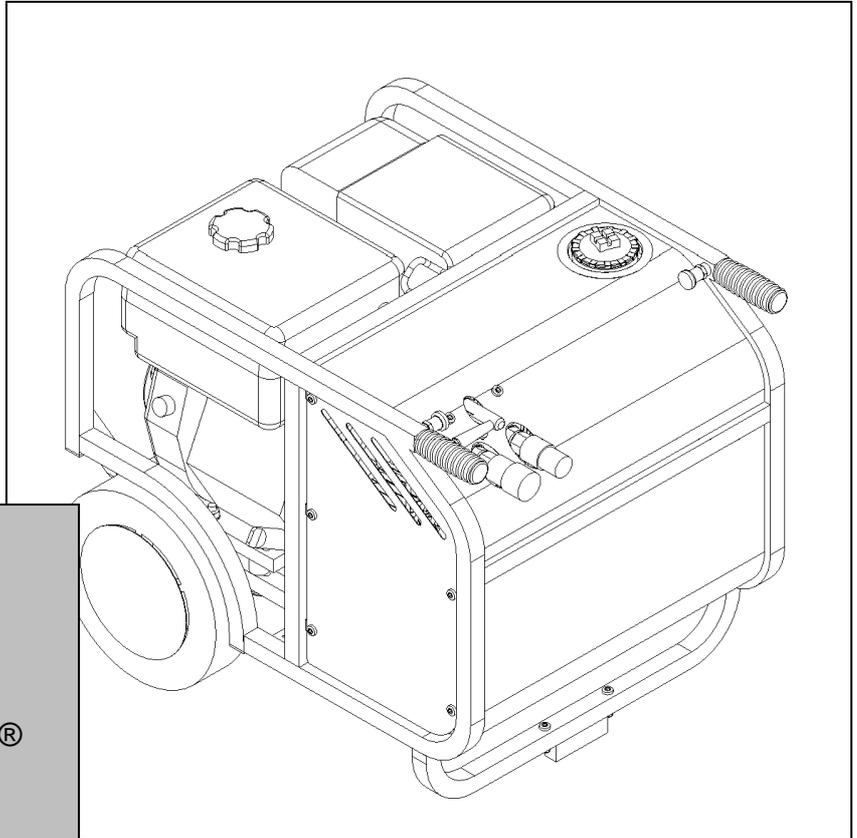


Operating Manual

Rhino® **HPP13** **Flex** **Hydraulic** **Powerpack**

Revised
01.2019



Prior to Operation

We thank you for choosing Rhino® Power Pack.

Please note that the Rhino® Power Pack is delivered without hydraulic oil, and therefore, it must be filled up with hydraulic oil prior to operation.

To ensure smooth operation and long-lasting performance of your new post driver, we recommend you study this operation manual carefully and pay special attention to the

Safety and Service Precautions

We hope you will be satisfied with your new Rhino® Hydraulic Power Pack.

Best Regards,
Rhino Tool Co.



Rhino Tool Co. Inc. 1134
West South St.
P.O. Box 111
Kewanee, IL 61443

Tel: 309.853.5555 main
Tel: 866.707.1808 toll-free
Fax: 309.856.5905
info@rhinotool.com
www.rhinotool.com

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Safety Precautions

1. Always use protective earplugs. The powerpack complies with the EU noise limits, but by daily long-lasting operation there is a risk of hearing defects.
2. Always connect hoses before starting.
3. Never add fuel or oil when the engine is running.
4. In case of non-operation or lack of performance, always turn off the engine.
5. Never start the engine without side covers.
6. Operation of the powerpack without tool connected and with lever at "ON" may cause overheating of the system and damage to the powerpack.
7. When lifting the powerpack from a vehicle, we recommend the use of a crane.
8. The pressure relief valve is set at 2175psi (150 bar) from our plant. Never set it higher.
9. Always use filters with by-pass. The use of filters without by-pass may blow the hydraulic hoses and the filter cover.

Filling Up Hydraulic Oil

- To fill up with hydraulic oil, loosen the filter cover on top of the powerpack.
- Remove the filter element (see photo), and fill up with oil. When oil is showing at the bottom of the filter unit, there is enough oil in the powerpack.
- Insert the filter element again, replace the cover and the powerpack is ready for use.

Please note: When connecting new extension hoses, it is necessary to fill up with extra 1/2 gal. (2 litres) of oil. Therefore always top up the powerpack when connecting new extension hoses.



Technical Data

Hydraulics

The Rhino® HPP13 Flex open centre hydraulic powerpack is designed in accordance with the EHTMA categories C and D, which prescribe a minimum performance of 5.25 gpm (20 l.p.m.) at 2000 p.s.i.(138 bar) and 8 g.p.m. (30 l.p.m.) at 2000 p.s.i.(138 bar), respectively.

- With POR system (Power On Request) that automatically reduces the engine r.p.m. if the connected tool is not operated. This version is set to 5.25 g.p.m. (20 l.p.m.) or 8 g.p.m.(30 l.p.m.) from the factory.
- With manual flow adjustment. This powerpack can be set to 5.25 g.p.m. (20 l.p.m.) or 8 g.p.m.(30 l.p.m.) on the front of the powerpack.

The powerpack is mounted with a pressure relief valve to avoid a too high pressure. Furthermore, the very efficient air cooling protects the powerpack against overheating.

Oil flow	5.25 g.p.m. (20 l.p.m.) at 2500 r.p.m. 8 g.p.m.(30 l.p.m.) at 3600 r.p.m.
Working pressure nominal	1725 p.s.i. (120bar)
Pressure relief valve	Set at 2175 p.s.i. (150 bar)
Pump	Gear pump
Oil temperature	Max. 158° (70° C)
Hydraulic oil tank capacity	Min. 1.5gal. (6litres)/max. 2.1 gal. (8litres)
Petrol tank capacity	1.7 gal. (6.5 litres)
Hydraulic system compl.	2.38 gal. (9 litres)
Filter system (filter element)	25Micron with by-pass
Engine	Honda GX390QXB7 13HP (gross power) 4-stroke gas with oil alert system Gas - normal or unleaded Engine oil .3 gal. (1.1 litres)
Guaranteed sound power level L_{WA}	101 dB
Sound pressure level 1 m L_{PA}	89 dB
Dimensions (LxWxH)	28"x 23.5" x 25.5" (710x595x645 mm)
Weight, without hydraulic oil	179 lb. (81kg)

Starting Instructions

Please observe the starting instructions on the front of the powerpack.

