DURAPAC
ENGINEERED FOR RELIABILITY

Instruction Manual

Two Speed, High Volume Hand Pump
Models – P-2800 & P-2800D

Maximum Operating Pressure – 700 bar

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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 – Hand Pumps are engineered to meet Industrial Standards for Performance and Safety.

The **P-2800** is a high flow, 2 speed hand pump with a **2 way valve** designed to be used with single acting hydraulic equipment.

The **P-2800D** is a high flow, 2 speed hand pump with a **4 way valve** designed to be used with double acting hydraulic equipment.

These models are the ultimate in high performance two speed portable power. They are ideally suited to operate high tonnage cylinders where conventional power sources are not available. Both models feature a first stage high flow of 113 cc per stroke for fast cylinder advance and retract and a high pressure power flow of 4 cc per stroke. The pumps are robustly built and an industry proven performer.

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 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 have an understanding of 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	Valve Type	Pressure Rating (bar)		Usable Oil Capacity (cc)	Oil Volumes per Stroke (cc)		Oil Port Thread	Max Handle Effort (kg)	Weight with Oil (kg)
			1st Stage	2nd Stage		1st Stage	2nd Stage			
P-2800	S/A	2 Way	27.5	700	8,000	113	4	3/8"-NPTF	29	29
P-2800D	D/A	4 Way	27.5	700	8,000	113	4	3/8"-NPTF	29	30

4.2 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:

- This pump is operated with a non-vented reservoir. If the reservoir is subjected to high pressure, the casing may rupture, causing personal injury and/or equipment damage. **NEVER** attempt to return more oil to the reservoir than it is capable of holding
- **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 application. If operated in this condition, the hose and connections will become pressurised. This increases burst hazard. Damage may occur to pump and its components

The pump may only be operated in a horizontal position as shown.

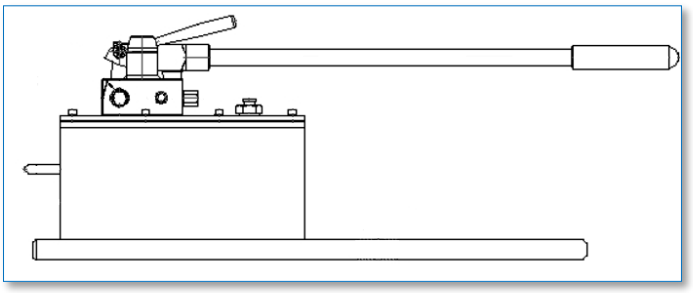


Figure 1 – Hand Pump Operation

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 Two-Speed Pumps

These pumps provide 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.

For P-2800 or P-2800D models, when pump pressure reaches approximately 27.5 bar, you must momentarily stop pumping and raise the handle to shift to the high pressure stage. 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 Single-Acting Applications with 2 Way Valve

5.3.1 Shift valve handle to the open position (ADV).

5.3.2 Operate pump handle to deliver hydraulic power to the system. Pressure will be maintained until the valve is shifted.

5.3.3 To allow oil to return to the reservoir, shift valve handle to closed position (180° - RET).

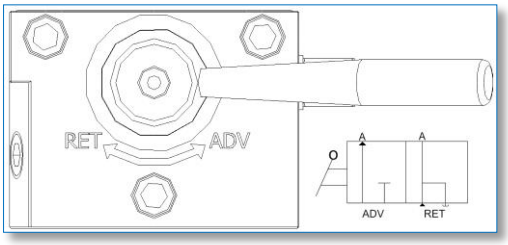


Figure 2 – 2 Way valve positioning

5.4 Double-Acting Applications with 4 Way Valve

⚠ WARNING: Operate double-acting cylinder only when both hoses are connected to the pump. If one coupler is left unconnected, high pressure will build behind the coupler which could cause personal injury and/or equipment damage

Pumps with 4-way control valves are designed to operate double-acting cylinders.

