon grease to 'O' ring before refitting cover. Fit the four cover retaining nuts and tighten down evenly to correct torque.

Replace suction pipe, fit bolts and tighten.

FIRST STAGE SUCTION VALVE



6.3 b) FIRST STAGE DELIVERY VALVE

i) Removal

As 6.3 a) i) except for removal of suction pipe

ii) To Dismantle

Unscrew and remove nut (16) and washer (15) whilst holding the valve in a soft jawed vice with just sufficient force to prevent it from turning. The valve can then be removed from the vice and the guard (14), springs (13), valve plate (12) and spacer (11) can then be lifted clear of the stud.

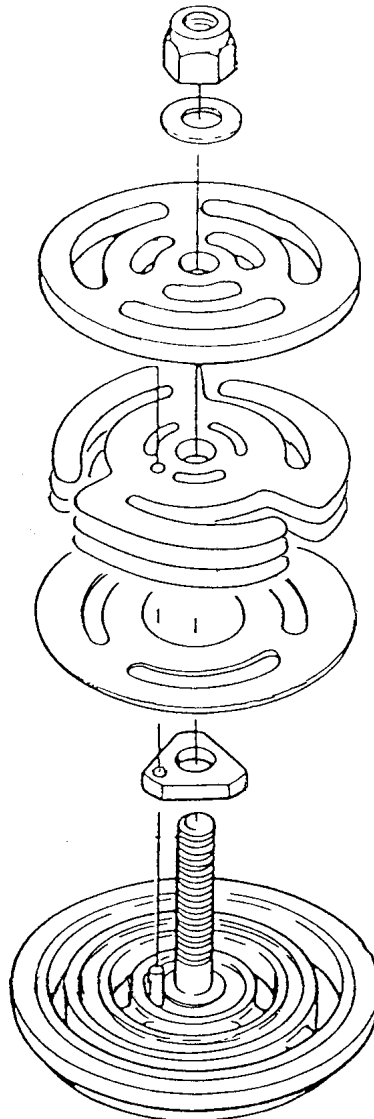
iii) To Assemble

Stand Valve seat 91 on a clean, flat surface with the stud (17) uppermost. Pass spacer (11) over stud and locate onto peg (18). Fit valve plate (12) onto seat and locate over spacer. Pass springs (13) over stud ensuring that spring fingers are pointing downwards and that location holes are aligned with peg. Pass guard (14) over stud and engage location hole on peg. Fit washer (15) and nut (16) and tighten to correct torque. Check freedom of operation of valve plate.

iv) Refitting

As 6.10.3 a) iv) except for replacement of suction pipe.

FIRST STAGE DELIVERY VALVE



NOTE: > Can be found on other pages
* Spares item only

6.4 a) SECOND STAGE SUCTION VALVE

i) Removal

As 6.3 a) i) except for removal of suction pipe.

ii) To Dismantle

Unscrew and remove nut (1) and washer (2) whilst holding the valve in a soft jawed vice with just sufficient force to prevent it from turning. The valve can then be removed from the vice and the valve seat (3), first valve/backing plate (4), valve springs (5) and second valve/backing plate (4) can then be lifted clear of the valve guard (6).

iii) To Assemble

Stand valve guard (6) on a clean, flat surface with the stud uppermost. Lower second valve/backing plate (4) over stud and locate in valve guard. Place valve springs (5) in valve guard having first positioned them as follows:-

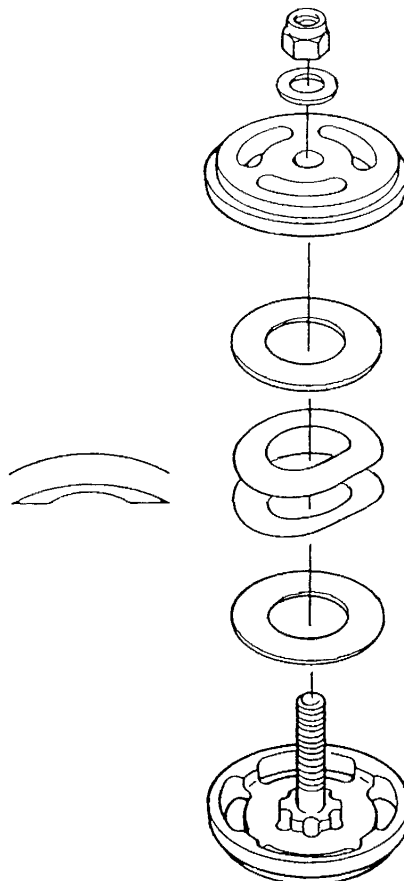
Hold the springs together with the concave faces facing each other and then rotate one of them until their outer edges touch all round the circumference and there is a constant gap around the inner edge.

Fit first valve/backing plate (4) and valve seat (3) ensuring that outer edge of seat contacts outer edge guard. Fit washer (2) and nut (1) and tighten to correct torque. Check freedom of operation of valve plate.

iv) Refitting

As 6.3 a) iv) except for replacement of suction pipe.

SECOND STAGE SUCTION VALVE



6.4 b) SECOND STAGE DELIVERY VALVE

i) Removal

As 6.3 a) i) except for removal of suction pipe.

ii) To Dismantle

Unscrew and remove nut (7) and washer (8) whilst holding the valve in a soft jawed vice with just sufficient force to prevent it from turning. The valve can then be removed from the vice and the guard (9), first valve/backing plate (10), valve springs (11) and second valve/backing plate (10) can be lifted clear from the valve seat (12).

iii) To Assemble

Invert the valve guard (9) and place on a suitable support, either a short piece of pipe, the slightly open jaws of a vice or something similar. Fit first valve/backing plate (1) to guard. Place springs (11) on backing plate having first positioned them as follows:-

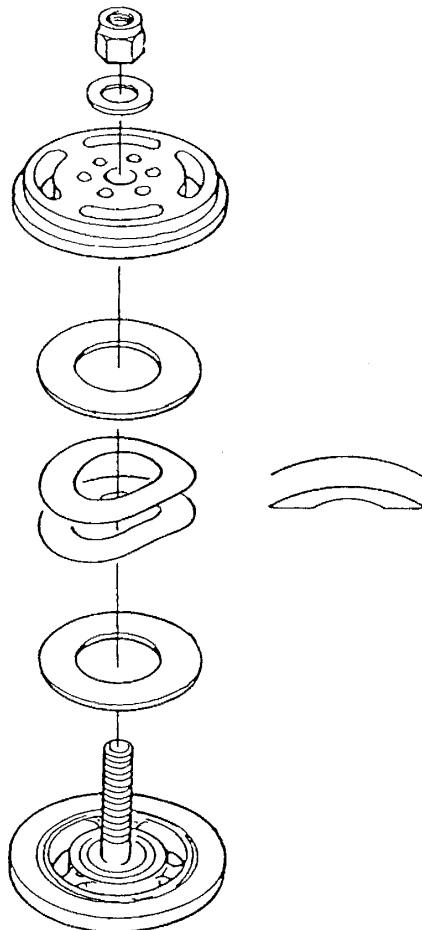
Hold the springs together with the concave faces facing each other and then rotate one of them until their outer edges touch all round the circumference and there is a constant gap around the inner edge.

Place second valve/backing plate (10) on valve springs and then fit valve seat (12) ensuring contact between outer edges of seat and guard. Holding the assembly together, fit washer (8) and nut (7) and tighten to correct torque (see SECTION 2). Check freedom of operation of valve plate.

iv. Refitting

As 6.3 a) iv) except for replacement of suction pipe

SECOND STAGE DELIVERY VALVE



NOTE: > Can be found on other pages
* Spares item only

6.5 THIRD STAGE VALVE

i) Removal

Remove suction pipe (between valve and separator) and undo union nut on delivery side of valve. Unscrew and remove the six bolts holding the valve to the cylinder. The valve may then be removed.

ii) To Dismantle

Invert valve and unscrew and remove the two screws (10) and lift off the lower half of valve (7). All internal components, i.e. 'O' ring (2), suction valve/backing plates (5), suction spring plates (6), delivery valve/backing plates (3) and delivery spring plates (4) can then be removed.

iii) To Assemble

Place upper half (1) and lower half (7) of valve body on clean, flat surface with their mating faces uppermost. Into the upper half fit the 'O' ring (2) into groove and first valve/backing plate (3) into recess. Place valve springs (4) onto backing plate having first positioned them as follows:-

Hold the springs together with the concave faces facing each other and then rotate one of them until their outer edges touch all round the circumference and there is a constant gap around the inner edge.

Place second valve/backing plate (5) on valve springs.

With a steel rule or similar item placed over suction valve components to prevent them falling out, invert lower half of valve and fit to upper half ensuring that dowels (8) fit into their location holes and clamping screw holes align. Withdraw rule and check that the valve halves are touching. Fit screws (10) and tighten to correct torque.

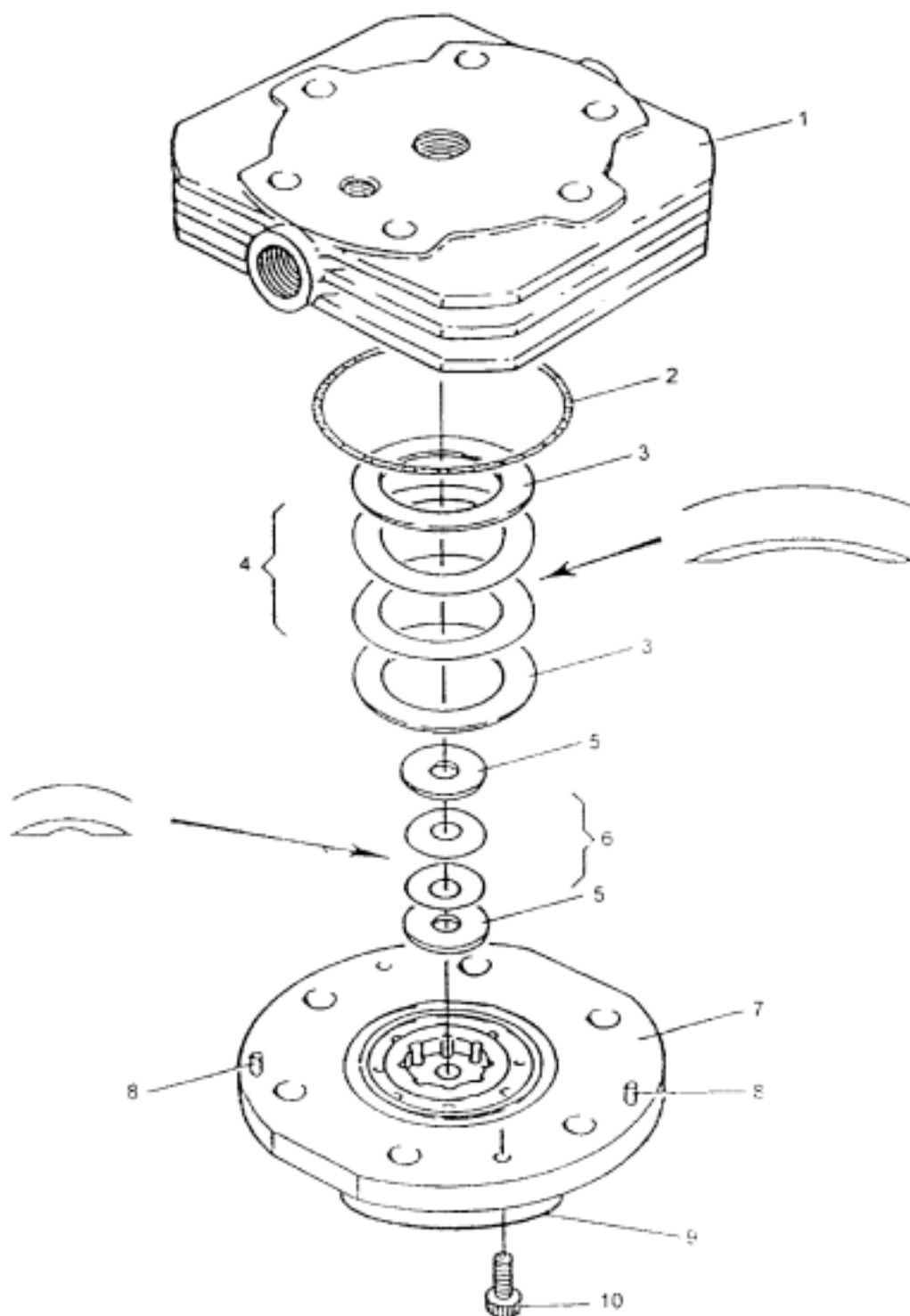
Check freedom of operation of suction and delivery valve plates.

iv) Refitting

Inspect 'O' ring (9) on top of third stage cylinder liner and replace if necessary.

Place valve on cylinder ensuring that dowel in cylinder locates in recess in valve and that delivery pipe engages in union. Fit suction pipe and do up unions **hand-tight** at this stage. Fit the six bolts that hold the valve to the cylinder and tighten to correct torque. Tighten the two unions on the suction pipe and one on the delivery pipe.

THIRD STAGE VALVE



NOTE: > Can be found on other pages
* Spares item only

6.6 FOURTH STAGE VALVE

i) Removal

As 6.5 i).

ii) To Dismantle

Invert valve and remove screws (10). Lift valve base (8) from valve seat (6) to gain access to the suction components, i.e. valve/backing plates (3), valve springs (4) and centre plate (5). remove 'O' ring (7) from groove in valve base.

Lift valve seat (6) to gain access to the delivery valve components, i.e. valve/backing plates (3), valve springs (4) and centre plate (5). Remove 'O' ring (2) from groove in valve top.

iii) To Assemble

Invert top section of valve (1) and place on clean, flat surface. Fit 'O' ring (2) to groove and the following delivery valve components into the recess; first valve/backing plate (3), valve spring (4) with concave face downwards, centre plate (5), valve spring (4) with concave face upwards and second valve/backing plate (3).

Fit valve seat (6) to top section of valve ensuring that dowels in top section of valve (not shown) locate in holes in seat and that clamping screw holes align.

Place valve base (8) on clean, flat surface. Fit 'O' ring (7) to groove and the following suction valve components into the recess; first valve/backing plate (3), spring plate (4) with concave face downwards, centre plate (5), spring plate (4) with concave face upwards and second valve/backing plate (3).

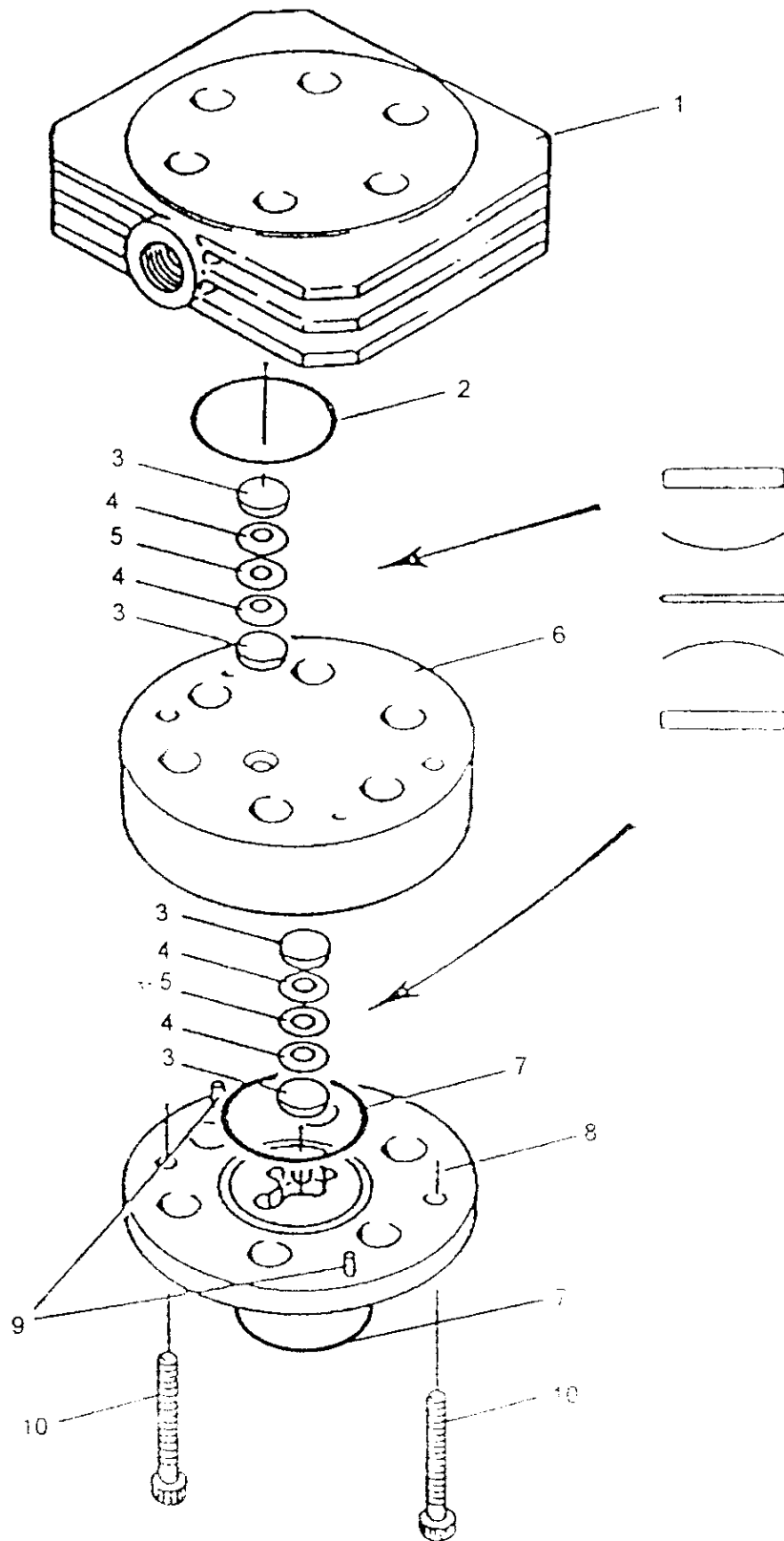
Holding valve seat and top section of valve firmly together to prevent displacement of delivery valve parts, fit assembly onto valve base ensuring dowels (9) in base locate in holes in valve seat and that the clamping screw holes align. Fit clamping screws (1) and tighten to correct torque.

iv) Refitting

Inspect 'O' ring on top of fourth stage cylinder liner and replace if necessary.

