DURAPAC
ENGINEERED FOR RELIABILITY

Instruction Manual

Single Acting, Ultra-high Pressure, 2 Speed Hand Pump – P-2100H

Maximum Operating Pressure – 2,800 bar

ABSOLUTE EQUIPMENT PTY LTD – 73 Northlink Place, VIRGINIA QLD 4014 – Australia
sales@absoluteequipment.com.au Phone: +61 7 3865 4006

This is a safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid injury or death

1.0 Product Information

DURAPAC – Aluminium Bodied Manual Hand pumps are engineered to meet Industrial Standards for Performance and Safety. The P-2100H model is a single acting, two speed, two-way valve design. The pump features an ultra-high 2,800 bar working pressure that can be used for bolt tensioning, bearing removal and high-pressure testing. The pump is a robustly built, industry proven performer, has a low handle effort for ease of operation and large easy to grip external pressure release knobs.

Please Note – Durapac offers optional high-pressure gauges and a gauge adaptor to suit the P-2100H 2,800 bar hand pump. Refer to the Durapac catalogue for details.

Special skill, knowledge and training may be required for a specific task and the product may not be suitable for all jobs. The user must ultimately make the decision regarding suitability of the product for any given task and assume the responsibility of safety for all in the work area. Contact a Durapac representative if you are unsure of your hand pumps' suitability for a particular application.

2.0 Receiving Instructions

It is recommended prior to use that an inspection be done by qualified personnel and that any missing or damaged parts, decals, warning/safety labels or signs are replaced with Durapac authorised replacement parts only. Any hand pump that appears to be damaged in any way, is worn, leaking or operates abnormally should be removed from service immediately until such time as repairs can be made. Any hand pump that has been or suspected to have been subject to a shock load should be removed from service immediately until inspected by a Durapac authorised service centre. Owners and operators of this equipment should be aware that the use and subsequent repair of this equipment may require specialised training and knowledge.

3.0 Safety

Save these instructions. For your safety, read and understand the information contained within. The owner and operator should understand this product and safe operating procedures before attempting to use this product. Instructions and safety information should be conveyed in the operator's native language before use of this product is authorised. Make certain that the operator thoroughly understands the inherent dangers associated with the use and misuse of the product. If any doubt exists as to the safe and proper use of this product as outlined in this factory authorised manual, remove from service immediately.

DANGER:

- To avoid personal injury keep hands and feet away from work area during operation
- **Do NOT** handle pressurised hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately
- Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be supported mechanically

WARNING:

- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system
- Always wear appropriate personal protective equipment (PPE) when operating hydraulic equipment. The operator must take precaution against injury due to failure of the tool or work piece(s)
- **Do NOT** hold or stand directly in line with any hydraulic connections while pressurising
- **Do NOT** attempt to disconnect hydraulic connections under pressure. Release all line pressure before disconnecting hoses
- All personnel must be clear before lowering load or depressurising the system
- **Do NOT** attempt to lift a load weighing more than the capacity of the cylinder

IMPORTANT:

- If at any stage, the safety related decals become hard to read, these must be replaced
- Minimum age of the operator must be 18 years. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the equipment. The operator is responsible for this activity towards other persons
- **Do NOT** lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport
- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Durapac authorised service centre in your area. To protect your warranty, use only high-quality hydraulic oil

CAUTION:

- **KEEP HYDRAULIC EQUIPMENT AWAY FROM FLAMES AND HEAT.** Hydraulic fluid can ignite and burn. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C (150°F) or higher. Protect all equipment from weld spatter
- No alteration should be made to this device

3.1 Hydraulic Pumps

- **Do** use a gauge or other load measuring instrument to verify load
- **Do NOT** exceed the rated capacity of the pump or any equipment in the system. Burst hazard exists if connection pressure exceeds rated pressure
- **Do NOT** operate the system with bent or damaged couplers or damaged threads
- **Do NOT** subject the pump and its components to shock loads
- Use only Durapac approved accessories and components

- **Do NOT** connect to an application which can return more oil to the reservoir than the pump reservoir can hold
- **Do NOT** connect pump to a hydraulic system that is powered by another pump

