

EC-3000 Service & Maintenance Manual

REV 2

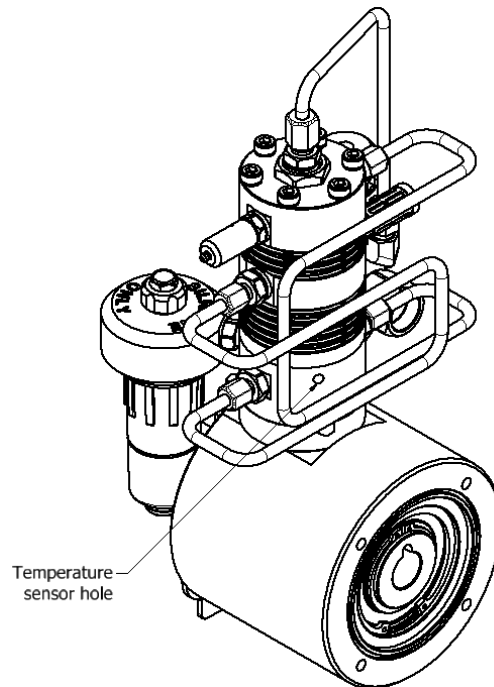
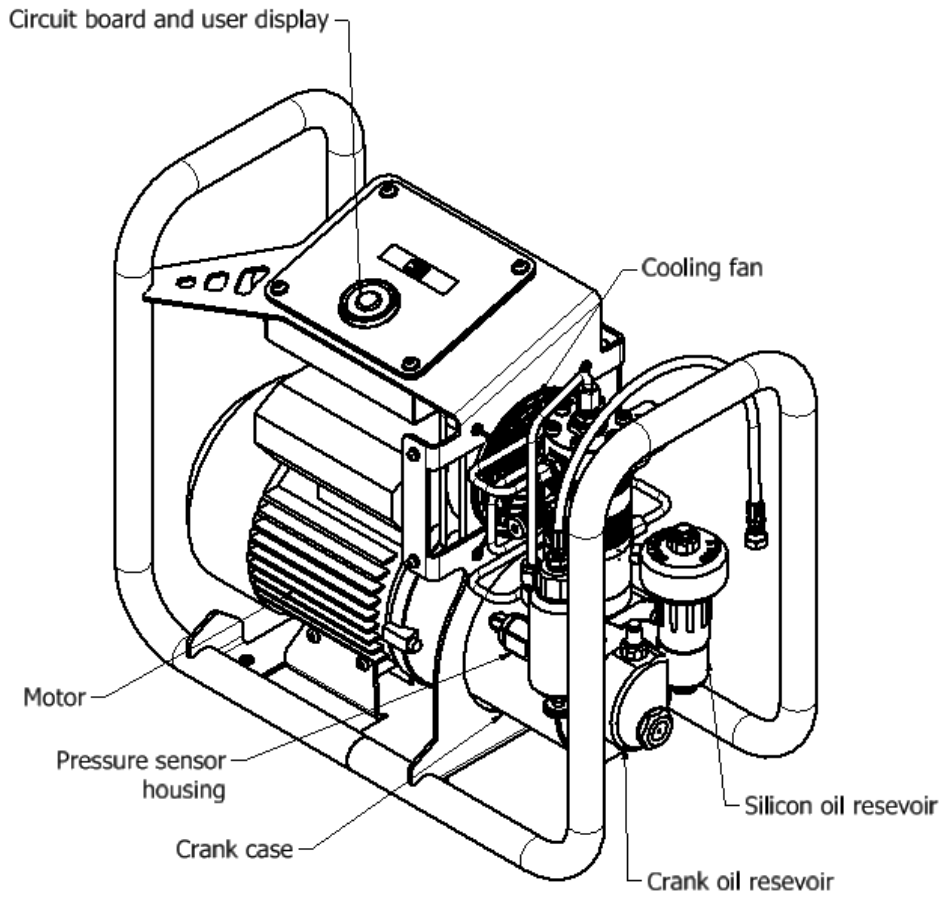


This manual describes how to perform the servicing and maintenance of the EC-3000 Hill Compressor.

TABLE OF CONTENTS

Overview	2
Model Specification	3
Maintenance Schedule.....	3
Theory of Operation.....	4
Troubleshooting Chart.....	5
Safety	6
Maintenance.....	7
1 - How to disassemble and change the compressor side valves	8
2 - How to disassemble and change the compressor final stage valve.....	13
3 - How to check and change the piston O-rings.....	16
4 - How to change the oil.....	21
5 – Crank case maintenance	22
6 – Replacing burst disc	24
Fuses	24

Overview



Model Specification

MODEL	CODE	VOLTAGE	Hz	POWER
UK	3000-001	230	50	0.75 kW
US	3000-002	115	60	0.75 kW
EU	3000-003 (004)	230	50	0.75 kW
AUS	3000-005	230	50	0.75 kW

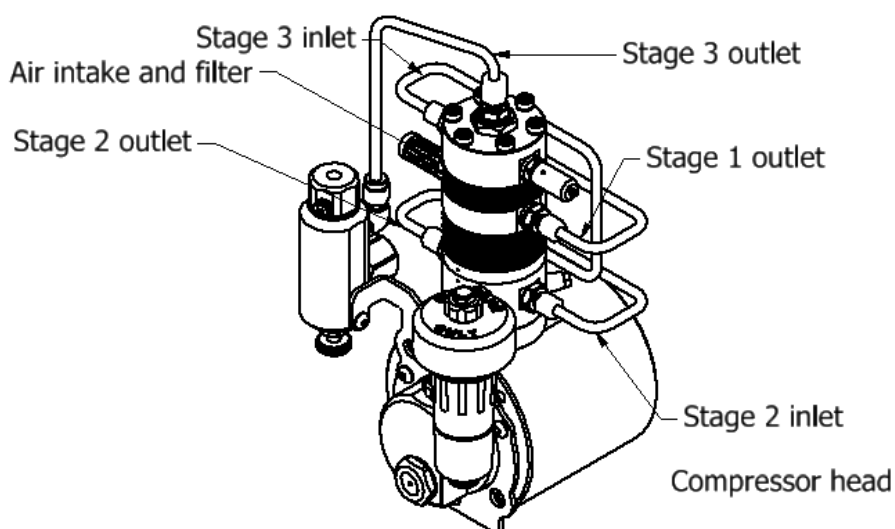
Maintenance Schedule

OPERATION	TIME PERIOD
Change crank oil.	50 hours running time or 1 year's use. Whichever comes first.
Replace ball valves.	50 hours running time or if compressor function decreases.
Replace piston O-rings.	When required.
Replace or clean final stage valves.	When pressure release valve hisses
Replace side bullet valves.	50 hours running time or if compressor function decreases.

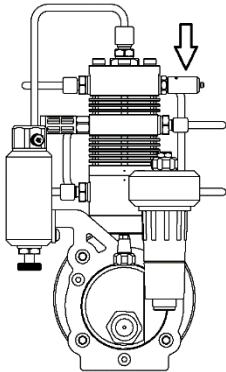
Theory of Operation

The compressor has three stages of compression. Each stage compressing the air to a higher pressure than previous.

- A. The user activates the compressor with the power switch on the side of the machine and attaches the compressor to the cylinder.
- B. The user selects the desired units and fill pressure.
- C. The user starts the compressor. The motor is switched on via a relay and pressure builds.
 - a. The pressure and temperature are constantly monitored via sensors.
 - b. When the temperature goes above 75 degrees Celsius the filling will pause and restart when 65 degrees Celsius is reached.
 - c. Once the desired pressure is released the compressor stops filling.
- D. Air is taken through the inlet filter into stage one.
- E. The air passes into stage 2 and is further compressed.
- F. The air passes through a filter and into stage 3 and is further compressed.
- G. The air is passed into a water separator which removes the majority of moisture from the air.
- H. The air passes from the compressor into the cylinder



Troubleshooting Chart

SYMPTOMS	CAUSES	POSSIBLE REMEDY
<p>Air coming out of pressure release valve.</p>  <p>Pressure will not exceed ~100 Bar.</p>	<ul style="list-style-type: none"> • Issue with top stage valve • Piston O-ring deteriorated 	<ul style="list-style-type: none"> • Unscrew the bleed screw slightly to introduce a slight leak. Allow the compressor to run for 10 minutes. • Clean top stage valve • Replace piston O-ring.
<p>Compressor no longer making pressure or very slow.</p>	<ul style="list-style-type: none"> • Ball valve in compressor deteriorated. 	<ul style="list-style-type: none"> • Replace ball valve.
<p>Compressor stalling at higher pressures.</p>	<ul style="list-style-type: none"> • Ball valve in compressor deteriorated. • Issue with top stage valve 	<ul style="list-style-type: none"> • Clean top stage valve • Replace piston O-ring. • Replace ball valve.
<p>Compressor leaking / depressurizes without opening bleed screw.</p>	<ul style="list-style-type: none"> • Quick release fitting worn. • Seal failure 	<ul style="list-style-type: none"> • Replace quick release fitting. • Use leak detector to locate.
<p>Loud bang and compressor starts leaking.</p>	<ul style="list-style-type: none"> • Burst disc failure. 	<ul style="list-style-type: none"> • Replace burst disc.

