1. INTRODUCTION

The ELGI Auto Service unit is a mobile service station unit, a concept developed for flexibility. The unit consist a compressor which may be used either for tyre inflation purpose or compressed air for cleaning purpose. In this auto service unit compressor is mainly used for pump the grease where a human hand can not reach for greasing purpose.

The grease pump consists of two types of pistons, called as grease piston and suction piston. The suction piston allows the compressed air to grease tank and pull it back to atmosphere. The grease piston is connected to suction piston which dipped in grease, lifts the grease during return stroke.

Due to irregular use of this unit the grease pump may chocked, the grease gun may also chock due to dust setting inside the gun. As a result it may not work properly. Also the crankcase oil may contaminated due to irregular oil change. Due to all such conditions the whole unit goes into breakdown. In this project we repair and service the unit of our college.

2. TECHNICAL DATA

2.1 COMPRESSOR

Model	LG 01 080 230V
Displacement	140 lit/min
Working pressure	8 kgf/cm^2
Speed	1420 rpm
Bore×stroke.	Dia 60×35

2.2 MOTOR

Horse power	1.5, Single phase
Voltage	220v
Load current.	12 amps
Frequency	50 cycles/sec
Speed	1420 rpm

2.3 RECEIVER

Capacity	45 liters
Working pressure	8 kgf/cm^2
Hydraulic test pressure	15 kgf/cm^2

2.4 COMPRESSOR ACCESSORIES

Safety valve	1/4" BSP set to 9kg/cm^2
Pressure switch	1/4" BSP model PSU/7
Drain valve	1/4" BSP
Non return valve	1/4" BSP
Outlet valve	1/4" BSP

Pressure gauge	62 mm Dia, Range 0-12 kg/cm^2

2.5 GREASE PUMP

Recommended working air pressure	4.5 kgf/cm^2
Max working air pressure.	8 kgf/cm^2
Max output of grease	300 gm/min
Blocked grease pressure min.	225 kgf/cm^2
Blocked grease pressure max.	400 kgf/cm^2
Grease tank capacity.	20 litres

2.6 HOSE FOR GREASE PUMP

HP grease hose.	Dia. 6mm, Length 2200mm
Test pressure	700kgf/cm^2
Air hose	Dia 6mm, Length 800 mm
Test pressure.	15 kgf/cm^2

3. LIST OF PARTS

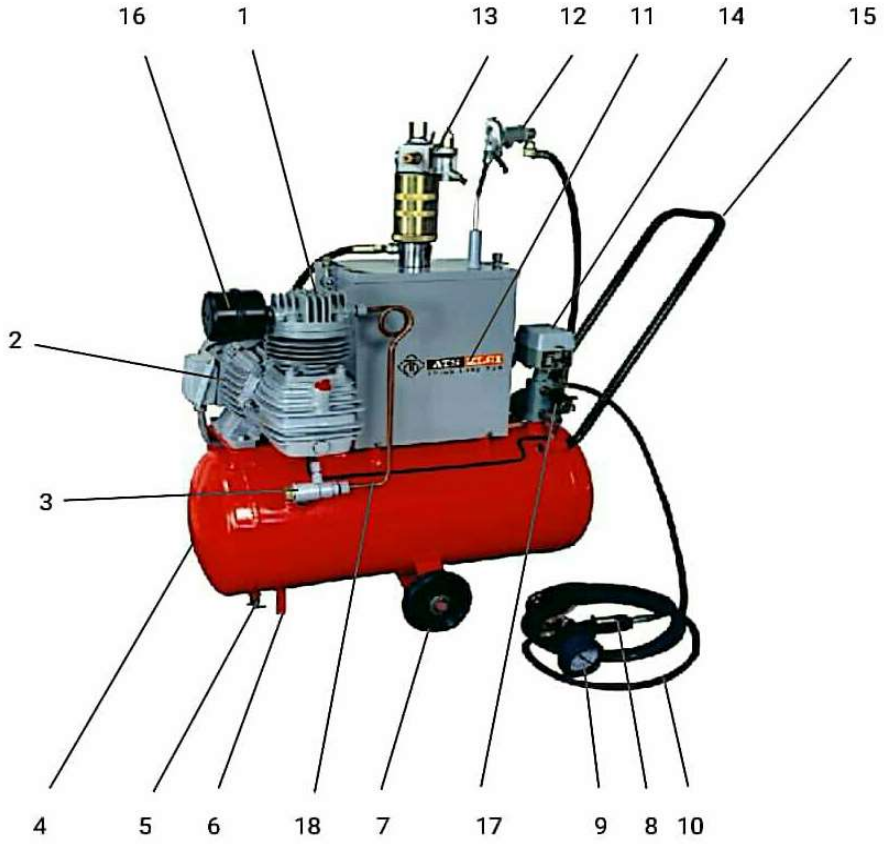

Fig.1 List of parts

Table no.1 List of parts

SR. NO	DESCRIPTION	QTY.
1	BLOCK ASSEMBLY TOP	1
2	MOTOR	1
3	VALVE, NON-RETURN	1
4	RECEIVER AIR ASSY.	1
5	VALVE, DRAIN	1
6	FOOTING PIPE	1
7	WHEELS, NYLON	1
8	HOSE ASSY. 12 meters	1
9	PRESSURE GAUGE	1
10	GUN ASSY.	1
11	GREASE TANK	1
12	GREASE PUMP ASSY.	1
13	PISTAL GREASE ASSY.	1
14	SWITCH, PRESSURE SWITCH UNLOADER	1
15	HANDLE	1
16	FILTER ASSY. I/L AIR	1
17	VALVE, SAFETY	1
18	PIPE	1

4. DESCRIPTION

4.1 AIR COMPRESSOR

The Compressor is a single cylinder, single stage unit. The compressor crankcase is of cast iron flange mounted on the motor end plate by four studs. The crankcase is ribbed to ensure adequate cooling. An oil seal provided inside the motor end cover seals the motor from the crankcase lubrication oil. A forged steel crank is mounted directly on the motor shaft extension by means of an Allen pinch bolt. The connecting rod is also of forged steel and provided with needle rollers at the big end and a gunmetal bush at the small end.

The piston is of low expansion aluminium silicon alloy of the automobile type. The gudgeon pin is fully floating and is made of anchormen steel case hardened, precision ground and tapped. The piston crown is recessed to accommodate the suction valve plate.

Both the reciprocating and rotating masses are dynamically balanced. The crank case is provided with a dipstick which also serves for fillings the lubricating oil. The dipstick has a drilled hole to provide ventilation tor the crankcase. A drain plug serves to drain the crack case of used oil.

The cylinder and cylinder head are of close-grained heavy duty cast iron and are provided with a large number of deep fins tor efficient cooling. The cylinder bore is precision honed.

The valve system consists of a valve flat and two valve plates (one suction and one delivery). The valve plates are made of stainless steel and are self cleaning. The absence of springs makes the valves trouble free in operation.

The air intake is provided with an efficient air filter which also reduces operating noise to a low level.

The air delivery is made through the cylinder head using a copper pipe to the non return valve on the receiver. The copper pipe serves as an after cooler.

4.2 AIR RECEIVER

The air receiver is a 45 liters tank mounted on a pair of nylon wheels and carries all the other units of the plant like the compressor, grease tank, pressure Switch, non-return valve, tyre intlato, motor starter etc. The air receiver has a drain valve at the botto and an air outlet valve at its 5-way manifold. A Safety valve and a vertical support pipe are also mounted on the air receiver. Specially designe nandle is provided to wheel the units to ensu easy mobility.

4.3 ELECTRIC MOTOR

In LG 01 080 220V, the Electric motor is a acitor start single phase 50 cycles motor at 1.5 HP rated at 220 V, 1420 RPM, of class 'E' insulation and is provided with a centrifugal switch. The starter has not volt and overload protections.

