

HP350S/HP350D HP550S/HP550D HP1000S/HP1000D

HYDRAULIC
SEALED HAND
PUMPS



CONTENTS

1. INTRODUCTION
2. TOOL SAFETY
 - 2.1 GENERAL SAFETY
 - 2.2 PERSONNEL COMPETENCY
 - 2.3 DISCLAIMER
 - 2.4 DEFINITION OF TERMS
 - 2.5 HAZARDS
3. GENERAL HAND PUMP OPERATION
 - 3.1 GENERAL GUIDANCE
 - 3.2 HP350S, HP550S & HP1000S INSTALLATION AND OPERATION
 - 3.3 HP350D, HP550D & HP1000D INSTALLATION AND OPERATION
 - 3.4 USE OF EQUALIZER INTERNATIONAL TOOLS WITH A HYDRAULIC MANIFOLD
4. HAND PUMP MAINTENANCE
 - 4.1 INSPECTION
 - 4.2 CLEANING
 - 4.3 MAINTENANCE
 - 4.4 STORAGE & TRANSPORTATION
 - 4.5 SUB-SEA USAGE
 - 4.6 LONG-TERM STORAGE - MAINTENANCE PLAN
5. TECHNICAL SPECIFICATIONS
 - 5.1 TECHNICAL DATA
 - 5.2 KIT CONTENTS
 - 5.3 HP350S, HP550S & HP1000S WEIGHTS AND DIMENSIONS
 - 5.4 HP350D, HP550D & HP1000S WEIGHTS AND DIMENSIONS
6. TROUBLESHOOTING
 - 6.1 HP350S/HP550S/HP1000S HP350D/HP550D/HP1000D TROUBLESHOOTING
7. REGULATORY INFORMATION
 - 7.1 REGISTERED HEAD OFFICE
8. PARTS LISTS & SERVICE KITS

15/05/2018

1.

INTRODUCTION

The Equalizer™ HP-S hydraulic single-port sealed hand pump and HP-D hydraulic twin-port sealed hand pump replace the Equalizer P142 hydraulic hand pump.

The HP350S, HP550S, HP1000S and HP350D, HP550D and HP1000D are tailored for use with Equalizer International Ltd hydraulic equipment. Their output is regulated to 700 bar (10 000psi) and is delivered from an output port threaded 5/8" NPT.

The HP350S and HP350D can be used with any 700 bar (10 000 psi) rated hydraulic equipment with an oil capacity of 350 cc (21.4 in³) or less.

The HP550S and HP550D can be used with any 700 bar (10 000 psi) rated hydraulic equipment with an oil capacity of 550 cc (33.6 in³) or less.

The HP1000S and HP1000D can be used with any 700 bar (10 000 psi) rated hydraulic equipment with an oil capacity of 1000 cc (61.0 in³) or less.

The diaphragm oil reservoir means that, unlike conventional hand pump units, the HP-S and HP-D pump ranges 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.

TOOL SAFETY

2.1

GENERAL SAFETY

These instructions cover the safe operation and maintenance of THE EQUALIZER **HP350S, HP550S, HP1000S, HP350D, HP550D** and **HP1000D** HYDRAULIC SEALED HAND PUMPS. The use of these tools should be as part of a broader task-based risk assessment, which should be carried out by the operation supervisor or other competent person.

Failure to comply with the safety information contained within this manual could result in personal injury or equipment damage. Read all instructions, warnings and cautions carefully, and follow all safety precautions.

The safety of the operator, any assisting personnel and the general public is of paramount importance. Always work in accordance with applicable national, local, site & company-wide safety procedures.

2.2

PERSONNEL COMPETENCY

Only personnel deemed competent in the use of mechanical and hydraulic equipment should use these tools.

2.3

DISCLAIMER

Equalizer cannot be held responsible for injury or damage resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. If in doubt as to the safety precautions and applications, contact Equalizer using the contact details at the back of this manual.

2.4

DEFINITION OF TERMS

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.



DO: an illustration showing how the tool should be used.



DON'T: an illustration showing an incorrect way to use a tool.

2.5

HAZARDS



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.



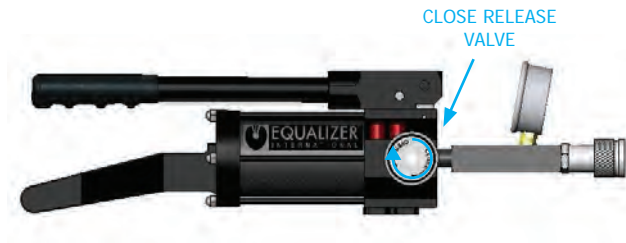
CAUTION: Do not operate the equipment without lubricating all moving parts. Use only high pressure molybdenum disulphide grease.

3.

GENERAL HAND PUMP OPERATION

3.1 GENERAL GUIDANCE

The release valve is closed fully by rotating clockwise until hand tight



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



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



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



3.2 HP350S, HP550S & HP1000S CONNECTION AND OPERATION



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 700 bar (10 000 psi). Over pressurizing a hydraulic system will result in component failure and personal injury.

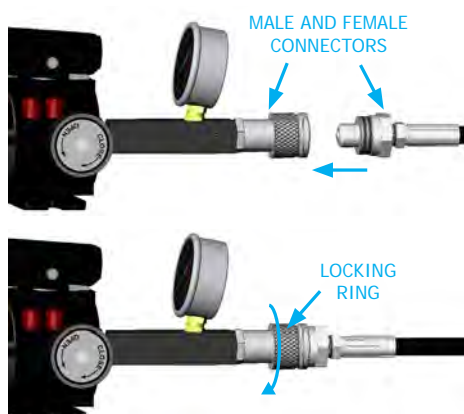
1. Prior to using the pump the hydraulic gauge must be fitted. Push the male connector on the gauge fully into the female connector on the gauge adaptor and rotate the locking ring counterclockwise until fully tight.



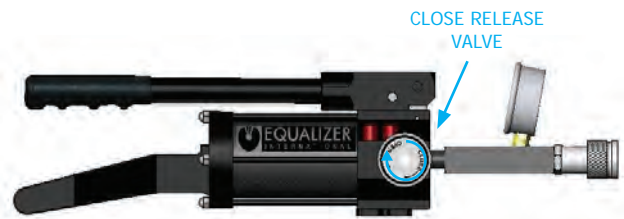
2. Ensure the hydraulic system you wish to pressurise has been bled and is free from air and leaks. Connect the pump into the system using the screw connector supplied with the pump, push the male and female connectors together fully and rotate the locking ring clockwise until fully tight.



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 700 bar (10 000 psi).



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.

3.3 HP350D, HP550D & HP1000D CONNECTION AND OPERATION

The HP350D, HP550D and HP1000D pumps have been designed for use with Equalizer maxi kit systems; however the HP350D, HP550D and HP1000D can be used in any situations where two separate hydraulic systems require to be pressurised and controlled independently by the same operator.



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 700 bar (10 000 psi). Over pressurizing a hydraulic system will result in component failure and personal injury.

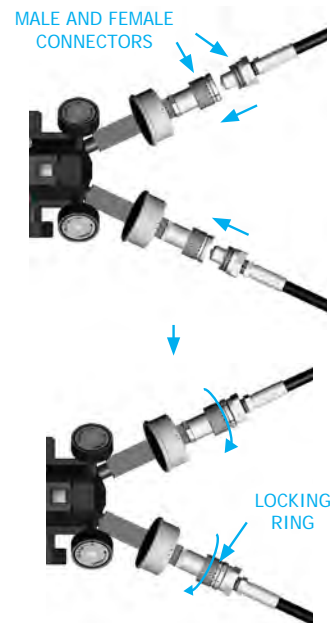
1. Prior to using the pump, the hydraulic gauges must be fitted. Push the male connector on the gauges fully into the female connector on the gauge adaptors and rotate the locking ring counterclockwise until fully tight.



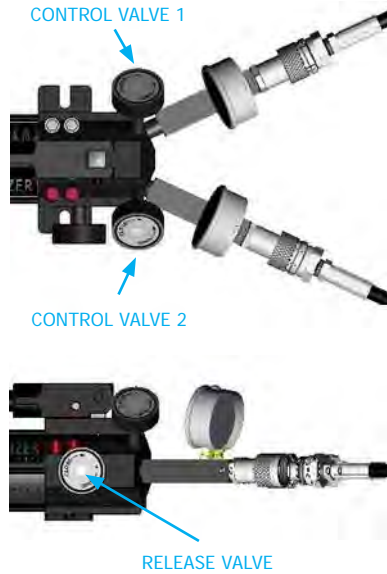
2. Ensure the hydraulic systems you wish to pressurise have been bled and are free from air and leaks. Connect the pump into the systems using the screw connectors supplied with the pump, push the male and female connectors together fully and rotate the locking rings clockwise until fully tight.



WARNING: Never disconnect the pump or other components when the system is pressurised.



3. The HP-D pumps are fitted with two control valves and a release valve. This enables the operator to adjust the pressure on both hydraulic systems independently or simultaneously.