3.2 Hydraulic Hoses & Fluid Transmission Lines

- Avoid short runs of straight-line tubing. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes
- Reduce stress in tube lines. Long tubing runs should be supported by brackets or clips. Before operating the pump, connections should be tightened securely and leak-free. Over tightening can cause premature thread failure or high-pressure fittings to burst
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurised hose with your hands. The force of escaping hydraulic fluid can inflict injury
- **Do NOT** subject the hose to potential hazard such as fire, sharp objects, extreme heat or cold or heavy impact
- **Do NOT** allow the hose to kink, twist, curl, crush, cut or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as battery acid, creosote-impregnated objects and wet paint. Never paint a coupler or hose

FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL INJURY AS WELL AS PROPERTY DAMAGE.

4.0 Installation

⚠ **IMPORTANT:** Always secure threaded port connections with high grade, non-hardening pipe thread sealant. Teflon tape can be used if only one layer of tape is used and it is applied carefully, two threads back, to prevent the tape from being introduced into hydraulic system, which could cause jamming of precision-fit parts

4.1 Familiarise yourself with the specifications and illustrations in this owner's manual. Know your hand pump, its limitations and how it operates before attempting to use. Refer to the specification chart below or if in doubt, contact a Durapac representative.

Model Number	Used with Cylinder	Pressure Rating (bar)		Usable Oil Capacity (cc)	Oil Volumes per Stroke (cc)		Oil Port Thread	Max Handle Effort (kg)	Weight (kg)
		1st Stage	2nd Stage		1st Stage	2nd Stage			
P-2100H	S/A	28.0	2,800	1,000	13.0	0.7	3/4"-16 UNF	40	6.9

4.2 Make hydraulic connections – Clean all areas around the oil port of pump and cylinder. Clean all hose ends, couplers and union ends. Remove the manifold plug and then connect oil output port to suitable fittings and application/cylinder.

4.3 Remove air from the system – Air can accumulate in the hydraulic system during the initial setup or after prolonged use, causing the cylinder to respond slowly or in an unstable manner. Should removal of air from pump be required, please follow the steps in 6.2 – Bleeding Air from the System in the Maintenance Section.

5.0 Operation

IMPORTANT:

- **Do NOT** add extensions to the pump handle. Extensions cause unstable pump operation
- In certain situations, the pump handle can "kick back". Always keep your body to the side of the pump, away from the line of force of the handle
- **Do NOT** operate a pump that is disconnected from the application. If operated in this condition, the hose and connections will become pressurised. This increases the chance of a burst hazard. Damage may also occur to the pump and its components

The pump may be operated in a horizontal or in a vertical position with the head pointing down as shown.

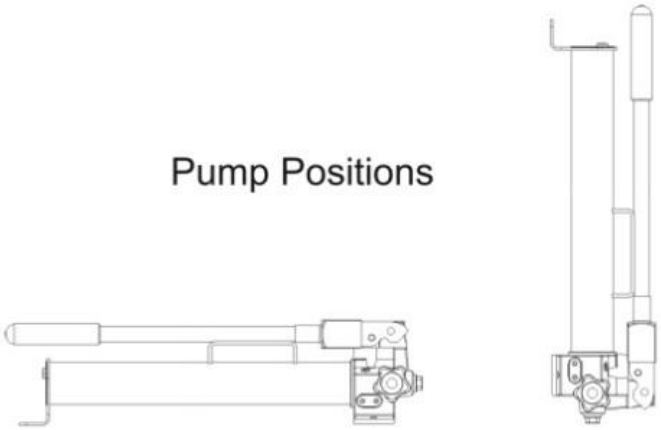


Figure 1 – Hand Pump Operation

5.1 Before Using the Pump

5.1.1 Check all system fittings and connections to be sure they are tight and leak free.

5.1.2 Check oil level in reservoir before operating pump.

5.2 Using a Two-Speed Pump

This pump provides 2-stage flow. Under no-load, the pump operates in the high flow first stage for rapid advance. When the load is contacted, the pump automatically shifts to the second stage for building pressure. After the pump shifts, pumping takes less effort.

