

ENVA AIR OPERATED SINGLE DIAPHRAGM PUMP



INSTRUCTION MANUAL

Introduction

Thank you for purchasing a Macnaught ENVA air operated single diaphragm pump. The ENVA pump has been designed for use with a wide variety of non-corrosive fluids. Please contact your local distributor or Macnaught if you are unsure of the compatibility of the fluid you are pumping.

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

Important Information

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

Your safety is important to us. Please read, understand and follow all safety instructions listed below. 'CAUTION' listed throughout this manual advise of potential practices or procedures which may cause damage to your equipment.

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

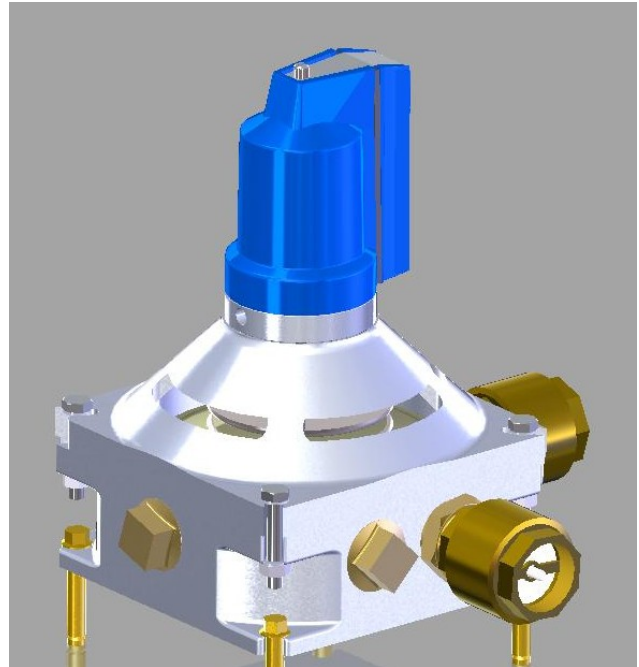
WARNING

Do not use air pressure greater than 850 kPa/ 125 psi/8 BAR on the Macnaught ENVA air operated pump.

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

Installation Procedure

- 1) Connect the suction hose to the inlet check valve. (The
- 2) Connect the outlet hose to the outlet check valve. (The arrow on the outlet valve will be facing away from the pump).
- 3) Place the suction hose (or inlet pipe) into the container of the fluid to be pumped.
- 4) Place the dispensing hose into the container to be filled.
- 5) Before connecting the air supply to the ENVA air pump. The customer should add a "stop" compressed air cock. The air cock must be a 1/4" turn type (allowing quick closure) and should be located close to the body of the pump and be easily recognised. A micro-fine (5 micron) in line air filter is recommended to ensure the maximum efficiency of this pump. Then connect your air line to the swivel type, brass air inlet.



ENVA MODEL

CAUTION

Before carrying out any maintenance disconnect the air supply to the ENVA air pump.

Maintenance Procedures

If you have an ENVA air operated pump you should apply a few drops of light oil, sewing machine oil is ideal, every two weeks (or sooner if the pump is used every day) to the air inlet of the pump.

ENVA AIR MOTOR DISASSEMBLY

Refer to Figure 3.

