HAMWORTHY COMPRESSOR SYSTEMS

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MODEL BP-P10 CHARGING SET

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FOREWORD

BP-P10 OPERATORS HANDBOOK

This Handbook incorporates operating and maintenance information for the BP-P10 Charging Set.

In the interest of safety it is recommended that all potential users of the equipment be fully aware of the contents of this Handbook.

CONTENTS

MODEL BP-P10 PETROL AND DIESEL ENGINE DRIVEN HIGH PRESSURE CHARGING SET

SECTION 1 - GENERAL DESCRIPTION

1.1 TECHNICAL DATA

Compressor	4S12
Number of Stages	4
Speed	1750 RPM
Maximum Working Pressure	345 Bar (5000 lbf/in^2)
Bottle Charging Rate	4.8 Litre/Sec (10 CFM)
Lubricating Oil	Tenneco Anderol 500
Oil Capacity	1.56 Litres (2.75 Pints)
Purifier	PAS 9
Spare Cartridge No.	Y26455

	PETROL ENGINE	PETROL ENGINE*	DIESEL ENGINE
Model	Briggs & Stratton	Honda GX340	Lister LV1
Speed	3000 RPM	3000 RPM	2600 RPM
Number of Cylinders	1	1	1
Oil Capacity	1.42 Litres	1.1 Litres	1.25 Litres
Power	11 HP	11 HP	9 HP
Lubricating Oil Viscosity			
Below -15^{o}C	SAE 5W-20	SAE 5W-20	SAE 5W
-15^{o}C to +4^{o}C	SAE 10W-30	SAE 10W-30	SAE 10W
+4^{o}C to +30^{o}C	SAE 10W-40	SAE 10W-40	SAE 20/20W
Above 30^{o}C	SAE 20W-40	SAE 20W-40	SAE 30W

* An optional electric start 13 HP Honda GX 390 engine is available.

Overall Length		1186MM (46.7in)
Overall Width		626MM (24.6in)
Overall Height	Briggs & Stratton	620MM (24.4in)
	Honda	660MM (26.0in)
	Lister	680MM (26.8in)
Weight	Briggs & Stratton	180Kg (396 Lb)
	Honda	181 Kg (399 Lb)
	Lister	244 Kg (539 Lb)

For further information, consult Operation and Maintenance Manuals for the 4S12 Compressor and for the individual engine supplied with the charging set.

1.2 DESCRIPTION

The Model BP-P10 Charging Set has been specifically designed for charging compressed air breathing cylinders. All components are mounted on a fabricated steel baseplate. Lifting handles are attached to both ends of the baseplate and the entire set is mounted on anti-vibration mounts.

Three petrol engine options are available: A Briggs & Stratton 11 HP engine, a manual start Honda 11 HP engine and an electric start Honda 13 HP engine. The diesel engine option employs a Lister 9 HP engine.

The set incorporates a Model 4S12 duplex double acting airflow -cooled compressor with two cylinders mounted in vee formation on a common crankcase. The air is compressed in four stages with intercooling between each stage and with air flow cooling on all surfaces. The aftercooler is located under the compressor crankcase to obtain maximum air flow cooling from the fan/flywheel of the compressor.

The purification system comprises a PAS 9 purifier designed to remove oil, water and other impurities from the compressed air. The chemical charge in the purifier can be renewed in just a few minutes without disturbing any pipe fittings.

The final delivery block charging point is conveniently mounted on the baseplate at the rear of the unit and incorporates a pressure gauge and two charging hoses. Each charging hose is complete with a bleed valve and appropriate bottle connector. When not in use, each charging hose connector must be screwed into its respective keeper block located on the beltguard. This prevents damage or contamination of the charging hose connector.

The final delivery block is secured to the compressor base plate by the minimum of securing points, enabling it to be removed easily and quickly for carrying our routine maintenance.

On manually operated charging sets the safety relief valves are calibrated to the specified working pressure of the charged cylinders.

1.3 SITE LOCATION

The set should be located out of doors, well away from buildings or obstructions and on level ground. It should also be positioned so that the engine is "down wind" of the compressor and that the compressor air intake is positioned "up wind" to avoid exhaust fumes or any other contaminant being drawn into the compressor.

Whenever set is in use, the greatest care must be taken to ensure that the exhaust fumes from motor vehicles, toxic gases or odours from nearby factories, etc., are not drawn into the compressor.

SECTION 2 - OPERATION

2.1 INITIAL START-UP PROCEDURE

Before despatch the compressor is inhibited for short-term storage and will have no lubricating oil in the sump. The engine will also be drained of oil and will have no fuel in the fuel tank. There will be no cartridge in the purification system.

BEFORE STARTING:-

1) Read and understand the engine operating instructions supplied with the set.

2) Fill the compressor sump to the correct level with the correct grade of lubricant (see Technical Data Section 1.1).

3) Fill the engine sump to high level on the dipstick with the correct grade of lubricant (see Technical Data Section 1.1).

4) Fill the engine fuel tank with correct fuel.

5) Check that the compressor intake is located upwind of the engine.

6) Open the drain valve on the separators and purifier valve.

7) Start the set in accordance with engine handbook instructions and allow it to warm up for 3 to 5 minutes with the purifier drain valve open to eject inhibiting oil from the compressor.

8) Stop the set and insert purifier cartridge.

2.2 OPERATING PROCEDURE

1) Check that the cylinder and hose connections are compatible. i.e. 'A' clamp DIN, etc.

2) Check the cylinder maximum working pressure and DO NOT overcharge.

3) Connect the cylinder to the charging hose with the valve closed.

4) Close the purifier and separator drain valves.

5) Open the charging valve on the cylinder valve, and observe the pressure gauge.

6) Charge the cylinder to the correct pressure, opening the separator and purifier drain valves for 5 seconds every 20 minutes charging time to eject condensate fluids.

7) On reaching full charging pressure close the cylinder valve.

8) Bleed the charging hose, remove the cylinder and close the bleed valve.

9) Stop the set by running for 2 to 3 minutes with all drain valves open before shutting down the engine in accordance with the engine handbook instructions.

10) Close all drain valves.

11) If the unit is likely to be shut down for more than 4 weeks it is advisable to carry out the short term inhibiting procedure as laid out in the compressor manual.