Note: To reduce handle effort at high pressure, take short strokes. Maximum leverage is obtained in the last 5° of stroke. For best performance, operate pump handle at moderate speed during the high flow first stage. Rapid handle speed in the first stage will prevent the pump from delivering full volume of oil.

5.3 Advance and Retraction of Single-Acting Applications

5.3.1 Turn the pump's release valve clockwise to a closed position.

⚠ **IMPORTANT**: Only hand-tighten the valve. Applying too much force to the valve may damage the valve stem

5.3.2 Work the pump handle up and down to send oil through the hose to the cylinder, causing the piston to extend to the work piece.

5.3.3 Monitor the pressure gauge while completing the application.

Note: The pump is equipped with an overload valve that will bypass oil back into the pump reservoir in an overload situation (when the system meets maximum pressure). In this case, continued pumping will have no effect on the system. If an overload situation commonly occurs, a higher capacity set is needed.

5.3.4 To release pressure, slowly turn the release valve counterclockwise. The release speed is controlled by how fast the valve is opened.

5.4 Relief Valve Adjustment

All pumps contain a factory set relief valve to prevent over-pressurisation of the system.

6.0 Maintenance

IMPORTANT:

- Check oil level regularly
- Use only good quality hydraulic fluid. **Do NOT** use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerine etc. Use of anything other than good quality hydraulic oil will void warranty and damage the pump, hose, and application. We recommend Durapac Hydraulic Oil or equivalent
- Equipment must only be serviced by a qualified hydraulic technician. For repair service, contact your local Durapac authorised service centre
- Damage to hydraulic hoses may not be detected during visual inspections. For this reason, Durapac recommends that hydraulic hoses be replaced on a regular basis
- Tighten connections as needed. Use non-hardening pipe thread compound when servicing connections

Dirt, sand, etc. will quickly ruin any hydraulic system. Ensure that couplings are clean and free of foreign matter. After each use, clean couplings and attach dust caps.

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem that may require service and maintenance.

6.1 Adding Hydraulic Fluid

⚠ **WARNING:** Always add oil with cylinders or tools fully retracted (or extended, if pull cylinders) or the system will contain more oil than the reservoir can hold

6.1.1 Depressurise and disconnect hydraulic hose from application/cylinder.

6.1.2 With the pump in its upright, horizontal position, remove the air vent plug located on the top plate of the reservoir.

6.1.3 Use a small funnel to fill the reservoir to approximately 85 mm from the top of the oil filler hole.

6.1.4 Bleed air from system if necessary.

6.1.5 Wipe up any spilled fluid and reinstall the air vent plug/reservoir cap.

6.2 Bleeding Air from the System

6.2.1 Repeat Steps 6.1.1 to 6.1.3 (above), if required.

6.2.2 Invert cylinder and place at a lower level than the pump reservoir.

6.2.3 Extend and retract the cylinder several times without putting a load on the system. Air will be released into the pump reservoir.

6.2.4 Recheck oil level after removing air.

6.3 Changing Hydraulic Fluid

⚠ For best results, change fluid once a year or every 300 hours of use

6.3.1 Repeat Steps 6.1.1 to 6.1.2 (above).

6.3.2 Pour used fluid into a sealable container.

6.3.3 Repeat Steps 6.1.3 to 6.1.5 (above).

6.3.4 Dispose of fluid in accordance with local regulations.

6.4 Lubrication

To extend pump life and improve performance, lubricate the beam pin (A), cross pin (B), and piston head (C) regularly, using roller bearing grease.