- Start:**
- Check engine oil level
 - Check hydraulic oil level at sight glass
 - Connect hoses and tool
 - Switch fuel tap to "ON"
 - Activate choke
 - Turn ignition switch to "1"
 - Pull recoil starter
 - Move the lever to "ON"
- Stop:**
- Move the lever to "OFF"
 - Turn off the ignition switch
 - Turn the fuel tap to "OFF"

Powerpack with adjustable flow:

The desired oil flow can be set on the front of the powerpack. A marking is engraved in the lever.

Turn the lever to the right until the marking is opposite the required flow

The pressure relief valve setting will be the same on all flows.



Service, Maintenance and Hydraulic Settings

Service/Maintenance	Daily	Weekly	Yearly
Engine oil	Check		1 x replacement
Hydraulic oil	Check		1 x replacement
Hydraulic oil filter *			1 x replacement
Check hoses		(tighten up if needed)	
Air filter			1 x replacement
Fuel filter			1 x replacement

* Use only filters with by-pass

Hydraulic Settings

Check the working pressure by means of test equipment. The test equipment must comprise a pressure gauge, a flow meter and a valve for adjustment of pressure.

The pressure relief valve is placed on the right side of the valve block.

1. Connect the test equipment, start the powerpack and move the lever to "ON". Then close the valve - the pressure gauge must show 2175 p.s.i.(150 bar).

Adjust the pressure relief valve by loosening the lock nut and turning the adjustment screw in or out. "In" increases the pressure, and "out" decreases the pressure.

Retighten the lock nut after adjustment.

2. When the pressure relief valve has been adjusted correctly, the working pressure must be set at 1450 p.s.i.(100 bar) by means of the valve on the test equipment. At 1450 p.s.i.(100 bar), the oil flow should be 5.28 (8.0) g.p.m.(20 (30) l. p.m.) power on request.

On the powerpack with POR (Power on Request), the flow is adjusted by loosening the POR (Power on Request) cylinder in the bracket and pushing it to the left (higher flow) or to the right (lower flow).

On the powerpack with adjustable flow, the flow is regulated by adjusting the position of the throttle cable.

If correct pressure/oil flow cannot be achieved by following the above instructions, the powerpack must be re-adjusted. If the pressure/oil flow is then still incorrect, the pump is defect and must be replaced.

Oil Types

The Rhino® HPP13 Flex Power Pack uses standard hydraulic oil, i.e. all types of mineral oil and biodegradable oil, which comply with the following values:

Recommended viscosity	ISO 32 (20-40 cSt)
Permitted viscosity	ISO 15-1000 (15-1000 cSt)
Viscosity index	Min. 100
Temperature area	-4° to 158°F (-20° to +70° C)



General Warranty Conditions & Limitations on Liability

Rhino Tool Company, Inc. ("Rhino") warrants to the original purchaser, purchasing the Equipment in new condition, in original packaging from an authorized dealer that its Hydraulic Tool(s) will be free from defects in workmanship and materials (the "Limited Warranty"). The Limited Warranty shall survive for twelve (12) months with regard to all other components, excluding the Honda 13 HP engine and Vanguard 18 HP engine for which Rhino provides no warranty and for which the warranty is provided by American Honda Motor Co., Inc and by Briggs and Stratton Corporation respectively and the shall be the sole warranty applicable thereto. This Limited Warranty is non-transferable.

In the event of a warranty claim, the Hydraulic Tool(s) must be returned freight prepaid to Rhino or delivered in person to a Registered Rhino Servicing Dealer within the applicable warranty period with proof of original purchase provided. Rhino's obligation under this Limited Warranty is expressly limited to the repair or replacement, at Rhino's election, of such defective Hydraulic Tool(s), which is proved to be defective upon inspection by a Rhino-certified/authorized technician.

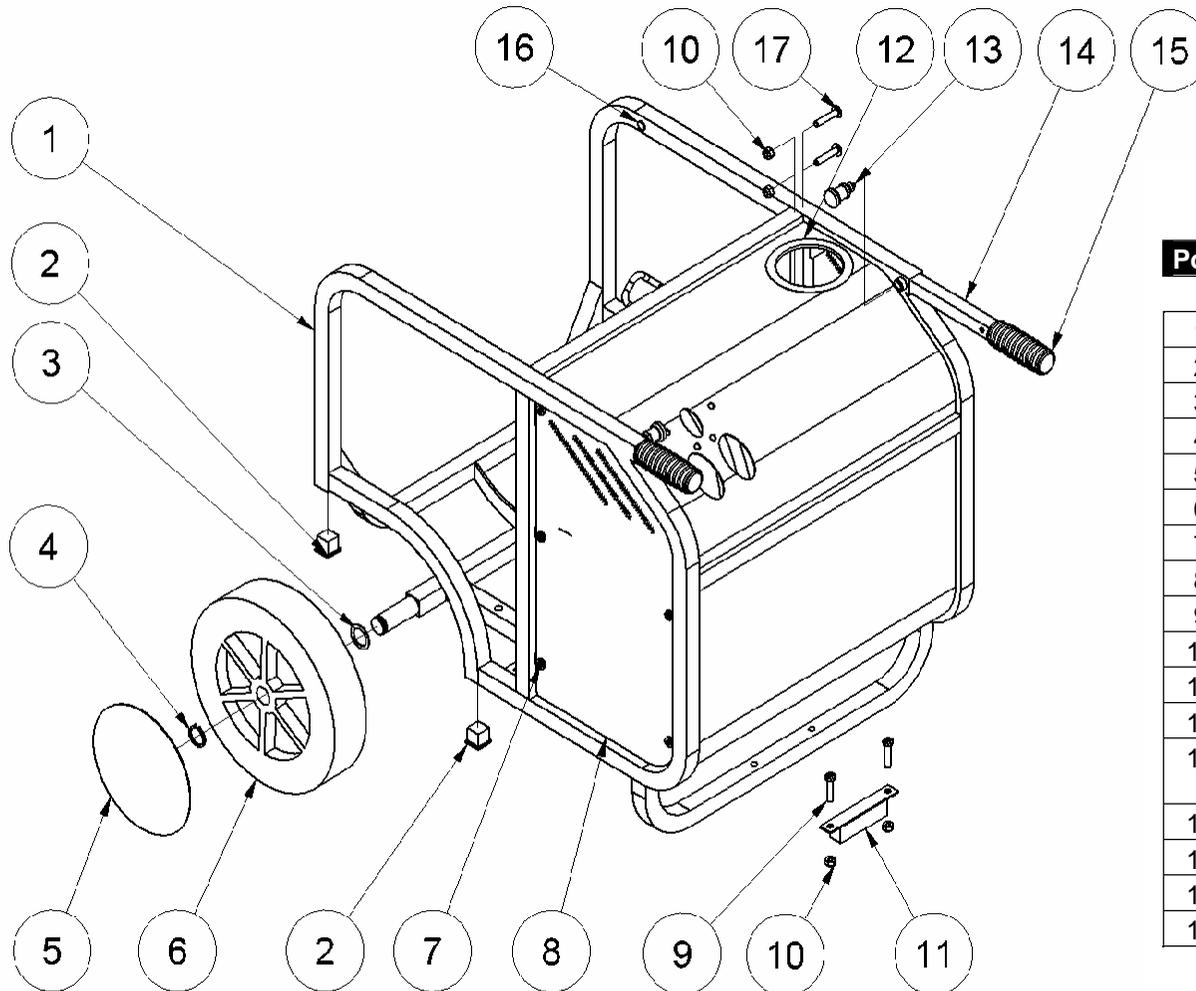
This Limited Warranty does not extend to a Hydraulic Tool(s) which has been subject to misuse, neglect, or accident, nor does it extend to any Hydraulic Tool(s) which has been repaired, altered, or serviced by unauthorized persons. This Limited Warranty does not cover any damage or adjustments required to any Hydraulic Tool(s) if such damage or adjustment is caused by the use of supplies, parts, or attachments not sold or approved by Rhino.

