



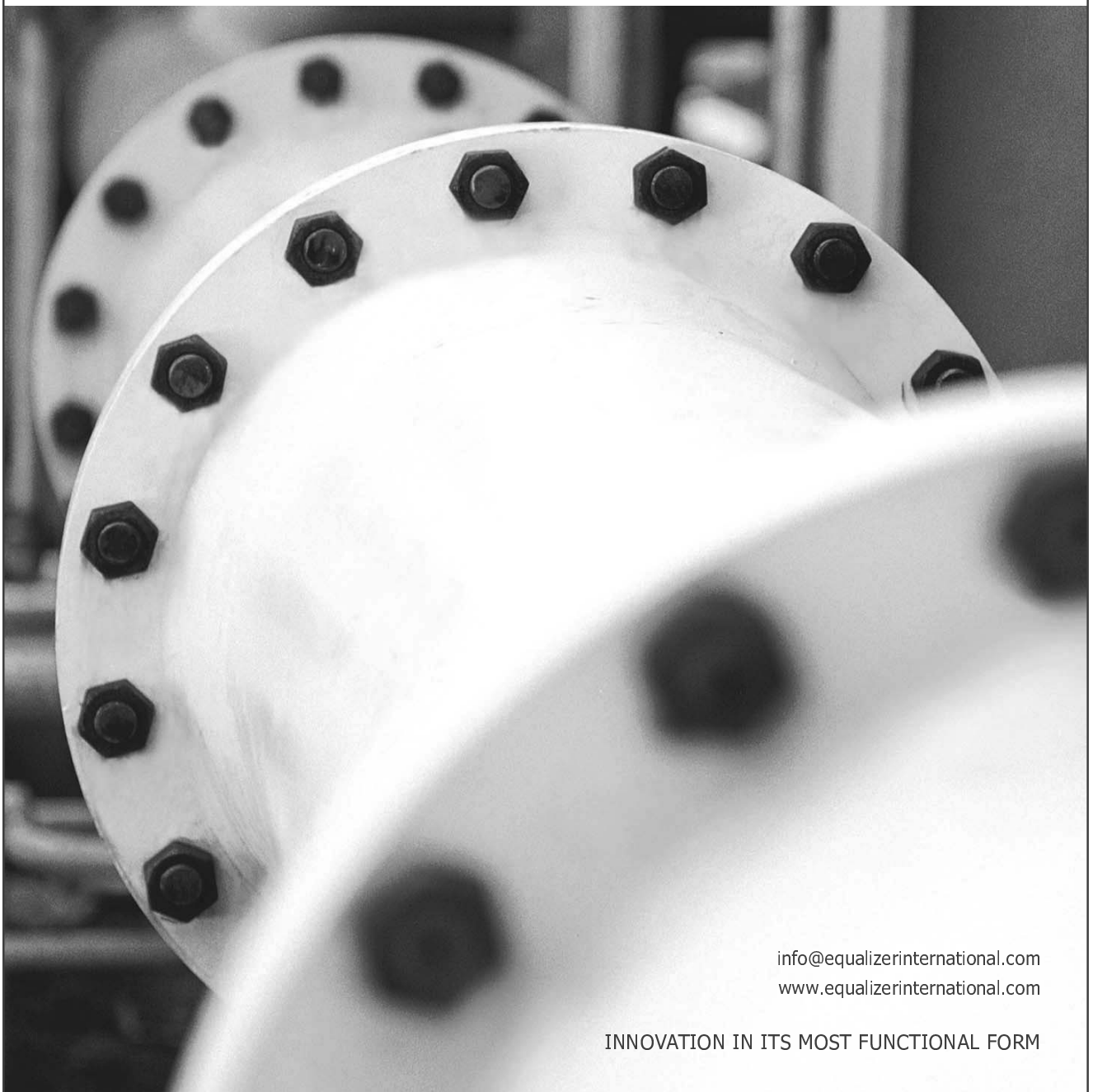
HP350SD, HP550SD

DOUBLE ACTING
HYDRAULIC SEALED
HAND PUMPS

Operator Instruction Manual



EQUALIZER[™]
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INNOVATION IN ITS MOST FUNCTIONAL FORM



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1. INTRODUCTION

The HP350SD, and HP550SD Hydraulic Hand Pumps output is regulated to 700 bar (10,000 psi) and is delivered from an output port threaded $\frac{3}{8}$ " NPT. The HP350SD and HP550SD can be used with any double acting 700 bar (10,000 psi) rated hydraulic equipment.