Safety



IMPORTANT

THIS PRODUCT IS DESIGNED TO **FILL** PRE-CHARGED PCP AIR GUNS AND PAINTBALL GUNS DIRECTLY. IT CAN ALSO BE USED TO TOP UP SMALL TANKS, BUDDY BOTTLES, AND CYLINDERS UP TO 7 LITRES. LARGE CYLINDERS AND TANKS ABOVE 4 LITRES SHOULD ONLY BE FILLED BY COMPETENT OR QUALIFIED PEOPLE

NOT FOLLOWING THE INSTRUCTIONS OR MISUSE OF THE COMPRESSOR WILL VOID YOUR WARRANTY AND MAY RESULT IN DEATH OR INJURY



DANGER OF EXPLOSION

FROM OVERFILLING OF COMPRESSED AIR BOTTLES

DO NOT EXCEED MAXIMUM FILL PRESSURE OF YOUR CYLINDER AT ROOM TEMPERATURE ONLY FILL CYLINDERS THAT ARE IN GOOD CONDITION AND ARE IN DATE OF INSPECTION



IMPORTANT



READ ALL INSTRUCTIONS BEFORE USE TO PROTECT YOUR EYES. YOU SHOULD ALWAYS WEAR SAFETY GLASSES WHEN OPERATING THIS COMPRESSOR AND HEARING PROTECTION WHEN BLEEDING



WARNING

THIS COMPRESSOR PRODUCES CLEAN AIR SUITABLE FOR FILLING PCP AIRGUNS IT DOES NOT COMPRESS AIR SUITABLE OR CERTIFIED FOR BREATHING APPARATUS. DO NOT USE IT TO FILL SCUBA TANKS THAT MAY LATER BE USED FOR BREATHING



DANGER OF ELECTRIC SHOCK

DO NOT OPERATE IN THE RAIN OR WITH WET HANDS OR CLOTHES



DANGER

PARTS OF THIS COMPRESSOR GET VERY HOT



WARNING

DO NOT TOUCH MOVING PARTS FOR EXAMPLE THE COOLING FAN.KEEP FINGERS AND LOOSE CLOTHING AWAY FROM MOVING PARTS

OPERATING TEMPERATURE

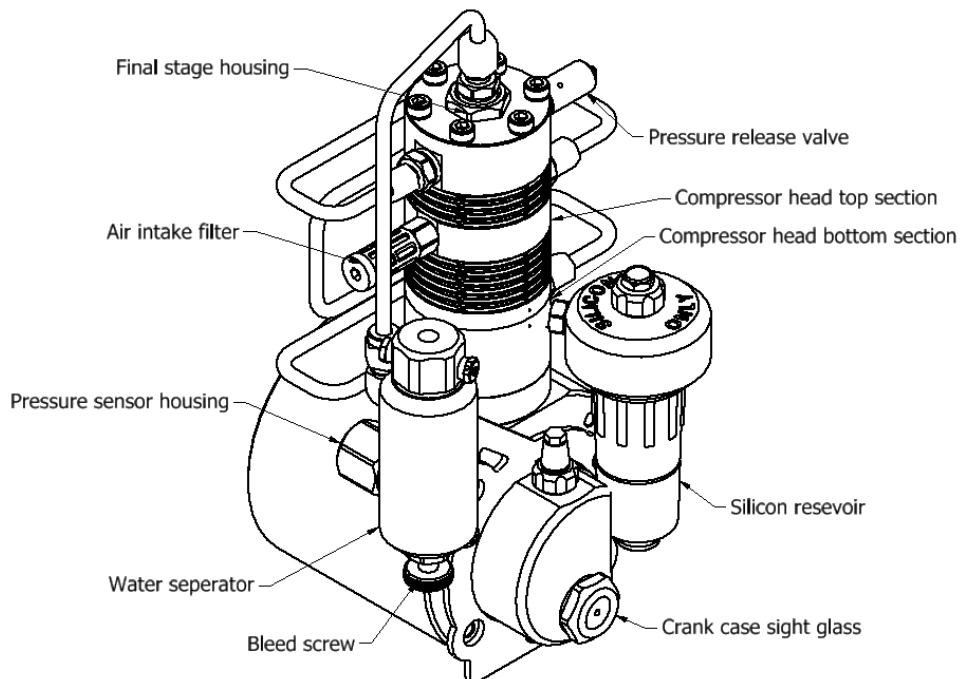
+5°C to 75°C (41°F to 167°F)

THERMAL PROTECTION WILL NOT ALLOW COMPRESSOR TO START OUTSIDE THIS RANGE

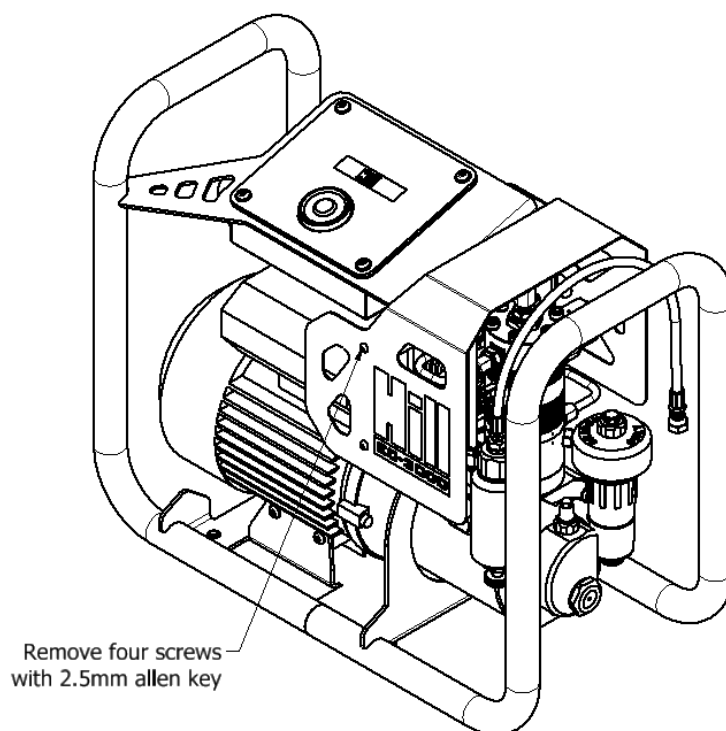
Maintenance

ALWAYS ENSURE BLEED SCREW IS FULLY UNDONE AND COMPRESSOR IS DISCONNECTED FROM THE CYLINDER BEFORE UNDERTAKING MAINTENANCE.

ENSURE COMPRESSOR IS SWITCHED OFF & UNPLUGGED.



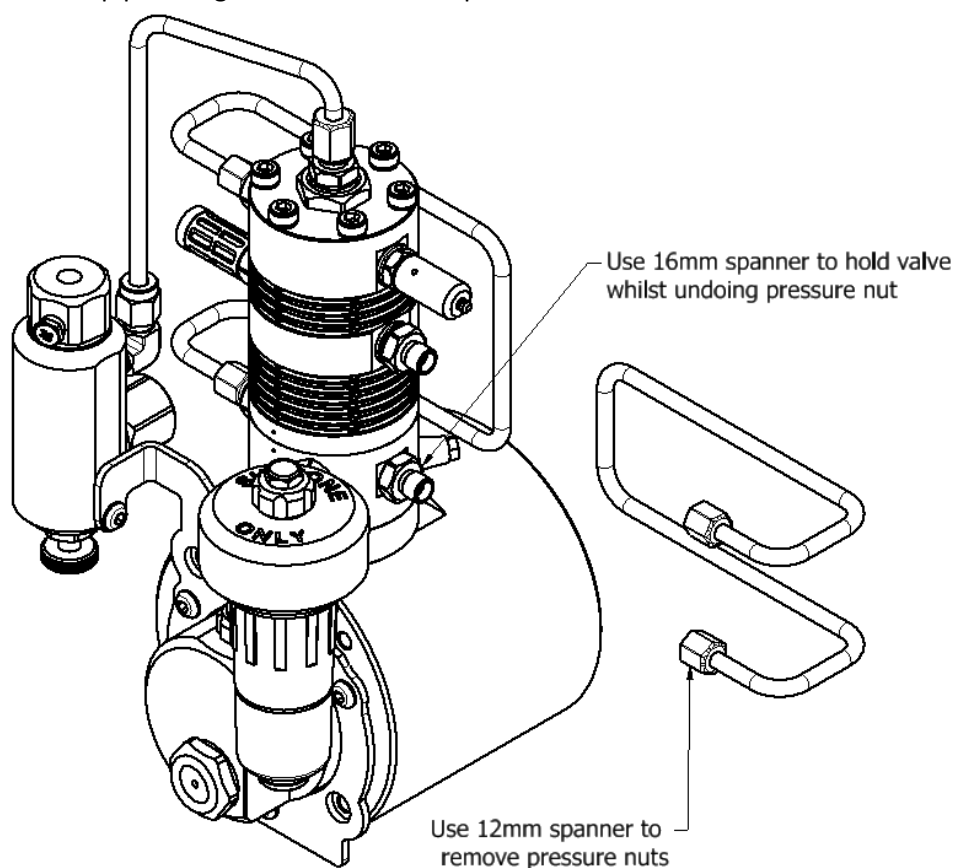
The cowl should be removed before any maintenance.