EXCEPT AS OTHERWISE PROVIDED HEREIN, RHINO DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES SHALL RHINO BE LIABLE FOR ANY LOSS OF BUSINESS, REVENUES, OR PROFIT OR OTHER INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS ARISING OUT OF ANY DEFECTS IN OR PERFORMANCE OF THE HYDRAULIC TOOL(S), HOWSOEVER CAUSED.

HPP13/HPP13 FLEX spare parts list

From serial No. 6109

Fig. 1

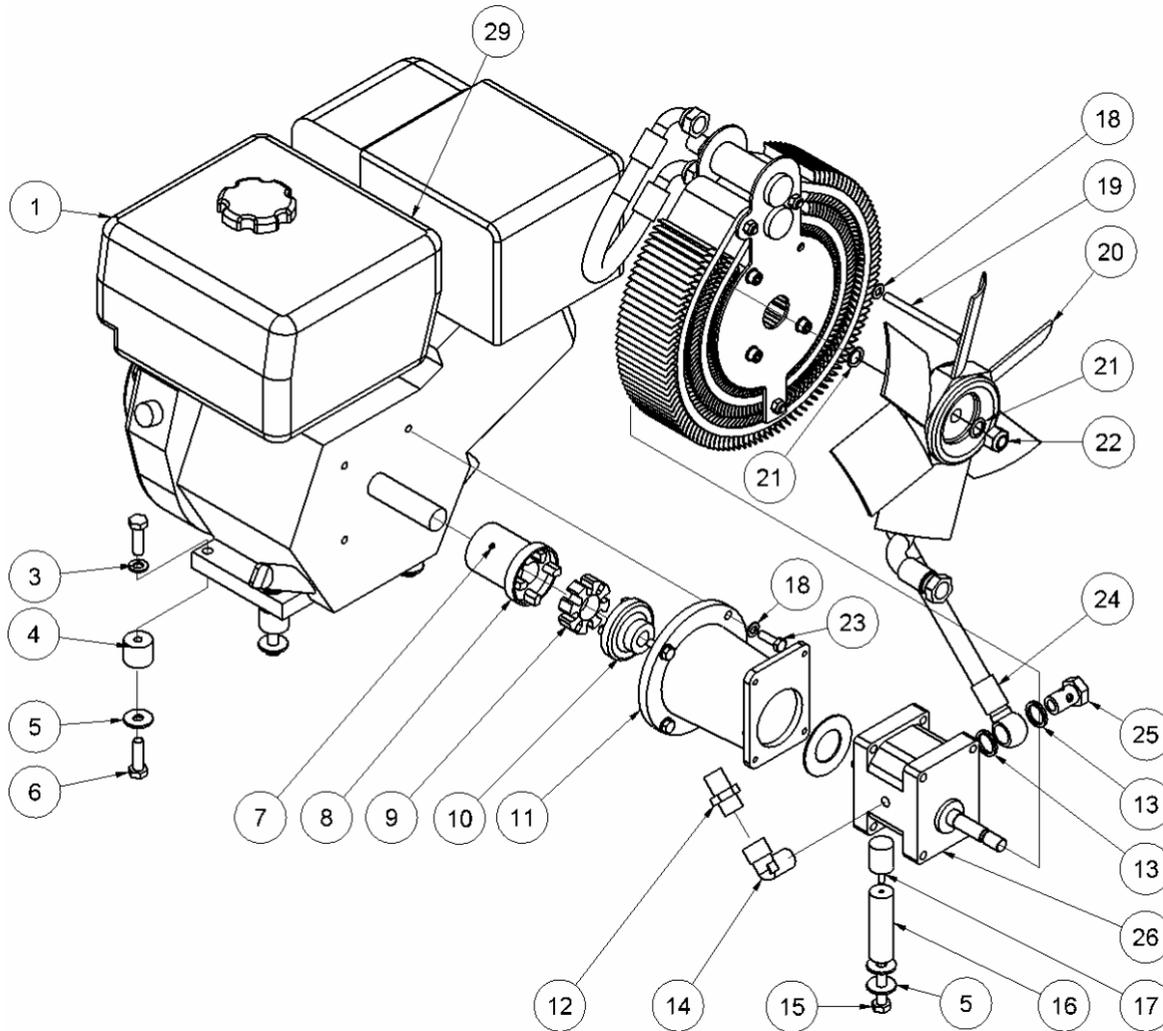


Pos.	Part No.	Description	Pcs.
1	8222360	Chassis complete HPP13/13 FLEX	1
2	7721125	Tube plug 25x25	4
3	7621100	Shim ring 25/35/1 mm	2
4	7621098	Retaining ring 25x2	2
5	7721140	Wheel cover	2
6	7721139	Wheel HPP13/18	2
7	7621042	Screw M8x10	10
8	8222361	Side cover set HPP13/13 FLEX	1
9	7621046	Screw M8x35	2
10	7621010	Lock nut M8	4
11	8721095	Rubber foot	1
12	9021563	Rubber band	1
13	7721197	Bolt <i>Loctite 243</i>	2
14	9022429	Pull-out handle w/rubber grip	2
15	-	Rubber grip (incl. In 9022429)	-
16	7722323	Plastic plug	4
17	7621795	Screw M8x40	2

HPP13/HPP13 FLEX spare parts list

From serial No. 6109

Fig. 2

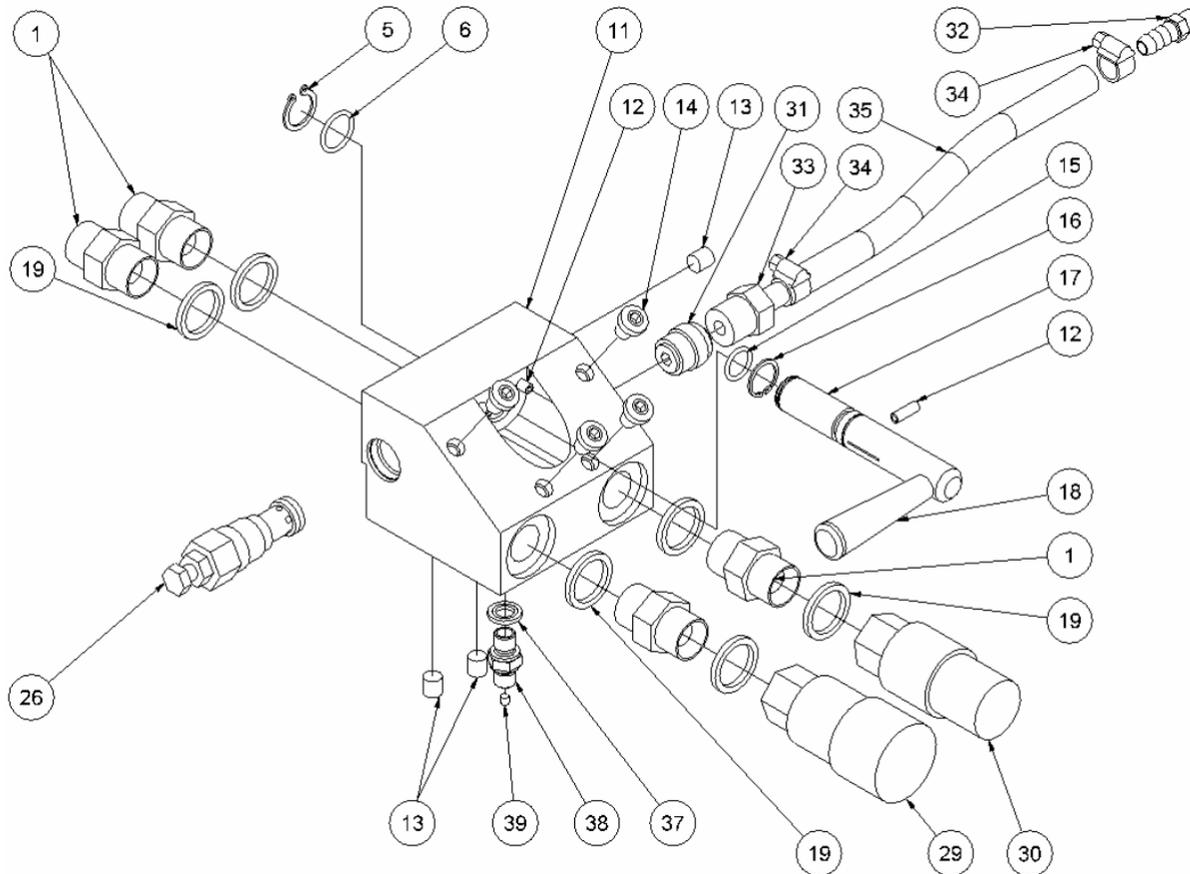


Pos.	Part No.	Description	Pcs.