The diaphragm oil reservoir means that, unlike conventional hand pump units, the HP350SD and HP550SD 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 HP350SD AND HP550SD 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

HP350SD KIT COMPONENTS

- 1 x HP350SD Pump Unit
- 1 x Pressure Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Product Code: HP350SDMIN



HP550SD KIT COMPONENTS

- 1 x HP550SD Pump Unit
- 1 x Pressure Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Product Code: HP550SDMIN





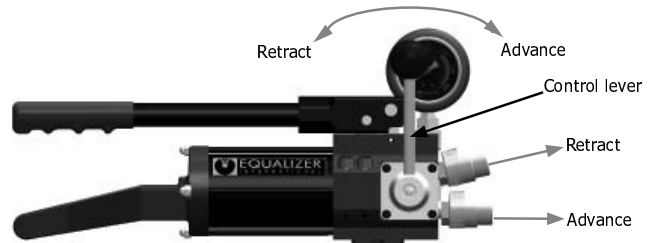
4. TECHNICAL DATA

		HP350SD	HP550SD
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 control lever is moved to the advance position to pressurise the lower/advance port or to the retract position to pressurise the upper/retract port.



- 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 HP350SD & HP550SD



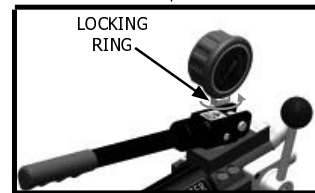
WARNING:

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

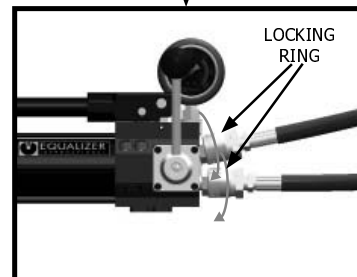
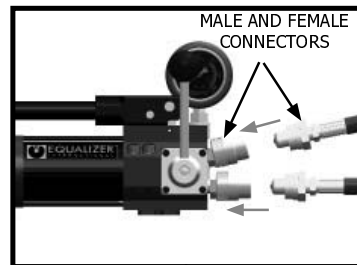
DANGER:

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.

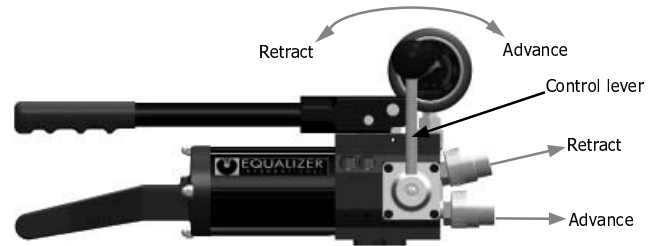


WARNING:

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



- 3.** The HP350SD & HP550Sd is fitted with a control lever. This enables the operator to pressurise the advance or retract hoses. Pushing the control lever forward to activate the advance port.



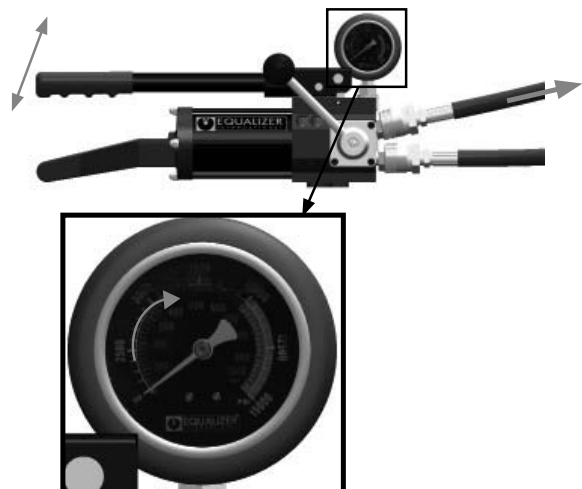
- 4.** Pressurise the advance hose by raising and depressing the pump handle until the desired pressure is indicated on the pressure gauge N.B. max. pressure 10,000 psi (700 bar)



- 5.** To depressurise the advance hose move the control lever to the retract position this will redirect the flow to the retract hose.