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



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



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



- 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.



- 6. Once both systems have been fully depressurized the pump can be disconnected by unscrewing the couplers



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.



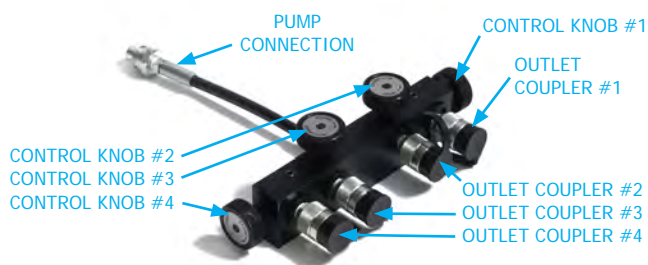
3.4

USE OF EQUALIZER INTERNATIONAL TOOLS WITH A HYDRAULIC MANIFOLD

Using the hydraulic manifold enables more than 2 tools to be used simultaneously from a single pump. The function of a manifold is to share the hydraulic output of one pump evenly between multiple tools, ensuring that all tools have equal pressure so can be used together in sharing the load.

USAGE GUIDELINES

- Ensure the manifold, the tools and the pump have the same hydraulic pressure rating.
- Do not pressurise the manifold unless all couplers are connected to tools or positively blanked off using appropriate pressure fittings; do not rely on the manifold valves or couplers to hold hydraulic pressure.
- Isolate individual tools by turning the corresponding Control Knob clockwise until tight. Isolating a single tool will disconnect it from the rest of the tools and the pump, maintaining whatever hydraulic pressure is currently within the tool and the hose.
- Isolating individual tools can allow some degree of differential control between manifolded tools, enabling different pressures or positions to be held for each tool, for example in controlling alignment.
- To return an isolated tool to the shared pressure of the manifold, slowly loosen the corresponding Control Knob anti-clockwise fully. Any pressure in the tools, manifold or pump will be balanced out and may result in an increase or decrease in pressure of any given tool.



IMPORTANT: there is a risk of back-loading individual tools when manifolded. To mitigate this risk, ensure all Control Knobs are fully open before releasing pump pressure!

4.

HAND PUMP MAINTENANCE

4.1 INSPECTION

A thorough inspection should be carried out prior to usage, storage or transportation to ensure the completeness and condition of the hand pump.

Inspection should include:

- visual inspection of the outer parts of the hand pump, checking for obvious damage, degradation or missing parts.
- visual inspection of the couplers and gauges, checking for obvious damage and degradation.

4.2 CLEANING

To lightly clean the pump, wipe gently with a damp cloth.

If more thorough cleaning is required (for example following immersion in water) carry out the following cleaning procedure:

- strip the tool down, observing the schematics in section 8
- clean the components using detergent, following the manufacturer's guidelines
- rinse the components to remove traces of detergent
- dry the component thoroughly

Inspect, service and lubricate the tool immediately after the cleaning process.

4.3 MAINTENANCE

Replace missing, worn or damaged parts. Use only genuine Equalizer parts from approved distributors or service centres. Equalizer parts have been engineered and manufactured to be fit for purpose.

Lubricate all moving parts with light machine oil.

If topping or replacing hydraulic oil as part of a service, use only premium quality hydraulic oil of the grade 15 cSt.

4.4 STORAGE & TRANSPORTATION

Equalizer Hand Pumps should be stored in a cool, dry place. Tools should always be cleaned, serviced and lubricated prior to storage. Ensure that tools are stored in their designated packing cases.

4.5 SUB-SEA USAGE

The Equalizer range of HP hydraulic hand pumps are fitted with a sealed-bladder type reservoir system that allows for sub-sea operation.

Please contact Equalizer International for instruction sheet.

4.6

LONG-TERM STORAGE - MAINTENANCE PLAN

1. Rub components down with a dry cloth to remove moisture.
2. Coat EVERY surface and contact point with a corrosion inhibitor. Where necessary, coat inside and outside of component
3. Nuts and threads must also be coated with a corrosion inhibitor.
4. Once surfaces have been coated, seal individual components in clear plastic bags or clear vacuum bags or clear shrink wrap.
NOTE: bags/shrink wrap must be clear for visibility. Take care when using shrink wrap that the tool is/ components are still easy to see.
5. Remove all or, where not vacuum sealed, as much air from bags as possible.
6. Once bags have been closed and sealed DO NOT re-open. Any visual inspections must be done with closed and sealed bags. If bags are opened the components will have to be dried, re-coated and re-sealed in bags/ shrink wrap.
7. Replace silica gel (100g) EVERY TIME the case is opened.
NOTE: depending on moisture content of air, silica gel should be changed weekly.
8. Visually inspect kits after 30-days and every 30-days thereafter. Remember to replace silica gel before closing case.

5.

TECHNICAL SPECIFICATIONS

5.1

TECHNICAL DATA

	STAGE	HP350S	HP550S	HP1000S
PUMP TYPE		TWO SPEED	TWO SPEED	TWO SPEED
PRESSURE RATING	1st	13.8 bar (197 psi)	13.8 bar (197 psi)	13.8 bar (197 psi)
	2nd	700 bar (10 000 psi)	700 bar (10 000 psi)	700 bar (10 000 psi)
NOMINAL OIL CAPACITY		350 cc (21.4 in ³)	550 cc (33.6 in ³)	1000 cc (61.0 in ³)
USABLE OIL CAPACITY		300 cc (18.3 in ³)	580 cc (35.4 in ³)	1110 cc (67.7 in ³)
OIL VOLUME PER STROKE	1st	3.62 cc (0.221 in ³)	3.62 cc (0.221 in ³)	3.62 cc (0.221 in ³)
	2nd	0.77 cc (0.047 in ³)	0.77 cc (0.047 in ³)	0.77 cc (0.047 in ³)
MAX HANDLE EFFORT		33 kgf (72.75 lbf)	25 kgf (55.12 lbf)	21 kgf (46.30 lbf)
PISTON STROKE		18 mm (0.71")	18 mm (0.71")	18 mm (0.71")
HYDRAULIC OIL		Grade 15 cSt	Grade 15 cSt	Grade 15 cSt

	STAGE	HP350D	HP550D	HP1000D
PUMP TYPE		TWO SPEED	TWO SPEED	TWO SPEED
PRESSURE RATING	1st	13.8 bar (197 psi)	13.8 bar (197 psi)	13.8 bar (197 psi)
	2nd	700 bar (10 000 psi)	700 bar (10 000 psi)	700 bar (10 000 psi)
NOMINAL OIL CAPACITY		350 cc (21.4 in ³)	550 cc (33.6 in ³)	1000 cc (61.0 in ³)
USABLE OIL CAPACITY		300 cc (18.3 in ³)	580 cc (35.4 in ³)	1110 cc (67.7 in ³)
OIL VOLUME PER STROKE	1st	3.62 cc (0.221 in ³)	3.62 cc (0.221 in ³)	3.62 cc (0.221 in ³)
	2nd	0.77 cc (0.047 in ³)	0.77 cc (0.047 in ³)	0.77 cc (0.047 in ³)
MAX HANDLE EFFORT		33 kgf (72.75 lbf)	25 kgf (55.12 lbf)	21 kgf (46.30 lbf)
PISTON STROKE		18 mm (0.71")	18 mm (0.71")	18 mm (0.71")
HYDRAULIC OIL		Grade 15 cSt	Grade 15 cSt	Grade 15 cSt

5.2

KIT CONTENTS

SINGLE-PORT SEALED HAND PUMP KITS



- **HP350S KIT**

Product Code: HP350SMIN

- 1 x HP350S Pump Unit
- 1 x 700 bar (10 000 psi) Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Packaging Dimensions:
250 mm x 180 mm x 600 mm
(9.84" x 7.09" x 23.62")

- **HP550S KIT**

Product Code: HP550SMIN

- 1 x HP550S Pump Unit
- 1 x 700 bar (10 000 psi) Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Packaging Dimensions:
250 mm x 180 mm x 700 mm
(9.84" x 7.09" x 27.56")

- **HP1000S MINI KIT**

Product Code: HP1000SMIN

- 1 x HP1000S Pump Unit
- 1 x 700 bar (10 000 psi) Gauge
- 1 x 3/8" Port Gauge Adaptor
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Packaging Dimensions:
250 mm x 180 mm x 900 mm
(9.84" x 7.09" x 35.43")

- **HP1000S STANDARD KIT**

Product Code: HP1000SSTD

- 1x HP1000S Pump Unit
- 1x 700 bar (10 000 psi) Gauge
- 1x 3/8" Port Gauge Adaptor
- 1x 2.0m Hydraulic Hose
- 1x Carry Case with foam inserts
- 1x Instruction Manual

Packaging Dimensions:
1190mm x 540mm x 165mm
(46.9" x 21.3" x 6.5")

TWIN-PORT SEALED HAND PUMP KITS



- **HP350D KIT**

Product Code: HP350DMIN

- 1 x HP350D Pump Unit
- 2 x 700 bar (10 000 psi) Gauges
- 2 x 3/8" Port Gauge Adaptors
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Packaging Dimensions:
250 mm x 180 mm x 600 mm
(9.84" x 7.09" x 23.62")

