

Air Pump

Maintenance Manual



Warning: Please carefully read and understand all safety instructions before attempting to operate this machine. Failure to follow the exact instructions may result in serious personal injury.

- Always keep your workbench clean.
- Avoid dangerous working environments.
- Do not operate equipment under the influence of drugs, alcohol or medicine.
- Keep all visitors to your working area at a safe distance.
- Use only original New Concept Mining spare parts. Failure to do this may result in serious damage to the pump or injury to the operator, and may affect the manufacturer's guarantee.
- Never attempt to repair a machine in operation.
- Ensure that the pump and accessories comply with the local health and safety regulations.
- Do not exceed the capacity of any part.
- Do not transform or alter the pump, its components, optional equipment or accessories without prior New Concept Mining authorization. Non-authorized alterations may result in lapse of the guarantee, serious damage to the equipment making it unsafe or affecting the performance of the pump.
- For any further information regarding training and operation, please contact your local New Concept Mining agent.

Make sure you wear the required personal protective equipment.

NOTE: If all appropriate procedures have not been followed, THE MANUFACTURER SHALL NOT ACCEPT GUARANTEE CLAIMS. Likewise, if original New Concept Mining spares are not used for the repairs and maintenance of the equipment, THE MANUFACTURER SHALL NOT ACCEPT GUARANTEE CLAIMS.

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NOTE: We are continuously updating our manuals in order to supply our clients with the best technical information available. Parts of this manual may contain information not corresponding with the current configuration of New Concept Mining products. Please contact your local New Concept Mining representative for the latest information on our products innovations and new updated versions of our manuals.

Introduction and General Information

The purpose of this Manual is to provide the Maintenance Technician with detailed information, which will help him to obtain the best performance of the pump. The following List of Parts and diagrams will facilitate the process of placing orders for parts required.

In order to obtain the best performance and longest life of the product, the pump must be serviced periodically and operated in accordance with the instructions.

Make sure to wear the appropriate personal protective equipment when performing maintenance work.

Carefully read this Manual before attempting to repair the pump and keep it at hand as reference while attending to any repair problem.

Standard Guarantee

New Concept Mining does not guarantee that the products here represented are for sale or that such products are appropriate for any particular purpose, and there are no explicit or implicit guarantees made by New Concept Mining except the following standard guarantee.

New Concept Mining guarantees that the material and manufacturing of each product and accessory is sold defect free. The guarantee covers the normal use and service of the product for 90 days from the first day of use, but not exceeding 6 months after shipping the product from the New Concept Mining factory.

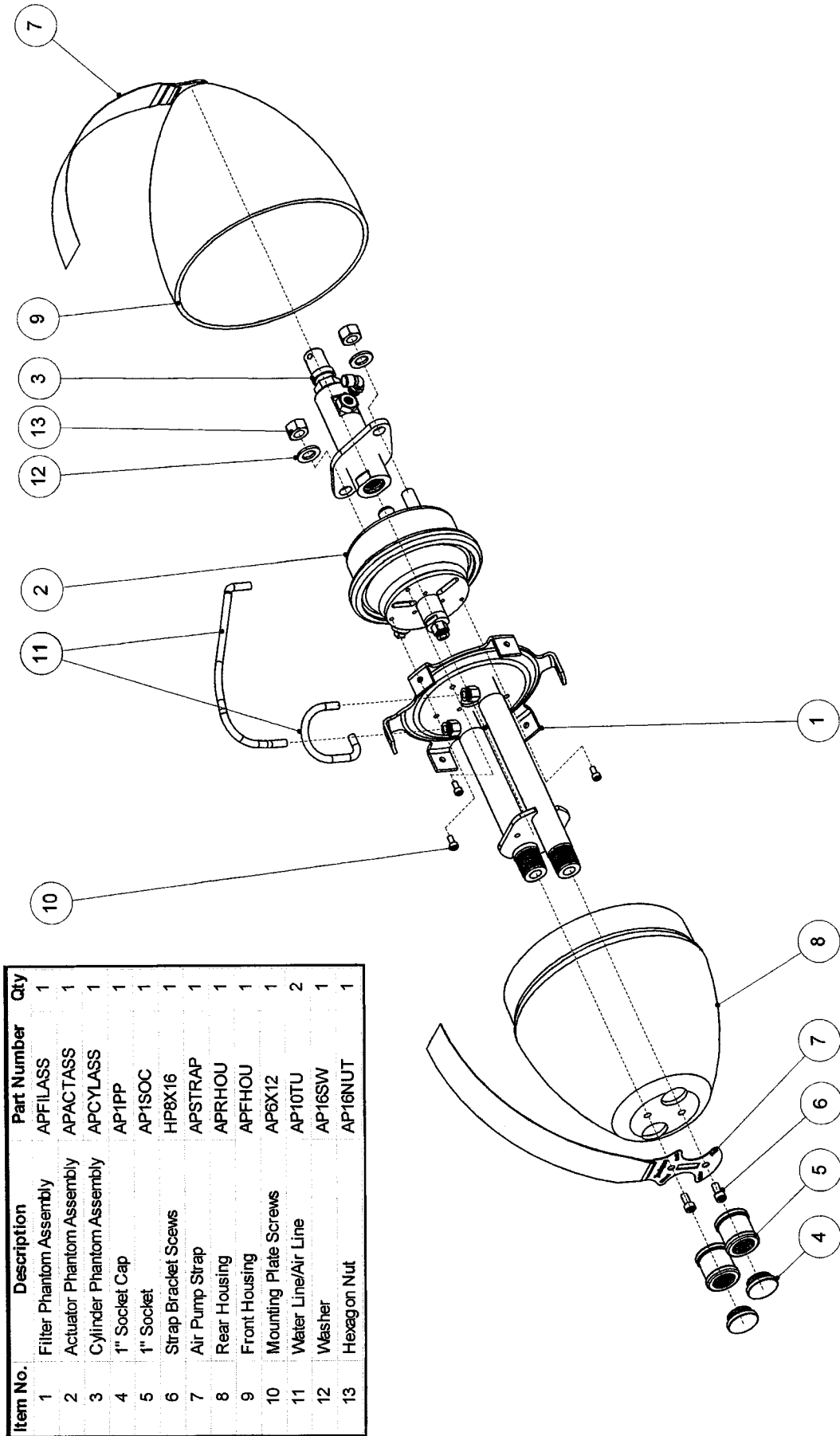
This guarantee is limited to the replacement or repair work conducted in our workshops in Johannesburg, South Africa, or in a designated workshop by the company, of such parts marked as faulty, being the material or workmanship, by the inspector at purchase, subjected to the condition that the faulty part or parts are returned to the place of inspection.