- 6.** Pressurise the retract hose by raising and depressing the pump handle with the control lever in the retract position until the desired pressure is indicated on the pressure gauge N.B. max. pressure 10,000 psi (700 bar)





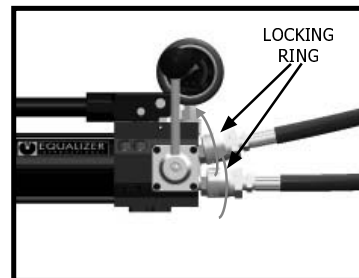
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- 7.** To keep pressure in both hoses, set the control lever in the central vertical position.



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- 8.** To depressurise both hoses, set the control lever in the advanced position until the gauge indicates zero pressure and then set the control lever in the retract position until the gauge indicates zero pressure.



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- 9.** Once both systems have been fully depressurised the pump can be disconnected by unscrewing the couplers





7. EXAMINATION, MAINTENANCE AND STORAGE

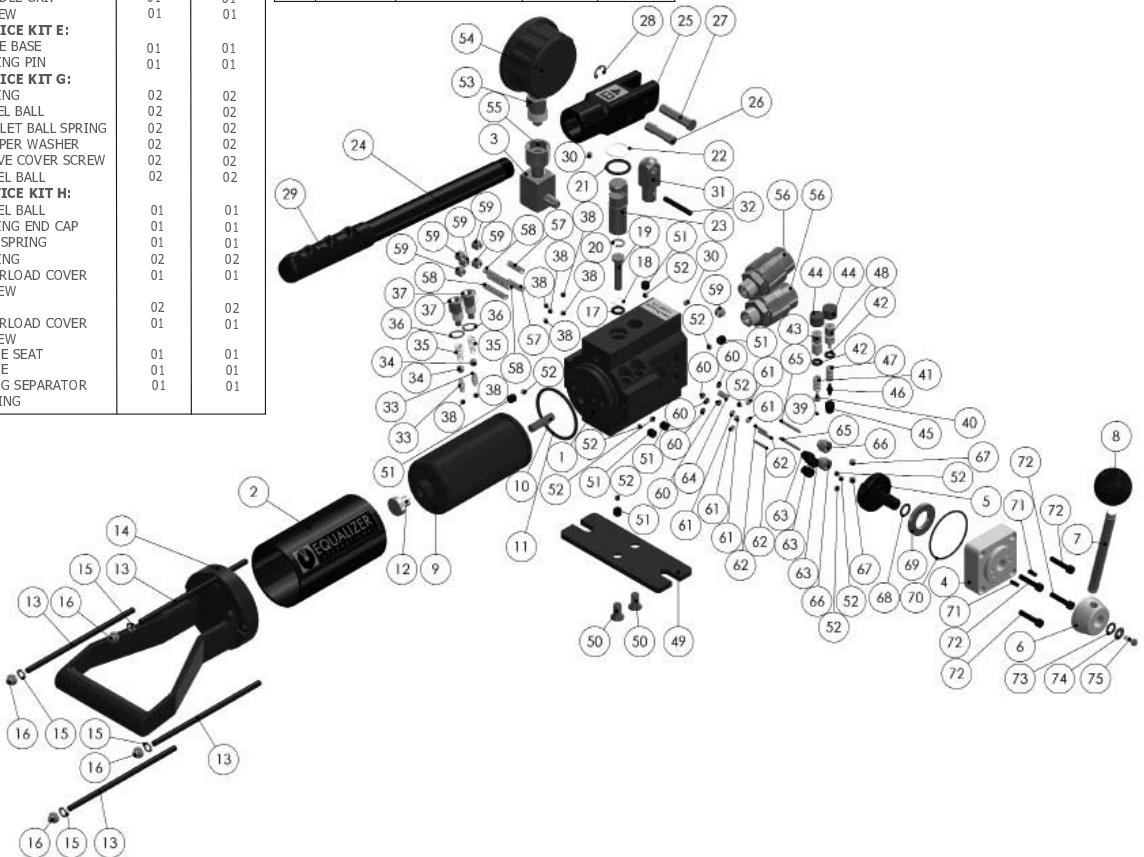
- On return from each job and before allocation against subsequent work the HP350SD / HP550SD should be examined to ensure that they are serviceable.
- Any missing or damaged items are to be replaced as soon as possible and prior to the pump being used again.
- Store the pump in a cool dry place and ensure all machined surfaces are greased.
- Grease all moving parts each and every time the pump is used.