- **HP550D KIT**

Product Code: HP550DMIN

- 1 x HP550D Pump Unit
- 2 x 700 bar (10 000 psi) Gauges
- 2 x 3/8" Port Gauge Adaptors
- 1 x Instruction Manual
- 1 x Cardboard Packaging

Packaging Dimensions:
250 mm x 180 mm x 700 mm
(9.84" x 7.09" x 27.56")

- **HP1000D MINI KIT**

Product Code: HP1000DMIN

1 x HP1000D Pump Unit
2 x 700 bar (10 000 psi) Gauges
2 x 3/8" Port Gauge Adaptors
1 x Instruction Manual
1 x Cardboard Packaging

Packaging Dimensions:
250 mm x 180 mm x 900 mm
(9.84" x 7.09" x 35.43")

- **HP1000D STANDARD KIT**

Product Code: HP1000DSTD

1x HP1000D Pump Unit
2x 700 bar (10 000 psi) Gauge
2x 3/8" Port Gauge Adaptor
2x 2.0m Hydraulic Hose
1x Carry Case with foam inserts
1x Instruction Manual

Packaging Dimensions:
1190mm x 540mm x 165mm
(46.9" x 21.3" x 6.5")

HYDRAULIC MANIFOLD KITS

- **MAN3TE KIT**

Product Code: MAN3TESTD

1x HP1000S Pump Unit
1x 700 bar (10 000 psi) Gauge
1x 3/8" Port Gauge Adaptor
3x 2.0m Hydraulic Hose
1x 3 Port Hydraulic Manifold with Couplers
1x Carry Case with foam inserts
1x Instruction Manual

Packaging Dimensions:
1190mm x 540mm x 165mm
(46.9" x 21.3" x 6.5")

- **MAN4TE KIT**

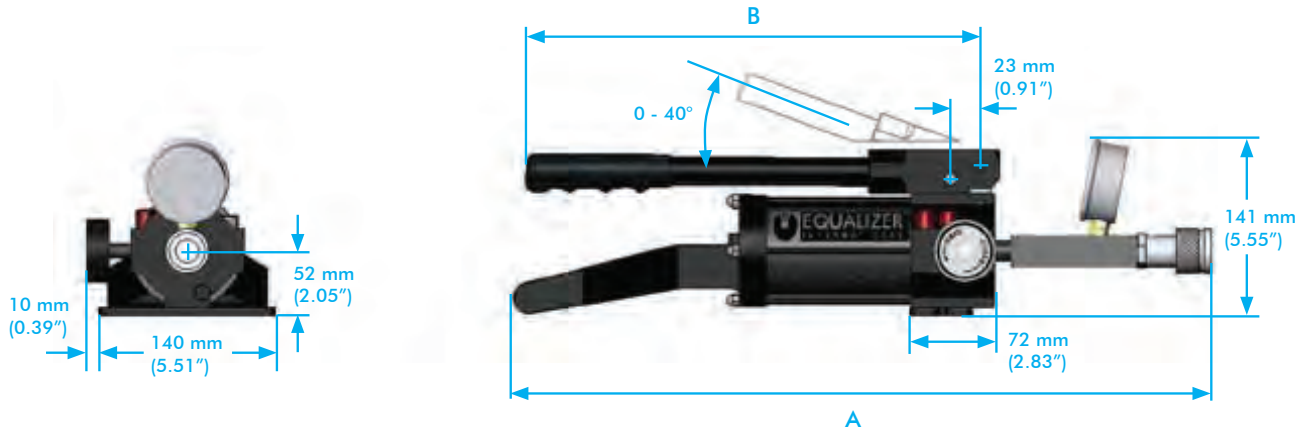
Product Code: MAN4TESTD

1x HP1000S Pump Unit
1x 700 bar (10 000 psi) Gauge
1x 3/8" Port Gauge Adaptor
4x 2.0m Hydraulic Hose
1x 4 Port Hydraulic Manifold with Couplers
1x Carry Case with foam inserts
1x Instruction Manual

Packaging Dimensions:
1190mm x 540mm x 165mm
(46.9" x 21.3" x 6.5")

5.3

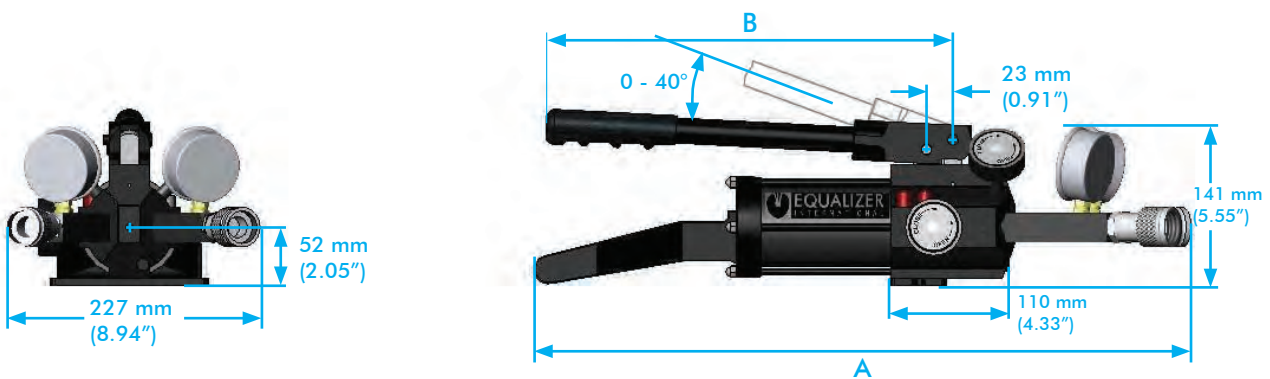
HP350S, HP550S & HP1000S WEIGHTS AND DIMENSIONS



	HP350S	HP550S	HP1000S
OVERALL LENGTH (A)	554 mm (21.81")	643 mm (25.31")	867 mm (34.13")
HANDLE LENGTH (B)	360 mm (14.17")	490 mm (19.29")	537 mm (21.14")
PUMP WEIGHT	4.4 kg (9.7 lb)	5.0 kg (11.2 lb)	6.1 kg (13.4 lb)
GROSS KIT WEIGHT	4.9 kg (10.8 lb)	5.9 kg (13.0 lb)	7.1 kg (15.7 lb)

5.4

HP350D, HP550D & HP1000D WEIGHTS AND DIMENSIONS



	HP350D	HP550D	HP1000D
OVERALL LENGTH (A)	580 mm (22.83")	669 mm (26.34")	893 mm (35.16")
HANDLE LENGTH (B)	360 mm (14.17")	490 mm (19.29")	537 mm (21.14")
PUMP WEIGHT	6.5 kg (14.3 lb)	7.2 kg (15.9 lb)	7.1 kg (15.7 lb)
GROSS KIT WEIGHT	7.2 kg (15.9 lb)	8.1 kg (17.9 lb)	9.3 kg (20.5 lb)

6.

TROUBLESHOOTING

6.1

HP350S/HP550S/HP1000S HP350D/HP550D/HP1000D TROUBLESHOOTING

HOSES ARE CONNECTED AND THE TOOL ADVANCES BUT THERE IS MINIMAL PRESSURE ON THE PUMP HANDLE; THE HANDLE IS RISING BACK OF ITS OWN ACCORD

POSSIBLE CAUSE:

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

RECOMMENDED ACTION:

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

HOSES ARE CONNECTED BUT THE TOOL DOES NOT ADVANCE. THE PRESSURE ON THE PUMP HANDLE IS MINIMAL

POSSIBLE CAUSE:

The Release valve is in the retract (open) position (and the control valves are open on the HP-D).

RECOMMENDED ACTION:

Close the release valve (and the control valves on the HP-D).



HOSES ARE CONNECTED AND THE PUMP QUICKLY REACHES MAXIMUM PRESSURE BUT THE TOOL HAS NOT ADVANCED

POSSIBLE CAUSE:

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

RECOMMENDED ACTION:

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

THE TOOL THE HAND PUMP IS DRIVING IS ADVANCING BUT DOES NOT REACH FULL PRESSURE.