Place valve on cylinder and ensure it is the correct way round, the delivery port is higher than the suction and faces towards the driving end of the machine and that the delivery pipe engages in its union. Fit suction pipe and do up unions **hand-tight** at this stage. Fit the six bolts that hold the valve to the cylinder and tighten to the correct torque. Tighten the two unions on the suction pipe and one on the delivery pipe.

FOURTH STAGE VALVE



NOTE: > Can be found on other pages
* Spares item only

SECTION 7

FAULT GUIDE

These notes are intended only as a guide to the more common aspects of fault location. In the case of difficulty, Service Engineers are available to advise and assist.

Before investigating a potential fault, ensure:-

- a) All pressure is released and installation is electrically isolated;
- b) Ambient and air inlet temperature is not too high;
- c) Driving unit is in good working order and power supply is adequate;
- d) Lubricant(s) are correct.

FAULT	POSSIBLE CAUSE	REMEDY
7.1 Excessive Stage Pressure (General)	Faulty Suction or Delivery Valve(s)	Service valve(s) as necessary. Note: A suction valve fault gives excess pressure in the previous stage.
	Pressure Gauge Not Accurate	Check pressure gauge against gauge of known accuracy.
	Restriction in pipeline	Existing Installation:- Check setting and function of all control valves. Clean pipeline filters and service elements as necessary. New Installation:- Ensure that protective plugs and blanks have been removed from ports and that all control valves are correctly set. Pipework must be of ample size with a minimum of bends. Joint gaskets should be checked for correct positioning and size.
Excessive Stage Pressure	Fourth Stage Plunger Failure	Remove, examine and replace, if necessary.

NOTE: > Can be found on other pages
* Spares item only

FAULT	POSSIBLE CAUSE	REMEDY
7.2 Insufficient pressure or Volume (See also 7.1)	Blocked Suction Filter (Air) Leakage in Pipe System or from Machine Wear Belt Drive Slipping Premature Opening of Safety Valve	Remove and Service. Locate and rectify. If general wear is suspected, strip the machine and examine all working parts. Check and adjust belt drive. Renew valve.
7.3 Overheating (See also 7.1 & 7.2)	Duty Higher Than Recommended Maximum Insufficient Cooling Air Supply Cooling Fan Blades Cylinder Fins Clogged or Dirty Intercooler and Aftercooler Tubes Dirty Wrong Rotation	Reduce duty to acceptable level. Check location Maximum ambient temperature is 45°C. Check and replace broken blades as necessary. Clean out cylinder fins. Clean tubes with a brush and compressed air. Reconnect electrical supply to give correct rotation.
7.4 Excessive Noise	Oil Level Low Pulley Loose Belt Drive Worn Vibration in Machine Drive Pulleys out of Line Low Oil Pressure Worn Bearings	Check oil level and replenish. Tighten pulley. Replace banded belts. Insecure mounting. Tighten mounting bolts. Inspect and adjust the alignment of the drive pulleys. Air lock in oil pump. Check oil level and replenish if necessary. Reprime pump and oil line. Dismantle, examine and replace, if necessary.
7.5 Extended Running	Speed Too Low Air Leak on Machine or Pipework	Check motor speed. Locate and rectify.

NOTE: > Can be found on other pages

* Spares item only

FAULT	POSSIBLE CAUSE	REMEDY
7.6 Excessive Wear (Machine)	Higher Duty Than Recommended Maximum	Reduce duty to acceptable level.
	Dirty Air and/or Suction Pipeline	Replace filter element and clean suction pipeline.
	Excessive Side or End Thrust	Inspect and adjust, if necessary, alignment of drive pulleys.
		Inspect and adjust, if necessary, belt tension.
(Belt)	Excessive Moisture Content in Air	Check drainage system and regularly check condition of crankcase oil.
	Incorrect Tension	Inspect and adjust belt tension.
	Drive Pulleys out of Line	Inspect and adjust the alignment of the drive pulleys.
7.7 Failure to Start	Seizure	If machine does not rotate freely (when unloaded) this indicates a fault of a serious nature. Investigate and check for broken and damaged components before trying to re-start.
	Electrical or Control Fault	Locate and rectify, or consult an electrician.
7.8 Low Oil Pressure	Air Lock in Oil Pump	Re-prime pump and oil line.
	Fourth Stage Piston Problem	Examine fourth stage plunger and renew, if necessary.
7.9 Short Cartridge Life	Failure to Drain Chamber Filter	Drain at recommended intervals.
	High ambient temperature	Ensure that compressor is sited in a cool location.
	Poor Compressor Cooling	Ensure that cooling air has free passage through belt guard. Make sure that hot cooling air is not re-circulated and that coolers are clean.
	Cartridge Not Fitted in Filter Camber	Inspect and set to recommended pressure.
7.10 Air Contamination	Cartridge At End of Life	Renew cartridge and re-purge system.
(General)	Air By-passing Cartridge	Check cartridge installation and re-purge system.
	Cartridge Not Fitted in Filter Chamber	Clean filter chamber, fit new cartridge and re-purge system.

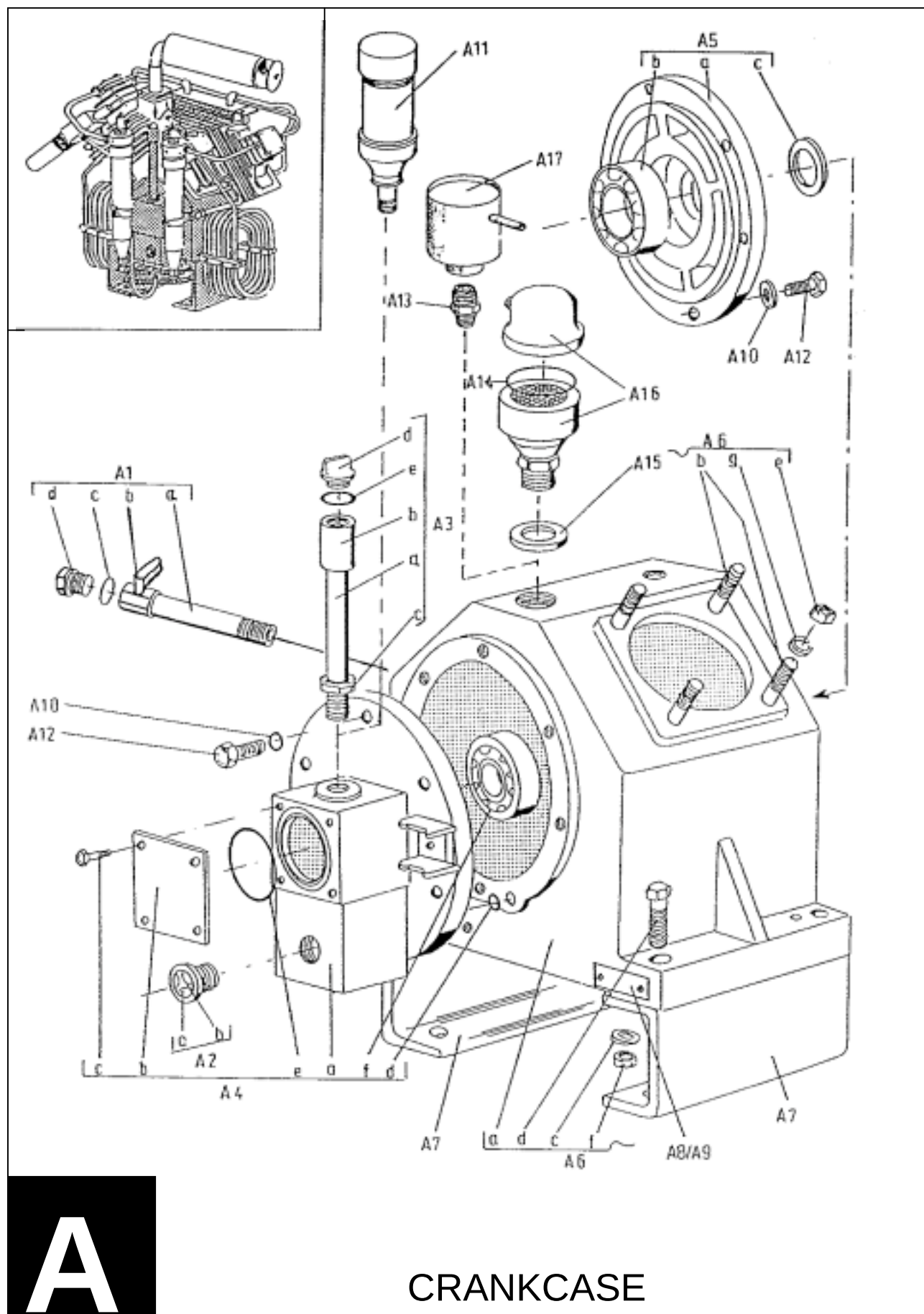
FAULT	POSSIBLE CAUSE	REMEDY
7.11 Excess Moisture Level (See also 7.10)	System Damp After Installation of New Cartridge	Re-purge system.
7.12 Excess CO or CO ₂ Level (See also 7.10)	Ambient Level Too High	Ensure that fresh air is available at machine intake.
7.13 Excessive Oil Mist Level	As 7.10	

SECTION 8

PARTS LIST FOR 5406, 5406E, 5406EI & 5406EH

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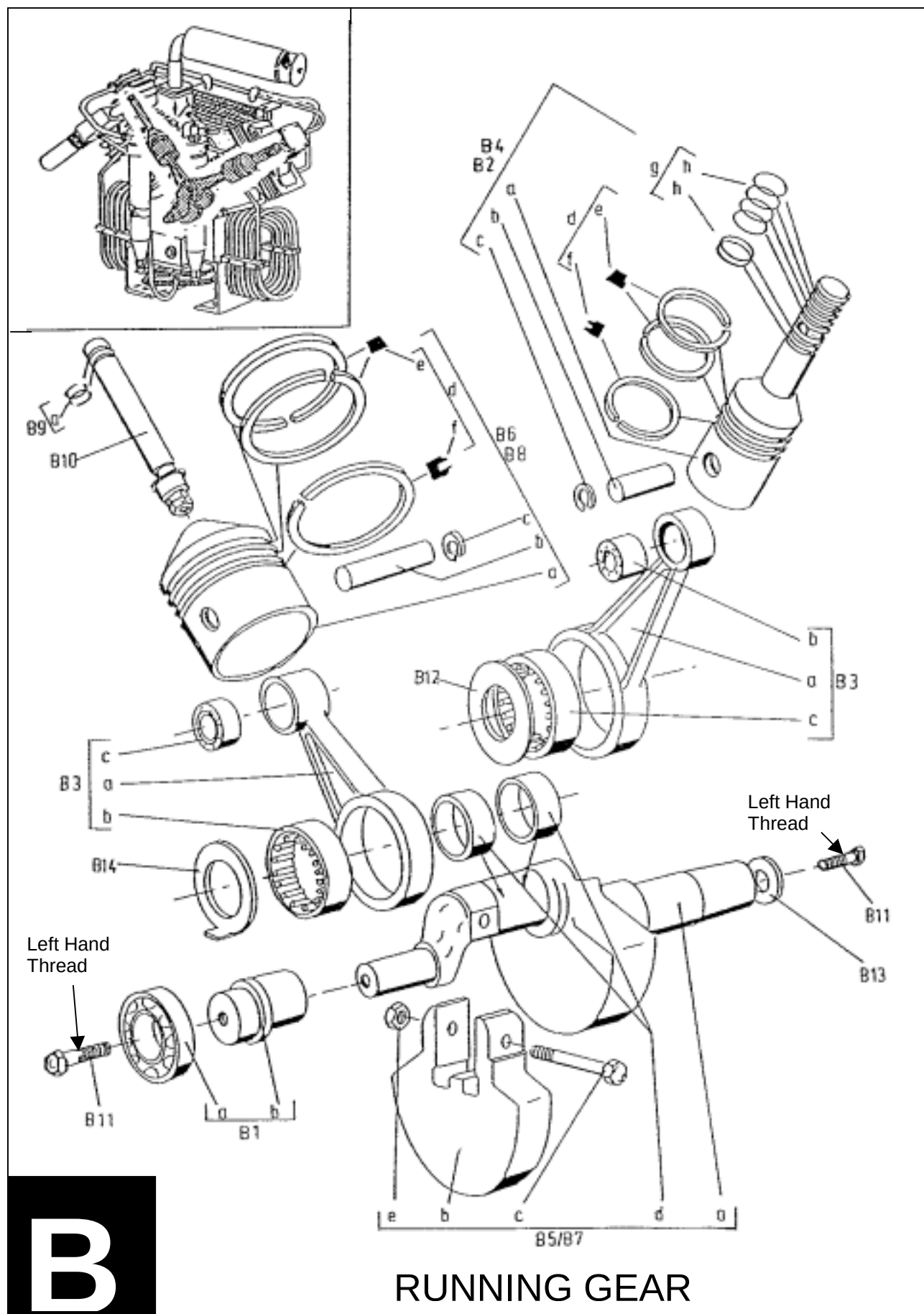
CRANKCASE