8. PARTS LISTS

HP350SD DOUBLE ACTING HYDRAULIC SEALED HAND PUMP

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY	ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY	ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
01	707001-01	PUMP HOUSING		01	49	715900-01	SERVICE KIT I:	01	01	68	707300-01	SERVICE KIT S:	01	01
02	710601-01	RESERVOIR		01	50		- BASE PLATE	02	02	69		- O-RING	01	01
03	707071-01	ELBOW		01		716100-01	SERVICE KIT K:			70		- BEARING	01	01
04	707052-01	TOP PLATE		01	51		- SCREW	04	06	71		- O-RING	01	01
05	707048-01	CONTROL SWITCH		01	52		- CHECK BALL	04	06	72		- SPRING PIN	02	02
06	707055-01	SWITCH BASE		01	59		- SCREW	01	01	73		- SCREW	04	04
07	707056-01	HANDLE		01	30		- SCREW	01	01	74		- O-RING	01	01
08	707057-01	HANDLE BALL		01		716200-01	SERVICE KIT L:			75		- WASHER	01	01
	715100-01	SERVICE KIT A:			53		- GAUGE COUPLER	01	02			- SCREW	01	01
09		- RESERVOIR BLADDER	01	01	54		- MALE	01	01					
10		- OIL FILTER	01	01		716300-01	SERVICE KIT M:							
11		- O-RING	01	01	55		- GAUGE COUPLER	01	01					
12		- REFILLING PLUG	01	01	56		- FEMALE	01	01					
13	725200-01	SERVICE KIT B:			--		- COUPLER	01	01					
14		- SCREW	04	04			- PORT GAUGE	01	00					
15		- TAIL BASE	01	01		707100-01	SERVICE KIT Q:							
16		- SPRING WASHER	04	04	57		- SPRING	02	02					
		- NUT	04	04	58		- SPRING	03	03					
17	715300-01	SERVICE KIT C:			59		- SCREW	05	05					
18		- O-RING	01	01	38		- STEEL BALL	05	05					
19		- BACK-UP RING	01	01		707200-01	SERVICE KIT R:							
20		- PUMP PISTON	01	01	60		- O-RING	05	05					
21		- SNAP RING	01	01	61		- O-RING END CAP	05	05					
22		- O-RING	01	01	62		- PIN	03	03					
23		- BACK-UP RING	01	01	63		- BALL SEAT	02	02					
24	715400-01	SERVICE KIT D:			64		- SPRING	01	01					
25		- HANDLE	01	01	65		- PIN	02	02					
26		- YOKE	01	01	66		- BALL SEAT	02	02					
27		- PISTON PIN	01	01	67		- STEEL BALL	02	02					
28		- YOKE PIN	01	01	52		- CHECK BALL	04	04					
29		- RETAINING RING	01	01										
30		- HANDLE GRIP	01	01										
31	715500-01	SERVICE KIT E:												
32		- YOKE BASE	01	01										
		- SPRING PIN	01	01										
33	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										
		- STEEL BALL	02	02										
39	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										
		- LONG SEPARATOR SPRING	01	01										



