

5. Trouble Shooting Guide

WARNING

COMPRESSED AIR AND ELECTRICITY ARE DANGEROUS

BEFORE DOING ANY WORK INVOLVING MAINTENANCE OR ADJUSTMENT, BE SURE THE ELECTRICAL SUPPLY HAS BEEN CUT OFF, AND COMPRESSOR INTERNAL SYSTEM HAS BEEN

PROBLEM	CAUSE	CORRECTION
Motor will not run	Motor overload protection switch has tripped	Let motor cool off and press reset button
	Fuse blown or circuit breaker tripped	Check fuse box for blown fuse and replace as necessary or reset circuit breaker. Do not use a fuse or circuit breaker with a rating higher than what is specified for your particular branch circuit.
	Wrong gauge wire in extension cord	Check for proper gauge wire. Refer to wire size recommendation under Motor Section of this manual
	Air receiver pressure exceeds switch cut in pressure	Compressor Motor will start automatically when air receiver pressure drops below cut in pressure switch.
	Loose electrical connections	Check wiring connections
	Faulty capacitor on the motor	Return to Seller's Service Centre to check and replace if necessary.
	Faulty motor	Have motor checked at your Seller's Service Centre
Air leaks	Tube or hose fitting loose	Tighten fittings with audible leak and check under pressure with soapy water solution (do not over tighten)
	Leak at welds	Receiver must be replaced
	Air leak in safety valve	Operate safety valve manually by pulling on ring. If valve still leaks, it should be replaced.
	Restricted air inlet	Dirty air filter
Low discharge pressure	Prolonged excessive use of air	Decrease amount of air usage, compressor is not large enough for air requirement.
	Restricted air inlet filter	Clean or replace air inlet filter
	Hole in hose	Clean and replace if required
Knocking or rattling	Low oil level	Check oil level and maintain at prescribed level.
	Loose screws or nuts	Check all screws and nuts are tightened as required.

6. Safety Precautions Please Read Carefully

AREA <small>Indicates where a hazard can occur</small>	HAZARDS <small>Indicates what can happen if precautions are not observed</small>	SAFEGUARDS <small>Indicates how to avoid the hazard and what special protective clothing, equipment and precautions to use</small>
Toxic Vapours	Compressed air from this unit may contain poisonous carbon monoxide. Certain sprayed materials such as paints, weed killer, sand, insecticides etc. may be harmful if used in a close area or inhaled	Never directly inhale the compressed air produced by this unit. Always read labels with containers when spraying paints or poisons. Use a mask or respirator whenever there is a chance that you might inhale anything that you are spraying. Read all instructions so that you know that your mask will protect you from what you are spraying.
Electrical Shock	This unit is powered by 240 or 415 volts. Electric Shock can be fatal.	Always unplug unit prior to doing any maintenance or repair. Never use the unit outdoors when it is raining. Always plug the cord into an electrical outlet with the specified voltage and adequate fuse protection.
Compressed Air	Compressed air may propel dirt, metal shavings etc. and result in possible injury.	Never point any nozzle or sprayer toward a person or any part of the body. Always wear safety goggles or glasses when spraying.
Air Receiver <small>(use approved air receivers only)</small>	Air pressure or mechanical loads that are greater than design loads could cause the air receiver to rupture. Changes to the air receiver structure will cause the receiver to weaken. Air receiver rupture or explosion could occur.	Do not adjust, remove or by-pass the safety valve. Check the valve occasionally by pulling the ring on the valve. If the valve is stuck or does not operate smoothly, it must be replaced. Do not adjust, remove or by-pass the pressure switch. Never use a motor with higher horsepower rating than the one supplied. Never drill into, weld to, or change the air receiver in any way.
Moving Parts	Unit cycles automatically when power is ON. During service or repair activities, this automatic cycling may cause a hazard.	Always unplug the unit before attempting repair or maintenance of the compressor. Also make sure the pressure is released from the compressor and air receiver.
Hot parts	Air compressors get hot when running. Serious burns may result if touched.	Never touch the compressor, tubing or motor during or immediately after operation of the compressor.