This guarantee is only applicable to new or unused products and accessories, which have not been altered, transformed or in any way repaired, after shipping from the manufacturing plant of New Concept Mining.

Disclaimer

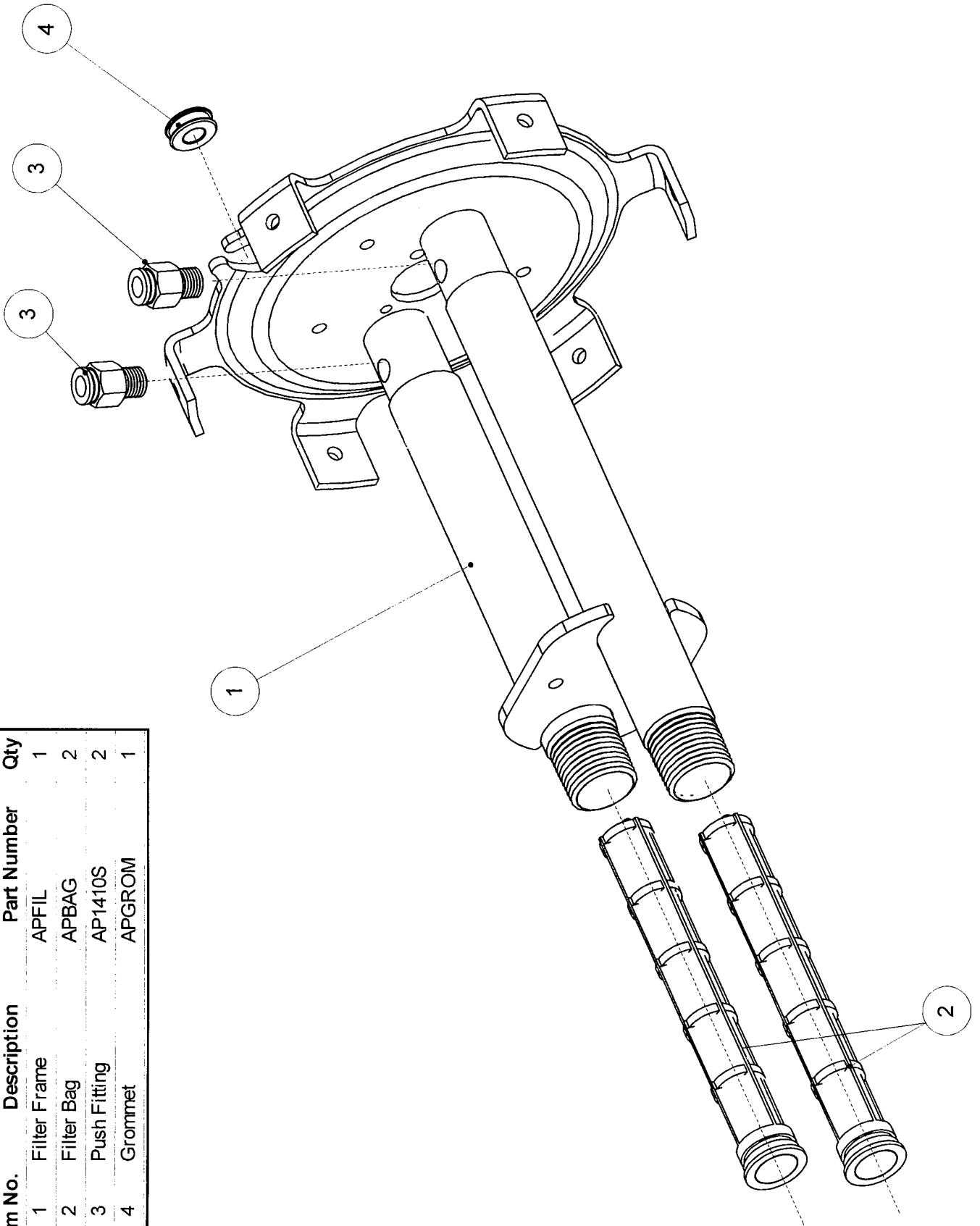
The purchasing party agrees that under no circumstance, will New Concept Mining be held responsible for any cost increases, loss of profit, loss of clients or any other damage/defect, resulting indirectly, unexpectedly or consequentially.