4.4 PRESSURE SWITCH

The pressure switch is diaphragm operated and is meant to ensure automatic operation of the compressor between set pressures. The diaphragm is of nitrile rubber to provide good resistance to heat and oil and also have high sensitivity. The non metalic parts are made of backlit of good quality to withstand high pressure and for safety. A knob provided at the top is used for adjusting the operating pressure. The same knob is also used for adjusting the differential. The action of heavy gauge snap action contact spring is very quick and sparking between contact is avoided ensuring their long life.

4.5 UNLOADER VALVE

An unloader valve is provided at the bottom of the pressure switch and is operated by its top contact bridge. The unloader valve releases the pressure in the compressor discharge lines when the compressor stops and ensures smooth restarting of the compressor. The pressure switch is set to stop the compressor at 8 kg/cm^2 and start the compressor at 6 kg/cm. The unloader valve operation can be adjusted through a unlock nut provided on the link rod connected to the top contact bridge. The unloader valve commences operation only after the top contact bridge has moved through 1/3 of its travel

4.6 NON RETURN VALVE

The non return valve is provided to serve as an automatic spring loaded valve at the air receiver inlet and had a rubber seat.

4.7 SAFETY VALVE

A safety valve is provided on the receiver and is set to lit at 9 kg/cm2 the spindle of the safety valves can also be lifted manually to release the pressure in the receiver by pulling out if necessary.

4.8 AIR FILTER

A wire mesh type air filter is provided on the cylinder head air intake to keep atrmospheric dust from being sucked into the cylinder. Disposable felt inserts are also fitted to some models.

4.9 PRESSURE GAUGE

A pressure gauge 0-12 kg/cm2 62 mm dial is fitted to the top of the receiver to indicate the pressure. This is an accurate instrument of accuracy class 1%.

4.10 OUTLET VALVE

A 1/4" outlet valve is fitted to the air receiver for connection to any other equipment like a pain spray gun etc.

4.11 HP GREASE PUMP

The high pressure grease pump is mounted on the grease tank cover and is direct driven by a double acting reciprocating air motor. The air supply to the motor is controlled by a convention (D) side valve and an automatic air reducer. The grease pump is plunger operated and is provided with a ball discharge valve. The suction pipe of the piston pump is provided with a grease filter and a feeder. The filter mesh is so chosen to cover a wide range of consistent greases from Grade No. 1 to 3.

4.12 FEEDER

The feeder is provided with a filter at the end of the suction pipe. The feeder is secured to the position rod by a securing nut.

4.13 PISTON PUMP

The piston is provided with a grease resistant synthetic rubber packing and operates in a piston pipe. The piston is connected by pins to the piston and connecting rods. The connecting rod is in turn connected to the plunger rod and is enclosed in pressure pipes. Ball and spacer serve as the grease discharge non retum valve.

The grease pump housing is screwed on to the lower flange of the air motor. The housing has a HP grease outlet with a cup seal.

4.14 AIR MOTOR

Air motor piston operates in the air cylinder. A tow rod connected to the top of the air piston provides the drive to the control slider rnechanism.

4.15 GREASE TANK

A grease tank ot 20 lit. capacity is mounted on the air receiver. The tank is provided with a heavy follower plate to ensure a steady pressure over the grease column and to avoid air packets in the grease. Two handles are provided on the follower plate to enable easy lifting. The grease tank cover is secured by wing nuts and mounts the High Pressure Grease Pump. The grease tank cover has a holder for the grease piston, which also receiver the grease over flow from the piston for return to the grease tank.

4.16 GREASE PISTONL

Grease pistol is provided with a spring loaded ball valve and is trigger operated. The grease pistol has an adapter with a socket ended mouth piece to fit standard grease nipple. The mouth piece also has a spring loaded ball valve. The grease pistol grip is conveniently shaped for easy handling and is connected to the higher pressure hose assembly through L'&'Z shaped swivel pieces at both the hose extremities ie. at the grease pump and the grease pistol.

4.17 HOSE ASSEMBLY

Hoses for control and foot connector are nylon braided and complete with connectors and clamps in 6 moters length. Hoses are pressure tested to 15 kg/cm2. The air connection is taken from the top of the receiver.