AIRLOCK REMOVAL PROCEDURE:

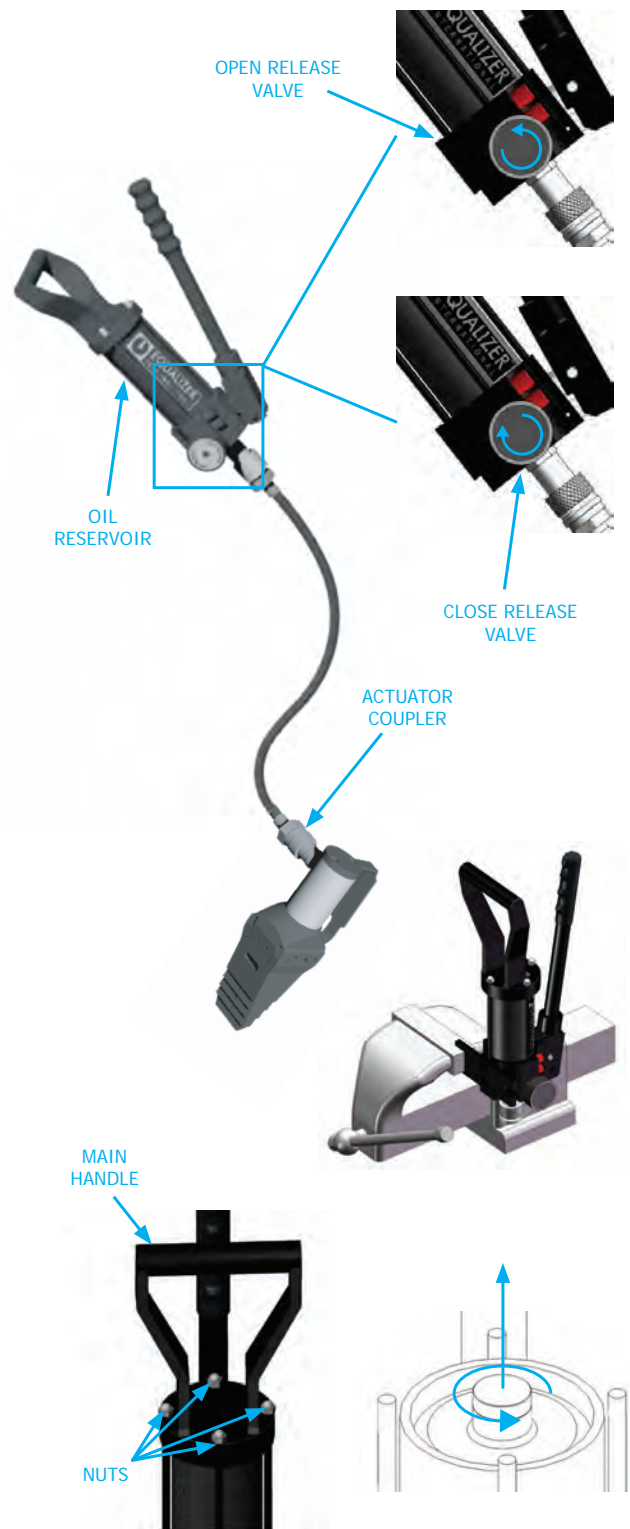
POSSIBLE CAUSE:

Air could be present in the hydraulic system.

RECOMMENDED ACTION:

Follow the airlock removal procedure:

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 held in an upright position, open the release valve. Any air that is within the system will 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 reaches 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 body 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 15 cSt.
9. Reinsert the refilling plug, wipe away any oil and reassemble by reversing the disassembly process.



7.

REGULATORY INFORMATION

7.1

REGISTERED HEAD OFFICE

EQUALIZER INTERNATIONAL LTD.
Equalizer House
Claymore Drive
Aberdeen
Scotland
AB23 8GD

8.

PARTS LISTS & SERVICE KITS

PUMPS KIT MATRIX

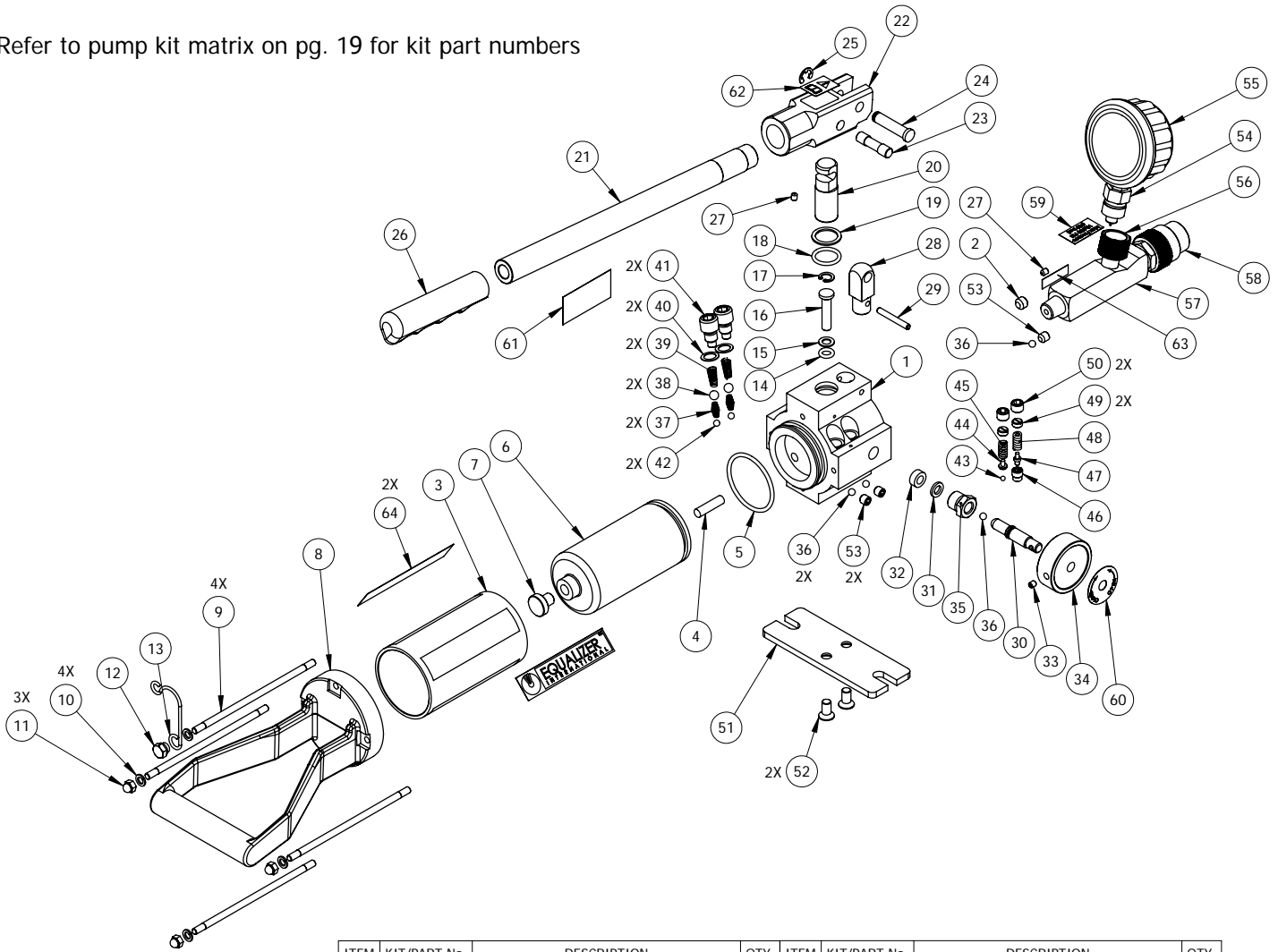
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KITS	350S	350D	550S	550D	1000S	1000D
BLADDER SERVICE KIT A 715100-01	X	X				
TAIL BASE SERVICE KIT B 725200-01	X	X				
PISTON SERVICE KIT C 715300-01	X	X	X	X	X	X
HANDLE SERVICE KIT D 715400-01	X	X				
YOKE SERVICE KIT E 715500-01	X	X	X	X	X	X
RELEASE KNOB SERVICE KIT F 715600-01	X	X	X	X	X	X
VALVE SERVICE KIT G 715700-01	X	X	X	X	X	X
VALVE SERVICE KIT H 715800-01	X	X	X	X	X	X
BASEPLATE SERVICE KIT I 715900-01	X	X	X	X	X	X
RELEASE KNOB SERVICE KIT J 726000-01		X		X		X
HOUSING SERVICE KIT K 716100-01	X	X	X	X	X	X
GAUGE SERVICE KIT L 716200-01	X	X	X	X	X	X
GAUGE ADAPTOR SERVICE KIT M 716300-01	X	X	X	X	X	X
BLADDER SERVICE KIT N 735100-01			X	X		
HANDLE SERVICE KIT O 735300-01			X	X	X	X
TAIL BASE SERVICE KIT P 735200-01			X	X	X	X
VALVE SERVICE KIT Q 707100-01						
VALVE SERVICE KIT R 707200-01						
VALVE SERVICE KIT S 707300-01						