Part Lists and Diagrams

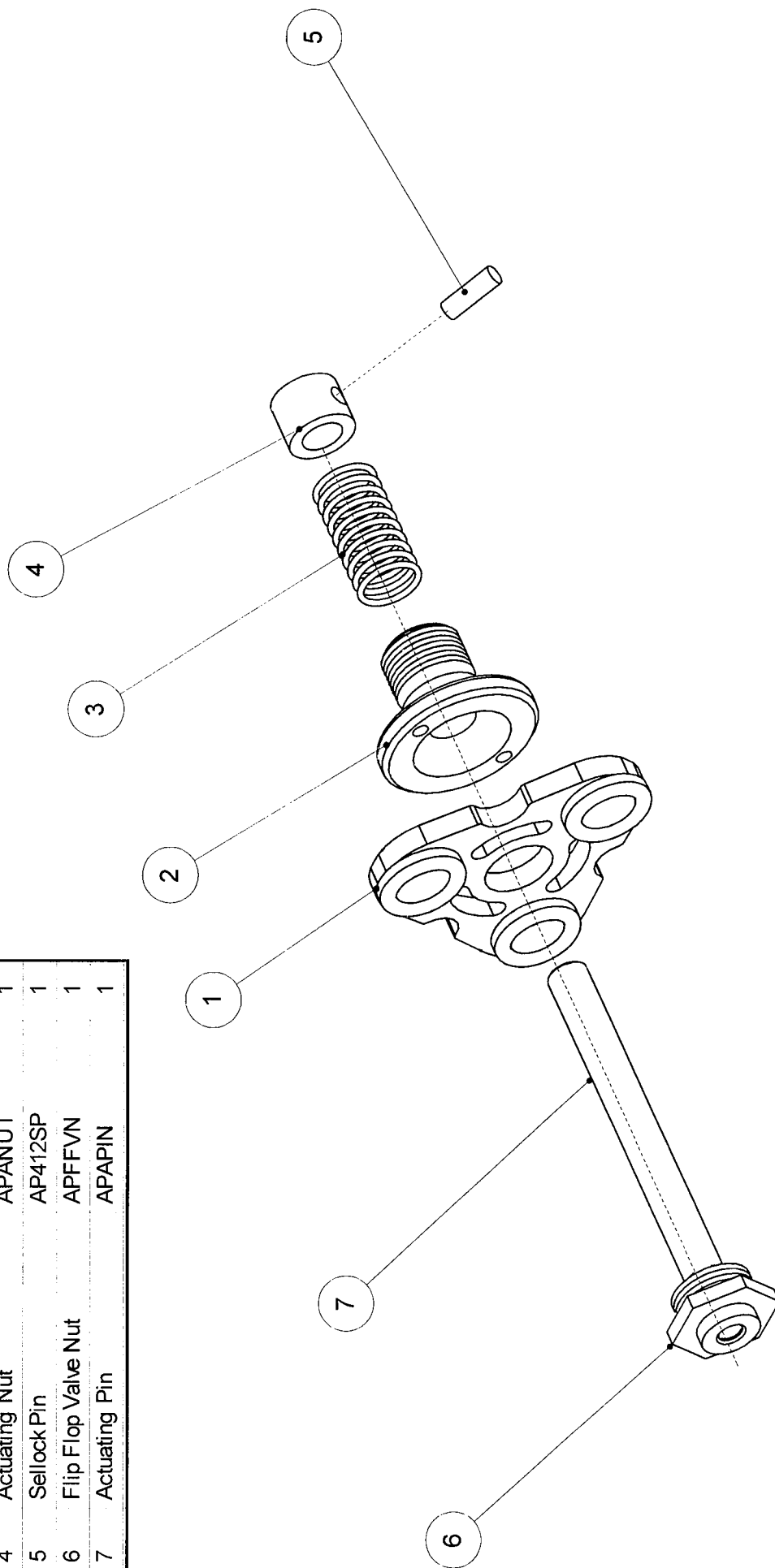


Item No.	Description	Part Number	Qty
1	Filter Phantom Assembly	APFILASS	1
2	Actuator Phantom Assembly	APACTASS	1
3	Cylinder Phantom Assembly	APCYLASS	1
4	1" Socket Cap	AP1PP	1
5	1" Socket	AP1SOC	1
6	Strap Bracket Screws	HP8X16	1
7	Air Pump Strap	APSTRAP	1
8	Rear Housing	APRHOU	1
9	Front Housing	APFHOU	1
10	Mounting Plate Screws	AP6X12	1
11	Water Line/Air Line	AP10TU	2
12	Washer	AP16SW	1
13	Hexagon Nut	AP16NUT	1

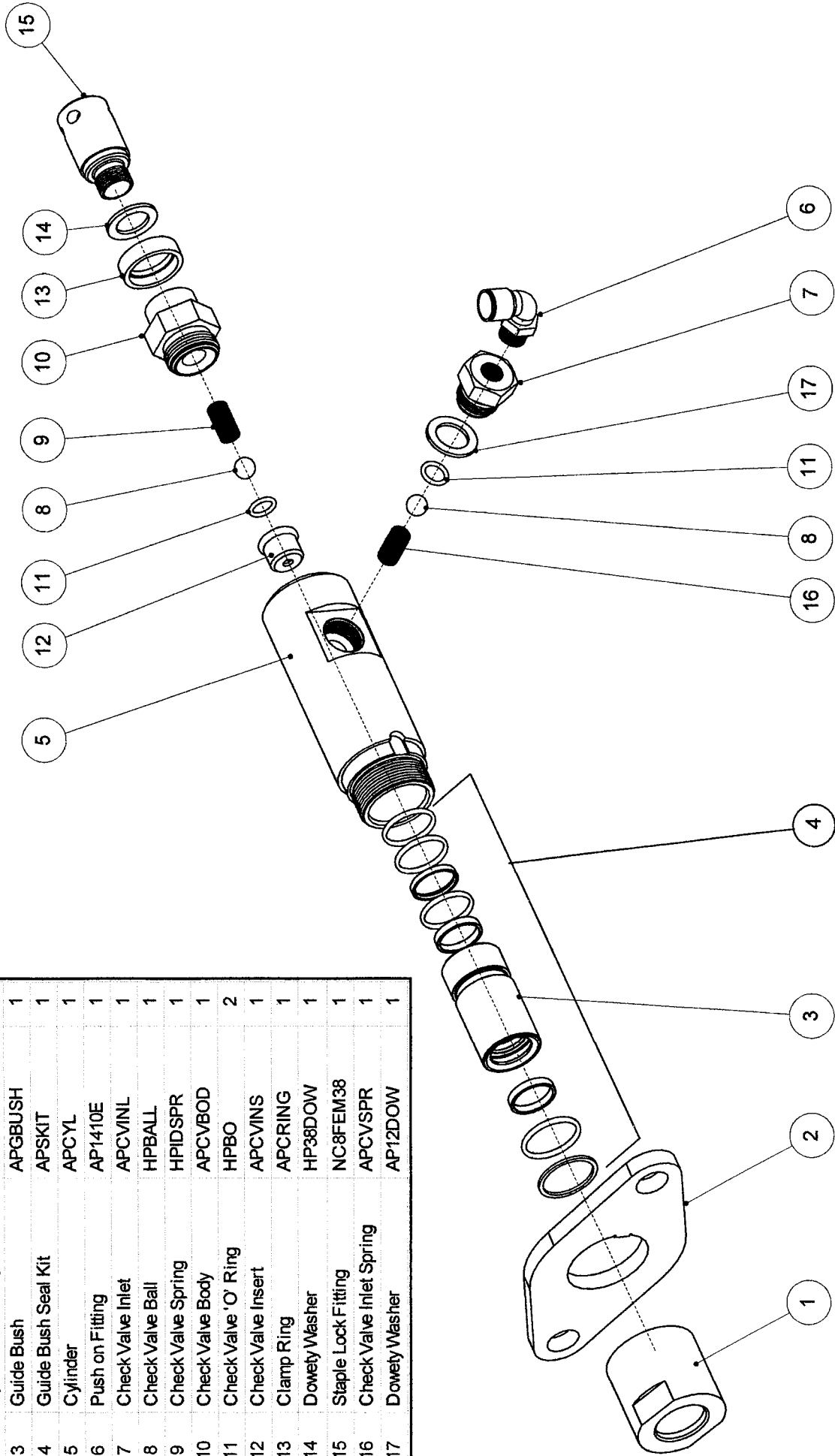
Item No.	Description	Part Number	Qty
1	Filter Frame	APFIL	1
2	Filter Bag	APBAG	2
3	Push Fitting	AP1410S	2
4	Grommet	APGROM	1