5. CONSTRUCTION

5.1 TOP BLOCK ASSEMBLY

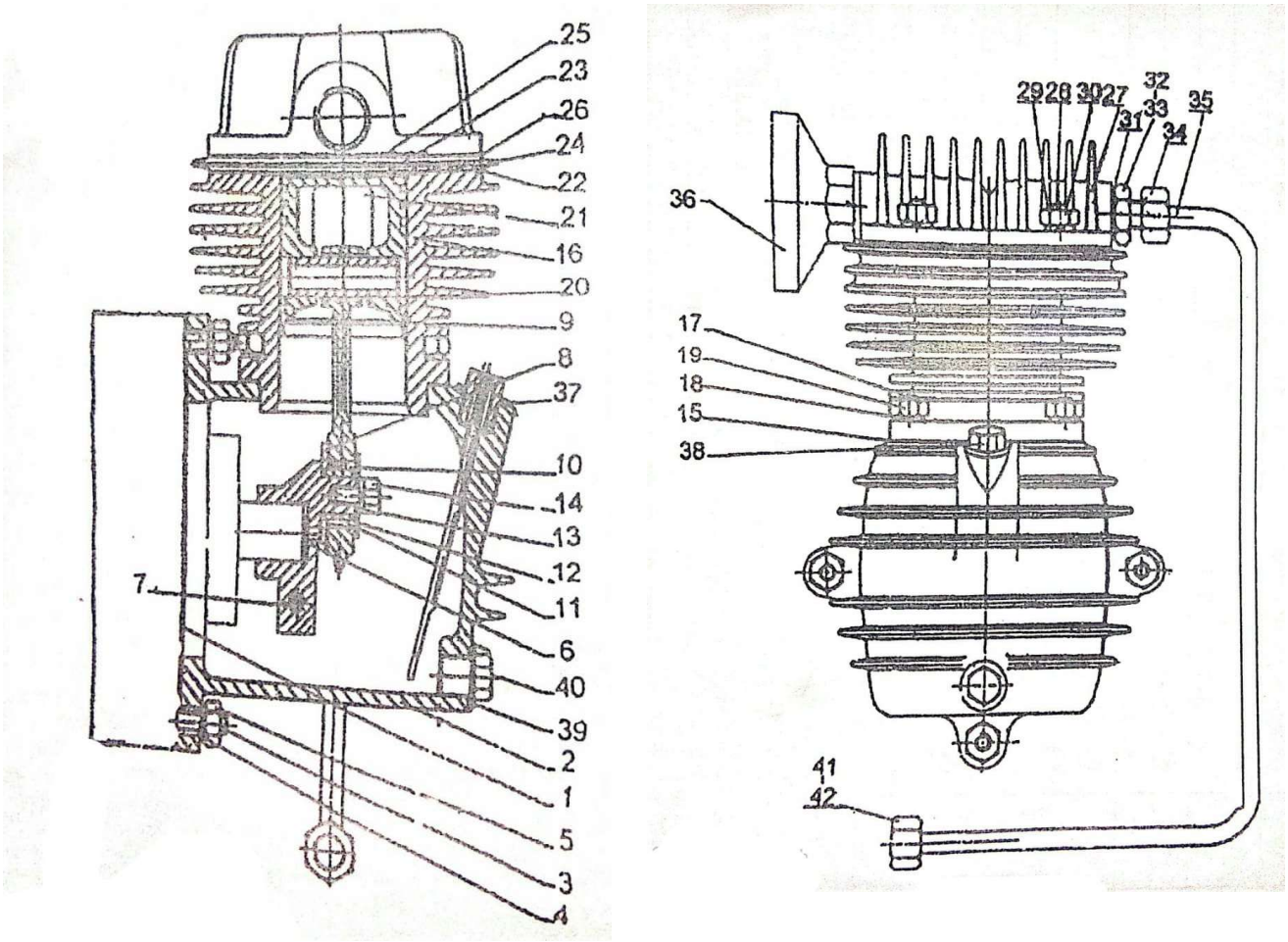

Fig.2 Top block assembly

Table no.2 Top block assembly

SR NO	DESCRIPTION	QTY
1	PICKING (CRANKCASE TO MOTOR)	1
2	CRANKCASE	1
3	STUD (MOTOR TO CRANKCASE)	4
4	SPRING WASHER M10	4
5	HEX NUT M10	4
6	CRANK	1
7	ALLEN SCREW M10*40	2
8	SPIDER RING	1
9	CONNECTING SPARKE	1
10	ROLLERS DIA. 3	14
11	BUSH CONNECTING ROD	1
12	STOP PLATE	1
13	SPRING WASHER M8	1
14	HEX SCREW M8*45	1
15	PACKING	1
16	CYLINDER DIA 60	1
17	STUD M10*39	4
18	SPRING WASHER M10	4
19	HEX NUT M10	4

20	BUSH CONNECTING ROD SMALL END	4
21	PISTON ASSY DIA 60	1
22	PACKING (CYLINDER TO VALVE FLAT)	1
23	VALVE PLATE, SUCTION SIDE	1
24	VALVE FLAT	1
25	VALVE PLATE, DELIVERY SIDE	1
26	PACKING (CYLINDER HEAD TO VALVE FLAT)	1
27	CYLINDER HEAD DIA 60	1
28	STUD M10*39	4
29	SPRING WASHER M10	4
30	HEX NUT M10	4
31	PACKING RING	1
32	ERMETO 1/2" * 3/8"	1
33	CONE	1
34	ERMETO NUT 3/8" BSP	1
35	AFTER COOLER PIPE	1
36	FILTER ASSY	1
37	PACKING RING	1
38	DIPSTICK CUM OIL FILLING PLUG	1

39	PACKING RING	1
40	DRAIN PLUG 3/8" BSP	1
41	CONE	1
42	ERMETO NUT 3/8" BSP	1

5.2 PRESSURE SWITCH ASSEMBLY

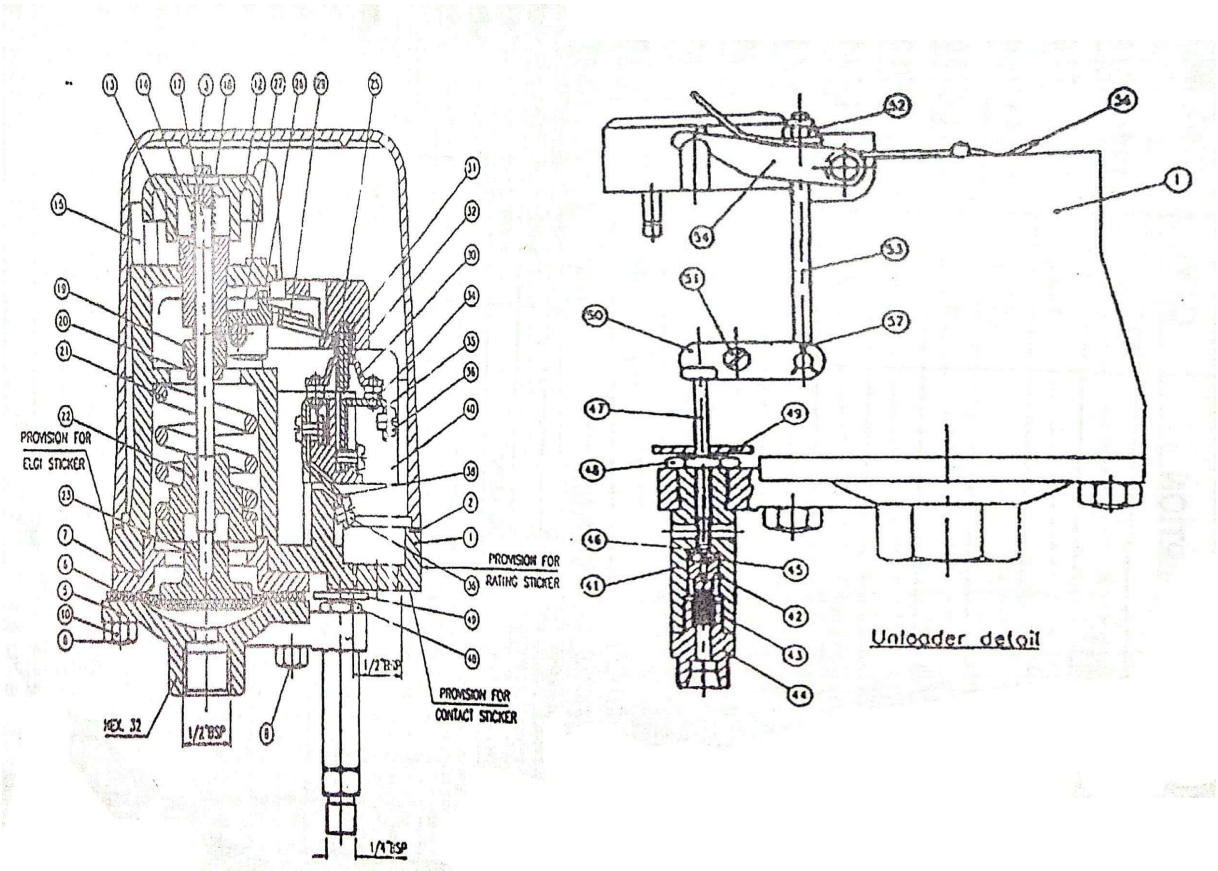

Fig.3 Pressure switch assembly

Table no.3 Pressure switch assembly

SR NO	DESCRIPTION	QTY
1	HOUSING (MAIN BODY)	1
2	RUBBER PACKING	1
3	COVER	1
5	BOTTOM FLANGE	1
6	DIAPHRAGM	1
7	FLANGE	1
8	HEXAGONAL BOLT SHORT	6
9	HEXAGONAL BOLT LONG	6
10	HEXAGONAL NUT	12
12	KNOB	1
13	DIFFERENTIAL ADJUSTMENT	1
14	SPRING	1
15	LOCK FOR KNOB	1
17	MAIN ADJUSTING SCREW	1
18	DOWEL PIN	1
19	COFF NUT	1
20	LOCK NUT	1
21	MAIN SPRING	1
22	SPRING SEAT	1
23	SPINDLE SEAT	1
25	TOP CONTACT BRIDGE	1

26	YOKE	
27	PIN HINGE, TOP CONTACT	1
29	TORSION SPRING	1
30	TOP CONTACT	1
31	PIN SQUARE	1
32	CONTACT SPRING	1
34	CONTACT POINT(MOVING)	4
35	BOTTOM CONTACT(FRONT)	1
36	CHEESE HEAD SCREW	1
38	BOTTOM CONTACT (REAR)	1
40	BOTTOM CONTACT BRIDGE	1
41	HOUSING U V	1
42	UNLOADER VALVE	1
43	SPRING	1
44	ERMETO	1
45	PIN VALVE SEAT	1
46	VALVE SEAT	1
47	ACTUATING PIN	1
48	NUT	1
49	RUBBER WASHER	1
50	BOTTOM LEVER U V	1
51	SCREW WITH STEP	1
52	NYLOCK NUT M4	2