NOTE: > Can be found on other pages
* Spares item only

CRANKCASE PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
A1	OIL DRAIN PIPE SOCKET ASSY		1	1	1	1	
a	Pipe	C202813.1	1	1	1	1	023
b	Valve	98650.1967	1	1	1	1	
c	'O' Ring	PS1206.1	1	1	1	1	
d	Oil Drain Plug	PS1068.1	1	1	1	1	029
A2	OIL LEVEL INDICATOR SET		1	1	1	1	
a	Oil Level Indicator	98281.1002>	1	1	1	1	029
b	Label	98381.1012	1	1	1	1	029
A3	OIL FILLER PIPE ASSY		1	1	1	1	
a	Pipe	C201768	1	1	1	1	
b	Socket	C200562.3	1	1	1	1	
c	Locknut	PS1290.3	1	1	1	1	
d	Oil Filler Plug	PS1990	1	1	1	1	029
e	'O' Ring	95602.40	1	1	1	1	029
A4	BEARING HOUSING	D100213.50*	1	1	1	1	
a	Bearing Housing	D100213	1	1	1	1	010
b	End Cover	C200645	1	1	1	1	029
c	Setscrew	95000.255	6	6	6	6	029
d	'O' Ring	95602.42	2	2	2	2	010
e	'O' Ring	95602.61	1	1	1	1	029
f	Roller Bearing	98076.1019	1	1	1	1	010
A5	BEARING HOUSING	D100255.100*	1	1	1	1	
a	Bearing Housing	D100255	1	1	1	1	010
b	Roller Bearing	98076.1044	1	1	1	1	010
c	Oil Seal	98505.1009	1	1	1	1	010
A6	CRANKCASE	E60419.50*	1	1	1	1	
a	Crankcase	E60419	1	1	1	1	010
b	Stud	D54109.8.28	8	8	8	8	010
c	Taper Washer	PS1742.1	4	4	4	4	010
d	Setscrew	95000.289	4	4	4	4	010
e	Nut	95111.5	8	8	8	8	029
f	Nut	95111.6	4	4	4	4	010
g	Lockwasher	PS1113.13	8	8	8	8	029
A7	MOUNTING BRACKET	C200937	2	2	2	2	010
A8	RIVET ROKUT	PS2189.1	4	4	4	4	010
A9	NAMEPLATE SERIAL	RP513	1	1	1	1	010
A10	SCREW SEAL	T6495.56	12	12	12	12	010
A11	OIL FILLER	U.422/E	0	0	1	0	023
A12	SETSCREW	95000.256	12	12	12	12	010
A13	REDUCING NIPPLE	95405/820	0	0	1	0	029
A14	'O' RING	95602.58	1	1	1	1	029
A15	FIBRE WASHER	95640.9	1	1	0	1	029
A16	CRANKCASE BREATHER	98262.1035	1	1	0	1	029
A17	CRANKCASE BREATHER	98262/1073	0	0	1	0	029

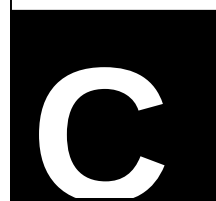
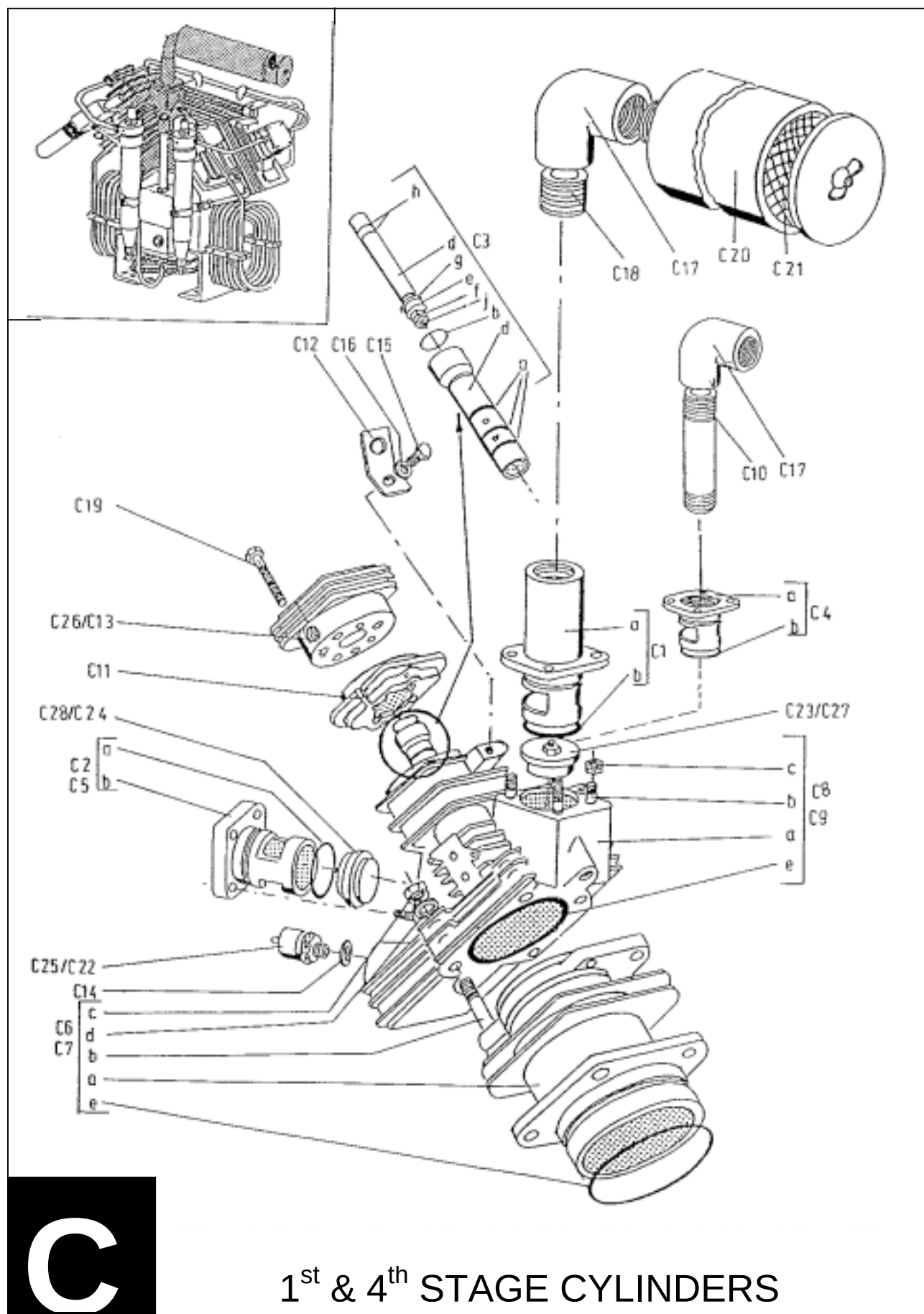
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* Spares item only



RUNNING GEAR

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
B1	OIL PUMP CAM ASSY	C201452	1	1	1	1	
a	Oil Pump Cam	C200859	1	1	1	1	029
b	Ball Bearing	96004.13	1	1	1	1	029
B2	PISTON ASSY 2nd & 3rd STAGE	D100268.50*	0	1	1	1	
a	Piston	D100268	0	1	1	1	029
b	Gudgeon Pin	E2229	0	1	1	1	
c	Circlip	95650.18	0	2	2	2	
d	Piston Ring Set 2nd Stage	98477.1091	0	1	1	1	
e	Piston Ring	98477.1067	0	2	2	2	029
f	Oil Control Ring	98477.1068	0	1	1	1	029
g	Piston Ring Set 3rd Stage - OLD	98477.1092	0	1	1	1	
g2	Piston Ring Set 3rd Stage - NEW	98477.1186	0	1	1	1	
h	Piston Ring Pre serial No 1336	PS1159.115	0	6	6	0	029
h1	Piston Ring Pre serial No 749	PS1159.115	0	0	0	6	029
h2	Piston Ring M/C serial No 1336	C203528	0	6	6	0	
h3	Piston Ring M/C serial No 749	C203528	0	0	0	6	
B3	CONN ROD ASSY	D100284	2	2	2	2	
a	Connecting Rod	D100120	2	2	2	2	010
b	S/E Bearing	96072.46	2	2	2	2	010
c	B/E Bearing	98076.1045	2	2	2	2	010
B4	PISTON ASSY 2nd & 3rd STAGE	D100286	1	0	0	0	
a	Piston	D100258	1	0	0	0	029
b	Gudgeon Pin	E2229	1	0	0	0	
c	Circlip	95650.18	2	0	0	0	
d	Piston Ring Set 2nd Stage	98477.1091	1	0	0	0	
e	Piston Ring	98477.1067	2	0	0	0	029
f	Oil Control Ring	98477.1068	1	0	0	0	029
g	Piston Ring Set 3rd Stage	98477.1092	1	0	0	0	
h	Piston Ring	PS1159.115	6	0	0	0	029
B5	CRANKSHAFT ASSY	D100428	0	1	1	1	
a	Crankshaft	D100261	0	1	1	1	010
b	Balance Weight	C200644	0	1	1	1	010
c	Bolt	95006.155	0	1	1	1	010
d	B/E Bearing Inner Race	98076.1064	0	2	2	2	010
e	Locknut	98422.1009	0	1	1	1	010
B7	CRANKSHAFT ASSY	D100465	1	0	0	0	
a	Crankshaft	D100256	1	0	0	0	010
b	Balance Weight	C200440	1	0	0	0	010
c	Bolt	95006.155	1	0	0	0	010
d	B/E Bearing Inner Race	98076.1064	2	0	0	0	010
e	Locknut	98422.1009	1	0	0	0	010
B8	PISTON ASSY 1st Stage	D100513.50	1	1	1	1	
a	Piston	D100513	1	1	1	1	029
b	Gudgeon Pin	C200642	1	1	1	1	
c	Circlip	95650.18	2	2	2	2	
d	Piston Ring Set 1st Stage	LD02688.100	1	1	1	1	
e	Piston Ring	PS1159.120	2	2	2	2	029
f	Oil Control Ring	D2688	1	1	1	1	029
B9	PISTON RING SET 4th STAGE	98477.1093	1	1	1	0	
a	Piston Ring	98477.1076	2	2	2	0	
B10	PLUNGER/LINER 4th STAGE	C201354>	1	1	1	0	
B10	PLUNGER/LINER 4th STAGE	C202246>	0	0	0	1	
B11	SETSCREW	98500.1003	1	1	1	1	029
B12	B/E SPACER	98660.1064	1	1	1	1	010
B13	WASHER	98660.1092	1	1	1	1	039
B14	SPACER WASHER	98660.1145	1	1	1	1	010

NOTE: > Can be found on other pages
* Spares item only



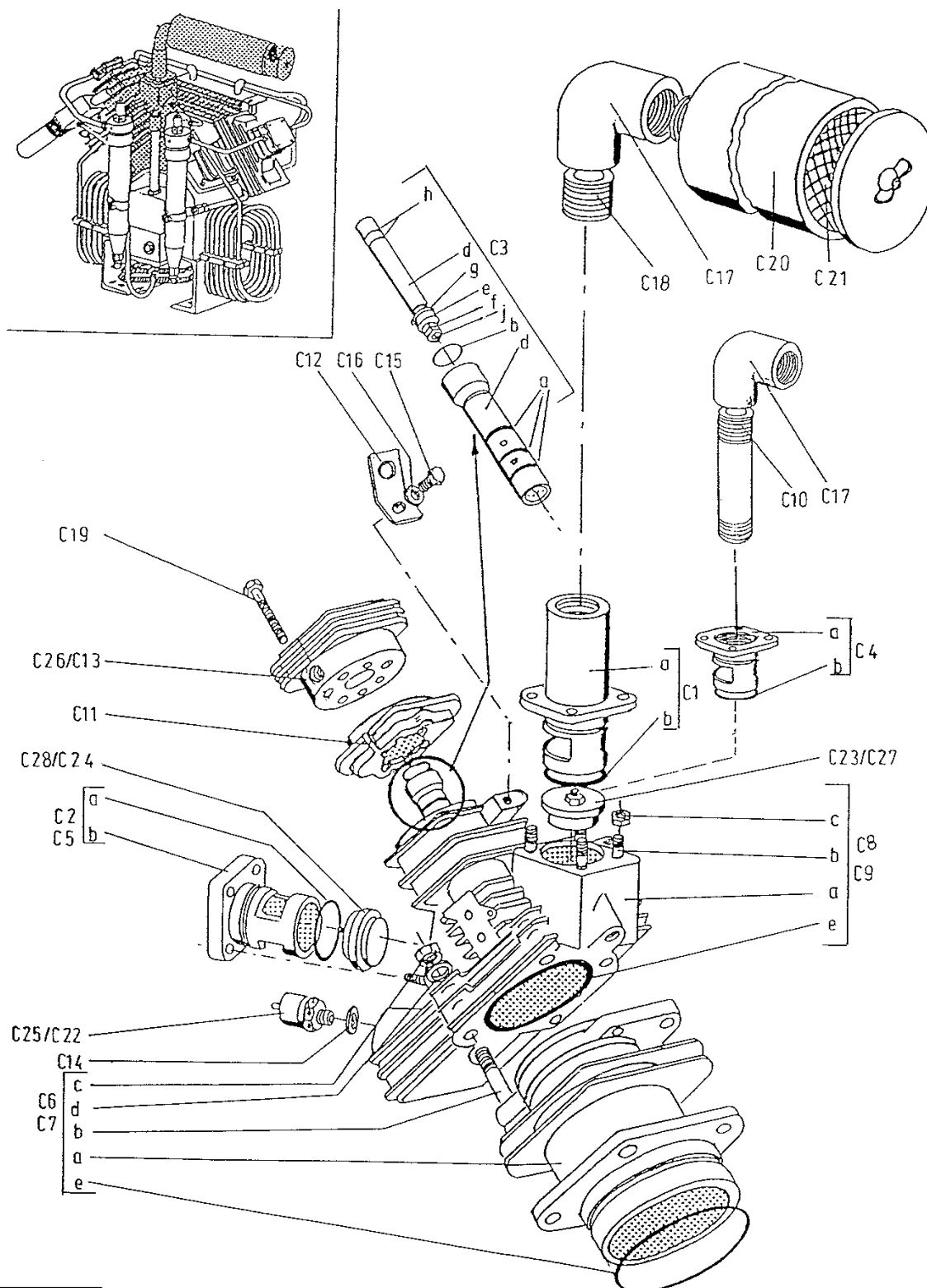
1st & 4th STAGE CYLINDERS

NOTE: > Can be found on other pages
* Spares item only

1ST & 4TH STAGE CYLINDER PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
C1	VALVE COVER ASSY	C200602.100	1	1	0	1	
a	Valve Cover	C200602	1	1	0	1	029
b	'O' Ring	95602.52	1	1	0	1	029
C2	VALVE COVER	C200603.100	1	1	0	1	
a	Valve Cover	C200603	1	1	0	1	029
b	'O' Ring	95602.52	1	1	0	1	029
C3	PLUNGER/LINER ASSY 4th STAGE	C201354	1	1	1	0	
a	'O' Ring	95602.15	3	3	3	0	
b	'O' Ring	95602.18	1	1	1	0	
c	Plunger/Liner Assy	C202526	1	1	1	0	029
e	Retaining Washer	C201411.1	1	1	1	0	
f	Nut	95111.3	2	2	2	0	
g	Circlip	95650.18	1	1	1	0	
h	Piston Ring	98477.1076	2	2	2	0	
C3	PLUNGER/LINER ASSY 4th STAGE	C202246	0	0	0	1	
a	'O' Ring	95602.15	0	0	0	3	
b	'O' Ring	95602.18	0	0	0	1	
c	Plunger/Liner Assy	C203958	0	0	0	1	029
e	Retaining Washer	C201411.1	0	0	0	1	
f	Nut	95111.3	0	0	0	1	
g	Circlip	95650.18	0	0	0	1	
h	Piston Ring	98477.1076	0	0	0	2	
C4	VALVE COVER ASSY	C202647.100	0	0	1	0	
a	Valve Cover	C202647	0	0	1	0	029
b	'O' Ring	95602.52	0	0	1	0	029
C5	VALVE COVER ASSY	C202648.100	0	0	1	0	
a	Valve Cover	C202648	0	0	1	0	029
b	'O' Ring	95602.52	0	0	1	0	029
C6	CYLINDER ASSY 1st STAGE	D100118.100	1	0	0	0	
a	Cylinder	D100118	1	0	0	0	029
b	Stud	D.100171.8.96	4	0	0	0	029
c	Nut	95111.5	4	0	0	0	029
d	Washer	95148.14	4	0	0	0	029
e	'O' Ring	95602.87	1	0	0	0	029
C7	CYLINDER ASSY 1st STAGE	D100757.100	0	1	1	1	
a	Cylinder	D100757	0	1	1	1	029
b	Stud	D100171.8.96	0	4	4	4	029
c	Nut	95111.5	0	4	4	4	
d	Washer	95148.14	0	4	4	4	029
e	'O' Ring	95602.87	0	1	1	1	029
C8	CYLINDER COVER ASSY 1st STG	D100774	1	1	0	0	029
a	Cylinder Cover	E60486	1	1	0	0	
b	Stud	D100171.6.28	8	8	0	0	029
c	Nut	95111.4	8	8	0	0	029
d	'O' Ring	95602.87	1	1	0	0	029
C8	CYLINDER COVER ASSY 1st STG	E61199.100	0	0	0	1	029
a	Cylinder Cover	E61199	0	0	0	1	
b	Stud	D100171.6.28	0	0	0	8	029
c	Nut	95111.4	0	0	0	8	029
d	'O' Ring	95602.88	0	0	0	1	029
C9	CYLINDER COVER ASSY 1st STG	E61014.100	0	0	1	0	
a	Cylinder Cover	E61014	0	0	1	0	029
b	Stud	D100171.6.28	0	0	8	0	029
c	Nut	95111.4	0	0	8	0	029
d	'O' Ring	95602.88	0	0	1	0	029