IMPORTANT

All parts included on your compressor unit have a purpose. Never use your compressor with parts removed or modified. In particular, do not remove or modify the belt guard. It is for your protection and is designed to pass cool air over the compressor pump prolonging operating life.

7. Ordering Spare Parts

7.1 Your ABAC Air Compressor is backed by a full parts service. Here are schematic diagrams of a bare pump, a direct drive pump and built up compressor units. To order the right part, quote the details on the last page of this manual with the part number from the diagram. This will identify the right model, build number and part.

N.B: Diagrams are schematic only. They do not represent any specific model. In particular, direct drive models have the motor and pump coupled directly instead of through a belt. The purpose of each diagram is to represent all parts which could be required.

7.2 Part Names - Bare Compressor Pump

- | | |
|--------------------------------------|-------------------------------|
| 1. Cylinder Head | 32. Crankcase |
| 2. Gasket-Valve Plate to Head | 33. Gasket-Base to Crankcase |
| 3. Socket Head Cap Screw | 34. Crankcase Base |
| 4. Aftercooler | 35. Socket Head Screw |
| 5. Gasket-Aftercooler to head | 36. Socket Head Cap Screw |
| 6. Socket Head Cap Screw | 37. Washer |
| 7. Filter Support | 38. Crankshaft |
| 8. Socket Head Cap Screw | 39. Ball Bearing |
| 9. Filter Cover | 40. Oil Seal |
| 10. Filter Element | 41. Crankcase Cover-Drive |
| 11. Filter Housing | 42. Gasket-Crankcase Cover |
| 12. Filter Stud | 43. Socket Head Cap Screw |
| 13. Wing Nut | 44. Piston |
| 14. Valve Plate - Assembly | 45. Compression Ring-Top |
| 15. All Parts Included | 46. Compression Ring-2nd |
| 16. In above Assembly | 47. Piston Ring-Oil Control |
| 17. Individual Parts | 48. Gudgeon Pin |
| 18. Not sold | 49. Circlip. |
| 19. And | 50. Connecting Rod |
| 20. Not shown | 51. Connecting Belt |
| 21. Gasket - Cylinder to valve Plate | 52. Shell Bearing (set of 2). |
| 22. All Parts Included | 53. Connecting Rod Cap |
| 23. Gasket - Crankcase to Cylinder | 54. Dipper Pin |
| 24. Hex Head Set Screw | 55. Nut-Self Locking. |
| 25. Oil Filter/Breather | 56. Beltwheel |
| 26. Gasket | 57. Hex Head Set Screw |
| 27. Crankcase Cover | 58. Washer Belt Wheel |
| 28. Gasket-Crankcase Cover | |
| 29. Socket Head Gap Screw | |
| 30. Sight Glass | |
| 31. Gasket - Sight Glass | |

DISCHARGE OF AIR THROUGH AN ORIFICE

	Diameter of Orifice in inches										
	1/64	1/32	1/16	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1
PSI	Flow through hole in cubic feet per minute										
30	0.158	0.633	2.53	10.1	40.5	91.9	162	253	365	496	648
35	0.176	0.703	2.81	11.3	45	101	180	281	405	551	720
40	0.194	0.774	3.1	12.4	49.6	112	198	310	446	607	793
45	0.211	0.845	3.38	13.5	54.1	122	216	338	487	662	865
50	0.229	0.916	3.66	14.7	58.6	132	235	366	528	718	938
60	0.264	1.06	4.23	16.9	67.6	152	271	423	609	828	1082
70	0.3	1.2	4.79	19.2	76.7	173	307	479	690	939	1227
80	0.335	1.34	5.36	21.4	85.7	193	343	536	771	1005	1371
90	0.37	1.48	5.92	23.7	94.8	213	379	592	853	1161	1516
100	0.406	1.62	6.49	26	104	234	415	649	934	1272	1661
110	0.441	1.76	7.05	28.2	113	254	454	705	1016	1383	1806
120	0.494	1.98	7.9	31.6	126	284	506	790	1138	1549	2023

From this chart you will see that a 1/16" pin hole will waste nearly all the output of a 2 h.p compressor at 120 psi. If you notice a fall-off in the performance of your compressor, first check your air system for leaks.