1	7321144	Engine 13 HP Honda GX390	1
3	7621172	Washer M10	4
4	8722356	Rubber damper $\varnothing 30 \times 25$	4
5	7621034	Washer M10	6
6	7621163	Screw M10x35	8
7	7621032	Set screw M6x8 <i>Loctite 243 - 5 Nm</i>	1
8	7421066	Coupling engine part	1
9	7421083	Rubber coupling	1
10	7421067	Coupling pump <i>20 Nm</i>	1
11	7421068	Coupling housing	1
12	7421080	Hose fitting 3/4"x1/2" <i>Loctite 542</i>	1
13	7521072	Seal ring 1/2"	2
14	7421060	Angle nipple 1/2" <i>Loctite 542</i>	1
15	7621173	Screw M10x40 <i>Loctite 243</i>	1
16	8221174	Supporting leg	1
17	8721166	Rubber damper M6x18 <i>Loctite 638</i>	1
18	7621171	Washer M8	8
19	7621043	Screw M8x110 <i>Loctite 243 - 15 Nm</i>	4
20	8321561	Fan $\varnothing 280-6$	1
21	7621117	Spring washer M14	2
22	7621111	Nut M14x1.5 <i>40 Nm</i>	1
23	7621038	Screw 5/16" UNFx25 <i>Loctite 243 - 20 Nm</i>	4
24	8721084	Feed line w/banjo	1
25	7421062	Banjo bolt 1/2" <i>80 Nm</i>	1
26	7421077	Pump 8.3 ccm	1
-	9021667	Seal kit for hydraulic pump	1
27	9922133	Centering washer	1
29	8621137	Tension spring 0.90x9.10x23 <i>Only included in HPP13 with POR</i>	1
-	2121103	Cooler complete <i>See fig. 7</i>	1