NOTE: > Can be found on other pages
* Spares item only



C

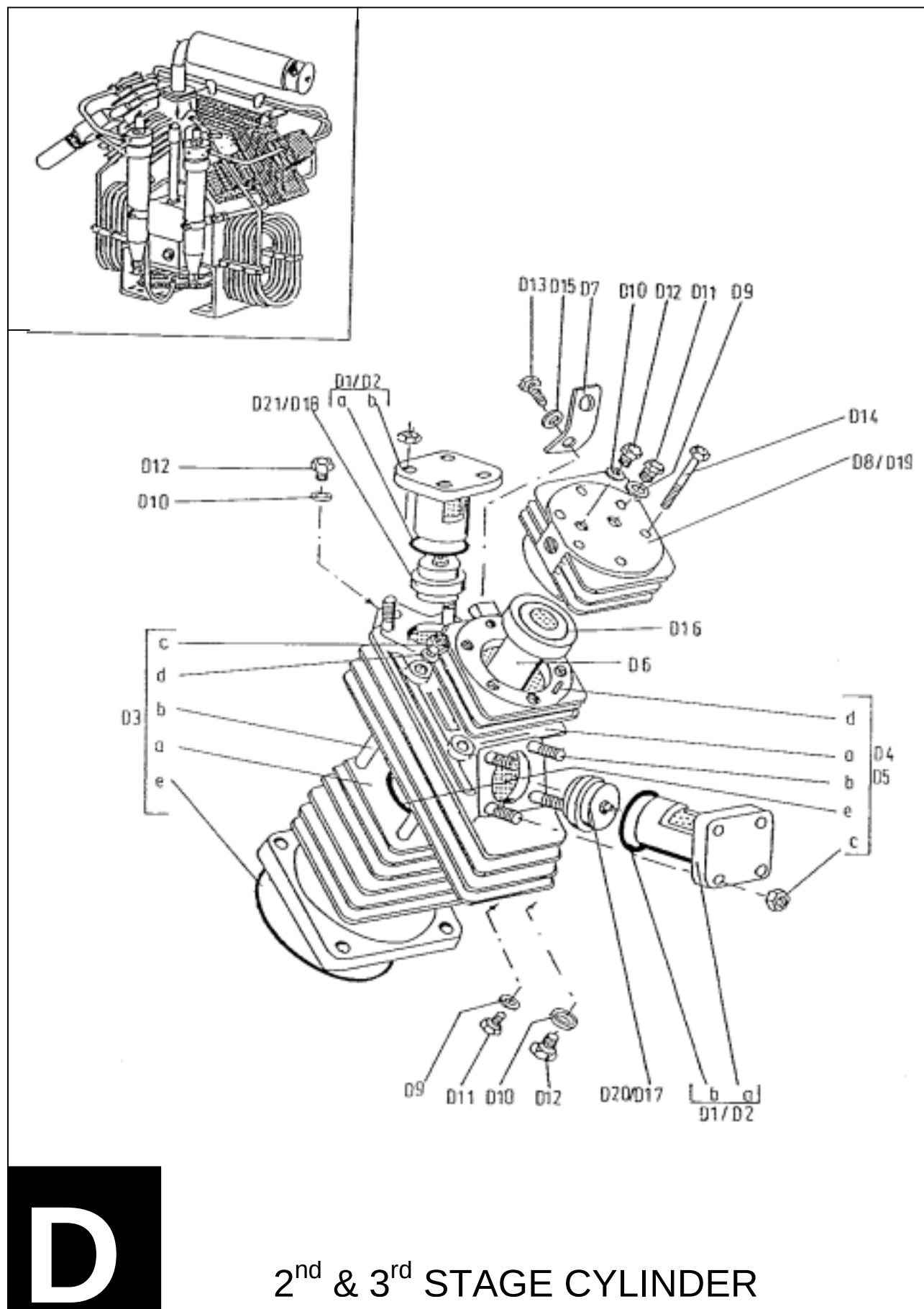
1st & 4th STAGE CYLINDERS

NOTE: > Can be found on other pages
* Spares item only

1ST & 4TH STAGE CYLINDER PARTS - CONTINUED

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
C10	SUCTION PIPE	C73514.620.125	0	0	1	0	039
C11	COOLING RING	C200546	1	1	1	1	029
C12	LIFTING LUGS	C200607.1	1	1	1	1	029
C13	VALVE ASSEMBLY 4th STAGE	C201654	1	1	0	1	029
C14	DOWTY SEAL	PS1322.2	1	1	1	1	029
C15	SETSCREW	95000.255	1	1	1	1	029
C16	WASHER	95179.6	1	1	1	1	029
C17	ELBOW MALE/FEMALE	95406.6	1	1	1	1	039
C18	NOW COMBINED WITH C17		0	0	0	0	039
C19	SETSCREW	98086.1016	6	6	6	6	029
C20	SUCTION FILTER	98262.1075	1	1	0	1	039
C21	SUCTION FILTER ELEMENT	98262.1060	1	1	0	1	029
C22	SAFETY VALVE	98650.1163-4.1	1	1	0	1	029
C23	SUCTION VALVE	98650.1179	1	1	0	1	029
C24	DELIVERY VALVE	98650.1180	1	1	0	1	029
C25	SAFETY VALVE	98650.1287-4.6	0	0	1	0	029
C26	VALVE ASSEMBLY 4th STAGE	98650.1549	0	0	1	0	029
C27	SUCTION VALVE	98650.1550	0	0	1	0	020
C28	DELIVERY VALVE	98650.1551	0	0	1	0	

NOTE: > Can be found on other pages
* Spares item only



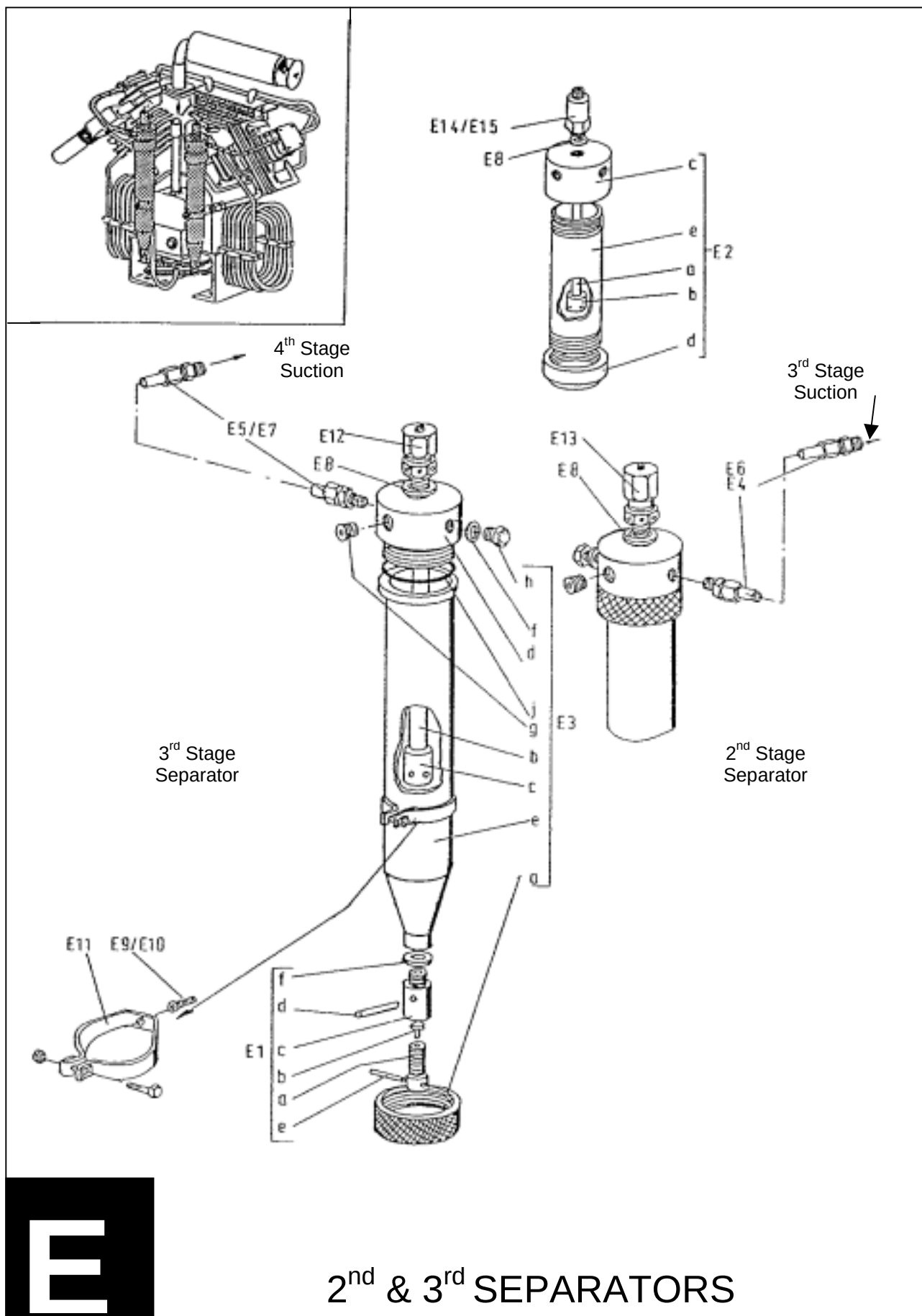
NOTE: > Can be found on other pages
* Spares item only

2ND & 3RD STAGE CYLINDER PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
D1	VALVE COVER ASSY	C200604.100	2	2	0	2	
a	Valve Cover	C200604	2	2	0	2	029
b	'O' Ring	95602.22	2	2	0	2	029
D2	VALVE COVER ASSY	C202649.100*	0	0	2		
a	Valve Cover	C202649	0	0	2		029
b	'O' Ring	95602.22	0	0	2		029
D3	CYLINDER ASSY 2nd STAGE	D100119.100	1	1	1	1	
a	Cylinder	D100119	1	1	1	1	029
b	Stud	D100171.8.91	4	4	4	4	029
c	Nut	95111.5	4	4	4	4	029
d	Washer	95148.14	4	4	4	4	029
e	'O' Ring	95602.87	1	1	1	1	029
D4	CYLINDER COVER ASSY 2nd STG	E60278.100*	1	1	0	1	029
a	Cylinder Cover	E60278	1	1	0	1	
b	Stud	D100171.6.28	8	8	0	8	
c	Nut	95111.4	8	8	0	8	029
d	Tension Pin	95541.160	1	1	0	1	029
e	'O' Ring	95602.56	1	1	0	1	029
D5	CYLINDER COVER ASSY 2nd STG	E61015.100	0	0	1		029
a	Cylinder Cover	E61015	0	0	1		029
b	Stud	D100171.6.28	0	0	8		
c	Nut	95111.4	0	0	8		029
d	Tension Pin	95541.160	0	0	1		029
e	'O' Ring	95602.56	0	0	1		029
D6	LINER	C200525	1	1	1	1	029
D7	LIFTING LUG	C200607.1	1	1	1	1	029
D8	VALVE ASSEMBLY	C201653	1	0	0	0	029
D8	VALVE ASSEMBLY	98650.1883	0	1	0	1	029
D9	DOWTY SEAL	PS1322.1	2	2	2	2	029
D10	DOWTY SEAL	PS1322.2	3	3	3	3	029
D11	PLUG	PS1814.2	2	2	2	2	029
D12	PLUG	PS1814.4	3	3	3	3	029
D13	SETSCREW	95000.255	6	6	6	6	029
D14	SETSCREW	95000.262	6	6	6	6	
D15	WASHER	95179.6	1	1	1	1	
D16	'O' RING	95602.50	1	1	1	1	029
D17	SUCTION VALVE	98650.1181	1	1	0	1	029
D18	DELIVERY VALVE	98650.1182	1	1	0	1	029
D19	VALVE COVER	98650.1548	0	0	1	0	029
D20	SUCTION VALVE	98650.1554	0	0	1	0	029
D21	DELIVERY VALVE	98650.1555	0	0	1	0	029
D22	NUT NYLOC	95141.6	2	2	2	2	

NOTE: > Can be found on other pages

* Spares item only

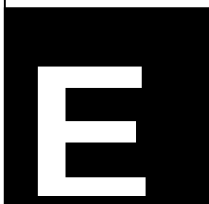


NOTE: > Can be found on other pages
* Spares item only

2ND & 3RD STAGE SEPARATOR PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
E1	DRAIN VALVE ASSY.	C200659	2	2	2	2	021
a	Valve Screw	C.200656.2	2	2	2	2	
b	Valve	C200656.3	2	2	2	2	
c	Drain Body	C200657.2	2	2	2	2	
d	Branch Pipe	C200657.3	2	2	2	2	
e	Tension Pin	95540.172	2	2	2	2	021
f	Dowty Seal	98504.1051	2	2	2	2	
E2	SEPARATOR BODY ASSY	C202658	0	0	2		022
a	Separator Downpipe	C202650	0	0	2		
b	Separator Deflector	C202651	0	0	2		
c	separator Cover	C202652	0	0	2		
d	Separator Body End	C202656	0	0	2		
e	Separator Body	C202657	0	0	2		
f	Dowty Seal	PS1322.1	0	0	0		
g	Pressure Plug	PS1454.2	0	0	2		
h	Plug	PS1814.2	0	0	0		
j	'O' Ring	95602.51	0	0	0		022
E3	SEPARATOR BODY ASSY.	D100291	2	0	0	0	
a	Separator Collar Nut	C200650	2	0	0	0	022
b	Separator Downpipe	C200652	2	0	0	0	022
c	Separator Deflector	C200653	2	0	0	0	022
d	Separator Cover	C200666	2	0	0	0	022
e	Separator Body	C201602	2	0	0	0	
f	Dowty Seal	PS1322.1	2	0	0	0	022
g	Pressure Plug	PS1454.2	2	0	0	0	022
h	Plug	PS1814.2	2	0	0	0	
j	'O' Ring	95602.51	2	0	0	0	
E3	SEPARATOR BODY ASSY.		0	2	0	2	
a	Separator Collar Nut	C200650	0	2	0	2	022
b	Separator Swirl Adaptor	C203442	0	2	0	2	022
c	Separator Deflector	98508.1002	0	2	0	2	022
d	Separator Cover	C203444	0	2	0	2	022
e	Separator Body	C201602	0	2	0	2	
f	Dowty Seal	PS1322.1	0	2	0	2	022
g	Pressure Plug	PS1454.2	0	2	0	2	022
h	Plug	PS1814.2	0	2	0	2	
j	'O' Ring	95602.51	0	2	0	2	
E4	SUCTION PIPE ASSY 3rd Stg.	C201191	1	1	0	1	
a	Coupling 1/2" tube x 1/4 BSPT	98156.1801	1	1	0	1	022
b	Coupling 1/2" tube x 3/8 BSPT	98617.1802	1	1	0	1	039
c	Al. tube 1/2" x 660mm	98617.1020	1	1	0	1	
E5	SUCTION PIPE ASSY. 4th Stg.	C201192	1	1	0	1	
a	Coupling 1/2" tube x 1/4 BSPT	98156.1801	2	2	0	2	
b	Al. tube 1/2" x 660mm	98617.1020	1	1	0	1	039
E6	SUCTION PIPE ASSY. 3rd Stg.	C202653	0	0	1	0	
a	Coupling 12mm tube x 1/4 BSPT	98156.1769	0	0	1	0	
b	Coupling 12mm tube x 3/8 BSPT	98156.1770	0	0	1	0	039
b	St.Steel 12 x 254mm	M3089.1210	0	0	1	0	
E7	SUCTION PIPE ASSY 4th Stg	C202654	0	0	1	0	039
a	Coupling 12mm tube x 11/4 BSPT	98156.1769	0	0	2	0	
b	St.Steel 12 x 254mm	M3089.1210	0	0	1	0	