53	UNLOADER LINK ROD	1
54	TOP LEVER U V	1
55	SCREW M4	1
56	TORSION SPRING U V	1
57	PIN SPLIT	1

5.3 VALVE ASSEMBLY, NRV

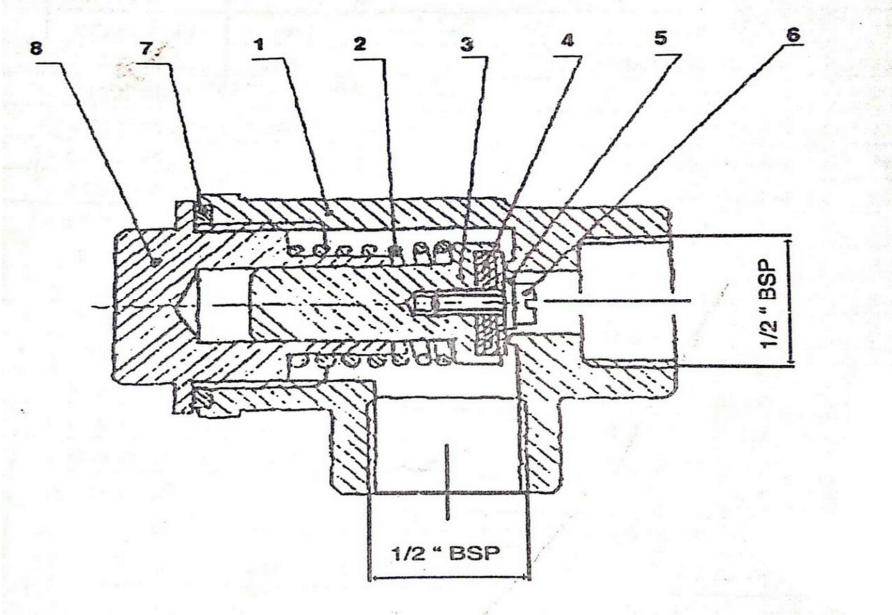

Fig.4 Valve assembly, NRV

Table no.4 Valve assembly, NRV

SR NO	DESCRIPTION	QTY
1	NON RETURN VALVE HOUSING	1
2	SPRING	1
3	VALVE CONE	1
4	RUBBER WASHER	1
5	WASHER PLAIN	1
6	CHEESE HEAD SCREW M4*0.7*10	1
7	COPPER RING	1
8	VALVE GUIDE	1

5.4 VALVE ASSEMBLY, DRAIN

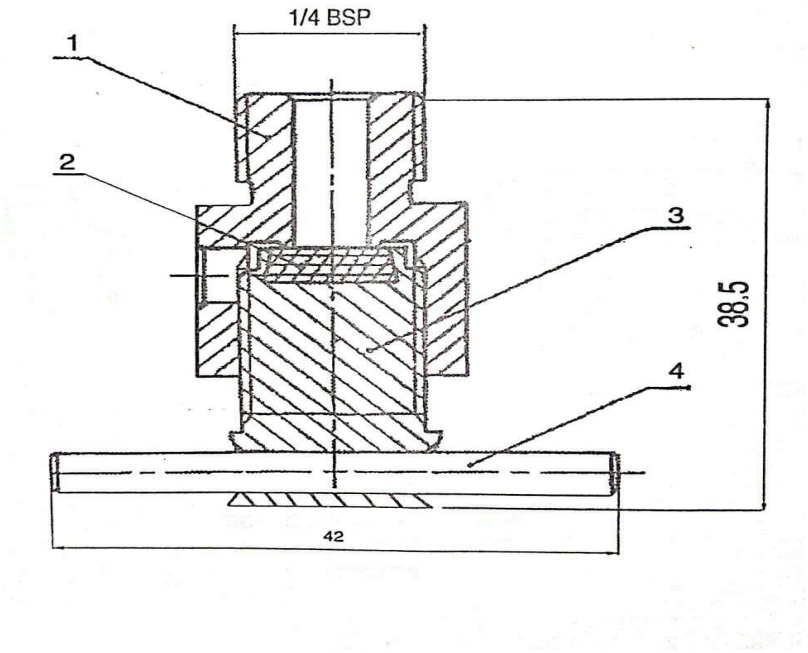

Fig no.5 Valve assembly, Drain

Table no.5 Valve assembly, Drain

SR NO	DESCRIPTION	QTY
1	HOUSING	1
2	VALVE SEAT	1
3	CONE SEAT	1
4	PIN	1

5.5 HOSES ASSEMBLY GREASE

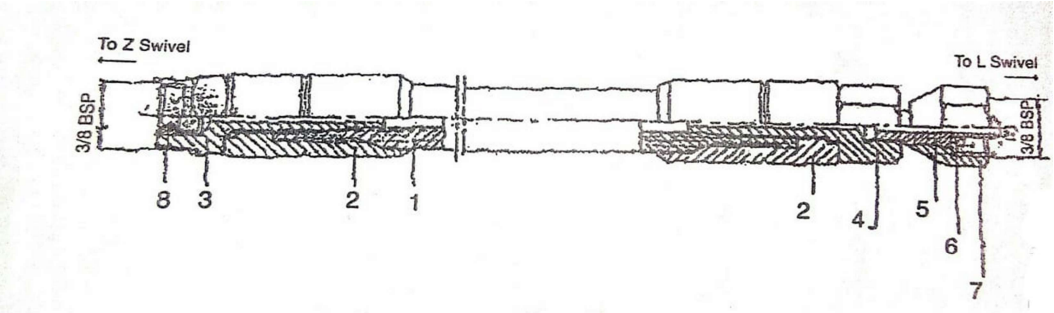

Fig no.6 Hose assembly, Grease

Table no.6 Hose assembly, Grease

SR NO	DESCRIPTION	QTY
1	HOSE	1
2	HOSE SLEEVE	2
3	HOSE NIPPLE	1
4	HOSE NIPPLE	1
5	TURNING NIPPLE	1
6	PLATE	1
7	LOCKING NUT	1
8	OIL SEAL	1

