

# Trojan Type-‘J’

AIR POWERED PUMP

(Assembly 10138, Version ‘FS’)

OPERATING AND MAINTENANCE  
INSTRUCTIONS



## THE Trojan TYPE 'J'

**DESCRIPTION** This unit is a reciprocating piston pump powered by compressed air. It basically consists of a pneumatic piston and hydraulic ram which is linked to a four way air valve which causes the pump to reciprocate. Inlet and outlet non-return valves fitted to the hydraulic cylinder turn the displacement of the ram into a pumping action. The area of the piston is greater than that of the ram and this difference in area is the pump ratio.

If the hydraulic outlet is blocked off completely, say during pressure testing of a component, then the hydraulic pressure within the system will be the driving air pressure multiplied by the pump ratio. (Eg. a 2 Bar air pressure in a pump of ratio 11:1 will give a 22 Bar hydraulic pressure, less a small amount due to friction.)

**INSTALLATION** The pump will operate in any position, and can either be used free standing or bolted down.


An air line is connected to the air inlet of the pump. **Not exceeding 8 bar.**  
An air filter should be included in the air line and though not essential the life of the pump will be extended by the use of an air lubricator.  
An air pressure regulator will give control of the hydraulic outlet pressure.

The hydraulic fluid is connected to the inlet non-return valve (see direction of flow on the assembly drawing).

Including a suitably sized strainer in the inlet pipework will prevent expensive damage from possible contaminants.

It is always advisable for the fluid reservoir to be higher than the pump. The hydraulic outlet non-return valve is connected to the high pressure hydraulic system.

Pressure Equipment Directive 2014/68/EU Category SEP

ATEX  II 2G Ex h IIC T5 Gb  
II 2D Ex h IIIC T 100°C Db

**PIPEWORK** The size of the pipework should be comparable to the size of the threads on the non-return valves.

The pressure rating and type of pipe should be suited to the particular application.

All pipework should be checked that it is clean and free from burrs before connecting to the pump.

### **OPERATION**

**The air pressure applied to the pump must never exceed 8 bar.**

The pump is started by turning on the air pressure.

If using for the first time, or if it is suspected that air has got into the hydraulic side of the pump it must first be primed to remove any air out of the system by allowing the pump to run with the hydraulic outlet unrestricted until all air has been expelled.

**Do not allow the pump to run for long periods with no liquid passing through it as this will cause the main seal to overheat and fail.**

The pump can be stopped at any time by turning the air supply off, or it will eventually stall itself when the hydraulic test pressure set by the air pressure regulator is reached; in this state no further air will be used until the hydraulic pressure drops and the pump automatically re-starts.

**MAINTENANCE** To keep the pump in good condition it is only necessary to ensure that it is fed with a clean and filtered air supply, and the liquid fed into the pump is free of any contaminants that could cause wear. Though not essential, fitting an air lubricator will extend the service interval of the pump but if one is fitted it is important that it is kept filled.

**FREEZING !** Care must be taken in extremely cold conditions to prevent the risk of freezing, if water is being used as the hydraulic medium.

**SPARES** When ordering spare parts it is essential to quote the pump type and ratio and if possible the serial number. This information will be found on a label fixed to the pump.

