T112 (1:1 Ratio) and T312 (3:1 Ratio)
Air Operated Oil Pumps

INSTRUCTION MANUAL

INTRODUCTION
Thank you for purchasing a Macnaught T112 (1:1 Ratio) or T312 (3:1 Ratio) air operated oil pump. Your double action piston type stubby pump is designed to dispense lubricating oils (e.g., engine oils, hydraulic and gear oils). The T112 (1:1 Ratio) is the ideal pump for transferring fluids over short distances (up to 10 metres). The T312 (3:1 Ratio) is the ideal pump for use in bulk tanks or drums through pipelines, hose reels and hose end oil delivery guns (with or without a flow meter) over distances of up to 30 meters (including hose reels).

The T112 and T312 are supplied with a standard 2” BSP adjustable bung adaptor which is suitable for most tanks and drums. The fluid inlet of the pump is tapped 1” BSP female (or 1” NPT for USA/Canada) so you have the choice of either supplying your own threaded suction tube or you can purchase the optional Macnaught telescopic suction tube kit (TB25s), which is suitable for drums or tanks up to 1.2 metres (48”) deep.

Macnaught manufacture a full range of accessories to suit air operated oil pumps, please consult your local Macnaught reseller for more information.

With your appropriate care combined with the Macnaught Guarantee of dependable after sales service, (provided by our worldwide distribution network), you will be assured of continuous safe, efficient and reliable product operation.

Please read and retain this instruction manual to assist you in the operation and maintenance of this quality product.

GENERAL INFORMATION
This manual assists you in operating and maintaining your new T112 or T312 oil pump. The information contained will help you ensure many years of dependable performance and trouble-free operation.

Please take a few moments to read through this manual before installing and operating your new oil pump. If you experience problems with the product, refer to the Maintenance and Trouble Shooting sections of this manual. If you require further assistance please contact your local Macnaught Distributor, Authorised Macnaught Service Centre or Macnaught P/L.

IMPORTANT INFORMATION

Read this information carefully before use!

Your safety is important to us. Please read, understand and follow all safety instructions listed below. Some of these instructions alert you to the potential for personal injury. ‘Cautions’ listed throughout the manual advise of potential practices or procedures which may cause damage to your equipment.

Make sure all operators have access to adequate instructions about safe operating and maintenance procedures.

Do not exceed the maximum recommended air-inlet pressure of 1035 kPa/150 psi/10.3 bar. The pump requires a minimum air inlet pressure of 400 kPa/60 psi/4 bar and we recommend that you operate the unit at 690 kPa/100 psi/6.9 bar.

Do not hit unit if it fails to operate. Refer to ‘Trouble Shooting Guide’ or return unit to your nearest Authorised Service Centre.

Use suitable thread sealant (e.g., Teflon tape) on all screwed fittings, but do not over-tighten (to avoid component damage).

This pump has been fitted with a pressure release valve. This unique feature will protect both the pump and the system against damage created by excessive pressure, possibly caused by thermal expansion.
Most accidents occur because of a component rupture. Be certain that any and all system components will withstand the pressures being developed. Never exceed the pressure rating of any component installed in the system.

Weak, worn or damaged hoses are also a hazard. Before each use check hose for signs of wear, leaks or loose fittings. Tighten all fluid connections regularly and replace weak or damaged hose. Your personal safety and well being are at stake.

Before attempting any repairs or maintenance of this product disconnect air supply and release oil line pressure by squeezing hand piece/gun trigger.

**ASSEMBLY**

1) Measure the depth of the drum/tank and attach appropriate length of 1" BSP (1" NPT USA/Canada) threaded pipe to the inlet of the pump (or use a Macnaught suction tube kit TB25s)

2) Remove the bung adaptor assembly from the pump and screw into drum/tank opening. Carefully lower the pump through bung adaptor and tighten the clamp screw located at the clamp sleeve.

Note: There is a wire mesh strainer located in the brass air inlet. It is recommended that a micro-fine (5 micron) in-line air filter is fitted to the air inlet to ensure maximum efficiency of this pump

3) Before connecting the air supply, the user should add a ‘stop’ compressed air cock.

Note: The air cock must be a ¼ turn type (allowing quick closure) and should be located close to the body of the pump and be easily recognised.

**OPERATION**

1) Ensure that the drum or tank is ‘vented’.

2) Partially open the on/off air valve. The pump will prime automatically.