5.4.1 Position lever on 4-way valve to select function as follows:

- (A) Flow to Port "A"; port "B" returns flow to the reservoir
- (T) Neutral; ports "A" and "B" are blocked
- (B) Flow to port "B"; port "A" returns flow to the reservoir

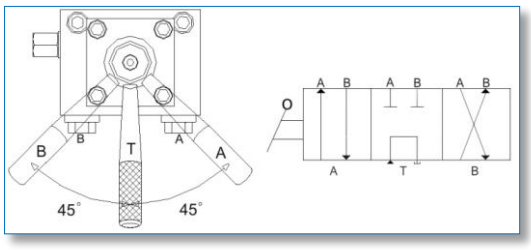


Figure 3 – 4 Way valve positioning

5.4.2 Operate pump to perform work.

5.4.3 Change valve positions as needed.

5.5 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 fully retracted (or extended, if pull cylinders) or the system will contain more oil than the reservoir can hold

⚠ Air is required in the reservoir to function properly. If the reservoir is completely filled, a vacuum will form preventing oil from flowing out of the pump

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 25 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

Air can accumulate in the hydraulic system during the initial setup or after prolonged use, causing the cylinder / spreader to respond slowly or in an unstable manner. To remove the air:

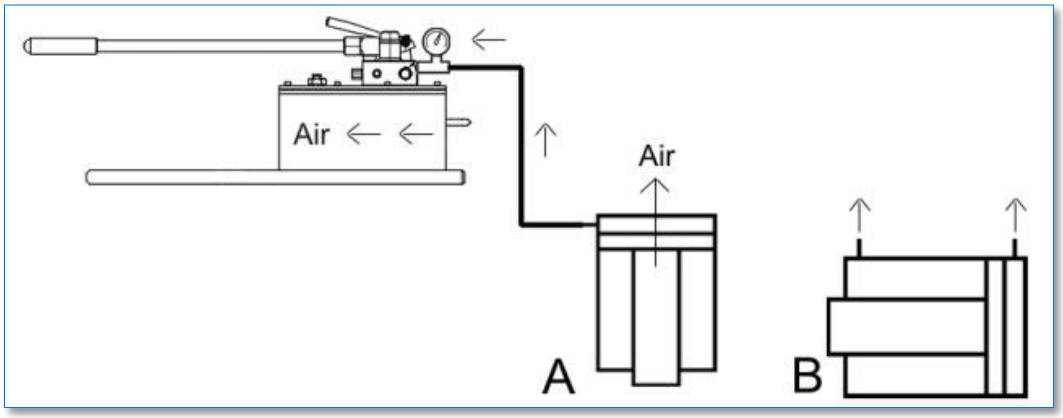


Figure 4 – Bleeding Air from the System

6.2.1 Pump With Single-Acting Cylinder (A)

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

6.2.1.2 Position pump at higher elevation than cylinder.

6.2.1.3 Position cylinder with the plunger end down (up if using pull cylinder).

6.2.1.4 Operate pump to fully extend the cylinder (retract if using pull cylinder).

6.2.1.5 Open release valve to retract cylinder (extend if a pull cylinder). This will force the trapped air to move up to the pump reservoir.

6.2.1.6 Repeat the above steps as necessary.

6.2.1.7 Recheck oil level after removing air.

6.2.1.8 Return vent/fill cap to operating position.

6.2.2 Pump With Double-Acting Cylinder (B)

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

6.2.2.2 Position pump at higher elevation than cylinder.

6.2.2.3 Put cylinder in horizontal position with ports up.

6.2.2.4 Fully advance and retract the cylinder 2 to 3 times.

6.2.2.5 Repeat the above steps as necessary.

6.2.2.6 Recheck oil level after removing air.

6.2.2.7 Return vent/fill cap to operating position.

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.

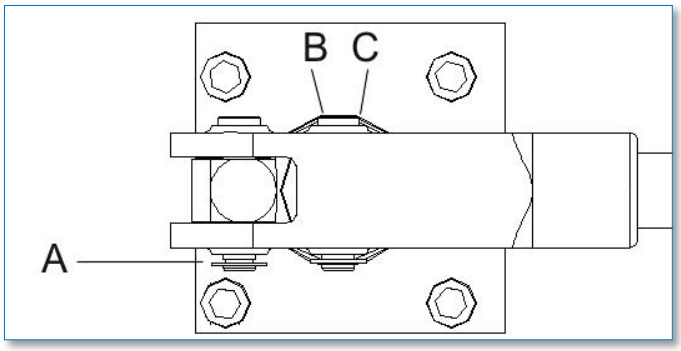


Figure 5 - Lubrication

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.