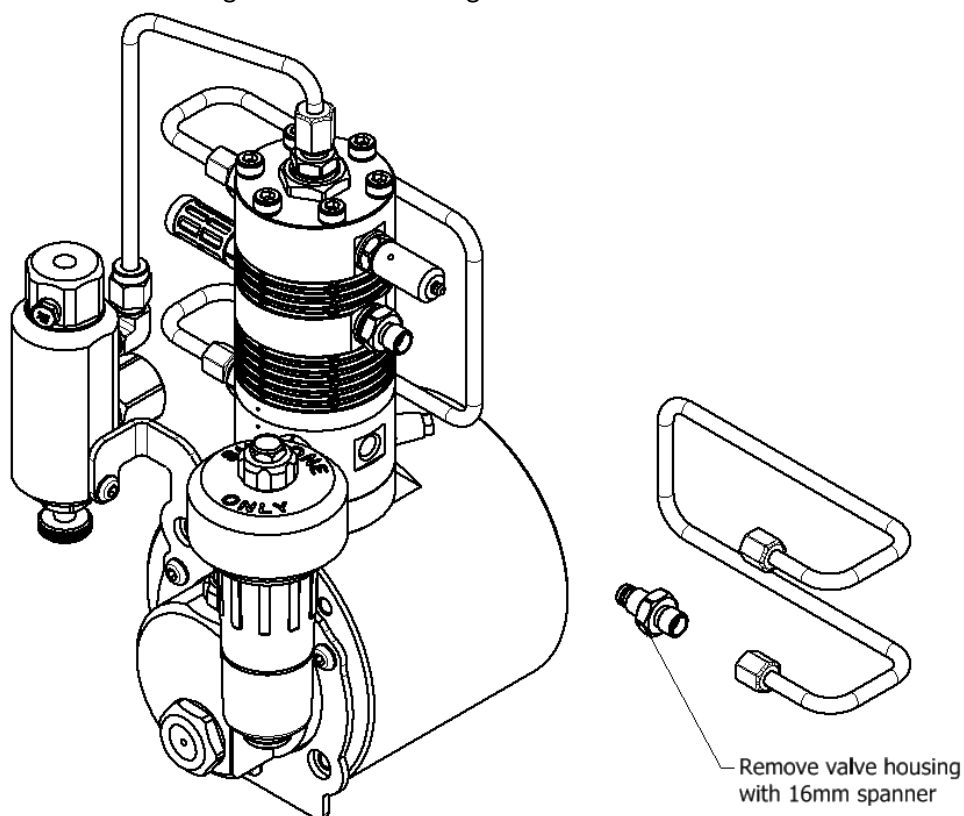
1 - How to disassemble and change the compressor side valves

During use the valves of the compressor will gradually wear. The EC-3000 has several internal filters that stop any debris entering the compressor or the item you are filling. The valves will eventually need replacing at the right time to keep the compressor in optimal condition.

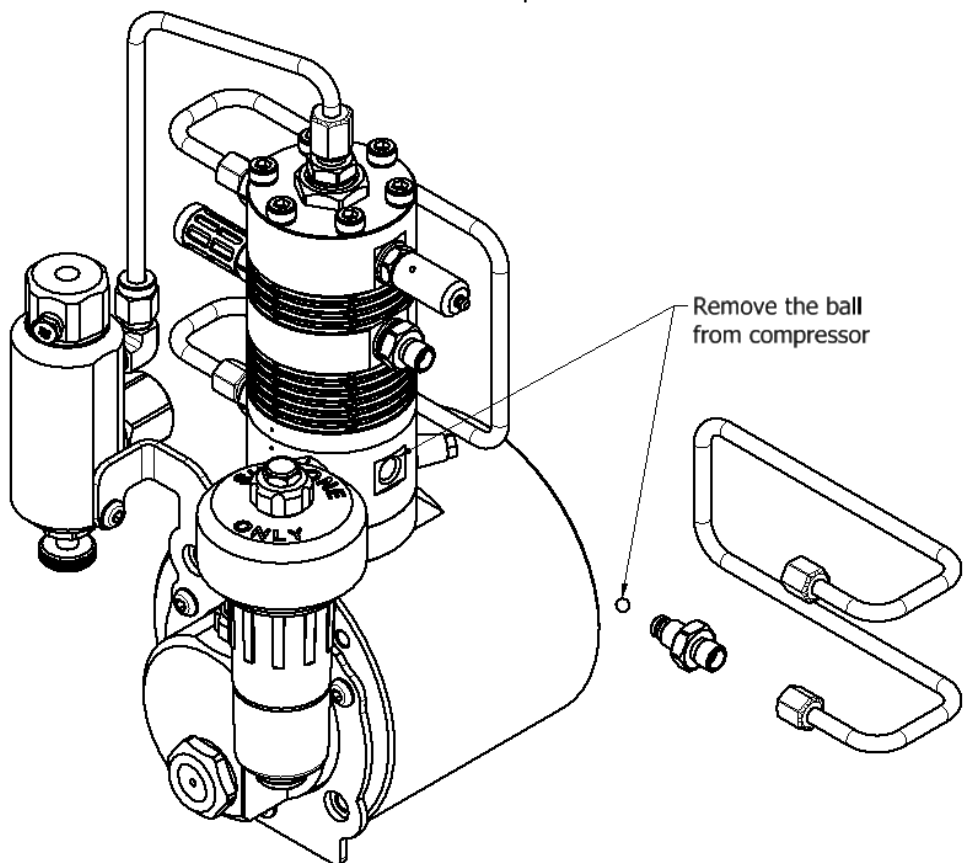
1. Remove pipe on right hand side of compressor head.



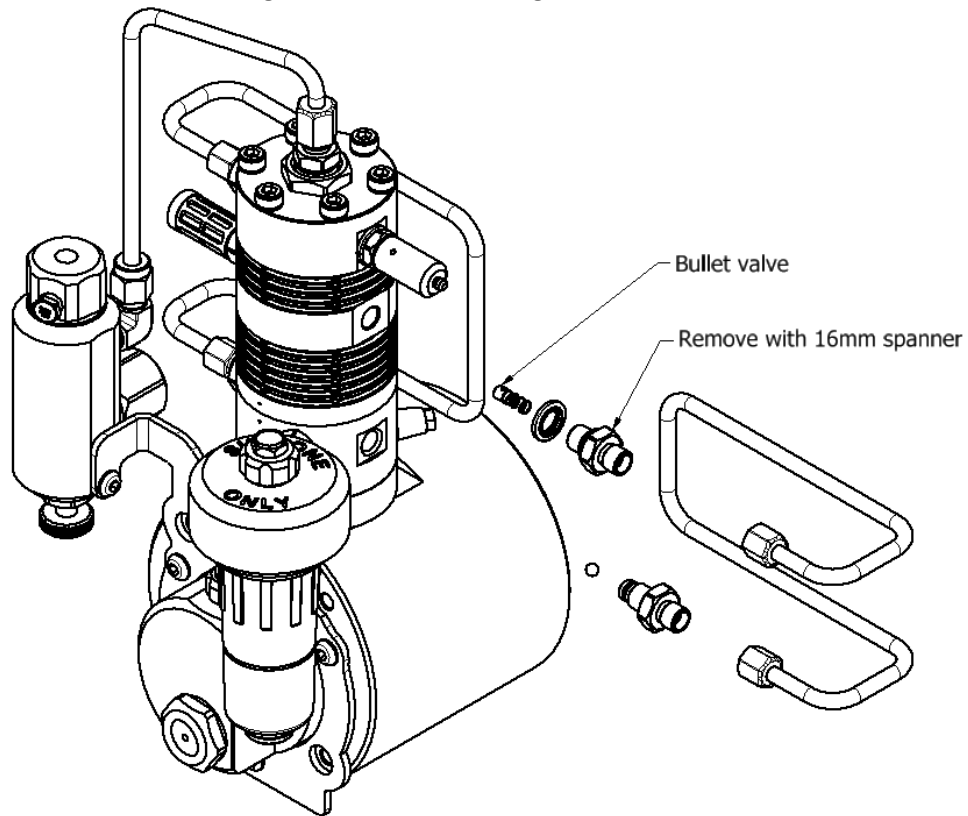
2. Remove bottom right ball valve housing.