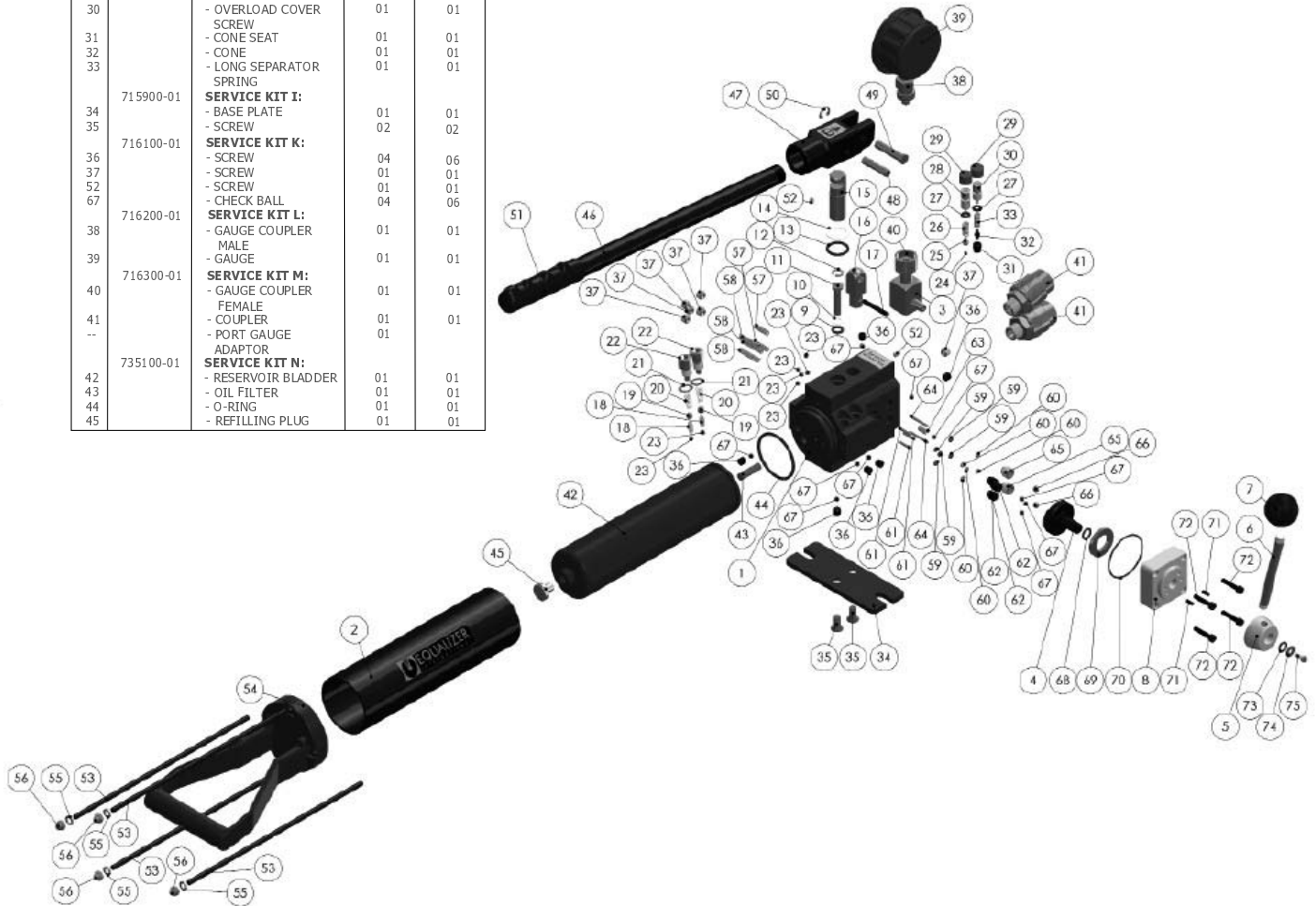


HP50SD DOUBLE ACTING HYDRAULIC SEALED HAND PUMP

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
01	707001-01	PUMP HOUSING		01
02	710601-01	RESERVOIR		01
03	707071-01	ELBOW		01
04	707048-01	CONTROL SWITCH		01
05	707055-01	SWITCH BASE		01
06	707056-01	HANDLE		01
07	707057-01	HANDLE BALL		01
08	707052-01	TOP PLATE		01
	715300-01	SERVICE KIT C:		
09		- O-RING	01	01
10		- BACK-UP RING	01	01
11		- PUMP PISTON	01	01
12		- SNAP RING	01	01
13		- O-RING	01	01
14		- BACK-UP RING	01	01
15		- PUMP PISTON	01	01
	715500-01	SERVICE KIT E:		
16		- YOKE BASE	01	01
17		- SPRING PIN	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 SCREW	01	01
29		- CAP	02	02
30		- OVERLOAD COVER SCREW	01	01
31		- CONE SEAT	01	01
32		- CONE	01	01
33		- LONG SEPARATOR SPRING	01	01
	715900-01	SERVICE KIT I:		
34		- BASE PLATE	01	01
35		- SCREW	02	02
	716100-01	SERVICE KIT K:		
36		- SCREW	04	06
37		- SCREW	01	01
52		- SCREW	01	01
67		- CHECK BALL	04	06
	716200-01	SERVICE KIT L:		
38		- GAUGE COUPLER MALE	01	01
39		- GAUGE	01	01
	716300-01	SERVICE KIT M:		
40		- GAUGE COUPLER FEMALE	01	01
41		- COUPLER	01	01
--		- PORT GAUGE ADAPTOR	01	01
	735100-01	SERVICE KIT N:		
42		- RESERVOIR BLADDER	01	01
43		- OIL FILTER	01	01
44		- O-RING	01	01
45		- REFILLING PLUG	01	01