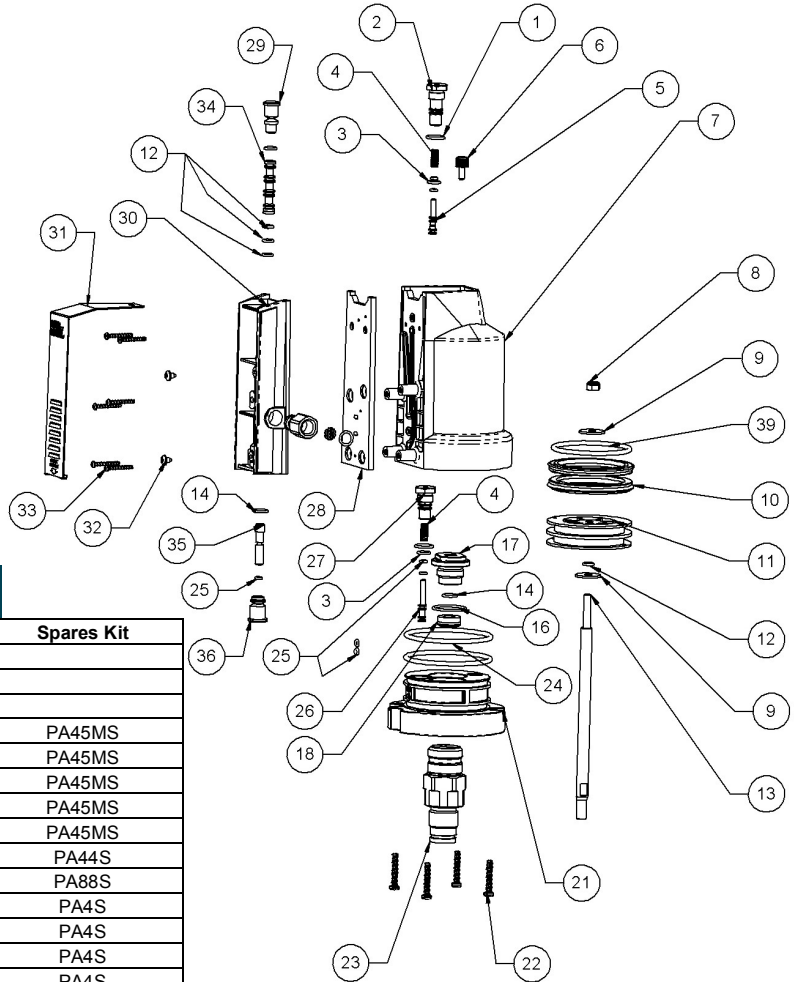
- 1) Disconnect air supply.
- 2) Remove 4 bolts (49) that hold the pump body housing together.
- 3) Place a spanner on the adapter that holds the air motor to the diaphragm assembly. With another spanner unscrew the nut holding the diaphragm assembly (47).
- 4) Remove the 2 diaphragm plates (38) and diaphragm (37) from the adapter (44).
- 5) Hold the air motor, unscrew the nut (46) that holds the air motor to the pump casting (43).
- 6) Remove 4 screws (22) Fig1, holding cylinder (7) to the base (21). There's a slot in the base near the valve body (30).

- 7) Remove the cylinder (7) from the cylinder base (21).
- 8) Remove the bottom poppet valve assembly (1,3,4,26 and 27) from the cylinder base (21).
- 9) Remove cover screw (6) and valve body cover(31).

NOTE

This model ENVA now has 4 ports to allow for a variety of configurations depending on the location of the pump. Ensure that the arrows on the check valves face the correct way before starting the pump. Ensure that two ports are plugged with the supplied brass plugs.