4.7 Torque Value Table for Bare Compressor Metric Fasteners

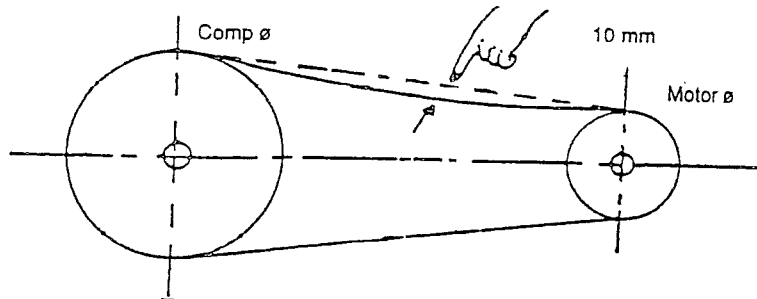
MODEL Cu.ft Size	8-10		12-20		28		45	
	Nm 1b/ft		Nm 1b/ft		Nm 1b/ft		Nm 1b/ft	
Aftercooler screws	7.9	5.8	24	18	43	32	43	32
Intercooler Screws	-	-	-	-	24	18	24	18
Flywheel Bolt	24	18	24	18	43	32	43	32
Connecting Rod Cap	-	-	24	18	24	18	24	18
Crankcase Cover Screw	5	3.6	5	3.6	7.9	5.8	7.9	5.8
Crankcase Base Screws (Sump)	5	3.6	5	3.6	7.9	5.8	7.9	5.8
Crankcase to Cyl Bolts	24	18	24	18	43	32	43	32
Filter Support Screws	7.9	5.8	24	18	43	32	43	32
Head Bolts	24	18	24	18	43	32	43	32
Oil Drain Plug	6.8	5	6.8	5	6.8	5	6.8	5
Oil Sight Glass	1	-	1	-	1	-	1	-
Valve Plate	-	-	-	-	24	18	43	32

4.4 Replacing Air Inlet Filter

A dirty air filter will not allow the compressor to operate at full capacity. When the inlet filter becomes dirty, oily or covered with paint overspray, replace it. Do not operate the compressor with the air inlet filter removed.

4.5 Belt adjustment (Belt Drive Compressors)

The v-belt(s) should be adjusted so that a declination of about 10 mm will be obtained when pushed by a finger at the middle point as shown.