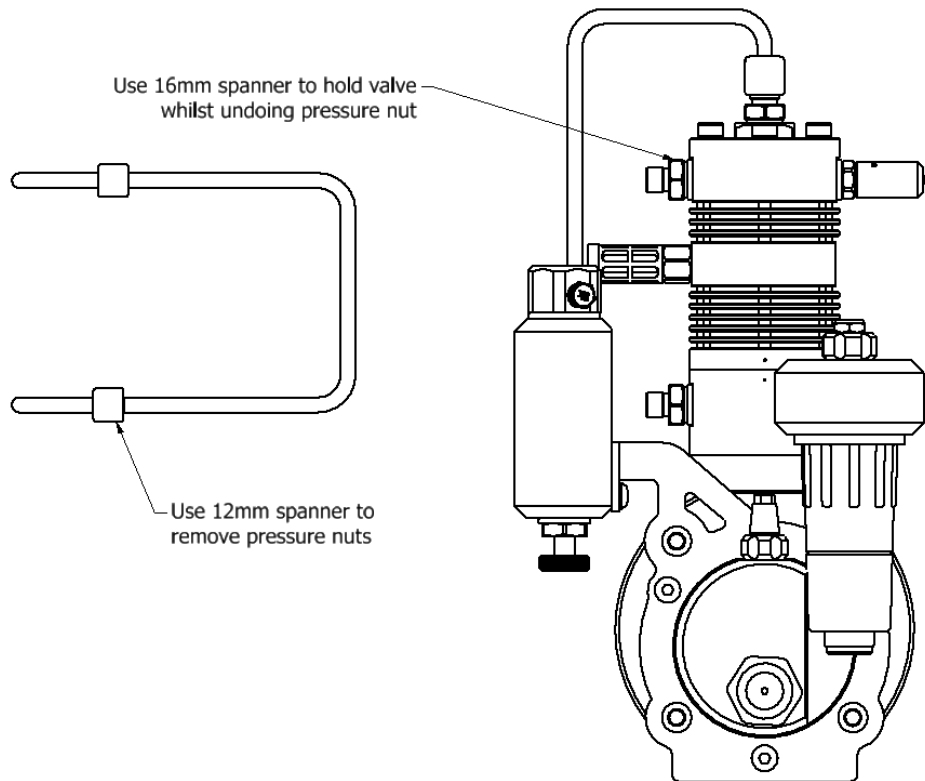
3. Remove the ball from the compressor. It may be necessary to use a small object such as a craft knife to remove the ball from the compressor.



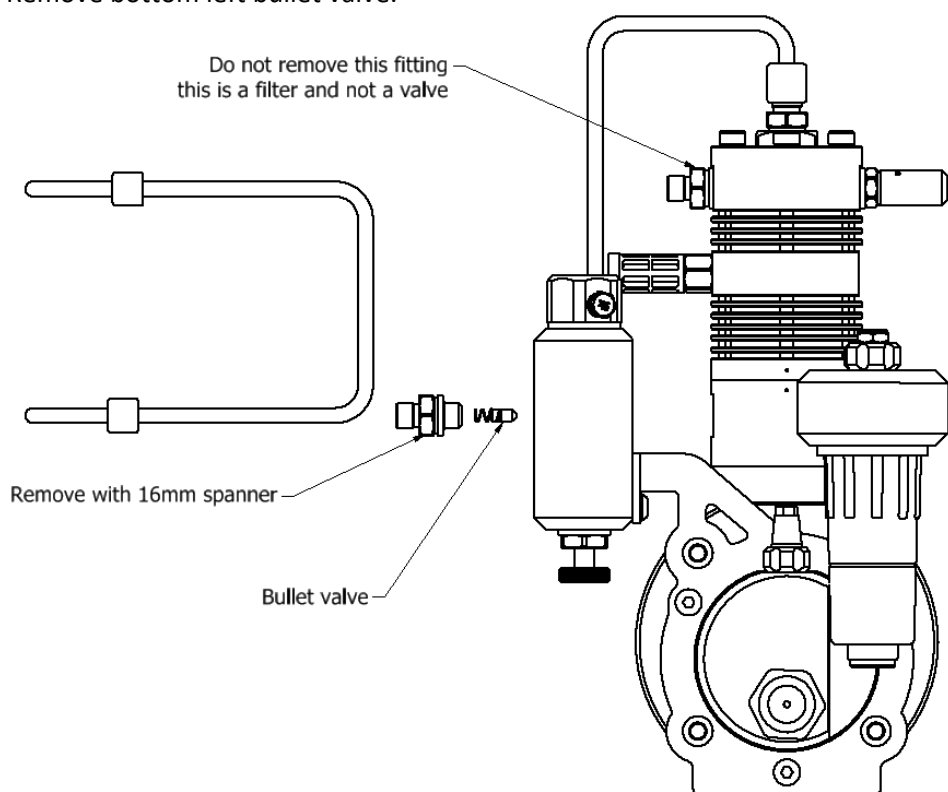
- Remove the middle right bullet valve housing.



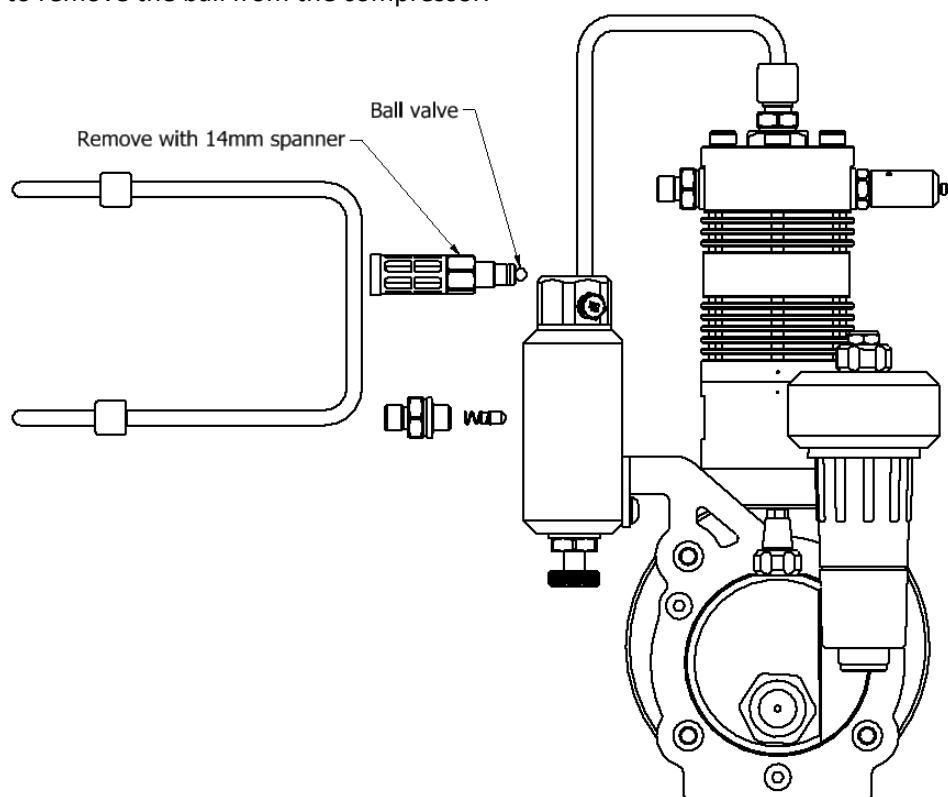
- Remove pipe on left hand side of compressor head.



- Remove bottom left bullet valve.

