



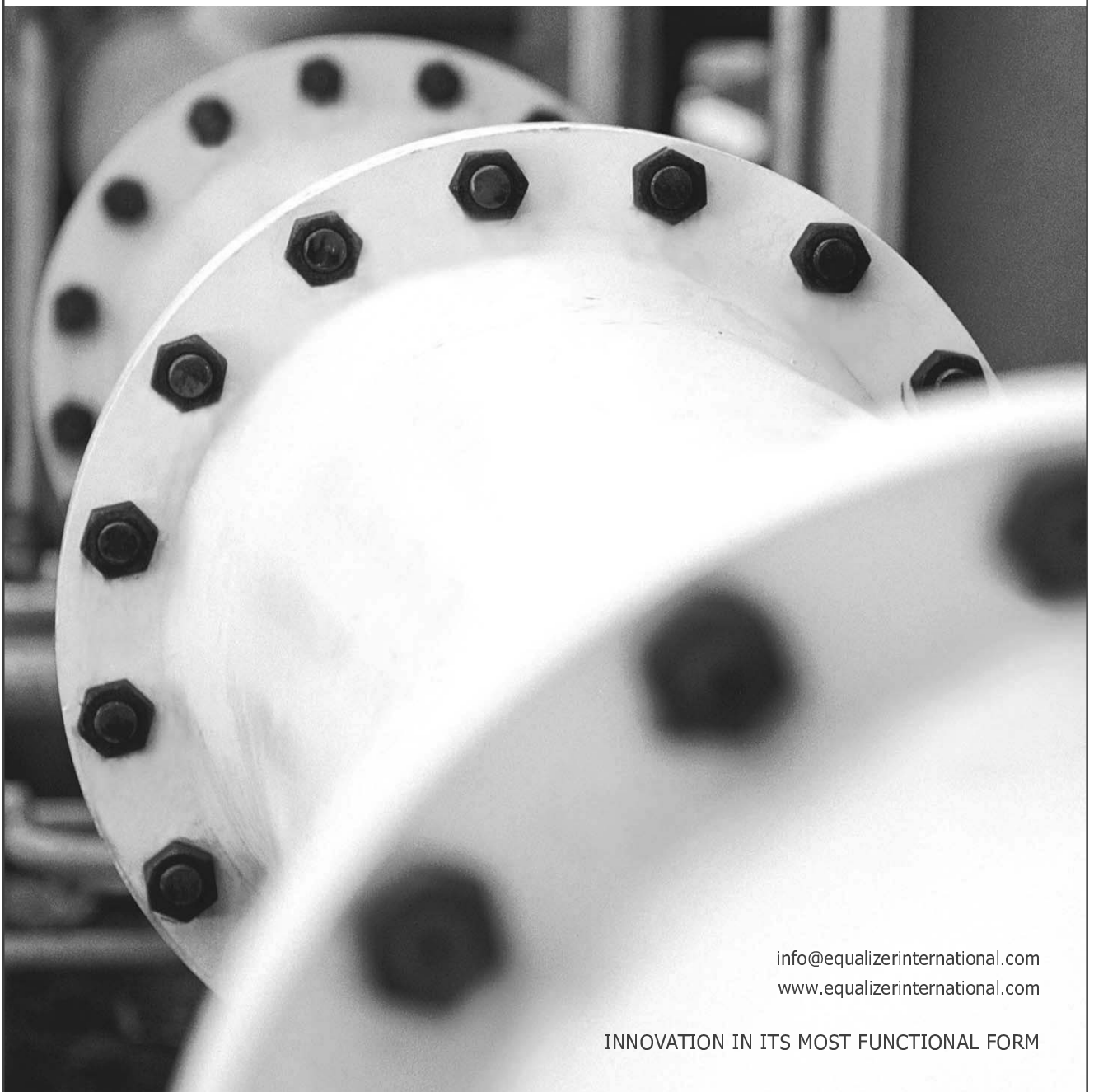
HP350S, HP350D, HP550S

HYDRAULIC SEALED
HAND PUMPS

Operator Instruction Manual



EQUALIZER[™]
INTERNATIONAL



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INNOVATION IN ITS MOST FUNCTIONAL FORM



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1. INTRODUCTION

The Equalizer HP350S hydraulic single port sealed hand pump, HP350D hydraulic twin port sealed hand pump and HP550S hydraulic single port sealed hand pump replace the Equalizer P142 hydraulic hand pump.

The HP350S, HP350D and HP550S are tailored for use with Equalizer International Ltd hydraulic equipment. Their output is regulated to 700 bar (10,000 psi) and is delivered from an output port threaded $\frac{3}{8}$ " NPT. The HP350S and HP350D can be used with any 700 bar (10,000 psi) rated hydraulic equipment with an oil capacity of 350cc (21.35 in³) or less. The HP550S can be used with any 700 bar (10,000 psi) rated hydraulic equipment with an oil capacity of 550cc (30.51 in³) or less.

The diaphragm oil reservoir means that, unlike conventional hand pump units, the HP350S, HP350D and HP550S are operable at all angles and are highly resistant to accidental spillage of hydraulic fluid.

Pressure rating:

- **1st stage:** 13.8 bar (197 psi)
- **2nd stage:** 700 bar (10,000 psi)



2. SAFETY INFORMATION

The operator MUST read this manual prior to using the tools.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury; read the manual fully!

Read all the following instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation.

Equalizer International Ltd cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact Equalizer International Ltd when in doubt as to the safety precautions and applications. To protect your warranty, use only good quality hydraulic oil of the grade 32cSt.

Only people competent in the use of hydraulic equipment should use these tools.

In all installations the site safety requirements must be adhered to. ALSO the safety of the operator, and when present, any assisting personnel, is of paramount importance along with the safety of others including, when present, the general public.