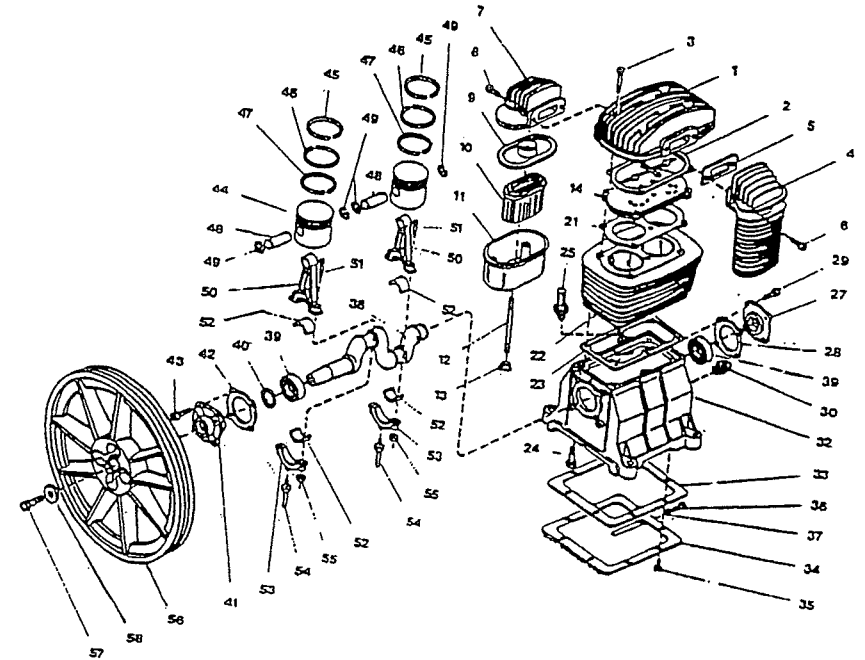


To adjust the belt, remove outer guard and remove belt. Slacken motor bolts and move motor back on slides provided. Retighten motor bolts, and replace belt. It is not possible to obtain sufficient belt tightness by adjusting motor with belt in place. Always replace guard.

4.6 Checking for leaks

IMPORTANT
EVEN A SMALL LEAK WASTES A LARGE VOLUME OF AIR. (SEE FOLLOWING CHART). YOU WILL ENHANCE THE LIFE OF YOUR COMPRESSOR IF YOU KEEP ALL OUTLETS, HOSES, COUPLINGS AND AIR TOOLS FREE OF LEAKS

7.3 Schematic of Bare Pump



- 1 Crankcase
- 2 Cylinder
- 3 Cylinder head
- 4 Cylinder head gaskets
- 5 Crankcase base
- 6 Valve plate assembly
- 8 Connecting rod
- 11 Crankshaft
- 12 Piston
- 14 Gudgeon pin
- 15 Circlip
- 16 Piston ring compression-top
- 17 Piston ring compression-2nd
- 18 Piston ring oil control
- 22 Oil dipper
- 23 Filter sponge
- 24 Filter box
- 25 Filter cover
- 26 Capacitor
- 27 Stator housing
- 28 Rotor
- 30 Ball bearing
- 33 Oil dipstick
- 34 Gasket crankcase cover
- 41 Crankcase cover
- 43 Motor shield
- 44 Motor housing bolts
- 45 Circlip
- 46 Fan
- 49 Cover

4. Maintenance Pays

- 4.1 Very little regular maintenance is needed to keep your compressor in top condition. Here is a chart of what you should do:

	Check Oil Level	Drain Tank	Check Inlet Filter	Change Oil	Clean cooling fins	Check Belts	Check for leaks
DAILY	✓	✓					✓
EACH WEEK			✓		✓		
EVERY 500 HOURS				✓		✓	

4.2 Oil level/ Oil Changing

Check the oil level in the compressor pump before each use. The oil level should be at or above centre of the sight glass at all times, when the compressor is on a level surface. If level drops below this point, add oil to bring level back to centre of sight glass. The oil should be changed every 500 hours of operation. To drain the oil, remove the oil drain plug and collect the oil in a suitable container. Be sure to replace the oil drain plug securely before adding new oil. Use ABAC air compressor oil (obtainable from your dealer). If necessary the correct grade of Shell Corena oil is an acceptable substitute. N.B. Some direct drive models use a dipstick instead of a sight glass to indicate oil level.

CAUTION
DO NOT OVERFILL THE COMPRESSOR WITH OIL. OVERFILLING WITH OIL WILL CAUSE PREMATURE COMPRESSOR FAILURE.

4.3 Condensate Build-up in Air Receiver

Water should be drained from the air receiver daily depending on where and how often the unit has been used. If the humidity is high, drain more often. To drain the air receiver, open drain valve in bottom of air receiver and allow to drain. After draining, close the valve tightly before operating the air compressor.

