

Introduction

Introduction

This publication contains parts lists and service information please read it carefully before you attempt to service or carryout adjustments on the compressor.

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

Note: If you need any specialist help or service, please contact your distributor or CompAir UK Hydrovane quoting the MODEL TYPE and SERIAL NUMBER.

Product development

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

Quality standards

CompAir UK Hydrovane Quality Management Systems are approved to BS EN / ISO 9002.

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(AN INVENSYS COMPANY)

Model range

This handbook relates to 50 Hz compressors, model types: **Classic 05/07** and **Airlogic 05/07**

This part/service manual refers to compressors with serial numbers:

705-002056-9907 onwards

707-003932-9905 onwards

Terminology:-

7	=	7 Series
05 & 07	=	kW
Airlogic	=	Self contained boxed unit

05/07 Combi Parts List and Service Manual

English

ST 15923-00

Iss A 10/99

OWNERSHIP RECORDS

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

Local CompAir UK Hydrovane Distributor

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

GENERAL HEALTH AND SAFETY PRECAUTIONS

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

The Health and Safety at Work Act, 1974

In order to comply with your responsibilities under the above act, it is essential that the compressor is transported, positioned, installed, operated and maintained by competent persons in accordance with the instructions in this handbook.

The compressor warranty will be invalidated if unapproved spare parts or lubricants are used. Using such items may cause the efficiency and service life of the compressor to be reduced and could create a hazardous condition over which CompAir UK Hydrovane has no control.

Failure to maintain the compressor correctly, or modifying it without prior approval from CompAir UK Hydrovane, may also create a hazardous condition. This will also invalidate the warranty.

Consequential damage of any nature is not covered by the warranty.

Read and fully understand the contents contained in the user handbook.

Ensure that the user Handbook is not permanently removed from the compressor.

Check that there are no signs of damage and/or oil leaks from the air-end, cooler and associated pipework.

After completing work, tools and foreign matter should be removed from the compressor and its surrounding area.

In the unlikely event of a compressor fire, dry powder or carbon dioxide fire extinguishers should be used. Never use water.

Before Working on Compressor

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

Introduction

GENERAL HEALTH AND SAFETY PRECAUTIONS (continued)

When Operating the Compressor

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

Potential Oil Health Hazards

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

1. There are no significant hazards associated with this product when properly used and in the application for which it was designed. Frequent and/or prolonged skin contact may give rise to skin irritations and it is recommended that protective gloves are worn. The carcinogenic action of mineral oils should be brought to the attention of all users. *
2. The oil may be hot so take care when carrying out oil changes.
3. Do not keep oily rags in pockets or wear contaminated clothing. Do not inhale fumes or vapours. Do not swallow. Avoid eye contact.
4. Always wash hands after use and before eating, drinking, smoking and using the toilet.
5. **Ingestion** - Do not induce vomiting because of the risk of aspiration. Wash mouth out with water. Give 1/2 pint milk. Seek immediate medical attention.
6. **Skin Contact** - *Mildly irritating. Remove by wiping. Wash with soap and water. Apply emollient cream.

7. **Eye Contact** - *Mildly irritating. Flush with copious amounts of warm water. Seek medical advice if necessary.

8. **Aspiration** - If there is any suspicion of aspiration into the lungs (for example during vomiting) admit to hospital immediately.

9. **Inhalation** - Remove from exposure into fresh air. If necessary give artificial respiration or oxygen. Seek medical advice.

10. **Pressure injection** - Obtain immediate medical attention, even if injury appears minor.

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

11. **Spillage** - Soak up with absorbent clay.

12. **Waste Disposal** - Oil, condensate, filter elements etc. should be disposed of in accordance with local regulations. Do not allow oil to contaminate water supplies.

Warnings, Cautions and Notes

1. Warning

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

Risk of electric shock



Risk of danger



Risk of hot surfaces



Pressurised vessel



Pressurised component or system



Unit is remotely controlled and may start without warning



Eye Protection Must be worn



Dust protection must be worn



Read the instruction manual



Do not operate the machine without the guard being fitted.



2. Caution

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

3. Notes

'NOTE' is used in the text of this handbook to draw attention to specific points of importance.

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

Servicing requirements

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

Read health and safety precautions before starting any work.

Service schedule: Fluid Force Clear Oil (1000 Hour oil change)

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

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

Preventative Maintenance Schedule		Fluid Force Clear							
		Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Suitable sited		✓			✓	✓	✓	✓	✓
Adequate ventilation		✓			✓	✓	✓	✓	✓
Ambient temperature		✓	✓	✓	✓	✓	✓	✓	✓
Sufficient access		✓							
Clear of airborne contaminants		✓	✓	✓	✓	✓	✓	✓	✓
Torque electrical connections		✓				✓	✓	✓	✓
Check oil level at filler plug	1C	✓			✓	✓	✓	✓	✓
Check correct drive rotation		✓							✓
Check for air leaks		✓			✓	✓	✓	✓	✓
Check for oil leaks		✓			✓	✓	✓	✓	✓
Check air filter	1C	✓							
Check power on load		✓			✓	✓	✓	✓	✓
Check power off load		✓			✓	✓	✓	✓	✓
Check oil temperature	1B	✓	✓	✓	✓	✓	✓	✓	✓
Check RSU oil temperature		✓	✓	✓	✓	✓	✓	✓	✓
Check servo pressure on load		✓			✓	✓	✓	✓	✓
Check servo pressure off load		✓			✓	✓	✓	✓	✓
Check motor cable glands secure		✓				✓	✓	✓	✓
Check motor for damage	1C	✓			✓	✓	✓	✓	✓
Check motor for loose connections	1C	✓			✓	✓	✓	✓	✓
Check motor cables and earth	1C	✓			✓	✓	✓	✓	✓
Check motor for vibration		✓			✓	✓	✓	✓	✓
Check perishable oil pipes						✓			
Check oil seal	1C					✓	✓	✓	
Check drive media							✓	✓	✓
Check operation of non-return valve		✓			✓	✓	✓	✓	✓

Introduction

Preventative Maintenance Schedule		Fluid Force Clear							
Maintenance Actions and Manual Reference		Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Check RSU temperature		✓	✓	✓	✓	✓	✓	✓	✓
Check starter contactors							✓	✓	✓
Check motor insulation resistance									✓
Clean air/oil radiator external	1C			✓	✓	✓	✓	✓	✓
Clean external dirt from motor	1C			✓	✓	✓	✓	✓	✓
Clean cabinet air filter	1C			✓	✓				
Clean solenoids					✓	✓	✓	✓	✓
Clean external dirt from compressor					✓	✓	✓	✓	✓
Clean oil return filter	2F					✓	✓	✓	
Clean air filter	2A			✓					
Grease motor bearings (if applicable)								✓	
Change Fluid Force Clear oil	1C				✓	✓	✓	✓	✓
Change oil filter	2F				✓	✓	✓	✓	✓
Change air filter	2A				✓	✓	✓	✓	✓
Change cabinet filter	1C					✓	✓	✓	✓
Change unloader valve seals	2B					✓	✓	✓	✓
Change MPV seals	2G					✓	✓	✓	✓
Change vacuum valve seals	2D					✓	✓	✓	✓
Change oil filter strainers						✓	✓	✓	✓
Change perishable oil pipes							✓	✓	✓
Change thermal motor							✓	✓	✓
Change drive media	2J								✓
Change oil return filter									✓
Change oil seal									✓
Change pressure gauge									✓
Replace motor bearings									✓
Test vacuum valve	5	✓			✓	✓	✓	✓	✓
Test minimum pressure valve	5	✓			✓	✓	✓	✓	✓
Test air delivery	5	✓			✓	✓	✓	✓	✓

Service schedule: Fluid Force 2000 (2000 Hour oil change)

The bulk oil temperature must not exceed 90°C (Fluid Force 2000) or 100°C (Fluid Force HPO). If the oil is working above this temperature, the oil life will be reduced.

Note: When changing recommended oil types it is advisable to flush the compressor.

Preventative Maintenance Schedule		Fluid Force 2000/HPO							
		Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Maintenance Actions and Manual Reference									
Suitable sited		✓			✓	✓	✓	✓	✓
Adequate ventilation		✓			✓	✓	✓	✓	✓
Ambient temperature		✓	✓	✓	✓	✓	✓	✓	✓
Sufficient access		✓							
Clear of airborne contaminants		✓	✓	✓	✓	✓	✓	✓	✓
Torque electrical connections		✓				✓	✓	✓	✓
Check oil level at filler plug	1C	✓			✓	✓	✓	✓	✓
Check correct drive rotation		✓							✓
Check for air leaks		✓			✓	✓	✓	✓	✓
Check for oil leaks		✓			✓	✓	✓	✓	✓
Check air filter	1C	✓			✓				
Check power on load		✓				✓	✓	✓	✓
Check power off load		✓				✓	✓	✓	✓
Check oil temperature	1B	✓	✓	✓	✓	✓	✓	✓	✓
Check RSU oil temperature		✓	✓	✓	✓	✓	✓	✓	✓
Check servo pressure on load		✓		✓	✓	✓	✓	✓	✓
Check servo pressure off load		✓		✓	✓	✓	✓	✓	✓
Check motor cable glands secure		✓				✓	✓	✓	✓
Check motor for damage	1C	✓				✓	✓	✓	✓
Check motor for loose connections	1C	✓				✓	✓	✓	✓
Check motor cables and earth	1C	✓				✓	✓	✓	✓
Check motor for vibration		✓				✓	✓	✓	✓
Check perishable oil pipes						✓			
Check oil seal	1C					✓	✓	✓	
Check drive media						✓	✓	✓	
Check operation of non-return valve		✓				✓	✓	✓	✓
Check RSU temperature		✓	✓	✓	✓	✓	✓	✓	✓
Check starter contactors							✓	✓	✓
Check motor insulation resistance									✓
Clean air/oil radiator external	1C			✓	✓	✓	✓	✓	✓
Clean external dirt from motor	1C	✓		✓	✓	✓	✓	✓	✓
Clean cabinet air filter	1C			✓	✓				
Clean solenoids					✓	✓	✓	✓	✓

Introduction

Preventative Maintenance Schedule		Fluid Force 2000/HPO							
Maintenance Actions and Manual Reference		Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 6000 hrs	Every 12000 hrs	Every 24000 hrs
Clean external dirt from compressor				✓	✓	✓	✓	✓	✓
Clean non-return filter	2F				✓	✓	✓	✓	
Clean air filter	2A			✓	✓				
Grease motor bearings (if applicable)								✓	
Change Fluid Force 2000 oil	1C					✓	✓	✓	✓
Change oil filter	2F					✓	✓	✓	✓
Change air filter	2A					✓	✓	✓	✓
Change cabinet filter	1C					✓	✓	✓	✓
Change unloader valve seals	2B					✓	✓	✓	✓
Change MPV seals	2G					✓	✓	✓	✓
Change vacuum valve seals	2D					✓	✓	✓	✓
Change oil filter strainers						✓	✓	✓	✓
Change perishable oil pipes							✓	✓	✓
Change thermal motor							✓	✓	✓
Change drive media	2J								✓
Change non-return filter									✓
Change oil seal									✓
Change pressure gauge									✓
Replace motor bearings									✓
Test vacuum valve	5	✓				✓	✓	✓	✓
Test minimum pressure valve	5	✓				✓	✓	✓	✓
Test air delivery	5	✓				✓	✓	✓	✓

Service schedule: Fluid Force HPO (4000 Hour oil change)

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

Note: When changing recommended oil types it is advisable to flush the compressor.

Preventative Maintenance Schedule		Fluid Force HPO								
		Inst.	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 4000 hrs	Every 8000 hrs	Every 12000 hrs	Every 24000 hrs
Suitable sited		✓			✓	✓	✓	✓	✓	✓
Adequate ventilation		✓			✓	✓	✓	✓	✓	✓
Ambient temperature		✓	✓	✓	✓	✓	✓	✓	✓	✓
Sufficient access		✓								
Clear of airborne contaminants		✓	✓	✓	✓	✓	✓	✓	✓	✓
Torque electrical connections		✓				✓	✓	✓	✓	✓
Check oil level at filler plug	1C	✓			✓	✓	✓	✓	✓	✓
Check correct drive rotation		✓								✓
Check for air leaks		✓			✓	✓	✓	✓	✓	✓
Check for oil leaks		✓			✓	✓	✓	✓	✓	✓
Check air filter	1C	✓			✓					
Check power on load		✓				✓	✓	✓	✓	✓
Check power off load		✓				✓	✓	✓	✓	✓
Check oil temperature		✓	✓	✓	✓	✓	✓	✓	✓	✓
Check RSU oil temperature	1B	✓	✓	✓	✓	✓	✓	✓	✓	✓
Check servo pressure on load		✓		✓	✓	✓	✓	✓	✓	✓
Check servo pressure off load		✓		✓	✓	✓	✓	✓	✓	✓
Check motor cable glands secure		✓				✓	✓	✓	✓	✓
Check motor for damage	1C	✓				✓	✓	✓	✓	✓
Check motor for loose connections	1C	✓				✓	✓	✓	✓	✓
Check motor cables and earth	1C	✓				✓	✓	✓	✓	✓
Check motor for vibration		✓				✓	✓	✓	✓	✓
Check perishable oil pipes						✓	✓		✓	
Check oil seal	1C					✓	✓	✓	✓	
Check drive media						✓	✓	✓	✓	
Check operation of non-return valve		✓				✓	✓	✓	✓	✓
Check RSU temperature		✓	✓	✓	✓	✓	✓	✓	✓	✓
Check starter contactors								✓		✓
Check motor insulation resistance										✓
Clean air/oil radiator external	1C			✓	✓	✓	✓	✓	✓	✓
Clean external dirt from motor	1C		✓	✓	✓	✓	✓	✓	✓	✓
Clean cabinet air filter	1C		✓	✓						✓
Clean solenoids				✓	✓	✓	✓	✓	✓	✓

Introduction

Preventative Maintenance Schedule	Fluid Force HPO									
	Maintenance Actions and Manual Reference	Install	Every Day	Every Week	Every 1000 hrs	Every 2000 hrs	Every 4000 hrs	Every 8000 hrs	Every 12000 hrs	Every 24000 hrs
Clean external dirt from compressor			✓	✓	✓	✓	✓	✓	✓	✓
Clean oil return filter	2F			✓	✓	✓	✓	✓		
Clean air filter	2A		✓	✓						
Grease motor bearings (if applicable)								✓		
Change Fluid Force HPO oil	1C					✓	✓	✓	✓	✓
Change oil filter	2F					✓	✓	✓	✓	✓
Change air filter	2A				✓	✓	✓	✓	✓	✓
Change cabinet filter	1C				✓	✓	✓	✓	✓	✓
Change unloader valve seals	2B				✓	✓	✓	✓	✓	✓
Change MPV seals	2G				✓	✓	✓	✓	✓	✓
Change vacuum valve seals	2D				✓	✓	✓	✓	✓	✓
Change oil filter strainers					✓	✓	✓	✓	✓	✓
Change perishable oil pipes							✓			✓
Change thermal motor							✓			✓
Change drive media	2J									✓
Change non-return filter										✓
Change oil seal										✓
Change pressure gauge										✓
Replace motor bearings										✓
Test vacuum valve	5	✓			✓	✓	✓	✓	✓	✓
Test minimum pressure valve	5	✓			✓	✓	✓	✓	✓	✓
Test air delivery	5	✓			✓	✓	✓	✓	✓	✓

Service Kits

Only use genuine CompAir UK Hydrovane parts and approved oils. **Oils must not be mixed.**

Service kits contents

Item	Part Number	Quantity	Description	Chapter Location
KM71 - Maintenance Kit				
1	50273	1	Air filter	2A
2	9842	1	'O' Ring	2A
3	0053/1	1	P.T.F.E. Seat	2B
4	0071	1	P.T.F.E. Seat	2G, 2N
5	52109	1	'O' Ring	2D
6	57596	1	Airzet Seal	2D
7	57738	1	Fibre washer	2A
8	57739	1	Fibre washer	2A
9	57761	1	Gasket	2C
10	57795	1	Gasket	2D
11	58024	1	Gasket	2A
12	9613	1	Bonded seal	2D, 2F
13	9619	1	Bonded seal	2A
14	9704	1	'O' Ring	2B, 2D
15	9711	1	'O' Ring	2G, 2N
16	9715	1	'O' Ring	2C, 2D
17	9717	1	'O' Ring	2C, 2D, 2G, 2N
18	9754	1	'O' Ring	2B
19	9758	1	'O' Ring	2G, 2N
20	9763	1	'O' Ring	2F
21	9804	1	'O' Ring	2B
22	W4-1	1	Square section seal	2D
KS71 - Separator Kit				
1	59177	1	Separator Element	2G
2	57803	1	Gasket	2G
3	3515C	1	Thermal Motor	2F
4	9613	1	Bonded Seal	2D, 2F
5	9624	1	Bonded Seal	2F
6	59941	1	Oil Restrictor Plug	
7	52866	1	Filter	
KT71 - Top Up Kit				
1	34222	1	Oil Seal	2J
2	56391	1	Gauge	2M
3	58017-03	2	Shim	2E
4	58017-04	2	Shim	2E
5	58018-03	2	Shim	2E
6	58018-04	2	Shim	2E
7	59370-03	2	Shim	2E
8	59370-04	2	Shim	2E
9	58691	1	Jubilee Clip	2L

Introduction

Item	Part Number	Quantity	Description	Chapter Location
10	9607	1	Bonded Seal	
11	9609	14	Bonded Seal	2K, 2L
12	9616	2	Bonded Seal	
13	9619	1	Bonded Seal	2F
14	9624	1	Bonded Seal	2F
15	9751	4	'O' Ring	
16	9754	1	'O' Ring	2B
17	9810	1	'O' Ring	2J
18	9900	1	'O' Ring	2E, 2L
19	52109	2	'O' Ring	
20	57785	1	Coupling Element	
21	58117	1	Lens	
22	58426	1	Lens Clip	
23	71180	1	Coupling Element	2J
24	57234	1	Cooler Seal (Motor end)	
25	58192	1	Cooler Seal (Compressor end)	

Note: Spare parts to be stored in original packaging and in a dry environment. Repaired or replacement units should be protected against corrosion and mechanical damage during storage.

Key to symbols used



Torque Setting Nm.



Spanner Required (mm) A/F



Grease Required (Specification)



Allen key Required (mm)



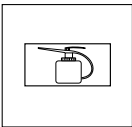
Loctite Required and Specification Number



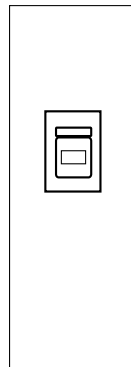
Service Tools Required and Part Reference



Lubricate With Sump Oil



Recommended Oils
Fluid Force Clear
Fluid Force 2000
Fluid Force HPO



Recommended Grease
Silkolene 660
Motor Grease
Esso Unirex N3
Shell Albida R2
Shell Nerita HV
SKF LGHQ3
Castrol Optimol PD2

Note: Do not mix oils.

Torque settings

Listed below are recommended torque settings.

Note: Torque settings must be applied when indicated.

Torque Settings	
Thread Size (mm)	Setting (Nm)
6	15
8	35
10	60
12	95
16	160
42	400

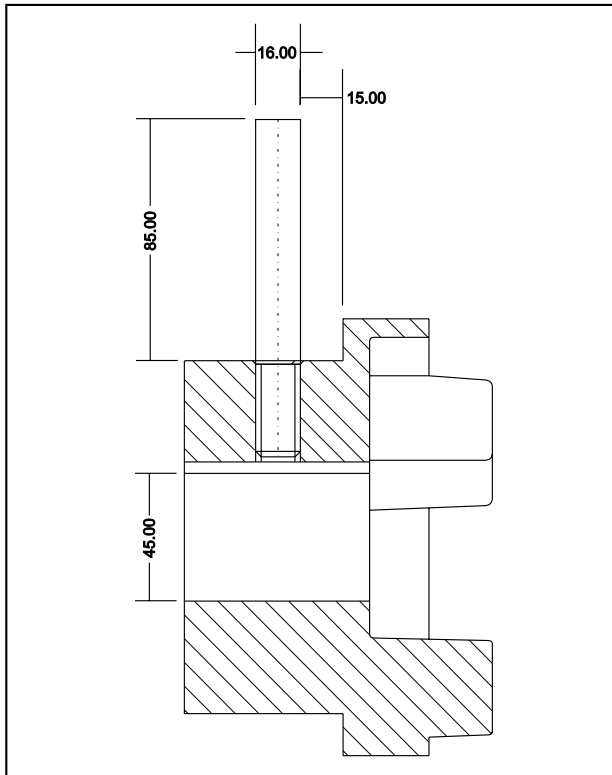
Introduction

Service Tools required

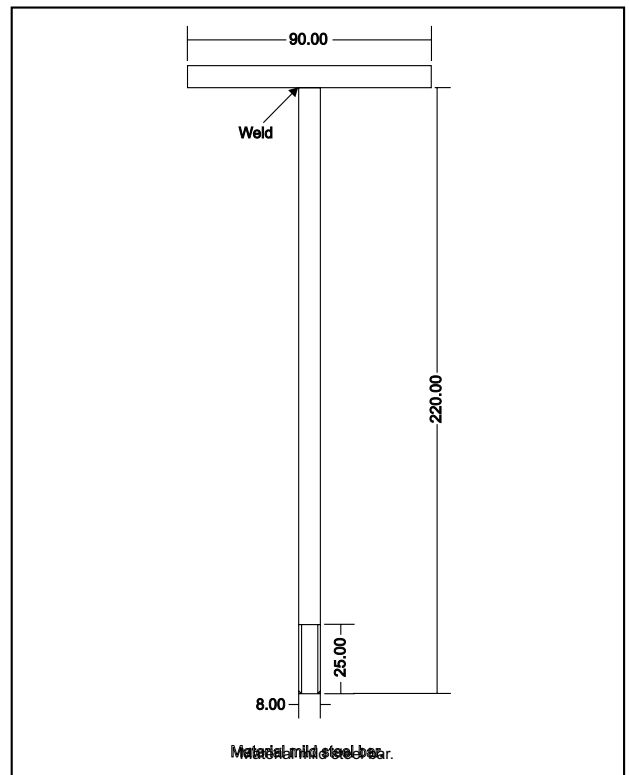
Technical drawing of a nozzle assembly. The drawing shows a cross-section of the nozzle with various dimensions and features. Key dimensions include: 36.0 (total length), 120° (ream angle), 1.5 Wide undercut to base of thread, 3/8 BSP (thread), 60° (taper angle), 12.0 (ream length), 18.5 (ream diameter), 9.0 (thread length), 12.0 (thread diameter), and Ø13.7 (thread diameter). The material is specified as EN1A. A note indicates: Dia 'A' Ream Tol :- ± 0.025.

Nozzle orifice Dia 'A'	Model	Bar	C.F.M
3.52mm	705	7	29.0
2.69mm	705	10	23.6
4.03mm	707	7	38.0
3.11mm	707	10	31.5

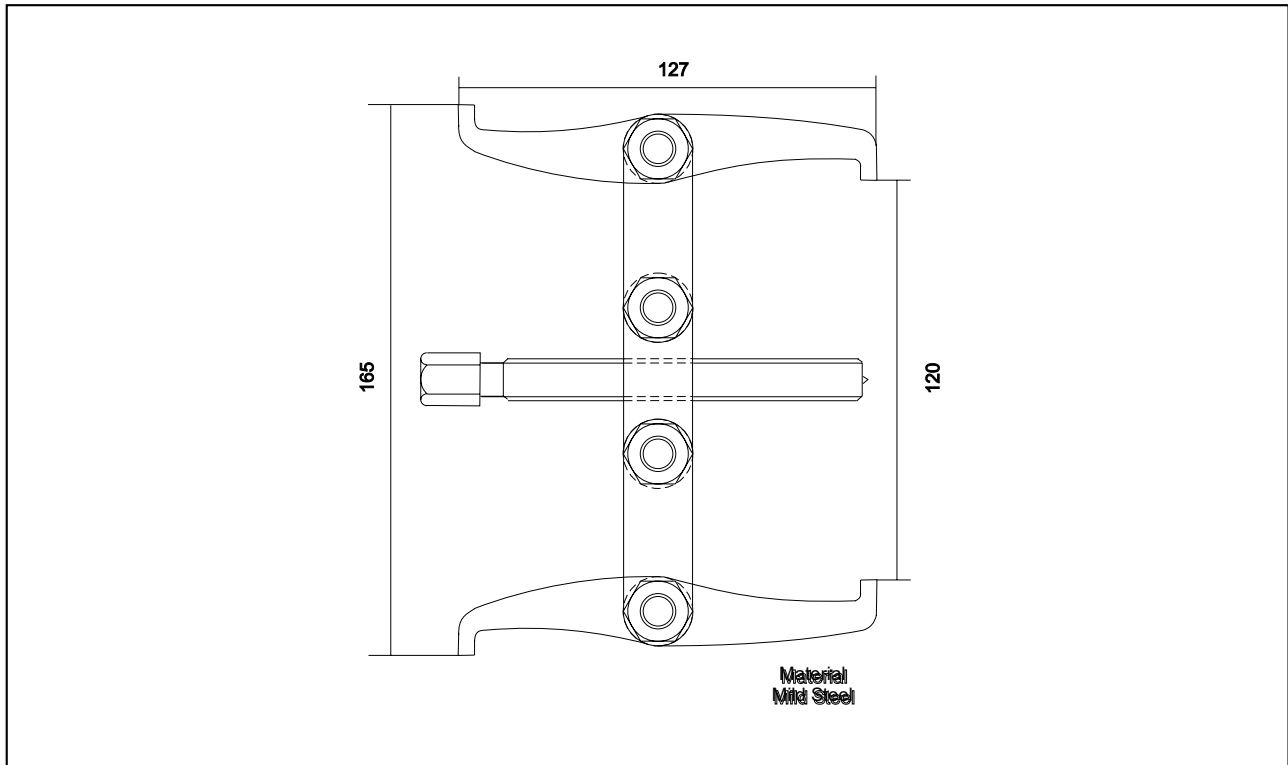
Service Tools (Test Nozzle)



Service Tools (S103)



Service Tools (S97)



Service Tools (S34)

Parts List and Service Manual

Contents

	Chapter	Page
Routine Servicing	1	17
Air-end	2	23
Starter Assembly	3	69
Labels	4	85
Adjustments and Testing	5	89
Fault Finding	6	93

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Chapter 1

Contents

	Section	Page
Introduction	A	19
Checking Operation of the Compressor	B	19
Check the compressor operating temperature		19
Check pressure in air-line systems		19
Check pressure in compressor air-end		19
Check oil level		19
Basic Service Procedures	C	19
Oil top-up procedure		20
Check compressor air filter		20
Clean combination oil cooler/aftercooler		20
Compressor air intake filter replacement		20
Oil draining procedure		21
Oil filter cleaning procedure		21
Oil filling procedure		21
Check drive shaft oil seal and drive end cover bonded seals		21
Electrical checks		21
Clean and check electric motors		21

A Introduction

WARNING !