These instructions are only to cover the safe operation of THE EQUALIZER HP350S, HP350D AND HP550S HYDRAULIC SEALED HAND PUMPS during normal maintenance/installation operations. All other safety aspects must be controlled by the operation supervisor.



A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



IMPORTANT: Operator must be competent in the use of hydraulic equipment. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the Equalizer equipment.



WARNING: To avoid personal injury and possible equipment damage, make sure all hydraulic components are rated to a safe working pressure of 700 bar (10,000 psi)



WARNING: Do not overload equipment. Overloading causes equipment failure and possible personal injury.



CAUTION: Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.



CAUTION: Avoid sharp bends and kinks that will cause severe back-up pressure in hoses. Bends and kinks lead to premature hose failure. Do not drop heavy objects onto hoses. A sharp impact may cause internal damage to hose wire strands; applying pressure to a damaged hose may cause it to rupture. Do not place heavy weights on the hoses, or allow vehicles to roll over the hoses; crush damage will lead to premature hose failure.



WARNING: Immediately replace worn or damaged parts with genuine Equalizer parts. Equalizer parts are designed to fit properly and withstand rated loads. For repair or maintenance service contact your Equalizer distributor or service centre.



DANGER: To avoid personal injury keep hands and feet away from the tool and workpiece during operation.



WARNING: Always wear suitable clothing and Personal Protective Equipment (PPE).



DANGER: Do not handle pressurised hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, seek medical attention immediately.



WARNING: Never pressurize unconnected couplers. Only use hydraulic equipment in a connected system.



IMPORTANT: Do not lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport.



CAUTION: Do not operate the equipment without lubricating all moving parts. Use only high pressure molybdenum disulphide grease.



3. KIT COMPONENTS

HP350S KIT COMPONENTS

- 1 x HP350S Pump Unit
- 1 x Pressure Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Product Code: HP350SMIN



HP350D KIT COMPONENTS

- 1 x HP350D Pump Unit
- 2 x Pressure Gauge
- 2 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Product Code: HP350DMIN



HP550S KIT COMPONENTS

- 1 x HP550S Pump Unit
- 1 x Pressure Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Product Code: HP550SMIN





4. TECHNICAL DATA

		HP350S / D	HP550S / D
Pump type		Two speed	Two speed
Pressure rating	1st stage	13.8 bar (197 psi)	13.8 bar (197 psi)
	2nd stage	700 bar (10,000 psi)	700 bar (10,000 psi)
Usable oil capacity		350.0 cc (21.35 in ³)	550.0 cc (30.51 in ³)
Oil volume per stroke	1st stage	13.0 cc (0.79 in ³)	13.0 cc (0.79 in ³)
	2nd stage	2.8 cc (0.17 in ³)	2.8 cc (0.17 in ³)
Max handle effort		25 kg (55.12 lbs)	25 kg (55.12 lbs)
Piston stroke		18.0 mm (0.71")	18.0 mm (0.71")
Hydraulic oil		Grade 32 cSt	Grade 32 cSt



5. HOW THE HAND PUMPS WORK

- 1.** The release valve is closed fully by rotating clockwise until hand tight



- 2.** The pump handle is raised, which creates a vacuum in the piston chamber which sucks oil from the reservoir into the chamber



- 3.** The pump handle is depressed, which pumps the oil from the chamber through the outlet port and into the system to which the pump is connected



- 4.** Steps 2 & 3 are repeated, which will pump oil into the system until the maximum pressure of 10,000 psi (700 bar) is achieved, at which point the safety release valve will open and the oil will cycle back to the reservoir





6. INSTALLATION AND OPERATION

6.1 HP350S & HP550S



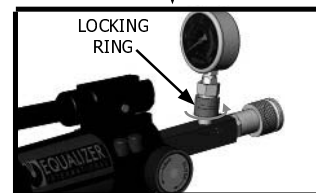
WARNING:

Never attempt to pressurise the pump when the pressure gauge is not connected or the pump is not connected to a system!

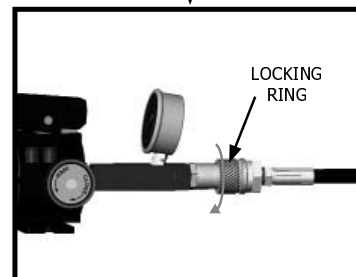
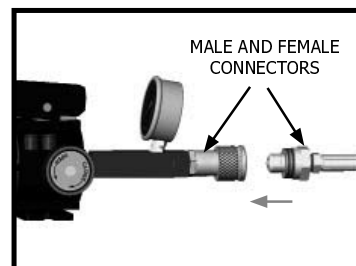
DANGER:

Always check the hydraulic system in which the pump is to be used is rated for 10,000 psi (700 bar). Over pressurising a hydraulic system will result in component failure and personal injury!

1. Prior to using the pump the hydraulic gauge must be fitted. push the male connector on the gauge and female connector on the gauge adaptor together fully and rotate the locking ring counterclockwise until fully tight.



2. Ensure the hydraulic system you wish to pressurise has been bled and is free from air and leaks. Connect the pump into the system using the screw connector supplied with the pump, push the male and female connectors together fully and rotate the locking ring clockwise until fully tight.



WARNING:

Never disconnect the pump or other components when the system is pressurised



-
- 3.** Close the release valve fully by rotating clockwise until hand tight



-
- 4.** Pressurise the system by raising and depressing the pump handle until the desired pressure is indicated on the pressure gauge
N.B. max. pressure 10,000 psi (700 bar)



-
- 5.** To depressurise the system, gently open the release valve by rotating the release knob anti-clockwise



-
- 6.** Once the system has been fully depressurised, the pump can be disconnected by unscrewing the connectors.
-



6.2 HP350D

The HP350D has been designed for use with Equalizer maxi kit systems, however the HP350D can be used in any situation where 2 separate hydraulic systems require to be pressurised and controlled independently by the same operator.