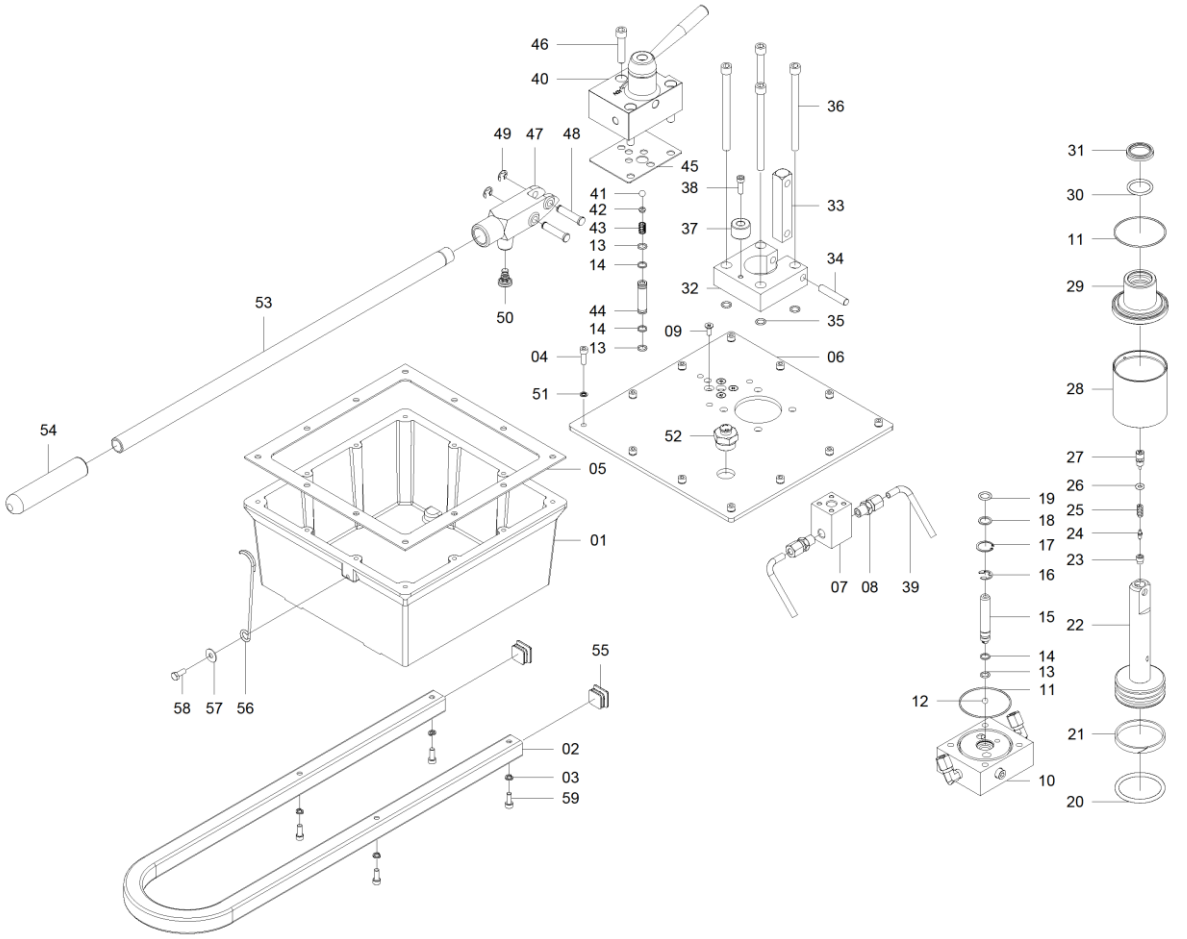
6.5.4 Shield pump with a protective cover.

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 (or retract for P-2800D model)	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 (or retracts for P-2800D model) only partially	Low fluid level in pump reservoir	• Fill and bleed the system
	Load above capacity of system	• Use correct equipment
Cylinder piston extends (or retracts for P-2800D model) 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 P-2800 Model