NOTE: > Can be found on other pages
* Spares item only

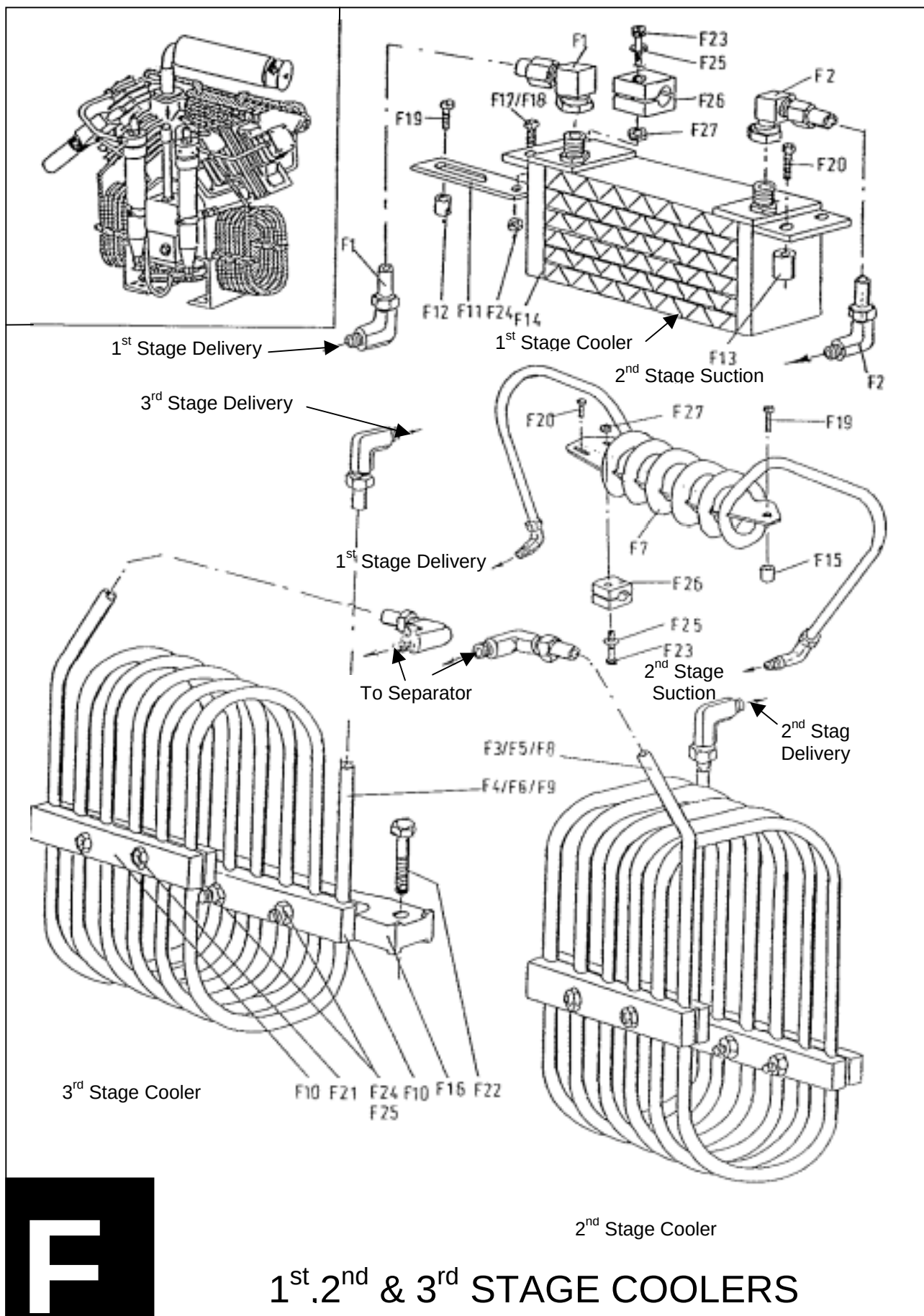


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2ND & 3RD STAGE SEPARATOR PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
E8	DOWTY SEAL	PS1322.2	2	2	2	2	029
E9	SCREW csk	95028.133	1	1	1	1	029
E10	SCREW csk	95028.134	1	1	1	1	029
E11	SEPARATOR CLIP ASSY.	98150.1006	2	2	2	2	029
E12	SAFETY VALVE 3rd STAGE	98650.1164-97	1	1	0	1	029
E13	SAFETY VALVE 2nd STAGE	98650.1164-21	1	1	0	1	029
E14	SAFETY VALVE 2nd STAGE	98650.1288-21	0	0	1	0	029
E15	SAFETY VALVE 3rd STAGE	98650.1288-95	0	0	1	0	029

NOTE: > Can be found on other pages
* Spares item only

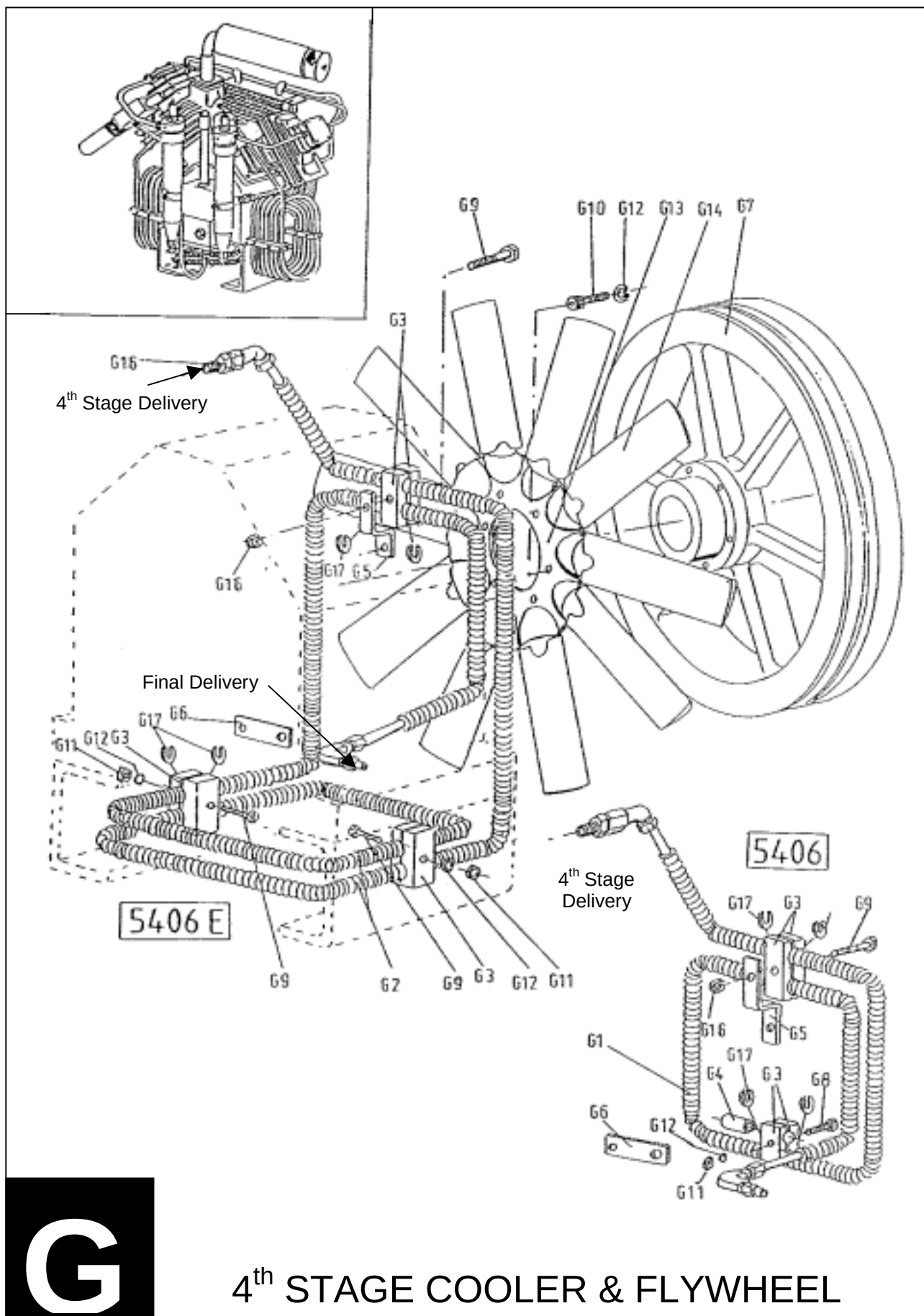


NOTE: > Can be found on other pages
* Spares item only

1ST, 2ND & 3RD STAGE COOLER PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
F1	DELIVERY PIPE ASSY. 1st STAGE	C201189	1	1	0	1	039
a	Elbow 1/2" tube x 3/8 BSPT	98156.2611	1	1	0	1	
b	Elbow 1/2" tube x 3/8 BSPT	98156.2824	1	1	0	1	
c	Al. Tube 1/2" tube x 410mm	98617.1018	1	1	0	1	
F2	SUCTION PIPE ASSY. 2nd STAGE	C201190	1	1	0	1	039
a	Elbow 1/2" tube x 3/8 BSPT	98156.2611	1	1	0	1	
b	Elbow 1/2" tube x 3/8 BSP	98156.2824	1	1	0	1	
c	Al. Tube 1/2" x 410mm	98617.1018	1	1	0	1	
F3	COOLER COIL 2nd STAGE	E60391	1	0	0	0	039
a	Elbow 1/2" x 1/4 BSPT	98156.2610	1	0	0	0	
b	Elbow 1/2" x 3/8 BSPT	98156.2611	1	0	0	0	
c	Al. Tube 1/2" x 3380mm	98617.1018	1	0	0	0	
F4	COOLER COIL 3rd STAGE	E60392	1	0	0		039
a	Elbow 1/2" x 1/4 BSPT	98156.2610	1	0	0		
b	Elbow 1/2" x 3/8 BSPT	98156.2611	1	0	0		
c	Al. Tube 1/2" x 3900mm	98617.1018	1	0	0		
F5	COOLER COIL 2nd STAGE	E60494	0	1	0	1	039
a	Elbow 1/2" x 1/4 BSPT	98156.2610	0	1	0	1	
b	Elbow 1/2" x 3.8 BSPT	98156.2611	0	1	0	1	
c	Al. Tube 1/2" x 4650mm	98617.1018	0	1	0	1	
F6	COOLER COIL 3rd STAGE	E60495	0	1	0	1	039
a	Elbow 1/2" x 1/4 BSPT	98156.2610	0	1	0	1	
b	Elbow 1/2" x 3/8 BSPT	98156.2611	0	1	0	1	
c	Al. Tube 1/2" x 5100mm	98617.1018	0	1	0	1	
F7	COOLER COIL 1st STAGE	E61012	0	0	1		039
a	Coil & Plate	E.61012.2	0	0	1		
b	Elbow 1/2" x 3/8 BSPT	98156.2611	0	0	2		
F8	COOLER COIL 2nd STAGE	E61018	0	0	1		039
a	St. Steel Tube 12mm x 4650	M3089.1210	0	0	1		
b	Elbow 12mm x 1/4" BSPT	98156.2579	0	0	1		
c	Elbow 12mm x 3/8" BSPT	98156.2580	0	0	1		
F9	COOLER COIL 3rd STAGE	E61019	0	0	1		039
a	St. Steel Tube 12mm x 5100	M3089.1210	0	0	1		
b	Elbow 12mm x 1/4" BSPT	98156.2579	0	0	1		
c	Elbow 12mm x 3/8" BSPT	98156.2580	0	0	1		
F10	COOLER CLAMP	C200576	6	6	6	6	039
F11	CLIP	C201199	1	1	0	1	039
F12	SPACER TUBE	C201200.1	1	1	0	1	029
F13	SPACER TUBE	C201200.2	1	1	0	1	029
F14	COOLER	C201604	1	1	0	1	030
F15	SPACER TUBE	C202655	0	0	1	0	
F16	COOLER BRACKET	D100320	2	2	2	2	039
F17	SETSCREW	95000.227	3	3	3	3	039
F18	SETSCREW	95000.228	0	0	1	0	
F19	SETSCREW	95000.230	1	1	1	1	029
F20	SETSCREW	95000.231	1	1	0	1	020
F21	SETSCREW	95000.237	8	8	8	8	030
F22	SETSCREW	95000.258	2	2	2	2	039
F23	SETSCREW	95018.170	1	1	1	1	039
F24	NUT	95111.4	10	10	10	10	039
F25	WASHER	95149.13	9	9	9	9	029
F26	PIPE CLAMP	98150.1040	1	1	1	1	030
F27	LOCKNUT	95141.6	1	1	1	1	039

NOTE: > Can be found on other pages
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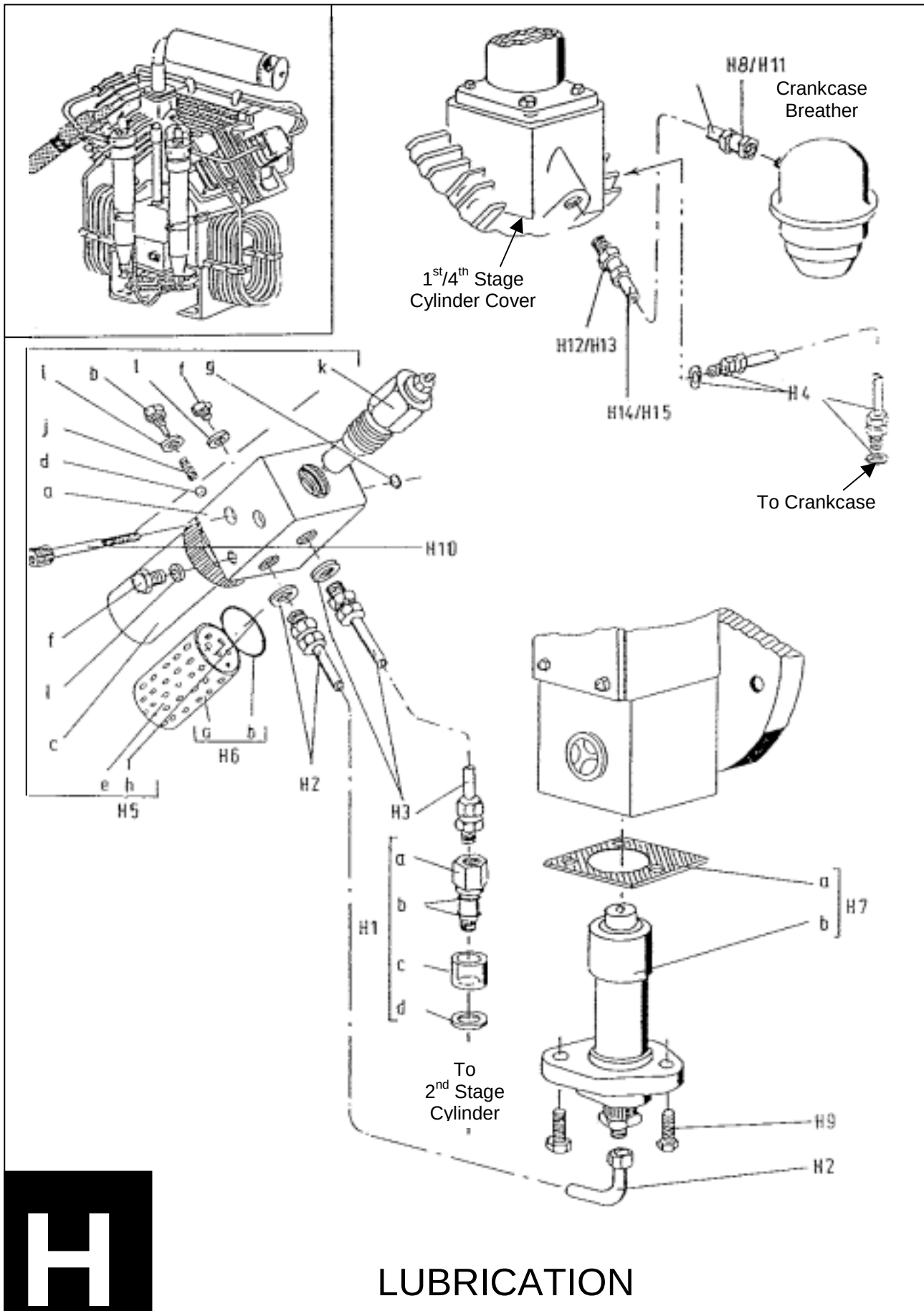
4th STAGE COOLER & FLYWHEEL