Pumps and spares are all available from:-

Hydraulic Pneumatic Services Ltd,

Unit 17, King Street Trading Estate

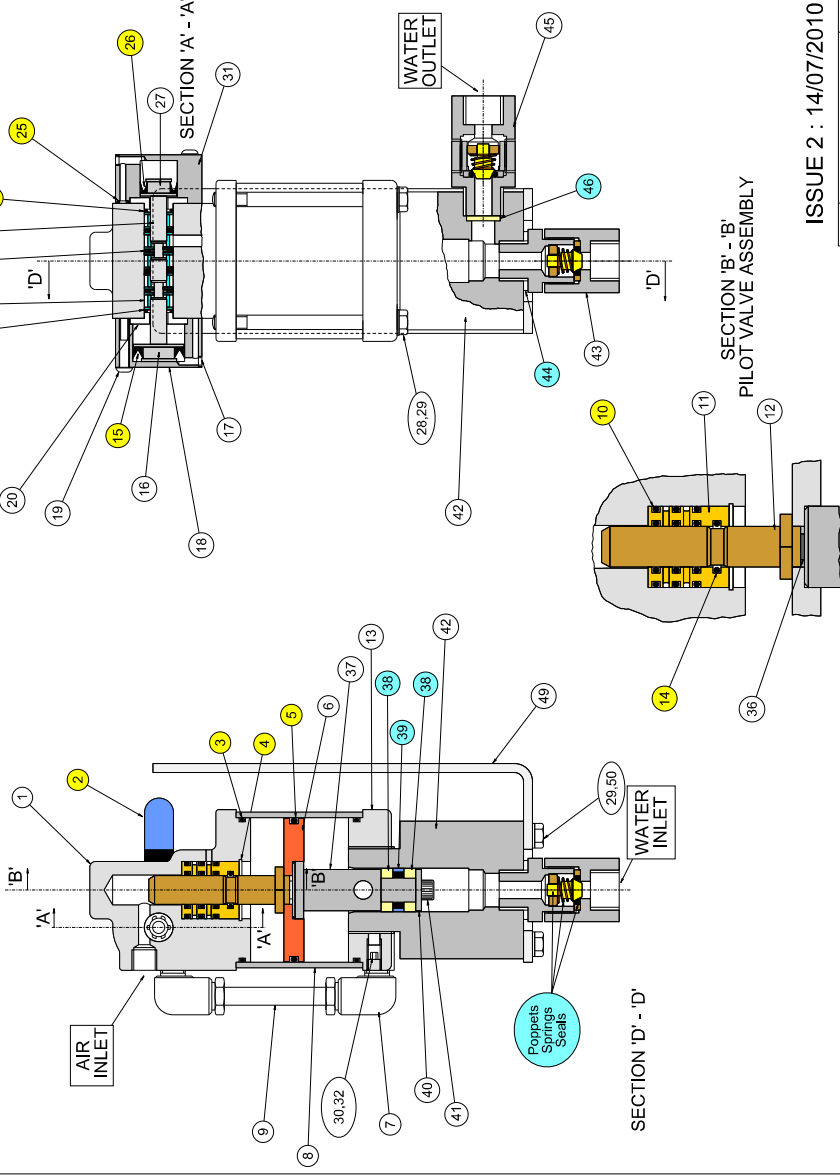
Middlewich

Cheshire UK

CW10 9LF

Tel: +44 (0)1606 835725      [www.trojanpumps.com](http://www.trojanpumps.com)

Items highlighted in YELLOW are included in the Pneumatic Service Kit 10138KPS.  
 Items highlighted in BLUE, along with the Poppets Seals and Springs from the Check Valves are included in the Hydraulic Service Kit 10138KH.



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50	BOLT	2
49	WALL BRACKET	1
48		

47	SEALING WASHER	
46	OUTLET CHECK VALVE	1
45	SEALING WASHER	1
44	INLET CHECK VALVE	1
43	HYDRAULIC CYLINDER	1
42	SCREW	1
41	BACK UP WASHER	1
40	HYDRAULIC SEAL	1
39	ANTI EXTRUSION RING	2
38	HYDRAULIC RAM	1
37	CONNECTING STUD	1
36		
35		
34		
33	LABEL	1
32	SOFT PLUG	1
31	END CAP RETURN	1
30	GRUB SCREW	1
29	WASHER	6
28	BOLT	4
27	RETURN PISTON	1
26	U' RING	1
25	O' RING	1
24	MAIN VALVE SPOOL	1
23	SEALING RING	4
22	CAGE	5
21	O' RING	2
20	LOCATING DISC	2
19	SCREW	6
18	END CAP SIGNAL	1
17	PLUG	2
16	SIGNAL PISTON	1
15	U' RING	1
14	O' RING	4
13	BOTTOM COVER	1
12	PILOT SHAFT	1
11	BUSH	1
10	O' RING	3
9	AIR PIPE	1
8	AIR CYLINDER	1
7	ELBOW	2
6	PISTON	1
5	O' RING	1
4	CIRCLIP	1
3	O' RING	2
2	SILENCER	2
1	TOP COVER/VALVE BODY	1
	DESCRIPTION	
ITEM		QTY.

## **SERVICING**

To avoid any leaks it is very important that all components are carefully examined for signs of wear, any scratches or grooves for example will lead to air or water leaks. For the same reason all components must be carefully and thoroughly cleaned to remove any built up hardened grease or dirt as this will also lead to air leaks.

### **To Change the Hydraulic Seal and Air Piston O' Ring.**

a) **Disconnect the air supply from the pump!**

b) Unscrew the retaining nuts on the two air elbows (item 7), remove the four retaining bolts (item 28). The two halves of the pump can now be pulled apart. Remove the air cylinder (item 8) by sliding it off the air piston (item 6) and pull the piston assembly along with the hydraulic ram (item 37) out of the pump. The main hydraulic seal is held on the end of the ram by a screw (item 41) and washer. During re-assemble all sliding surfaces should be lubricated with a general purpose grease.