HPP13/HPP13 FLEX spare parts list

From serial No. 6109

Fig. 3a HPP13 with POR

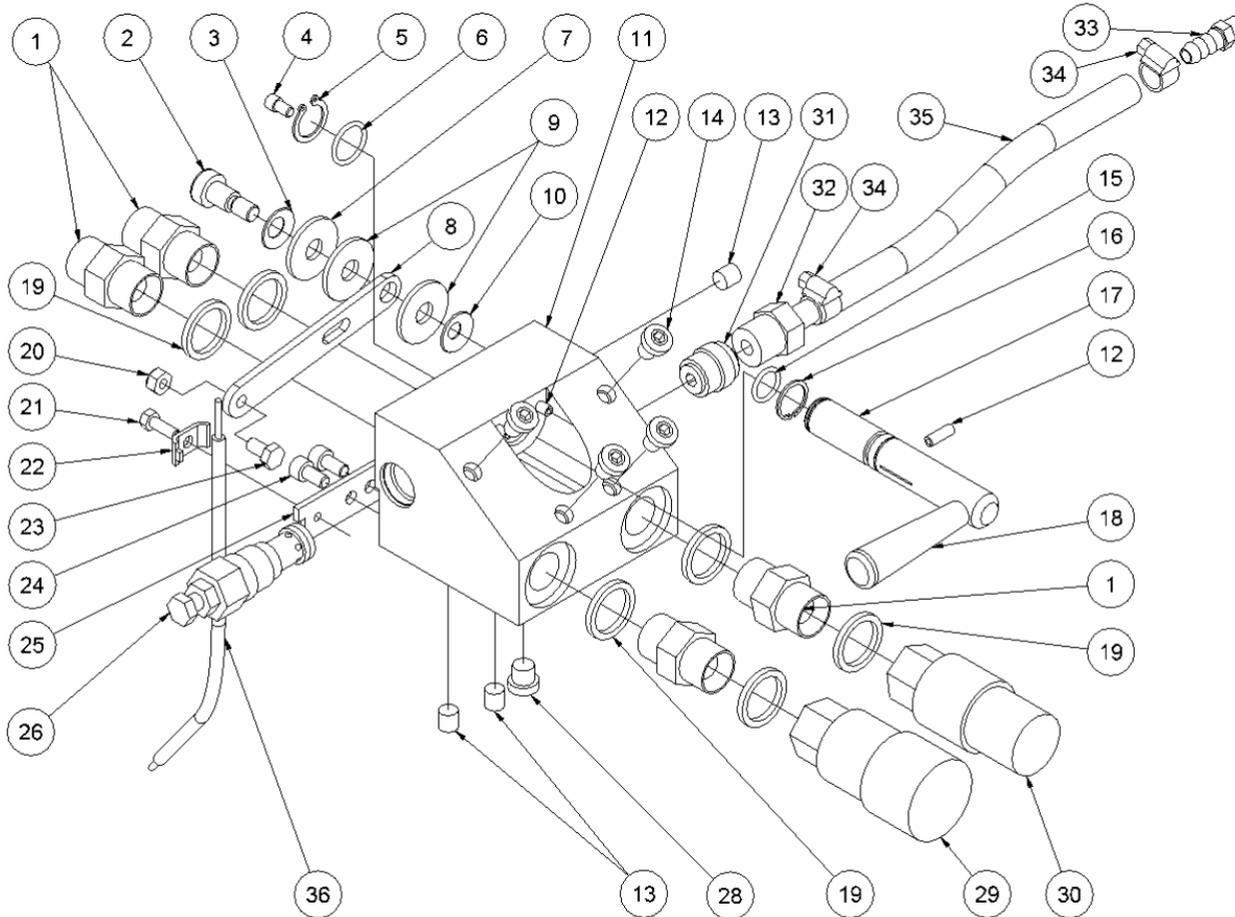


Pos.	Part No.	Description	Pcs.
1	7421063	Fitting 1/2"x1/2" BSP	4
5	7621606	Retaining ring A17	1
6	7521609	O-ring 17x2 mm	1
11	8221731	Valve block	1
12	7621050	Roll pin ø5x14	3
13	7621037	Pipe plug 1/8" <i>Loctite 542</i>	3
14	7621044	Screw M8x16	4
15	7521608	O-ring 13x2 mm	1
16	7621607	Retaining ring AV17	1
17	8221792	Spool	1
18	7721094	Lever ON/OFF <i>Loctite 243</i>	1
19	7521072	Seal ring 1/2"	6
26	7421587	Pressure relief valve <i>40 Nm</i>	1
29	7401142	Q.R. coupling 1/2" BSP female	1
30	7401141	Q.R. coupling 1/2" BSP male	1
31	7421733	Check valve	1
32	7421734	Hose fitting 3/8"x1/8" <i>Loctite 542</i>	1
33	7421735	Hose fitting 3/8"x1/2" <i>Loctite 542</i>	1
34	7421740	Hose clip 3/8"	2
35	9021738	Hose 3/8"	1
37	7521064	Seal ring 1/8"	1
38	8221024	Fitting 1/8"x1/8"	1
39	7421073	Fitting with reduction M4	1
-	2121741	Valve block complete HPP13	1