Item No.	Description	Part Number	Qty
1	Flip Flop Valve Plate	APFFVP	1
2	Piston Retainer	APPRET	1
3	Exhaust Open Spring	APEOSPR	1
4	Actuating Nut	APANUT	1
5	Sellock Pin	AP412SP	1
6	Flip Flop Valve Nut	APFFVN	1
7	Actuating Pin	APAPIN	1



Item No.	Description	Part Number	Qty
1	Guide Bush Nut	APBNUT	1
2	Cylinder Retaining Plate	APCRPLT	1
3	Guide Bush	APGBUSH	1
4	Guide Bush Seal Kit	APSKIT	1
5	Cylinder	APCYL	1
6	Push on Fitting	AP1410E	1
7	Check Valve Inlet	APCVINL	1
8	Check Valve Ball	HPBALL	1
9	Check Valve Spring	HPIDSPR	1
10	Check Valve Body	APCVBOD	1
11	Check Valve 'O' Ring	HPBO	2
12	Check Valve Insert	APCVINS	1
13	Clamp Ring	APCRING	1
14	Dowty Washer	HP38DOW	1
15	Staple Lock Fitting	NC8FEM38	1
16	Check Valve Inlet Spring	APCVSPR	1
17	Dowty Washer	AP12DOW	1



Description

The Air Pump is basically a water intensifier device. It uses a diaphragm to pump high-pressure water, so it does not require lubrication. The pump has a strap and a handle for easy transportation and is sufficiently sturdy to withstand damage.

The Safety Pistol MUST be used with the air pump.

Routine Maintenance

It is essential to routinely examine and disassemble the pump to ensure its good operation and optimum life span of the components. We recommend that frequently used pumps be subjected to scheduled checks, at least every 90 days and all details be carefully recorded.

Maintenance of every pump follows the same pattern, that is, cleaning of the exterior, disassembling, thorough cleaning of the parts, inspection, replacement of the necessary parts, reassembling and testing.

Disassembling

Required tools:

- 375mm/15” shifting spanner
- 250mm/10” shifting spanner
- Wrenches no. 11,14,16,17,19, 24 and 30.
- Pneumatic tool
- No. 24 socket
- No. 14 socket
- Screwdriver 10mm x 300mm
- Screwdriver 4.5mm x 10mm
- Hammer
- 4 pound hammer
- Rubber mallet
- Allen Key No. 5
- Allen Key No. 6
- Support wooden blocks (TK SJ)
- AP spanner
- Pointed nose pliers
- Punch



Always ensure you wear the prescribed personal protective equipment such as gloves, safety goggles, earplugs and safety shoes during maintenance or repair work to the pump.

Please refer to the diagrams and part lists



1. Clean the pump's exterior surface.
2. Place the pump vertically in the bench vise.



3. Place the U shape staple (NW6STAPLE) in the hydraulic hose connector, then loosen it using a 375mm/15" shifting spanner and remove the plastic cover using the rubber mallet.



4. Place the empty cover in the bench vise, making sure that the U shape staple (NW6STAPLE) is firmly in the staple lock fitting.

5. Using the No. 30 wrench and the 375mm/15" shifting spanner, loosen and remove the check valve body



(APCVBOD), the Dowty washer (HP38DOW), the clamp ring (APCRING) and the staple lock fitting (NC8FEM38).



6. Remove the spring, the ball, the check valve insert (HPIDSPR, HPBALL and APCVINS) from the cylinder.



7. Place the pump in the bench vise and using the No. 6 Allen key loosen the two strap bracket screws (HP8X16).



8. Using the 375mm/15" shifting spanner loosen and remove the air line and water line (AP1SOC). Now remove the rest of the plastic cover.