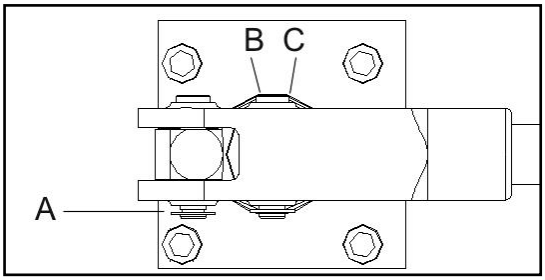


Figure 2 - Lubrication

6.5 Storage

6.5.1 When not in use, depressurise and disconnect the hydraulic pump from the application.

6.5.2 Wipe clean thoroughly and store in a clean, dry environment. Avoid temperature extremes.

6.5.3 For transportation or long storage, replace the air vent plug with shipping plug.

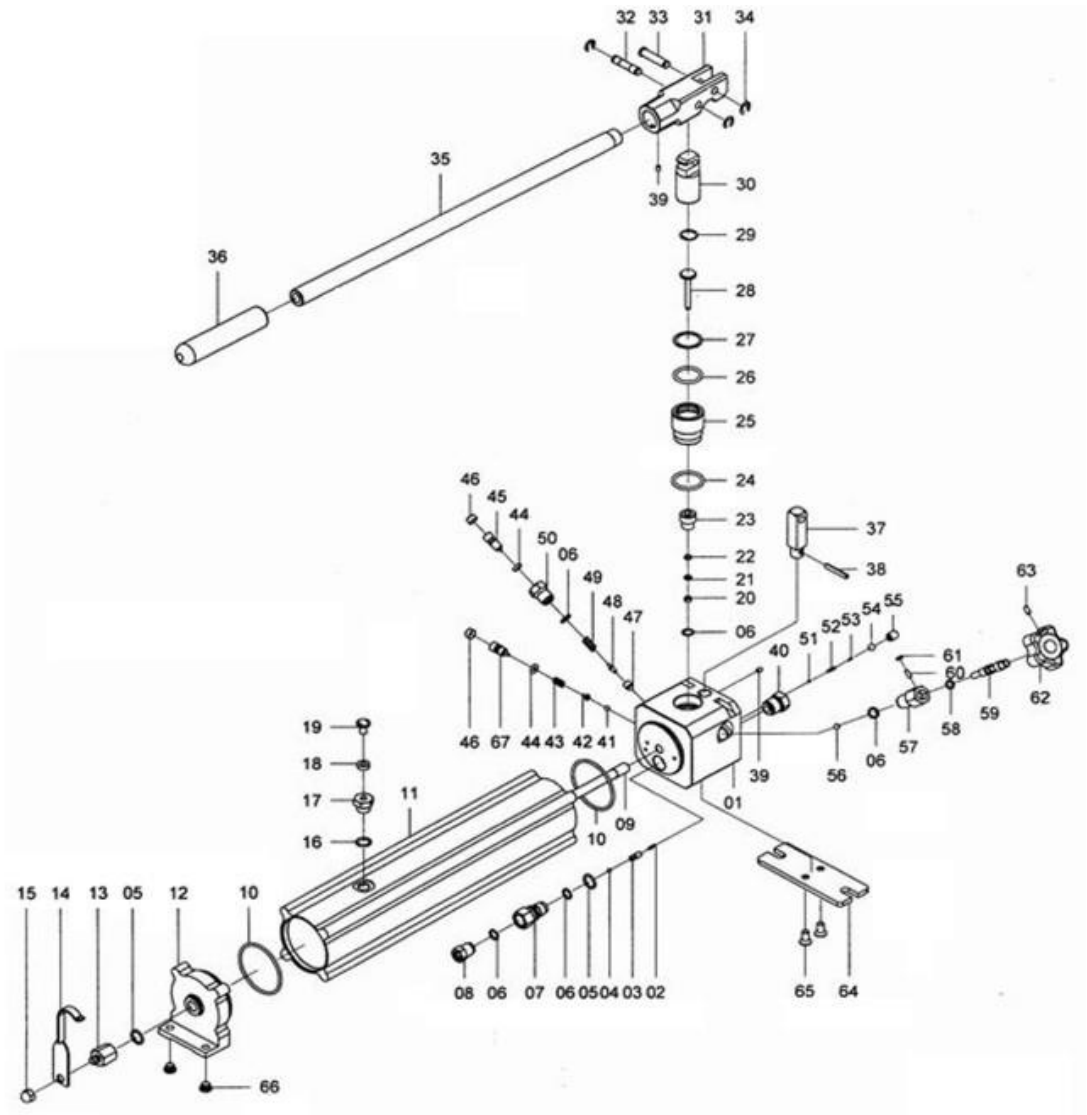
6.5.4 Shield pump with a protective cover.