3) Open the oil delivery outlet/nozzle. The pump will automatically start.

4) Adjust on/off air valve to regulate the flow. Close delivery outlet/nozzle to stop flow.

Caution! Do not run the pump dry. Remember to switch air supply off if not using the pump for an extended period e.g. at the end of each working day.

**MAINTENANCE**

Before carrying out any maintenance disconnect the air supply and release the fluid pressure in the system.

Inspect your oil pump weekly for any signs of damage. Replace any suspect or damaged parts/components as required.

Every 2 weeks (or sooner if the pump is used every day) apply a few drops of light oil to the air inlet of the pump. (Sewing machine oil is ideal).

**PUMP DISASSEMBLY**

1) Remove oil hose from the pump unit.

2) Withdraw pump from the oil drum/tank. Use a clean bench to carry out maintenance.

3) Remove the 4 screws (22) holding cylinder (11) to the bottom adaptor (21). Lever the cylinder off the bottom adaptor. There is a slot above the pump outlet.

4) Remove the cover screw (10) and valve body cover (1).

5) Remove the 6 screws holding the valve body (2) to the cylinder (11). Remove the valve body assembly and valve gasket (5).

6) Pull out the 2 brass pins holding the end plugs to the valve body. Lever out the end plugs at either end of the valve body.

7) Gently push the spool valve out of the valve body. Be careful not to damage any o-rings when removing.

8) Remove the top (long) poppet valve assembly and o-rings located on top of the cylinder and the bottom (short) poppet valve assembly located on top of the bottom adaptor.

9) Hold hex section foot valve horizontally in a vice. Hold the air piston firmly and unscrew Allen head screw (12). Remove screw, washer, o-ring and air piston and from the piston rod.

10) Carefully unscrew the foot valve and pump cylinder assembly from the bottom adaptor.

11) Withdraw the plunger and piston rod assembly from the bottom adaptor.

12) Clean and carefully inspect all parts for wear or damage. Replace any suspect, worn or damaged parts.

**PUMP REASSEMBLY**

1) Ensure that all parts have the correct orientation. If parts are assembled upside down, the pump will not work. Check the parts diagram for correct orientation.

2) Apply thread sealant (Loctite or similar) to pump cylinder thread (26) when reassembling the unit.

3) Assembly of the pump is a reversal of the disassembly procedure.

4) Ensure that all o-rings, particularly in the valve body (2) and the top and bottom poppet valves areas sit square.

5) Apply light grease (eg Petroleum Jelly) to the o-rings on the bottom adaptor and air piston seals before fitting the cylinder to the bottom adaptor.

6) Fit the pump to your oil drum/tank and reconnect the oil hose and air supply. Open dispensing nozzle to ensure correct operation.
TROUBLE SHOOTING GUIDE

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) The air leaks continuously from the exhaust screen (1).</td>
<td>Damaged or worn air piston cup seals (14) or air piston (15).</td>
<td>Replace the cup seals and piston.</td>
</tr>
<tr>
<td>2) The air motor does not operate or cycle when the reset button is pressed.</td>
<td>The lower poppet spring is fatigued.</td>
<td>Replace the bottom poppet spring.</td>
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<tr>
<td>3) The air motor does not operate, but will cycle when the reset button is pressed.</td>
<td>a) The spool valve is jammed in the valve body.</td>
<td>a) Push the reset button.</td>
</tr>
<tr>
<td></td>
<td>b) The top poppet spring is fatigued.</td>
<td>b) Replace the top poppet spring.</td>
</tr>
<tr>
<td>4) The air motor cycles much faster than normal but fails to pump oil.</td>
<td>a) The suction tube is not fitted correctly. (i.e. sucking air).</td>
<td>a) Re-seal the suction tube to the pump with thread sealant.</td>
</tr>
<tr>
<td></td>
<td>b) The piston valve is not seating properly.</td>
<td>b) Check that the piston valve is seating correctly, or replace if damaged.</td>
</tr>
<tr>
<td>5) The air motor runs slower than normal.</td>
<td>a) The air pressure is too low.</td>
<td>a) Increase the air pressure to specifications (See below)</td>
</tr>
<tr>
<td></td>
<td>b) The air strainer is partially blocked.</td>
<td>b) Clean air strainer.</td>
</tr>
<tr>
<td>6) The air motor cycles intermittently when not using the pump.</td>
<td>The ball in the foot valve is not seated properly.</td>
<td>Check that the foot valve ball is seating correctly. (Clean if necessary)</td>
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SPECIFICATIONS