5.6 GREASE PUMP ASSEMBLY

Fig.7 Grease pump assembly

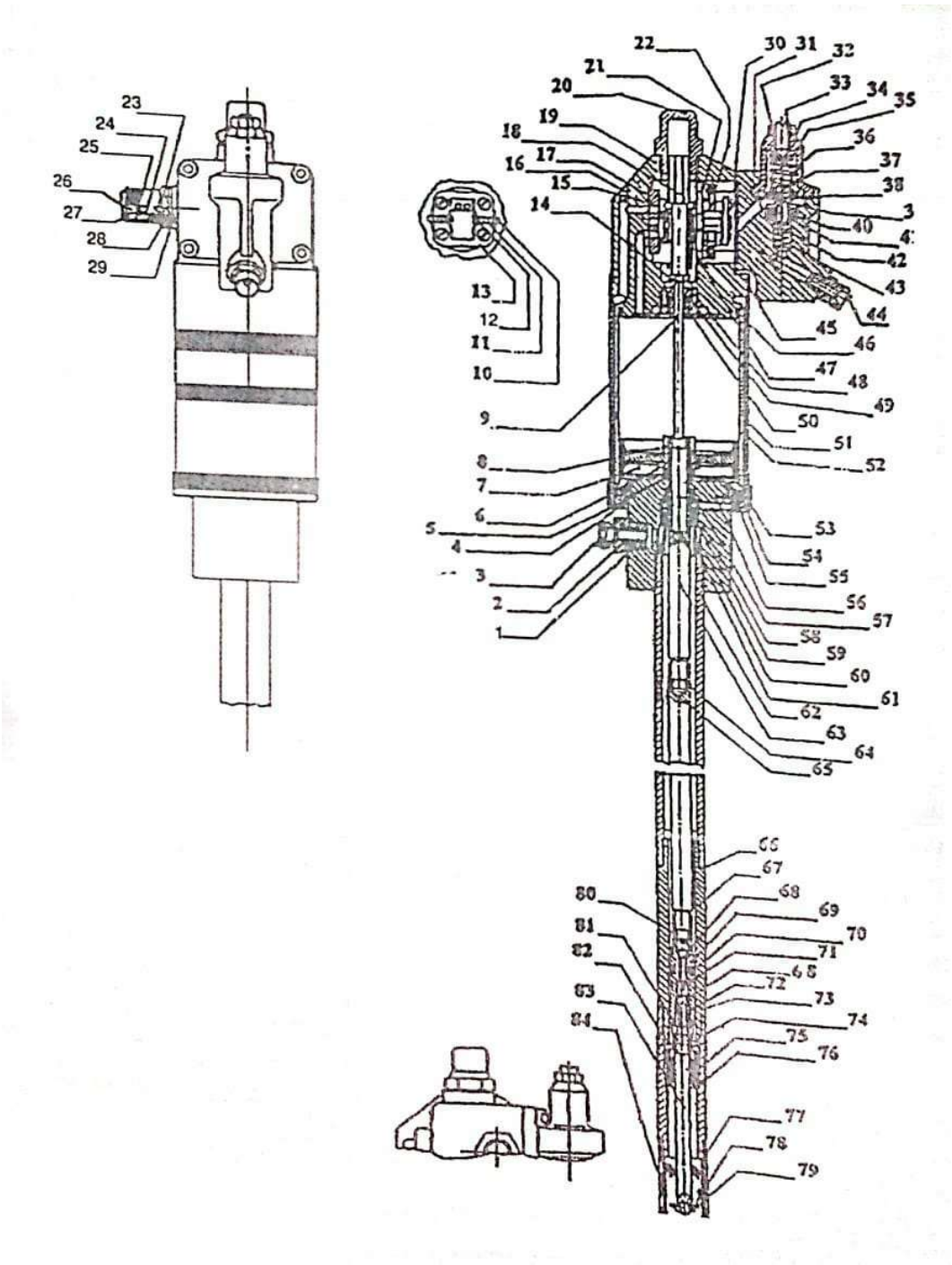

Table no.7 Grease pump assembly

SR NO	DESCRIPTION	QTY
1	PLAIN WASHER	1
2	OUTLET UNION	1
3	OIL SEAL	1
4	O RING	1
5	NUT M12	1
6	WASHER	1
7	AIR PISTON	1
8	RETAINNING NUT	1
9	TOW ROD	1
10	LOCKING PIN	1
11	SPRING	1
12	CIRCLIP	1
13	LOCK HOUSUNG	1
14	CHECK NUT	1
15	SLIDER SEATING PLATE	1
16	BLOCKING PIN	1
17	GASKET SEATING WASHER	1
18	FOLLOWER	1
19	CONTROL HEAD	1
20	CAP	1
21	SCREW M5*15	1

22	GOVERNOR CONTROL ASSY	1
23	SPRING SEAT	1
24	SPRING	1
25	WASHER 1/2" *1/4"	1
26	HEX BOLT M6*10	1
27	TOP PIECE	1
28	O RING	1
29	COPPER WASHER	1
30	COVER PACKING	1
31	VALVE BODY	1
32	HEX NUT M10*1.25	1
33	STUD M8*1.25	1
34	TOP PIECE	1
35	SPRING HOLDER TOP	1
36	SPRING	1
37	SPRING HOLDER BOTTOM	1
38	REGULATING PLATE	1
39	PRESSURE REDUCING BOLT	1
40	TIGHTENING SCREW	1
41	SEALING WASHER	1
42	VALVE PLATE	1
43	SPRING	1
44	NIPPLE 1/4"*1/4" BSP	1

45	O RING	1
46	O RING	1
47	CONTROL JAW	1
48	PRESSURE RING	1
49	OIL SEAL	1
50	INSERT	1
51	AIR CYLINDER	1
52	COVER PIPE	1
53	LOCKING RING	1
54	O RING	1
55	FLANGE	1
56	PRESS HOUSING	1
57	O RING	1
58	GUIDE INSERT	1
59	BUCKET WASHER	1
60	SUPPORTING STOP	1
61	PACKING RING	1
62	PRESSURE PIPE	1
63	GREASE PLUNGER	1
64	STEADY PIN	1
65	CONNECTING ROD	1
66	COPPER WASHER	1
67	PISTON PIPE	1

68	STEEL BALL DIA 5.5	2
69	CONVEYOR PISTON	1
70	PISTON PACKING RING	1
71	SPACER	1
72	VALVE SEAT	1
73	COPPER WASHER	1
74	STEADY PIN	1
75	VALVE INSERT	1
76	VALVE RING	1
77	FILTER	1
78	FEEDER	1
79	LOCK NUT	1
80	STEADY PIN	1
81	COPPER WASHER	1
82	SUCTION PIPE	1
83	PISTON ROD	1
84	FILTER HOLDER	1