HP350S HYDRAULIC SINGLE PORT SEALED HAND PUMP

717171-01 REV. 04

Refer to pump kit matrix on pg. 19 for kit part numbers

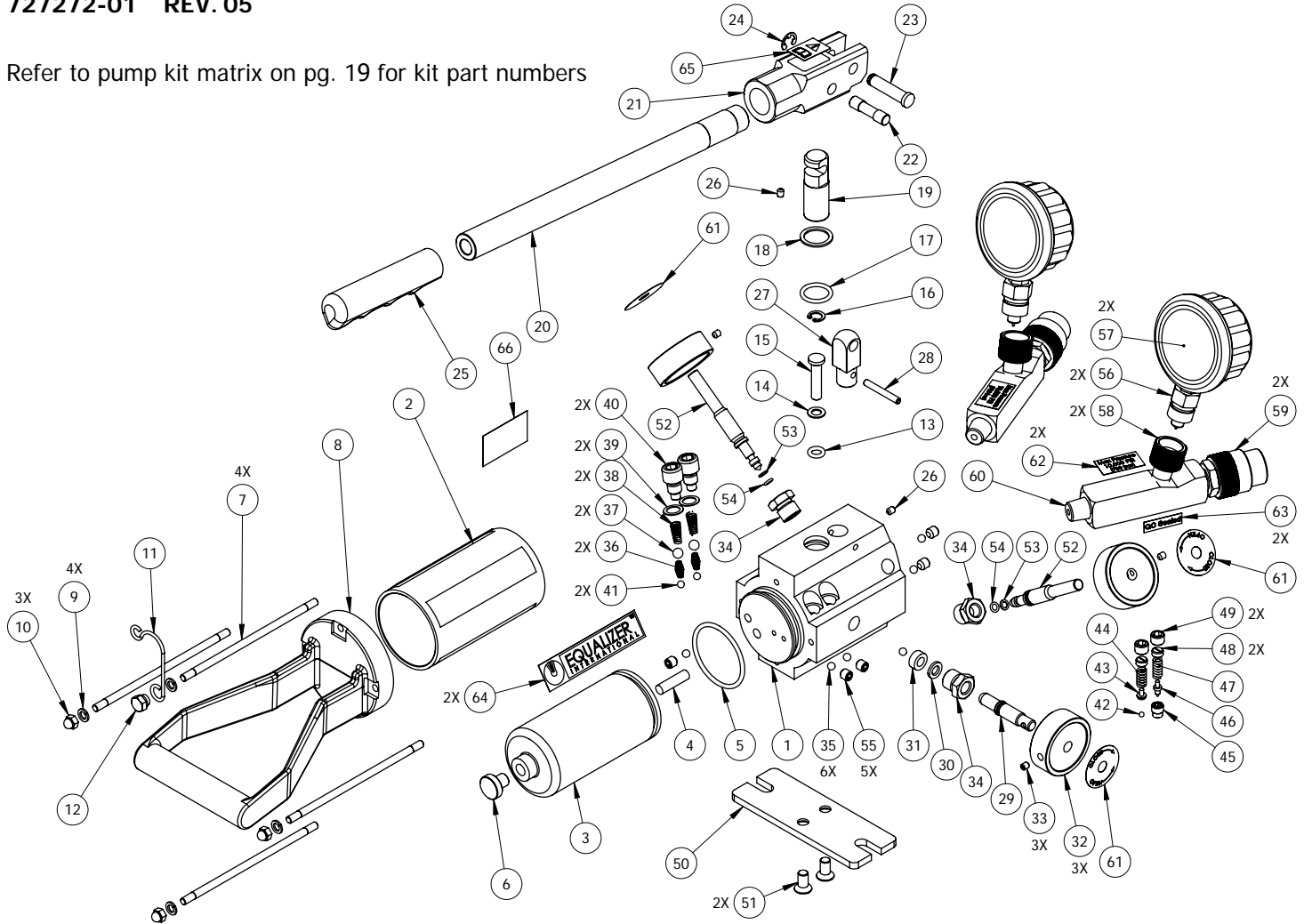


ITEM	KIT/PART No.	DESCRIPTION	QTY.	ITEM	KIT/PART No.	DESCRIPTION	QTY.
1	710101-01	PUMP HOUSING	1	33	F/J	M5 SCKT SET SCREW	1
2	707067-01	SCREW	1	34	F/J	RELEASE KNOB	1
3	710601-01	RESERVOIR	1	35	F/J	ADAPTOR	1
4	A/N	OIL FILTER	1	36	F/K/R	CHECK BALL	4
5	A/N	O-RING	1	37	G	SPRING	2
6	A	RESERVOIR BLADDER	1	38	G	STEEL BALL	2
7	A/N	REFILLING PLUG	1	39	G	OUTLET BALL SPRING	2
8	B/P	TAIL BASE	1	40	G	COPPER WASHER	2
9	B	SCREW	4	41	G	VALVE COVER SCREW	2
10	B/P	SPRING WASHER	4	42	G/Q	STEEL BALL	2
11	B/P	NUT	3	43	H	STEEL BALL	1
12	B/P	PUMP RETAINING CLIP NUT	1	44	H	SPRING END CAP	1
13	B/P	PUMP RETAINING CLIP	1	45	H	L.P. SPRING	1
14	C	O-RING	1	46	H	CONE SEAT	1
15	C	BACK-UP RING	1	47	H	CONE	1
16	C	H.P. PISTON	1	48	H	LONG SEPARATOR SPRING	1
17	C	SNAP RING	1	49	H	SCREW	2
18	C	O-RING	1	50	H	SET SCREW	2
19	C	BACK-UP RING	1	51	I	BASE PLATE	1
20	C	L.P. PISTON	1	52	I	SCREW	2
21	D	HANDLE	1	53	K	SCREW	3
22	D/O	YOKE	1	54	L	GAUGE COUPLER MALE	1
23	D/O	PISTON PIN	1	55	L	GAUGE	1
24	D/O	YOKE PIN	1	56	M	GAUGE COUPLER FEMALE	1
25	D/O	RETAINING RING	1	57	M	PORT GAUGE ADAPTOR	1
26	D/O	HANDLE GRIP	1	58	M	3/8" NPT COUPLER 10ksi	1
27	D/O	SCREW	2	59	070260-01	MAX PRESSURE STICKER	1
28	E	YOKE BASE	1	60	070059-01	OPEN-CLOSE STICKER	1
29	E	SPRING PIN	1	61	ON REQUEST	HP350S STICKER	1
30	F	RELEASE VALVE SCREW	1	62	070001-01	WARNING READ INSTRUCTION STICKER	1
31	F	WASHER	1	63	070013-01	OC SEALED STICKER	1
32	F	SPACER	1	64	070058-01	EQUALIZER LOGO RESERVOIR STICKER	2