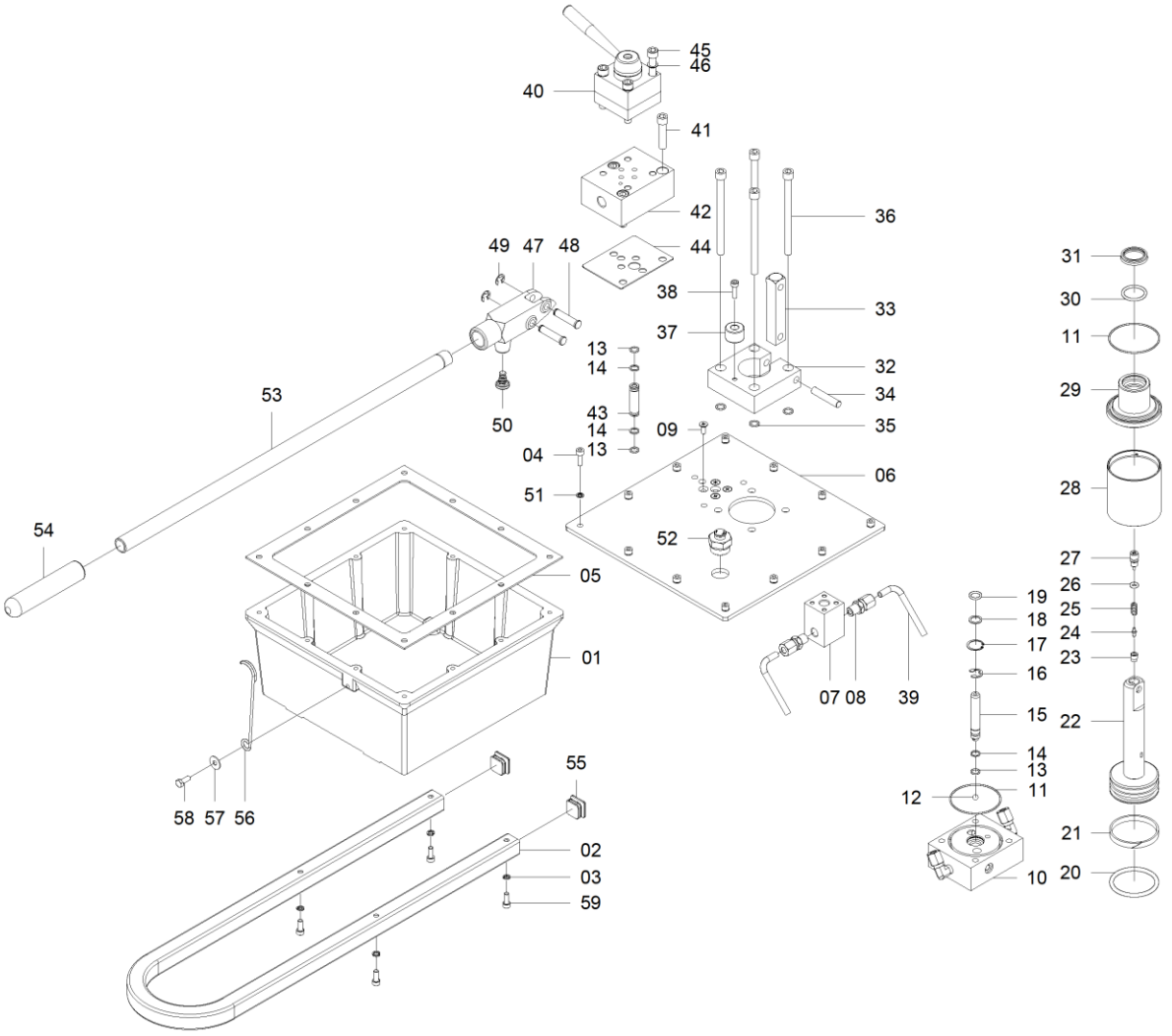


Item	Description	Part No.	Qty
1	Reservoir assembly	ZAL1195	1
2	Hand pump base	ZAL1547	1
3	Spring washer	ZAL1343	4
4	Screw	ZAL1296	12
5	Reservoir gasket	ZAL1260	1
6	Cover plate	ZAL1057	1
7	Junction block	ZAL1171	1
8	Tube connector	ZAL1385	2
9	Screw	ZAL1319	4
10	Pump body	ZAL1032	1
11	O-ring	ZAL1258	2
12	Steel ball	ZAL1377	1
13	O-ring*	ZAL1251	3
14	Back-up ring*	ZAL1250	3
15	Piston	ZAL1146	1
16	E-ring	ZAL1330	1
17	Retaining ring	ZAL1336	1
18	Back-up ring	ZAL1257	1
19	O-ring	ZAL1256	1
20	O-ring	ZAL1254	1