5.7 PISTOL ASSEMBLY

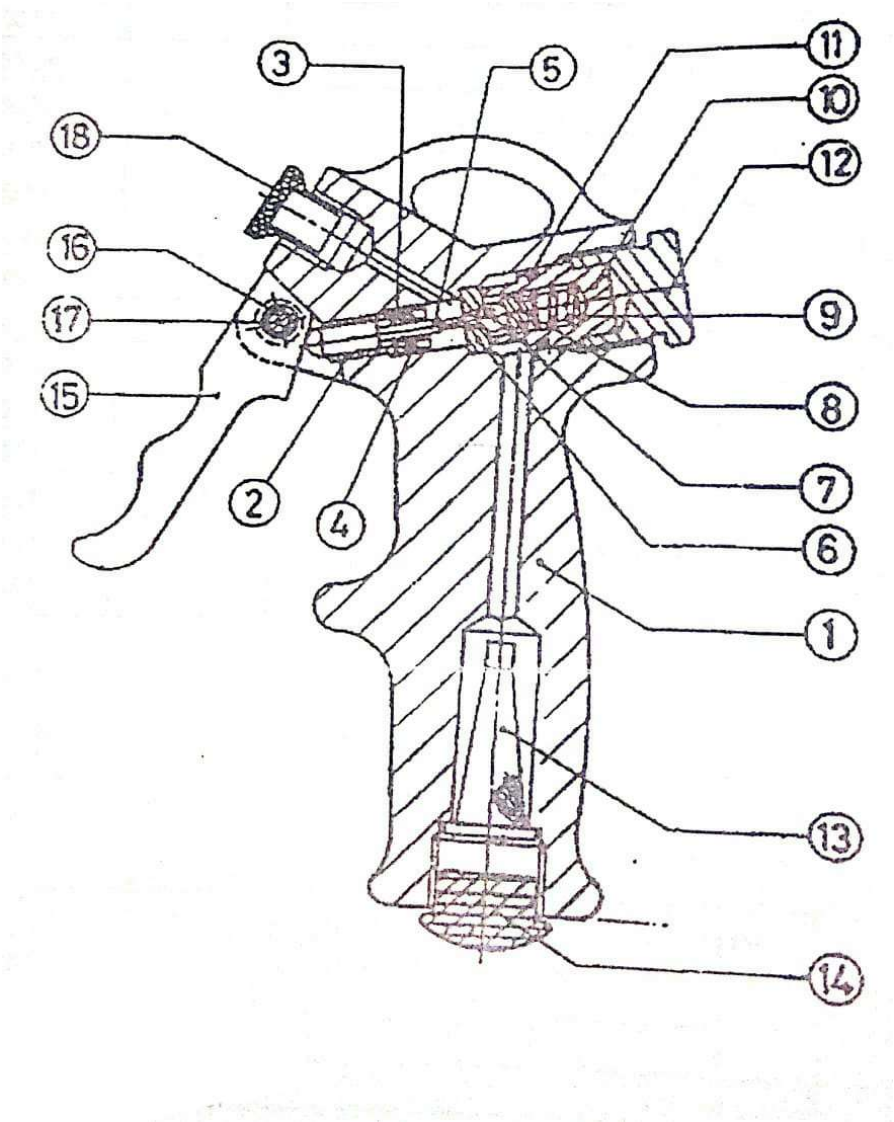

Fig.8 Pistol assembly

Table no.8 Pistol assembly

SR NO	DESCRIPTION	QTY
1	PISTOL CASE	1
2	BUSH	1
3	GUIDE WASHER	1
4	CUP SEAL	1
5	PRESSURE PIN	1
6	BALL SEATING PLATE	1
7	STEEL BALL	1
8	VALVE PLATE	1
9	SPRING	1
10	INSERT	1
11	O RING	1
12	STOPPER PIECE	1
13	FILTER	1
14	DUMMY PLUG	1
15	TRIGGER	1
16	BEARING PIN	1
17	CHEESE HEAD SCREW	1
18	DUMMY PLUG	1

5.8 ADAPTER ASSEMBLY

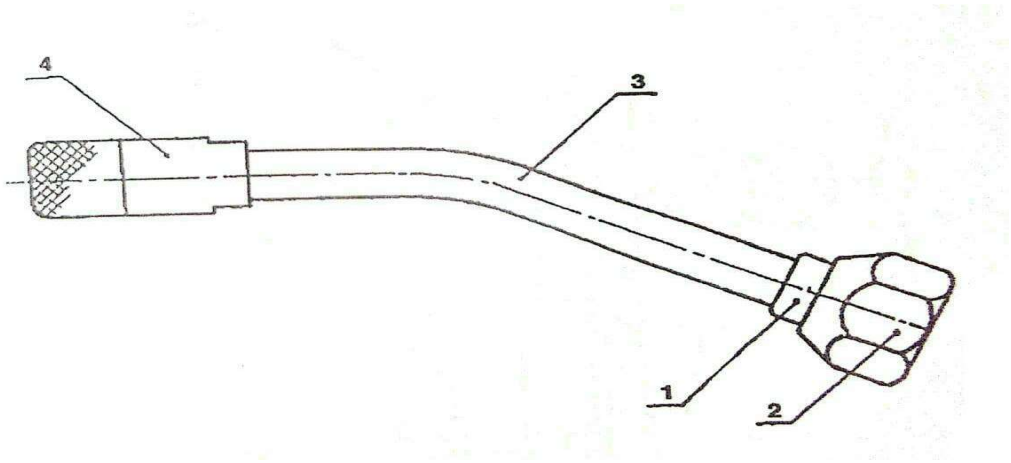

Fig.9 Adaptor assembly

Table no.9 Adaptor assembly

SR. NO	DESCRIPTION	QTY
1	TURNING NIPPLE	1
2	LOCKING NUT	1
3	PIPE	1
4	MOUTH PIECE ASSY.	1

5.9 MOUTH PIECE ASSEMBLY

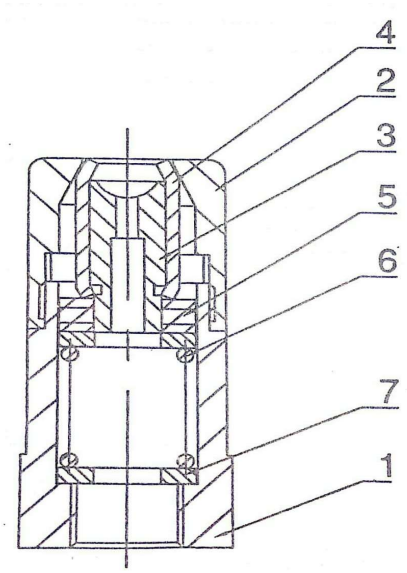

Fig. 10 Mouth piece assembly

Table no.10 Mouth piece assembly

SR NO	DESCRIPTION	QTY
1	PIECE, BOTTOM	1
2	PIECE, TOP	1
3	PIN, PRESSURE	1
4	CATCHES	3
5	SEAL, OIL	1
6	SPRING	1
7	WASHER, PLATE	2

5.10 AIR FILTER ASSEMBLY

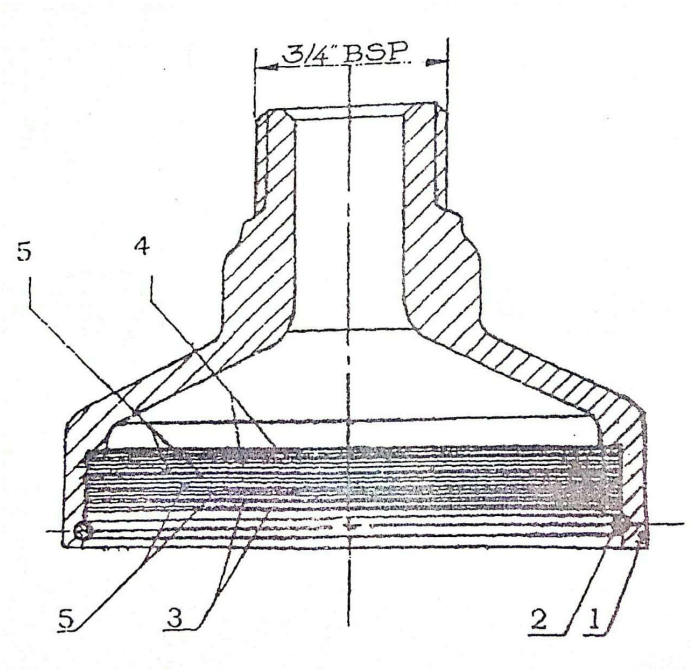

Fig.11 Air filter assembly

Table no.11 Air filter assembly

SR NO	DESCRIPTION	QTY
1	AIR FILTER HOUSING	1
2	CIRCLIP	1
3	MESH DIAMOND	2
4	MESH DIAMOND	2
5	MESH SQUARE	4

5.11 VALVE ASSEMBLY SAFETY

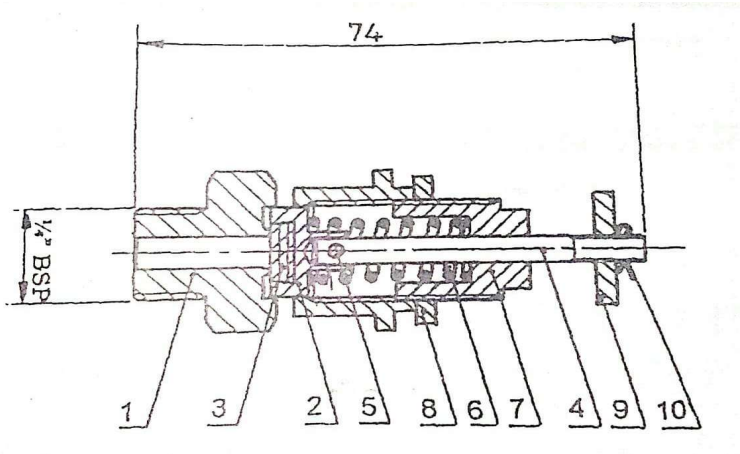

Fig.12 Valve assembly Safety

Table no.12 Valve assembly Safety

SR NO	DESCRIPTION	QTY
1	SAFETY VALVE HOUSING	1
2	VALVE CONE	1
3	VALVE SEAT	1
4	ACTUATING ROD	1
5	LOCKING PIN	1
6	SPRING	1
7	PRESSURE ADJUSTER	1
8	LOCK NUT	1
9	KNOB	1
10	SPLIT PIN	1