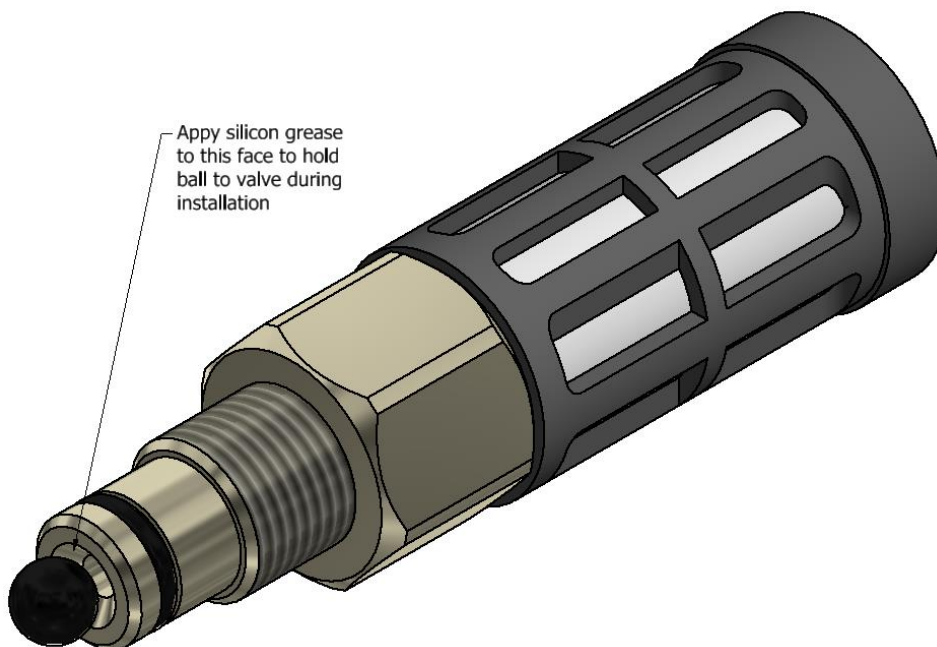
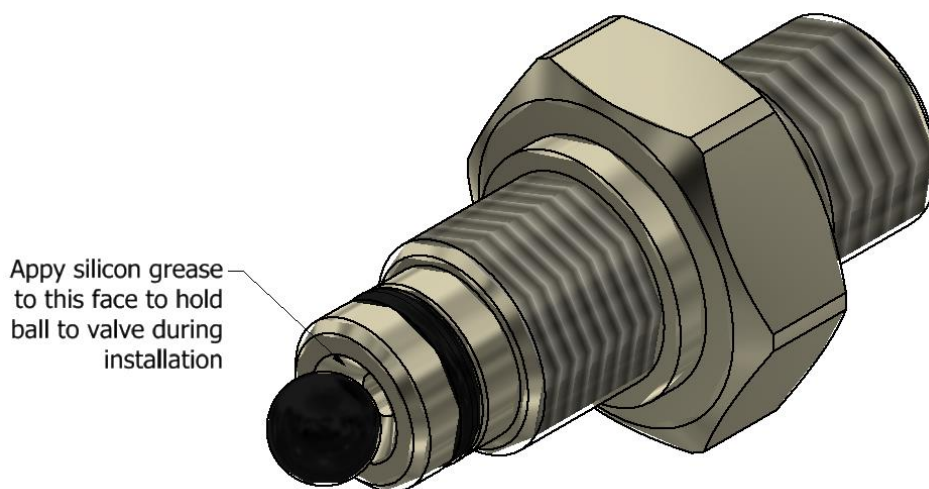


- Remove middle left ball valve. It may be necessary to use a small object such as a craft knife to remove the ball from the compressor.



- Replace bullet valves and tighten valves into compressor.
- Replace balls.

- a. Apply a dab of silicon grease onto both ball valve housings. To hold balls to the valve housing.
- b. Tighten both bullet valves into compressor.

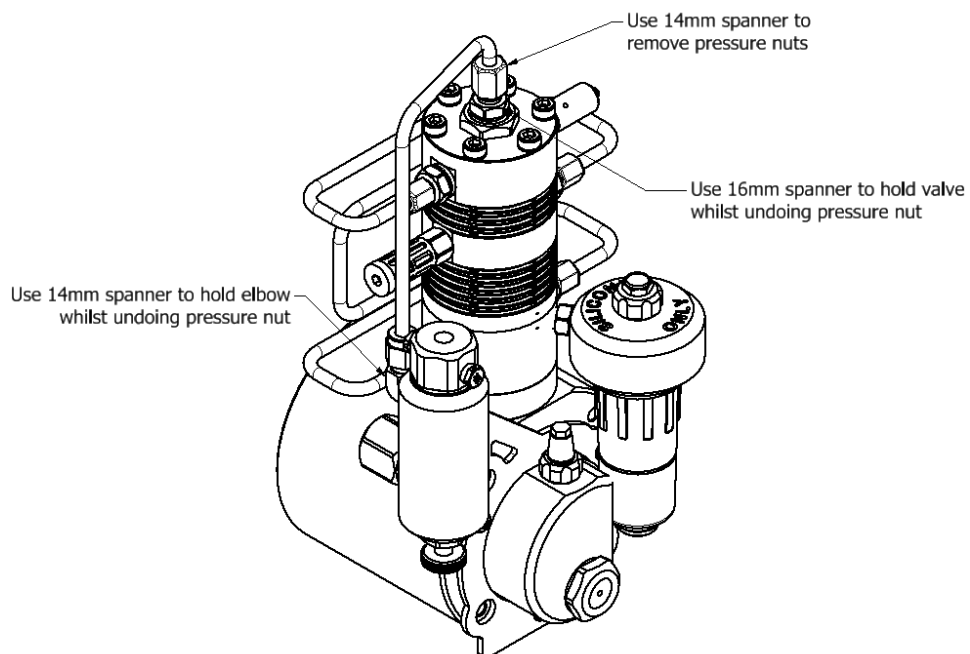


10. Tighten tubes onto compressor head.
 - a. **Ensure pressure nuts are not overtightened but are done up securely.**

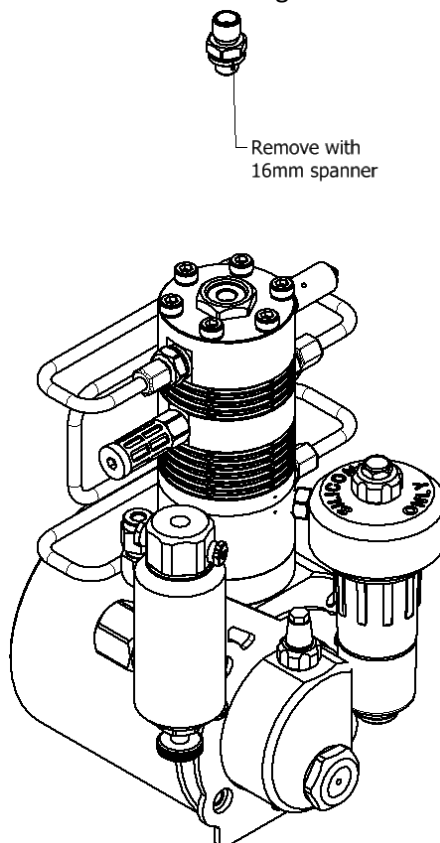
2 - How to disassemble and change the compressor final stage valve

Cleaning or replacing parts in the final stage valve is often required if air is being ejected from the pressure release valve.

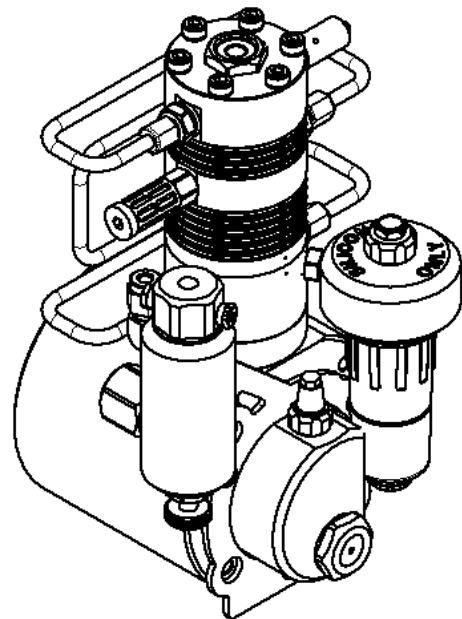
1. Remove pipe on top of compressor.