NOTE: > Can be found on other pages
* Spares item only

4TH STAGE COOLER & FLYWHEEL PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
G1	COOLER COIL ASSY. 4th STAGE	E60357	1	0	0	0	039
a	Swivel Elbow	98156.1604	1	0	0	0	
b	Elbow	98156.2180	1	0	0	0	
c	Cooler Coil	98617.1006	1	0	0	0	
G2	COOLER COIL ASSY. 4th STAGE	E60496	0	1	1	0	039
a	Swivel Elbow	98156.1604	0	1	1	0	
b	Elbow	98156.2180	0	1	1	0	
c	Cooler Coil	98617.1008	0	1	1	0	
G2	COOLER COIL ASSY. 4th STAGE	E60876	0	0	0	1	039
a	Swivel Elbow	98156.1604	0	0	0	1	
b	Elbow	98156.2180	0	0	0	1	
c	Cooler Coil	98617.1013	0	0	0	1	
G3	COOLER CLIP	C200587	4	6	6	6	039
G4	PACKING PIECE	C200879	1	0	0	0	039
G5	COOLER BRACKET	C201009	1	2	2	2	010
G6	SUPPORT PLATE	C201827	1	1	1	1	039
G7	FLYWHEEL	E60354	1	0	0	0	039
G7	FLYWHEEL	E60436	0	1	0	1	039
G8	SETSCREW	95000.233	1	0	0	0	039
G9	SETSCREW	95000.234	1	3	3	3	039
G10	SETSCREW	95018.168	6	6	6	8	039
G11	NUT	95111.4	2	3	3	3	039
G12	LOCKWASHER (Fan)	95179.5	9	9	9	9	
G13	FAN ASSY.	98084.1001	1	1	1	1	039
G14	FAN BLADE	98084.1008	10	10	10	10	
G15	UNION	98156.1574	1	1	1	1	039
G16	LOCKNUT	98422.1007	1	1	1	1	039
G17	SUPPORT WASHER	98660.1109	12	24	24	24	039
G18	TEMP. SWITCH STUD COUPLING	98156.2809	1	1	1	1	039

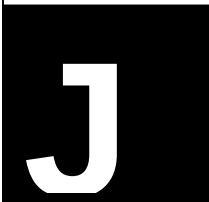
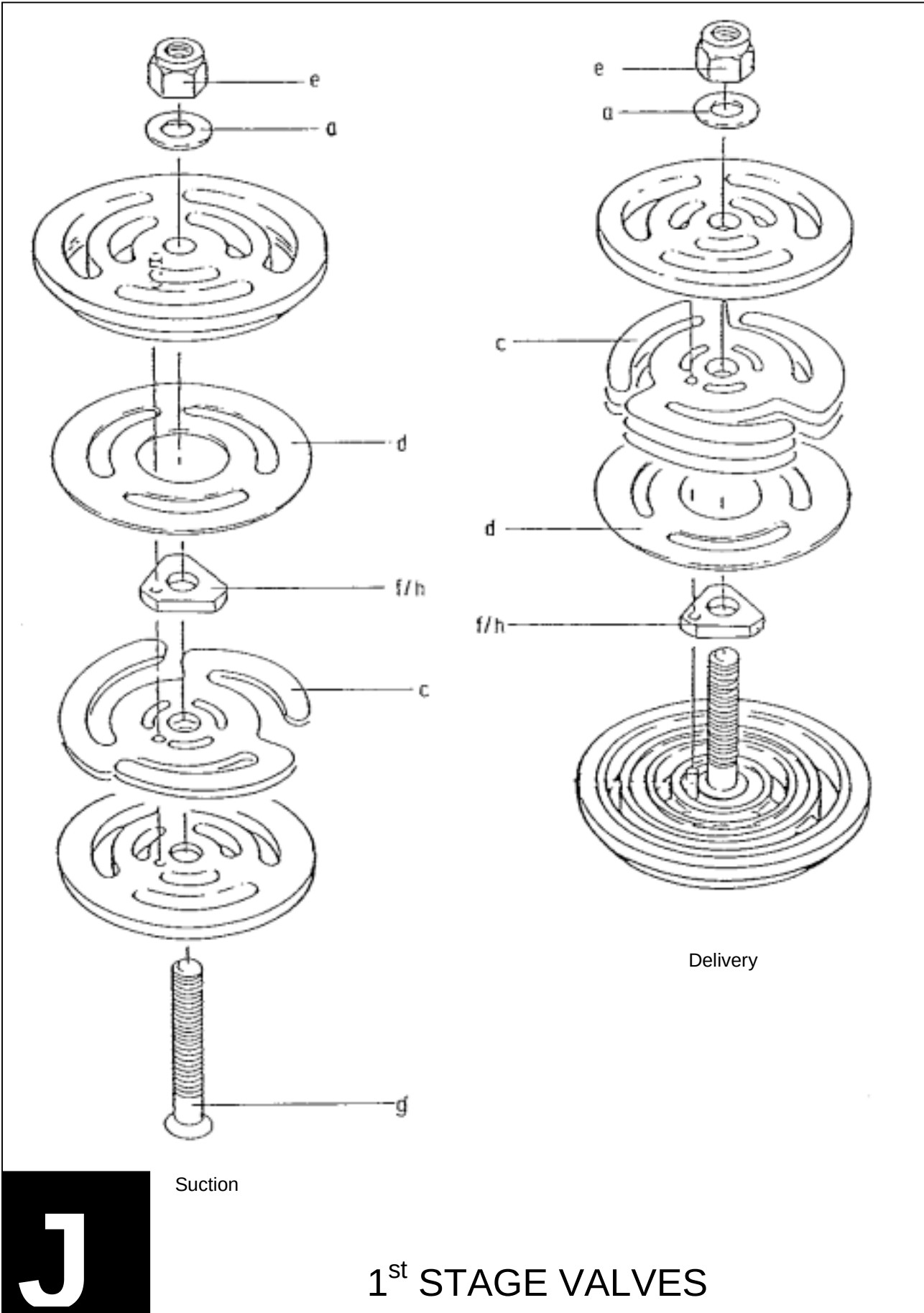
NOTE: > Can be found on other pages
* Spares item only



LUBRICATION PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
H1	SIGHT GLASS ASSY.	C201218	1	1	1	1	039
a	Sight Feed Fitting	C200628	1	1	1	1	
b	'O' Ring	95602.8	2	2	2	2	
c	Sight Glass	98281.1001	1	1	1	1	
d	Washer	98660.1152	1	1	1	1	
H2	OIL FEED PIPE ASSY.	C201668	1	1	1	1	039
a	Pipe Steel 6mm x 534mm	M3130.0603	1	1	1	1	
b	Coupling	98156.1123	1	1	1	1	
c	Coupling	98156.1687	1	1	1	1	
d	Ring	98156.1709	1	1	1	1	
e	Seal	98660.1152	1	1	1	1	
H3	OIL RETURN PIPE ASSY.	C201670	1	1	1	1	039
a	Pipe Steel 6mm x 356mm	M3130.0603	1	1	1	1	
b	Coupling	98156.1123	2	2	2	2	
c	Seal	98660.1152	2	2	2	2	
H4	OIL RETURN PIPE	C201671	1	1	1	1	039
a	Pipe Steel 6mm x 305mm	M3130.0603	1	1	1	1	
b	Coupling	98156.1123	2	2	2	2	
c	Seal	98660.1152	2	2	2	1	
H5	OILPRESS.REG. BODY ASSY	D100406	1	1	1	1	029
a	Oil Press. Regulator Body	D100400	1	1	1	1	
b	Plug	C201080	1	1	1	1	
c	Filter Housing	C201093	1	1	1	1	
d	Ball	PS1149.3	1	1	1	1	
e	Filter Element	PS1432.2	1	1	1	1	
f	Plug	PS1814.2>	2	2	2	2	
g	'O' Ring	95602.7	1	1	1	1	
h	'O' Ring	95602.75>	1	1	1	1	
j	Spring	98518.1046	1	1	1	1	
k	Oil Relief Valve	98650.1162	1	1	1	1	
l	Washer	98660.1152	3	3	3	3	
H6	OIL FILTER ASSY.	98262.1148	1	1	1	1	
a	Filter Element	PS1432.2>	1	1	1	1	
b	'O' Ring	95602.75>	1	1	1	1	
H7	OIL PUMP ASSY.	98446.1050	1	1	1	1	
a	Joint	98502.1017	1	1	1	1	
b	Oil Pump	C203193	1	1	1	1	
H8	COUPLING	C200658	1	1	0	1	029
H9	SETSCREW	95000.256	3	3	3	3	029
H10	SETSCREW	95018.174	2	2	2	2	029
H11	COUPLING	95440.5	0	0	1	0	
H12	COUPLING	95440.88	0	0	1	0	
H13	COUPLING	98156.1551	1	1	0	1	
H14	TUBING Nylon 10mm x 1 x 400mm	98617.1003	0	0	1	0	
H15	TUBING Nylon 8mm x 1 x 330mm	98617.1012	1	1	0	1	

NOTE: > Can be found on other pages
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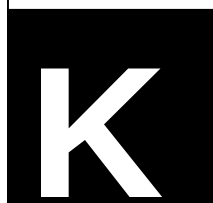
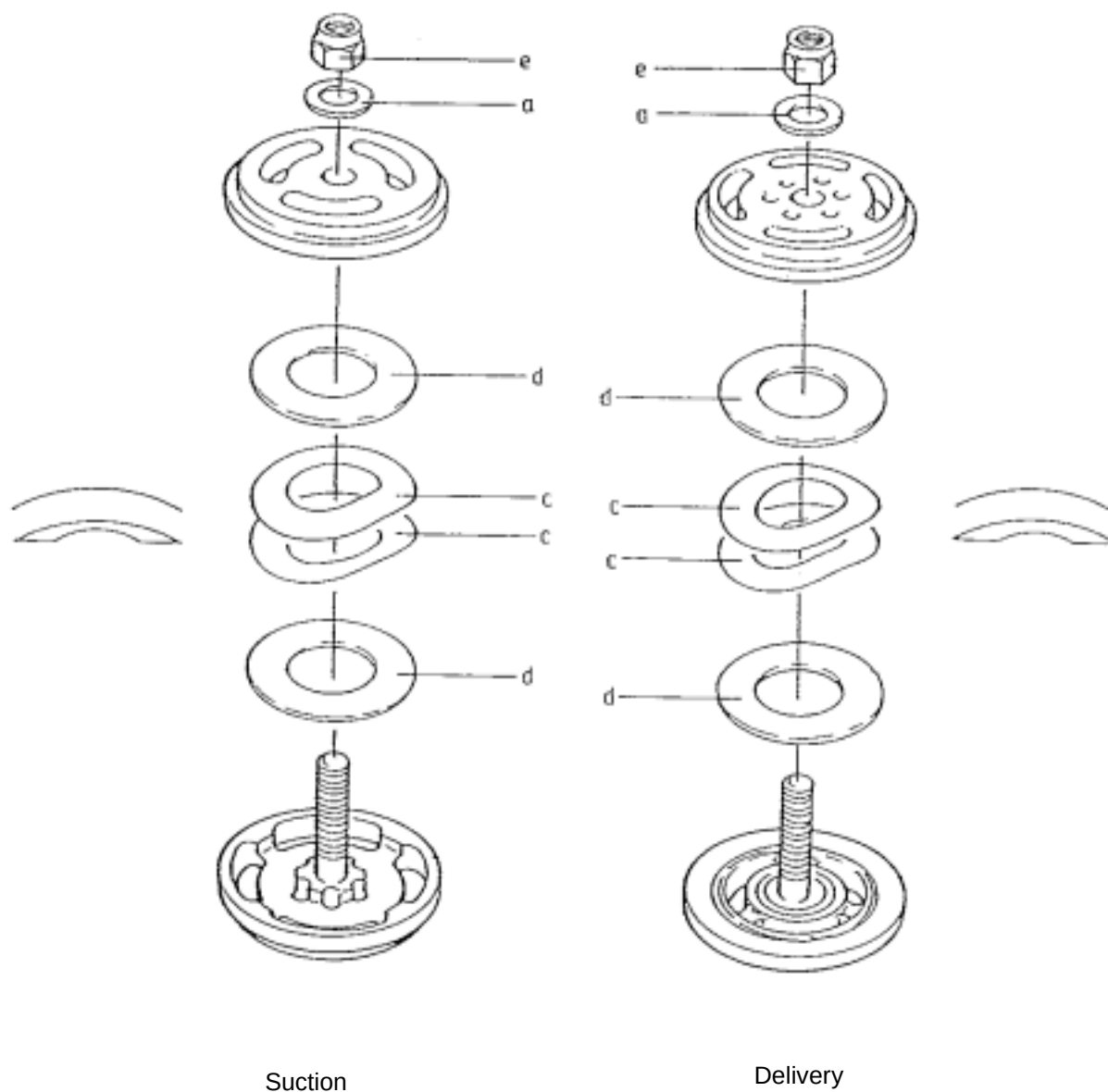
1st STAGE VALVES

NOTE: > Can be found on other pages
* Spares item only

1ST STAGE VALVE PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
J1	SUCTION VALVE ASSEMBLY	98650.1179	1	1	0	1	
J1	SUCTION VALVE ASSEMBLY	98650.1550	0	0	1	0	
J2	DELIVERY VALVE ASSEMBLY	98650.1180	1	1	0	1	
J2	DELIVERY VALVE ASSEMBLY	98650.1549	0	0	1	0	
	VALVE MAINTENANCE KIT FOR	98650.1750	1	1	1	1	
	ABOVE						
a	washer	98650.1629	2	2	2	2	
b	'O' Ring	95602.52	2	2	2	2	
c	Spring Plate	98650.1254	5	5	5	5	
d	Valve Plate	98650.1255	2	2	2	2	
e	Nut	98650.1628	2	2	2	2	
f	Lift Washer	98650.1626	0	0	2	0	
g	Bolt	98650.1631	1	1	1	1	
h	Lift Washer	98650.1639	2	2	0	2	

NOTE: > Can be found on other pages
* Spares item only



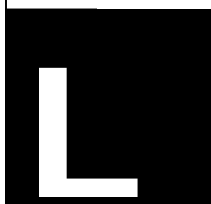
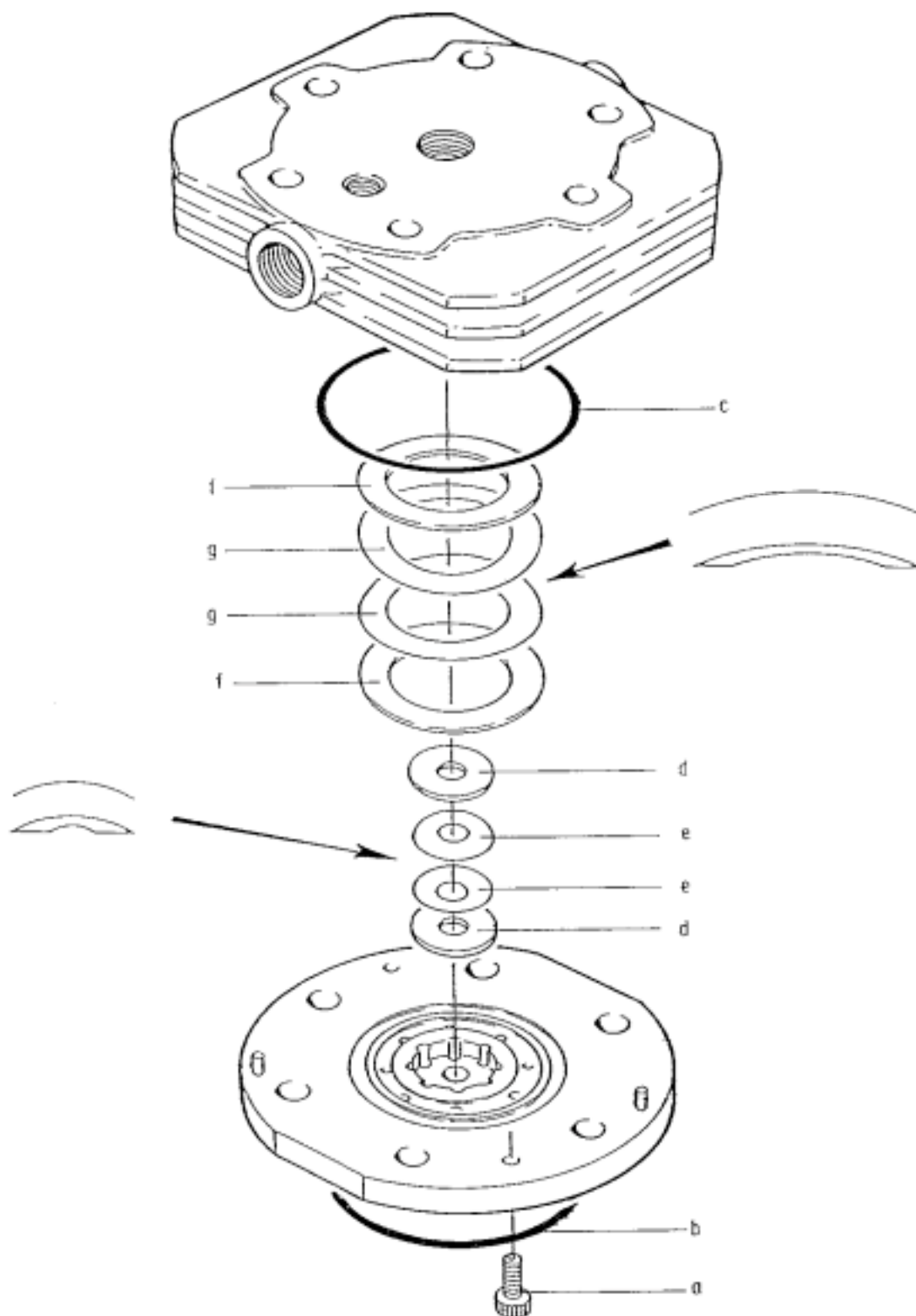
2nd STAGE VALVES