2.3 OPERATION OF CHARGING VALVE

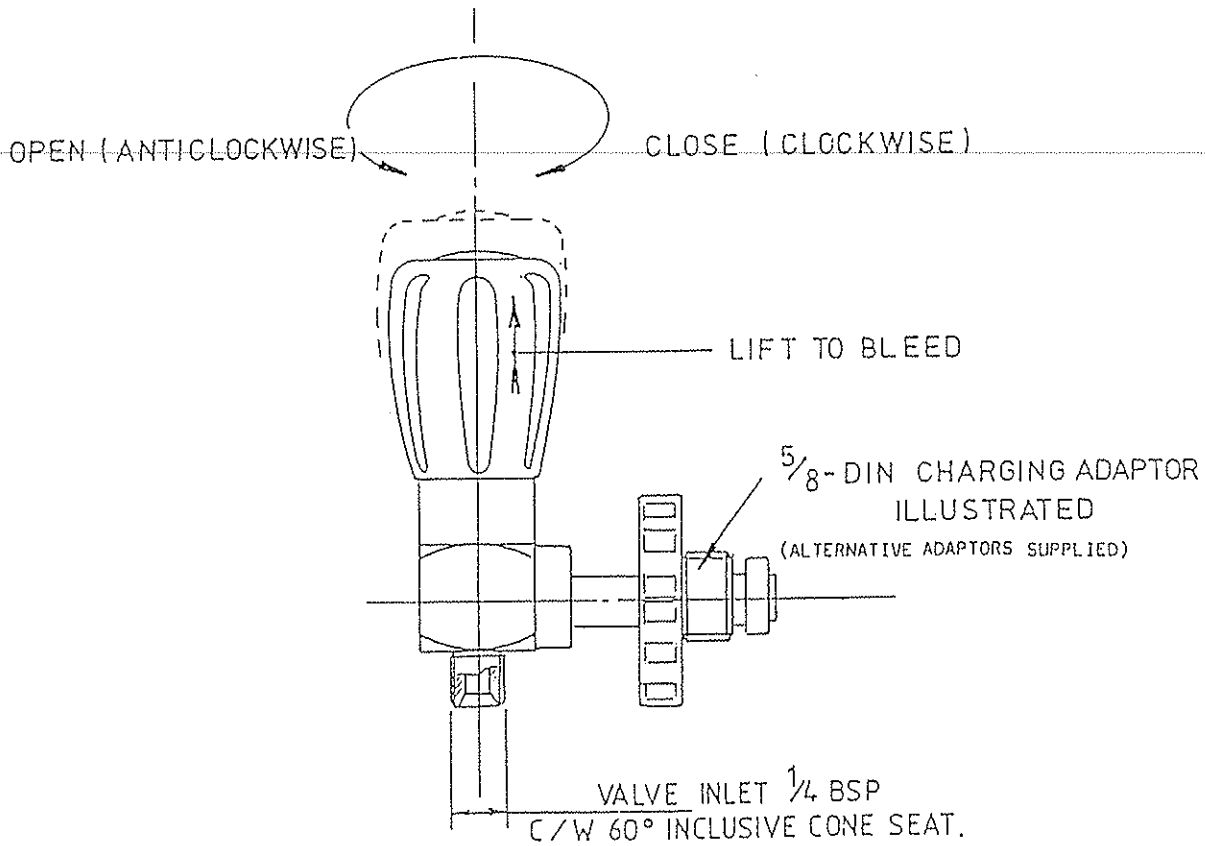
To open or close the valve requires the rotation of the black coloured handwheel in the direction as shown.

To bleed the valve the black handwheel must first be turned clockwise to the fully closed position. The 'bleed' function is then achieved by lifting the handwheel vertically upwards.

NOTE: When charging cylinders, the operator must bleed the valve before removing the charging adaptor from the cylinder.

ALWAYS ensure that the cylinder isolating valve is fully closed before operating the 'bleed' function of the charging valve.

It is recommended that at the end of a working day when all charging requirements have been achieved, any pressure stored within the charging hoses be released. This can be achieved by slowly opening the charging valve.



SECTION 3 - MAINTENANCE

3.1 ROUTINE MAINTENANCE

(Refer to compressor and engine handbooks for routine maintenance procedures.)

DAILY:-

1) Check the engine lubricating oil level and top up if necessary. Change the oil after the first five hours of operation.

2) Check the compressor lubricating oil level and top up, if necessary with the correct grade of oil.

3) Ensure that the engine fuel tank contains sufficient fuel to complete the impending charging operation.

4) Check that the engine and compressor systems are in order and free of obstructions.

EVERY 25 HOURS:-

1) Clean the condensate from the inside of the purifier body.

2) Clean and re-oil the foam element in the engine air cleaner as described in the engine service instructions.

EVERY 50 HOURS:-

1) Replace the PAS 9 purifier cartridge after 50 hours of charging time has elasped. Full instructions are given on the cartridge label.

NOTE: Under severe atmospheric conditions, in high ambient temperature, high humidity, etc., it may be necessary to change the cartridge at more regular intervals. For information see Section 4 - Purification system.

2) Clean the condensate from the inside of the purifier body.

EVERY 100 HOURS:-

1) Drain the lubricating oil from the compressor sump while warm.

2) Clean the compressor magnetic drain plug.

3) Refill the compressor sump with the correct grade of lubricating oil.

4) Clean the compressor air intake filter.

5) Check all nuts and bolts, etc., for tightness.

NOTE: The cylinder head nuts must **NOT** be tightened when the engine and compressor are hot or the system pressurised.

EVERY 200 HOURS (COMPRESSOR):-

1) Clean the third/fourth stage filter.

2) Clean all the outside surfaces of the compressor to remove any traces of oil or dirt from the heat radiating surfaces of the cylinders and coolers.

3) Check the drive belts for wear and correct tension.

EVERY 600 HOURS:-

1) Inspect and lubricate all charging valve splindles and glands with silicon grease.

2) Check the charging pressure gauge for accuracy and re-calibrate or replace if necessary.

EVERY 800 HOURS:-

1) Remove all compressor valves and springs, inspect and replace as necessary (refer to the compressor instruction book provided).

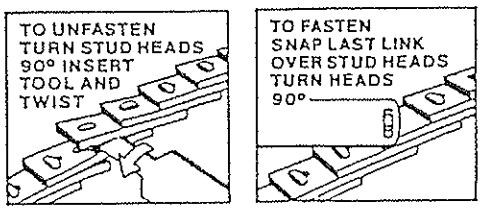
3.2 GENERAL MAINTENANCE

1) For general maintenance of the compressor, refer to 4S12 manual supplied with set.