HP350D HYDRAULIC DOUBLE PORT SEALED HAND PUMP

727272-01 REV. 05

Refer to pump kit matrix on pg. 19 for kit part numbers

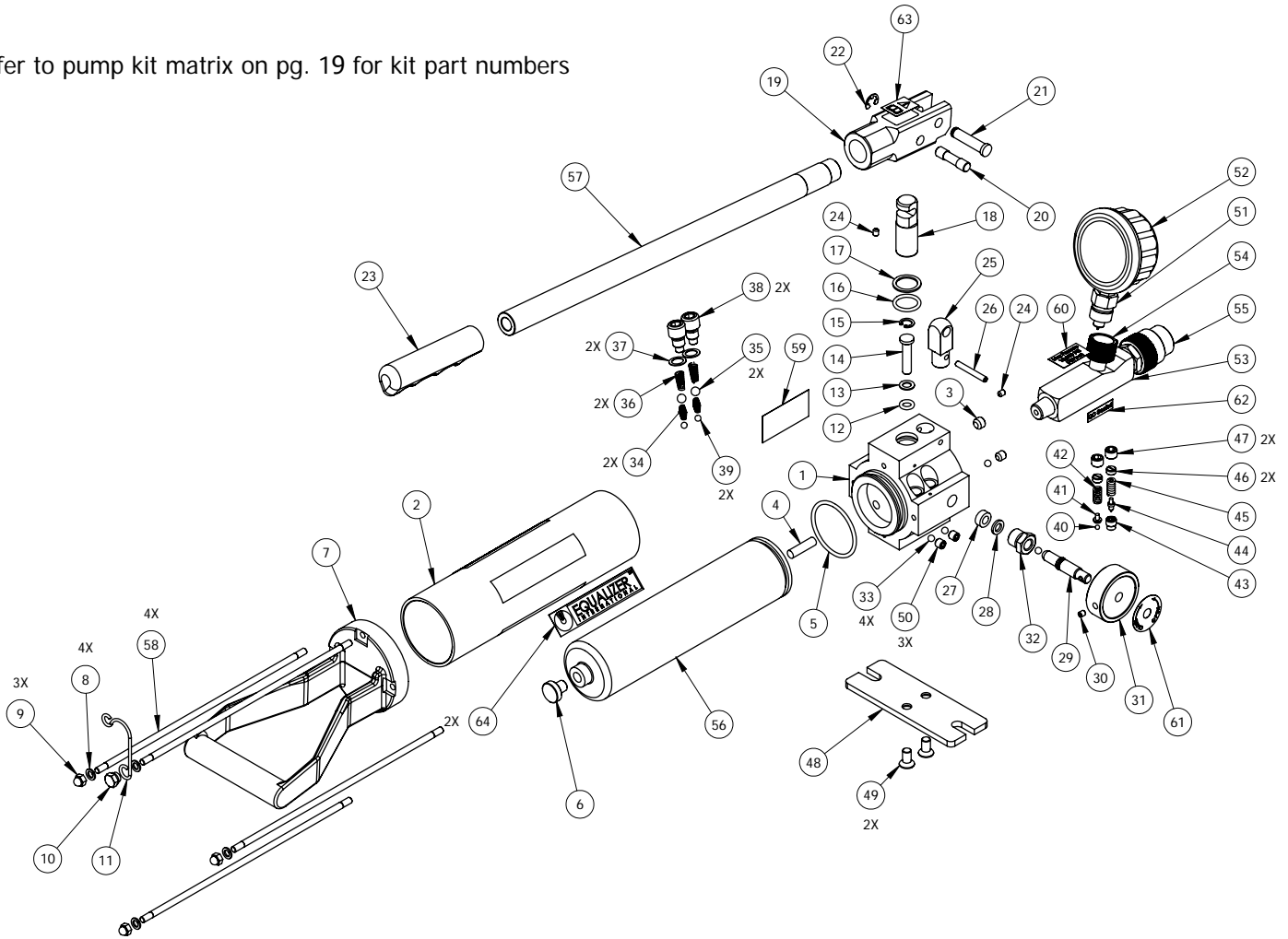


ITEM	KIT/PART No.	DESCRIPTION	QTY	ITEM	KIT/PART No.	DESCRIPTION	QTY
1	720101-01	PUMP HOUSING	1	34	F/J	ADAPTOR	3
2	710601-01	RESERVOIR	1	35	F/K/R	CHECK BALL	6
3	A	RESERVOIR BLADDER	1	36	G	SPRING	2
4	A/N	OIL FILTER	1	37	G	STEEL BALL	2
5	A/N	O-RING	1	38	G	OUTLET BALL SPRING	2
6	A/N	REFILLING PLUG	1	39	G	COPPER WASHER	2
7	B	SCREW	4	40	G	VALVE COVER SCREW	2
8	B/P	TAIL BASE	1	41	G/Q	STEEL BALL	2
9	B/P	SPRING WASHER	4	42	H	STEEL BALL	1
10	B/P	NUT	3	43	H	SPRING END CAP	1
11	B/P	PUMP RETAINING CLIP	1	44	H	L.P. SPRING	1
12	B/P	PUMP RETAINING CLIP NUT	1	45	H	CONE SEAT	1
13	C	O-RING	1	46	H	CONE	1
14	C	BACK-UP RING	1	47	H	LONG SEPARATOR SPRING	1
15	C	H.P. PISTON	1	48	H	SCREW	2
16	C	SNAP RING	1	49	H	SET SCREW	2
17	C	O-RING	1	50	I	BASE PLATE	1
18	C	BACK-UP RING	1	51	I	SCREW	2
19	C	L.P. PISTON	1	52	J	VALVE SCREW	2
20	D	HANDLE	1	53	J	BACK-UP RING	2
21	D/O	YOKE	1	54	J	O-RING	2
22	D/O	PISTON PIN	1	55	K	SCREW	5
23	D/O	YOKE PIN	1	56	L	GAUGE COUPLER MALE	2
24	D/O	RETAINING RING	1	57	L	GAUGE	2
25	D/O	HANDLE GRIP	1	58	M	GAUGE COUPLER FEMALE	2
26	D/O	SCREW	2	59	M	3/8" NPT COUPLER 10ksi	2
27	E	YOKE BASE	1	60	M	PORT GAUGE ADAPTOR	2
28	E	SPRING PIN	1	61	070059-01	OPEN-CLOSE STICKER	3
29	F	RELEASE VALVE SCREW	1	62	070260-01	MAX PRESSURE STICKER	2
30	F	WASHER	1	63	070013-01	OC SEALED STICKER	2
31	F	SPACER	1	64	070058-01	EQUALIZER LOGO RESERVOIR STICKER	2
32	F/J	RELEASE KNOB	3	65	070001-01	WARNING READ INSTRUCTION STICKER	1
33	F/J	M5 SCKT SET SCREW	3	66	ON REQUEST	HP350D S. No STICKER	1