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

Ensure genuine parts are available for fitment.

Frequency of service work will depend on:-

- a) Time periods mentioned in introduction.
- b) Climatic conditions.
- c) Installation.

B - Checking Operation of the Compressor

Check the compressor operating temperature

Wait until air-end vent down cycle is complete.

Check that the air-end pressure gauge reads zero.

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

Assuming the compressor is serviced correctly the machine is capable of operating in ambient temperatures up to a maximum of 40°C. At this ambient the bulk oil temperature measured at the filler plug should be 70-90°C.

Check oil temperature. When the compressor is working the temperature should be:-

Initial startup and warm-up period.	< 70°C
Optimum working temperature.	70 - 95°C
High temperature.	95 -100°C
Stop ! See fault finding section.	>100°C

Check pressure - air-line systems

Check the air-line system pressure by using the electronic control panel.

If the correct size of compressor has been installed the gauge should read:

Condition	7 bar	10 bar
When compressor is stopped	0-7.7 barr	0-10.8 bar
Normal working pressure (continuous run mode)	7.0-7.8 bar	10.0-10.8 bar
Sto compressor and see fault finding if	>7.8 bar	>10.8 bar
Normal working pressure (auto mode)	6.0-7.4 bar	6.0-10.4 bar

Check pressure in Compressor air-end

Check compressor air-end pressure using compressor pressure gauge. If the correct size of compressor has been installed the gauge should read:

Condition	7 bar	10 bar
Pressure when stopped	After vent down air-end pressure should read 0 bar	
Initial start up (3 seconds approx.)	0-53.5 bar	0-5.5 bar
When charging the air-line	5.5-7.8 bar	5.5-10.8 bar
Normal working pressure (continuous run)	7.0-7.8	10.0-10.8 bar
Stop compressor and see fault finding if	>7.8 bar	>10.8 bar

Check oil level

Check oil level using the compressor oil-level sight glass. The sight-glass is located in the oil chamber. When the compressor is running, oil should be visible in the sight-glass. When stopped the sight-glass should be full. If not top up.

C - Basic Service Procedures

WARNING ! 

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

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

DO NOT PROCEED UNTIL GAUGE READS ZERO!

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

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

Oil Top-up procedure (Fig 1.1)

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

Check compressor air filter (Fig 1.1)

WARNING ! 

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

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

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

Clean combination oil cooler/aftercooler

The combination cooler is located vertically. The inside face of the cooler must be cleaned and is accessed by removing the cover plates fitted to the cooler duct.

- Remove access plate.
- Using low pressure air, carefully blow out any dust or dirt from cooler matrix (F).
- Use a vacuum cleaner to remove any dust or dirt remaining inside cowl or on fan guard (G).
- Refit and secure cover plates.

Compressor air intake filter replacement (Fig 1.1)

WARNING ! 

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

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

- Unscrew retaining nut (C) and remove the filter cover (D) and seal.
- Remove filter element (E) and discard.

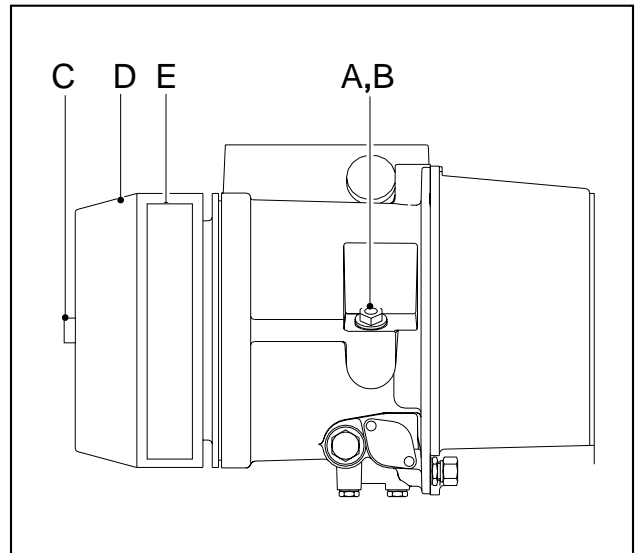


Figure 1.1 - Outlet and Filler Plug Location

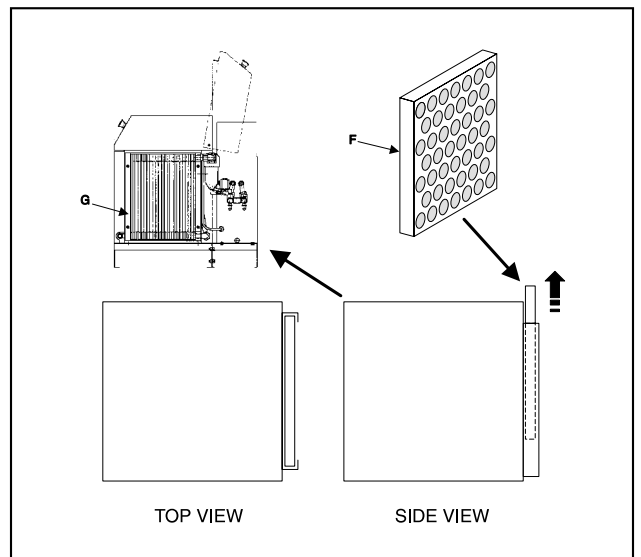


Figure 1.2 - Air filter location

- Wipe clean the area inside the filter cover and its support.
- Fit a new air filter element.
- Reinstall sealing washer and cover. Secure the assembly. Unscrew retaining nut and remove the filter cover and seal.
- Reinstall the air filter cover and sealing washer. Secure the assembly.

Note: The air filter may contain oil and must be disposed of in an approved manner.

Oil draining procedure (Fig 1.3)

- Wait until air-end vent down cycle is complete.
- Open test valve to vent pressure from air aftercooler and associated pipework.
- Check that compressor air-end pressure gauge reads zero.
- Carefully unscrew compressor filler plug (A).
- Remove plug (A), discard bonded seal (B).
- Place a shallow 5 litre container below the oil drain plugs (F).
- Carefully remove drain plugs (F). Discard bonded seals (G).
- Collect all oil drained from the compressor.

Oil filling procedure (Fig 1.3)

- Fill to overflow with an approved oil (e.g. Fluid Force).
- Refit filler plug (A) using a new bonded seal (B). Tighten to 25 Nm.
- Check that air outlet and test valves are closed.
- Ensure that all covers, guards and plugs are securely fitted.
- Remove safety notices.
- Start the compressor in manual mode and run for 30 seconds only, then stop. Top up oil level as per oil level as per oil top up procedure 8.4.
- Reinstall all panels and covers.
- Test run the compressor and check pressure, temperature. Inspect for oil leaks.
- Ensure panels are fitted and secured, and that air outlet valve is open before leaving.

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

Check drive shaft oil seal and drive end cover bonded seals

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

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

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

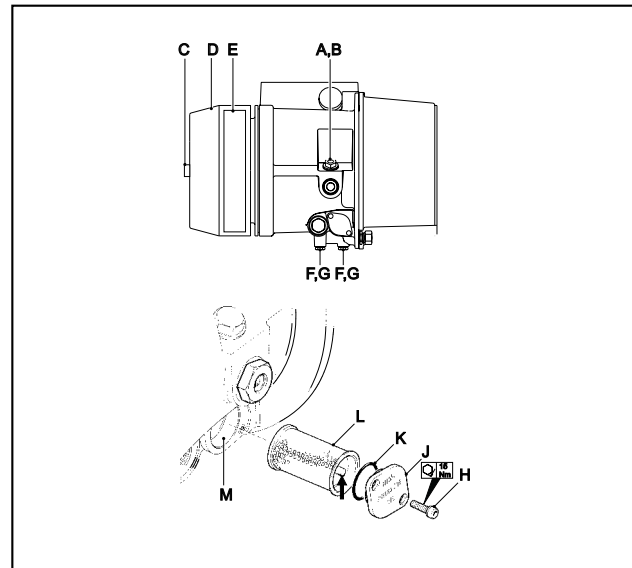




Figure 1.3 - Filters and Drain Plug Location

Electrical checks

WARNING !  

- Open the starter panel door.
- Remove any terminal covers fitted to contactors and incoming supply terminals.
- Check for any signs of overheating and ensure that all electrical connections are tightened to correct torque settings, as per label on inside face of starter.

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

- Lock starter panel door and remove key to prevent unauthorised access.

Clean and check electric motors

WARNING ! 

- Remove any dust or dirt from motor bodies and motor air intake grills.
- Lubricate motor bearings as per manufacturers instructions.
- Reinstall all covers.
- Remove safety notices.

Chapter 2

Contents

	Section	Page
Air Intake Arrangement	A	22
Changing air filter		22
Removing filter support		22
Unloader/Inlet Valve	B	24
Servicing unloader valve.		24
Servo Valve	C	26
Servicing servo valve.		26
Testing		26
Vacuum Relief and Safety Valve	D	28
Safety Valve		28
Servicing Vacuum Relief Valve		28
Testing Vacuum Relief Valve		28
Rotor Stator Unit - Dismantling	E	30
Rotor Stator Unit - Dismantling		30
Oil Chamber Arrangement	F	36
Thermal By-pass valve		36
Oil Filter		38
Minimum Pressure Valve and Oil Separator	G	40
Minimum Pressure Valve		40
Separator		42
Bell Housing	H	44
Removing and refitting the compressor.		44
Removing bell housing		44
Drive Coupling Arrangement	J	46
Compressor removal / re-fitting		46
Oil Seal and Drive Arrangement		46
Intake End Cover - Removal	K	48
Intake end cover removal.		48
Assembling the Rotor Stator Unit	L	50
Assembling the rotor stator unit.		50
Assembling the rotor stator unit - continued		52
Oil Separator Assembly	M	54
Replacing separator element	M	54
Minimum Pressure Valve Assembly	N	56
Service schedules	N	56
Panels	P	58
Dryer	Q	60
Oil Cooler / Base	R	62
Vent Down Assemblies	S	64
Air-end Part Modifications	T	66

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	MN1708	M8 Philidas Locknut		1		
2	57738	Fibre washer	KM71	1		
3	57737	Filter cover		1		
4	50273	Air filter	KM71	1		
5	57735	Filter support bolt		1		
5A	73421	M8 x 40 stud		1		
6	57739	Fibre washer	KM71	1		
7	58183	Servo valve access plug		1		
8	9619	Bonded seal 3/4		1		
9	71141	Filter support		1		
10	9842	'O' Ring	KM71	1		
11	MS706-25	Socket head screw M6 x 25		3		
12	73626	Bearing end cap		1		
13	58024	Gasket	KM71	1		
14	73283	Male stud elbow ¼ BSPT - 6mm		1		
15	MS2105-16	Pan head screw M5 x 16		2		
16	71140	Intake baffle		1		
17	MW5	Washer M5		2		
18	MN1705	Nut		2		

Refer to Health and Safety section before carrying out any service work.

Changing air filter

- Refer to 1C.
- Fit parts contained in service kits.

Removing filter support

- Renew seal (2).
- Clean dust from filter (4) using low pressure, clean dry air. Renew filter if necessary.
- Renew seals (6) and (8).
- Release vent down pipe from elbow (14).
- Place drip tray underneath to collect oil spillage.
- Screw a suitable M 12 bolt into the hole provided in the filter support (9) to extract it from the intake end cover.
- Clean filter support and intake end cover.
- Renew 'O' ring (10).
- If removal of the intake end cover cap (12) is necessary, ensure a new gasket (13) is fitted on assembly.
- On assembly, the filter support (9) should be inserted evenly into the intake end cover by tightening the support bolt. Ensure that the servo access hole in the support aligns centrally with the servo adjusting screw prior to inserting the support. This will enable easy future adjustment of the servo valve.

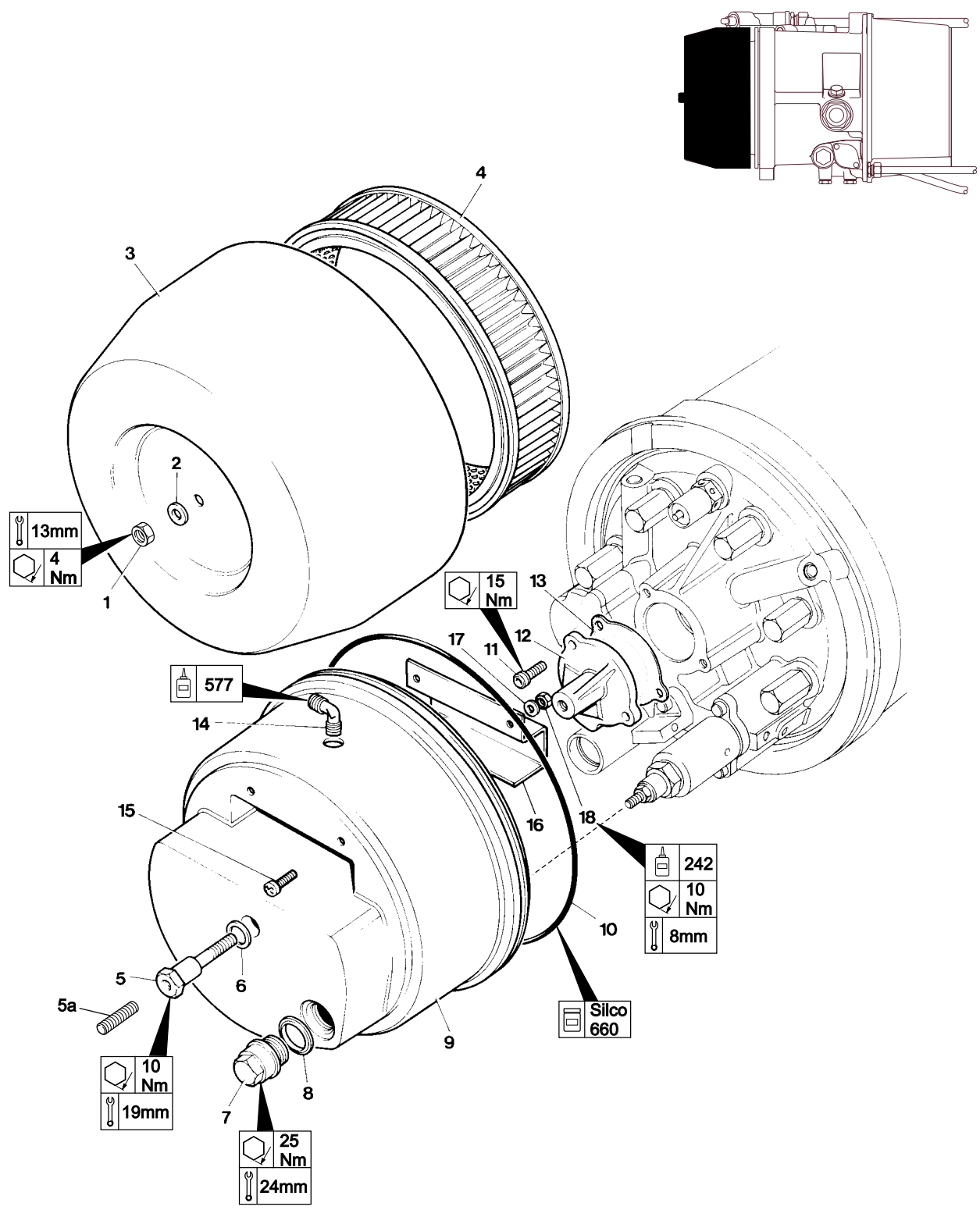


Figure 2A - Air Intake Arrangement

Item	Part Number	Description	Kit	Quantity		
				All	705	707
	3653	Unloader valve assembly		1		
1	MCI-22	Circlip 22mm (internal)		1		
2	71062	Shim		1		
3	52502	Spring support		1		
4	9402	Spring unloader valve		1		
5	3656	Philidas nut M5		1		
6	MW5	Washer M5		1		
7	0195/1	Piston unloader valve		1		
8	9754	'O' Ring	KT71	1		
9	MS706-16	Cap head screw M6 x 16		2		
10	0192/1	Unloader body		1		
11	MG1706-6	Grub screw tuflock M6 x 6		1		
12	9804	'O' Ring	KM71	1		
13	9704	'O' Ring	KM71	1		
14	3655	Philidas nut M10		1		
15	52064	Unloader support		1		
16	0053/1	Valve facing	KM71	1		
17	51029	Unloader seat		1		
18	51028	Unloader stem		1		

Refer to Health and Safety section before carrying out any service work.

Servicing unloader valve

- Remove screws (9) and withdraw unloader valve assembly from intake end cover.
- On a workbench dismantle and clean assembly.
- Check seating washer (16) for damage. Renew if necessary.
- Renew 'O' rings (12) and (13) on valve body. Apply grease to 'O' ring (13) to hold it in position.
- Renew 'O' ring (8) on piston (7). Ensure piston works freely in the valve body.

Note: Screw nut (5) to bottom of thread.

- Screw nut (14) until it touches support (15). Tighten until valve facing (16) turns stiffly.

Note: Over tightening will distort item (16).

- Push spring support (3) and shim (2) against spring to enable circlip (1) to be fitted.
- When inserting valve assembly use a slight turning action. This should overcome O ring resistance.

Note: Valve operates as an:

Inlet valve (stop/start machines).

Inlet/unloader valve (continuous run machines).

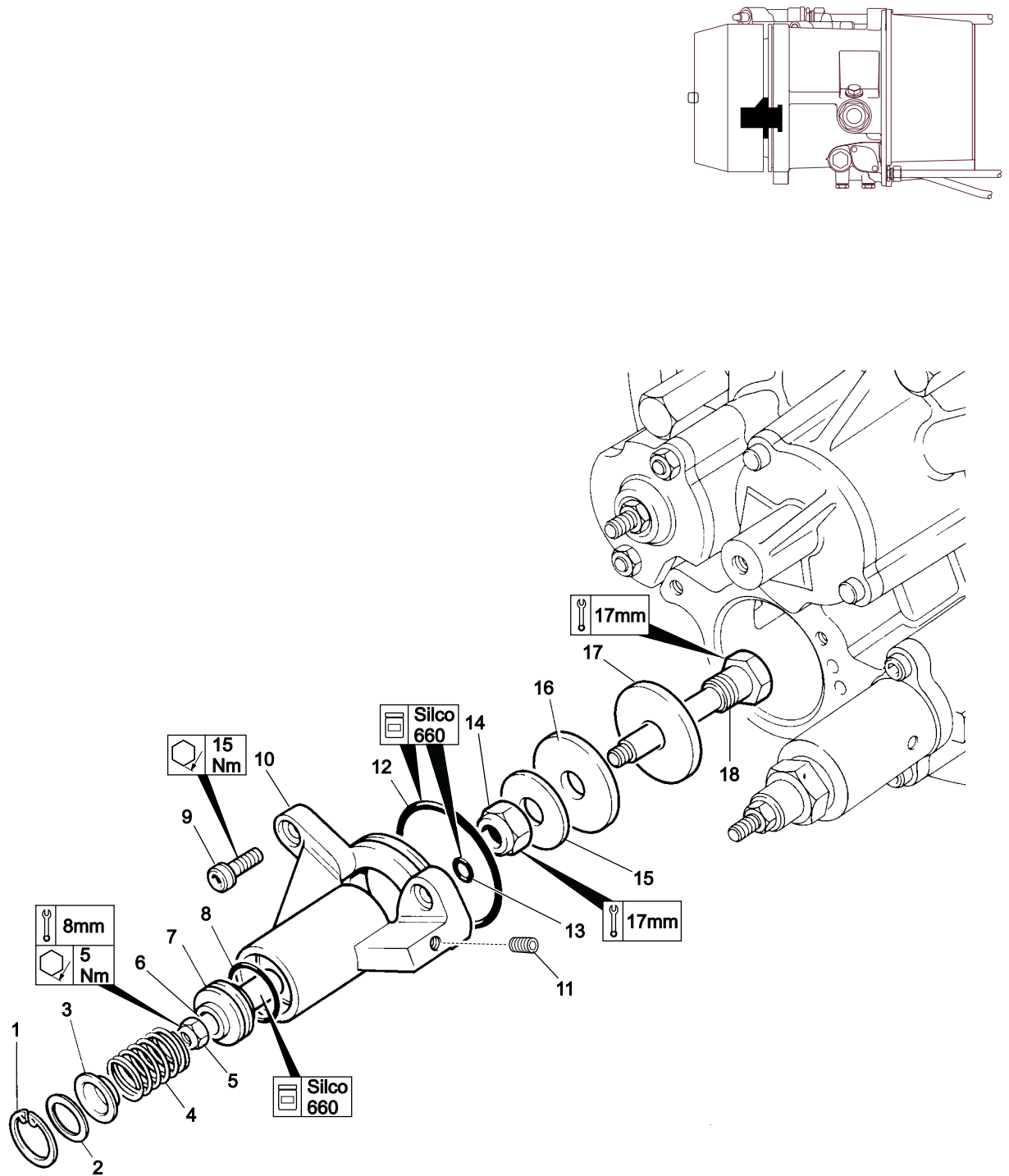


Figure 2B - Unloader/Inlet Valve

Item	Part Number	Description	Kit	Quantity		
				All	705	707
	32505	Servo valve assembly (7 bar models)		A/R		
	32624	Servo valve assembly (8 and 10 bar)		A/R		
1	MG706-30	Grub screw M6 x 30		1		
2	MN106	Lock nut M6		1		
3	57577	Servo end cap		1		
4	52499	Spring carrier		1		
5a	9401	Spring (7 bar)		A/R		
5b	9415	Spring (8 and 10 bar)		A/R		
6	RO800-42	Piston		1		
7	MS706-20	Socket head screw M6 x 20		2		
8	57576	Servo housing		1		
9	57761	Gasket	KM71	1		
10	9717	'O' Ring	KM71	1		
11	9715	'O' Ring	KM71	1		
12	C18	Circlip ½ internal		1		

A/R = As required

Refer to Health and Safety section before carrying out any service work.

Servicing servo valve

- Remove screws (7) and withdraw servo valve assembly from intake end cover.
- On a workbench, dismantle and clean assembly.
- Renew housing gasket (9).
- Renew 'O' rings (10) and (11).
- Removal and refitting of piston (6) is simplified using a threaded rod (1/4" B.S.F.) screwed into the end of the piston.
- Prior to assembly, ensure piston (6) is free from sharp edges and surface damage. Coat piston with an APPROVED OIL and ensure that it slides freely within the housing (8). DO NOT USE GRINDING PASTE.
- Piston must be inserted into the housing, cross-drilled end first.
- Fit spring (5) and insert support (4) in end cap.
- Ensure circlip (12) is securely located in housing.
- Nut (2) should be left loose to enable setting of servo (see TESTING) when all servicing has been completed.

Testing

- Remove air intake filter.
- Remove plug and seal.
- Close outlet valve and start compressor.
- Slacken nut (2).
- Adjust screw (1) until gauge pressure indicates 7.5/7.8 (for 7 bar compressor) or 10.5/10.8 bar (for 10 bar compressor).
- Tighten nut (2) after adjustment, ensuring screw (1) is held in position using an allen key.