3.4 Extension Cords and Generators

IMPORTANT

Avoid using long extension cords. They can cause a power loss to the motor. Add extra air hose instead of extension cords. If an extension cord must be used, follow these recommendations:

Maximum cord length.....7.62 Metres (25 feet)
of 1.5 mm 15 AMP flex single phase

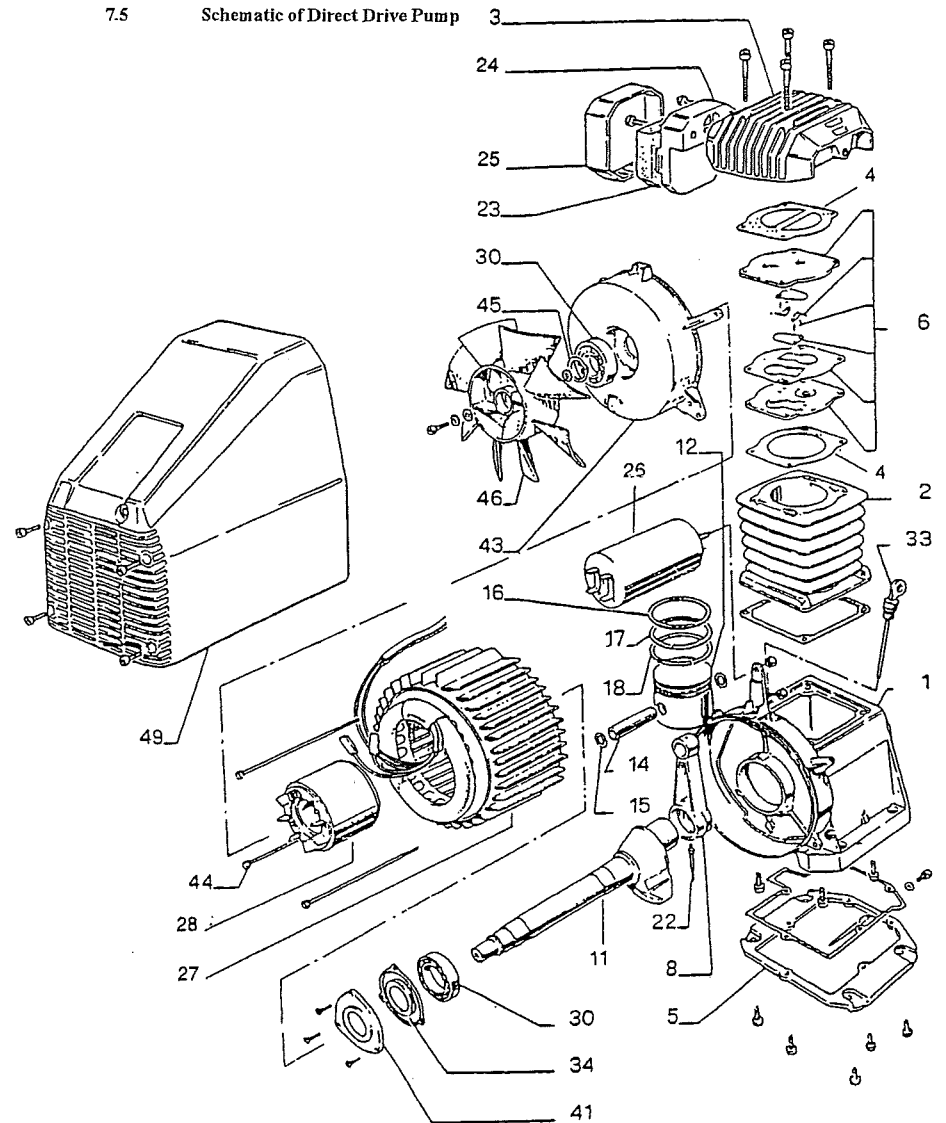
Never run your compressor from a portable generator. A portable generator will not supply adequate motor starting current and will cause motor burn-out. Your warranty is invalidated if a generator is used.