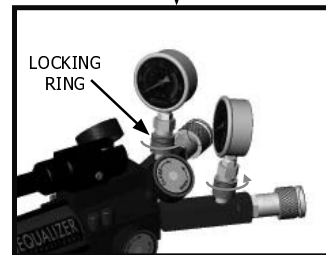
WARNING:

Never attempt to pressurise the pump when the gauge is not connected or the pump is not connected to a system!

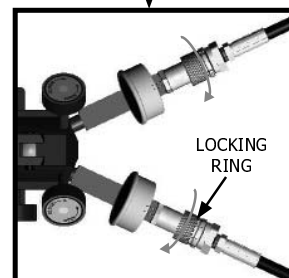
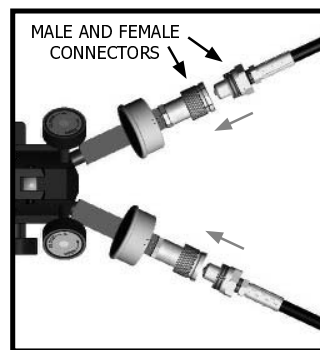
DANGER:

Always check the hydraulic system in which the pump is to be used is rated for 10,000 psi (700 bar). Over pressurising a hydraulic system will result in component failure and personal injury!

1. Prior to using the pump the hydraulic gauges must be fitted.
push the male connector on the gauges and female connector on the gauge adaptors together fully and rotate the locking ring counterclockwise until fully tight.



2. Ensure the hydraulic systems you wish to pressurise have been bled and are free from air and leaks. Connect the pump into the systems using the screw connectors supplied with the pump, push the male and female connectors together fully and rotate the locking rings clockwise until fully tight.

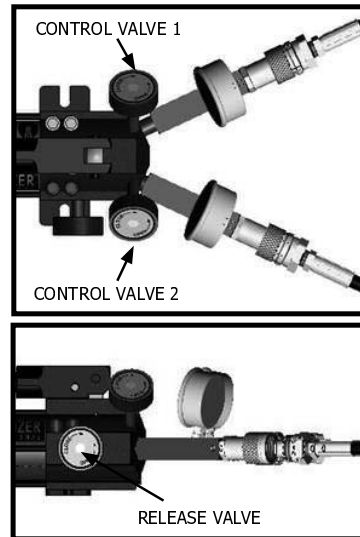


WARNING:

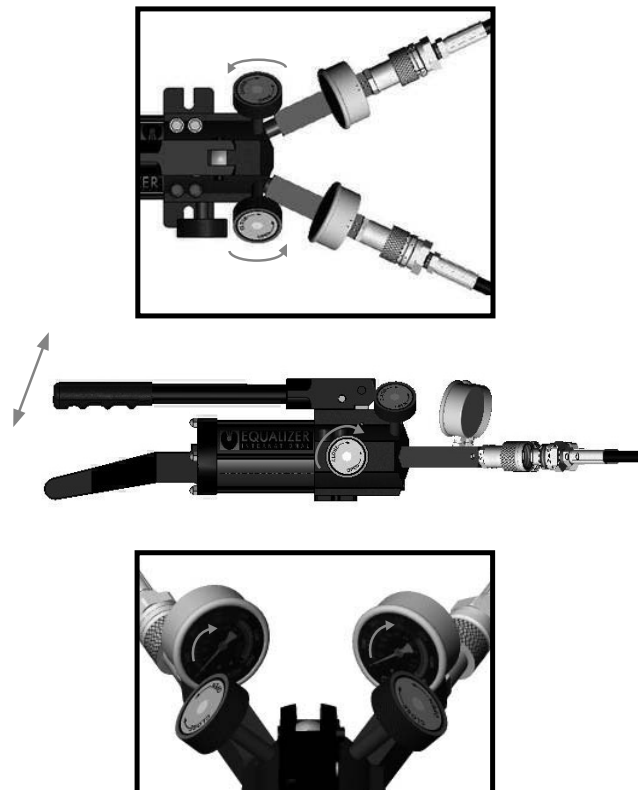
Never disconnect the pump or other components when the system is pressurised



- 3.** The HP350S is fitted with two control valves and a release valve. This enables the operator to adjust the pressure on both hydraulic systems independently or simultaneously.



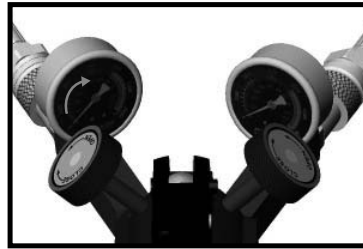
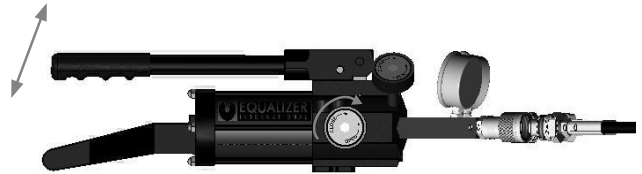
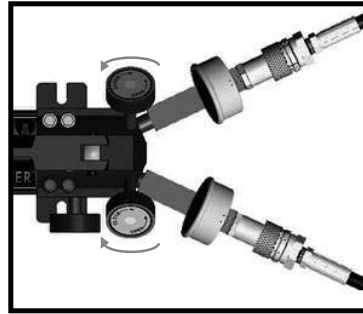
- a.** If control valves 1 and 2 are set to the fully open position and the release valve is screwed fully home, when the pump handle is raised and lowered both hydraulic systems will be pressurised to an equal pressure (max. pressure 10,000 psi (700 bar))