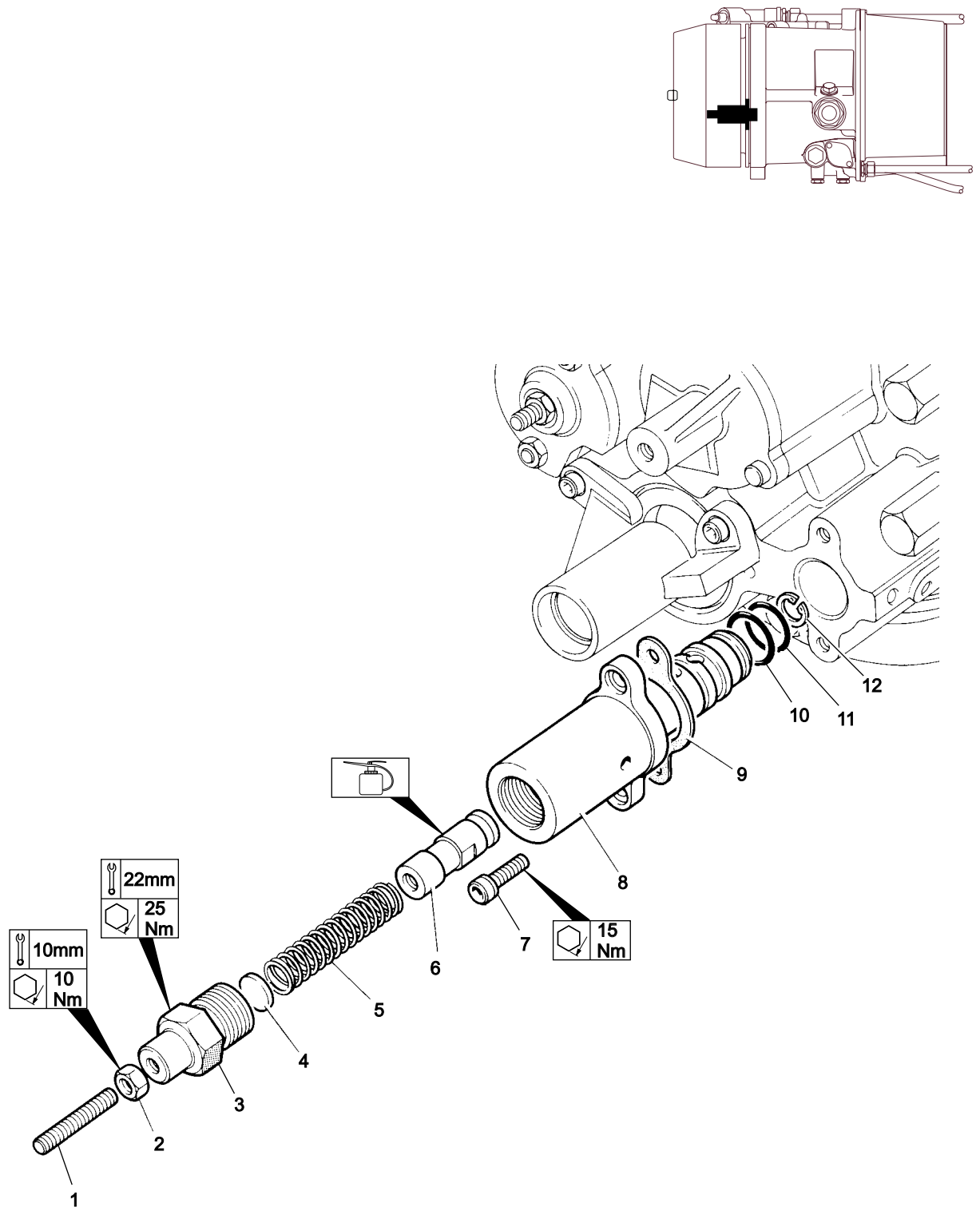


Figure 2C - Servo Valve

Item	Part Number	Description	Kit	Quantity		
				All	705	707
	32536	Vacuum relief valve assembly		1		
1	MG706-40	Grub screw M6 x 40		1		
2	MN106	Lock nut M6		1		
3	W4-1	Sealing ring	KM71	1		
4	57794	Vacuum relief valve cap		1		
5	MN106	Nut M6		2		
6	MWG6	Spring washer M6		2		
7	57795	Gasket	KM71	1		
8	RO20000-79	Spring		1		
9	57596	Vacuum valve seal	KM71	1		
10	RO20000-225	Valve		1		
11	52109	'O' Ring	KM71	1		
12	57849	Stud M6 x 56		2		
13	57793	Vacuum relief valve body		1		
14	9704	'O' Ring	KM71	1		
15	9717	'O' Ring	KM71	1		
16	9715	'O' Ring	KM71	1		
17a	50054	Safety valve (7 bar models)		A/R		
17b	50053	Safety valve (8 and 10 bar models)		A/R		
18	9613	Bonded seal 3/8	KM71	1		

A/R = As required

Refer to Health and Safety section before carrying out any service work.

Safety Valve

- Renew bonded seal (18).
- If the valve (17) is found to be defective, it must be renewed complete. It cannot be dismantled.
- Testing the valve for correct lift pressure is described in Chapter 5 - Adjustments and Testing.

Servicing Vacuum Relief Valve

- Remove nuts (5) and washers (6).
- Slide assembly over studs (12) and remove from intake end cover.
- On a workbench, dismantle and clean assembly.
- Renew seal (3) on adjuster screw (1).
- Renew gasket (7) behind valve cap (4).
- Renew seal (9) on piston (10).
- Ensure seal (9) is correctly fitted as shown in inset. Squeeze seal between finger and thumb. Seal should feel spongy without any hard spots. If there are use a feeler gauge in the piston groove to convert seal. Refer to inset.

- Renew 'O' ring (11) on piston.
- Renew 'O' rings (14, 15 & 16) on body. Apply grease to (14) to hold it in position.
- On assembly, screw adjuster screw (1) fully into the valve cap (4). Then unscrew it 1½ turns before tightening the nut against the valve cap.

Note: This is only an approximate setting. Further slight adjustment may be required (see Testing, below) to obtain correct valve operation.

Testing Vacuum Relief Valve

- Close air outlet valve and start compressor.
- Open and close outlet valve. If rattle is heard when outlet valve is closed, adjustment of vacuum relief valve is necessary. Stop compressor.
- Remove air intake filter and filter support.
- Slacken nut (2). Screw adjuster screw (1) fully in. DO NOT TIGHTEN.
- Unscrew adjuster screw (2) two turns.
- Close outlet valve. Start compressor. Adjust screw (1) until rattle is eliminated, then tighten nut (2).

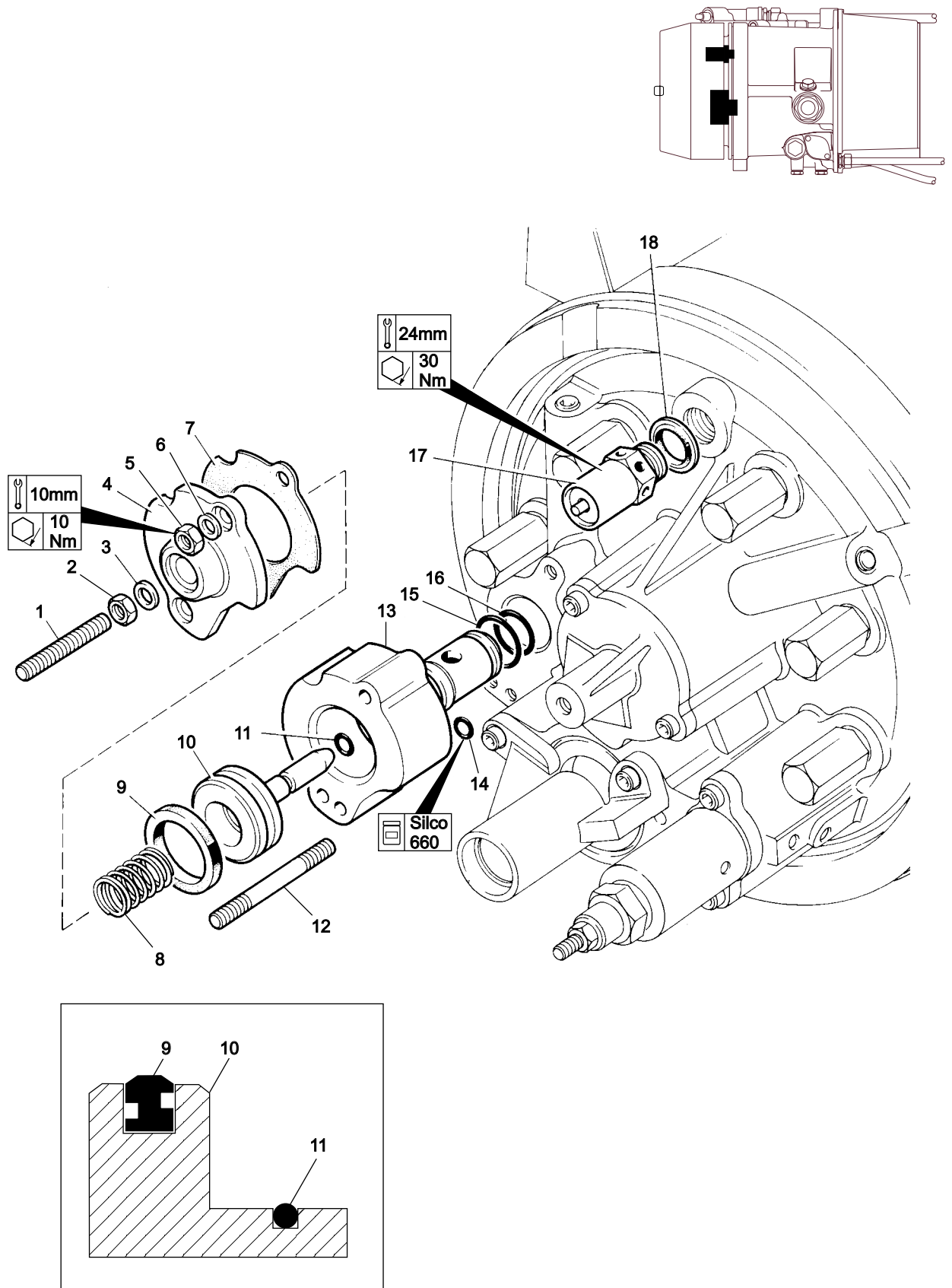


Figure 2D - Vacuum Relief Valve and Safety Valve

Item	Part Number	Description	Kit	Quantity				
				All	705		707	
					7 Bar	10 Bar	7 Bar	10 Bar
1a	32549	Intake end cover assembly			1			1
1b	32748	Intake end cover assembly				1		
2	59425-01	Taper plug brass 1/8 BSP		2				
3	0782	Bearing		1				
4	MG1706-6	Grub-screw tuflock M6 x 6		3				
5	57747	Stator nut M12		14				
6	9609	Bonded seal 1/4		14				
7	9900	O Ring	KT71	1				
8a	58017-02	Gasket 0.04mm A/R			1		1	1
8b	58017-03	Gasket 0.05mm A/R	KT71		1		1	1
8c	58017-04	Gasket 0.08mm A/R	KT71		1		1	1
8d	59370-03	Gasket 0.05mm A/R	KT71			1		
8e	59370-04	Gasket 0.08mm A/R	KT71			1		
9	57746	Stator stud M12		7				
10	58410	Deflector		1				
11	MS105-12	Hex head screw M5 x 12		2				
12	MWG5	Spring washer M5		2				

Refer to Health and Safety section before carrying out any service work.

Rotor Stator Unit - Dismantling

- Drain compressor oil.
- Remove compressor from motor.
- Remove bell housing.
- Remove compressor coupling and oil seal housing.
- Remove air intake filter arrangement.
- Remove valves from intake end cover.

1. Intake End Cover Removal

- Stand drive end of compressor oil chamber on wooden blocks.
- Unscrew and remove seven stator nuts (5) and discard bonded seals (6).
- Use the gap between the intake end cover flange and the oil chamber to lever the intake end cover clear of the oil chamber. Use two levers positioned diagonally opposite each other to achieve even leverage and ease extraction. Avoid damage to the end cover 'O' ring groove.
- Discard 'O' ring (7).

Inspect inner face of intake end cover and its white metal bearing (3) for damage, wear or score marks. Renew intake end cover complete if any damage is found.

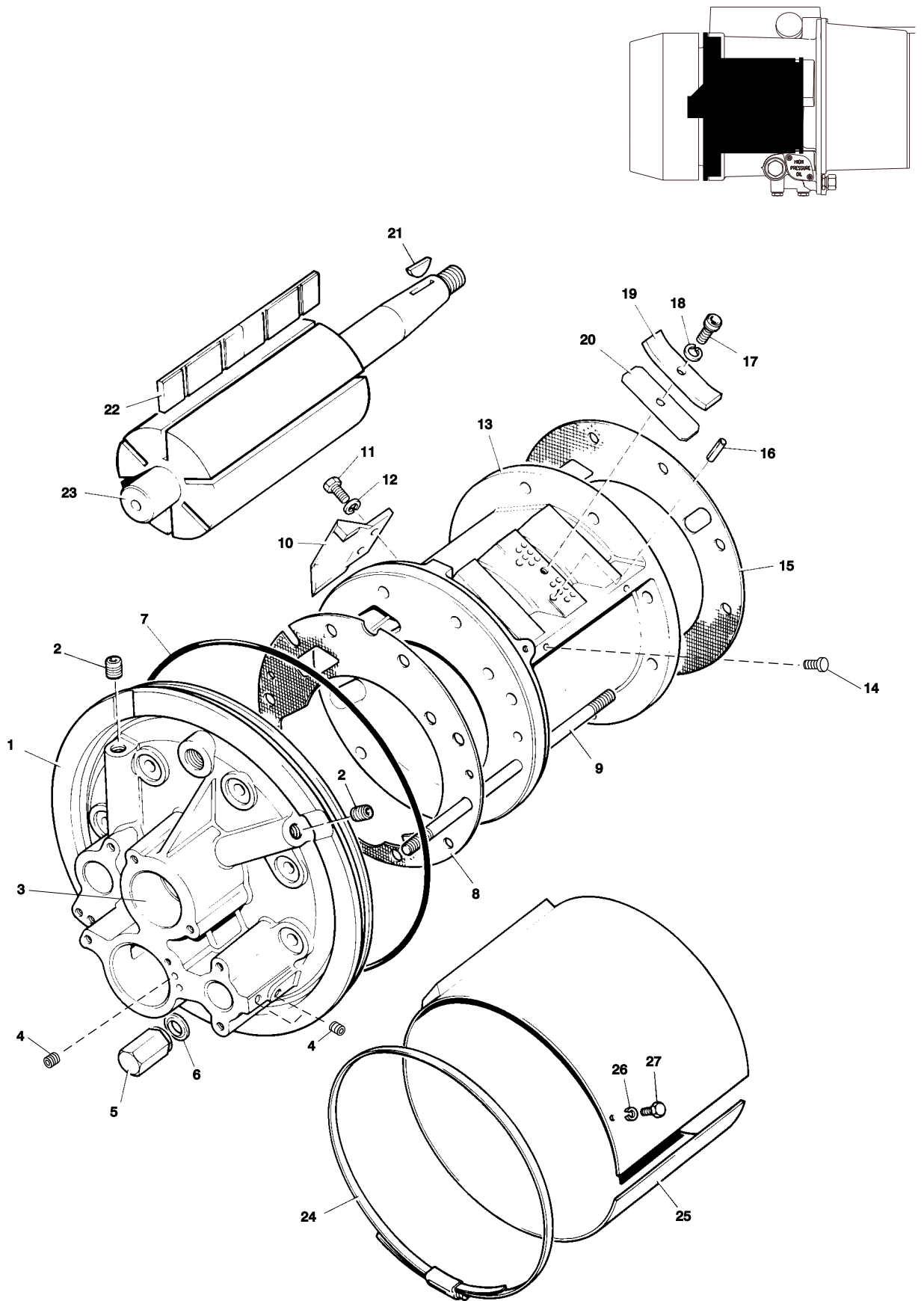


Figure 2E - Rotor Stator Unit - Dismantling

Item	Part Number	Description	Kit	Quantity				
				All	705		707	
					7 Bar	10 Bar	7 Bar	10 Bar
	32557-01	Stator assembly			1			
	32557-02	Stator assembly						1
	32557-03	Stator assembly					1	
	32559-03	Stator assembly				1		
13a	57584-01	Stator			1			
13b	57585-03	Stator				1		
13c	57584-03	Stator					1	
13d	57584-02	Stator						1
14	HD75120-E5	Drive rivet 5/16 x No.6		2				
15a	58018-02	Gasket 0.04mm A/R	KT71		1		1	1
15b	58018-03	Gasket 0.05mm A/R	KT71		1		1	1

Refer to Health and Safety section before carrying out any service work.

2. Rotor, Blades and Stator

- Lift stator (13) over studs (9) and out of oil chamber, noting their relative positions to aid assembly.
- Note the position and thickness of the gaskets (8 & 15) found at each end of the stator.
- If the shims are undamaged, and the rotor and/or stator do not need renewing they may be retained for assembly.
- Retain the blades (22) in position in the rotor (23) using rubber bands.
- Remove rotor and blades.
- If blades (22) are to be re-used, they must be removed from their slots and marked with a felt tip pen (NOT SCRATCHED) so that each blade can be refitted in its original position.
- Blades and slots must be perfectly clean before assembly.
- Blades must be fitted with their rounded edge outwards, and with their slotted faces orientated as shown in the illustration. The blades must never be reversed in their slots.
- Examine end face and white metal bearing (3) in oil chamber for wear or damage. Renew if necessary.
- Remove cowl (25) from stator, to gain access for servicing oil relief valve. Note position of cowl clip (24) and measurement between end of cowl and stator flange for correct location on assembly.
- Examine stator for damage. Renew if necessary.
- Ensure the cutaway is clearly defined by two straight lines running the length of the bore.
- Ensure stator bore and end faces are free from debris and perfectly clean before assembly.

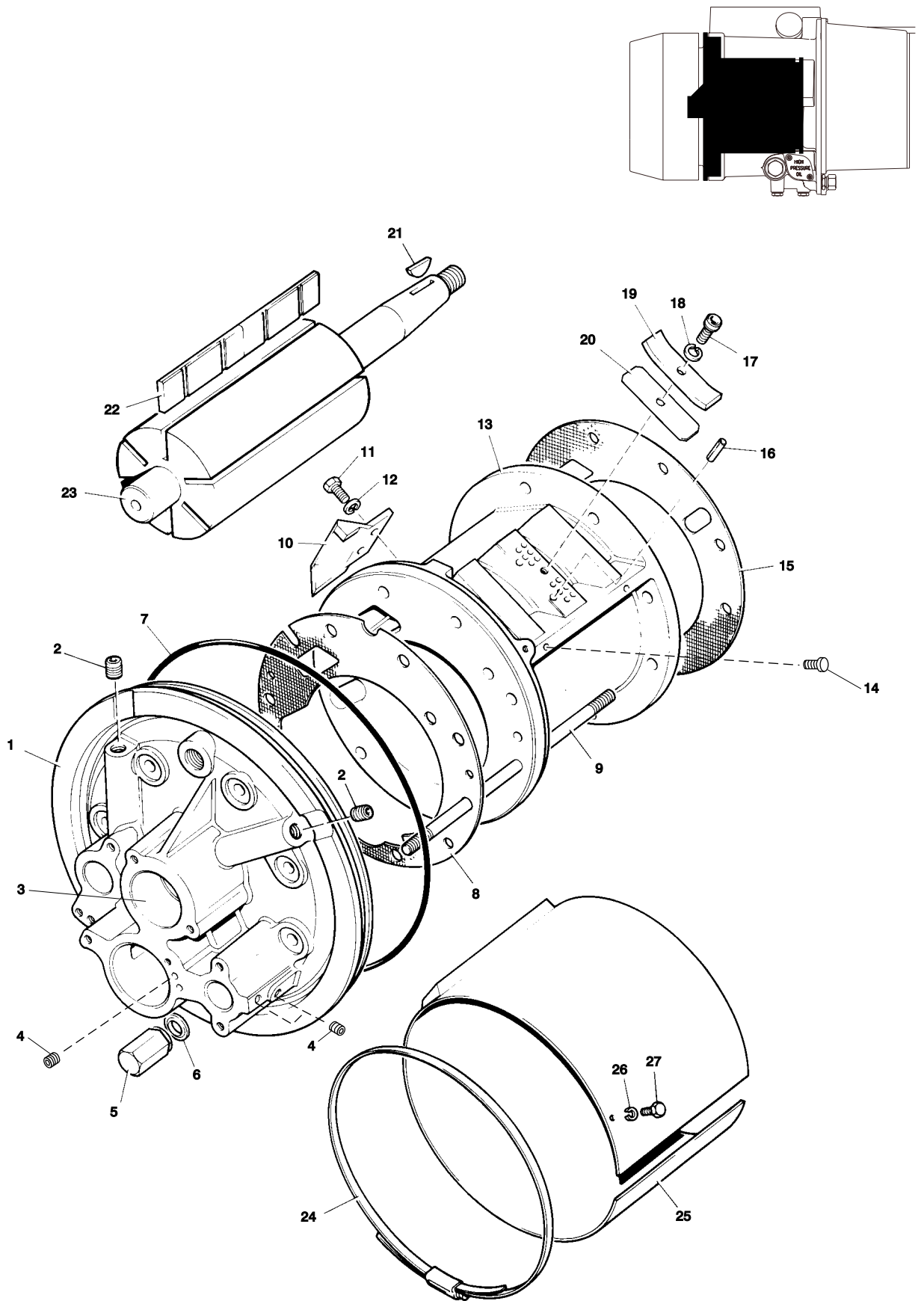


Figure 2E - Rotor Stator Unit - Dismantling

Item	Part Number	Description	Quantity				
			All	705		707	
				7 Bar	10 Bar	7 Bar	10 Bar
15c	58018-04	Gasket 0.08mm A/R		1		1	1
15d	59302-03	Gasket 0.05mm A/R			1		
15e	59302-04	Gasket 0.08mm A/R			1		
16	57027	Tension pin	2				
17	FS702-3	Screw 4BA x 3/8	1				
18	AGS203-B	Spring washer	1				
19	56586	Valve support	1				
20	56302	Valve support	1				
21	57802	Key	1				
22a	59187-01	Blade		12	12		
22b	59187-02	Blade				12	12
23a	58186	Rotor		1	1		
23b	58038	Rotor				1	1
24	58691	Clip	1				
25	58411	Impingement cowl	1				

Refer to Health and Safety section before carrying out any service work.

3. Deflector and Oil Relief Valve

Deflector

- Ensure that the port on the deflector (10) is facing the intake end of the stator (13) on assembly.

Oil Relief Valve

- Remove screw (17) and washer (18) from the oil relief valve.
- Remove support (19) and plate (20).
- Check plate (20) for wear or damage. Renew if necessary.
- Ensure valve seating surface on stator is perfectly flat. Use an emery stone to obtain flatness.
- Remove all traces of emery dust.
- Renew washer (18) on screw (17).
- Renew screw (17) if worn.
- Check valve guide pins (16). Renew if worn or bent.

Item	Part Number	Description	Kit	Quantity		
				All	705	707
	34398	Oil chamber assembly		1		
1	71495	Oil chamber		1		
2	0782	Bearing		1		
3	59425-03	Taper plug brass 3/8 BSP		2		
4	9613	Bonded seal	KM71	3		
5	57996	Drain plug 3/8 BSP		2		
6	59425-01	Taper plug brass 1/8 BSP		2		
7	57798	Oil return plug assembly		1		
8	58306	Delivery pipe 16mm		1		
9	58340	Lock-nut 16mm		1		
11	MHC6-15	M6 x 2.5D Helicoil		2		
12	52487	Spring		1		
	30661	Thermal bypass piston assembly		1		
13	52486	Piston		1		
14	3515C	Thermal motor		1		
15	MCI-22	Circlip 22mm internal		1		
16	9624	Bonded seal	KT71	1		
17	53191	End cap		1		
18	MS706-20	Socket head screw M6 x 20		2		
19	59046	Filter cap		1		
20	9763	O Ring	KM71	1		

Refer to Health and Safety section before carrying out any service work.

Note: Drain compressor oil prior to servicing the following item. Refill with oil after service completion.

Thermal By-pass valve

If necessary check the thermostat (14) for correct operation. Thermostat starts operation at 82°C and normal extension at 96°C is 9.5 mm (14.3 mm max.).

- Clean and degrease all parts. Ensure piston (13) is free from score marks and sharp edges.
- If new thermostat is to be fitted, DO NOT REMOVE STEM.
- Renew bonded seal (16).