9. Using the No. 11 wrench pull the water and air lines (AP10TU).



10. With the No. 5 Allen Key loosen the mounting plate screws (AP6X12) and remove the filters.



11. Using the No. 17 and 24 wrenches loosen and remove the push on fitting (AP1410S) and the flip flop cap (APFFCAP).



12. With the small screwdriver remove the flip flop cap 'O' ring (APFFCO).



13. Using the 10mm x 300mm screwdriver loosen the popet screw from the flip flop inlet.



14. Place the pump up side down in the bench vise.



15. With the No. 16 wrench loosen the push fitting (AP1410E) of the cylinder assembling.



16. With the No. 24 wrench remove the check valve inlet (APCVINL), the Dowety washer (AP12DOW), the ball (HPBALL) and the spring (APCVSPR).



17. Using the pneumatic tool and the No. 24 socket or a No. 24 spanner remove the hexagonal nut (AP16NUT) and the washer (AP16SW).





18. Now proceed to remove the cylinder phantom assembling (APCYLASS8) and the diaphragm's spring (APDSPR).



19. Place the cylinder in the bench vise and using the 4 pound hammer remove the cylinder retaining plate (APCRPLT) and the guide bush nut (APBNUT).



20. Place the cylinder assembling horizontally in the bench vise and using the No. 30 wrench and the hammer remove the piston guide bush (APGBUSH).



21. Using a small screwdriver remove all the seals and 'O' rings from the inside and outside of the piston guide bush (APGBUSH).





22. Using two No. 14 wrenches or the pneumatic tool with a No. 14 socket, unscrew the actuator housing screw and remove the clamp (APACLP).



23. Proceed to dismantle the actuator.



24. Using the wooden block supports (TK SJ) and the AP spanner (APSPANNER) remove the flip flop phantom assembly (APFFASS) of the diaphragm (APDIA) and the diaphragm plate (APDPLT).



25. Place the flip flop phantom assembly (APFFASS) in the bench vise and using the punch and hammer remove the sellock pin (AP412SP) and disassemble the set.



26. Place the flip flop valve plate (APFFVP) and the actuating pin (APAPIN) in the bench vise and using the No.19 wrench loosen the valve's nut (APFFVN).



27. Remove the spring (APECSPR) from the interior of the piston (APPIST).



28. Using the No. 5 Allen Key loosen all three flip flop valve screws (AP6X16) of the actuator rear housing (APARH) and remove the exhaust plate (APEPLT), the flip flop body (APFFBOD) and the flip flop valve gasket (APFFVG).





29. Place the actuator rear housing in the bench vise and using the 250mm/10" shifting spanner remove the actuator housing plug (AP38PL).



31. Use the small screwdriver to remove the grommet (APGROM) from the filter assembly.



30. Using the No. 17 wrench loosen and remove the push on fittings (AP1410S) from the filter's assembly.



31. Use the small screwdriver to remove the grommet (APGROM) from the filter assembly.



32. Use a screwdriver to pull up and remove the filters (APBAG).



Assembling

Before starting the assembling work:

Ensure all components are thoroughly washed in solvent and air dried or pat dried with a clean cloth. Carefully re-assemble the pump, do not push or force the components in place. Ensure all rotating or sliding components are properly aligned.



1. Use Teflon tape to cover the push fitting thread (AP1410S) and fit them in the filters assembly with a No. 17 wrench.



2. Fit two new filter bags (APBAG) into the assembly and tap them in properly with a rubber mallet.





3. Using the pointed nose pliers insert the grommet (APGROM) in place.



4. Assemble the actuator rear housing (APARH), the flip flop body (APFFBOD), if damaged, a new flip flop valve gasket (APFFVVG) and the exhaust plate (APEPLT) together. Align the set as shown in the red framed picture below.



ASSEMBLY



5. Apply threadlock 3247 into the holes of all three flip flop valve screws (AP6X16) and tighten them using the No. 5 Allen Key.



6. Apply threadlock 3247 to the actuator rear housing (APARH) plug's thread (AP38PL), place it in the bench vise and tighten using a 250mm/10" shifting spanner.



7. Apply threadlock 3247 to the flip flop valve nut (APFFVN), place the flip flop valve plate (APFFVP) in the bench vise and using a No. 19 wrench tighten the nut.



8. Fit the piston retainer (APPRET); a new exhaust open spring (APEOSPR) if damaged, and the actuating nut on the actuating pin (APAPIN). Place the set in the bench vise and using the pointed nose pliers and hammer insert the sellock pin (AP412SP).



9. Assemble the flip flop with its diaphragm (APDIA) and the plate (APDPLT). Fit the spring (APECSPR, a new one should the old be damaged) into the piston (APPIST). Apply threadlock 3247 to the flip flop and insert it in the piston.