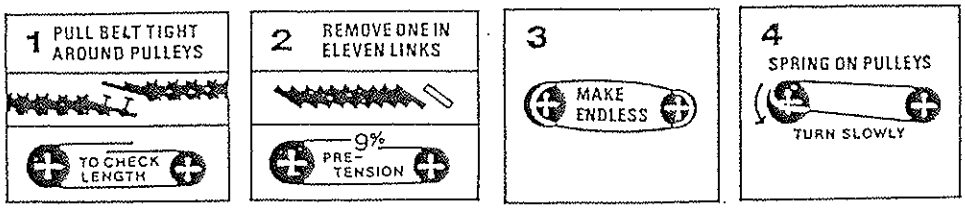
2) For general maintenance of the engine refer to operating and maintenance instructions supplied with set.

3) For general maintenance of the purifier, refer to Section 4.

4) The main compressor belt drive should be checked for tension after initial 50 hour operation and adjusted as shown below. Access is by removing the front of the belt guard. Once correctly set, the belt tension will only need checking at six monthly intervals or if the belts are seen to be slack in use.



INSTALLATION INSTRUCTIONS — SECTIONS Z/10, A/13 and B/17



5) The pressure gauge should be removed and checked for accuracy every 600 hours or earlier if suspected of being incorrect. If any discrepancy is found in accuracy, the gauge should be re-calibrated before fitting.

SAFETY VALVES (RELIEF VALVES)

INTRODUCTION

Due consideration should be taken of climatic, process or other conditions which might adversely affect the performance of the safety valve. Installation must be undertaken by qualified technicians and to good engineering practice. In additions, user's attention is drawn to our joint responsibility to ensure that the Health and Safety at Work Act is not contravened by incorrect installation, commissioning or servicing. It is important that the valve to be installed is correct in every aspect, ie. set pressure, size, material and type etc. for the application.

STORAGE OF VALVE BEFORE INSTALLATION

Valves should be stored preferably between $5^{o}C$ and $25^{o}C$ and a relative humidity of less than 75%. Very moist or very dry conditions should be avoided. If a safety valve is installed after six months, or more, of storage, it must be subjected to a functional test before commissioning.

Thread protectors should not be removed until immediately prior to testing or installation, as they also prevent the ingress of foreign matter which could harm the valve.

INSTALLATION - VALVE INLET

Under no circumstances should it be possible to isolate the safety valve from the protected system. Safety valves should be mounted as close as possible to the protected system. The connecting pipe should be straight and as short as possible. The inlet line to the safety valve should have an effective area of flow at least equal to that of the safety valve inlet. The manufacturer should be consulted if the safety valve is to be mounted in any position other than vertically. The maximum pressure drop through the inlet line to the safety valve should not exceed 3% of the set pressure when the valve is discharging at its rated capacity.

VALVE OUTLET

No isolating devices shall be fitted to the outlet pipe. Discharge pipes should be as short as possible and of such a size that the pressure developed therein will not reduce the relieving capacity. Ensure arrows indicating the direction of the flow are pointing in the correct direction. The cross-sectional area of the discharge pipe should not be less than the area of the safety valve outlet.

Where safety valves are discharged into a manifold, the manifold must be capable of accommodating simultaneous discharge of all valves connected to the manifold. Atmospheric discharge or discharge pipes should terminate at a location which will not cause a hazard to personnel, particular attention being given to hazardous fluids or particles.

GENERAL

Inlet and outlet piping should be capable of supporting the safety valve so that no unacceptable mechanical load or vibration is transmitted to the valve and be sufficiently strong to withstand the effects of the reaction forces when the valve is discharging.

All pipework or pressure vessels to which the safety valve is connected should be thoroughly cleaned before fitting the safety valve, to ensure that foreign matter does not pass through the valve. Particular care should be taken with the use of sealing compounds and P.T.F.E. tape to ensure that they do not enter the valve.

Atmospheric discharge valves should not be painted or coated with any substance which could possibly obstruct or restrict free and full discharge through the valve. Suitable protection should be provided to prevent environmental build up of ingress of foreign matter. Any condition that could lead to blockage of discharge piping or discharge ports on safety valves must be avoided. Where appropriate, discharge pipes should be provided to a non-hazardous location. Where there is a possibility of a liquid head forming in a discharge pipe, a drain should be provided which leads to a safe discharge location. To prevent unnecessary lifting of the safety valve it is recommended that there is a margin of at least 10% between the maximum operating pressure and the set pressure of the safety valve.

FUNCTIONAL TESTING

Once installed in service, valves should be tested at least once every six months to ensure free movement of parts. This should be carried out by operating the easing gear when the valve is under a pressure of not less than 75% of the set pressure. Where valves are supplied without easing gear, the test should be in accordance with the full functional test described below. Due regard must be paid to the safety of personnel. Testing should not create a hazard, particular attention being given to foreign matter located in discharge outlets.

When valves are installed in extreme operating environments, as listed below, the frequency of testing must be increased.

a) Hot, dry, dusty or high humidity areas.

b) Oil, tar or gumming deposits.

c) Sand, grit, earth, cement (construction, quarry or similar sites).

d) Pollution laden atmosphere (chemical works).