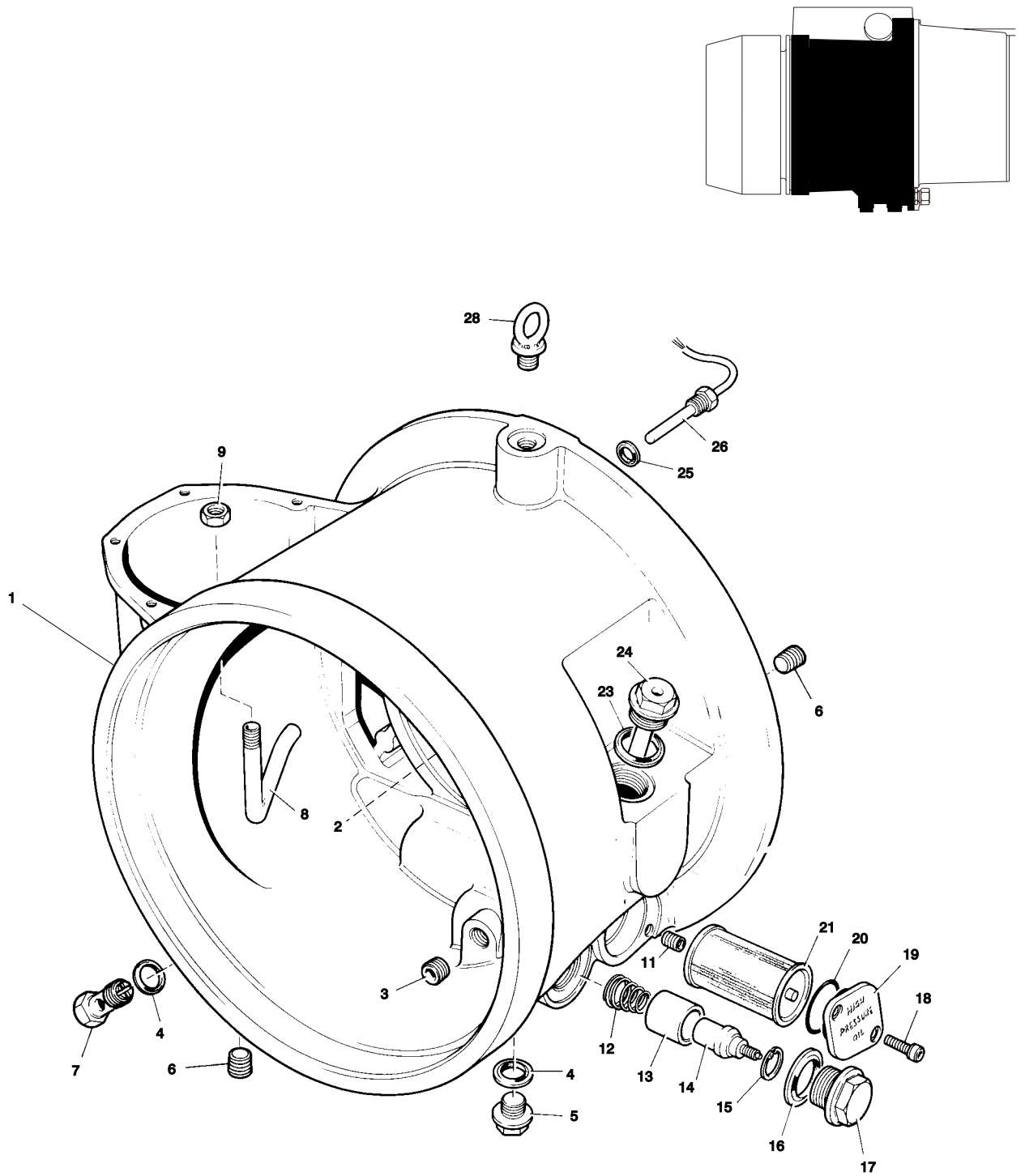


Figure 2F - Oil Chamber Arrangement

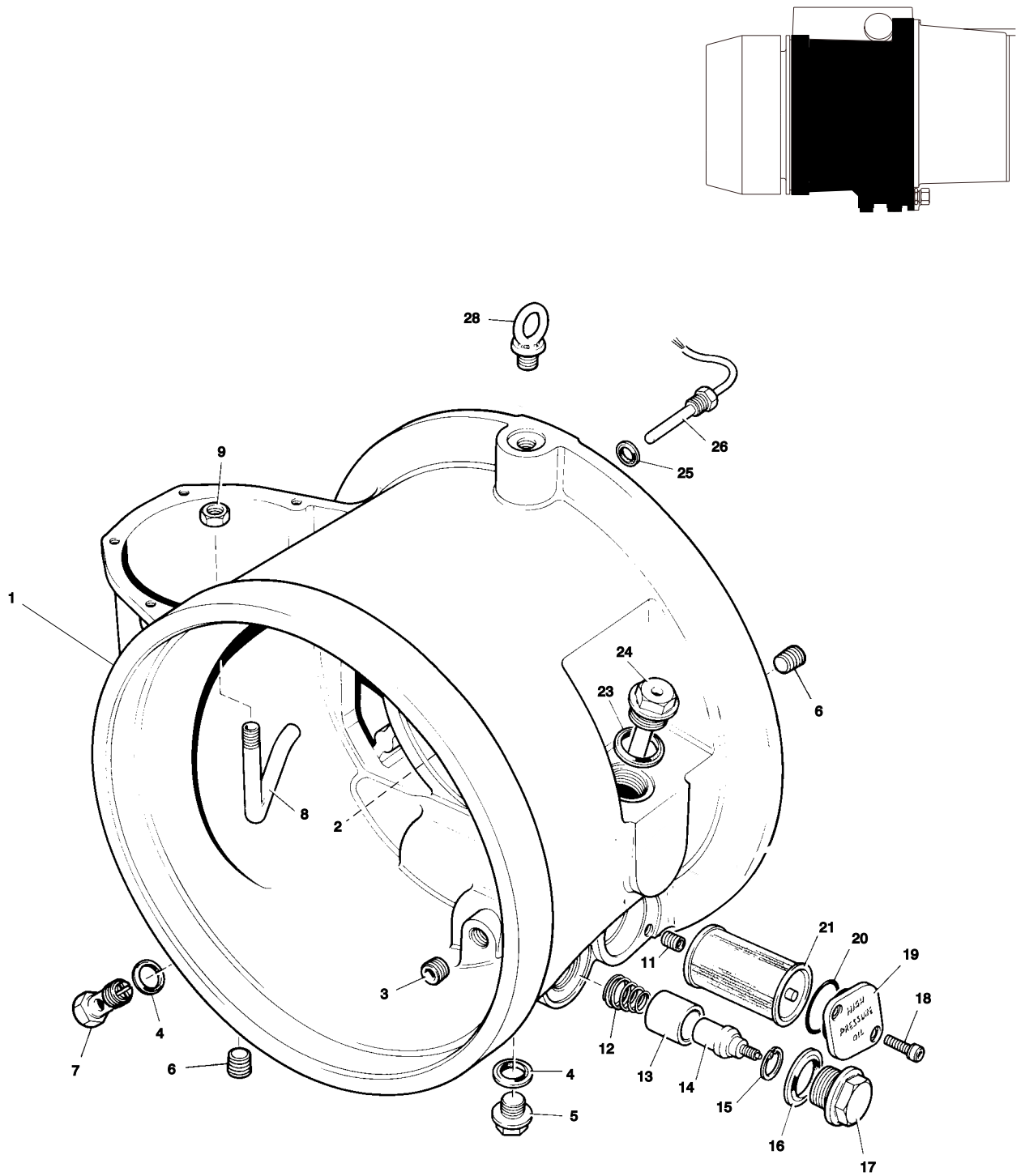


Figure 2F - Oil Chamber Arrangement

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	MCI-30	Circlip internal		1		
	33413	Minimum pressure valve assembly		1		
2	50225	Male stud elbow 1/4 BSPT-6mm		1		
3	58470	Adjuster plug		1		
4	57742	M.P.V body		1		
5	9758	O ring	KM71	1		
6	9717	O ring	KM71	1		
7	9711	O ring	KM71	1		
8	57842	M.P.V Piston		1		
9	57588	Spring		1		
10	57845	M.P.V Return spring		1		
11	71760	Non return valve		1		
12	0071	M.P.V Seat	KM71	1		
13	W3	Washer 3/16		1		
14	MCE4-8	Circlip external		1		
15		See Ventdown assemblies				

Refer to Health and Safety section before carrying out any service work.

Minimum Pressure Valve

- Disconnect vent-down pipe (15) and remove elbow (2).
- Before removing the valve body (4), unscrew adjuster (3) to ease spring pressure.
- Removal of non-return valve (11) assembly is simplified using long nosed pliers.
- Examine valve seat (12) for damage. Renew if necessary.
- Renew 'O' rings (5, 6 & 7). Silicon grease must be applied to these 'O' rings prior to fitting them to the valve body.
- On assembly, fit springs (9 & 10), piston (8) and the non-return valve assembly (11, 12, 13 & 14) to the valve body, before inserting the valve body into its housing.
- To enable the valve body to be fully inserted, spring pressure must be eased by fully unscrewing the adjuster (3).

- After circlip (1) has been refitted to secure the assembly, screw in adjuster (3) to an approximate depth of 12 mm.

Note: This is only a temporary setting. Further adjustment will be required (see Section 3, TESTING) to obtain the correct minimum pressure setting. Elbow (2) and vent-down pipe (15) need not be fitted until testing is finished.

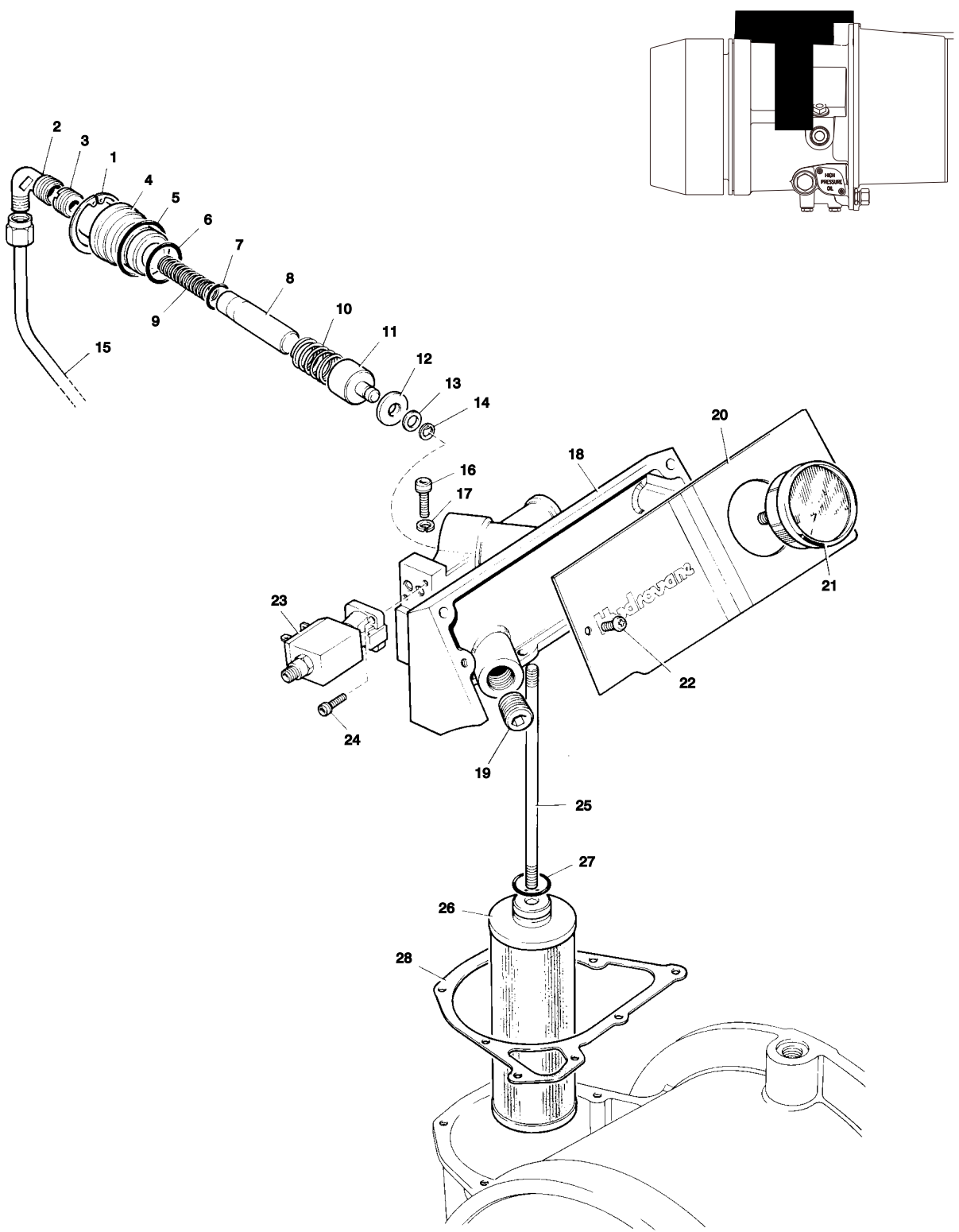


Figure 2G - Minimum Pressure Valve and Oil Separator

Item	Part Number	Description	Kit	Quantity		
				All	705	707
16	MS706-20	Socket head screw		8		
17	MWG6	Spring washer		8		
18	32506	Separator cap assembly		1		
19	59425-03	Taper plug brass 3/8 BSP		1		
20a	71162	Nameplate				1
20b	71163	Nameplate			1	
20c	72427	Nameplate				
21	56391	Pressure gauge		1		
22	MS2105-10	Pan head screw M5 x 10		2		
23		see Ventdown assemblies				
24	MS703-10	Cap head screw M3 x 10		2		
25	58341	Separator stud M8		1		
26	59177	Separator element	KS71	1		
27	9799	O ring		1		
28	57803	Gasket	KS71	1		

Refer to Health and Safety section before carrying out any service work.

Separator

- Disconnect cable connector from solenoid valve.
 - Remove nameplate (20).
 - Unscrew and remove eight screws (16) and spring washers (17). The separator assembly may now be lifted from the oil chamber. If necessary, tap the end cap (18) with a soft hammer to overcome gasket adhesion.
 - Remove and discard gasket (28).
 - Unscrew separator element (26) and discard its 'O' ring (27).
 - Check element (26) for contamination. Renew the element, if necessary. Ensure the element is fitted with a new 'O' ring (27).
 - Thoroughly clean the jointing surfaces of the separator cap (18) and oil chamber before fitting a new gasket (28). To aid assembly, the gasket may be retained on the oil chamber jointing surface using a small amount of APPROVED OIL.
- When refitting the separator cap (18) to the oil chamber, avoid distortion by tightening the eight screws (16) evenly to the specified torque.

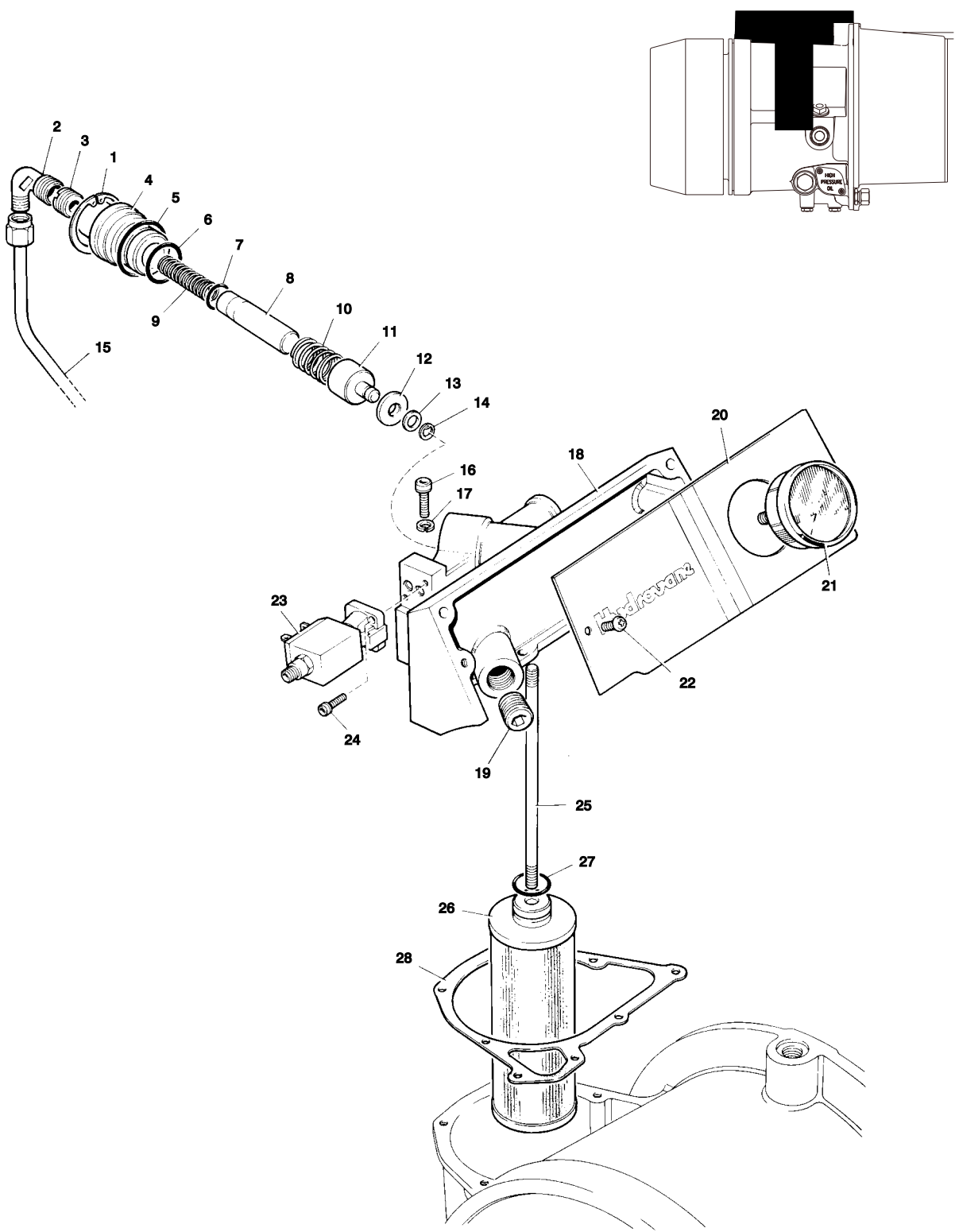


Figure 2G - Minimum Pressure Valve and Oil Separator

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1a	71111	Bell housing		1		
1b	71987	Bell Housing				
2	RO10000-331	Grommet		1		
3a	MST12-60B	Stud M12		2		
3b	UFST8-16B	Stud ½" x 2"				
4	MW12	Washer M12		4		
5	MWG12	Spring washer M12		4		
6a	MN112	Nut M12		4		
6b	UFN 108	Nut ½" UNF				
7	57039	Stud M12		2		
8	MS712-35	Socket head screw M12 x 35		3		
9	MWG12	Spring washer M12		3		
10	73326	Stud coupling 1.2" - 15mm		2		

Refer to Health and Safety section before carrying out any service work.

Removing bell housing

Using an extension socket remove screws and washers.

Compressor removal / re-fitting

- Disconnect the thermistor / thermostat probe cable from either the pressure switch assembly (PURS) or the starter assembly (PUTS).
- Drain the oil from the compressor and cooler into a suitable container.
- Disconnect the pipework from the compressor to aftercooler, where applicable.
- Support the compressor before removing 4 off nuts and washers from the motor flange.
- If required remove 4 off cap head screw securing the backplate, where fitted.
- Remove the compressor from the support and place on a suitable work surface.

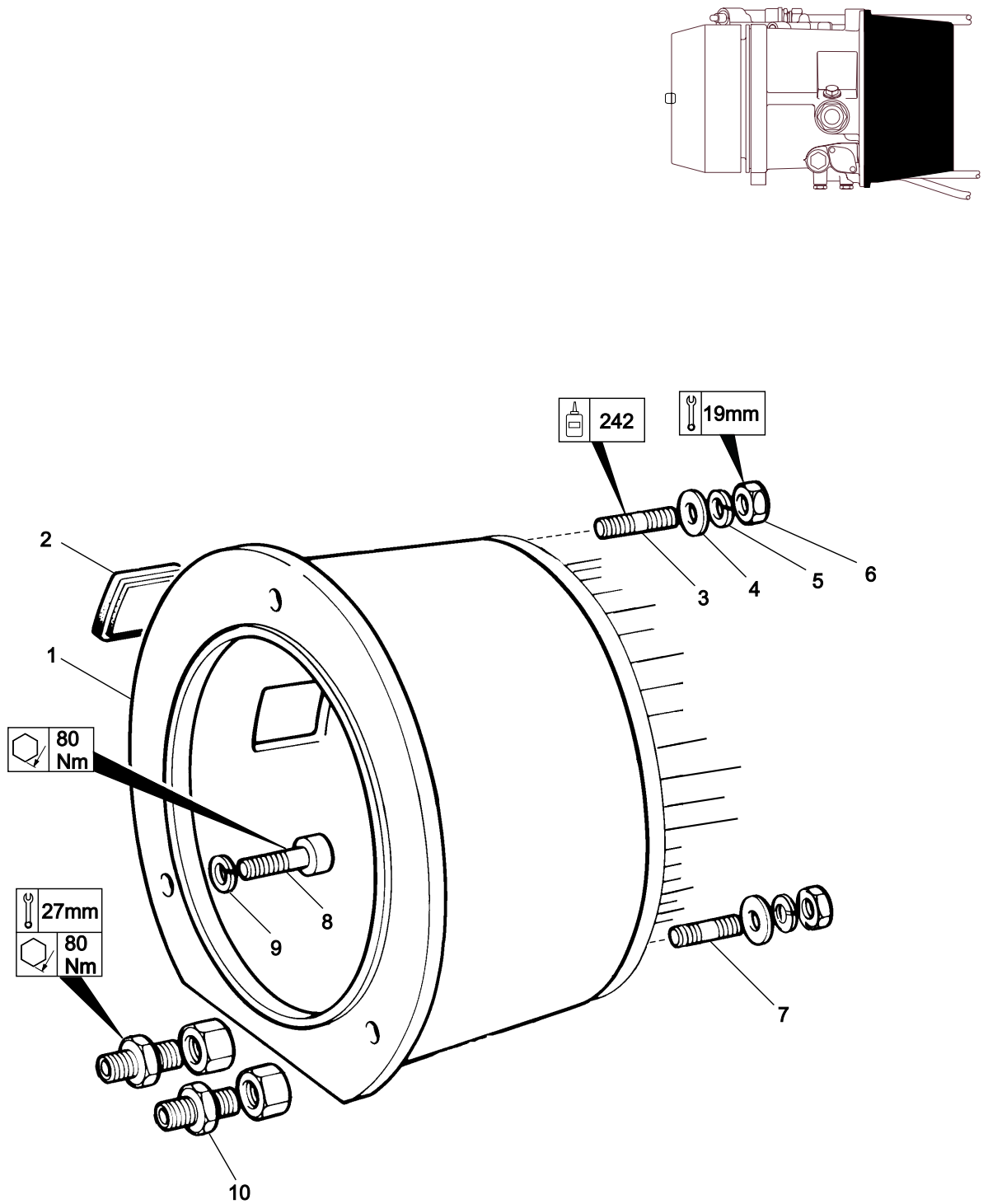


Figure 2H - Bell Housing

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	57802	Key 94mm diameter		1		
2	9810	'O' Ring	KT71	1		
3	34222	Oil seal housing assembly (replacement)	KT71	1		
6a	72351	Drive coupling compressor (cooler plate)			1	
6b	72350	Drive coupling compressor (panel cooler)		1		
6c	73570	Drive coupling comp (toroidal cooler)				1
7	MW20	Washer M20			1	
8	MN120	Lock nut M20			1	
9a	71180	Coupling element (Toroidal cooler)	KT71	1		
9b	71890	Coupling element (panel cooler)	KT71	1		
10a	71179	Drive coupling motor (cooler plate)			1	
10b	72349	Drive coupling motor (panel cooler)		1		
10c	72320	Drive coupling motor (toroidal cooler)				1
	71178	Coupling - complete				
10d	71990	Coupling, Motor				
11	MG710-16	Grub screw M10 x 16		2		
12	ST213924	Loctite		A/R		

Refer to Health and Safety section before carrying out any service work.

Removing compressor drive coupling

- Remove compressor from bell housing.
- Secure drive coupling (6) using service tool (103). Remove locknut (8) and washer (7).
- Using an extractor tool remove coupling (6).
- Remove retaining wire (4).
- Remove oil seal (3).
- Fit parts contained in service kit.
- Fit new oil seal assembly using service tool (1302). Ensure oil seal and shaft are dry. Wirelock in place. Refit washer and locknut.

Note: If it is necessary to remove or disturb the motor coupling, it must be accurately reset to the following procedure.