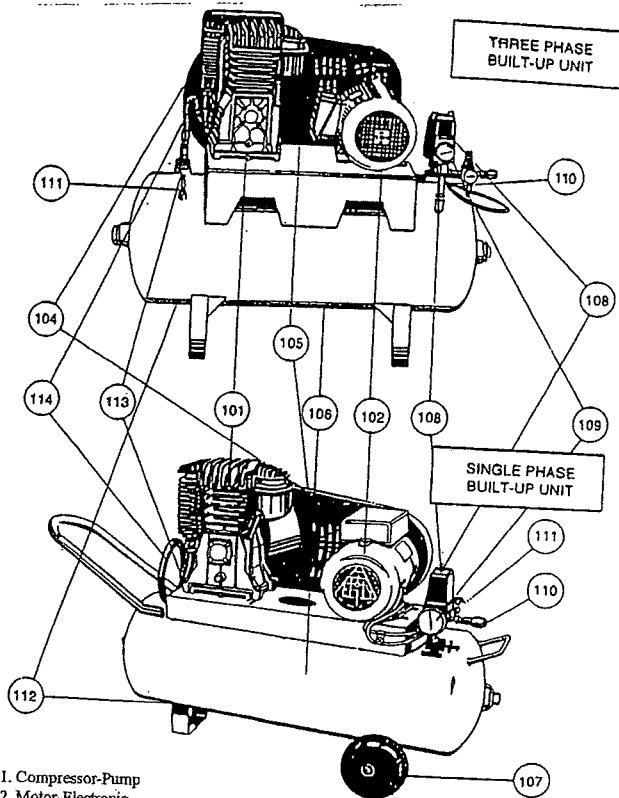
3.5 Pump Unloading System

Your compressor is fitted with a valve that will automatically releases pressure on the head of the unit each time the pressure switch stops the motor. This means the motor restarts against zero pressure, enhancing motor life. A hiss of air each time the motor stops is normal. N.B. The pressure will not be released from the head if the power is interrupted while the motor is running. The pressure should then be released manually by turning the machine off at the pressure switch.

WARNING
DO NOT ATTEMPT TO ADJUST OR MODIFY THE
PRESSURE UNLOADING VALVE. MOTOR BURNOUT
CAN RESULT IF THIS VALVE IS OVERTIGHTENED OR
WRONGLY ADJUSTED.

7.5 Schematic of Direct Drive Pump





- 101. Compressor-Pump
- 102. Motor-Electronic
- 103. Pulley-Motor
- 104. Belts-Vee
- 105. Guard-Belt
- 106. Receiver-Comp with base, handle and axle
- 107. Wheel-Receiver
- 108. Switch-Pressure
- 109. Gauge-Pressure
- 110. Valve-Service
- 111. Valve-Safety
- 112. Valve-Drain
- 113. Valve-Unloader
- 114. Discharge Line

3. Use of your Compressor

3.1 Pressure Switch

The pressure switch starts the motor when the air receiver pressure drops below the factory set cut-in pressure and stops the motor when the air receiver pressure reaches the factory set cut-out pressure.

WARNING

AIR PRESSURE BEYOND DESIGN LIMITS COULD CAUSE THE AIR RECEIVER TO RUPTURE OR EXPLODE. PRESSURE SWITCH OPERATION IS RELATED TO MOTOR HORSEPOWER, RECEIVER RATING, AND SAFETY VALVE SETTING. DO NOT ATTEMPT TO ADJUST, REMOVE, OR BY-PASS THE PRESSURE SWITCH, OR CHANGE AND MODIFY ANY PRESSURE CONTROL RELATED DEVICE.

3.2 Air Receiver Safety Valve

The pressure switch is pre-set to shut off the motor automatically at the maximum operation pressure. If the pressure switch does not shut off the compressor unit at ties cut-off pressure setting, the safety valve will protect against over pressuring the air receiver by 'popping off' at its pre-set pressure setting.