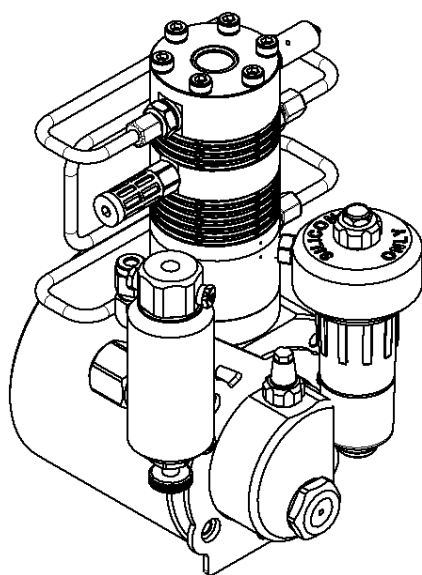
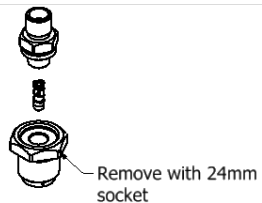
2. Remove final stage valve.



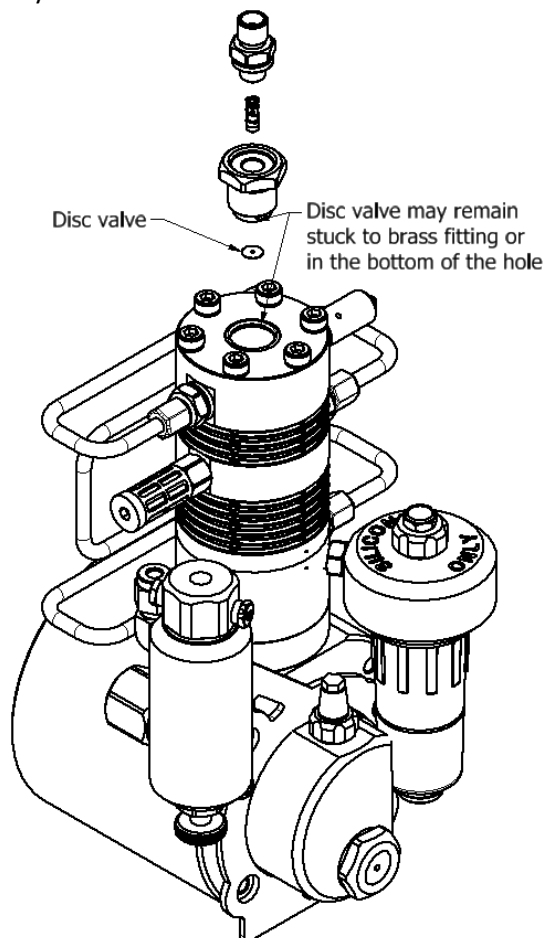
- 3. Remove final stage bullet valve. It may be necessary to use a small object such as a craft knife to remove the valve from the compressor.
 - a. Ensure that any debris or dirt is removed. If the valve is worn, replace.



- 4. Remove final stage housing.



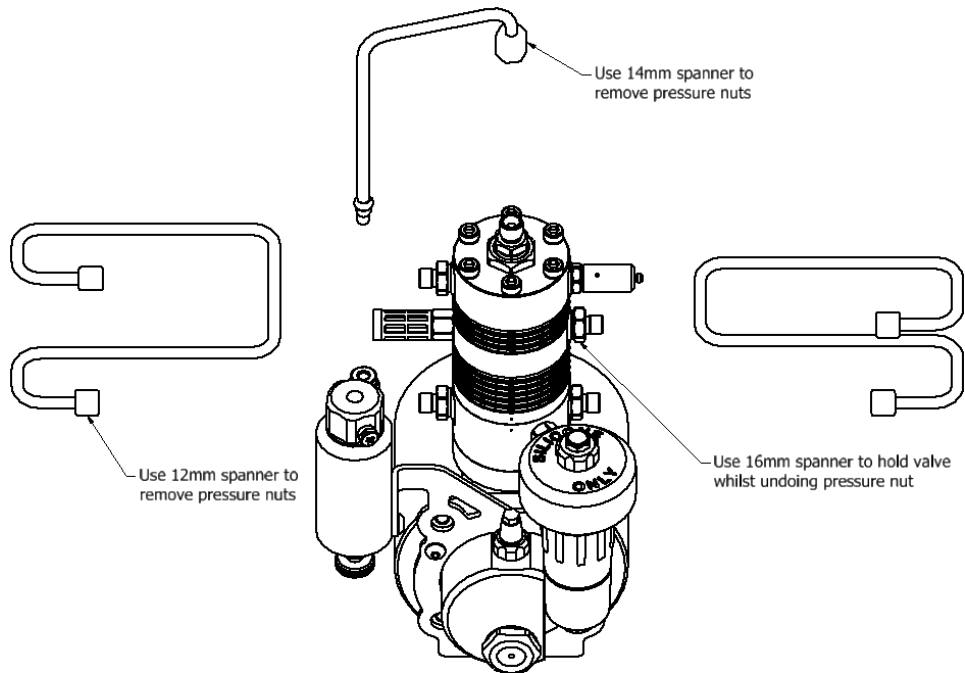
5. Remove final stage disc valve.
 - a. Ensure that any debris or dirt is removed. If the valve is worn, replace.



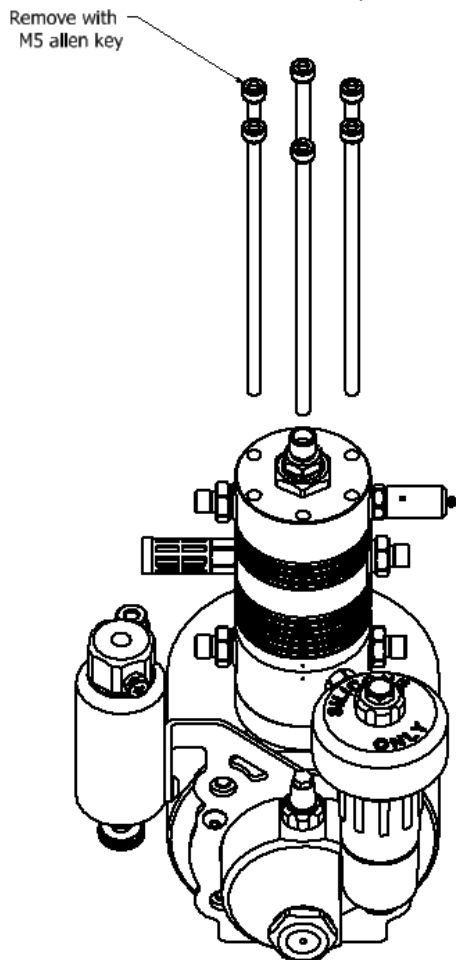
- b. Ensure that that the disc valve is not bent whilst removing it.