- Measure distance (X).
- Slide motor coupling (10) onto the motor shaft until the distance measured between motor contact face and motor coupling face equals dimension (X minus 2mm).
- Lock coupling in position.

Oil Seal and Drive Arrangement

- Remove compressor from motor (see page 2).
- Remove coupling element (9). Examine for wear or damage. Renew if necessary.
- Unscrew drive locknut (8) and remove washer and compressor coupling (6).
- Renew oil seal assembly (3) and its 'O' ring (2) taking care not to damage the oil seal on the shaft keyway.
- Apply Loctite 242 to rotor thread. Refit locknut (8) and tighten to 130 Nm.

IMPORTANT!

IF IT IS NECESSARY TO REMOVE OR DISTURB THE MOTOR COUPLING, THEN, ON ASSEMBLY, IT MUST BE RESET ACCURATELY FOLLOWING THE PROCEDURES BELOW TO OBTAIN 1.5 mm CLEARANCE BETWEEN THE COMPRESSOR AND MOTOR COUPLINGS.

- Measure the distance between the compressor coupling face and the bell housing contact face. This is dimension X.
- Slide the motor coupling (10) onto the motor shaft until the distance measured between the motor contact face (dimension Y) and the motor coupling face equals dimension X minus 1.5 mm.
- When the motor coupling/impeller assembly is correctly positioned on the motor shaft, apply Loctite 242 to grubscrews (11) on the motor coupling and tighten it to the specified torque.

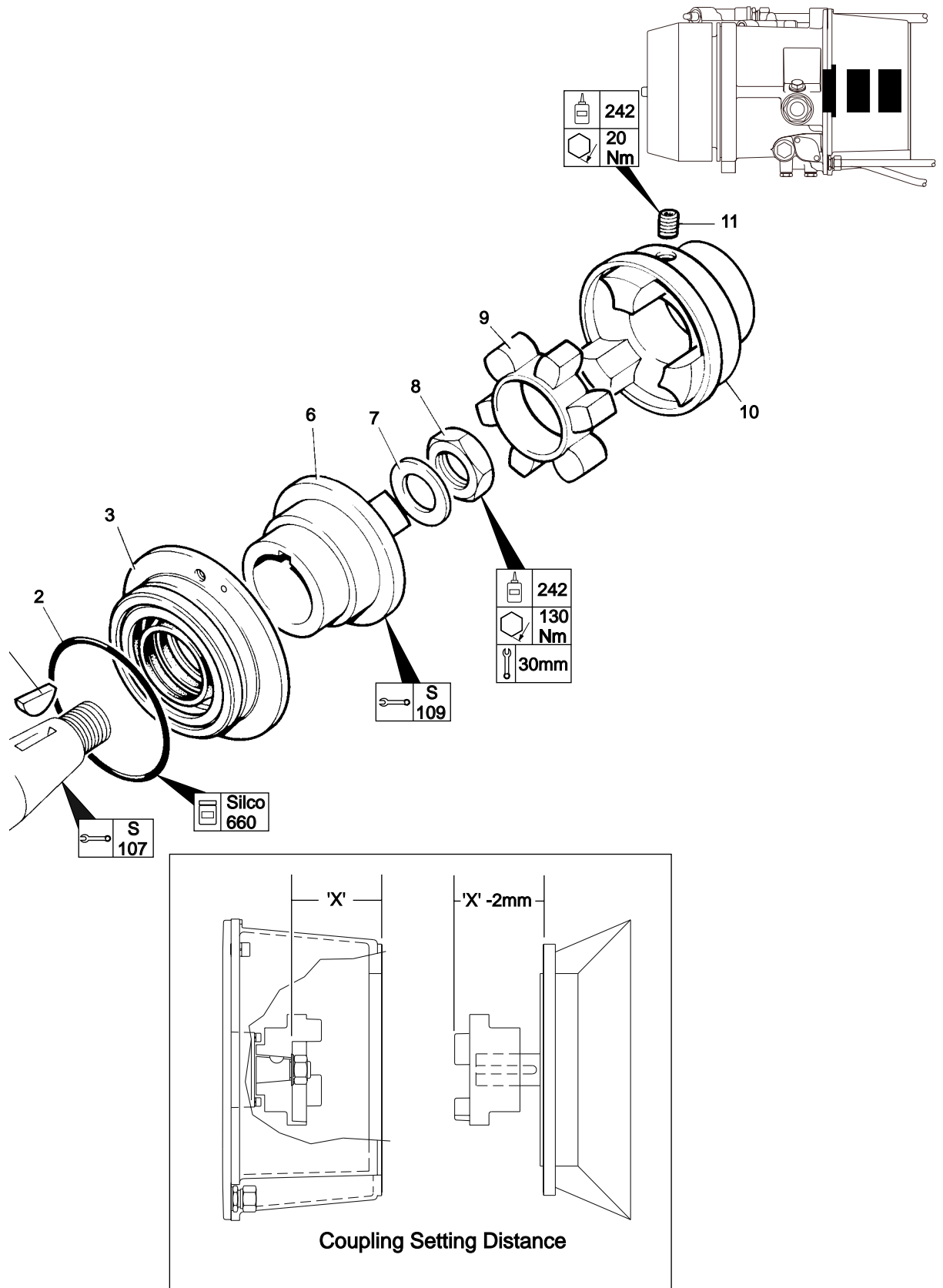


Figure 2J - Drive Coupling Arrangement

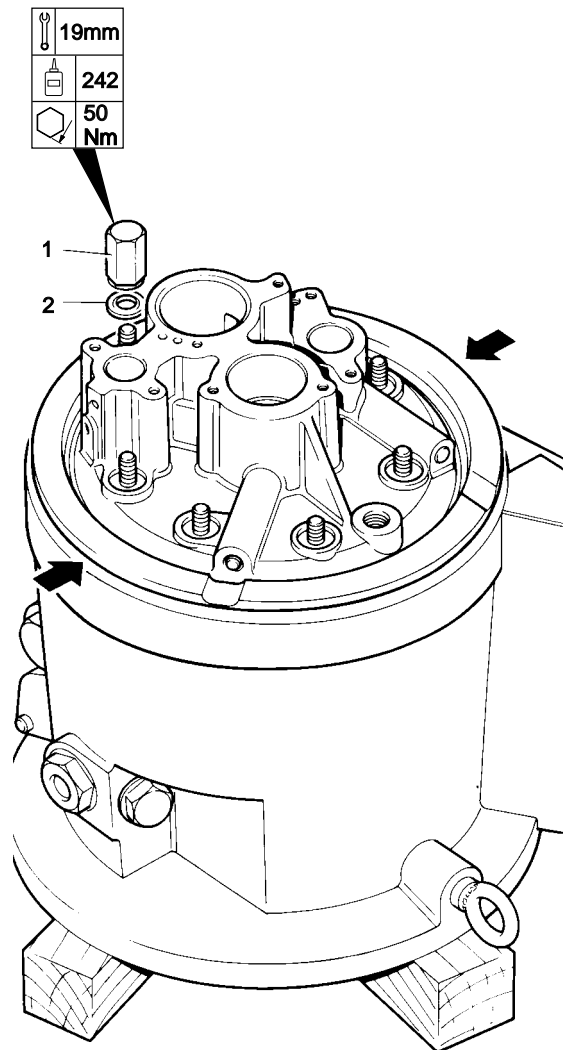
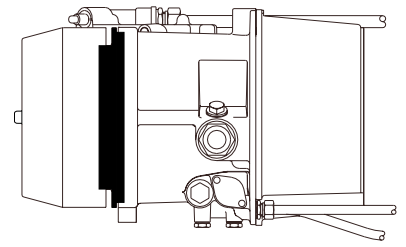


Figure 2K - Intake End Cover - Removal

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	57746	Stator stud M12		7		
2	9609	Bonded seal		14		
3	57747	Nut M12		14		
4a	58017-02	Shim 0.04 mm				
4b	58017-03	Shim 0.05 mm	KT71			
4c	58017-04	Shim 0.08 mm	KT71			
4d	59370-03	Shim 0.05 mm	KT71		A/R	A/R
4e	59370-04	Shim 0.08 mm	KT71		A/R	A/R
5	MS105-12	Screw M5 x 12		1		
6	MWG5	Spring washer M5		1		
7	58411	Impingement cowl		1		
8	58691	Jubilee clip	KT71	1		
9a	58018-02	Shim 0.04 mm	KT71			
9b	58018-03	Shim 0.05 mm	KT71			
9c	58018-04	Shim 0.08 mm	KT71			
9d	59302-03	Shim 0.05 mm			A/R	A/R
9e	59302-04	Shim 0.08 mm			A/R	A/R
10		Stator assembly				
11a	58186	Rotor (10 bar)				
12a	59186-02	Blade (10 bar)				
12b	59187-02	Blade (10 bar)				12
12c	72364-01	Blade (10 bar)			12	

A/R = As required

Refer to Health and Safety section before carrying out any service work.

Assembling the rotor stator unit

- Check discharge pipe in oil chamber for condition and tightness. If replacement or tightening of the pipe is necessary, separator cap must be removed to obtain access to the pipe locknut. Pipe must be positioned parallel with the end face of the oil chamber
- If stator studs (1) have been removed, apply loctite and screw fully into the oil chamber.
- Clean all components.
- Fit parts contained in service kits.
- Refit the stator nuts (3) ensuring new bonded seals (2) are used.
- Refit rotor (11), complete with blades (12) into oil chamber. Take care not to damage bearing in oil chamber when inserting rotor.

- Refit cowl (7) to flange on intake end of stator (wider flange). Cowl must be fitted in exactly the same position as that prior to dismantling.
- Apply a smear of oil to shim (9) and affix to the drive end face of the oil chamber. Take care not to damage shim when fitting over studs (1).
- Locate stator (10) over studs (1). With jubilee clip to the top lower it fully into the oil chamber.

Note: Stator can only be fitted one way due to the position of the stator studs and holes.

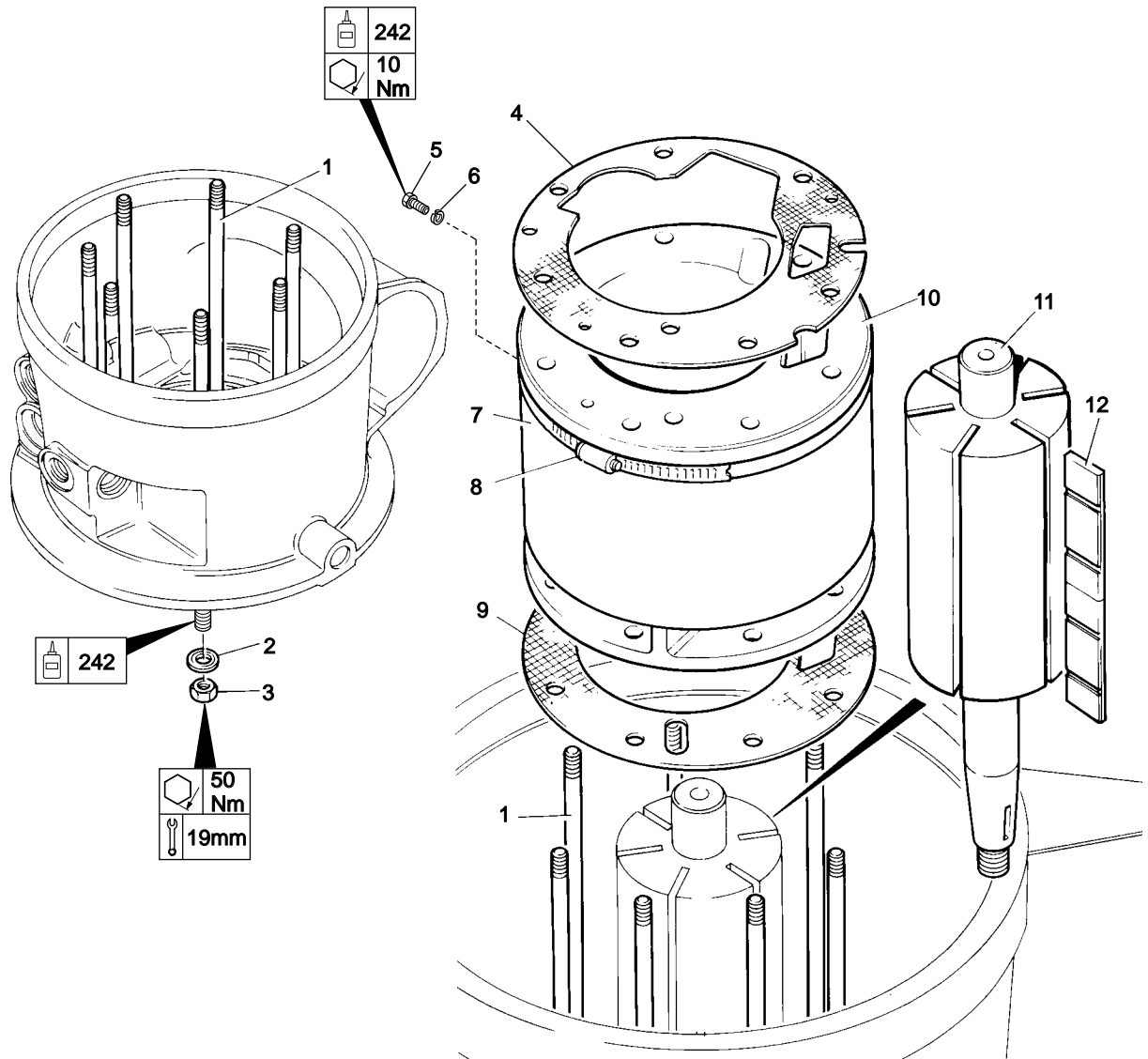


Figure 2L - Assembling the Rotor Stator Unit

Item	Part Number	Description	Kit	Quantity		
				All	705	707
	33831-01	Intake end cover assembly			1	1
	33831-02	Intake end cover assembly				
1	58039	Intake end cover			1	1
2	59425-04	Taper plug brass 1/2 BSP (non-servo)			2	2
3	MG1706-6	Grub screw tuflock M6 x 6		1		
4	MG1706-6	Grub screw tuflock M6 x 6 (servo)			2	2
5a	59425-01	Taper plug brass 1/2 BSP (servo)			2	2
	0782	Bearing (refer to chapter 3H)		1		
6	9900	O Ring	KT71	1		
7a	58017-02	Shim 0.04 mm				
7b	58017-03	Shim 0.05 mm				
7c	58017-04	Shim 0.08 mm				
7d	59370-03	Shim 0.05 mm			A/R	A/R
7e	59370-04	Shim 0.08 mm			A/R	A/R
8	9609	Bonded seal 1/4	KT71	14		
9	57747	Stator nut M12		14		

A/R = As required

Refer to Health and Safety section before carrying out any service work.

Assembling the rotor stator unit - continued

- Using a straight edge and feeler gauges, check the end clearance between the rotor and stator.
- The correct clearance between the rotor face and stator face is 0.2 mm. This clearance must be maintained to ensure correct compressor operation and performance.
- Apply a smear of approved oil to the end of the stator and fit the required size shim/s (7) to give the correct total end clearance of 0.2 mm.
- After applying oil to its bearing, refit the intake end cover (1) to the stator ensuring a new 'O' ring (6) is fitted. Intake end cover will fit over the studs in only one position.
- Refit stator nuts ensuring new bonded seals are used.
- Refit new oil seal housing and refit compressor coupling.
- Refit bell housing
- Refit valves to intake end cover.
- Refit air intake arrangement.
- Refit compressor to motor.
- Refill compressor with an APPROVED OIL and carryout the test procedures.

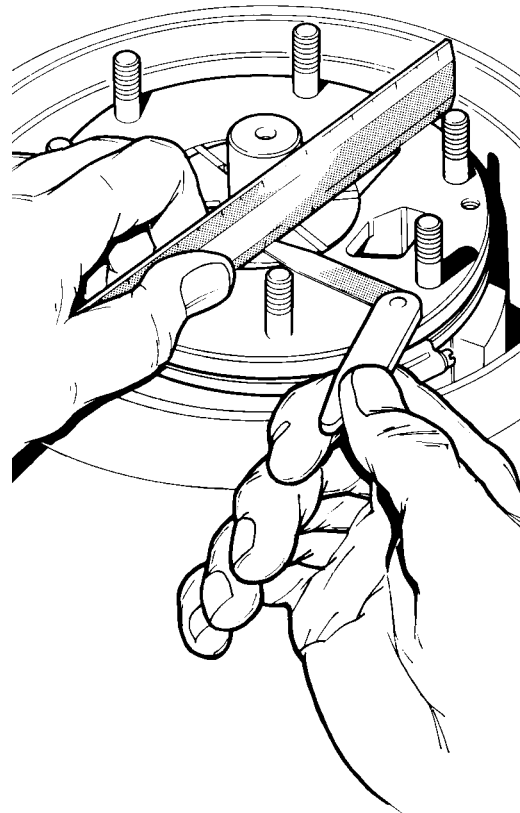


Figure 2L - Assembling the Rotor Stator Unit ... Continued

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	MS706-20	Socket head screw		8		
2	MWG6	Spring washer		8		
	34400	Separator cap assembly		1		
3	74012	Cap				
4	59425-03	Taper plug brass 3/8" BSP		1		
5a	74158	Nameplate - Classic			1	
5b	71163	Nameplate				1
6	56391	Pressure gauge	KT71	1		
7	MS2105-10	Pan head screw M5x10		2		
8		refer to Ventdown assemblies				
9	MS703-10	Cap head screw M3x10		2		
10	58341	Separator stud M8		1		
11	59177	Separator element		1		
12	9799	O Ring		1		
13	57803	Gasket		1		

Refer to Health and Safety section before carrying out any service work.

Replacing separator element

- Remove the eight retaining screws (1) securing the separator cap to the oil chamber.
- Lift assembly out of oil chamber and place on workbench.
- Unscrew separator element.
- Clean all components.
- Fit parts contained in service kit.

Note: If separator studs (10) have been removed, screw into cap first not into elements.

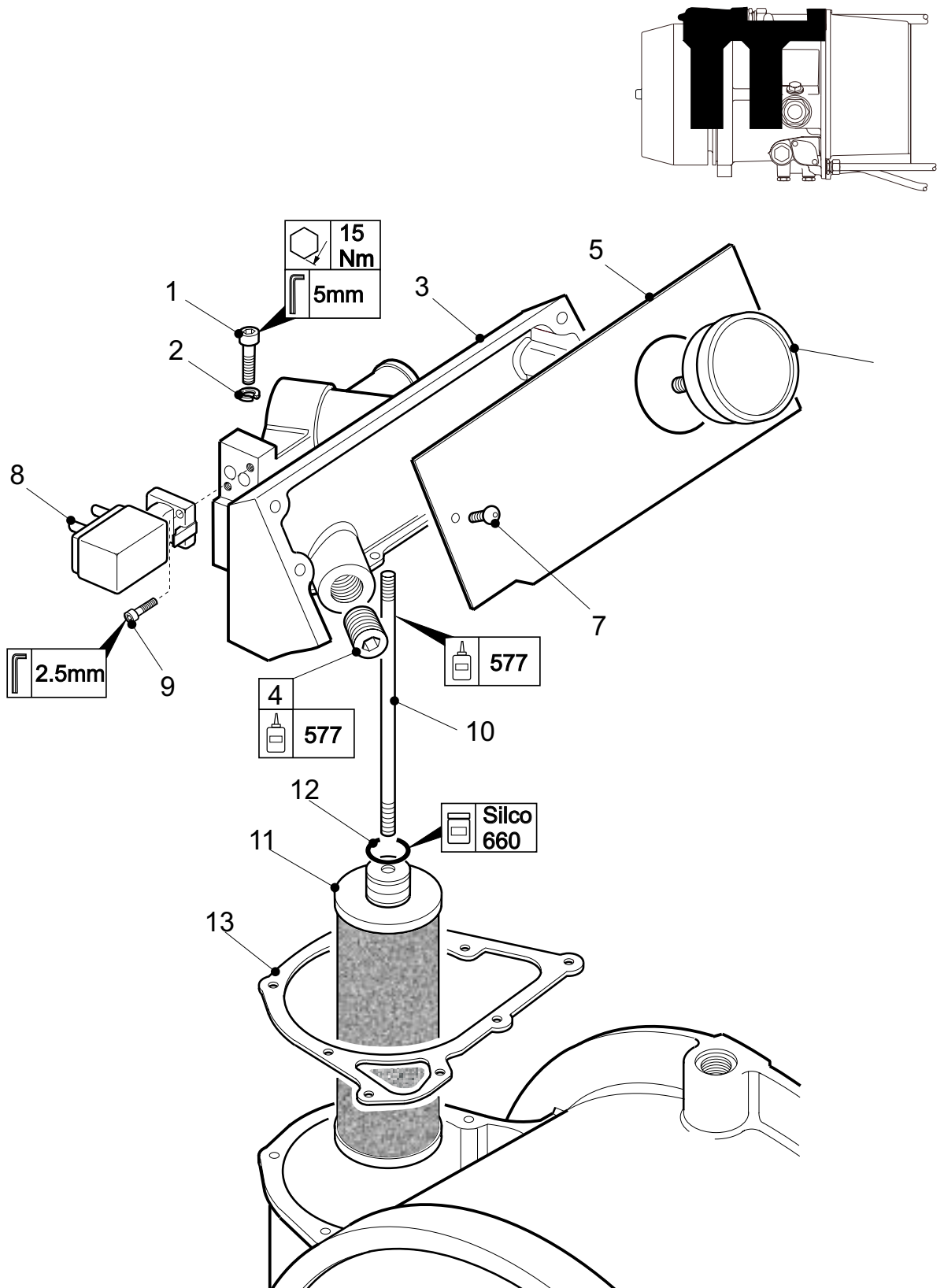


Figure 2M - Oil Separator Assembly

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	MCI-30	Circlip internal		1		
	33413	Minimum pressure valve assembly				
2	73283	Elbow		1		
3	58470	Adjuster plug		1		
4	57742	M.P.V. Body		1		
5	9758	O Ring	KM71	1		
6	9717	O Ring	KM71	1		
7	9711	O Ring	KM71	1		
8	57842	M.P.V. Piston		1		
9	57588	Spring		1		
10	57845	M.P.V return spring		1		
11	71760	Non return valve		1		
12	0071	M.P.V. Seat	KM71	1		
13	W3	Washer 3/16		1		
14	MCE4-8	Circlip external		1		
15	34238	Nylon tube		1		

Refer to Health and Safety section before carrying out any service work.

Service schedules

- Clean all components.
- Fit parts contained in service kits.
- Check freedom of piston (8) in body before assembly.
- Refer to chapter 6 for M.P.V setting procedure.