NOTE: > Can be found on other pages
 * Spares item only

2ND STAGE VALVE PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
K1	SUCTION VALVE ASSEMBLY	98650.1181	1	1	0	1	
K1	SUCTION VALVE ASSEMBLY	98650.1554	0	0	1	0	
K2	DELIVERY VALVE ASSEMBLY	98650.1182	1	1	0	1	
K2	DELIVERY VALVE ASSEMBLY	98650.1555	0	0	1	0	
	VALVE MAINTENANCE KIT FOR ABOVE	98650.1751	1	1	1	1	
a	washer	95148.12	2	2	2	2	
b	'O' Ring	95602.22	2	2	2	2	
c	Spring Plate	98650.1249	2	2	2	2	
d	Valve Plate	98650.1250	4	4	4	4	
E	Spring Plate	98650.1251	2	2	2	2	
e	Nut	98650.1527	2	2	2	2	

NOTE: > Can be found on other pages
* Spares item only



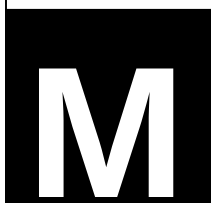
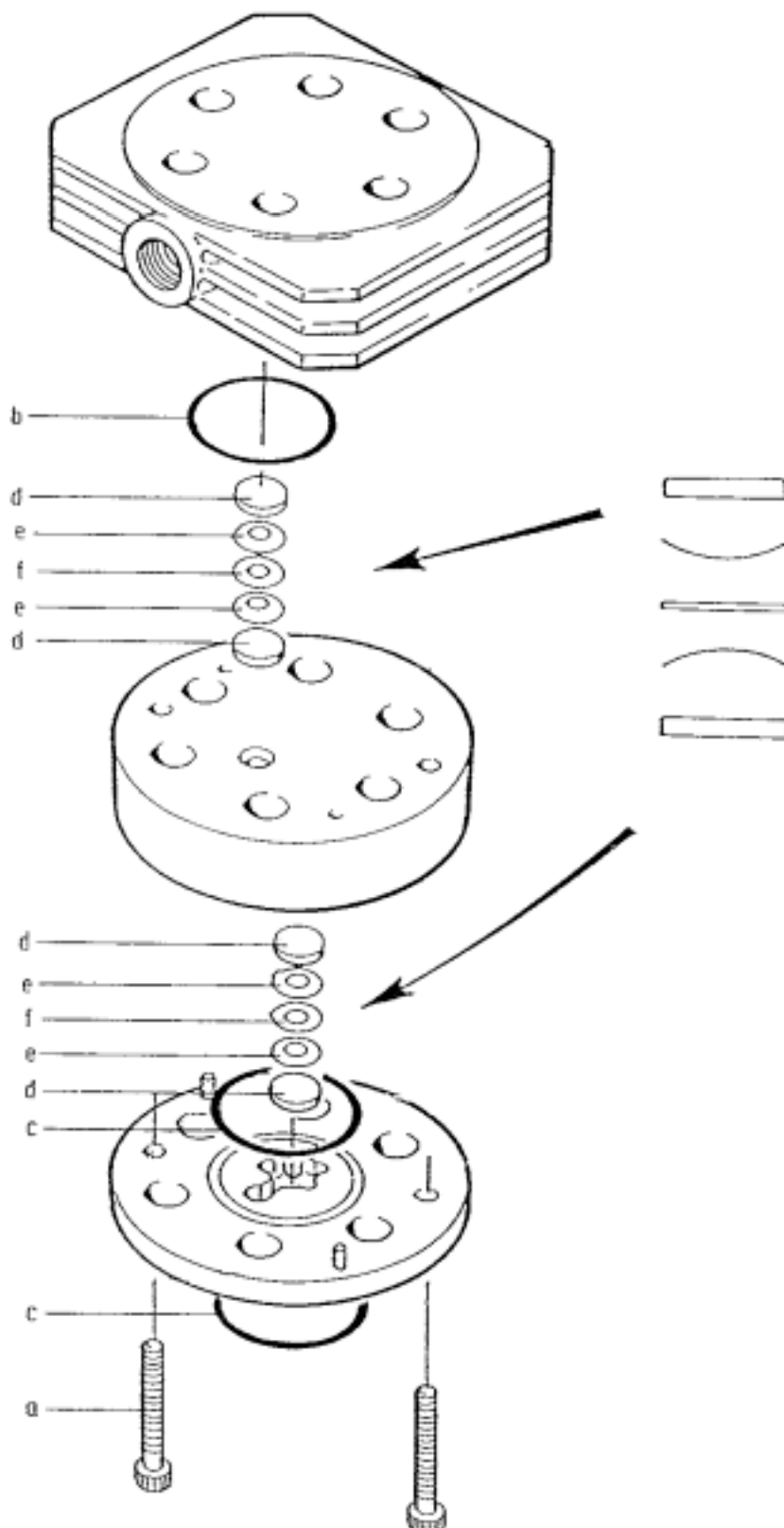
3rd STAGE COCENTRIC VALVE

NOTE: > Can be found on other pages
* Spares item only

3RD STAGE VALVE PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
L1	3rd STAGE CONCENTRIC VALVE	C201653	1	0	0	0	
L1	3rd STAGE CONCENTRIC VALVE	98650.1883	0	1	0	1	
L1	3rd STAGE CONCENTRIC VALVE	98650.1548	0	0	1	0	
	VALVE MAINTENANCE KIT FOR ABOVE	98650.1215	1	1	1	1	
a	Capscrew	95018.134	2	2	2	2	
b	'O' Ring	95602.50	1	1	1	1	
c	'O' Ring	98602.54	1	1	1	1	
d	Valve Plate Delivery	98650.1211	2	2	2	2	
e	Spring Plate Delivery	98650.1212	2	2	2	2	
f	Valve Plate Suction	98650.1213	2	2	2	2	
g	Spring Plate Suction	98650.1214	2	2	2	2	

NOTE: > Can be found on other pages
* Spares item only



4th STAGE CONCENTRIC VALVE

NOTE: > Can be found on other pages
* Spares item only

4TH STAGE VALVE PARTS

ITEM REF	DESCRIPTION	PART No.	No. OFF 5406	No. OFF 5406E	No. OFF 5406Ei	No. OFF 5406EH	STG
M1	4th STAGE CONCENTRIC VALVE	C201654	1	1	0	1	
M1	4th STAGE CONCENTRIC VALVE	98650.1549	0	0	1	0	
	VALVE MAINTENANCE KIT FOR	98650.1199	1	1	1	1	
	ABOVE						
a	Capscrew	95018.106	2	2	2	2	
b	'O' Ring	95602.16	1	1	1	1	
c	'O' Ring	98602.18	2	2	2	2	
d	Valve Plate	98650.1196	4	4	4	4	
e	Spring Plate	98650.1197	4	4	4	4	
f	Centre Plate	98650.1198	2	2	2	2	

NOTE: > Can be found on other pages
* Spares item only

SECTION 9

RECOMMENDED SERVICE PLANS

5406, 5406E & 5406EH

SYNTHETIC OIL - STANDARD

INITIAL SERVICE 50 HOURS OR ELAPSED TIME 6 MONTHS REPEAT AT 8000 HOURS MAJOR OVERHAUL OR ANY INTERMEDIATE OVERHAUL	Change oil, oil filter element.	No Off	Part Ref RSP5406/s.1
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Check belt tension & condition of all ancillaries		
	Check for oil & air leaks		
AT 500 HOURS OR ELAPSED TIME 12 MONTHS REPEAT AT 1500, 2500, 3500, 4500, 5500, 6500 & 7500 HOURS.	Renew suction filter element.	No Off	Part Ref RSP5406/s.2
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check oil level, top-up if necessary.		
	Check for oil & air leaks		
AT 1000 HOURS OR ELAPSED TIME 24 MONTHS REPEAT AT 3000, 5000 & 7000 HOURS	Change oil, oil filter element. Renew suction filter element. Service 3rd & 4th stage valves.	No Off	Part Ref RSP5406/s.3
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check for oil and air leaks		
	Check tightness of all fasteners		
AT 2000 HOURS OR ELAPSED TIME 36 MONTHS REPEAT AT 6000 HOURS	Change oil, oil filter element. Service 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406/s.4
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Service kit 2nd stage valve	1	98650/1751
	Service kit 1st stage valve	1	98650/1760
	'O' ring 1st stage valve covers	2	95602/57
	'O' ring 2nd stage valve covers	2	95602/22
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	4th stage piston ring set	1	98477/1093
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check and clean externally all cooler assemblies particularly the final cooler coil finned area.		
	Ensure fan blades are clean, secure and undamaged.		

AT 4000 HOURS OR ELAPSED TIME 72 MONTHS	Change oil, oil filter element. Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406/s.5
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	C201653
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter element (<i>if fitted</i>)	1	98262/1060
	4th stage plunger/liner assembly	1	C201346
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Clean out all cooler assemblies including finned area.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		

AT 8000 HOURS MAJOR OVERHAUL	Change oil, oil filter element. Cleanse crankcase, Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew conn rod assemblies. Renew all gudgeon pins. Renew crankshaft assembly. Renew suction filter. Renew all safety valves.	No Off	Part Ref RSP5406/s.6
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	C201653
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter. (if fitted)	1	98262/1075
	4th stage plunger/liner assembly	1	C201346
	1st stage piston ring set	1	98477/1090
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	Conn rod assembly	2	D100284
	Crankshaft assembly	1	D100428
	B/E bearing spacer	1	98660/1064
	Spacer washer	1	98660/1145
	Oil seal	1	98505/1009
	Gudgeon pin 1st & 4th stage	1	C200642
	Gudgeon pin 2nd & 3rd stage	1	E2229
	Circlips	4	95650/18
	Oil pump cam assembly	1	C201452
	1st stage safety valve (air)	1	98650/1163-4.1
	2nd stage safety valve (air)	1	98650/1164-21
	3rd stage safety valve (air)	1	98650/1164-97
	4th stage safety valve (check contract for correct valve)	1	as fitted
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		
	<i>Cleanse all cooler coils internally & externally specially finned areas.</i>		
	<i>Hydraulic pressure test all cooler coils.</i>		
	<i>Cleanse, hydraulic pressure test interstage oil/moisture separators.</i>		
	<i>Replace or calibrate all pressure gauges</i>		

SYNTHETIC OIL - WINTER

INITIAL SERVICE 50 HOURS OR ELAPSED TIME 6 MONTHS REPEAT AT 8000 HOURS MAJOR OVERHAUL OR ANY INTERMEDIATE OVERHAUL	Change oil, oil filter element.	No Off	Part Ref RSP5406/w.1
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Check belt tension & condition of all ancillaries		
	Check for oil & air leaks		
AT 500 HOURS OR ELAPSED TIME 12 MONTHS REPEAT AT 1500, 2500, 3500, 4500, 5500, 6500 & 7500 HOURS.	Renew suction filter element.	No Off	Part Ref RSP5406/w.2
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check oil level, top-up if necessary.		
	Check for oil and air leaks		
AT 1000 HOURS OR ELAPSED TIME 24 MONTHS REPEAT AT 3000, 5000 & 7000 HOURS	Change oil, oil filter element. Renew suction filter element. Service 3rd & 4th stage valves.	No Off	Part Ref RSP5406/w.3
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check condition of 3rd & 4th stage cylinder bores.		
AT 2000 HOURS OR ELAPSED TIME 36 MONTHS REPEAT AT 6000 HOURS	Change oil, oil filter element. Service 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406/w.4
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Service kit 2nd stage valve	1	98650/1751
	Service kit 1st stage valve	1	98650/1760
	'O' ring 1st stage valve covers	2	95602/57
	'O' ring 2nd stage valve covers	2	95602/22
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	4th stage piston ring set	1	98477/1093
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check and clean externally all cooler assemblies particularly the final cooler coil finned area.		
	Ensure fan blades are clean, secure and undamaged.		

AT 4000 HOURS OR ELAPSED TIME 72 MONTHS	Change oil, oil filter element. Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406/w.5
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	C201653
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter element (<i>if fitted</i>)	1	98262/1060
	4th stage plunger/liner assembly	1	C201346
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Clean out all cooler assemblies including finned area.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		

AT 8000 HOURS MAJOR OVERHAUL	Change oil, oil filter element. Cleanse crankcase, Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew conn rod assemblies. Renew all gudgeon pins. Renew crankshaft assembly. Renew suction filter. Renew all safety valves.	No Off	Part Ref RSP5406/w.6
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	C201653
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter.	1	98262/1075
	4th stage plunger/liner assembly	1	C201346
	1st stage piston ring set	1	98477/1090
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	Conn rod assembly	2	D100284
	Crankshaft assembly	1	D100428
	B/E bearing spacer	1	98660/1064
	Spacer washer	1	98660/1145
	Oil seal	1	98505/1009
	Gudgeon pin 1st & 4th stage	1	C200642
	Gudgeon pin 2nd & 3rd stage	1	E2229
	Circlips	4	95650/18
	Oil pump cam assembly	1	C201452
	1st stage safety valve (air)	1	98650/1163-4.1
	2nd stage safety valve (air)	1	98650/1164-21
	3rd stage safety valve (air)	1	98650/1164-97
	4th stage safety valve (check contract for correct valve)	1	as fitted
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		
	<i>Cleanse all cooler coils internally & externally specially finned areas.</i>		
	<i>Hydraulic pressure test all cooler coils.</i>		
	<i>Cleanse, hydraulic pressure test interstage oil/moisture separators.</i>		
	<i>Replace or calibrate all pressure gauges</i>		

SYNTHETIC OIL - STANDARD

INITIAL SERVICE 50 HOURS OR ELAPSED TIME 6 MONTHS REPEAT AT 8000 HOURS MAJOR OVERHAUL OR ANY INTERMEDIATE OVERHAUL	Change oil, oil filter element.	No Off	Part Ref RSP5406E/s.1
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Check belt tension & condition of all ancillaries		
	Check for oil & air leaks		
	Check tightness of all fasteners.		
AT 500 HOURS OR ELAPSED TIME 12 MONTHS REPEAT AT 1500, 2500, 3500, 4500, 5500, 6500 & 7500 HOURS.	Renew suction filter element.	No Off	Part Ref RSP5406E/s.2
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check oil level, top-up if necessary.		
	Check for oil and air leaks		
	Check tightness of all fasteners.		
AT 1000 HOURS OR ELAPSED TIME 24 MONTHS REPEAT AT 3000, 5000 & 7000 HOURS	Change oil, oil filter element. Renew suction filter element. Service 3rd & 4th stage valves.	No Off	Part Ref RSP5406E/s.3
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check condition of 3rd & 4th stage cylinder bores.		
AT 2000 HOURS OR ELAPSED TIME 36 MONTHS REPEAT AT 6000 HOURS	Change oil, oil filter element. Service 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406E/s.4
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Service kit 2nd stage valve	1	98650/1751
	Service kit 1st stage valve	1	98650/1750
	'O' ring 1st stage valve covers	2	95602/52
	'O' ring 2nd stage valve covers	2	95602/22
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	4th stage piston ring set	1	98477/1093
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check and clean externally all cooler assemblies particularly the final cooler coil finned area.		
	Ensure fan blades are clean, secure and undamaged.		