**Carefully inspect the inside of the Hydraulic Cylinder item 42, any scratches or grooves will cause leaks.**

### **Servicing the air drive section and air change over valve.**

a) **Disconnect the air supply from the pump!**

b) Separate the two halves of the pump as described above. Remove the pilot bush retaining circlip (item 4) and carefully pull the bush from the housing. The main air valve is dismantled by removing the end caps (items 18 & 31) and sliding the internal seals etc. out. The end caps will retain the pistons which should also be pulled out and examined. Make careful note as to the order in which the various components are fitted. The two end caps are designed in such a way that it is impossible to fit them incorrectly. The return end cap is fitted with a small O' Ring (item 25) to seal the pilot hole, the other end cap has no O' Ring. This is correct and no attempt should be made to seal this hole. (Continued)

## **SERVICING**

(Continued) Carefully inspect the inside of the Air Valve Body item 1, the End Caps items 18 & 31, the Air Cylinder item 8 the condition of the Pilot Shaft item 12 and the Main Valve Spool item 24, any corrosion, scratches or grooves will cause leaks.

During re-assembly all sliding surfaces should be lubricated with a general purpose grease.

### **To Service the Non-Return (Check) Valves.**

a) **Disconnect the air supply from the pump!**

b) Unscrew the Non-Return Valves (items 43 & 45) from the pump. Grip the wider part of the Valve, the Seat (item 1) in a sturdy vice using soft jaws to protect the valve from damage. Using a large spanner unscrew the Valve Body (item 2) and separate the two halves of the Valve.

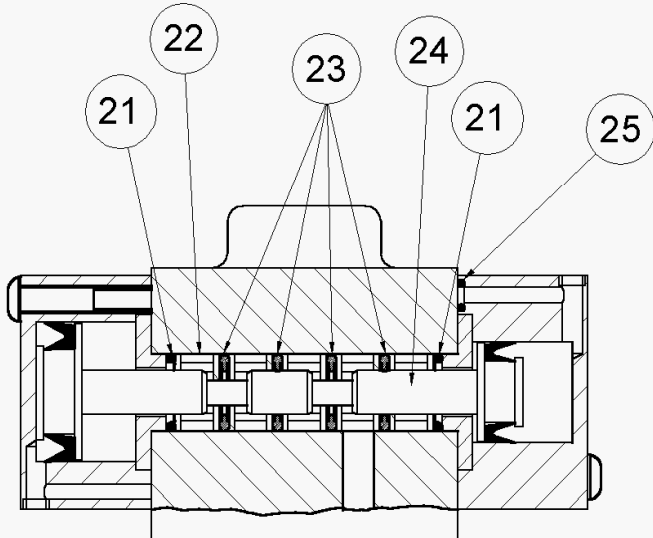
During reassembly place the Body of the Valve (item 2) with the open end upwards in a vice. Insert the Guide (item 6), Spring, (item 4) wide end against the Guide, Poppet (item 5) into position then place the Seal Retainer (item 7) fitted with a new O' Ring on top of the Poppet, be sure this is the correct way round.

Apply anti-seize grease to the threads and carefully lower the Seat (item 1) into position and screw the two parts together.

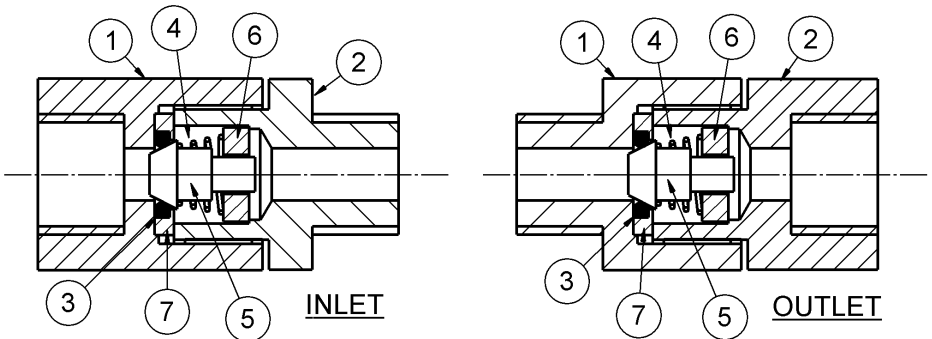
Grip the Valve in a vice as before and tighten fully.

### **IMPORTANT**

Before refitting the Non-Return Valves to the pump you need to seat the poppets onto the seals. A suitably sized rod. is inserted through the Body (item 2) and pushed firmly against the end of the poppet forcing it onto the Seal.



AIR CHANGE OVER VALVE



NON RETURN VALVES