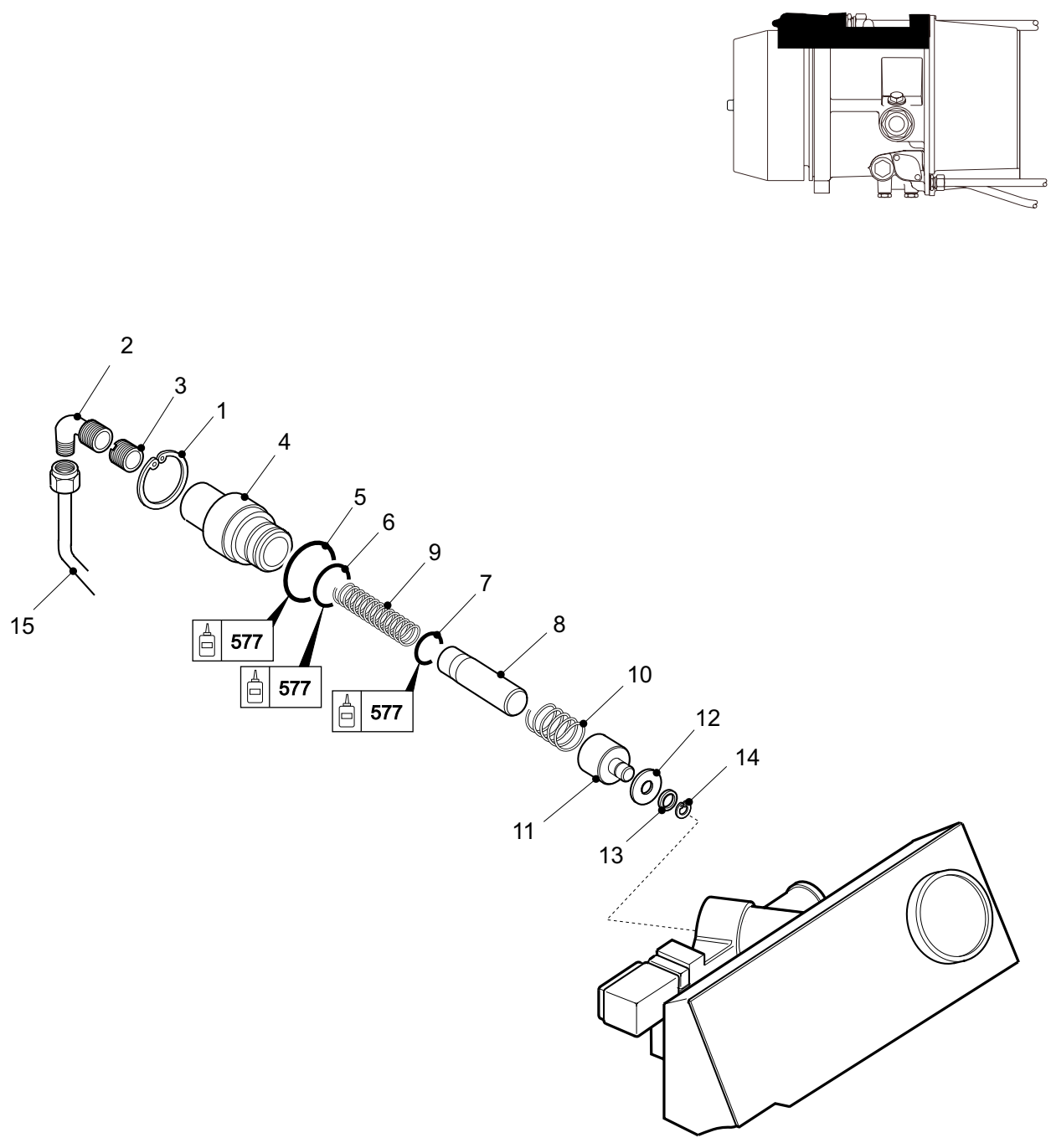


Figure 2N - Minimum Pressure Valve Assembly

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	73900	Starter Hinge		1		
2	73981	Cooler Duct		1		
3	74062	Starter Cover		1		
4	74089	Front Trim Panel		1		
5	74096	Starter Cover Bracket		1		
6	74133	Cabinet Filter Bracket		1		
7	73894	Rear Panel		1		
8	73895	End Panel		1		
9	73896	Top Panel		1		
10	74008	Air Intake Baffle		1		
11	74090	Front Panel, Short		1		
12	73988	Foam, Rear Panel		1		
13	73989	Foam, End Panel		1		
14	73990	Foam, Top Panel		1		
15	74091	Foam, Front Panel		1		

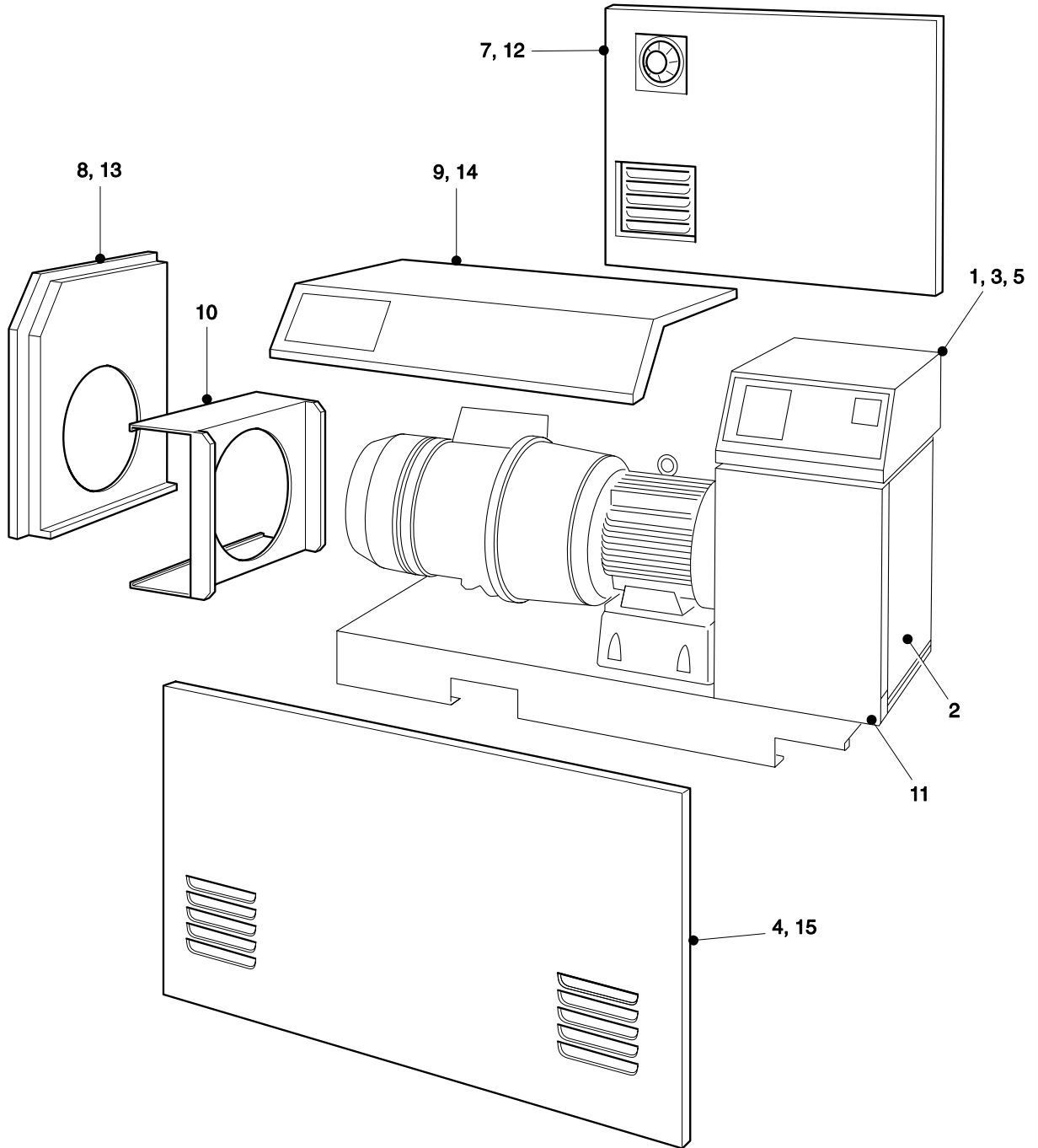


Figure 2P - Panels

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	1068	Tubing nut		1*		
2	1069	Tubing sleeve		1*		
3	1911	Stud elbow c/w nuts		2		
4	34447	By-pass kit comprising:-		1		
5	72956	Stud elbow ½ - 20 mm		3		
6	74150	Ball valve 3-way		2		
7	74151	Pipe, dryer to by-pass		2		
8	74152	Stud coupling		2		
9	74153	Elbow, equal		2		
10	74154	Sleeve		1		
11	3679	Drain filter		1		
12	50463	Straight stem adapter		1*		
13	53682	Elbow, 8 mm standpipe		1*		
14	58076	Grommet		1*		
15	58077	Filter		1*		
16	70661	Solenoid valve		1*		
17	73961	Base		1		
18a	74108	Refrigerant HBD 56 (05)		1		
18b	74140	Refrigerant HBD 76 (07)		1		
19	74155	Pipe, filter to by-pass		1		
20	74156	Stem adaptor		1		
21	74157	Cable assy, solenoid valve		1*		
22	MS108-20	Screw, hexagon head M8 x 20		4		
23	MS110-20	Screw, hexagon head M10 x 20		6		
24	MWG 10	Washer, spring M10		6		
25	MWG 8	Washer, spring M8		4		

* Denotes only used with Electronic Control.

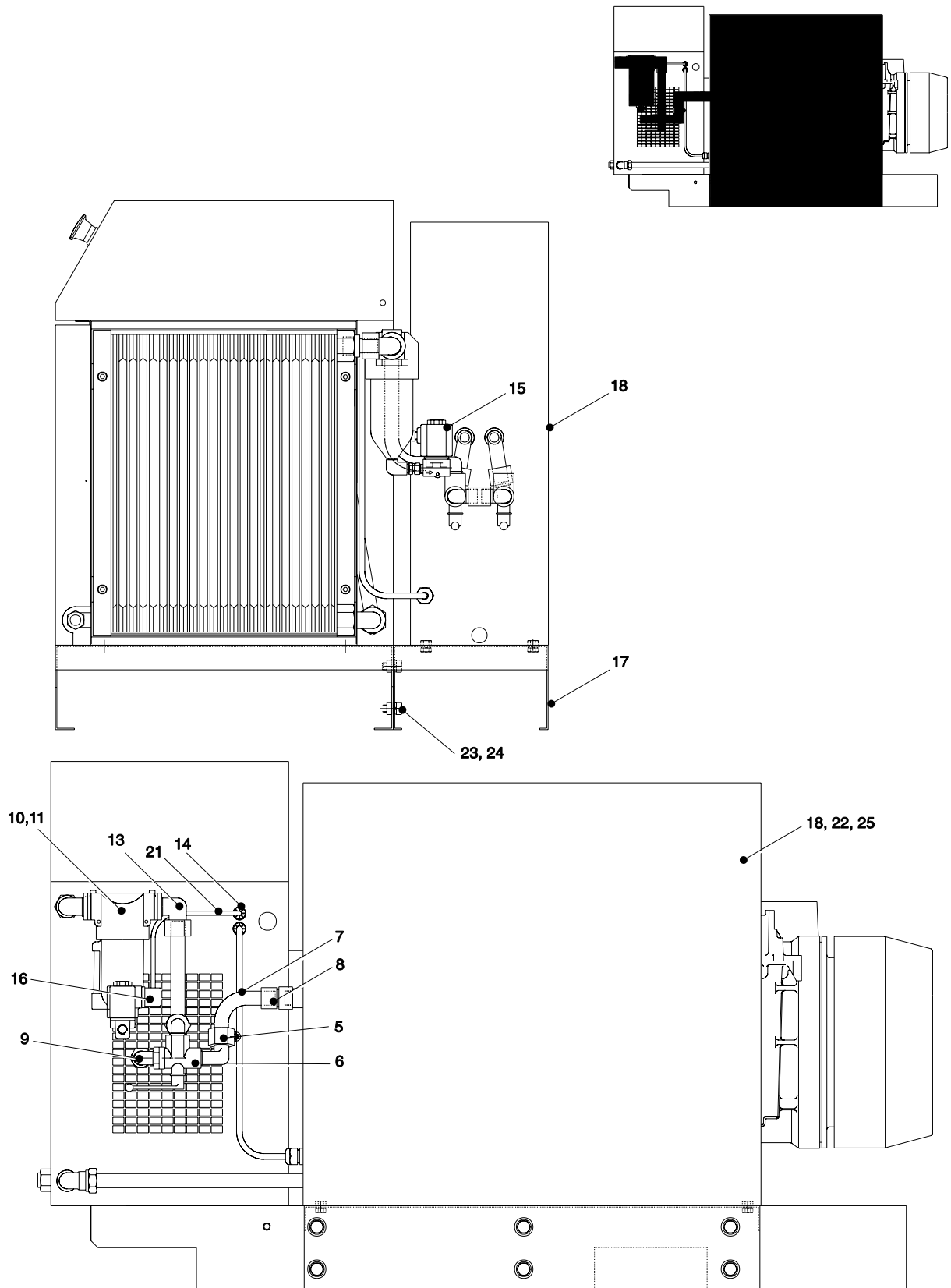


Figure 2Q - Dryer

Item	Part Number	Description	Kit	Quantity		
				All	705	707
1	1911	Stud elbow c/w nuts		2		
2	53549	Stud coupling ½ BSP		1		
3	70832	Door seal		0.7 m		
4	71129	Stud elbow		2		
5	71130	Tee ½ x 15 mm		1		
6	71131	Blanking plug		1		
7	71432	Cooler		1		
8	73901	Oil feed pipe		1		
9	73902	Oil return pipe		1		
10	73903	Air outlet pipe		1		
11	73991	Latch spring		3		
12	73992	Latch ball stud		3		
13	74092	Impeller		1		
14	73894	Impeller		1		
15	74093	Impeller volute		1		
16	73897	Impeller volute		1		
17	74134	Cabinet filter		1		
18	MG1706-6	Screw, Tuflock M6 x 6		2		
19	MS104-10	Screw, hexagon hd, M4 x 10		4		
20	MS108-16	Screw, hexagon hd, M8 x 16		4		
21	MS2108-16	Screw, Pozipan hd, M8 x 16		4		
22	MW8	Washer M8		4		
23	MWG8	Washer, spring M8		4		
24	73890	Base		1		
25	73479	Plug		1		
26	73891	Motor support		2		
27	MS108-16	Screw, hexagon hd, M8 x 16		8		
28	MS110-20	Screw, hexagon hd, M10 x 20		4		
29	MW10	Washer M10		4		
30	MW8	Washer M8		8		
31	MWG10	Washer, spring M10		4		
32	MWG8	Washer, spring M8		8		

Refer to Health and Safety section before carrying out any service work.

Oil Pipe Connectors

- Drain the oil from the compressor and oil cooler.
- Remove oil feed and oil return pipes.
- Remove connectors and renew bonded seals.
- Refit oil feed and oil return pipes.
- Refil the compressor with approved oil.

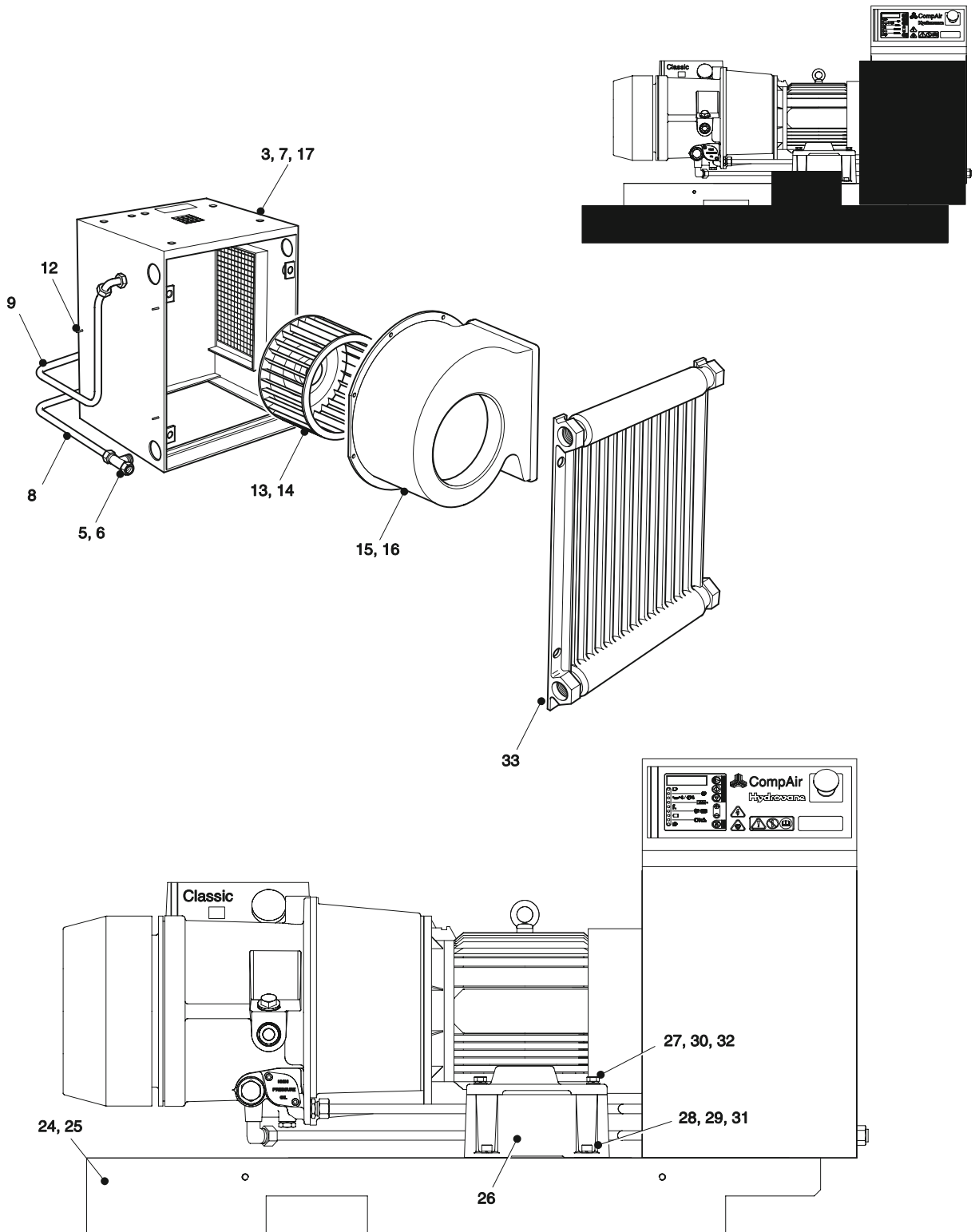
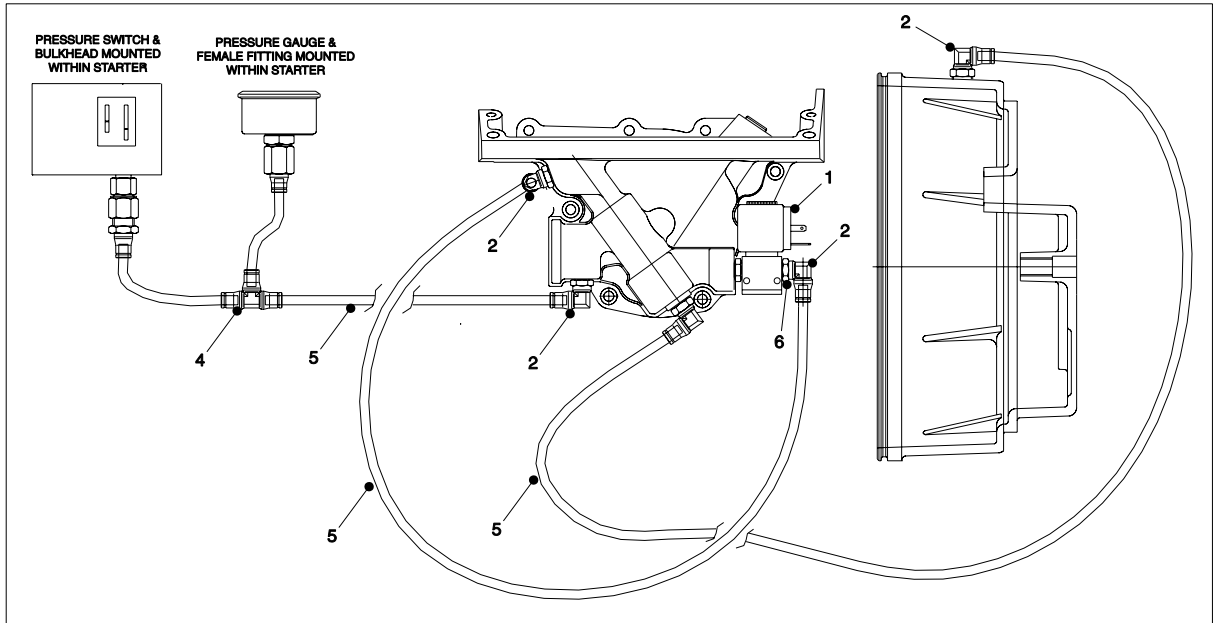
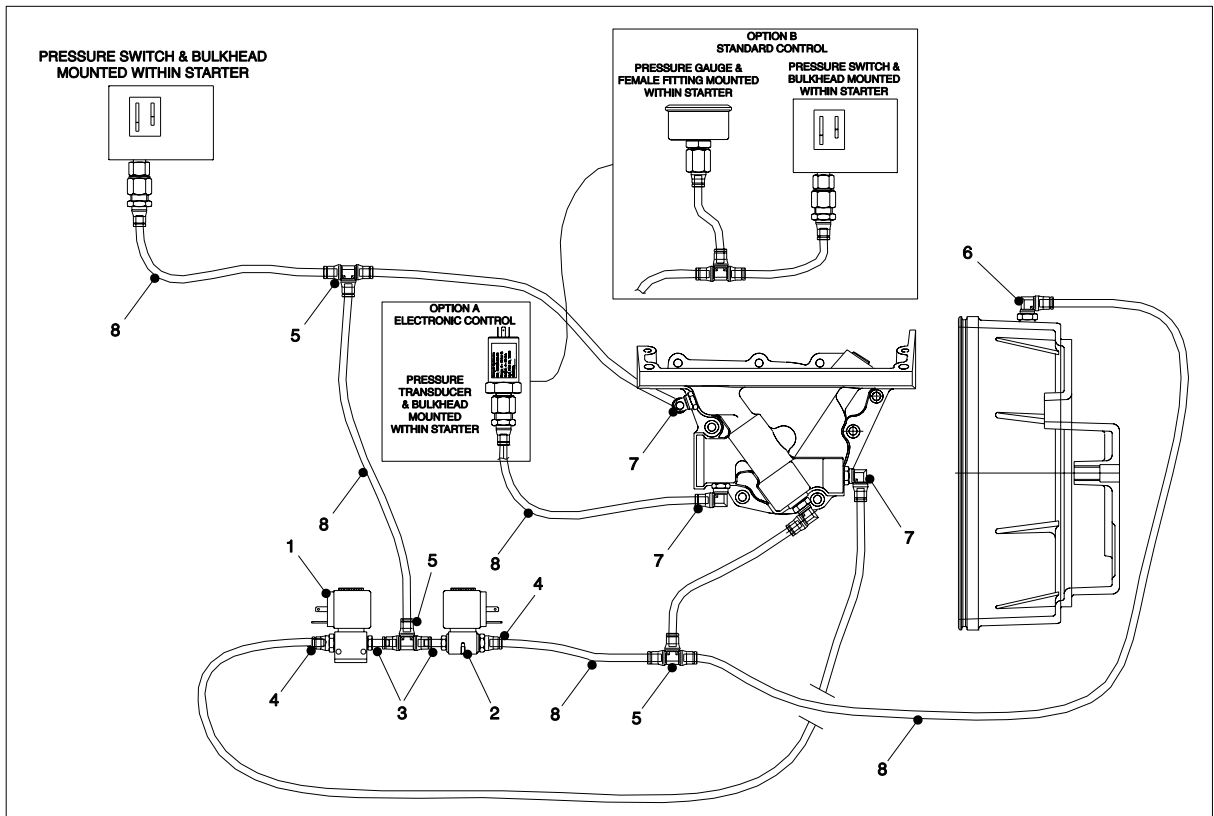


Figure 2R - Oil Cooler;Base

Item	Part Number	Description	Kit	Quantity		
				All	705	707
D.O.L STANDARD CONTROL						
1	73220	Solenoid valve 110 V N.O.		1		
2	73215	Elbow, push-in, R 1/8 " - 6 mm		3		
3	73283	Elbow, push-in, R 1/4 " - 6 mm		2		
4	73282	Tee, push-in, 6 mm		1		
5	ST214671	Tube, nylon, 6 mm		A/R		
6	74139	Equal nipple R 1/8 "		1		
STANDARD / ELECTRONIC CONTROL						
1	73220	Solenoid Valve 110 V N.O.		1		
2	74057	Solenoid Valve 110 V N.C.		1		
3	74059	Standpipe adaptor R 1/8 " - 6 mm		2		
4	73449	Stud, push-in,, male, R 1/8 " - 6 mm		2		
5	73282	Tee, push-in, 6 mm		3		
6	73283	Elbow, push-in, R 1/4 " - 6 mm		2		
7	73215	Elbow, push-in, R 1/8 " - 6 mm		3		
8	ST214671	Tube, nylon, 6 mm		A/R		
9	74060	Solenoid valve bracket		1		



D.O.L. STANDARD CONTROL



STANDARD/ELECTRONIC CONTROL

Figure 2S - Ventdown Assemblies

Chapter 3

Contents

	Section	Page
400V 50Hz Electronic Control Starter	3A	68
400V 50Hz D.O.L. and 380/440V 60Hz Standard	3B	70
208-230V 60Hz D.O.L. Electronic Starter	3C	72
400V 50Hz and 380/440V 60Hz Standard Control Starter	3D	74
400V 50Hz and 380/440V 60Hz Standard Control Starter	3E	76
230V 50/60Hz Standard Control Starter	3F	78
230V 50/60Hz D.O.L. Standard Control Starter	3G	80
Starter Assembly Part Modifications	3H	82

3A

01/02 Three Phase (PUTS) Starter

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34367
1	74097	Contactora		3
2	74035	Thermal overload		1
3	74022	Terminal		5
4	74023	Earth terminal		1
5	74024	Terminal, double stack		12
6	74036	Transformer		1
7	56132	Fuse 1A		1
8	74027	Fuse 1.6A		2
9	74038	Emergency stop button		1
10	74028	End bracket		2
11	74043	Power outlet socket		1
12	74039	Aux. contact block		2
13	74064	Circuit breaker		1
14	74063	Aux. contact block		1
15	74025	End section		2
Starter assembly 34367 = 5.5/7.5 kW, 400 Volt, 50 Hz Electronic Control				

Refer to Health and Safety section before carrying out any service work.