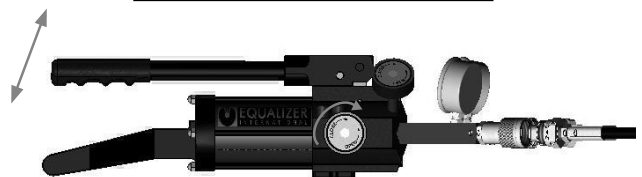
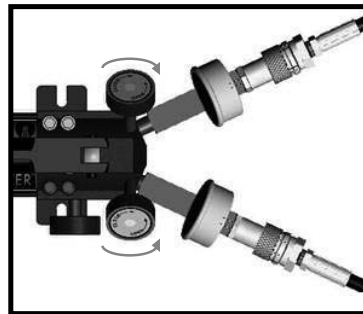
b.

If control valve 1 is open and control valve 2 is closed with the release valve screwed fully home, when the pump handle is raised and lowered only the system connected to control valve 1 will be pressurised (max. pressure 10,000 psi (700 bar))



c.

If control valve 2 is open and control valve 1 is closed with the release valve screwed fully home, when the pump handle is raised and lowered only the system connected to control valve 2 will be pressurised (max. pressure 10,000 psi (700 bar))





d.

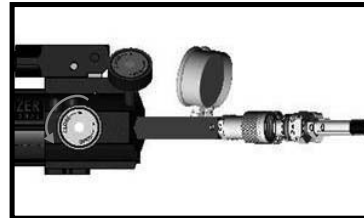
If after pressurising one system the control valve for the unpressurised system is opened then the pressure in both systems will adjust until they are equal



4.

a.

To depressurise both systems simultaneously open both control valves and gently open the release valve by rotating the release knob anti-clockwise

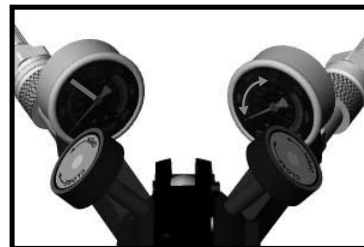


b.

To depressurise only one system open only the control valve for that system and gently open the release valve by rotating the release knob anti-clockwise

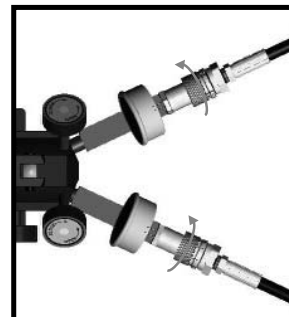
5.

At any time during pressurisation of the systems the appropriate control can be closed to hold one system at a fixed pressure while the pressure in the other system can be increased by raising and lowering the pump handle or decreased by opening the release valve



6.

Once both systems have been fully depressurised the pump can be disconnected by unscrewing the couplers





7. EXAMINATION, MAINTENANCE AND STORAGE

- On return from each job and before allocation against subsequent work the HP350S / HP350D / HP550S should be examined to ensure that they are serviceable.
- Any missing or damaged items are to be replaced as soon as possible and prior to the pump being used again.
- Store the pump in a cool dry place and ensure all machined surfaces are greased.
- Grease all moving parts each and every time the pump is used.