Spare Part Diagram



Spare Part Listing

Item	Description	Qty	Overhaul Kit	Spares Kit
	Air Motor Service Kit		ENVA-1K	
	Complete Air Motor Assy		PA85S	
	Air Motor O'Ring Kit		ENVA-3K	
1	O'Ring	2	ENVA-1K & ENVA-3K	PA45MS
2	Top Poppet Body (LONG)	1		PA45MS
3	O'Ring	5	ENVA-1K & ENVA-3K	PA45MS
4	Poppet Spring	2	ENVA-1K & ENVA-3K	PA45MS
5	Poppet Piston Assembly	1	ENVA-1K	PA45MS
6	Cover Screw	1		PA44S
7	Air Cylinder	1		PA88S
8	1/4" UNF NY Lock Nut	1		PA4S
9	1/4" Washer	2		PA4S
10	Cup Seal	2	ENVA-1K	PA4S
11	Air Piston	1		PA4S
12	O'Ring	1	ENVA-1K & ENVA-3K	PA4S
13	Piston Rod	1		PA81S
14	O'Ring	2	ENVA-1K & ENVA-3K	PA45S
15	O'Ring	1	ENVA-1K & ENVA-3K	PA45S
16	O'Ring	1	ENVA-1K & ENVA-3K	PA45S
17	Gland Nut	1		PA45S
18	Piston Rod Seal	1	ENVA-1K	PA23S
21	Cylinder Base	1		PA46S
22	Hi-Lo Screw	4		PA2S
23	Steel Insert	1		PK95S
24	O'Ring	2	ENVA-1K & ENVA-3K	
25	O'Ring	2	ENVA-1K & ENVA-3K	
26	Poppet Piston Assembly	1	ENVA-1K	PA32MS
27	Lower Poppet Body (SHORT)	1		PA32MS
28	Valve Gasket	1	ENVA-1K	PA39S
29	Valve Plug	1		PA97S
30	Valve Body	1		PA39S—assy order PA30S
31	Valve Body Cover	1		PA44S incl PA21
32	End Plug In	2	ENVA-1K	PA97S
33	Hi-Lo Screw	6		PA2S
34	Valve Spool Assembly	1	ENVA-1K	PA34S
35	Reset Button Assembly	1	ENVA-1K	PA97S
36	End Plug	1		PA97S