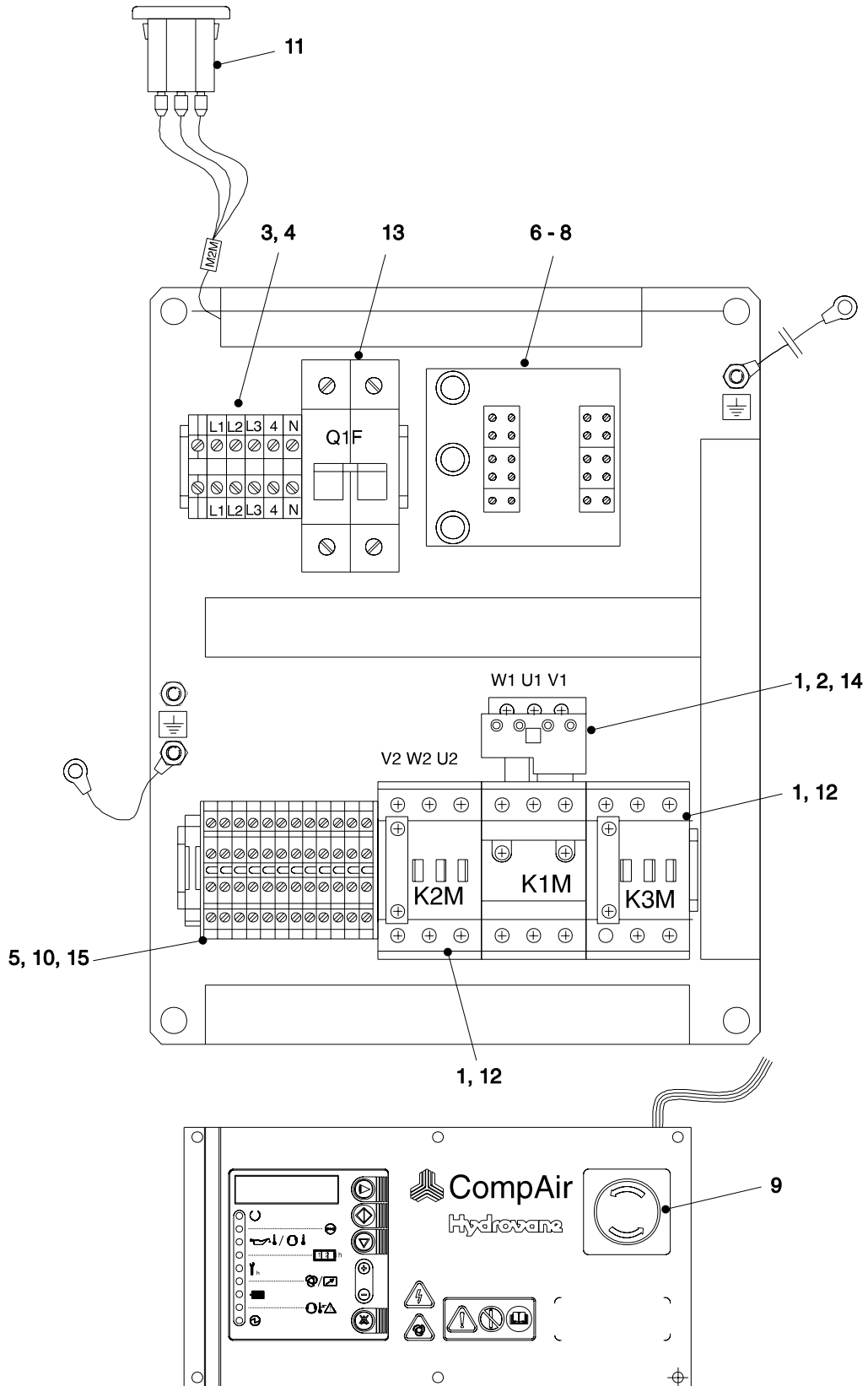


Figure 3A - 400V, 50Hz Electronic Control Starter

3B**01 Single Phase (PUTS) Starter**

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34368
1	74098	Contactator		1
2	74024	Terminal, double stack		3
3	74025	End section		2
4	74036	Transformer		1
5	56132	Fuse 1A		2
6	59344	OTC board		1
7	56122	Timer		1
8	53494	Timer base		1
9	74067	Knob		1
10	74068	Indicator lens		1
11	72708	Push button		1
12	50432	Hour counter		1
13	72706	Emergency stop push button		1
14	74043	Power outlet socket		1
15	74064	Circuit breaker		1
16	74022	Terminal		1
17	74023	Earth terminal		5
18	74020	Thermal overload		1
				1
Starter assembly 34368 = 5.5 kW, 400 Volt, 50 Hz D.O.L. and 380/440 Volt, 60 Hz Standard				

Refer to Health and Safety section before carrying out any service work.

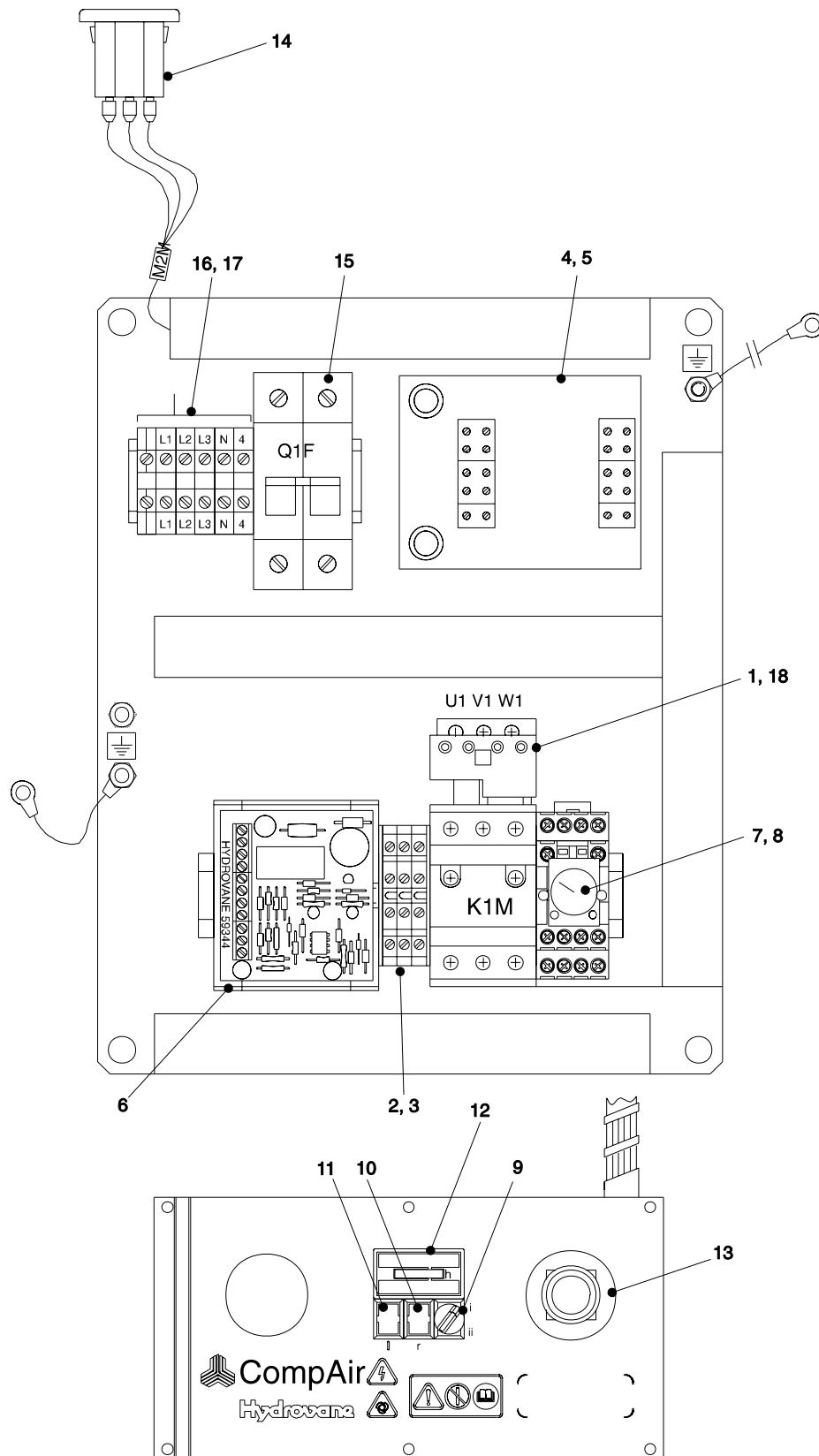


Figure 3B - 400V, 50Hz D.O.L. and 380/440V 60Hz Standard

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34390
1	74029	Contactora		1
2	74020	Thermal overload 7.5/5.5kW (460V)		1
3	74021	Thermal overload 5.5kW (208-230V)		A/R
4	74030	Thermal overload 7.5kW (208-230V)		A/R
5	74022	Terminal		3
6	74023	Earth terminal		1
7	74024	Terminal, double stack		12
8	74025	End section		2
9	74026	Transformer		1
10	56132	Fuse 1A		1
11	74027	Fuse 1.6A		2
12	74038	Emergency stop push button		1
13	74064	Circuit breaker		1
14	74043	Power outlet socket		1
15	74079	Connector, thermal overload		A/R
16	74028	End bracket		1
17	74039	Aux. Contact block		1
Starter assembly 34390 = 5.5/7.5 kW, 208-230/460 Volt, 60 Hz D.O.L. Electronic Control				

Refer to Health and Safety section before carrying out any service work.

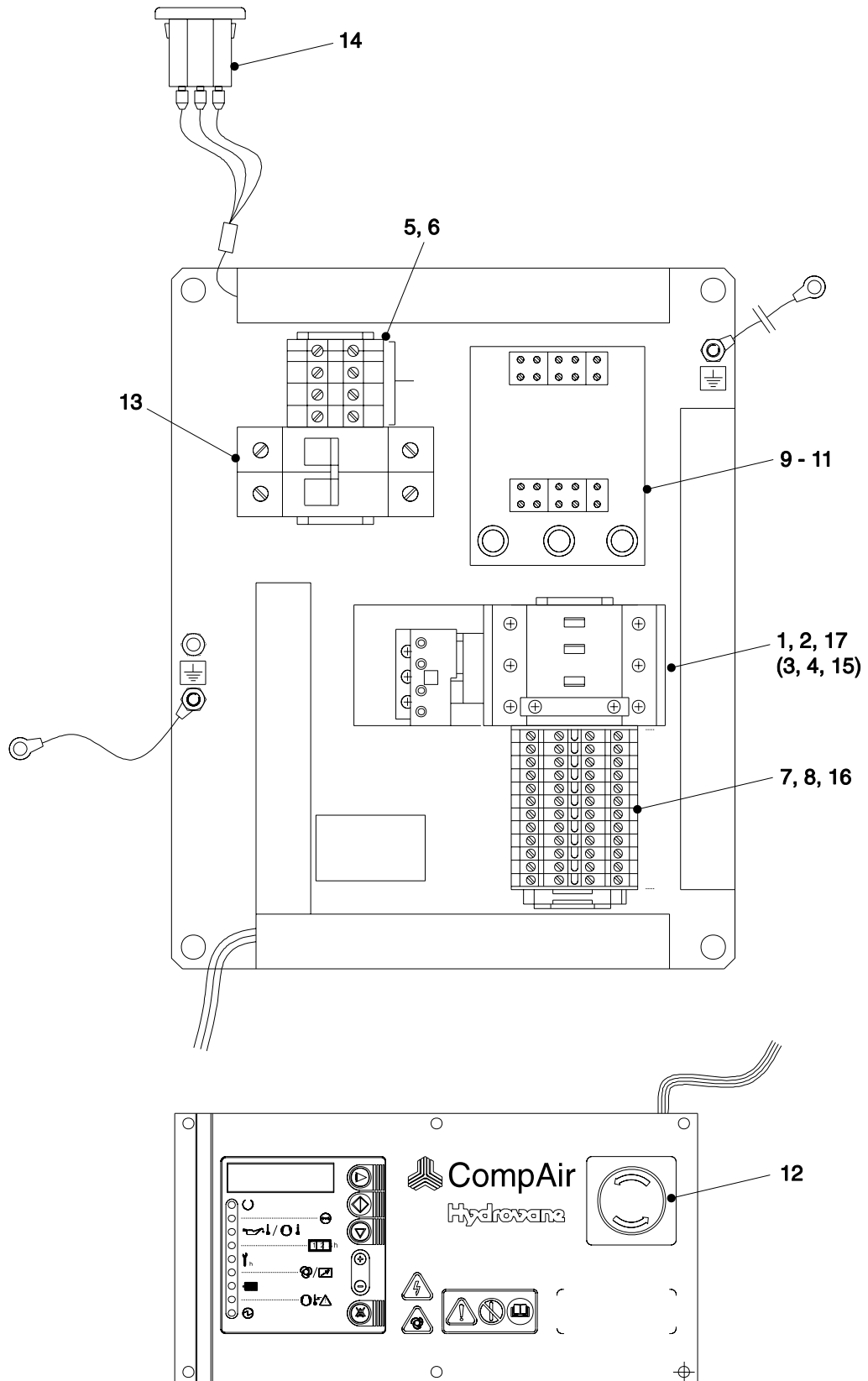


Figure 3C - 208-230V, 60Hz D.O.L. Electronic Starter

3D**Starter Assembly Part Modifications**

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34403
1	74097	Contactora		3
2	74039	Auxiliary contact block		1
3	74063	Auxiliary contact block		1
4	56378	Timer (Star/Delta)		1
5	74064	Circuit breaker		1
6	56122	Timer		1
7	53494	Timer base		1
8	59344	OTC board		1
9	74024	Terminal, double stack		4
10	74025	End section		2
11	74036	Transformer		1
12	56132	Fuse 1A		2
13	74067	Knob operator (Auto)		1
14	74068	Indicator lamp (Reset)		1
15	72708	Push button (Start)		1
16	50432	Hours counter		1
17	72706	Emergency stop push button		1
18	74043	Power outlet socket		1
19	74022	Terminal		5
20	74023	Earth terminal		1
21	74035	Thermal overload		1
Starter assembly 34403 = 7.5 kW, 400 Volt, 50 Hz and 380/440 Volt, 60 Hz Standard Control				

Refer to Health and Safety section before carrying out any service work.

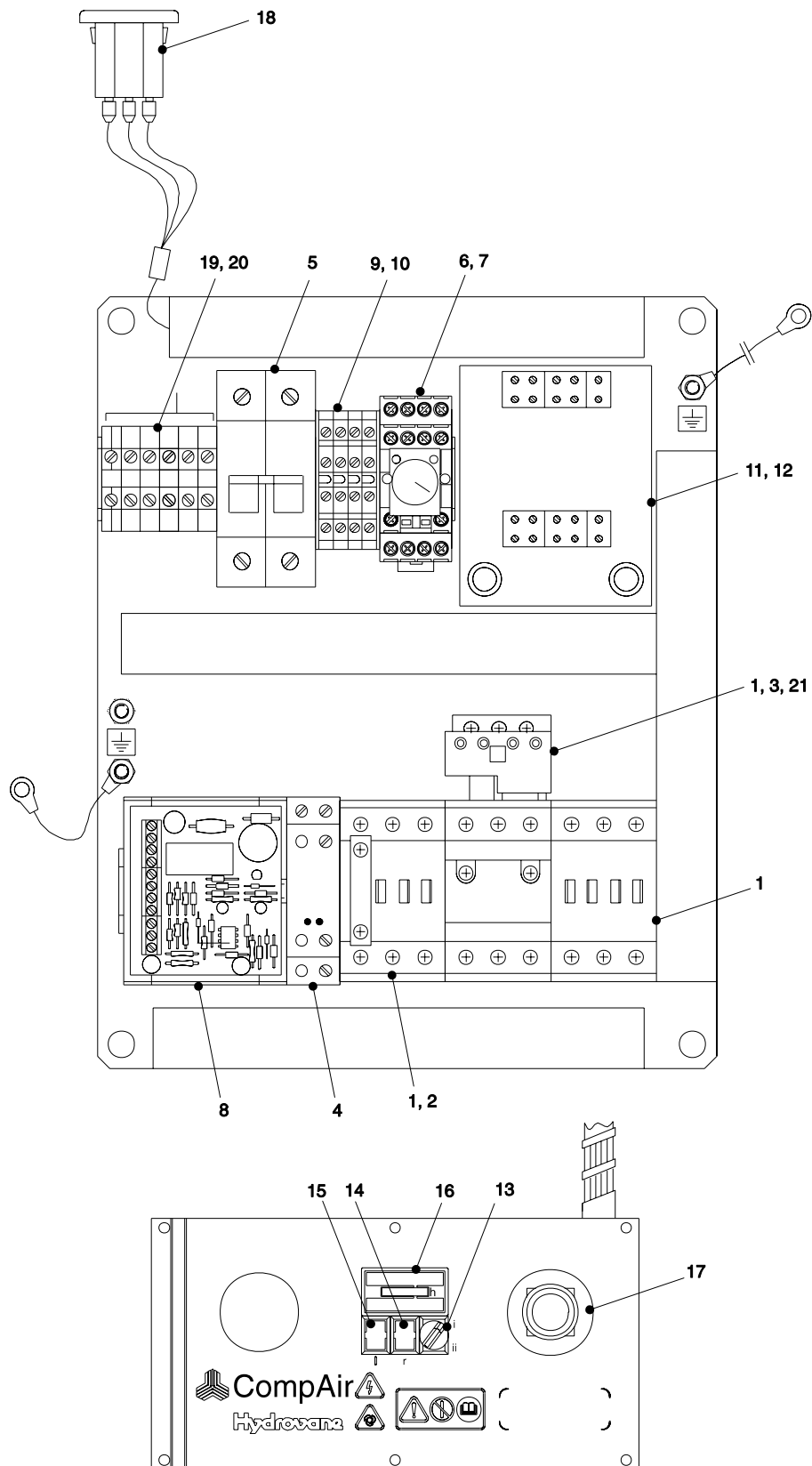


Figure 3D - 400V, 50Hz and 380/440V, 60Hz Standard Control Starter

3E 400V 50Hz and 380/440V 60Hz Standard Control Starter

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34409
1	74029	Contactora 110V 60Hz		1
2	74024	Terminal, double stack		3
3	74025	End section		2
4	74026	Transformer		1
5	56132	Fuse 1A		2
6	59344	OTC board		1
7	56122	Timer		1
8	53494	Timer base		1
9	74067	Knob operator (Auto)		1
10	74068	Indicator lamp (Reset)		1
11	72708	Push button (Start)		1
12	74080	Hours counter		1
13	72706	Emergency stop push button		1
14	74043	Power outlet socket		1
15	74039	Auxiliary contact block		1
16	74064	Circuit breaker Q1F		1
17	74022	Terminal		3
18	74023	Earth terminal		1
19	74020	Thermal overload 5.5/6.5kW (460V)		1
20	74021	Thermal overload 5.5kW (208-230V)		1
21	74030	Thermal overload (208-230V)		1
22	74079	Connector thermal overload		1
Starter assembly 34409 = 5.5/7.5 kW, Nema 60 Hz D.O.L. Standard Control				

Refer to Health and Safety section before carrying out any service work.

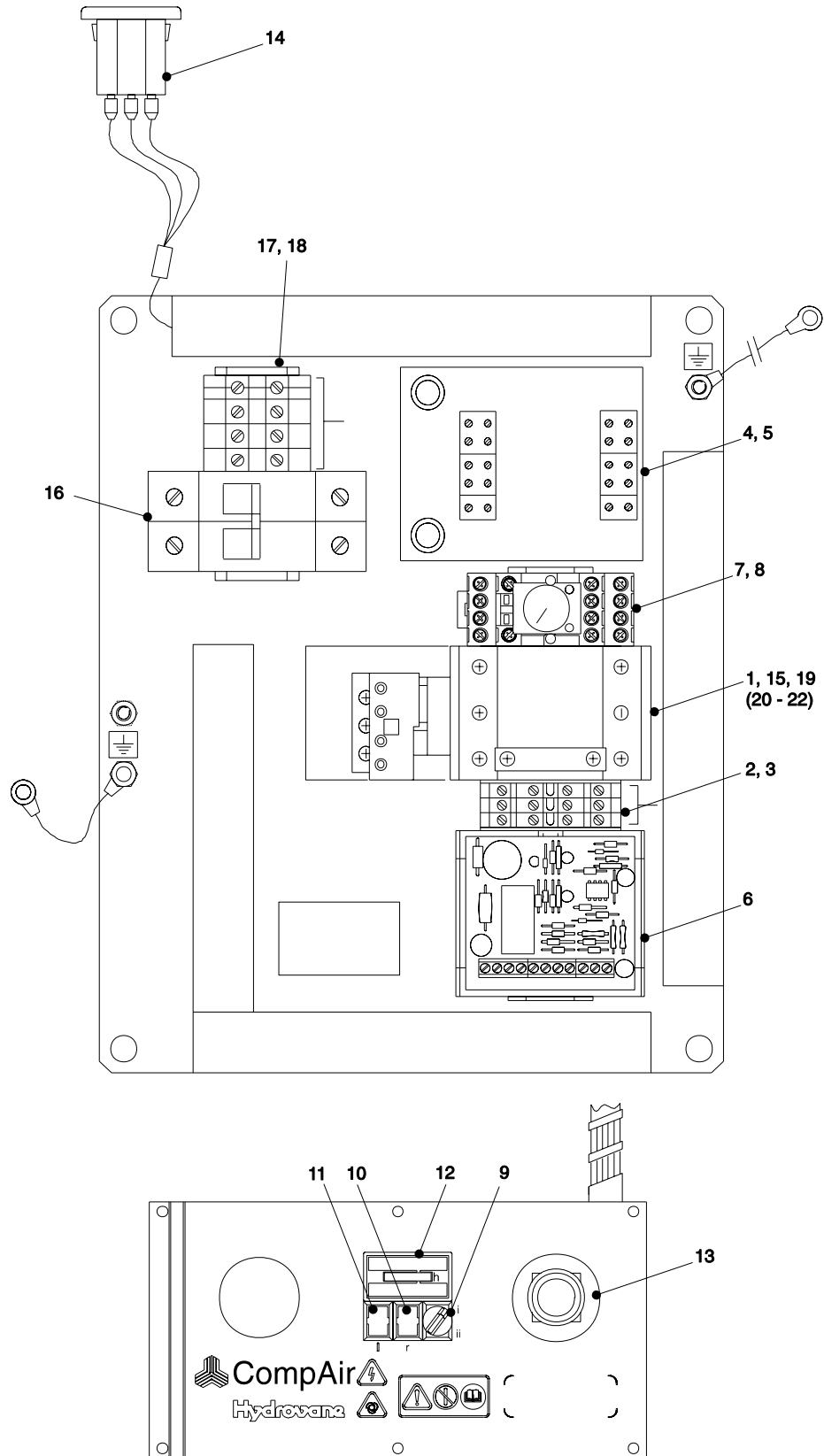


Figure 3E - 400V, 50Hz and 380/440V, 60Hz Standard Control Starter

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34423
1	74112	Contactator		3
2	74063	Auxiliary contact block		1
3	74113	Auxiliary contact block		1
4	56378	Timer (Star/Delta)		1
5	74064	Circuit breaker		1
6	56122	Timer		1
7	53494	Timer base		1
8	59344	OTC board		1
9	74024	Terminal, double stack		4
10	74025	End section		2
11	74026	Transformer		1
12	56132	Fuse 1A		2
13	74067	Knob operator (Auto)		1
14	74068	Indicator lamp (Reset)		1
15	72708	Push button (Start)		1
16	50432	Hours counter		1
17	72706	Emergency stop push button		1
18	74074	Auxiliary contact block		1
19	74043	Power outlet socket		1
20	74022	Terminal		5
21	74023	Earth terminal		1
22	74021	Thermal overload		1
Starter assembly 34423 = 7.5 kW, 230 Volt, 50/60 Hz Standard Control				

Refer to Health and Safety section before carrying out any service work.