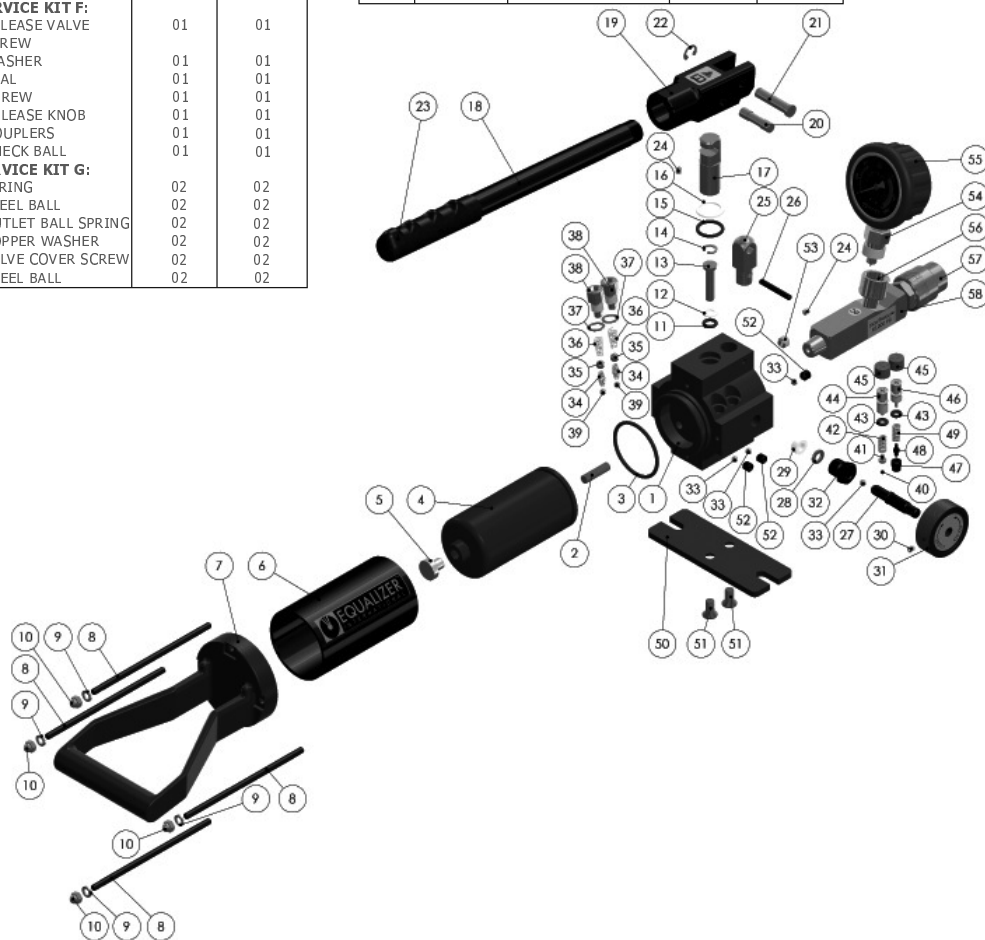


8. PARTS LISTS

HP350S HYDRAULIC SINGLE PORT SEALED HAND PUMP

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
01	710101-01	PUMP HOUSING		01
	715100-01	SERVICE KIT A:		
02		- OIL FILTER	01	01
03		- O-RING	01	01
04		- RESERVOIR BLADDER	01	01
05		- REFILLING PLUG	01	01
06	710601-01	RESERVOIR		01
	725200-01	SERVICE KIT B:		
07		- TAIL BASE	01	01
08		- SCREW	04	04
09		- SPRING WASHER	04	04
10		- NUT	04	04
	715300-01	SERVICE KIT C:		
11		- O-RING	01	01
12		- BACK-UP RING	01	01
13		- PUMP PISTON	01	01
14		- SNAP RING	01	01
15		- O-RING	01	01
16		- BACK-UP RING	01	01
17		- PUMP PISTON	01	01
	715400-01	SERVICE KIT D:		
18		- HANDLE	01	01
19		- YOKE	01	01
20		- PISTON PIN	01	01
21		- YOKE PIN	01	01
22		- RETAINING RING	01	01
23		- HANDLE GRIP	01	01
24		- SCREW	01	01
	715500-01	SERVICE KIT E:		
25		- YOKE BASE	01	01
26		- SPRING PIN	01	01
	715600-01	SERVICE KIT F:		
27		- RELEASE VALVE	01	01
28		- SCREW	01	01
29		- WASHER	01	01
30		- SEAL	01	01
31		- SCREW	01	01
32		- RELEASE KNOB	01	01
33		- COUPLERS	01	01
	715700-01	SERVICE KIT G:		
34		- CHECK BALL	01	01
35		- SPRING	02	02
36		- STEEL BALL	02	02
37		- OUTLET BALL SPRING	02	02
38		- COPPER WASHER	02	02
39		- VALVE COVER SCREW	02	02
		- STEEL BALL	02	02

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
	715800-01	SERVICE KIT H:		
40		- STEEL BALL	01	01
41		- SPRING END CAP	01	01
42		- L.P. SPRING	01	01
43		- O-RING	02	02
44		- OVERLOAD COVER	01	01
		SCREW		
45		- CAP	02	02
46		- OVERLOAD COVER	01	01
		SCREW		
47		- CONE SEAT	1	01
48		- CONE	01	01
49		- LONG SEPARATOR	01	01
	715900-01	SERVICE KIT I:		
50		- BASE PLATE	01	01
51		- SCREW	02	02
	716100-01	SERVICE KIT K:		
52		- SCREW	04	03
53		- SCREW	01	01
24		- SCREW	01	01
33		- CHECK BALL	04	03
	716200-01	SERVICE KIT L:		
54		- GAUGE COUPLER	01	01
		MALE		
55		- GAUGE	01	01
	716300-01	SERVICE KIT M:		
56		- GAUGE COUPLER	01	01
		FEMALE		
57		- COUPLER	01	01
58		- GAUGE PORT	01	01
		ADAPTOR		