HP550S HYDRAULIC SINGLE PORT SEALED HAND PUMP

737373-01 REV. 04

Refer to pump kit matrix on pg. 19 for kit part numbers

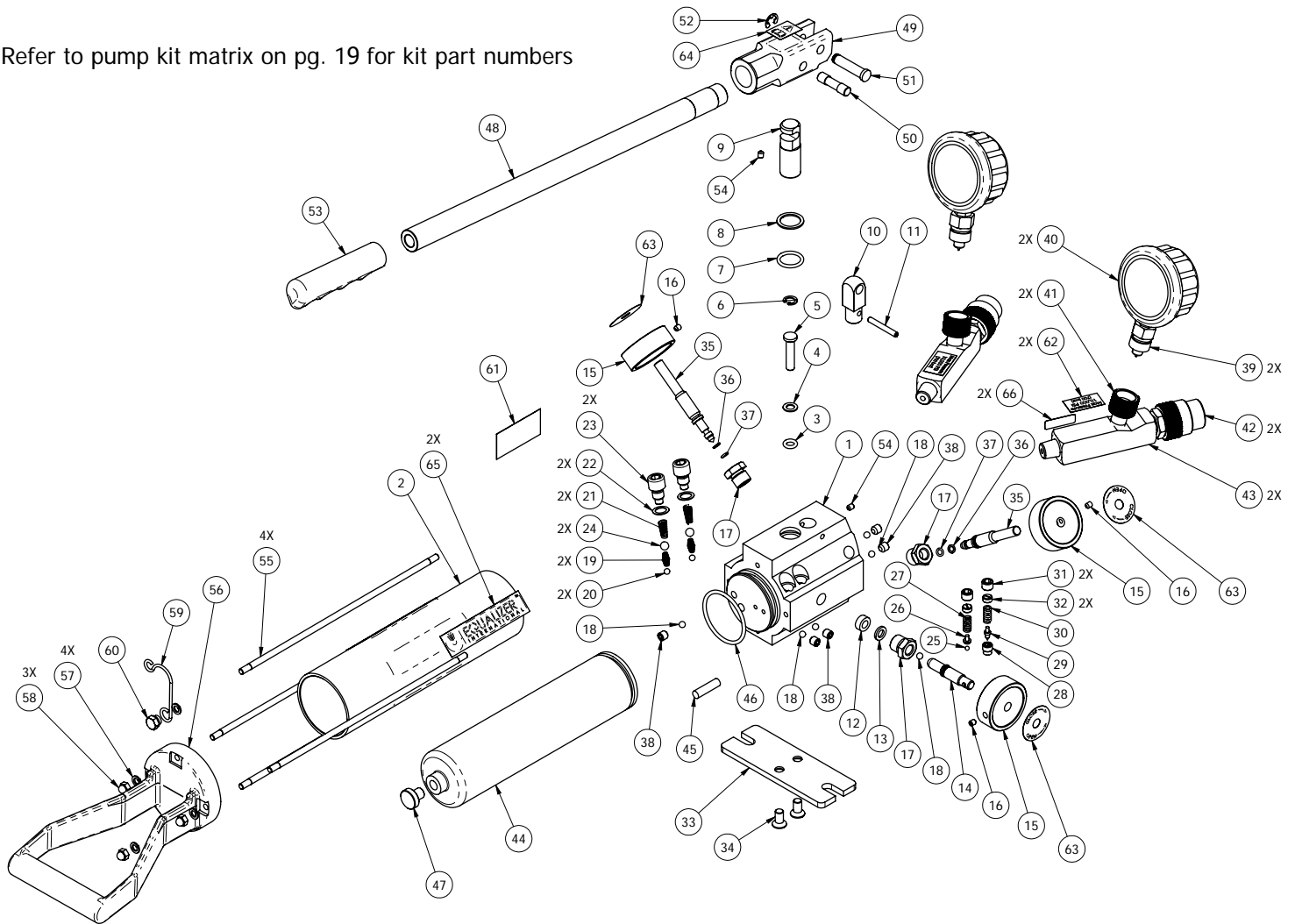


ITEM	KIT/PART No.	DESCRIPTION	QTY.	ITEM	KIT/PART No.	DESCRIPTION	QTY.
1	710101-01	PUMP HOUSING	1	33	F/K/R	CHECK BALL	4
2	708002-01	RESERVOIR	1	34	G	SPRING	2
3	707067-01	SCREW	1	35	G	STEEL BALL	2
4	A/N	OIL FILTER	1	36	G	OUTLET BALL SPRING	2
5	A/N	O-RING	1	37	G	COPPER WASHER	2
6	A/N	REFILLING PLUG	1	38	G	VALVE COVER SCREW	2
7	B/P	TAIL BASE	1	39	G/Q	STEEL BALL	2
8	B/P	SPRING WASHER	4	40	H	STEEL BALL	1
9	B/P	NUT	3	41	H	SPRING END CAP	1
10	B/P	PUMP RETAINING CLIP NUT	1	42	H	L.P. SPRING	1
11	B/P	PUMP RETAINING CLIP	1	43	H	CONE SEAT	1
12	C	O-RING	1	44	H	CONE	1
13	C	BACK-UP RING	1	45	H	LONG SEPARATOR SPRING	1
14	C	H.P. PISTON	1	46	H	SCREW	2
15	C	SNAP RING	1	47	H	SET SCREW	2
16	C	O-RING	1	48	I	BASE PLATE	1
17	C	BACK-UP RING	1	49	I	SCREW	2
18	C	L.P. PISTON	1	50	K	SCREW	3
19	D/O	YOKE	1	51	L	GAUGE COUPLER MALE	1
20	D/O	PISTON PIN	1	52	L	GAUGE	1
21	D/O	YOKE PIN	1	53	M	PORT GAUGE ADAPTOR	1
22	D/O	RETAINING RING	1	54	M	GAUGE COUPLER FEMALE	1
23	D/O	HANDLE GRIP	1	55	M	3/8" NPT COUPLER 10ksi	1
24	D/O	SCREW	2	56	N	RESERVOIR BLADDER	1
25	E	YOKE BASE	1	57	O	HANDLE	1
26	E	SPRING PIN	1	58	P	SCREW	4
27	F	SPACER	1	59	ON REQUEST	HP550S STICKER	1
28	F	WASHER	1	60	070260-01	MAX PRESSURE STICKER	1
29	F	RELEASE VALVE SCREW	1	61	070059-01	OPEN-CLOSE STICKER	1
30	F/J	M5 SCKT SET SCREW	1	62	070013-01	QC SEALED STICKER	1
31	F/J	RELEASE KNOB	1	63	070001-01	WARNING READ INSTRUCTION STICKER	1
32	F/J	ADAPTOR	1	64	070058-01	EQUALIZER LOGO RESERVOIR STICKER	2

HP550D HYDRAULIC TWIN PORT SEALED HAND PUMP

730001-01 REV. 04

Refer to pump kit matrix on pg. 19 for kit part numbers

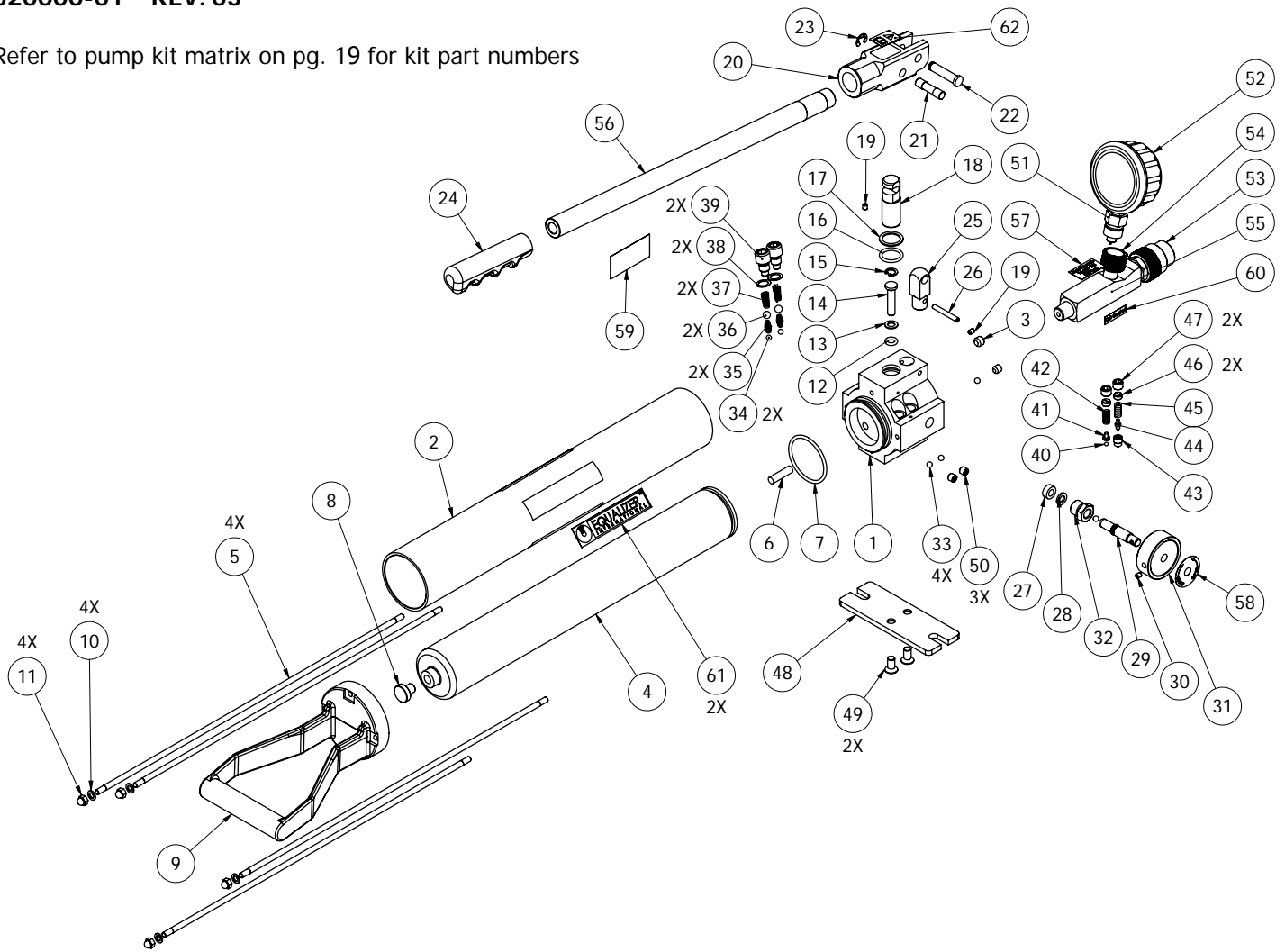


ITEM	KIT/PART No.	DESCRIPTION	QTY	ITEM	KIT/PART No.	DESCRIPTION	QTY
1	720101-01	PUMP HOUSING	1	34	I	SCREW	2
2	708002-01	RESERVOIR	1	35	J	VALVE SCREW	2
3	C	O-RING	1	36	J	BACK-UP RING	2
4	C	BACK-UP RING	1	37	J	O-RING	2
5	C	H.P. PISTON	1	38	K	SCREW	5
6	C	SNAP RING	1	39	L	GAUGE COUPLER MALE	2
7	C	O-RING	1	40	L	GAUGE	2
8	C	BACK-UP RING	1	41	M	GAUGE COUPLER FEMALE	2
9	C	L.P. PISTON	1	42	M	3/8" NPT COUPLER 10ksi	2
10	E	YOKE BASE	1	43	M	PORT GAUGE ADAPTOR	2
11	E	SPRING PIN	1	44	N	RESERVOIR BLADDER	1
12	F	SPACER	1	45	A/N	OIL FILTER	1
13	F	WASHER	1	46	A/N	O-RING	1
14	F	RELEASE VALVE SCREW	1	47	A/N	REFILLING PLUG	1
15	F/J	RELEASE KNOB	3	48	O	HANDLE	1
16	F/J	M5 SCKT SET SCREW	3	49	D/O	YOKE	1
17	F/J	ADAPTOR	3	50	D/O	PISTON PIN	1
18	F/K/R	CHECK BALL	6	51	D/O	YOKE PIN	1
19	G	SPRING	2	52	D/O	RETAINING RING	1
20	G/Q	STEEL BALL	2	53	D/O	HANDLE GRIP	1
21	G	OUTLET BALL SPRING	2	54	D/O	SCREW	2
22	G	COPPER WASHER	2	55	P	SCREW	4
23	G	VALVE COVER SCREW	2	56	B/P	TAIL BASE	1
24	G	STEEL BALL	2	57	B/P	SPRING WASHER	4
25	H	STEEL BALL	1	58	B/P	NUT	3
26	H	SPRING END CAP	1	59	B/P	PUMP RETAINING CLIP	1
27	H	L.P. SPRING	1	60	B/P	PUMP RETAINING CLIP NUT	1
28	H	CONE SEAT	1	61	ON REQUEST	HP550D S. No STICKER	1
29	H	CONE	1	62	070260-01	MAX PRESSURE STICKER	2
30	H	LONG SEPARATOR SPRING	1	63	070059-01	OPEN-CLOSE STICKER	3
31	H	SET SCREW	2	64	070001-01	WARNING READ INSTRUCTION STICKER	1
32	H	SCREW	2	65	070058-01	EQUALIZER LOGO RESERVOIR STICKER	2
33	I	BASE PLATE	1	66	070013-01	QC SEALED RECTANGULAR STICKER	2