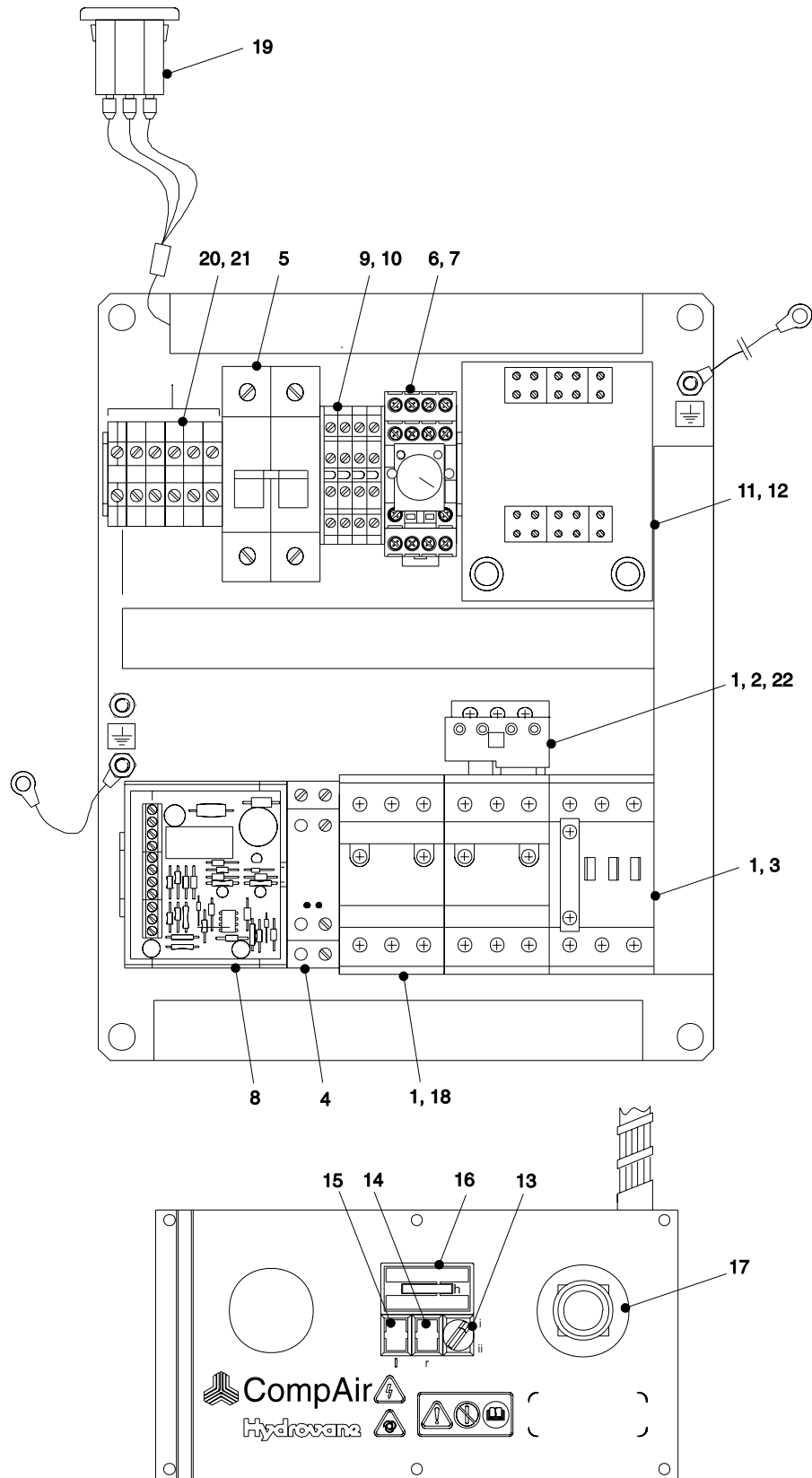


Figure 3F - 230V, 50/60Hz Standard Control Starter

Item	Part Number	Description	Kit	Quantity
				Starter Assembly No.
				34424
1	74029	Contactator		1
2	74024	Terminal, double stack		3
3	74025	End section		2
4	74026	Transformer		1
5	56132	Fuse 1A		2
6	59344	OTC board		1
7	56122	Timer		1
8	53494	Timer base		1
9	74067	Knob operator (Auto)		1
10	74068	Indicator lamp (Reset)		1
11	72708	Push button (Start)		1
12	50432	Hours counter		1
13	72706	Emergency stop push button		1
14	74043	Power outlet socket		1
15	74039	Auxiliary contact block		1
16	74064	Circuit breaker Q1F		1
17	74022	Terminal		5
18	74023	Earth terminal		1
19	74030	Thermal overload		1
20	74079	Connector, thermal overload		1
Starter assembly 34424 = 5.5 kW, 230 Volt, 50/60 Hz D.O.L. Standard Control				

Refer to Health and Safety section before carrying out any service work.

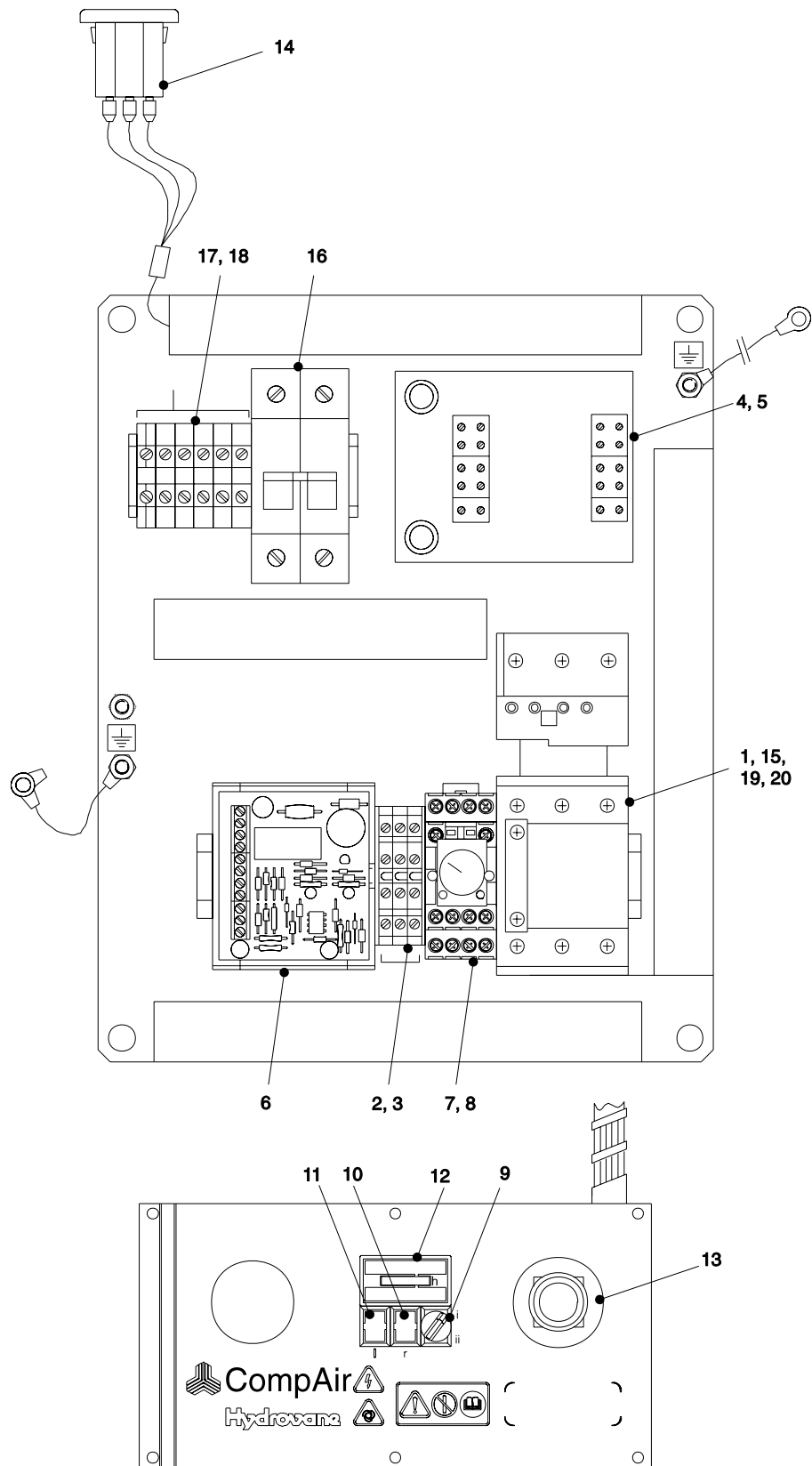


Figure 3G - 230V, 50/60Hz D.O.L. Standard Control Starter

Chapter 4

Contents

	Section	Page
Labels	4A	84
Labels Parts Modifications	4B	86

<p>CompAir UK Ltd., Redditch, B98 ODS, England</p>	<p>WARNING</p> <p>The use of REPLACEMENT PARTS AND LUBRICANTS not supplied or approved by Hydrovane, or failure to observe the maintenance instructions, may have serious SAFETY and/or WARRANTY implications. Hydrovane accept no responsibility for damage or injury caused by use of non-genuine parts or failure to comply with maintenance instructions.</p>	<p>NETT WEIGHT</p> <p>Classic 05 - 155Kg Classic 07 - 177Kg Airlogic 05 - 160Kg Airlogic 07 - 182Kg HBD Dryer - +41Kg</p>
<p>HYDROVANE 05/07 AIREND KIT 74160</p>	<p>WARNING</p> <p>The use of REPLACEMENT PARTS AND LUBRICANTS not supplied or approved by Hydrovane, or failure to observe the maintenance instructions, may have serious SAFETY and/or WARRANTY implications. Hydrovane accept no responsibility for damage or injury caused by use of non-genuine parts or failure to comply with maintenance instructions.</p>	<p>NETT WEIGHT</p> <p>Classic 05 - 155Kg Classic 07 - 177Kg Airlogic 05 - 160Kg Airlogic 07 - 182Kg HBD Dryer - +41Kg</p>
<p>CompAir UK Ltd., Redditch, B98 ODS, England</p>	<p>WARNING</p> <p>The use of REPLACEMENT PARTS AND LUBRICANTS not supplied or approved by Hydrovane, or failure to observe the maintenance instructions, may have serious SAFETY and/or WARRANTY implications. Hydrovane accept no responsibility for damage or injury caused by use of non-genuine parts or failure to comply with maintenance instructions.</p>	<p>NETT WEIGHT</p> <p>Classic 05 - 155Kg Classic 07 - 177Kg Airlogic 05 - 160Kg Airlogic 07 - 182Kg HBD Dryer - +41Kg</p>
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1

Figure 4A - Labels

Chapter 5

Contents

	Section	Page
Introduction	A	88
Pressure Switch Adjustment	B	88
Minimum Pressure Valve	C	88
Safety Valve Lift Pressure	D	88
Oil Temperature	E	89
Air Output	F	89
Leakage Check	G	89
Setting the Run-on Timer	H	89

A - Introduction**WARNING !****READ HEALTH AND SAFETY PRECAUTIONS BEFORE MAKING ANY ADJUSTMENTS.**

Adjustment procedures shown must only be carried out by authorised persons fully trained and competent in the maintenance of CompAir UK Hydrovane compressors.

If you are not able to carry out the work safely, contact your CompAir UK Hydrovane distributor.

B - Pressure Switch Adjustment (Fig. 5.1)

- Close air-outlet valve (A).
- Start compressor, allow pressure to rise until compressor cuts-out (stops).

WARNING !

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

- Remove pressure-switch cover.
- To adjust the cut-out higher (stop) pressure; turn the screw marked (P1) towards:-

minus (-) to reduce cut-out pressure; compressor stops at a lower pressure.

plus (+) to increase cut-out pressure; compressor stops at a higher pressure.

Note: Cut-out, higher (stop) pressure must not be set above 10.4 bar.

- To adjust the lower cut-in (start) pressure; turn screw marked (P2) towards:-

minus (-) to reduce differential and restart the compressor at a higher pressure.

plus (+) to increase differential and restart compressor at a lower pressure.

- Re-fit pressure-switch cover.
- Switch mains electrical supply on.
- Start compressor and carry-out check settings procedure.

C - Minimum Pressure Valve ① (Fig. 5.2)

- Close outlet valve and start compressor.
- Open outlet valve fully to atmosphere.
- Check the lowest pressure gauge reading obtainable. This should be 5.2 - 5.5 bar.
- If not correct, disconnect vent-down pipe and remove elbow.
- Adjust pressure by adjusting the screw. Refit elbow and reconnect vent-down pipe after completing adjustment.

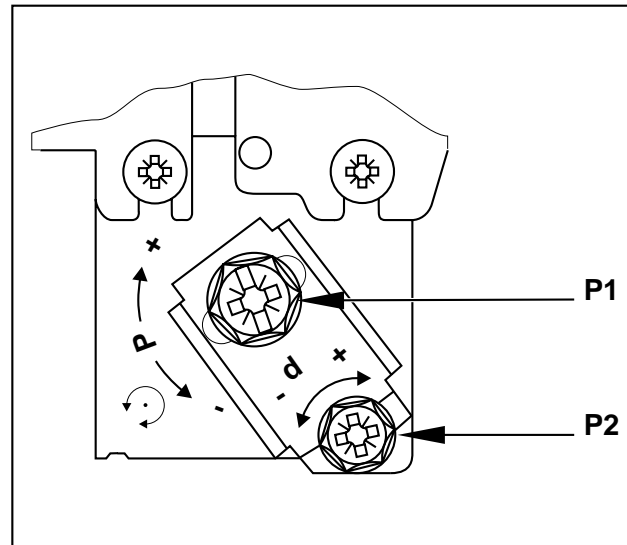


Figure 5.1 - Pressure Switch Adjustment

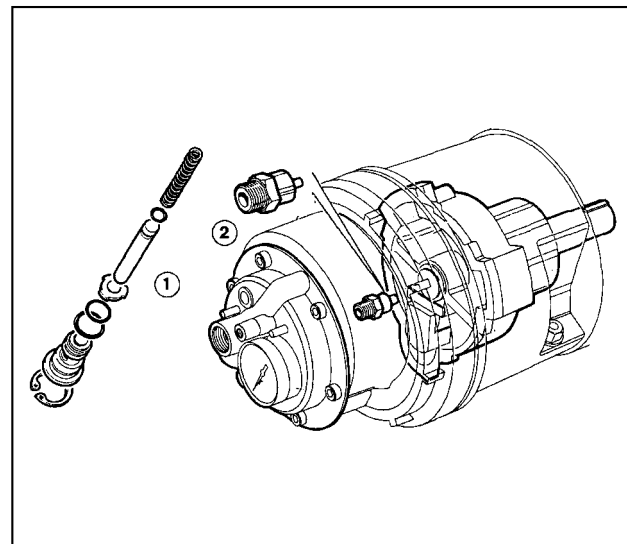


Figure 5.2 - Minimum Pressure Valve and Safety Valve Lift Pressure

D - Safety Valve Lift Pressure ② (Fig. 5.2) (Where fitted)

- Safety valve is preset to lift as follows:
 - 7 bar compressors - 10 bar lift pressure
 - 10 bar compressors - 12 bar lift pressure
- If the safety valve proves faulty, it must be renewed. It cannot be repaired or adjusted.

E - Oil Temperature

- Introduce a small amount of oil and a thermometer into the thermometer pocket.
- Allow compressor to run for 30 minutes in order to attain its normal working temperature.
- Average running temperature should be 88°C approx.
- Refit filler plug and its seal when testing is completed.

Average running temperature should be approximately 60°C above ambient.

F - Air Output (Fig. 5.3)

- Screw test nozzle into compressor outlet valve.
- Close outlet valve and start compressor.
- Open outlet valve fully to atmosphere.
- Pressure indicated on the compressor gauge should not fall below 6.5 bar (7 bar compressor) or 9.5 bar (10 bar compressor).
- Test nozzle \varnothing must be reamed to a tolerance of $\pm 0.025\text{mm}$.

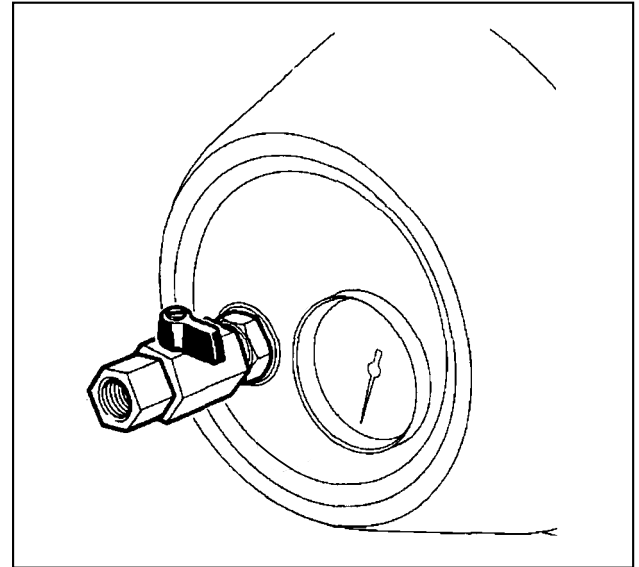


Figure 5.3 - Air Output

G - Leakage Check

- Examine all external seals, gaskets and pipe connections for air or oil leakage.
- **No leaks are permissible.**

H - Setting the Run-on Timer

- The run-on timer sets the required duration of off-load running after which the compressor will stop.
- The timer is factory preset to 2 minutes, but may be reset to suit the individual air system.

Note: Do not set the timer to less than 30 seconds.

- For guidance, each division between the marks **S** (short delay) and **L** (long delay) on the timer, represents approximately one minute delay time.

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Chapter 6

Contents

	Ref	Page
System Pressure Low	A	92
Low or No Air Delivered by Compressor	B	92
High Temperature	C	93
Excessive Oil Consumption	D	93
Oil mist from air intake when stopping and/or rapid venting	E	93
Unusual Noise or Vibration	F	94
Safety Valve Lifting	G	94
Slow/No Ventdown	H	95
Motor overload or High Power Consumption	I	95

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

Servicing of the compressor must only be carried-out by authorised persons fully trained and competent in the maintenance of CompAir UK Hydrovane compressors. They must fully understand and adopt correct and safe working practices.

05/07 Troubleshooting chart

Ref	Symptom	Cause (Level 1)	Cause (Level 2)	Diagnosis	Cause (Level 3)	Action
A	System pressure low					
1.1		Demand exceeds capacity	Air leaks in air-line system	Audible check for air leaks or time pressure decay.		Identify and rectify leaks
1.2		Low output from compressor				See B
B	Low or No air delivered by compressor					
2.1		Compressor not rotating	Motor not running	Visual check of cooling fan	Electrical supply failure	Restore supply
					System pressure switch fault	Repair pressure switch
			Drive coupling failure	Remove grommet from bell housing and visually check coupling.	Mechanical breakdown	Replace coupling
2.2		Compressor rotating in reverse		Visual check of cooling fan against direction arrow on compressor.	Motor wiring reversed	Correct motor direction (Note that compressor will be damaged if run in reverse.)
2.3		Motor speed low		Check motor speed with optical tachometer.	Electrical supply fault	Check speed and rectify supply
2.4		Intake filter blocked	Heavy contamination	Dismount intake filter and check for presence of excessive dirt.	Environmental conditions	Replace air filter
					Maintenance failure	Replace air filter
2.5		Safety valve lifting		Check for short loud pressure release from behind air filter and oil on air filter.		See G
2.6		Minimum pressure valve closed	Adjustment incorrect	Read pressure gauge and follow adjustment procedure.	Service error or Spring wear	Adjust MPV
			Valve jammed	Read pressure gauge. If no output from compressor, remove MPV and examine.	Mechanical failure	Replace MPV
2.7		Servo set too low	Adjustment incorrect	Follow adjustment procedure. If rated pressure cannot be achieved inside compressor, remove and change spring.	Service error	Adjust servo
			Servo spring worn or broken	Check length against new spring.		Replace spring and adjust
2.8		Oil separation system blocked	Separators blocked	Read pressure gauge. If 1 bar, remove separator cap and bottle and examine.	Contamination	Replace separator and return restrictors

Ref	Symptom	Cause (Level 1)	Cause (Level 2)	Diagnosis	Cause (Level 3)	Action
			Separator flooded with oil	Read pressure gauge. If 1 bar, remove separator cap and bottle and examine.	Oil return restrictors blocked	Replace separator and return restrictors
2.9		Rotor blades not extended	Blades stuck in rotor	Compressor will run very quietly without producing air and no air will be sucked in through inlet.	Oil too thick	Check/replace oil
				Remove intake end cover to inspect condition of rotor and blades.	Blades seized	Free blades/slots
2.10		Internal air leaks in compressor	Shim breakdown	Dismantle compressor to examine rotor/stator unit.		Check temperature, flow and power.
						Replace stator shims
C	High temperature					
3.1		Oil level low	Incorrectly filled	Check sight glass with machine stopped and depressurised.		Drain and replace oil to overflow
			Oil leaks	Visually check for external oil.		Repair leaks, drain and new oil
			Oil carryover	Check downstream equipment for signs of oil contamination.		See D
3.2		Dirty/blocked cooler matrix		Visually examine cooler matrix for excessive dirt.		Clean cooler, drain and new oil
3.3		Thermal bypass failure	Damaged thermal motor	Remove thermal motor and examine. If wax has leaked or piston rod is loose, it is rejected. Check function of piston in hot water @ 90°C.		Replace thermal motor, drain and new oil
3.4		Dirty/blocked Oil filter	Oil contamination	Remove filter and visually check condition.		Drain oil, clean filter, fill with fresh oil.
3.5		Incorrect oil	Service error	Remove sample and compare with correct oil or check source.		Drain, flush, drain, fill with fresh oil.
3.6		Internal air leakage	Damaged shims	Dismantle compressor to examine rotor/stator unit.		Dismantle and replace
3.7		Blocked internal oil passageways	Hydrocarbon deposits	Dismantle compressor to examine oil passageways.	High temperature oil	Dismantle, clean and rebuild
D	Excessive oil consumption					
4.1		Oil leaks		Visually check for external oil.		Identify source and rectify
4.2		Compressor running at Minimum pressure		Fit pressure gauge in test point and check internal running pressure.	Excessive air demand	Rectify system leaks
4.3		Incorrect oil	Service error	Remove sample and compare with correct oil or check source.		Drain, flush, drain, fill with fresh oil.
4.4		Oil carryover	Flooded or broken separators	Check downstream equipment for signs of oil contamination. Remove oil return restrictor plugs and check if blocked.		If restrictor plugs are blocked, remove and replace separator elements and oil return restrictors.

Ref	Symptom	Cause (Level 1)	Cause (Level 2)	Diagnosis	Cause (Level 3)	Action
4.5				Remove separator cap and bottle and examine separator.		If separator element are broken, Replace separator element, oil return restrictors, clean oil filter and change oil
E	Oil mist from air intake when stopping and/or rapid venting					
5.1		Unloader valve seats damaged		Remove air filter and support and observe where mist exits when machine is stopping.		Replace damaged seats
5.2		Unloader valve body worn		Remove air filter and support and observe where mist exits when machine is stopping.		Replace unloader valve body
5.3		Vacuum valve seal leaking		Remove air filter and support and observe where mist exits when machine is stopping.		Replace Vacuum valve seal/gasket
5.4		Servo valve leaking		Remove air filter and support and observe where mist exits when machine is stopping.		Replace servo valve
5.5		Bearing end cap gasket leaking		Remove air filter and support and observe where mist exits when machine is stopping.		Replace bearing end cap gasket
F	Unusual noise or vibration during running					
6.1		Vacuum valve incorrectly adjusted		Compressor makes rattling noise when running off load only.		Adjust vacuum valve
6.2		Fan fouling cooler ducting		Visually check for interference.		Check/realign ducting
6.3		Damaged/worn drive coupling		Remove grommet from bell housing and visually check coupling. Remove compressor from motor to verify.		Check/replace motor coupling
6.4		Motor bearing failure		Listen for rumbling or screaming noise from each end of motor. Remove compressor and rotate motor by hand to check for rough feeling.		Check/replace motor bearings
6.5		Seized blade in slot		Listen for uneven popping noise from compressor under load. Remove intake end cover to check condition of blades.		Check/free/replace blades
G	Safety valve lifting					
7.1		Overpressure in compressor	Servo set too high	Read pressure gauge.		Adjust servo
			Servo piston incorrectly assembled	Remove servo assembly and check orientation of piston.		Reassemble servo and adjust
			Excessive Air intake during offload running	Read pressure gauge.	Leaking vacuum valve	Replace vacuum valve seals and gasket

Ref	Symptom	Cause (Level 1)	Cause (Level 2)	Diagnosis	Cause (Level 3)	Action
					Leaking bearing cap gasket	Replace end cap gasket
					Leaking unloader valve	Replace unloader valve seat
7.2		Faulty safety valve	Worn spring	Read pressure gauge in test point and check internal pressure when safety valve blows.		Replace safety valve
			Damaged/worn seating	Fit pressure gauge in test point and check internal pressure when safety valve blows.		Replace safety valve
H	Slow/no ventdown					
8.1		Automatic Ventdown orifice blocked		Listen for air loss into intake area after stopping. Fit pressure gauge in test point to monitor vent down of pressure.		Clean orifice plate
I	Motor overload or high power consumption					
9.1		High pressure setting		Fit pressure gauge in test point and check internal pressure.		Check/adjust servo
9.2		Compressor overheating		Fit thermometer in oil filler pocket and check maximum temperature.		See C
9.3		Faulty motor		Check impedance of motor windings.		Check motor windings/bearings repair or replace.
9.4		Seized blade in slot		Listen for uneven popping noise from compressor under load. Remove intake end cover to check condition of blades.		Check/free/ replace blades
9.5		Compressor rotor seizing	Rotor pushed against intake end cover	Remove compressor, dismantle and examine rotor and end cover. Check setting of coupling.	Motor drive coupling incorrectly fitted	Replace damaged parts
			Bearing seizing	Remove compressor, dismantle and examine rotor and bearings	Lubrication failure	Replace damaged parts