<table>
<thead>
<tr>
<th>T112 (1:1 Ratio)</th>
<th>T312 (3:1 Ratio)</th>
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<tbody>
<tr>
<td>Air Motor (Size)</td>
<td>72mm (2.75&quot;)</td>
</tr>
<tr>
<td>Air Inlet</td>
<td>1/4&quot; (F) NPT</td>
</tr>
<tr>
<td>Pump Oil Inlet</td>
<td>3/4&quot; (F) BSP or NPT</td>
</tr>
<tr>
<td>Pump Oil Outlet</td>
<td>1/4&quot; (F) BSP or NPT</td>
</tr>
<tr>
<td>Bung Adaptor</td>
<td>2&quot; (M)</td>
</tr>
<tr>
<td>Wetted Materials</td>
<td>Aluminium, Nitrile, Zinc Plated Carbon Steel</td>
</tr>
<tr>
<td>Fluid</td>
<td>Automatic transmission fluid, Engine oil, Gear oil and Hydraulic oil</td>
</tr>
<tr>
<td>Maximum Air Pressure</td>
<td>1035 kPa / 80 psi / 10.3 bar</td>
</tr>
<tr>
<td>Minimum Air Pressure</td>
<td>400 kPa / 60 psi / 4 bar</td>
</tr>
<tr>
<td>Air Consumption Typical System Application 3m 10cfm/min</td>
<td>Typical System Application 27m 9cfm/min</td>
</tr>
<tr>
<td>Output (Free Flow at Pump)</td>
<td>27 ltr / min of SAE 10 oil @ 120 psi</td>
</tr>
<tr>
<td>Maximum Static Head</td>
<td>100 Mtr</td>
</tr>
<tr>
<td>Dimensions</td>
<td>108mm x 131mm x 385mm</td>
</tr>
<tr>
<td>Net Weight</td>
<td>9kg</td>
</tr>
</tbody>
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macnaught warranty

1. Macnaught Pty Ltd ("Macnaught") warrant that all products manufactured by Macnaught and/or supplied by Macnaught under the "Macnaught" brand, including M-Series positive displacement meters "Meters" and components subject to wear, will be free from any defects caused by faulty materials or workmanship ("Warranty") for a period of 5 years from the date of purchase of the product.
2. For products (excluding Meters) which carry the "Macnaught design" endorsement, an additional Warranty period of 5 years applies to all mechanical components (excluding electronic and electrical components), giving a total Warranty period of 10 years.
3. For Meters, the Warranty period is 12 months from the date of purchase of the product.
4. For components contained in all products which are subject to wear from normal operation of the products (such as shafts, seals, springs, hoses and batteries), the Warranty period is 12 months from the date of purchase of the relevant product and the period of the manufacturer's warranty.
5. For products and components which are not manufactured by Macnaught and are supplied by Macnaught under a brand name other than "Macnaught", the Warranty period is the longer of 12 months from the date of purchase of the relevant product and the period of the manufacturer's warranty.
6. The warranties contained in clauses 1, 2, 3, 4 and 5 above are conditional on the purchaser, during the relevant Warranty period:
   a. delivering to Macnaught a detailed notice setting out full details of any defect and the date and place of purchase (together with copies of purchase receipts and/or other supporting documents), and
   b. at the purchaser's own cost, returning the defective part to the nearest authorised Macnaught service centre.
7. The products are intended for use by trained operators only. Macnaught shall, at its option, repair or replace any component or product found defective by its inspection in the manner it deems suitable, at its discretion and at its sole discretion, without liability for any consequential damage or loss.
8. Macnaught's sole option will be made at its discretion, without liability for any consequential damage or loss.
9. If Macnaught's sole option will be made at its discretion, without liability for any consequential damage or loss.
10. This Warranty does not include, nor does it extend to, any warranties implied or otherwise given by the seller of the products. This Warranty does not exclude, limit, restrict or modify the non-excludable rights or remedies conferred upon the end user or purchaser, or the non-excludable duties or liabilities imposed on the seller of the product or the manufacturer of the product. This Warranty is in addition to, and does not affect, any other warranties, obligations, rights, remedies or liabilities imposed on the seller of the product or the manufacturer of the product. This Warranty does not form part of, nor does it constitute, a contract between Macnaught and the end-user or purchaser.