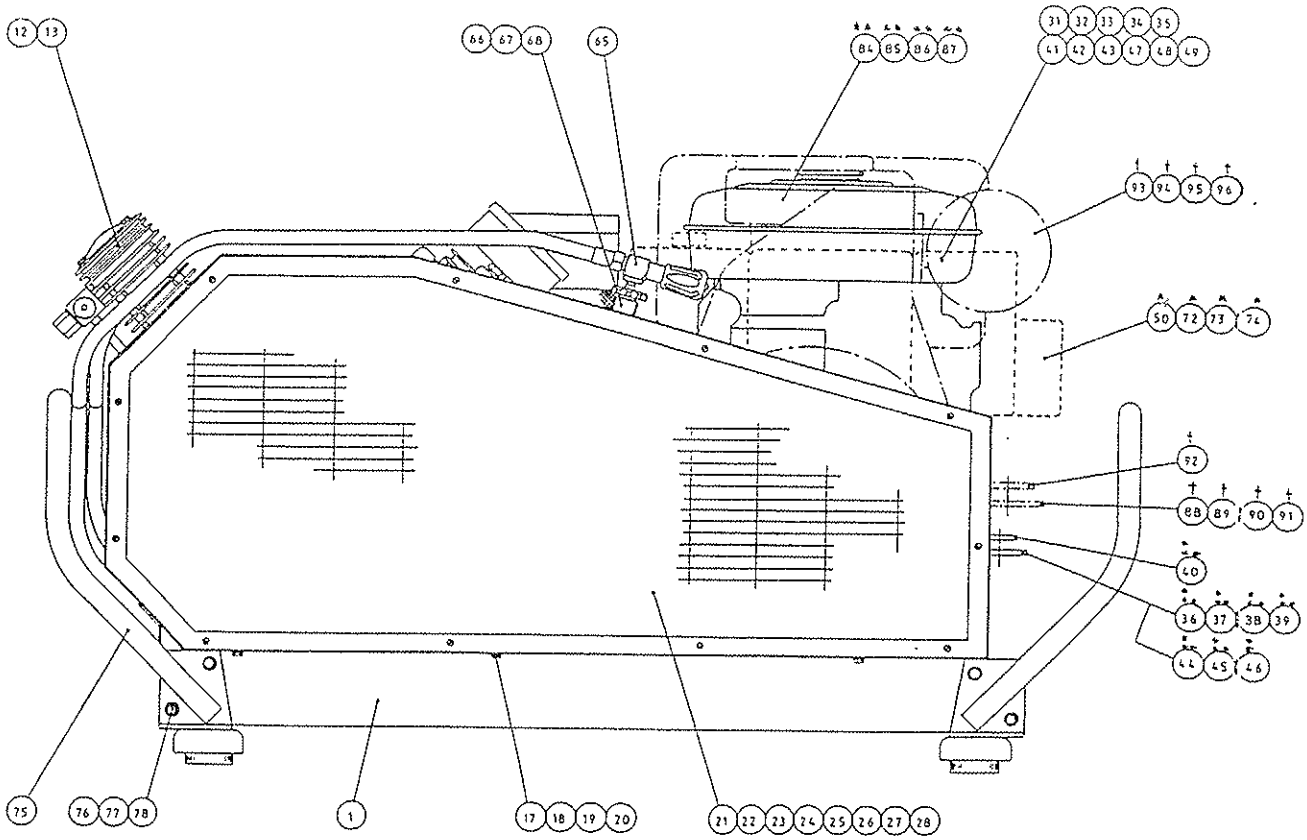
e) Any area where the valve can become contaminated with foreign matter likely to obstruct free and full discharge through the valve.

THE FREQUENCY OF TEST MUST BE ESTABLISHED BY THE USER TO SUIT EACH INSTALLATION OR PROCESS. IT IS IMPORTANT THAT DISCHARGE OUTLETS OF THE SAFETY VALVE BE KEPT IN A CLEAN CONDITION, FREE FROM DEPOSITS OR BUILD OF FOREIGN MATTER.

FULL FUNCTIONAL TEST

Safety valves should be checked every 12 months for correct function and test of set pressure, full flow and reseat pressures. Ideally the valve should be removed from the system and tested on specific test equipment. Before dismantling any pressurised components, the system must be effectively isolated from all sources of pressure and completely vented to atmosphere. When safety valves are taken out of service, care must be taken that the plant remains secure. Parallel or replacement safety devices of at least the same capacity must be provided. Where a safety valve does not meet the specification it must be refurbished, or replaced. If the valve is not functioning correctly, ie. noisy or 'hammering' refer to the manufacturer.

IT IS RECOMMENDED THAT ADJUSTMENTS, MAINTENANCE AND REPAIR OF SAFETY VALVES, INCLUDING CHANGES IN SET PRESSURE, SHOULD ONLY BE PERFORMED BY THE MANUFACTURER OR AN AUTHORISED REPRESENTATIVE.



NOTE

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* BRIGGS & STRATTON, ONLY.

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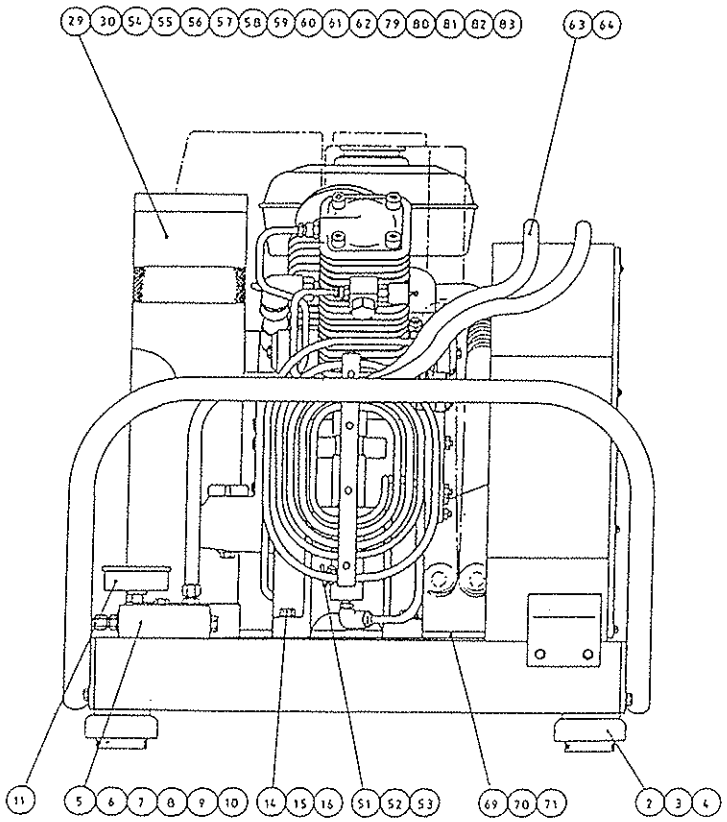
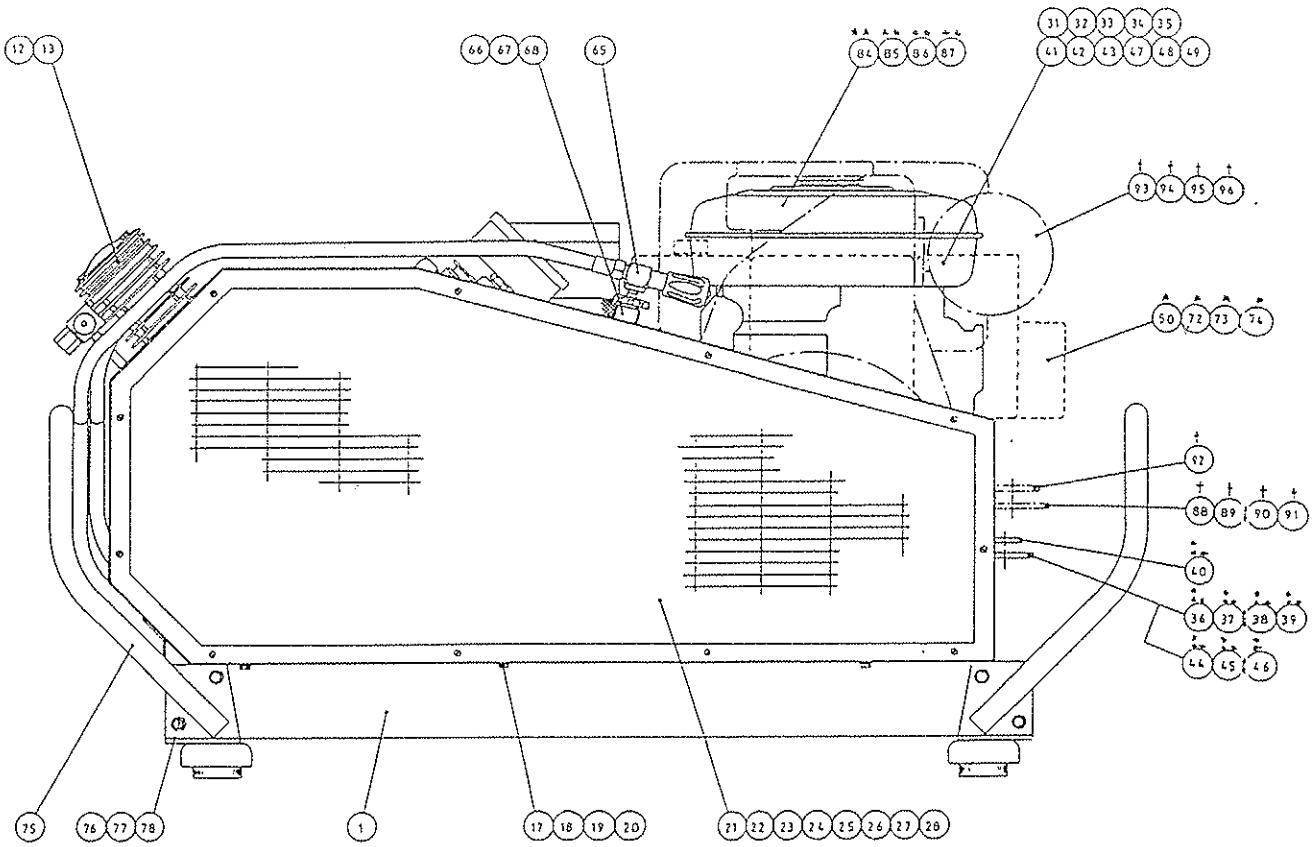
† LISTER, ONLY.