Spare Part Diagram—ENVA

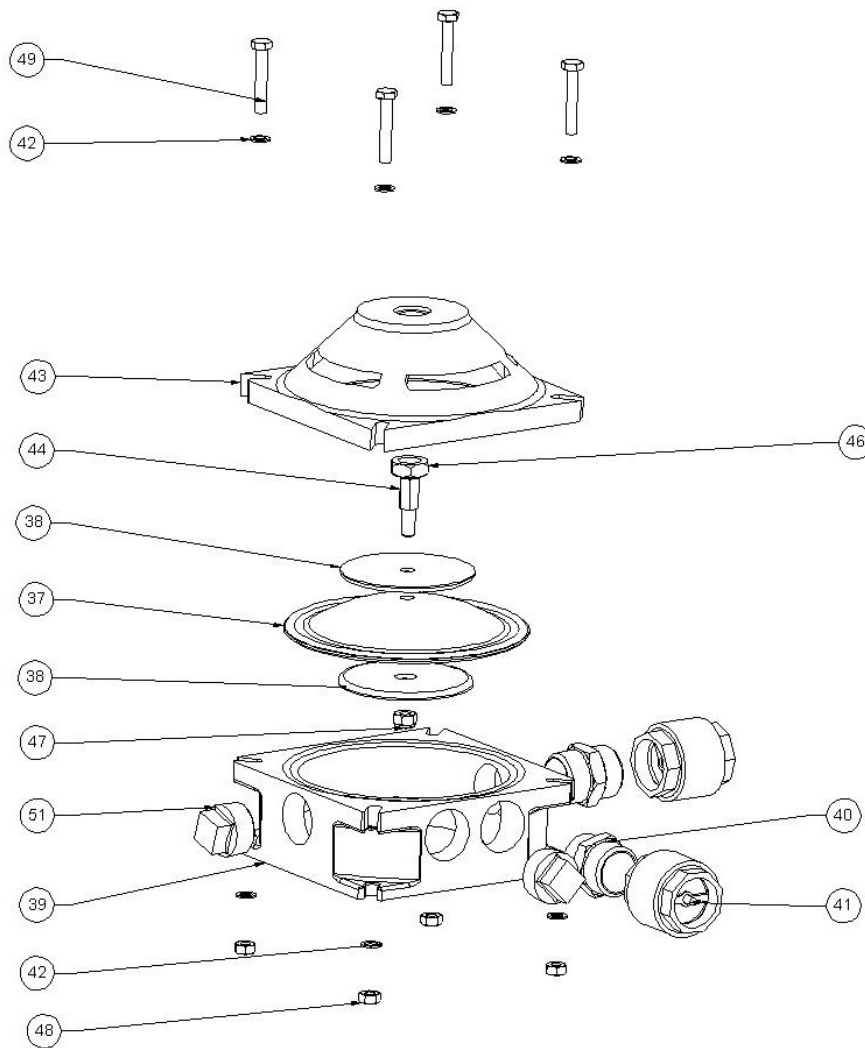


Fig 2

Spare Part Listing—ENVA

ITEM	DESCRIPTION	No. off	PART/SET
37	DIAPHRAGM (BUNA/NITRILE)	1	EN1Ns
38	DIAPHRAGM PLATES	2	EN19s - incl 2xEN19
39	BASE CASTING - MULTIPORT	1	EN3s
40	NIPPLE 1.5" BSP - BRASS	2	EN24s
41	CHECK VALVE 1.5" BSP	2	EN23s
42	WASHER	8	ORDER N25s
43	TOP CASTING	1	EN6s
44	ADAPTOR	2	EN26s
46	RETAINER NUT	1	EN15s
47	NUT M12	1	
48	NUT M10	4	
49	BOLT M10	4	N25s
50	ROLL PIN	1	order EN15s
51	PLUG 1.5" BSP - BRASS	2	EN20s

* Spare part EN23s only includes 1 only Check valve when you order a EN23s

Troubleshooting Guide

TROUBLE	CAUSE	REMEDY
Air leaks continuously from the Valve Body	Damaged or worn Air Piston Cup Seals (10) or Air Piston (11)	Replace cup seals (10) and / or Air Piston (11) 1) follow "ENVA Air Motor Disassembly" steps 1 to 7 and 14 2) Inspect the Cup Seals (10) and Air Piston (11). Replace as required. 3) Apply light grease e.g. Petroleum Jelly to Piston Cup Seals (10) and O' rings (24) and (25) before re-assembly.
Air Motor does not operate, but will cycle when reset button is pressed.	a) The spool (34) is jammed in the valve body (30).	a) Push Reset Button (35). If motor starts, disconnect air inlet and apply 3 or 4 drops of light oil (e.g. sewing machine oil) to air inlet of pump. b) If motor does not start, follow "ENVA Air Motor Disassembly" steps 10,11 and remove the spool assembly (34). 1) Replace Spool (34), and clean valve Body bore (30). 2) When re-assembled, apply 3 or 4 drops of light oil to air inlet of pump.
	b) Top poppet Spring (4) fatigued.	a) Replace top Poppet Spring (4). 1) Unscrew and remove the Top Poppet Assembly (1,2,3,4,5) 2) Replace the Poppet spring (4) and reassemble the top poppet valve assembly (1,2,3,4,5) into the cylinder (7)
Air motor does not operate or cycle when reset button is pressed	a) Lower Poppet Spring (4) fatigued.	a) Replace Bottom Poppet Spring (4). 1) Follow "ENVA Air Motor Disassembly" steps 1 to 8 2) Replace the Poppet spring (4) and reassemble the bottom poppet valve assembly (1,3,4,26 and 27) into the cylinder base (21) 3) When re-assembled, apply 3 or 4 drops of light oil to air inlet of pump.

Product Specifications

PUMP WEIGHT	14 KG
INLET THREAD	1 1/2" BSP (F)
OUTLET THREAD	1 1/2" BSP (F)
WETTED MATERIALS	Aluminium, Santoprene, Brass, Mild Steel, Nylon, Stainless Steel, Nitrile Rubber
BOLTS	Stainless Steel
FLOWRATE	60 LTR / MIN (with water)
AIR PRESSURE	Maximum Air Pressure 850 kPa / 125 psi / 8 bar Minimum Air Pressure 400 kPa / 60 psi / 4 bar



Macnaught Pty Limited

ABN 66 000 075 785

41-49 Henderson Street
Turrella NSW 2205 Sydney Australia
Postal Address PO Box 90
Amcliffe NSW 2205 Sydney Australia

T: +61 2 9567 0401

F: +61 2 9597 7773

W: www.macnaught.com.au

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For a list of Australian Service Centres see macnaught.com.au**