7.0 Troubleshooting

Problem	Cause	Solution
Pump loses pressure	Leaking system components	• Repair or replace as necessary
Pump not delivering fluid	Low fluid level in reservoir	• Check fluid level
	Worn seats	• Repair seats • Replace pump body
Pump does not reach rated capacity	Low fluid level in reservoir	• Check fluid level
	Leaking system components	• Repair or replace as necessary
	Fluid leaking past inlet or outlet checks	• Repair inlet or outlet checks • Replace high pressure piston seal
Pump handle has a "spongy" feel	Air trapped in system	• Refer to 6.2 - Bleeding Air from the System
	Too much fluid in reservoir	• Check fluid level
Cylinder piston will not extend	Loose couplers	• Tighten couplers
	Low fluid level in pump reservoir	• Fill and bleed the system
	Leaking cylinder seals	• Replace worn seals. Look for excessive contamination or wear
Cylinder piston extends only partially	Low fluid level in pump reservoir	• Fill and bleed the system
	Load above capacity of system	• Use correct equipment
Cylinder piston extends slower than normal	Loose couplers	• Tighten couplers
	Restricted hydraulic line or fitting	• Clean and replace if damaged
	Pump not operating correctly	• Check pump's operating instructions • Repair or replace as necessary
	Low fluid level in pump reservoir	• Fill and bleed the system
Cylinder does not hold pressure	Leaky connection	• Clean, reseal with thread sealant, and tighten connection
	Leaking cylinder seals	• Replace worn seals. Look for excessive contamination or wear Replace contaminated fluid
	Pump or valve not operating correctly	• Repair or replace as necessary
Cylinder will not retract or retracts slower than normal	Closed pump release valve	• Open pump release valve
	Loose couplers	• Tighten couplers
	Blocked hydraulic lines	• Clean and flush lines
	Weak or broken retraction springs	• Send to a Durapac authorised service centre for repair
	Internally damaged cylinder	• Send to a Durapac authorised service centre for repair
	Pump reservoir too full	• Drain fluid to correct level