MODEL BP-P10 CHARGING SET

3.3 BP-P10 PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	Y35053	Baseplate	1
2	Y34200	Anti-Vibration Mount	4
3	Y24567/20	Setscrew M10 x 20mm	4
4	Y26280	Shakeproof Washer M10	8
5	Y34196	Final Delivery Block	1
6	Y24601/35	Capscrew M6 x 35mm	2
7	Y24398	Male Stud Coupling 1/4 BSP x 1/4" Pipe	1
8	Y09784	Blanking Plug 1/4 BSP	1
9	Y26350	Equal Nipple 1/4 BSP	2
10	Y17969	Dowty Seal 1/4 BSP	4
11	Y23753	Pressure Gauge	1
12	4S12	Compressor Unit	1
13	Y34194	Blanking Plate	1
14	Y24568/40	Setscrew M12 x 40mm	4
15	Y24680	Plain Washer M12	4
16	Y24692	Spring Washer M12	4
17	Y24565/16	Setscrew M6 x 16mm	7
18	Y24677	Plain Washer M6	7
19	Y24689	Spring Washer M6	7
20	Y34195	Beltguard Bottom Plate	1
21	Y35060	Beltguard	1
22	Y24565/16	Setscrew M6 x 16mm	3
23	Y24677	Plain Washer M6	3
24	Y20549	Nyloc Nut M6	3
25	Y15876	Rivnut 2 BA	11
26	Y34193	Beltguard Front	1
27	Y23842/05	Posipan Setscrew 2 BA x 5/8"	11
28	Y26116	Shakeproof Washer 2 BA	11
29	Y24567/20	Setscrew M10 x 20mm	3
30	Y24691	Spring Washer M10	3
31	Y24568/30	Setscrew M12 x 30mm	4
32	Y24680	Plain Washer M12	4
33	Y20552	Nyloc Nut M12	4
34	Y24567/100	Setscrew M10 x 100mm	2
35	Y24627	Plain Nut M10	4
36	Y35059	Engine Cradle Support - Outer	1
37	Y35123	Anti-Vibration Mounts	4
38	Y24906/06	Setscrew 2 BA x 3/4"	16
39	Y12158	Nyloc Nut 2 BA	16
40	Y35058	Engine Cradle Support - Inner	1
41	Y24555/50	Bolt M10 x 50mm	4
42	Y24679	Plain Washer M10	8
43	Y20551	Nyloc Nut M10	4
44	Y35122	Rubber Buffer	2
45	Y24678	Plain Washer M8	2
46	Y20550	Nyloc Nut M8	2
47	Y26423	Pulley Bush 2012 x 1"	1
48	43315	Drive Belt Link or B60	3.5M
49	Y36626	Drive Pulley 132 PCD x 2B	1
50	Y25434	Briggs & Stratton Engine (11 HP)	1
51	Y34287	Male Stud Coupling 1/4 BSP	1
52	Y34291	Bleed Valve - Large Bleed Hole	2
53	Y23113	Aluminium Washer 1/4 BSP	3
54	Y23968	Positional Elbow 1/4 BSP x 1/4" Pipe	1
55	Y26926	Positional Elbow 1/4 BSP	1