5.12 FOLLOWER PLATE ASSEMBLY

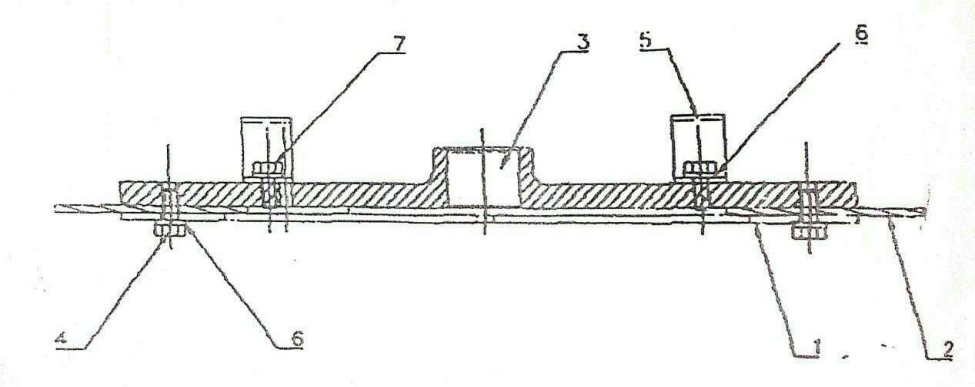

Fig.13 Follower plate assembly

Table no.13 Follower plate assembly

SR NO	DESCRIPTION	QTY
1	BOTTOM PLATE	1
2	RUBBER	1
3	TOP PLATE	1
4	HEX BOLT M6*16	12
5	HANDLE	2
6	SPRING WASHER M6	16
7	HEX BOLT M6*10	4

6. WORKING

As we give the electric supply to the motor, the motor shaft rotates as a result the crankshaft of engine is connected to motor shaft starts rotate. This gives the reciprocating action of piston. The piston sucks the the atmospheric air through air filter and compresses it and store in compressor. A non return valve is given to inlet of compressor to avoid return flow of air. A connection is given to pressure switch to auto cut off procedure.

Ther compressor cuts in at 6 kgf/cm^2

The compressor cuts out at 8 kgf/cm^2

A connection of compressor is directly given to grease pump. As trigger the grease pistol we get the grease at application point.

ADJUSTMENT OF COMPRESSOR PRESSURE

Remove the cover on the pressure switch. Unlock the control knob and turn clockwise to increase the cut off pressure. Turn the knob counter clockwise to decrease the cut off pressure. Now, observe the pressure at which the compressor automatically restarts. If the differential needs adjustment, depress the know against the spring and turn clockwise to decrease the differential i.e. to increase the cut in pressure and counter clockwise to increase the differential or decrease the cut in pressure. It is necessary to appreciate that it is uneconomical to run the compressor at higher pressures when air pressure requirements are lower.

7. BEFORE MAINTENANCE

- There is filter is missing at inlet side
- Damaged finger valves of engine
- Oil is contaminated
- Piston rings are worn out
- All gaskets and sealing of engine are leaking
- Non return valve leaking
- Leakage in hose connections
- Outlet valve leaking
- Leakage in air lining
- Pressure gauge does not work
- Dust and dirt get stuck on grease pump
- Dirty grease filter
- Chocked grease pistol

8. DURING MAINTENANCE

Fig.14 Inlet air filter with casung

New air filter is mounted

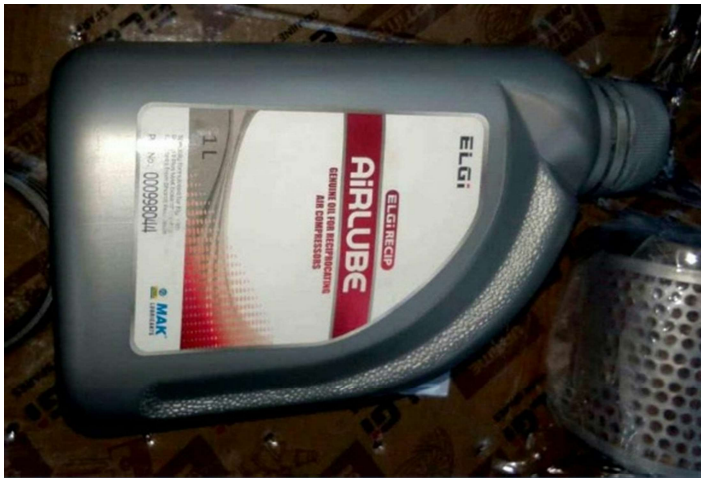

Fig.15 Engine oil

Engine oil is changed

Fig.16 Compressor tune up kit

Compressor tune up kit :-

This is the compressor tune up kit which contains piston rings, gaskets, washers, diaphragm, finger valve, and a filter.

A anabond, tefflon tape used for sealing purpose of threads and a polish paper is used for cleaning purpose.


Scanned with CamScanner

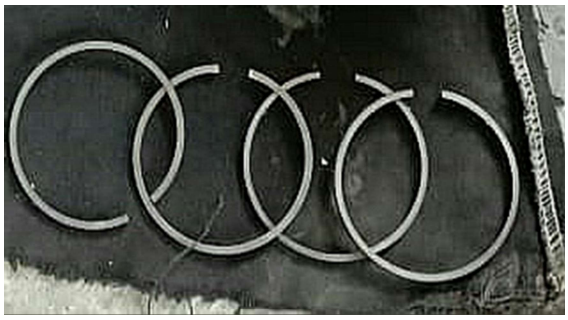

Fig.17 Engine components

Fig.18 Gasket replacement

We replace the gasket and packings, finger valves, piston rings.

Fig.19 Grease pump and Grease gun

We dismantle the grease pump and grease pistol clean the old contaminated grease and reassemble the unit.

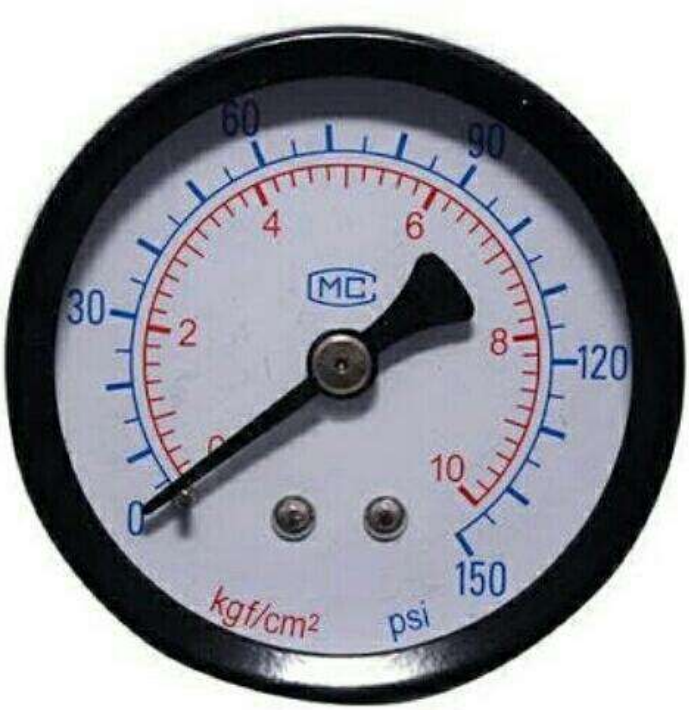

Fig.20 Pressure gauge

The pressure gauge, which is not working, we repair and calibrate it through the calibration lab.