WARNING

DO NOT ELIMINATE, MAKE ADJUSTMENTS, OR SUBSTITUTIONS FOR THIS VALVE. OCCASIONALLY PULL THE RING ON THE SAFETY VALVE TO MAKE SURE THAT THE VALVE OPERATES FREELY. IF THE VALVE IS STUCK OR DOES NOT OPERATE SMOOTHLY IT MUST BE REPLACED.

3.3 Motor

The motor has a manual overload protector. If the motor overheats for any reason, the overload protector will shut off the motor. To restart the motor, press the reset button located at the rear of the motor.

IMPORTANT

If the overload protector shuts the motor off frequently, check for a possible voltage problem. Low voltage can also be suspected when:

1. The motor does not develop full power or speed
2. Fuses blow out when starting motor
3. Lights dim and remain dim when motor is started,

1. Before using your compressor

- 1.1 Read this manual carefully. Especially note items including your safety, and for the proper operation and maintenance of your compressor.
- 1.2 Fill out and return your warranty card. The registration of your warranty depends on this.
- 1.3 Fill in the details on the last page of this manual. You will need to be able to quote them for spare parts supply.
- 1.4 Check your new compressor for transit damage. Before leaving the factory your unit was quality inspected and test run, all control gear set to to specification, pressure and current readings taken, and it was leak tested. It left in perfect condition. Claim on your carrier immediately for any damage.

2. Start-up Procedures

2.1 Locating Your Air Compressor

Locate the unit in a dry, clean, cool and well ventilated area. The compressor is designed with fans which allow proper cooling. Clean or blow off fins and other parts of the compressor that collect dust or dirt. A clean compressor runs cooler and provides longer service. Do not place rags, containers or other materials on top of the compressor which would obstruct ventilation openings necessary for proper compressor operating temperature. Make sure the unit is located on a firm, level surface.

2.2

<p>CAUTION ALL BUILT-UP UNITS ARE SHIPPED WITH OIL. BEFORE ATTEMPTING TO START UNIT, CHECK COMPRESSOR FOR PROPER OIL LEVEL.</p>
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If level is low, remove oil fill plug and slowly pour ABAC[®] Air compressor oil into crankcase until the oil level, shown through sight glass plug on front side of compressor pump, rises to centre of sight glass. Replace oil fill plug. Shell Corena P68-Single phase, Shell Corena P100-2 phase oil is acceptable as a substitute. N.B. Some direct drive models use a dipstick to indicate oil level.

2.3 Permanent wiring on three phase compressors must be carried out by an electrician. Make sure that pump rotation is correct. The rotating direction for the flywheel must be counter-clockwise while facing the flywheel side of the compressor.

2.4 Open tank drain valve to permit air escape, preventing air pressure build-up in air receiver. Start the compressor by plugging power supply plug into the correct power source.

Run the air compressor for 20 minutes in this no-load condition to lubricate the bearings and piston(s)

2.5 After 4 hours running under normal operating conditions evenly tighten head bolts to torque as per paragraph 4.7 while compressor is at operating temperature, starting from inner most bolt and working out.

8. Identifying your Compressor

8.1 The following plates and identifying marks will give you a complete satisfaction of your particular machine. It is advisable to write these on this page to give a record for parts ordering or future identification.

8.2 **Serial number:** This is located on the dome end of the air receiver, or underneath the unit beside the air receiver seam weld.

My serial number is:.....

8.3 **Pump Model Number:** This is located on the crankcase cover (part 27) above the sight glass.

My Pump Model Number is:.....

8.4 **Motor Model Number:** This is located on the side of the electronic motor.

My Motor Brand is:.....

My Motor Power is:.....

My Motor Model is:.....

<h2>NOTES AND MAINTENANCE RECORD</h2>

NOTES

//////// ABAC - BALMA / AIRMASTER

User's Operating Manual

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CONGRATUALIONS

ON YOUR CHOICE OF AIR COMPRESSOR

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THE RANGE OF ABAC AIR COMPRESSORS HAS BEEN SPECIAFICALLY DESIGNED TO SATISFY ALL NEEDS OF THE CUSTOMER IN TERMS OF POWER, PERFORMANCE AND DURABILITY COMBINED WITH LOW MAINTENANCE AND SERVICING COST.