HPP13/HPP13 FLEX spare parts list

From serial No. 6109

Fig. 3b HPP13 FLEX

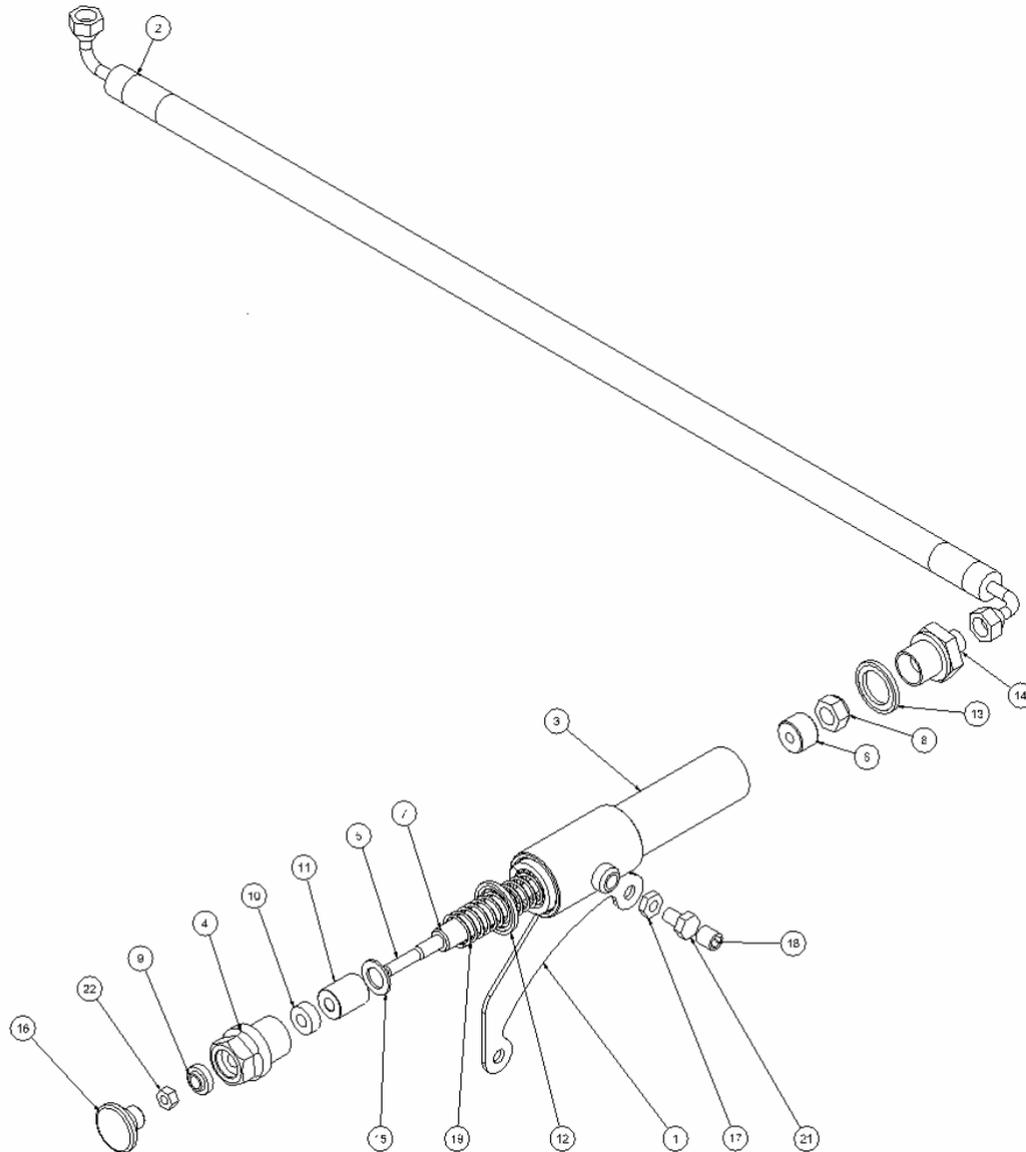


Pos.	Part No.	Description	Pcs.
1	7421063	Fitting 1/2"x1/2" BSP	4
2	7621647	Shoulder bolt \varnothing 10/M8x12 <i>Loctite 638 - 20 Nm</i>	1
3	7621648	Disc spring \varnothing 10.2/ \varnothing 20x0.8	1
4	8621658	Screw M5x8 <i>Loctite 638</i>	1
5	7621606	Retaining ring A17	1
6	7521609	O-ring 17x2 mm	1
7	7621809	Washer 10x30x2	1
8	8221650	Eccentric plate <i>Grease with copper paste</i>	1
9	7621649	Nylon washer \varnothing 10.5/30/2.5	2
10	7621651	Disc spring \varnothing 8.2/ \varnothing 20x1.0	1
11	8221731	Valve block	1
12	7621050	Roll pin \varnothing 5x14	3
13	7621037	Pipe plug 1/8" <i>Loctite 243</i>	3
14	7621044	Screw M8x16	4
15	7521608	O-ring 13x2 mm	1
16	7621607	Retaining ring AV17	1
17	8221792	Spool	1
18	7721094	Lever ON/OFF <i>Loctite 243</i>	1
19	7521072	Seal ring 1/2"	6
20	7621029	Nut M6	1
21	9921656	Screw M5	1
22	9921657	Cable clamp	1
23	8221652	Screw	1
24	7621653	Screw M6x12 <i>Loctite 243</i>	2
25	8221655	Cable plate	1
26	7421587	Pressure relief valve <i>40 Nm</i>	1
28	7621323	Threaded plug 1/8" w/seal	1
29	7401142	Q.R. coupling 1/2" BSP female	1
30	7401141	Q.R. coupling 1/2" BSP male	1
31	7421733	Check valve	1
32	7421735	Hose fitting 3/8"x1/2" <i>Loctite 542</i>	1
33	7421734	Hose fitting 3/8"x1/8"	1
34	7421740	Hose clip 3/8"	2
35	9021738	Hose 3/8"	1
36	9022064	Throttle cable complete	1
-	2121791	Valve block complete HPP13 FLEX	1