8.0 Parts Breakdown and List

8.1 Parts Breakdown and List – New Version – S/N 13024826 and above

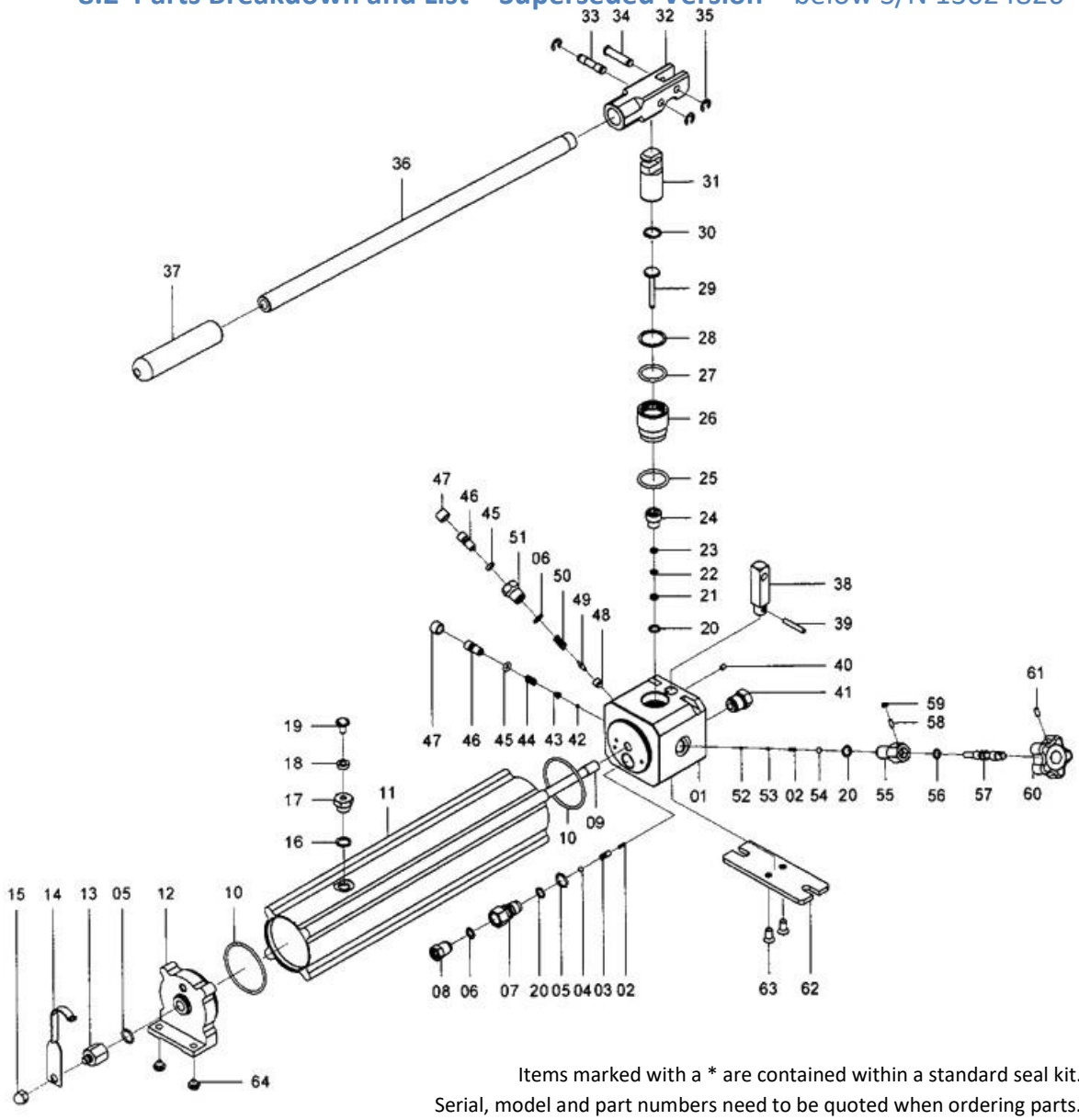


Item	Description	Part No.	Qty
1	Pump housing	ZAL1197	1
2	Spring	ZAL1352	1
3	Ball seat	ZAL1142	1
4	Steel ball	ZAL1369	1
5	O-ring	ZAL1207	2
6	Copper washer	ZAL1357	5
7	High pressure valve	ZAL1140	1
8	Inlet valve	ZAL1023	1
9	Tie rod	ZAL1124	1
10	O-ring	ZAL1228	2
11	Reservoir	ZAL1715	1
12	Tail base	ZAL1196	1
13	Plastic plug	ZAL1174	1
14	Fixing hook	ZAL1062	1
15	Nut	ZAL1413	1
16	O-ring	ZAL1233	1
17	Breather nut	ZAL1173	1
18	Seal	ZAL1716	1
19	Breather	ZAL1312	1
20	Fasten nut	ZAL1139	1
21	O-ring*	ZAL1717	1
22	Back-up ring*	ZAL1718	1
23	Piston housing	ZAL1138	1

Item	Description	Part No.	Qty
24	O-ring*	ZAL1278	1
25	Pump piston	ZAL1136	1
26	O-ring*	ZAL1277	1
27	Back-up ring*	ZAL1225	1
28	Pump piston	ZAL1166	1
29	Snap ring	ZAL1329	1
30	L.P. piston	ZAL1103	1
31	Yoke	ZAL1056	1
32	Piston pin	ZAL1125	1
33	Yoke pin	ZAL1095	1
34	Retaining ring	ZAL1327	3
35	Handle	ZAL1090	1
36	Handle grip	ZAL1263	1
37	Yoke base	ZAL1054	1
38	Roll pin	ZAL1719	1
39	Screw	ZAL1289	2
40	Bolt plug	ZAL1141	1
41	Steel ball	ZAL1370	1
42	Spring end cap	ZAL1096	1
43	H.P. spring	ZAL1350	1
44	O-ring*	ZAL1210	2
45	Overload cover screw	ZAL1287	1
46	Cap	ZAL1041	2