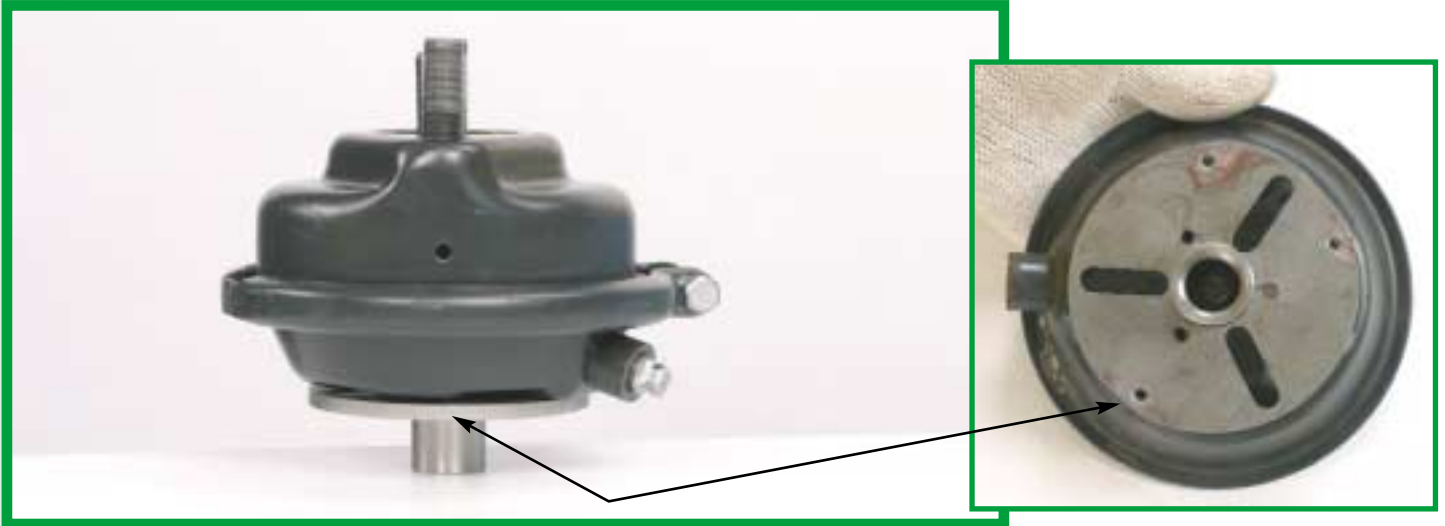
ASSEMBLY



10. Place this set in the bench vise and using the AP spanner tighten the piston retainer (APPRET).



11. Join the diaphragm to the actuator rear housing. Apply threadlock 3247 to the flip flop inlet poppet (APFFIP) and tighten it with the 10mm x 300mm screwdriver while affixed to the bench vise.



12. Join the actuator housings. Align one of the holes of the actuator front housing with the corresponding hole of the actuator rear housing exhaust plate (APEPL). Place the set in the bench vise and proceed to seal it with the actuator clamp (APACL).P).

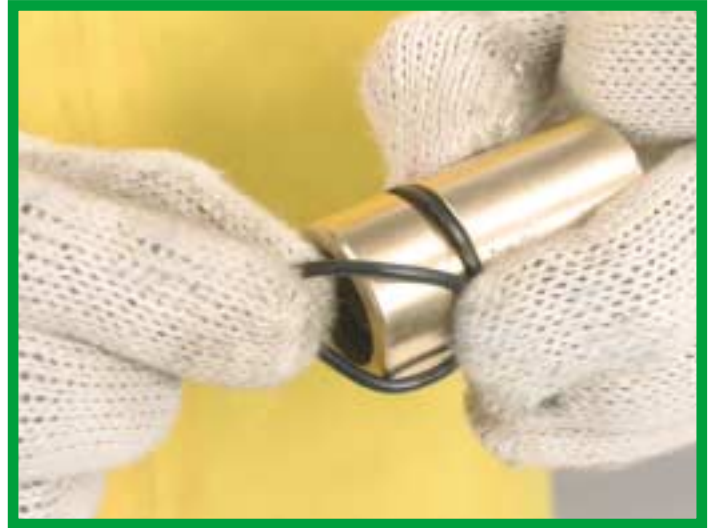


13. Using the pointed nose pliers fit the tie rod into the inner groove, the excluder 'O' ring into the outer groove and the excluder over the 'O' ring inside the piston guide bush (APGBUSH). The tie rod, 'O' ring and excluder must be new.

ASSEMBLY



ASSEMBLY



14. Do the same with the exterior flat back-up and the 'O' ring at the opposite end. The 'O' ring and the flat back up must be new.



15. Apply lithium based multipurpose grease on the inside and outside the piston guide bush (APGBUSH).



16. Insert the piston guide bush (APGBUSH) into the Cylinder (APCYL) ending with the flat back-up. Use a rubber mallet to tap in place.

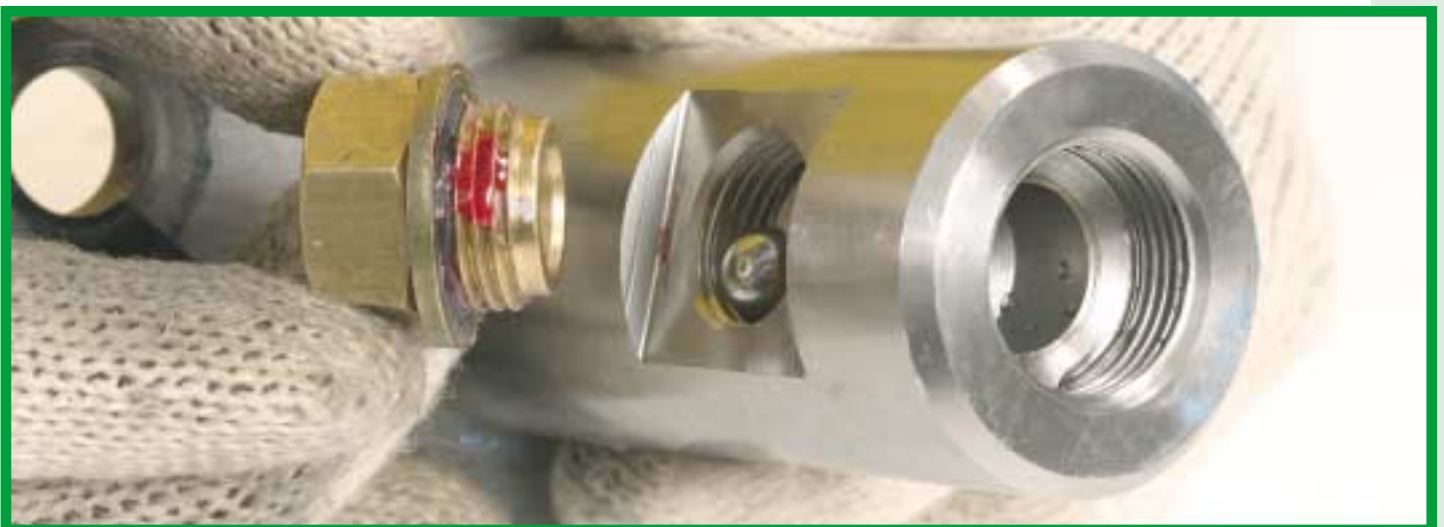
ASSEMBLY



17. Assemble the cylinder (APCYL) with the cylinder plate (APCRPLT) and the guide bush nut (APBNUT).



18. Fit the spring (APCVSPR) and the check valve ball (HPBALL) inside the cylinder. If the spring is damaged, it must be replaced.