HP1000S HYDRAULIC SINGLE PORT SEALED HAND PUMP

520000-01 REV. 03

Refer to pump kit matrix on pg. 19 for kit part numbers

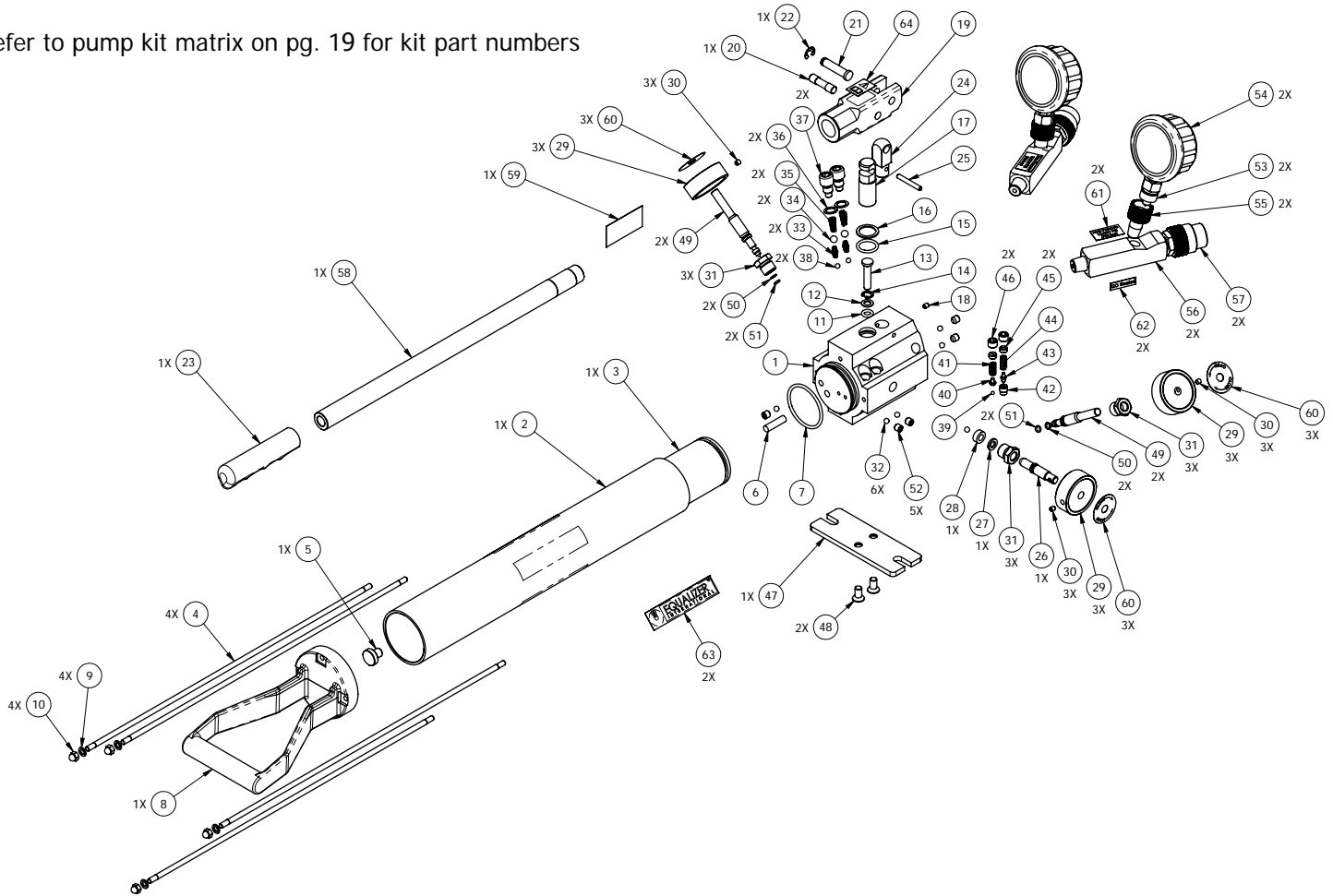


ITEM	KIT/PART No.	DESCRIPTION	QTY	ITEM	KIT/PART No.	DESCRIPTION	QTY
1	710101-01	PUMP HOUSING	1	32	F/J	ADAPTOR	1
2	520002-01	RESERVOIR 1000	1	33	F/K/R	CHECK BALL	4
3	707067-01	SCREW	1	34	G/Q	STEEL BALL	2
4	520001-01	RESERVOIR BLADDER 1000	1	35	G	SPRING	2
5	520003-01	SCREW	4	36	G	STEEL BALL	2
6	A/N	OIL FILTER	1	37	G	OUTLET BALL SPRING	2
7	A/N	O-RING	1	38	G	COPPER WASHER	2
8	A/N	REFILLING PLUG	1	39	G	VALVE COVER SCREW	2
9	B/P	TAIL BASE	1	40	H	STEEL BALL	1
10	B/P	SPRING WASHER	4	41	H	SPRING END CAP	1
11	B/P	NUT	4	42	H	L.P. SPRING	1
12	C	O-RING	1	43	H	CONE SEAT	1
13	C	BACK-UP RING	1	44	H	CONE	1
14	C	H.P. PISTON	1	45	H	LONG SEPARATOR SPRING	1
15	C	SNAP RING	1	46	H	SCREW	2
16	C	O-RING	1	47	H	SET SCREW	2
17	C	BACK-UP RING	1	48	I	BASE PLATE	1
18	C	L.P. PISTON	1	49	I	SCREW	2
19	D/O	SCREW	2	50	K	SCREW	3
20	D/O	YOKE	1	51	L	GAUGE COUPLER MALE	1
21	D/O	PISTON PIN	1	52	L	GAUGE	1
22	D/O	YOKE PIN	1	53	M	3/8" NPT COUPLER 10ksi	1
23	D/O	RETAINING RING	1	54	M	GAUGE COUPLER FEMALE	1
24	D/O	HANDLE GRIP	1	55	M	PORT GAUGE ADAPTOR	1
25	E	YOKE BASE	1	56	O	HANDLE	1
26	E	SPRING PIN	1	57	070260-01	MAX PRESSURE STICKER	1
27	F	SPACER	1	58	070059-01	OPEN-CLOSE STICKER	1
28	F	WASHER	1	59	ON REQUEST	HP1000S STICKER	1
29	F	RELEASE VALVE SCREW	1	60	070013-01	QC SEALED STICKER	1
30	F/J	M5 SCKT SET SCREW	1	61	070058-01	EQUALIZER LOGO RESERVOIR STICKER	2
31	F/J	RELEASE KNOB	1	62	070001-01	WARNING READ INSTRUCTION STICKER	1

HP1000D HYDRAULIC DOUBLED PORT SEALED HAND PUMP

530000-01 REV. 03

Refer to pump kit matrix on pg. 19 for kit part numbers



ITEM	KIT/PART No.	DESCRIPTION	QTY	ITEM	KIT/PART No.	DESCRIPTION	QTY
1	720101-01	PUMP HOUSING	1	33	G	SPRING	2
2	520002-01	RESERVOIR 1000	1	34	G	STEEL BALL	2
3	520001-01	RESERVOIR BLADDER 1000	1	35	G	OUTLET BALL SPRING	2
4	520003-01	SCREW	4	36	G	COPPER WASHER	2
5	A/N	REFILLING PLUG	1	37	G	VALVE COVER SCREW	2
6	A/N	OIL FILTER	1	38	G/Q	STEEL BALL	2
7	A/N	O-RING	1	39	H	STEEL BALL	1
8	B/P	TAIL BASE	1	40	H	SPRING END CAP	1
9	B/P	SPRING WASHER	4	41	H	L.P. SPRING	1
10	B/P	NUT	4	42	H	CONE SEAT	1
11	C	O-RING	1	43	H	CONE	1
12	C	BACK-UP RING	1	44	H	LONG SEPARATOR SPRING	1
13	C	H.P. PISTON	1	45	H	SCREW	2
14	C	SNAP RING	1	46	H	SET SCREW	2
15	C	O-RING	1	47	I	BASE PLATE	1
16	C	BACK-UP RING	1	48	I	SCREW	2
17	C	L.P. PISTON	1	49	J	VALVE SCREW	2
18	D/O	SCREW	1	50	J	BACK-UP RING	2
19	D/O	YOKE	1	51	J	O-RING	2
20	D/O	PISTON PIN	1	52	K	SCREW	5
21	D/O	YOKE PIN	1	53	L	GAUGE COUPLER MALE	2
22	D/O	RETAINING RING	1	54	L	GAUGE	2
23	D/O	HANDLE GRIP	1	55	M	GAUGE COUPLER FEMALE	2
24	E	YOKE BASE	1	56	M	PORT GAUGE ADAPTOR	2
25	E	SPRING PIN	1	57	M	3/8" NPT COUPLER 10ksi	2
26	F	RELEASE VALVE SCREW	1	58	O	HANDLE	1
27	F	WASHER	1	59	ON REQUEST	HP1000D STICKER	1
28	F	SPACER	1	60	070059-01	OPEN-CLOSE STICKER	3
29	F/J	RELEASE KNOB	3	61	070260-01	MAX PRESSURE STICKER	2
30	F/J	M5 SCKT SET SCREW	3	62	070013-01	QC SEALED STICKER	2
31	F/J	ADAPTOR	3	63	070058-01	EQUALIZER LOGO RESERVOIR STICKER	2
32	F/K/R	CHECK BALL	6	64	070001-01	WARNING READ INSTRUCTION STICKER	1



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