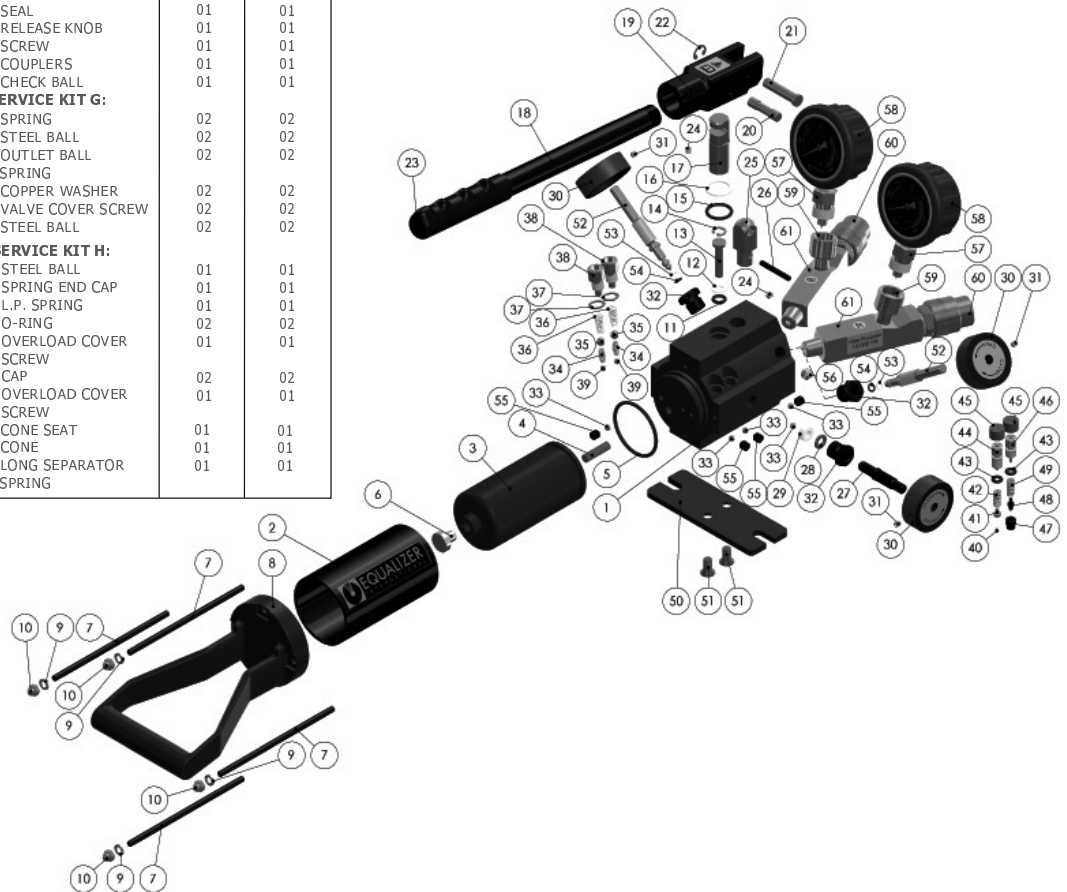




HP350D HYDRAULIC TWIN PORT SEALED HAND PUMP

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
01	720101-01	PUMP HOUSING		01
02	710601-01	RESERVOIR		01
	715100-01	SERVICE KIT A:		
03		- RESERVOIR BLADDER	01	01
04		- OIL FILTER	01	01
05		- O-RING	01	01
06		- REFILLING PLUG	01	01
	725200-01	SERVICE KIT B:		
07		- SCREW	04	04
08		- TAIL BASE	01	01
09		- SPRING WASHER	04	04
10		- NUT	04	04
	715300-01	SERVICE KIT C:		
11		- O-RING	01	01
12		- BACK-UP RING	01	01
13		- H.P. PISTON	01	01
14		- SNAP RING	01	01
15		- O-RING	01	01
16		- BACK-UP RING	01	01
17		- L.P. PISTON	01	01
	715400-01	SERVICE KIT D:		
18		- HANDLE	01	01
19		- YOKE	01	01
20		- PISTON PIN	01	01
21		- YOKE PIN	01	01
22		- RETAINING RING	01	01
23		- HANDLE GRIP	01	01
24		- SCREW	01	01
	715500-01	SERVICE KIT E:		
25		- YOKE BASE	01	01
26		- SPRING PIN	01	01
	715600-01	SERVICE KIT F:		
27		- RELEASE VALVE SCREW	01	01
28		- WASHER	01	01
29		- SEAL	01	01
30		- RELEASE KNOB	01	01
31		- SCREW	01	01
32		- COUPLERS	01	01
33		- CHECK BALL	01	01
	715700-01	SERVICE KIT G:		
34		- SPRING	02	02
35		- STEEL BALL	02	02
36		- OUTLET BALL SPRING	02	02
37		- COPPER WASHER	02	02
38		- VALVE COVER SCREW	02	02
39		- STEEL BALL	02	02
	715800-01	SERVICE KIT H:		
40		- STEEL BALL	01	01
41		- SPRING END CAP	01	01
42		- L.P. SPRING	01	01
43		- O-RING	02	02
44		- OVERLOAD COVER SCREW	01	01
45		- CAP	02	02
46		- OVERLOAD COVER SCREW	01	01
47		- CONE SEAT	01	01
48		- CONE	01	01
49		- LONG SEPARATOR SPRING	01	01

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
	715900-01	SERVICE KIT I:		
50		- BASE PLATE	01	01
51		- SCREW	02	02
	726000-01	SERVICE KIT J:		
52		- VALVE SCREW	01	02
53		- BACK-UP RING	01	02
54		- O-RING	01	02
30		- RELEASE KNOB	01	02
31		- SCREW	01	02
32		- COUPLERS	01	02
	716100-01	SERVICE KIT K:		
55		- SCREW	04	04
33		- CHECK BALL	04	04
	716200-01	SERVICE KIT L:		
56		- GAUGE COUPLER MALE	01	02
57		- GAUGE FEMALE	01	02
	716300-01	SERVICE KIT M:		
58		- GAUGE COUPLER FEMALE	01	02
59		- COUPLER	01	02
60		- PORT GAUGE ADAPTOR	01	02