9. AFTER MAINTENANCE

- Replaced finger valves of engine, ease to flow of air.
- Oil is changed, silently operated.
- Piston rings are replaced, compressed air increases per stroke.
- All gaskets and sealing of engine are replaced, efficiency increased.
- Fixed the leakage of non return valve, efficiency increased.
- Leakage in hose connections are fixed, efficiency increased.
- Outlet valve leakage fixed, efficiency increased.
- Pressure gauge repaired and calibrated and it works normally, accurate pressure can be noted.
- Grease pump cleaned, efficiency of grease pump increased.
- Grease filter cleaned, pure grease available at application point.
- Grease pistol cleaned, pure grease available at application.
- Filter is mounted on inlet side, impurities of air are catches.

10. PERIODIC MAINTENANCE

10.1 AIR COMPRESSOR

10.1.1 DAILY

1) Clean the compressor

2) Check the lubricating oil level.

3) Drain water from the air receiver.

10.1.2 WEEKLY

Start the unit and check Normal noise & vibration Pressure switch operation

Change lubricating oil. The first oil change in a new compressor is to be carried out after 50 hours of operation. The second is to be done after 20O hours. Subsequent oil changes are undertaken after 500 hours.

10.1.3 125 HOURS

1) Run the compressor and observe the cut out and cut in pressures. Read Just if required.

2) Dismantle the drain valve and allow the compressor to run for a short while blowing off all condensate. Replace drain valve.

10.1.4 250 HOURS

1) Check the mounting bolts for slackness.

2) Run the compressor and observed for air and oil leaks. Rectify leaks observed.

3) Check that the operational noise and vibration are normal

4) Strip and examine the rubber seat of the drain valve. Renew seat if required.

10.1.5 500 HOURS

Examine the condition of the lubricating oil and renew if dirty. In case of oil change, run the compressor for a short while and warm up the lubricating oll before draining the sump to clear all sediments from the lubricating oil passages.

10.1.6 1000 HOURS

1)Remove the cylinder head. Clean and inspect valve flat and valve plates.

2) Dismantle the non return valve. Examine the spring and rubber seat and replace if required.

3)Dismantle the safety valve and inspect the rubber seat and spring. Replace if required. Set safety valve to lift at 9 kgf/cm2.

10.1.7 3000 HOURS

1) Strip the compressor and examine the piston, pision rings, piston pin, connecting rod bush and big end rollers. Examine the motor bearings. Renew parts as required. Reassemble and adjust the operating pressures.

2)Remove the outlet valve and examine the internal condition of the air receiver, chemically clean if required.

10.1.8 TWO YEARLY

Hydraulically pressure test the receiver to 15 kgf/cm^2

10.2 GREASE PUMP

10.2.1 DAILY

1) Clean the grease filter daily (if in use) and during the recharging the drum with fresh grease.

10.2.2 125 HOURS (6 Days -weekly)

1) Lubricate the control head of the grease pump trough the graase nipple.

10.2.3 500 HOURS (Monthly)

1) Open the Air motor control head assembly and check pivot pins and pivot holes for wear. Reassemble and lubricate.

10.2.4 3000 HOURS (125 days, 4 Months)

1) Dismantle pump, examine parts and reassemble replacing worn out components as necessary .

11. TROUBLESHOOTING

Defects	Causes	Remedies
COMPRESSOR Compressor operating pressure other than specified	Pressure switch out of adjustment Frequent operation of pressure switch Very hot air	Readjust Check with master gauge Replace if necessary Increase differential Replace rubber diaphragm
Unloader valve leaky.	Damaged rubber seat or dirt under seat Oporating pin from pressure switch constantly pressing on the unloader valve	Replace seat or clean seat Readjust pressure pin lock nut
Pressure loss when Compressor is Stopped	Non return valve leaking. Safety valve leaking Air leak in pressure pipes	Examine rubber seats and joints and replace as necessary
Motor cuts out before max. pressure is reached	Pressure swiich out of adjustment. Overload trip of motor starter out of adjustment.	Readjust Readjust
Excessive filling time	Checked air filter Worn out piston ring & cyinder. Suction & Delivery valves	Clean filter Overhaul compressor

	leaking-Leaky joints in pressured lines	Retighten and replace parts if necessary
Oil contamination in compressed air	Checked air filter Crankcase breather hole in dipstick chocked Too high oil level Oil viscosity low Piston rings and cylinder worn out	Clean filter Clean hole Drain to correct level Charge with correct grade of lubricant oil Carry out major overhaul
Difficult in restarting	Defective non return valve and unloader valve	Overhaul unloader and non return valve
GREASE PUMP Air motor working even when grease pistol is closed	Leak in grease line Grease filter blocked	Locate and correct the leakage Clean filter
Pump working but no grease delivery	Air pockets in grease drum Defective ball valve seat Worn out valve insert piston rod and ring Dirt in between spacer and ball valve Blocked grease hose	Remove follower plate and pack grease Dismantle clean and replace worn out parts Clean the hose
Low or insufficient grease pressure line	Leakage in the grease line Low air pressure Slack grease piston	Rectify after dismantling Readjust air control valve to 4.5kg/cm2 Replace packing ring

	Defective ball seat and piston	Replace worm out parts
Pump working slowly	Choke in the air line Dust in pressure reducing valve Defective governer mechanism	Check and clear line Overhaul pressure reducing valve and readjust Dismantle the governor mechanism.Examine for wear
Pump does not operate	Excessive moisture in air	Overhaul and drain the water from the air receiver frequently
Grease pistol leaky	Damaged rubber seats	Dismantle and clean Replace seats

12. DOS AND DONTS

12.1 COMPRESSOR

DO'S

Drain off the condensate in the air-receiver tank periodically

Check the oil level in Crank-case before switching the unit ON every time (accumulation of water in the reciever-tank will lead to rusting and moisture in delivery) (It is disastrous to run the compressor wihout oil)

DONTS

Change the pressure settings of compressor (Compressor is tactory set for designed pressure, vaniations may lead to danger)

Run the compressor at higher pressure when the air-requirement is low (It is economical to run the compressor at low pressure, when the requirement is low

12.2 GREASE PUMP

DOS

Take care that the slider face is always free from scratches (Any scratches on the slider will affect its movement)

Replace the O rings in position without damage (Since, it is a pressure device, air tight seal is to be maintained always)

Use an FRL before the pump. (The pneumatic machine should not be exposed to dust. The parts coming in contact with air should be lubricated)

DONTS

Use the pump for Grease grades other than what is rocommended (The pump is designad for specific Grease grades. It may not be suitable for other lubricants and grades)

Use contaminated lubricant with the pump (Contaminants in the lubricant will choke the internal parts of the pump)

Choke the exhaust port of the pump (Choking the exhaust port will disturb the path of air and lead to malfunction of the pump)

13. APPLICATIONS

- It is used in garages, workshops to service a vehicle
- It is used to grease the parts where our hand can not be reach
- Its high pressure compressed air used for primary cleaning of parts
- It is used as tyre inflator as we connect the air hose to compressor output

14. CONCLUSION

As we replace the gaskets and rubber sealings of compressor, motor and of grease pump the leakages are reduced. The leakages at joints are removed by using tefflon tape during fittings. The air linings, the grease pump, the engine crank case, the grease piston are all clean, due to this the flow of compressed air and flow of grease is maintained as regular requirement, the auto service unit comes in operational condition.

15. REFRANCES

1. The service manual of ELGI auto service unit
2. www.elgi.com
3. A textbook of pneumatic system principle and maintenance by S. R. Mujumdar
4. A textbook of hydraulic and pneumatic controls by S. Chand

16.COSTING AND ESTIMATE

Rs. 1526 - Compressor tune up kit

Rs. 555 - Calibration process

Rs. 600 – Grease

Rs. 115 – Araldite sealent

Rs. 20 – Tefflon Tape

Rs. 150 – Travelling expences

Rs. 65 – Copper nipple

Rs. 80 – Other expenses

Total cost of project is **Rs.3,111 /-**