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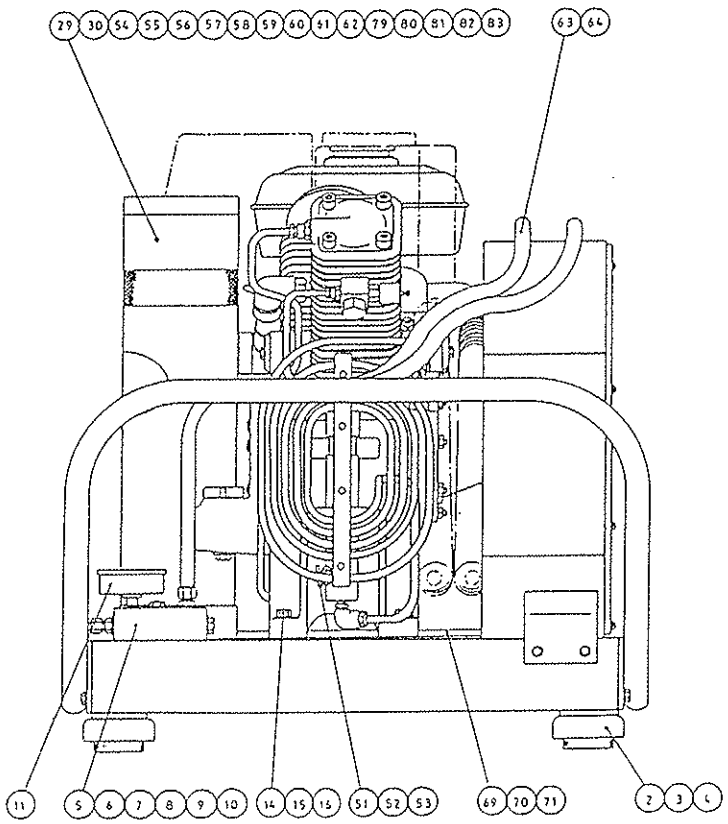


MODEL BP-P10 CHARGING SET

3.3 BP-P10 PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
56	Y23216	Safety Valve	1
57	Y23303/1	Pressure Maintaining Valve	1
58	Y26262	Locknut	1
59	Y26263	Seal	1
60	Y26195	Female Stud Coupling 1/4" BSP x 1/4" Pipe	1
61	Y17969	Dowty Seal 1/4 BSP	2
62	Y34470	Tungum Tube 1/4" O/D x 60cm	1
63	Y29469	Charging Hose - Straight	1
64	Y23706	Charging Hose - 90° Bend	1
65	Y25431	Charging Valve/Bleed/Adaptor 5/8 DIN	2
66	Y28057	Retaining Block	2
67	Y23842/04	Posipan Setscrew 2 BA x 1/2"	4
68	Y26103	Spring Washer 2 BA	4
69	Y26364	Pipe Clip 1/4" Pipe	1
70	Y23842/04	Posipan Setscrew 2 BA x 1/2"	1
71	Y12158	Nyloc Nut 2 BA	1
72	Y24566/50	Setscrew M8 x 50mm	4
73	Y24678	Plain Washer M8	4
74	Y20550	Nyloc Nut M8	4
75	Y35055	Handle	2
76	Y24566/25	Setscrew M8 x 25mm	8
77	Y24678	Plain Washer M8	8
78	Y20550	Nyloc Nut M8	8
79	Y26509	Drain Valve Stud	1
80	Y26507	Nylon Insert	1
81	Y26506	Handwheel	1
82	Y26511	Roll Pin	1
83	Y34293	PAS 9 Purifier	1
84	83927	Honda GX340 QX Engine	1
85	Y24567/45	Setscrew M10 x 45mm	4
86	Y24679	Plain Washer M10	4
87	Y20551	Nyloc Nut M10	4
88	Y35057	Engine Cradle Support - Outer	1
89	Y34453	Anti-Vibration Mounts	4
90	Y24566/20	Setscrew M8 x 20mm	8
91	Y20550	Nyloc Nut M8	8
92	Y35056	Engine Cradle Support - Inner	1
93	Y36784	Drive Pulley 140 PCD x 2B	1
94	Y35067	Lister 'LVI' Engine	1
95	Y35106	Flywheel Guard	1
96	Y35107	Heat Shield Deflector	1
97	*Y36785	Rubber Buffer	2
98	*Y26632	Drain Tube	1
99	*Y09393	Lock Nut 1/4" BSP	1
100	*Y09842	End Cap 1/4" BSP	1
101	*Y09823	Hose Clip	1
102	*Y22359	Conduit 32 mm	1
103	*Y24437	Conduit Adaptor 32 mm Male	1
104	*Y26738	End Loop	1

* Not Illustrated

SECTION 4 - PURIFICATION SYSTEM

4.1 DESCRIPTION

Air from the compressor contains impurities which must be removed to obtain breathable air. This is achieved by a two step purifying operation using mechanical separation to remove oil and water droplets and chemical filtration to absorb the remaining impurities and odour. The system is most effective at low temperatures, which are achieved by the use of an aftercooler on the compressor final delivery and at high pressure, which is controlled by the use of a pressure maintaining valve. This valve is located at the purifier outlet and is pre-set to open at 1800 lbf/in^2 (124 bar) and will maintain this pressure or higher in the purifier.

Regular draining of condensate via the drain valve (Ref.16) at least every 20 minutes during operation will prolong the life of the purifier cartridge, which is factory-packed with chemicals and contains filter pads to remove particles greater than 10 microns.

The purifier is constructed to the LUX INT. 1. Specification. The castings are manufactured from extrusions of aluminium alloy type HE 30 TF. The system is protected by a safety valve set at maximum working pressure and, as an additional safety feature, each individual housing incorporates a burst disc in the base, designed to rupture in the event of the pressure reaching approximately 20% in excess of maximum working pressure of the set. The burst disc outlet in the base must never be obstructed.

4.2 ROUTINE MAINTENANCE AND OVERHAUL PROCEDURE

It should be noted that the purifier is always supplied ex-works with a loose cartridge which must be fitted before use. The cartridge is supplied in a sealed pack and must **NOT** be opened until actually required.

To maintain an acceptable air quality it will be necessary to replace the purifier cartridge every 50 hours of compressor running on the PAS 9 purifier under normal operating conditions. Under severe atmospheric conditions such as high ambient temperature and humidity, the cartridge must be changed more frequently. In the event of extended lay-off periods between use, the cartridge should be replaced every 3 months.

SERVICE PROCEDURES:-

1) Open the drain valve on the purifier and check that there is no pressure in the system.

2) Unscrew the body of the purifier using a belt strap wrench and lift to remove.

3) The cartridge can now be lifted and removed. Replace the 'O' ring on the purifier stand with the new 'O' ring provided. Fit new cartridge. Ensure part number is identical to the original cartridge.

4) With a dry cloth wipe all internal surfaces. Lubricate the threads with a good quality silicone grease such as Dow Corning MS4.

5) Check the 'O' ring and anti-extrusion ring on the purifier base for signs of wear or damage and replace as necessary.

6) Replace the purifier body but do not overtighten. Screw the purifier body fully onto the base and then back off the body a quarter of a turn to prevent seizure of body to base.