HPP13/HPP13 FLEX spare parts list

From serial No. 6109

Fig. 4 PORsystem

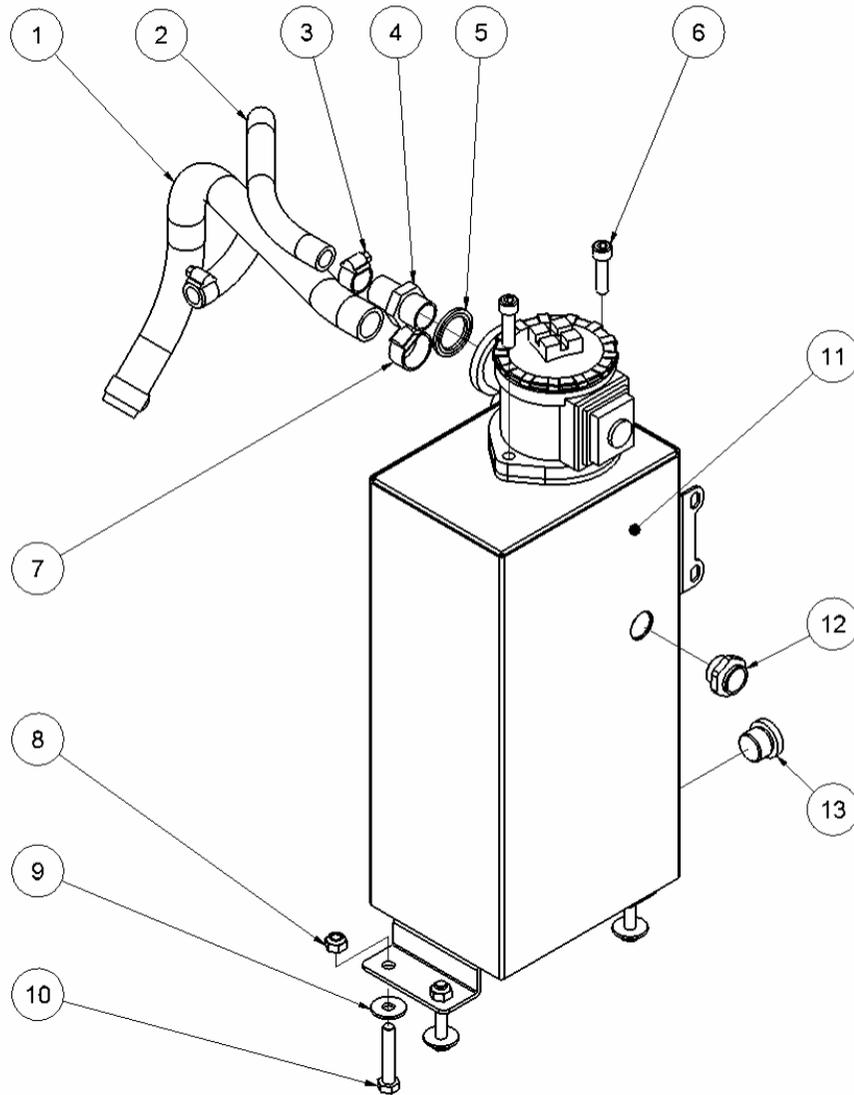


Pos.	Part No.	Description	Pcs.
1	8221023	POR bracket complete HPP13	1
2	8721110	POR hose HPP13	1
3	8221005	POR cylinder	1
4	8221006	Seal housing	1
5	8221007	Piston rod	1
6	8221008	Piston	1
7	8221009	Distance pipe	1
8	7621029	Nut M6	1
9	7521013	Seal	1
10	7521014	Seal	1
11	8221015	Guide element, bronze	1
12	7521018	Seal ring POR 18/24x2	1
13	7521017	Seal ring 3/8"	1
14	7421012	Fitting 3/8"x1/8"	1
15	7621021	Washer SS 10x16x1.2	1
16	8221131	POR head <i>Loctite 243</i>	1
17	7621028	Nut M6	1
18	7621031	Set screw M8x8	1
19	8621019	Compression spring	1
21	7621040	Screw M6x10	1
22	7621011	Nut M5	1
-	2121106	POR complete <i>Pos. 3-16, 19, 22, 23</i>	1

HPP13/HPP13 FLEX spare parts list

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Fig. 5

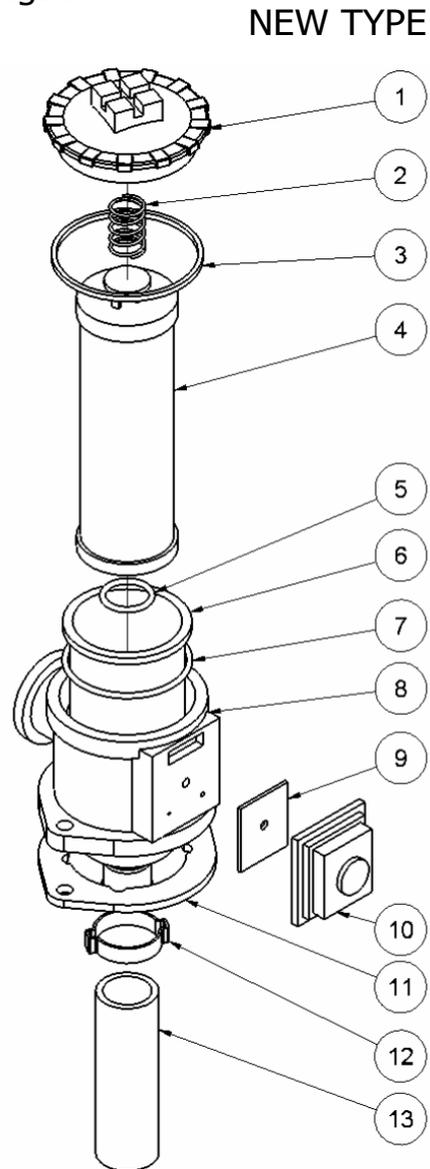


Pos.	Part No.	Description	Pcs.
1	8721071	3/4" hose	1
2	8721070	1/2" hose	1
3	7421081	Hose clip 1/2"	2
4	7421079	Hose fitting 1/2"x3/4"	1
5	7521118	Seal ring 3/4"	1
6	7621045	Screw M8x30 <i>Loctite 243</i>	2
7	7421082	Hose clip 3/4"	2
8	7621010	Lock nut M8	4
9	7621035	Washer M8	4
10	7621049	Screw M8x45	4
11	8222359	Hydraulic tank	1
12	7721099	Sight glass 1/2" w/seal	1
13	7621075	Threaded plug 1/2" w/seal	1