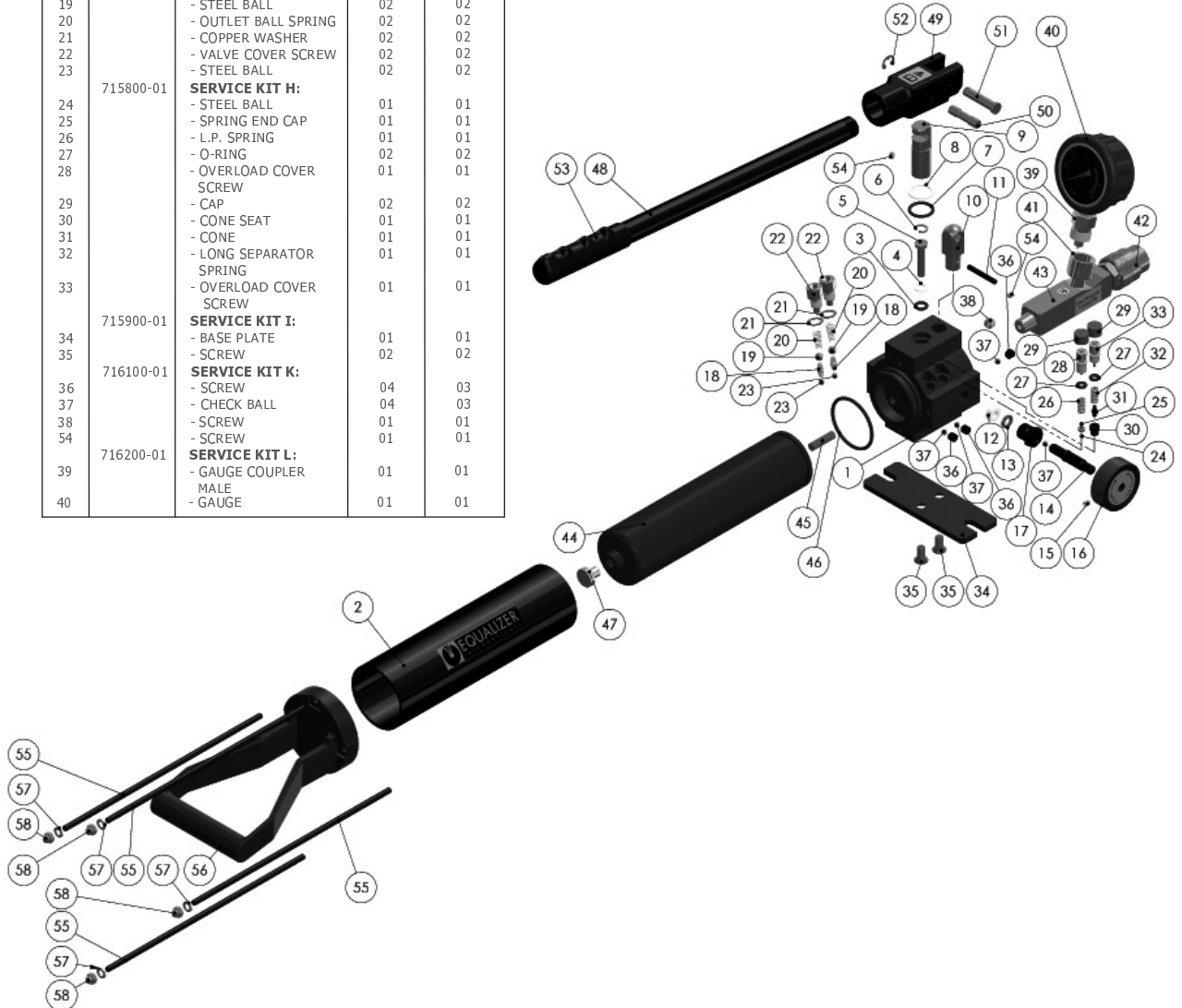




HP550S HYDRAULIC TWIN PORT SEALED HAND PUMP

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
01	710101-01	PUMP HOUSING		01
02	730601-01	RESERVOIR		01
	715300-01	SERVICE KIT C:		
03		- O-RING	01	01
04		- BACK-UP RING	01	01
05		- H.P. PISTON	01	01
06		- SNAP RING	01	01
07		- O-RING	01	01
08		- BACK-UP RING	01	01
09		- L.P. PISTON	01	01
	715500-01	SERVICE KIT E:		
10		- YOKE BASE	01	01
11		- SPRING PIN	01	01
	715600-01	SERVICE KIT F:		
12		- SEAL	01	01
13		- WASHER	01	01
14		- RELEASE VALVE	01	01
		- SCREW		
15		- SCREW	01	01
16		- RELEASE KNOB	01	01
17		- COUPLERS	01	01
37		- CHECK BALL	01	01
	715700-01	SERVICE KIT G:		
18		- SPRING	02	02
19		- STEEL BALL	02	02
20		- OUTLET BALL SPRING	02	02
21		- COPPER WASHER	02	02
22		- VALVE COVER SCREW	02	02
23		- STEEL BALL	02	02
	715800-01	SERVICE KIT H:		
24		- STEEL BALL	01	01
25		- SPRING END CAP	01	01
26		- L.P. SPRING	01	01
27		- O-RING	02	02
28		- OVERLOAD COVER	01	01
		- SCREW		
29		- CAP	02	02
30		- CONE SEAT	01	01
31		- CONE	01	01
32		- LONG SEPARATOR	01	01
		- SPRING		
33		- OVERLOAD COVER	01	01
		- SCREW		
	715900-01	SERVICE KIT I:		
34		- BASE PLATE	01	01
35		- SCREW	02	02
	716100-01	SERVICE KIT K:		
36		- SCREW	04	03
37		- CHECK BALL	04	03
38		- SCREW	01	01
54		- SCREW	01	01
	716200-01	SERVICE KIT L:		
39		- GAUGE COUPLER	01	01
40		- MALE		
		- GAUGE	01	01

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
	716300-01	SERVICE KIT M:		
41		- GAUGE COUPLER	01	01
		- FEMALE		
42		- COUPLER	01	01
43		- PORT GAUGE	01	01
		- ADAPTOR		
	735100-01	SERVICE KIT N:		
44		- RESERVOIR BLADDER	01	01
45		- OIL FILTER	01	01
46		- O-RING	01	01
47		- REFILLING PLUG	01	01
	735300-01	SERVICE KIT O:		
48		- HANDLE	01	01
49		- YOKE	01	01
50		- PISTON PIN	01	01
51		- YOKE PIN	01	01
52		- RETAINING RING	01	01
53		- HANDLE GRIP	01	01
54		- SCREW	01	01
	735200-01	SERVICE KIT P:		
55		- SCREW	04	04
56		- TAIL BASE	01	01
57		- SPRING WASHER	04	04
58		- NUT	04	04