7) Close the drain valve, pressurise the set and test for leaks.

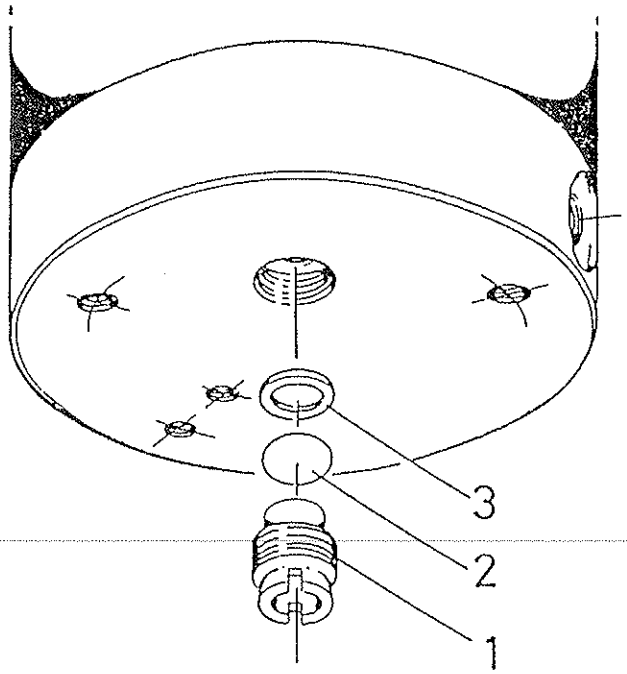
4.3 DRAWING AND PARTS LIST

Exploded view of the PAS 9 purifier together with parts list is given overleaf.

BURST DISC ASSEMBLY

DESCRIPTION

The purpose of the assembly is to protect the purifier from exceeding the vessel material proof stress in the event of a blockage in the system. The burst disc is designed to rupture at approximately 30% above the maximum working pressure of the purifier in the event that the safety relief valve fails to operate. If over pressurisation causes the burst disc to rupture, air will rapidly vent safely downwards into the base of the set or directly into the ground. Therefore, it is essential that the burst disc escape passage must never be blocked in any way. Failure to do so may result in damage to the equipment or serious injury to the operator.

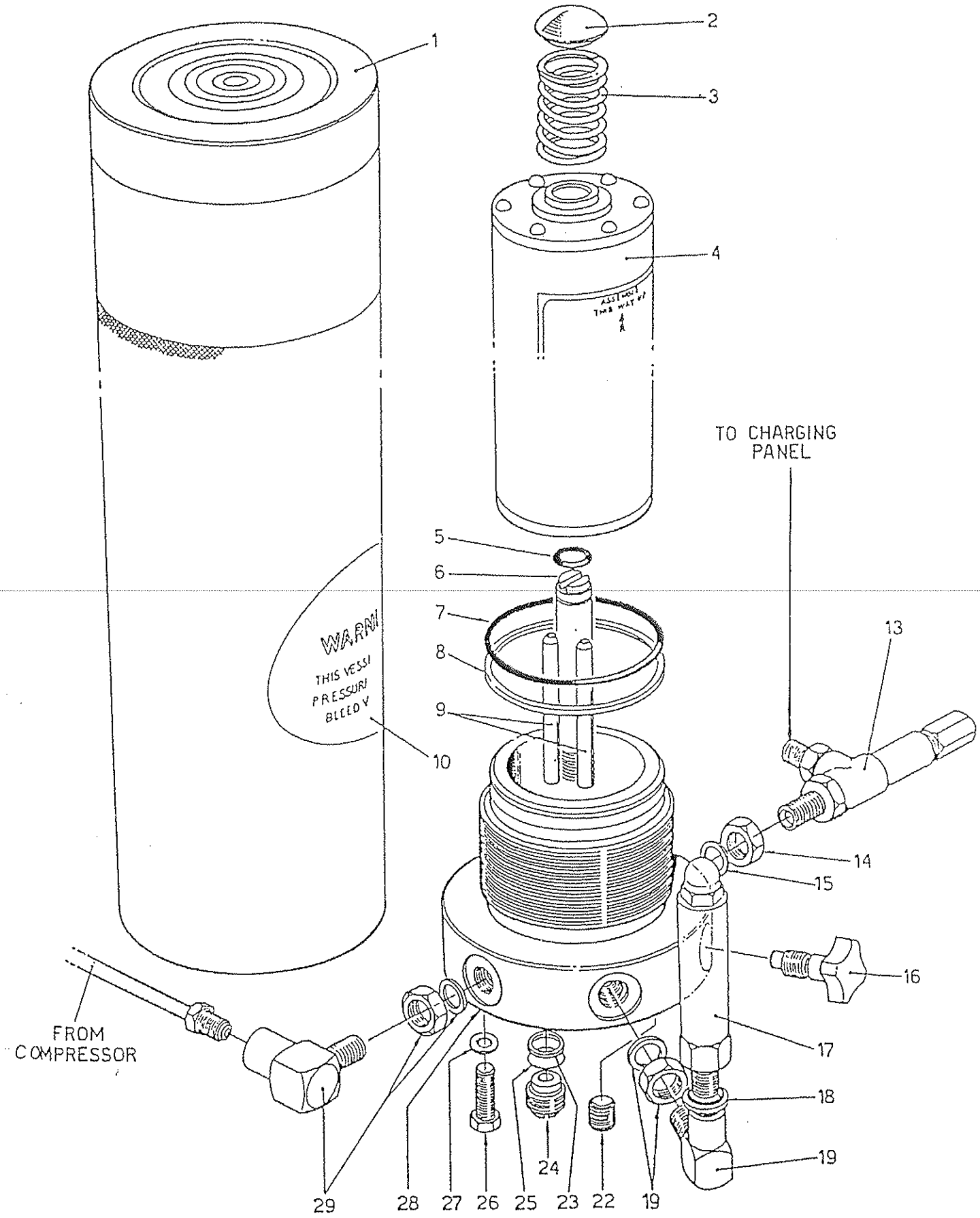


VIEW OF PURIFIER BASE SHOWING SEQUENCE OF ASSEMBLY

REF NO.	DESCRIPTION
1	Burst Disc Holder
2	Burst Disc
3	Sealing Washer

FITTING

1. Ensure cleanliness of all parts.
2. Remove protective film from burst disc.
3. Examine sealing face and curved profile of holder for burrs or imperfections. These faces must be undamaged and blemish free.
4. Fit sealing washer into purifier base.
5. Lightly smear a thin film of silicone grease on sealing face of burst disc holder.
6. Fit burst disc onto holder. Ensure polished face of burst disc locates against sealing washer.
7. Fit holder into purifier base and tighten to a torque value of 21 LB/FT (2.91 KGM) with special screwdriver type socket.