Item	Description	Part No.	Qty
47	Cone seat	ZAL1164	1
48	Cone	ZAL1152	1
49	Spring	ZAL1365	1
50	Setting screw seat	ZAL1170	1
51	Steel ball	ZAL1372	1
52	Spring	ZAL1720	1
53	Pin	ZAL1382	1
54	Steel ball	ZAL1368	1
55	Screw	ZAL1721	1
56	Steel ball	ZAL1366	1
57	Release valve	ZAL1143	1
58	O-ring*	ZAL1273	1
59	Release valve screw	ZAL1135	1
60	Screw	ZAL1321	1
61	Nut	ZAL1320	1
62	Release valve	ZAL1388	1
63	Screw	ZAL1290	1
64	Base plate	ZAL1045	1
65	Screw	ZAL1299	2
66	Plug*	ZAL1236	2
67	Overload cover screw	ZAL1315	1
	Seal kit	ZAL1527	1

8.2 Parts Breakdown and List – Superseded Version – below S/N 13024826



Items marked with a * are contained within a standard seal kit.
Serial, model and part numbers need to be quoted when ordering parts.

Item	Description	Part No.	Qty
1	Pump housing	ZAL1197	1
2	Spring	ZAL1352	2
3	Ball seat	ZAL1142	1
4	Steel ball	ZAL1367	1
5	O-ring	ZAL1207	2
6	Washer	ZAL1349	2
7	High pressure valve	ZAL1140	1
8	Inlet valve	ZAL1023	1
9	Tie rod	ZAL1124	1
10	O-ring	ZAL1228	2
11	Reservoir	ZAL1195	1
12	Tail base	ZAL1196	1
13	Plastic plug	ZAL1174	1
14	Fixing hook	ZAL1062	1
15	Nut	ZAL1129	1
16	O-ring	ZAL1233	1
17	Breather nut	ZAL1173	1
18	Seal	ZAL1271	1
19	Breather	ZAL1312	1
20	Copper washer	ZAL1357	3
21	Fasten nut	ZAL1139	1
22	O-ring*	ZAL1281	1

Item	Description	Part No.	Qty
23	Back-up ring*	ZAL1236	1
24	Piston housing	ZAL1138	1
25	O-ring*	ZAL1278	1
26	Pump piston	ZAL1136	1
27	O-ring*	ZAL1277	1
28	Back-up ring*	ZAL1225	1
29	Pump piston	ZAL1166	1
30	Snap ring	ZAL1329	1
31	L.P. piston	ZAL1103	1
32	Yoke	ZAL1056	1
33	Piston pin	ZAL1125	1
34	Yoke pin	ZAL1095	1
35	Retaining ring	ZAL1327	3
36	Handle	ZAL1090	1
37	Handle grip	ZAL1263	1
38	Yoke base	ZAL1054	1
39	Roll pin	ZAL1334	1
40	Screw	ZAL1289	1
41	Bolt plug	ZAL1141	1
42	Steel ball	ZAL1370	1
43	Spring end cap	ZAL1096	1
44	L.P. spring	ZAL1350	1

Item	Description	Part No.	Qty
45	O-ring*	ZAL1210	2
46	Overload cover screw	ZAL1287	2
47	Cap	ZAL1211	2
48	Cone seat	ZAL1164	1
49	Cone	ZAL1152	1
50	Spring	ZAL1365	1
51	Setting screw seat	ZAL1170	1
52	Steel ball	ZAL1372	1
53	Pin	ZAL1382	1
54	Steel ball	ZAL1366	1
55	Release valve	ZAL1143	1
56	O-ring*	ZAL1273	1
57	Release valve screw	ZAL1135	1
58	Screw	ZAL1321	1
59	Nut	ZAL1320	1
60	Release valve knob	ZAL1388	1
61	Screw	ZAL1290	1
62	Base plate	ZAL1044	1
63	Screw	ZAL1299	2
64	Plug*	ZAL1231	2
	Seal kit	ZAL1395	1