19. Fit the Dowety washer (AP12DOW, a new one should there be a leak) on the check valve inlet (APCVINL), apply threadlock 3247 and tighten it onto the cylinder.



20. Fix the cylinder in the bench vise, fit the check valve insert (APCVINS), the ball (HPBALL) and the check valve spring (HPIDSPR) inside the cylinder. If the spring is damaged, it must be replaced.



21. Now fit the check valve body (APCVBOD). Should there be a water leak between the body and the cylinder when testing the pump, apply the white Teflon tape to the body's thread. Then fit the Dowety washer (HP38DOW) and the staple lock fitting (NC8FEM38).

ASSEMBLY



22. Using the No. 24 wrench tighten the check valve inlet (APCVINL).



Then using the 4 pound hammer tighten the cylinder retaining plate (APCRPLT).
Using a No. 30 wrench tighten the check valve body (APCVBOD).



23. Insert the diaphragm spring (APDSPR) into the actuator assembly. Apply lithium based multipurpose grease to the actuator front housing screws and to the piston.



24. Join the cylinder assembly and using a pneumatic tool and No. 24 socket or a same size wrench, tighten the two hexagonal nuts (AP16NUT). Remember to put the washers (AP16SW) in place.



Ensure that the two horizontal holes of the Actuator Front Housing (APAFH) are on the same side as the push on fitting (AP1410E) as shown in the photograph above.



25. Fit the push-on fitting (AP1410E) in the check valve inlet (APCVINL) and tighten it using a No. 16 wrench.

ASSEMBLY



26. Place the actuator in the bench vise with cylinder facing down and put the flip flop cap (APFFCAP) in place, with its corresponding 'O' ring (APFFCO, a new one should there be a leak) and tighten it using a No. 24 wrench.



27. Wrap Teflon tape round the push on fitting thread (AP1410S) and tighten it with a No. 17 wrench.



28. Tighten the actuator bolts using No. 14 wrenches and/or pneumatic tool.



29. Fit the filters assembly, apply threadlock 3247 to the screw holes (AP6X12) and tighten with a No. 5 Allen Key.



30. Then fix the water line and air line (AP10TU).



ASSEMBLY

The air pump is now ready for its first testing.

Always ensure that the re-assembled pump is fully operational before you leave the repair workshop.

You need a test bench with water and compressed air outlets.

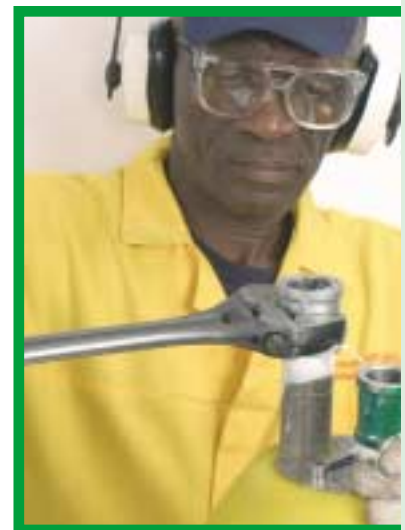
Ensure you wear the proper personal protective equipment.

Procedure

- a. Connect the water line, the safety pistol and the pressure gauge to the hydraulolts mouth pieces.
- b. Drain the water line and airline before connecting
- c. Start pumping, the pressure gauge must reach between 25 and 28 MPa and the water will overflow through the safety pressure outlet of the pistol, otherwise adjust the device with the safety pistol setting tool (JP-STs) adjusting the safety valve (SAFRADJ) of the pistol (please refer to the safety pistol maintenance manual). Repeat until the required pressure is achieved.
- d. Check for leakage around the water inlets and outlets. Ensure there are no leaks through the pump's body and/or the Safety Pistol.



31. Place the pump in the bench vise and assemble the rear housing (APRHOU), the strap (APSTRAP) and tighten the two screws (HP8X16) with the No. 6 Allen Key.



32. Use Teflon tape around the air and water inlets threads and install the appropriate size hose connectors.



33. Turn the pump and fix it in the bench vise. Remove the Dowety washer (HP38DOW) and the hydraulic hose connector (NC8FEM38) of the cylinder. Now put the front housing (HAPFHOU) in place. Insert the clamp ring



(APCRING) in the hydraulic hose connector (NC8FEM38) and the Dowety washer (HP38DOW). Put the 'U' pin (NW6STAPLE) in place and tighten using a 375mm/15" shifting spanner.



The air pump is now fully assembled.

ASSEMBLY

Testing the air pump

NOTE: Always ensure that the re-assembled pump is fully operational before you leave the repair workshop.

You need a testing bench with water and compressed air outlets.

Ensure you wear the required personal protective equipment.

Procedure

- a. Connect the water line, the safety pistol and the pressure gauge to the hydrabolts mouthpieces.
- b. Drain the water line and airline before connecting them. First open the inlet valve. Never open or connect the compressed air valve before the water. This way you will prevent flooding the pump.
- c. Start pumping, the pressure gauge must reach between 25 and 28 MPa and the water will overflow through the safety pressure outlet of the pistol, otherwise adjust the device with the safety pistol setting tool (JP-ST5) adjusting the safety valve (SAFRADJ) of the pistol (please refer to the safety pistol maintenance manual). Repeat until the required pressure is achieved.
- d. Check for leakage around the water inlets and outlets. Ensure there are no leaks through the pump's body and/or the Safety Pistol.