3 - How to check and change the piston O-rings

1. Remove all tubes from the compressor.

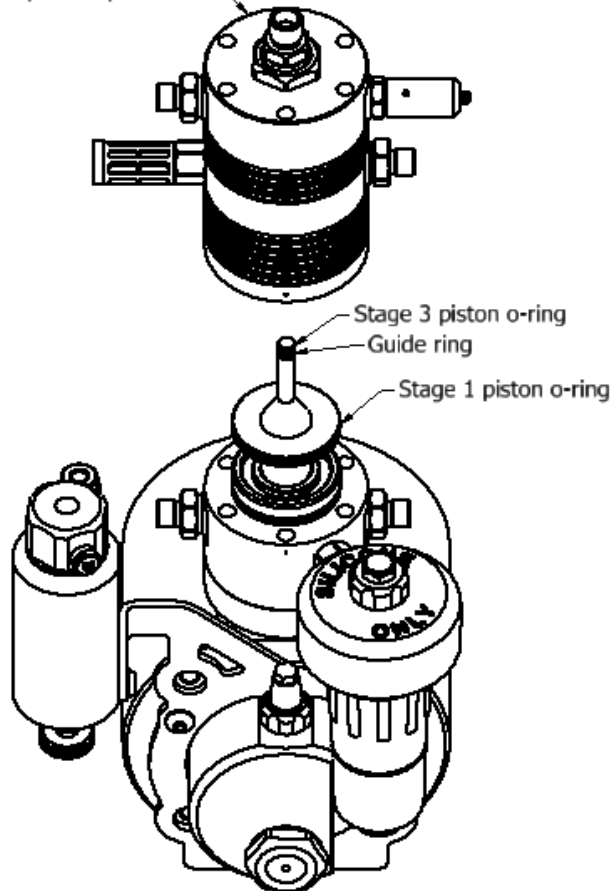


2. Remove 6 M5 bolts from compressor head.



3. Slide up top section.

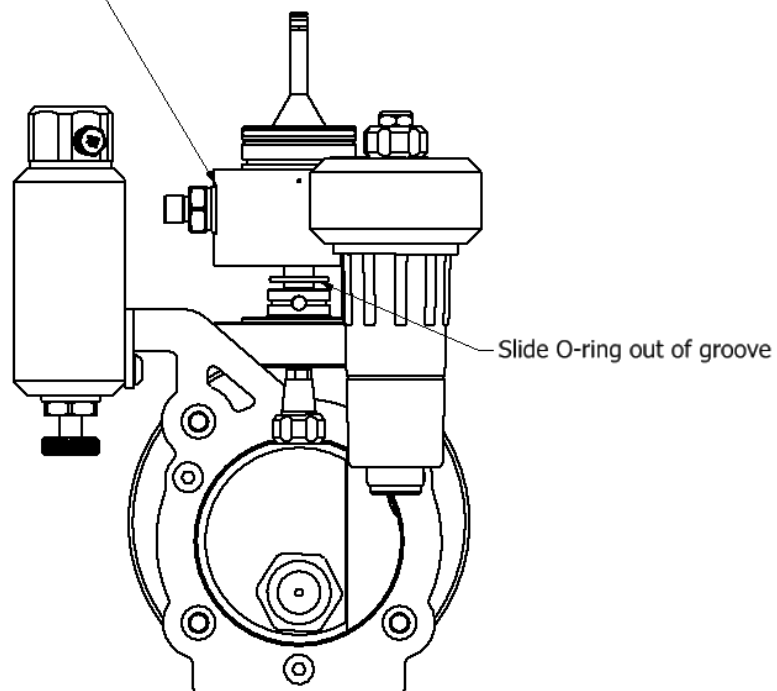
This whole top section can be pulled upwards



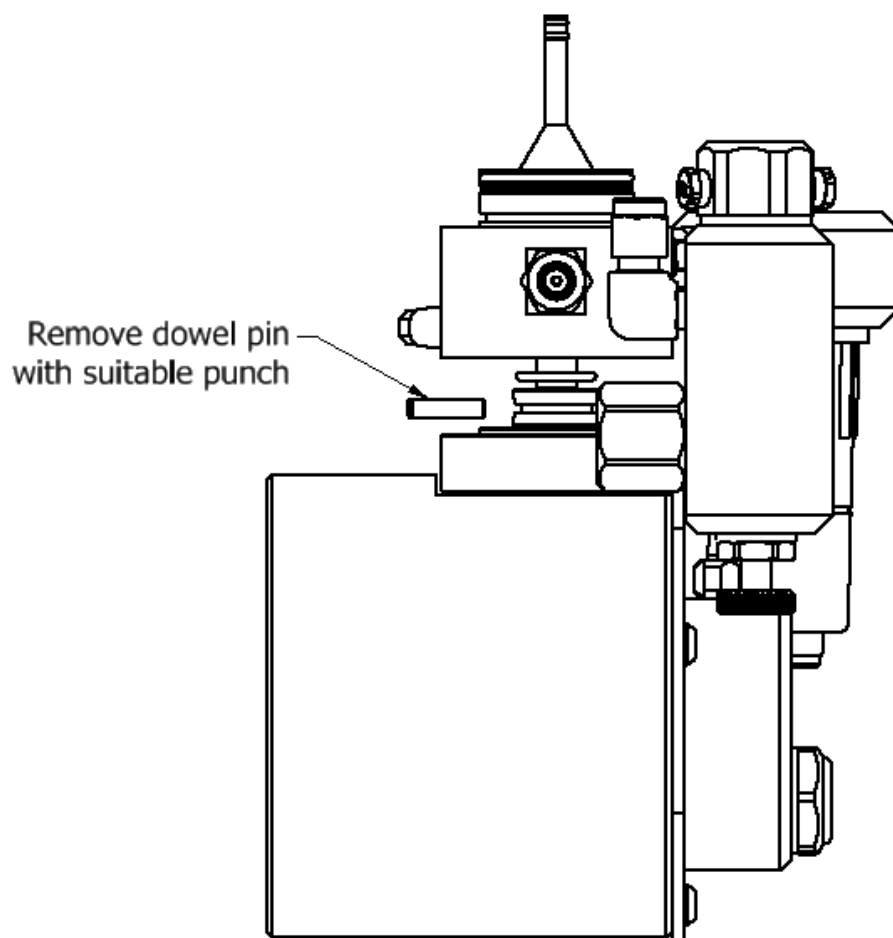
- a. Check the piston O-rings and replace if necessary.

4. Slide up bottom section and slide up O-ring.

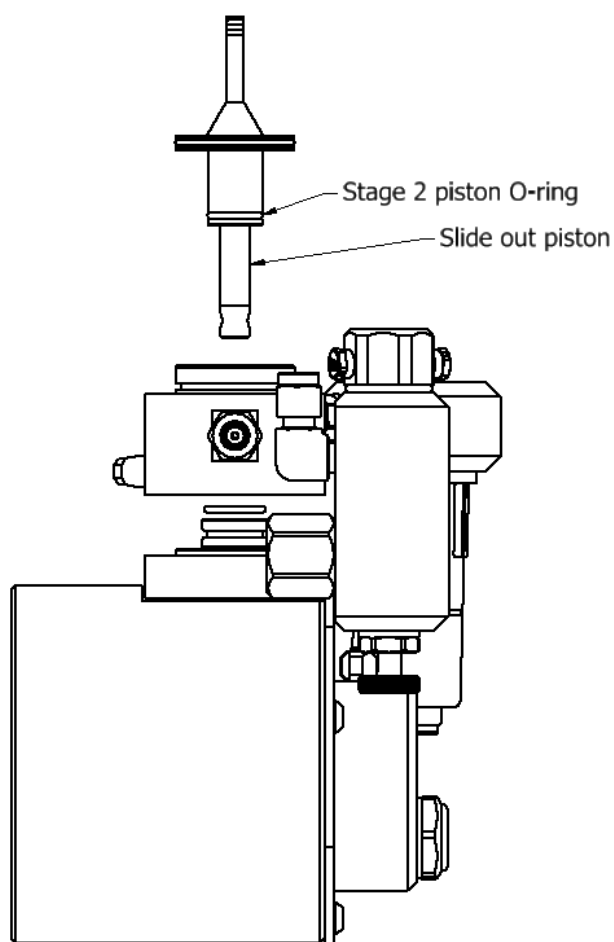
Slide up bottom section



5. Remove dowel pin with suitable tool.



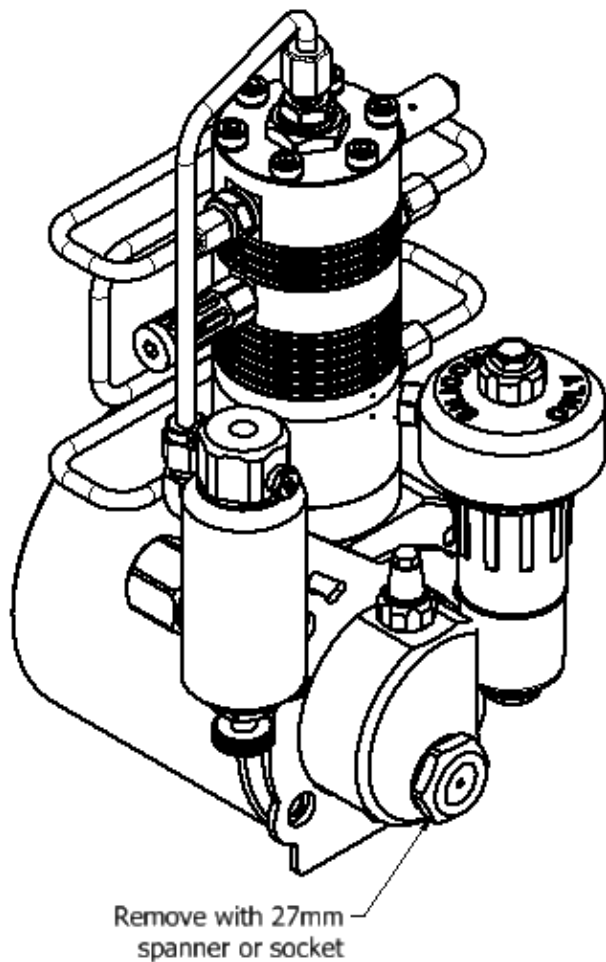
6. Slide up piston and inspect stage 2 O-ring.