AT 4000 HOURS OR ELAPSED TIME 72 MONTHS	Change oil, oil filter element. Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew suction filter element.	No Off	Part Ref RS5406E/s.5
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	C201653
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter element	1	98262/1060
	4th stage plunger/liner assembly	1	C201356
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Clean out all cooler assemblies including finned area.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		

AT 8000 HOURS MAJOR OVERHAUL	Change oil, oil filter element. Cleanse crankcase, Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew 1st & 2nd stage cylinders & 3rd stage liner. Renew conn rod assemblies. Renew all gudgeon pins. Renew crankshaft assembly. Renew suction filter. Renew all safety valves.	No Off	Part Ref RSP5406E/s.6
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	C201653
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter.	1	98262/1075
	4th stage plunger/liner assembly	1	C201356
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	3rd stage liner	1	C200525
	Joint Kit	1	98504/1119
	Conn rod assembly	2	D100284
	Crankshaft assembly	1	D100428
	B/E bearing spacer	1	98660/1064
	Spacer washer	1	98660/1145
	Oil seal	1	98505/1009
	Gudgeon pin 1st & 4th stage	1	C200642
	Gudgeon pin 2nd & 3rd stage	1	E2229
	Circlips	4	95650/18
	Oil pump cam assembly	1	C201452
	1st stage safety valve	1	98650/1163-4.1
	2nd stage safety valve	1	98650/1164-21
	3rd stage safety valve	1	98650/1164-97
	4th stage safety valve (check contract for correct valve)	1	as fitted
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		
	<i>Cleanse all cooler coils internally & externally specially finned areas.</i>		
	<i>Hydraulic pressure test all cooler coils.</i>		
	<i>Cleanse, hydraulic pressure test interstage oil/moisture separators.</i>		
	<i>Replace or calibrate all pressure gauges</i>		

SYNTHETIC OIL - WINTER

INITIAL SERVICE 50 HOURS OR ELAPSED TIME 6 MONTHS REPEAT AT 8000 HOURS MAJOR OVERHAUL OR ANY INTERMEDIATE OVERHAUL	Change oil, oil filter element.	No Off	Part Ref RSP5406E/w.1
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Check belt tension & condition of all ancillaries		
	Check for oil & air leaks		
	Check tightness of all fasteners.		
AT 500 HOURS OR ELAPSED TIME 12 MONTHS REPEAT AT 1500, 2500, 3500, 4500, 5500, 6500 & 7500 HOURS.	Renew suction filter element.	No Off	Part Ref RSP5406E/w.2
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check oil level, top-up if necessary.		
	Check for oil and air leaks		
	Check tightness of all fasteners.		
AT 1000 HOURS OR ELAPSED TIME 24 MONTHS REPEAT AT 3000, 5000 & 7000 HOURS	Change oil, oil filter element. Renew suction filter element. Service 3rd & 4th stage valves.	No Off	Part Ref RSP5406E/w.3
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check condition of 3rd & 4th stage cylinder bores.		
AT 2000 HOURS OR ELAPSED TIME 36 MONTHS REPEAT AT 6000 HOURS	Change oil, oil filter element. Service 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406E/w.4
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Service kit 2nd stage valve	1	98650/1751
	Service kit 1st stage valve	1	98650/1750
	'O' ring 1st stage valve covers	2	95602/52
	'O' ring 2nd stage valve covers	2	95602/22
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	4th stage piston ring set	1	98477/1093
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check and clean externally all cooler assemblies particularly the final cooler coil finned area.		
	Ensure fan blades are clean, secure and undamaged.		

AT 4000 HOURS OR ELAPSED TIME 72 MONTHS	Change oil, oil filter element. Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406E/w.5
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	98650.1883
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter element (<i>if fitted</i>)	1	98262/1060
	4th stage plunger/liner assembly	1	C201356
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Clean out all cooler assemblies including finned area.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		

AT 8000 HOURS MAJOR OVERHAUL	Change oil, oil filter element. Cleanse crankcase, Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew conn rod assemblies. Renew all gudgeon pins. Renew crankshaft assembly. Renew suction filter. Renew all safety valves.	No Off	Part Ref RSP5406E/w.6
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	98650.1883
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter. (<i>if fitted</i>)	1	98262/1075
	4th stage plunger/liner assembly	1	C201356
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	Conn rod assembly	2	D100284
	Crankshaft assembly	1	D100428
	B/E bearing spacer	1	98660/1064
	Spacer washer	1	98660/1145
	Oil seal	1	98505/1009
	Gudgeon pin 1st & 4th stage	1	C200642
	Gudgeon pin 2nd & 3rd stage	1	E2229
	Circlips	4	95650/18
	Oil pump cam assembly	1	C201452
	1st stage safety valve	1	98650/1171
	2nd stage safety valve	1	98650/1221
	3rd stage safety valve	1	98650/1192
	4th stage safety valve (check contract for correct valve)	1	as fitted
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		
	<i>Cleanse all cooler coils internally & externally specially finned areas.</i>		
	<i>Hydraulic pressure test all cooler coils.</i>		
	<i>Cleanse, hydraulic pressure test interstage oil/moisture separators.</i>		
	<i>Replace or calibrate all pressure gauges</i>		

SYNTHETIC OIL - STANDARD

INITIAL SERVICE 50 HOURS OR ELAPSED TIME 6 MONTHS REPEAT AT 8000 HOURS MAJOR OVERHAUL OR ANY INTERMEDIATE OVERHAUL	Change oil, oil filter element.	No Off	Part Ref RSP5406EH/s.1
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Check belt tension & condition of all ancillaries		
	Check for oil & air leaks		
AT 500 HOURS OR ELAPSED TIME 12 MONTHS REPEAT AT 1500, 2500, 3500, 4500, 5500, 6500 & 7500 HOURS.	Renew suction filter element.	No Off	Part Ref RSP5406EH/s.2
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check oil level, top-up if necessary.		
	Check for oil and air leaks		
AT 1000 HOURS OR ELAPSED TIME 24 MONTHS REPEAT AT 3000, 5000 & 7000 HOURS	Change oil, oil filter element. Renew suction filter element. Service 3rd & 4th stage valves.	No Off	Part Ref RSP5406EH/s.3
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check condition of 3rd & 4th stage cylinder bores.		
AT 2000 HOURS OR ELAPSED TIME 36 MONTHS REPEAT AT 6000 HOURS	Change oil, oil filter element. Service 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406EH/s.4
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Service kit 2nd stage valve	1	98650/1751
	Service kit 1st stage valve	1	98650/1750
	'O' ring 1st stage valve covers	2	95602/52
	'O' ring 2nd stage valve covers	2	95602/22
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	4th stage piston ring set	1	98477/1093
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check and clean externally all cooler assemblies particularly the final cooler coil finned area.		
	Ensure fan blades are clean, secure and undamaged.		

AT 4000 HOURS OR ELAPSED TIME 72 MONTHS	Change oil, oil filter element. Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew suction filter element.	No Off	Part Ref RS5406EH/s.5
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre	2	98384/1020
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	98650/1883
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter element	1	98262/1060
	4th stage plunger/liner assembly	1	C201356
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Clean out all cooler assemblies including finned area.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		

AT 8000 HOURS MAJOR OVERHAUL	Change oil, oil filter element. Cleanse crankcase, Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew 1st & 2nd stage cylinders & 3rd stage liner. Renew conn rod assemblies. Renew all gudgeon pins. Renew crankshaft assembly. Renew suction filter. Renew all safety valves.		No Off	Part Ref RSP5406EH/s.6
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'S' 1 Litre		2	98384/1020
	Oil filter element		1	98262/1148
	4th stage valve		1	C201654
	3rd stage valve		1	98650/1883
	2nd stage suction valve		1	98650/1181
	2nd stage delivery valve		1	98650/1182
	1st stage suction valve		1	98650/1179
	1st stage delivery valve		1	98650/1180
	Suction filter.		1	98262/1075
	4th stage plunger/liner assembly		1	C202246
	1st stage piston ring set		1	LD02688/100
	2nd stage piston ring set		1	98477/1091
	3rd stage piston ring set		1	98477/1092
	3rd stage liner		1	C200525
	Joint Kit		1	98504/1119
	Conn rod assembly		2	D100284
	Crankshaft assembly		1	D100428
	B/E bearing spacer		1	98660/1064
	Spacer washer		1	98660/1145
	Oil seal		1	98505/1009
	Gudgeon pin 1st & 4th stage		1	C200642
	Gudgeon pin 2nd & 3rd stage		1	E2229
	Circlips		4	95650/18
	Oil pump cam assembly		1	C201452
	1st stage safety valve		1	98650/1163-4.1
	2nd stage safety valve		1	98650/1164-21
	3rd stage safety valve		1	98650/1164-97
	4th stage safety valve (check contract for correct valve)		1	as fitted
	Check unloader valves & seats relap if necessary			
	Check condition of unloader diaphragms & replace if necessary.			
	Check belt tension & condition of all ancillaries			
	Check condition of all cylinder bores.			
	Inspect piston ring grooves and piston lands for wear.			
	Ensure fan blades are clean, secure and undamaged.			
	Check for oil and air leaks			
	Check tightness of all fasteners			
	Cleanse all cooler coils internally & externally specially finned areas.			
	Hydraulic pressure test all cooler coils.			
	Cleanse, hydraulic pressure test interstage oil/moisture separators.			
	Replace or calibrate all pressure gauges			

SYNTHETIC OIL - WINTER

INITIAL SERVICE 50 HOURS OR ELAPSED TIME 6 MONTHS REPEAT AT 8000 HOURS MAJOR OVERHAUL OR ANY INTERMEDIATE OVERHAUL	Change oil, oil filter element.	No Off	Part Ref RSP5406EH/w.1
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Check belt tension & condition of all ancillaries		
	Check for oil & air leaks		
AT 500 HOURS OR ELAPSED TIME 12 MONTHS REPEAT AT 1500, 2500, 3500, 4500, 5500, 6500 & 7500 HOURS.	Renew suction filter element.	No Off	Part Ref RSP5406EH/w.2
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check oil level, top-up if necessary.		
	Check for oil and air leaks		
AT 1000 HOURS OR ELAPSED TIME 24 MONTHS REPEAT AT 3000, 5000 & 7000 HOURS	Change oil, oil filter element. Renew suction filter element. Service 3rd & 4th stage valves.	No Off	Part Ref RSP5406EH/w.3
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	Check belt tension & condition of all ancillaries		
	Check for oil and air leaks		
	Check tightness of all fasteners		
AT 2000 HOURS OR ELAPSED TIME 36 MONTHS REPEAT AT 6000 HOURS	Change oil, oil filter element. Service 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406EH/w.4
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	Service kit 4th stage valve	1	98650/1199
	Service kit 3rd stage valve	1	98650/1215
	Service kit 2nd stage valve	1	98650/1751
	Service kit 1st stage valve	1	98650/1750
	'O' ring 1st stage valve covers	2	95602/52
	'O' ring 2nd stage valve covers	2	95602/22
	Suction filter element. (<i>if fitted</i>)	1	98262/1060
	4th stage piston ring set	1	98477/1093
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
	Check and clean externally all cooler assemblies particularly the final cooler coil finned area.		
	Ensure fan blades are clean, secure and undamaged.		

AT 4000 HOURS OR ELAPSED TIME 72 MONTHS	Change oil, oil filter element. Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew suction filter element.	No Off	Part Ref RSP5406EH/w.5
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	98650.1883
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter element (<i>if fitted</i>)	1	98262/1060
	4th stage plunger/liner assembly	1	C201356
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	<i>Check unloader valves & seats relap if necessary</i>		
	<i>Check condition of unloader diaphragms & replace if necessary.</i>		
	<i>Check belt tension & condition of all ancillaries</i>		
	<i>Check condition of all cylinder bores.</i>		
	<i>Inspect piston ring grooves and piston lands for wear.</i>		
	<i>Clean out all cooler assemblies including finned area.</i>		
	<i>Ensure fan blades are clean, secure and undamaged.</i>		
	<i>Check for oil and air leaks</i>		
	<i>Check tightness of all fasteners</i>		

AT 8000 HOURS MAJOR OVERHAUL	Change oil, oil filter element. Cleanse crankcase, Renew 1st, 2nd, 3rd & 4th stage valves. Renew 4th stage plunger/liner assembly. Renew 1st, 2nd & 3rd stage piston rings. Renew conn rod assemblies. Renew all gudgeon pins. Renew crankshaft assembly. Renew suction filter. Renew all safety valves.	No Off	Part Ref RSP5406EH/w.6
	Change oil (<i>sump capacity 1.75 litres</i>) REAVELLITE 'W' 1 Litre	2	98384/1021
	Oil filter element	1	98262/1148
	4th stage valve	1	C201654
	3rd stage valve	1	98650.1883
	2nd stage suction valve	1	98650/1181
	2nd stage delivery valve	1	98650/1182
	1st stage suction valve	1	98650/1179
	1st stage delivery valve	1	98650/1180
	Suction filter. (<i>if fitted</i>)	1	98262/1075
	4th stage plunger/liner assembly	1	C202246
	1st stage piston ring set	1	LD02688/100
	2nd stage piston ring set	1	98477/1091
	3rd stage piston ring set	1	98477/1092
	Joint Kit	1	98504/1119
	Conn rod assembly	2	D100284
	Crankshaft assembly	1	D100428
	B/E bearing spacer	1	98660/1064
	Spacer washer	1	98660/1145
	Oil seal	1	98505/1009
	Gudgeon pin 1st & 4th stage	1	C200642
	Gudgeon pin 2nd & 3rd stage	1	E2229
	Circlips	4	95650/18
	Oil pump cam assembly	1	C201452
	1st stage safety valve	1	98650/1171
	2nd stage safety valve	1	98650/1221
	3rd stage safety valve	1	98650/1192
	4th stage safety valve (check contract for correct valve)	1	as fitted
	Check unloader valves & seats relap if necessary		
	Check condition of unloader diaphragms & replace if necessary.		
	Check belt tension & condition of all ancillaries		
	Check condition of all cylinder bores.		
	Inspect piston ring grooves and piston lands for wear.		
	Ensure fan blades are clean, secure and undamaged.		
	Check for oil and air leaks		
	Check tightness of all fasteners		
Cleanse all cooler coils internally & externally specially finned areas.			
Hydraulic pressure test all cooler coils.			
Cleanse, hydraulic pressure test interstage oil/moisture separators.			
Replace or calibrate all pressure gauges			

SECTION 10

ANCILLARY PARTS PUBLICATIONS



The use of replacement parts or lubricating oils not supplied, recommended or approved by **CompAir UK Ltd. Ipswich**, may lead to failure in service which would not be covered by the warranty.

Any unauthorised modifications or failures to maintain this equipment in accordance with the manufacturers maintenance instructions may make it unsafe. The use of replacement parts not supplied by or recommended by CompAir UK Ltd may create unsafe and hazardous conditions or result in damage to the equipment over which CompAir UK Ltd has no control. Such hazardous conditions may lead to accidents that can be life threatening, cause substantial bodily injury or result in damage to the equipment.

CompAir UK Ltd can bear no responsibility for equipment in which unapproved replacement parts are included.



GENUINE PARTS
CompAir UK Ltd

Use **Reavellite** compressor lubricant.
Advantages:

- Longer life.
- Longer time between oil changes.
- Longer valve life.
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CompAir UK Ltd
Sales, Service and Parts
Ranelagh Road
Ipswich
IP2 0AE
England

Telephone: +44 (0) 1473 602222
Customer Service: +44 (0) 1473 556027
Fax: +44 (0) 1473 601704
Parts Fax: +44 (0) 1473 601282
www.CompAir.com
e-mail: ipswich@CompAir.com