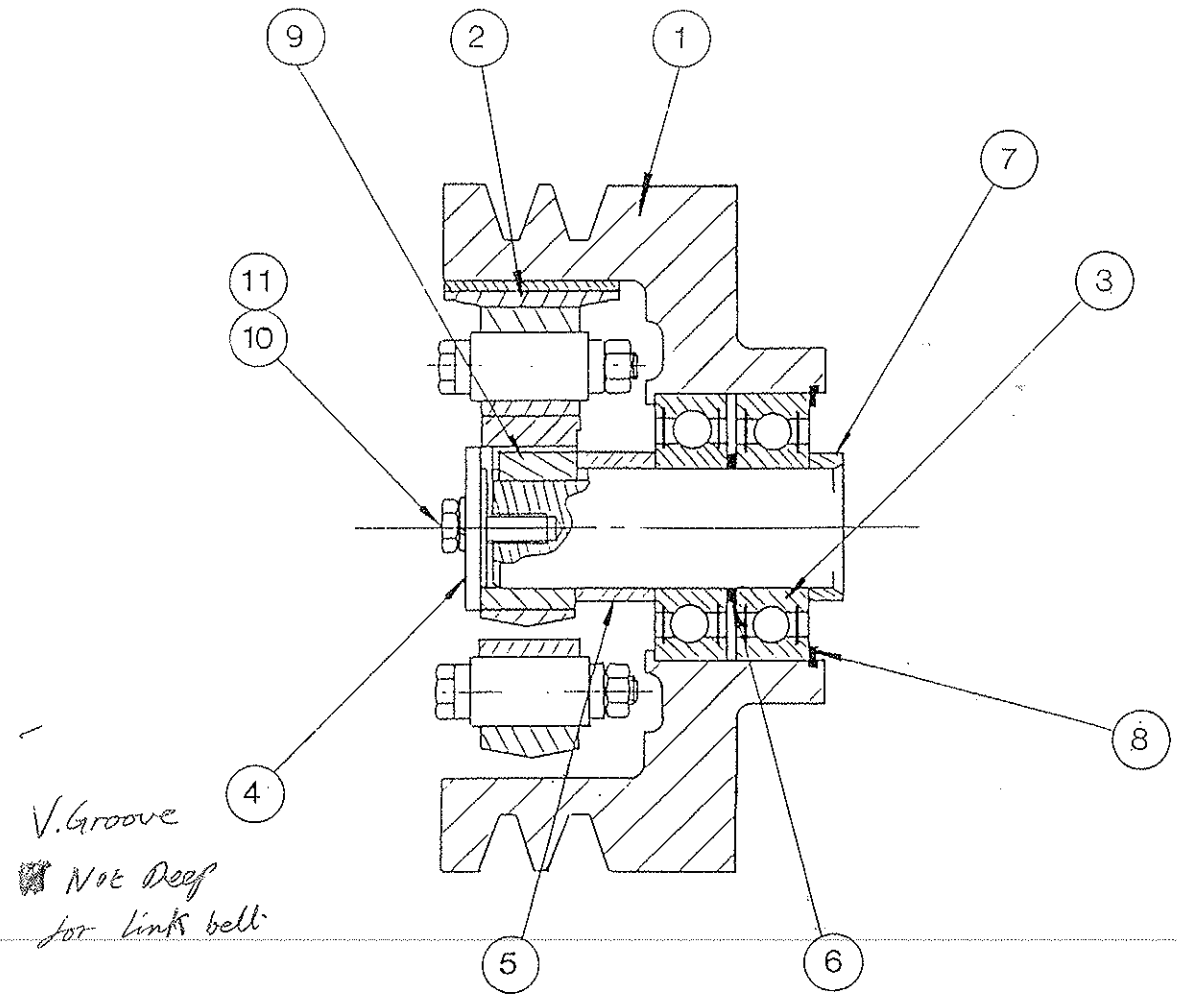
PAS 9 PURIFIER

4.3 PAS 9 PURIFIER

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	Y24109	Purifier Body	1
2	Y24112	Spring Cap	1
3	Y24113	Spring	1
4	Y26455	Purifier Cartridge	1
5	Y26036	'O' Ring - Purifier Stand	1
6	Y24111	Purifier Stand	1
7	Y23194	'O' Ring	1
8	Y23195	Back-Up Ring	1
9	Y23244	Inlet Tube	2
10	Y24033	Warning Label	1
11			
12			
13	Y23303/1	Pressure Maintaining Valve	1
14	Y26262	Lock Nut - PMV	1
15	Y26263	Seal - PMV Locknut	1
16	Y26510	Drain Valve	1
17	Y23216	Relief Valve	1
18	Y17969	Seal - Relief Valve	1
19	Y26926	Positional Elbow - Relief Valve	1
20			
21			
22	Y26410	Plug - 1/8" BSP	1
23	Y26275	Burst Disc Seal	1
24	Y23120	Burst Plug Holder	1
25	Y26917	Burst Disc	1
26	Y24567/20	Setscrew Hex Head - M10	3
27	Y24691	Spring Washer	3
28	Y23192	Purifier Base	1
29	Y23968	Positional Elbow	1

SECTION 5 - OPTIONAL EXTRAS

5.1 DRIVE CLUTCH - BRIGGS AND STRATTON AND HONDA ENGINES



ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	Y35062	Pulley	1
2	Y26667	Centrifugal Clutch	1
3	Y17345	Bearing	2
4	Y35068	Retaining Washer	1
5	Y26655	Bearing/Clutch Spacer	1
6	Y26656	Bearing Spacer	1
7	Y35064	Inner Spacer	1
8	Y26665	Circlip	1
9	Y26668	Key	1
10	Y24909/08	Setscrew 3/8" UNF	1
11	Y26106	Spring Washer 3/8" O/Dia	

DESCRIPTION

The drive clutch assembly comprises a bought out clutch attached by a keyway to the engine shaft. The pulley is mounted on the engine shaft via two sealed ball bearings. As the engine speed increases, centrifugal action forces the three clutch friction pads outwards into contact with the inner face of the pulley, thus transferring power to the compressor.

SERVICING

Servicing of the clutch is by unit replacement only. To remove, unscrew setscrew in end of driving shaft and withdraw retaining washer, clutch and key.