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
46	735300-01	SERVICE KIT O:		
47		- HANDLE	01	01
48		- YOKE	01	01
49		- PISTON PIN	01	01
50		- YOKE PIN	01	01
51		- RETAINING RING	01	01
52		- HANDLE GRIP	01	01
	735200-01	SERVICE KIT P:		
53		- SCREW	04	04
54		- TAIL BASE	01	01
55		- SPRING WASHER	04	04
56		- NUT	04	04
	707100-01	SERVICE KIT Q:		
57		- SPRING	02	02
58		- SPRING	03	03
37		- SCREW	05	05
23		- STEEL BALL	05	05
	707200-01	SERVICE KIT R:		
59		- O-RING	05	05
60		- O-RING END CAP	05	05
61		- PIN	03	03
62		- BALL SEAT	03	03
63		- SPRING	01	01
64		- PIN	02	02
65		- BALL SEAT	02	02
66		- STEEL BALL	02	02
67		- CHECK BALL	04	04

ITEM	PART No.	DESCRIPTION	KIT QUANTITY	PUMP QUANTITY
	707300-01	SERVICE KIT S:		
68		- O-RING	01	01
69		- BEARING	01	01
70		- O-RING	01	01
71		- SPRING PIN	02	02
72		- SCREW	04	04
73		- O-RING	01	01
74		- WASHER	01	01
75		- SCREW	01	01





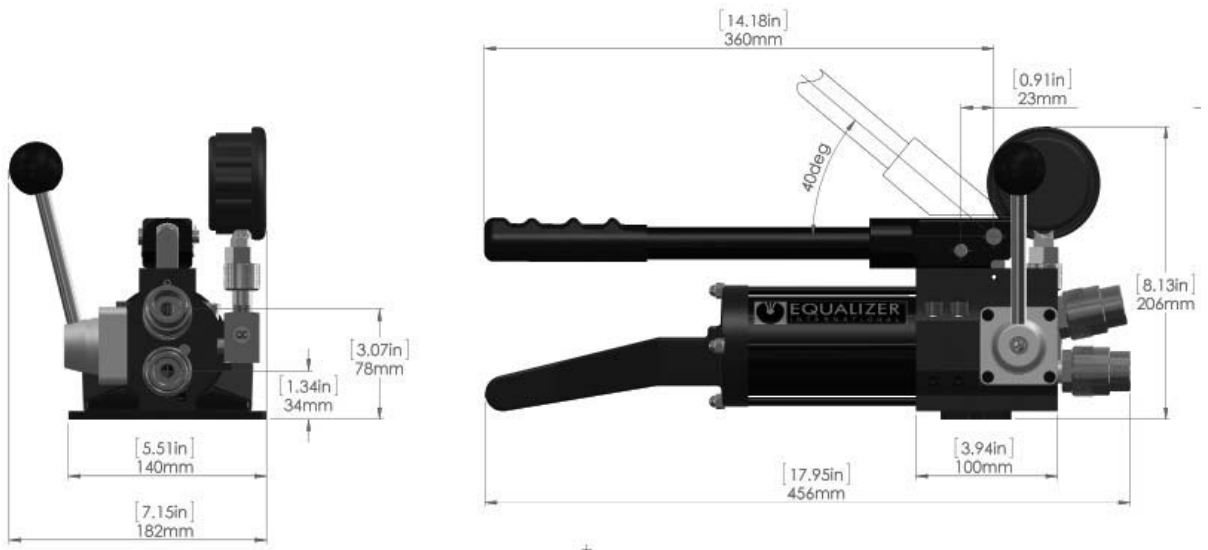
9. WEIGHTS AND DIMENSIONS

WEIGHTS

HP350SD Pump Unit = 5.0 kg (11.02 lbs)

HPD50SD Pump Unit = 5.5 kg (12.13 lbs)

HP350SD DIMENSIONS



HP550SD DIMENSIONS





10. TROUBLESHOOTING

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 Actuator with the hydraulic hoses
2. Set the control lever to the advance position, 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 actuator and the actuator in an upright position, set the control valve to the retract position and prime the pump until the actuator is fully retracted and a small pressure is achieved. this will cause 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. Release all pressure from the system then 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