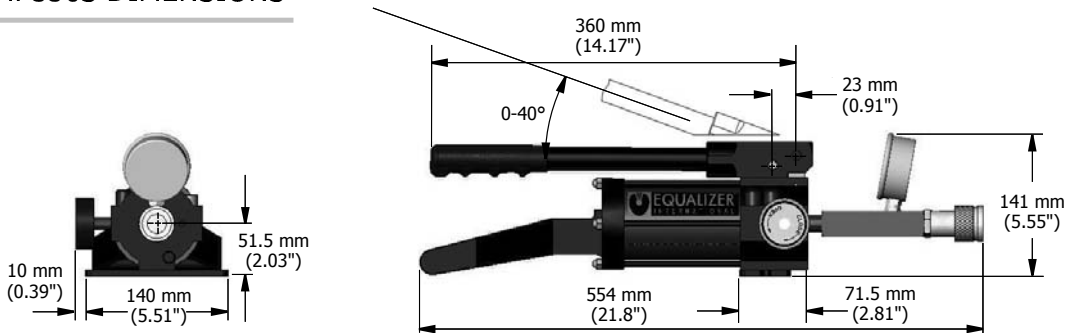


9. WEIGHTS AND DIMENSIONS

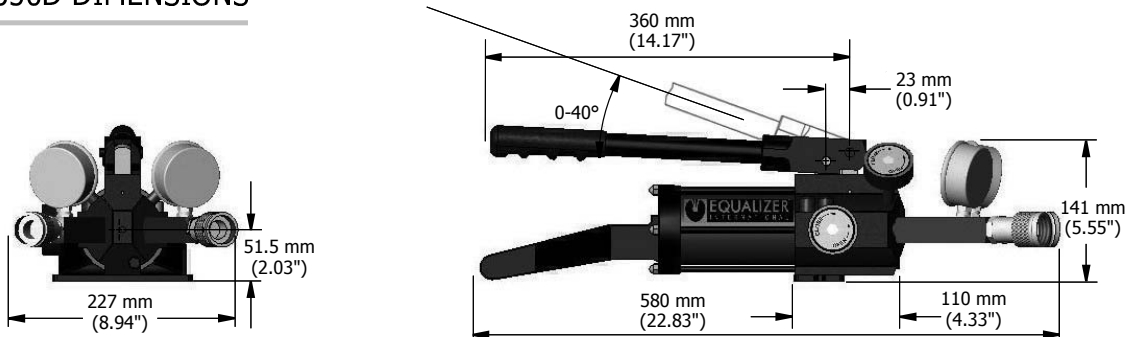
WEIGHTS

- HP350S Pump Unit = 4.5 kg (9.9 lbs)
- HP350D Pump Unit = 6.5 kg (13.2 lbs)
- HP550S Pump Unit = 5.0 kg (14.3 lbs)

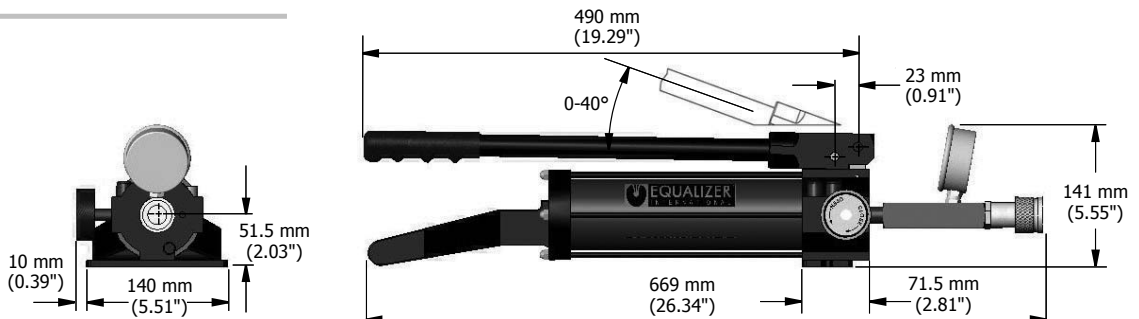
HP350S DIMENSIONS



HP350D DIMENSIONS



HP550S DIMENSIONS





10. TROUBLESHOOTING

Problem: Hoses are connected but the tool does not advance. The pressure on the pump handle is minimal.

- ↪ The release valve is in the retract (open) position (and the control valves are open on the HP350D)

- Close the release valve (and the control valves on the HP350D)



Problem: Hoses are connected and the pump quickly reaches maximum pressure but the tool has not advanced

- ↪ One or more of the connectors are not fully tightened and the hydraulic oil cannot pass through from the pump to the cylinder

- Check all connectors are fully tightened and the release valve is in the fully closed position

Problem: Hoses are connected and the tool advances but there is minimal pressure on the pump handle and the handle is rising back of its own accord

- ↪ There is dirt or a damaged valve seat within the pump unit

- The pump should be sent to an authorised Equalizer distributor for repair



Problem: The tool the hand pump is driving is advancing but does not reach full pressure

→ Air could be present in the hydraulic system

→ Use the airlock removal procedure as follows:

1. Connect the hand pump to the tool with the hydraulic hose
2. Close the release valve on the pump, and prime the pump until the hydraulic cylinder is fully extended and a small pressure is achieved
3. With the hand pump held above the tool and the tool in an upright position, open the release valve causing any air that is within the system to be forced up through the pump and vented into the oil reservoir
4. Repeat steps 1 - 3 three or four times to ensure that all air is removed from the system and the tool will reach full working pressure
5. Disconnect the hand pump from the hydraulic hose, grip the baseplate of the hand pump body in a vice with the pump body vertical and the main handle at the top
6. Remove the four nuts holding the main handle and lift off
7. Grip the refilling plug with pliers and extract it by pulling and twisting simultaneously. Ensure the reservoir body is held down when removing the refilling plug as pulling up on the reservoir body will release the bladder within, and oil will spill out.
8. Fill the reservoir to the top with a good quality hydraulic oil of the grade 32 cSt
9. Reinsert the refilling plug, wipe away any oil, and reassemble by reversing the disassembly process