BEFORE USING YOUR NEW AIR COMPRESSOR

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PLEASE READ THE INSTALLATION/OPERATIONAL INSTRUCTION MANUAL FOR YOUR SAFETY AND FOR THE PROPER OPERATION AND MAINTENANCE OF YOUR COMPRESSOR

INFORMATION COMPLIANCE

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COMPLIANCE WITH THE FOLLOWING INFORMATION WILL ENSURE YOU OF MANY YEARS OF TROUBLE FREE OPERATION FROM YOUR AIR COMPRESSOR AND IT WILL REMAIN A VALUABLE ASSET.

PURCHASE/ACQUISITION DETAILS

RETAIL STORE:.....

ADDRESS:.....

.....

CONTACT NAME:.....

DATE PURCHASED:.....

INVOICE NUMBER:.....

SERVICE RECORD

6 MONTHS OR 200 HOURS
SERVICE AGENT

.....
DATE OF SERVICE.....

.....
SIGNATURE.....

12 MONTHS OR 400 HOURS
SERVICE AGENT

.....
DATE OF SERVICE.....

.....
SIGNATURE.....

18 MONTHS OR 600 HOURS
SERVICE AGENT

.....
DATE OF SERVICE.....

.....
SIGNATURE.....

24 MONTHS OR 800 HOURS
SERVICE AGENT

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DATE OF SERVICE.....

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SIGNATURE.....

30 MONTHS OR 1000 HOURS
SERVICE AGENT

.....
DATE OF SERVICE.....

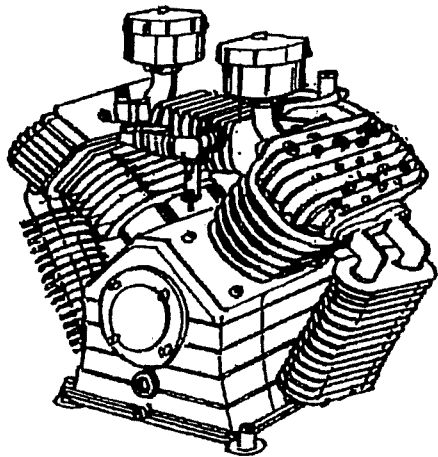
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36 MONTHS OR 1200 HOURS
SERVICE AGENT

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DATE OF SERVICE.....

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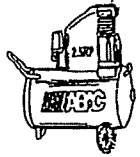
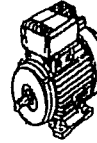
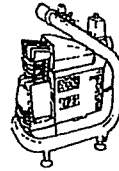
PLEASE CONTINUE TO HAVE YOUR AIR COMPRESSOR SERVICED EVERY 6 MONTHS OR 200 HOURS WHICH EVER OCCURS FIRST.
PREVENTATIVE MAINTENANCE IS MUCH LESS COSTLY IN THE LONG RUN AND IT WILL INCREASE THE LIFE SPAN OF YOUR AIR COMPRESSOR SIGNIFICANTLY



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VARIATION WITHOUT PRIOR NOTICE

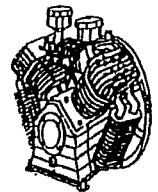
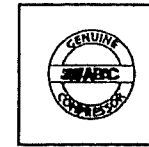
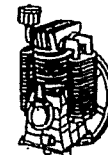
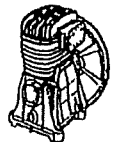
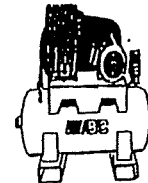
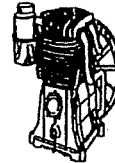
TO BE USED AS A GUIDE ONLY



ABAC
AIR COMPRESSORS

Balma

McMILLAN Air Compressors



INSTALLATION / OPERATIONAL INSTRUCTION