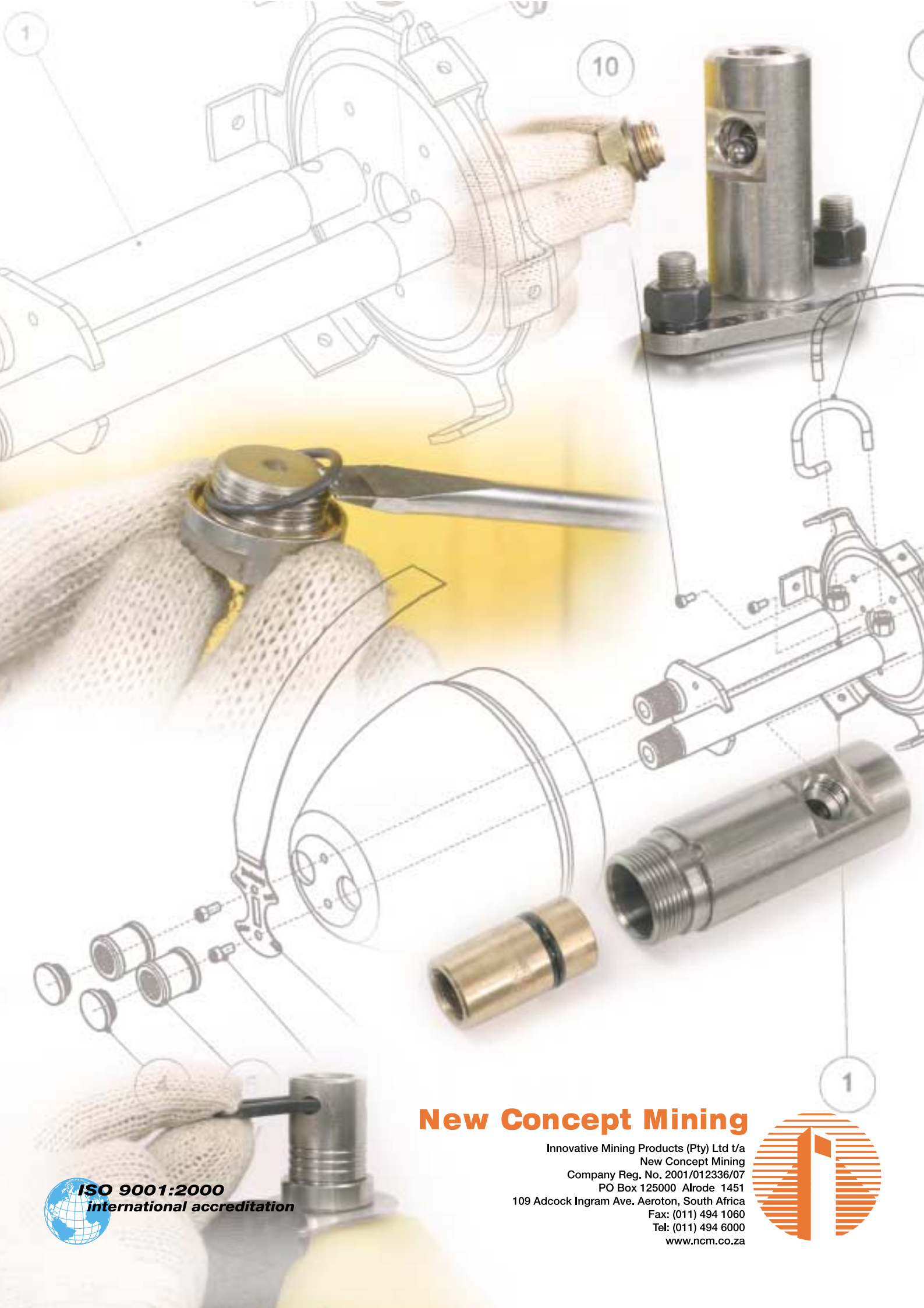
Troubleshooting

Problem	Cause	Solution
<ul style="list-style-type: none"> Water leakage while pump is on 	<ul style="list-style-type: none"> Worn seals, gasket or 'O' rings Damaged water line 	<ul style="list-style-type: none"> Replace them
<ul style="list-style-type: none"> Water leakage while pump is off 	<ul style="list-style-type: none"> Water and air lines incorrectly connected 	<ul style="list-style-type: none"> Re-connect the hoses
<ul style="list-style-type: none"> Water fails to come out during pumping 	<ul style="list-style-type: none"> Insufficient water intake The intake valve does not open correctly 	<ul style="list-style-type: none"> Supply correct volume of water Check the water filter as it might be blocked Replace the valve
<ul style="list-style-type: none"> The pump does not reach the appropriate pressure 	<ul style="list-style-type: none"> Insufficient air pressure 	<ul style="list-style-type: none"> Supply the correct air pressure
<ul style="list-style-type: none"> Water leakage through the water hose connector and the pump 	<ul style="list-style-type: none"> Damaged 'O' ring Incorrect hose connector size Connection of the water hose has a leak 	<ul style="list-style-type: none"> Replace the 'O' ring Make sure you are using the correct size Replace the connector
<ul style="list-style-type: none"> Difficulty when trying to remove the mouthpiece of the Hydrabolt / Jackpot after pumping 	<ul style="list-style-type: none"> The safety pistol is not releasing pressure when trigger is released 	<ul style="list-style-type: none"> Service
<ul style="list-style-type: none"> Water leakage through the mouth piece 	<ul style="list-style-type: none"> Incorrect mouth piece Damaged mouth piece seal 	<ul style="list-style-type: none"> Make sure you are using the correct mouth piece Replace the seal

Technical Specifications

Specification	Unit	Low pressure pump	High pressure pump
Minimum air pressure input	bar	3.5	3.5
Maximum air pressure input	bar	7	7
Minimum water pressure input	bar	2	2
Maximum water pressure input	bar	18	18
Water pressure output: Air pressure input		33:1	80:1
Mass	kg	11.24	12.01

Notes:



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