4 - How to change the oil

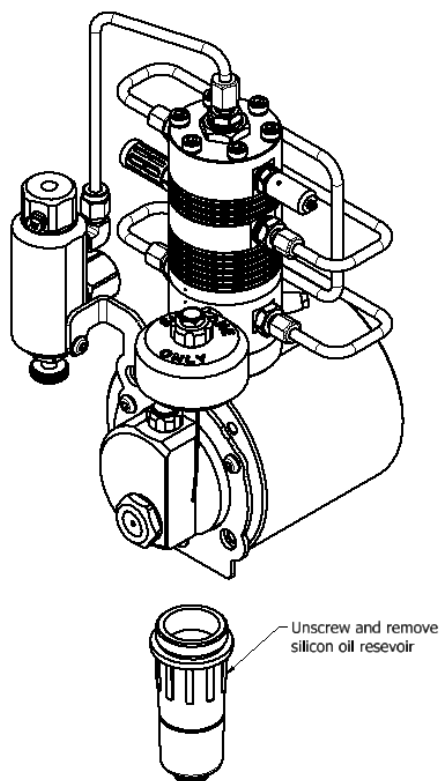
The crank oil of the compressor should be changed every year or every 50 hours running time, whichever comes first. Top up the silicon oil as required up to the blue line.

1. Place the compressor at an angle.
2. Undo the crank oil sight glass and allow oil to drain out into container.

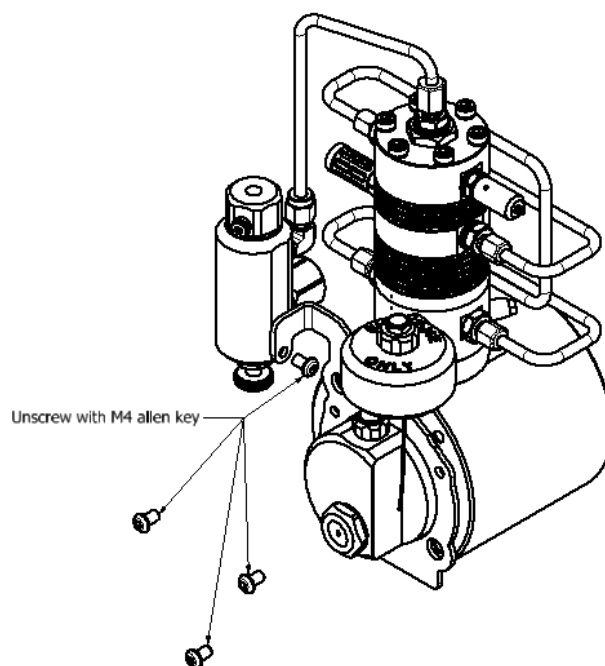


5 – Crank case maintenance

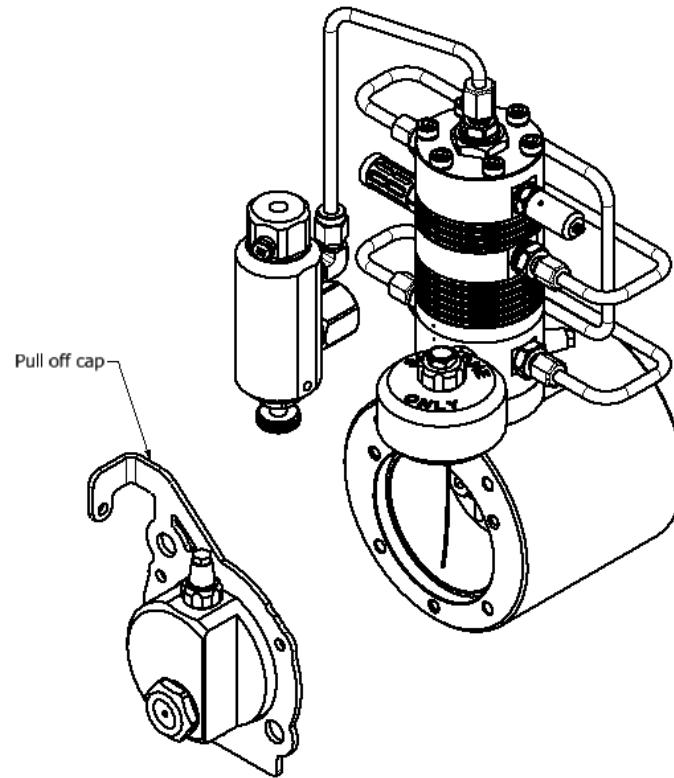
1. Remove silicon oil reservoir.



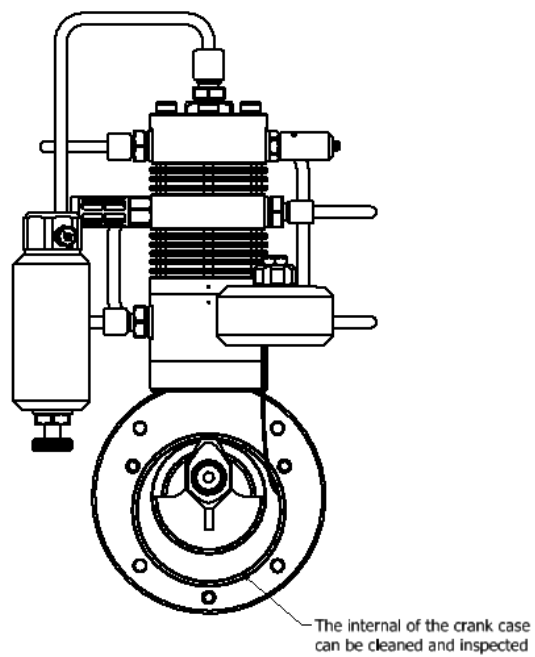
2. Remove M4 bolts.



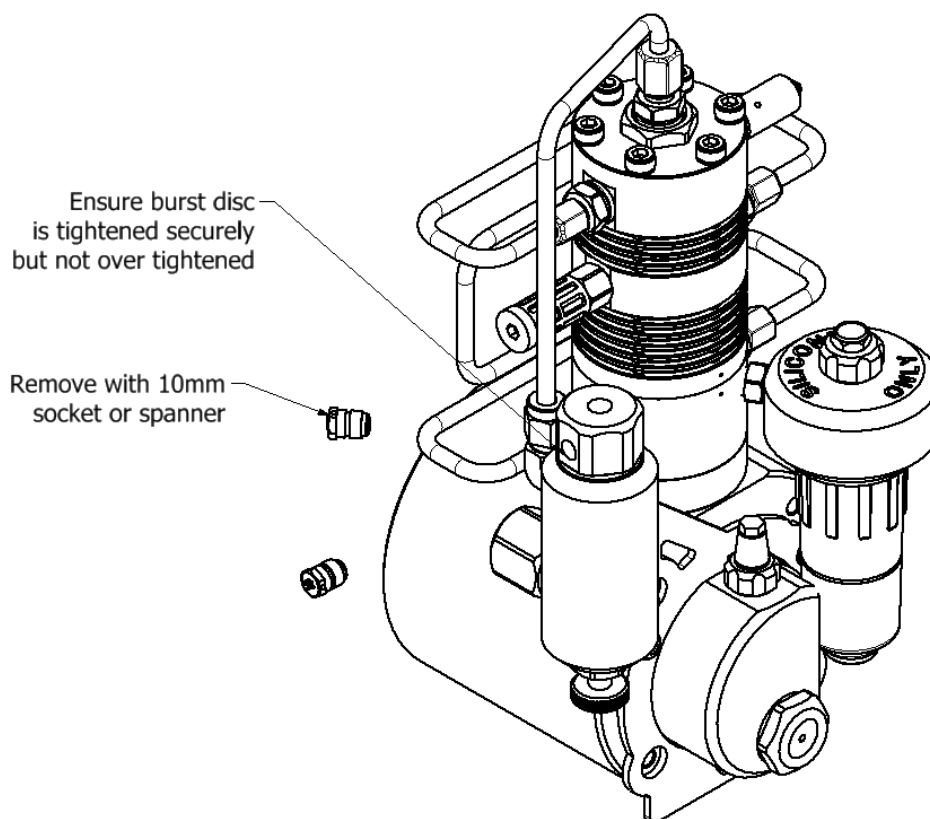
3. Remove acetal cap.



4. Inspect and clean the inside of the crank case.



6 – Replacing burst disc



7 - Fuses

There are two fuses located within the compressor. One in the plug and one next to the power switch.

The fuse next to the power switch can be removed by taking out the 3-pin plug from the compressor and using a small screwdriver to open the fuse box. This is the most likely fuse to become blown during use.

Fuse Specifications

240V Model – 12.5A 5 x 20mm speed T

110V Model – 15A 5 x 20mm

Fuses can be ordered through contacting Hill Pumps.