Item	Description	Part No.	Qty
21	Split ring	ZAL1270	1
22	Piston	ZAL1028	1
23	Cone seat	ZAL1153	1
24	Cone	ZAL1152	1
25	Spring	ZAL1361	1
26	O-ring*	ZAL1210	1
27	Overload cover screw	ZAL1287	1
28	Pump cylinder	ZAL1091	1
29	Bearing	ZAL1157	1
30	O-ring	ZAL1222	1
31	Wiper	ZAL1214	1
32	Pump collar	ZAL1159	1
33	Yoke base	ZAL1158	1
34	Pin	ZAL1145	1
35	O-ring	ZAL1237	4
36	Screw	ZAL1316	4
37	Connector base	ZAL1548	1
38	Screw	ZAL1296	1
39	Tube assembly	ZAL1093	2
40	Valve assembly	ZAL1027	1

Item	Description	Part No.	Qty
41	Steel ball	ZAL1368	1
42	Spring end cap	ZAL1144	1
43	Spring	ZAL1360	1
44	Link tube	ZAL1172	1
45	Valve gasket	ZAL1711	1
46	Screw	ZAL1322	3
47	Yoke	ZAL1198	1
48	Yoke pin	ZAL1156	2
49	E-ring	ZAL1327	2
50	Rubber	ZAL1261	1
51	Gasket seal	ZAL1262	12
52	Breather assembly	ZAL1025	1
53	Handle	ZAL1081	1
54	Handle grip	ZAL1263	1
55	Cover	ZAL1259	2
56	Fixing hook	ZAL1549	1
57	Washer	ZAL1550	1
58	Screw	ZAL1551	1
59	Screw	ZAL1713	4
	Seal kit	ZAL1325	1

8.2 P-2800D Model



Item	Description	Part No.	Qty
1	Reservoir assembly	ZAL1195	1
2	Hand pump base	ZAL1547	1
3	Spring washer	ZAL1343	4
4	Screw	ZAL1296	12
5	Reservoir gasket	ZAL1260	1
6	Cover plate	ZAL1057	1
7	Junction block	ZAL1171	1
8	Tube connector	ZAL1385	2
9	Screw	ZAL1319	4
10	Pump body	ZAL1032	1
11	O-ring	ZAL1258	2
12	Steel ball	ZAL1377	1
13	O-ring*	ZAL1251	3
14	Back-up ring*	ZAL1250	3
15	Piston	ZAL1146	1
16	E-ring	ZAL1330	1
17	Retaining ring	ZAL1336	1
18	Back-up ring	ZAL1257	1
19	O-ring	ZAL1256	1
20	O-ring	ZAL1254	1

Item	Description	Part No.	Qty
21	Split ring	ZAL1270	1
22	Piston	ZAL1028	1
23	Cone seat	ZAL1153	1
24	Cone	ZAL1152	1
25	Spring	ZAL1361	1
26	O-ring*	ZAL1210	1
27	Overload cover screw	ZAL1287	1
28	Pump cylinder	ZAL1091	1
29	Bearing	ZAL1157	1
30	O-ring	ZAL1222	1
31	Wiper	ZAL1214	1
32	Pump collar	ZAL1159	1
33	Yoke base	ZAL1158	1
34	Pin	ZAL1145	1
35	O-ring	ZAL1237	4
36	Screw	ZAL1316	4
37	Connector base	ZAL1548	1
38	Screw	ZAL1296	1
39	Tube assembly	ZAL1093	2
40	4 way valve	ZAL1038	1

Item	Description	Part No.	Qty
41	Screw	ZAL1322	3
42	Valve block	ZAL1035	1
43	Link tube	ZAL1172	1
44	Valve gasket	ZAL1711	1
45	Screw	ZAL1714	4
46	Washer	ZAL1357	4
47	Yoke	ZAL1198	1
48	Yoke pin	ZAL1156	2
49	E-ring	ZAL1327	2
50	Rubber	ZAL1261	1
51	Gasket seal	ZAL1262	12
52	Breather assembly	ZAL1025	1
53	Handle	ZAL1081	1
54	Handle grip	ZAL1263	1
55	Cover	ZAL1259	2
56	Fixing hook	ZAL1549	1
57	Washer	ZAL1550	1
58	Screw	ZAL1551	1
59	Screw	ZAL1713	4
	Seal kit	ZAL1325	1

Items marked with a * are contained within a standard seal kit.

Serial, model and part numbers need to be quoted when ordering parts.