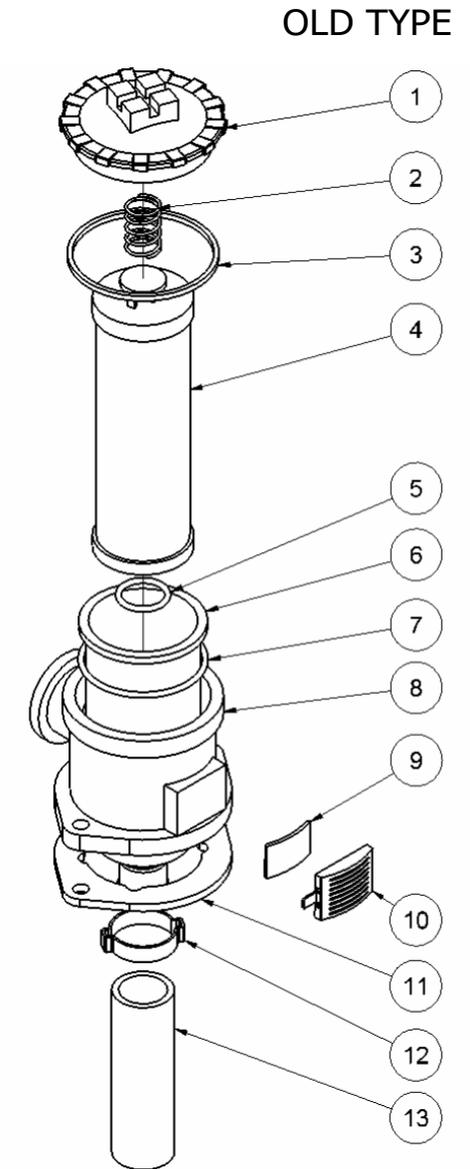
HPP13/HPP13 FLEX spare parts list

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Fig. 6



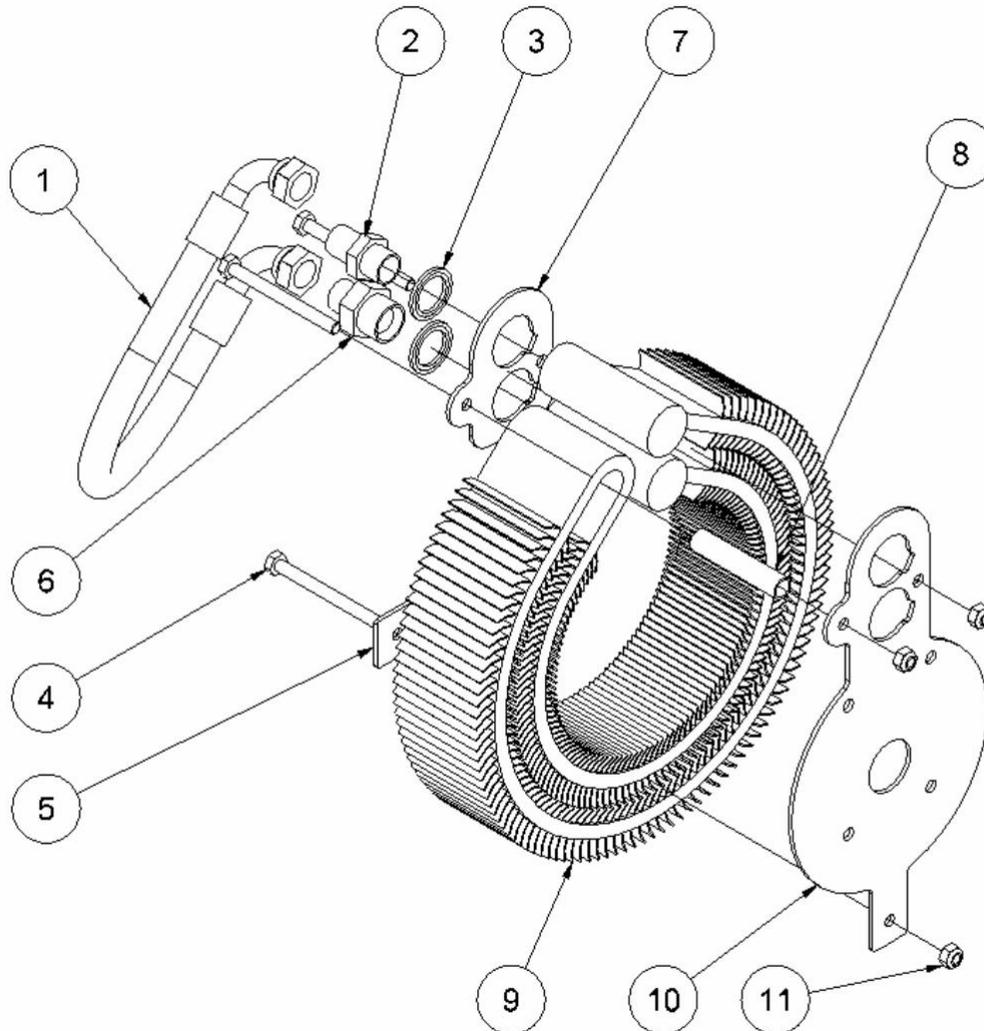
Pos.	Part No.	Description	Pcs.
1	9421189	Filter cover	1
2	9421193	Filter spring	1
3	9421502	Seal f/filter cover <i>Also included in 9421188</i>	1
4	9421190	Filter element	1
5	-	O-ring $\varnothing 3 \times 22$ <i>Included in 9421188</i>	1
6	-	Filter cup	1
7	-	O-ring $\varnothing 3 \times 60$ <i>Included in 9421188</i>	1
8	-	Filter housing	1
9	9421191	Ventilation filter <i>Old type</i>	1
9	9422041	Ventilation filter <i>New type</i>	1
10	9421192	Cover f/ventilation filter <i>Old type</i>	1
10	9422042	Cover f/ventilation filter <i>New type</i>	1
11	-	Seal <i>Included in 9421188</i>	1
12	7621789	Hose clamp	1
13	9022043	Filter hose	1
-	9421188	Seal kit filter <i>Pos. 3, 5, 7 and 11</i>	1
-	8421092	Filter complete <i>Pos. 1-13</i>	1



HPP13/HPP13 FLEX spare parts list

From serial No. 6109

Fig. 7



Pos.	Part No.	Description	Pcs.
1	8721630	Cooler pressure hose	1
2	7421079	Hose fitting 1/2"x3/4"	1
3	7521118	Seal ring 3/4"	2
4	7621047	Screw M8x90	3
5	8221121	Plate	1
6	7421582	Fitting 1/2"x3/4"	1
7	8221116	Plate	1
8	8221086	Distance pipe \varnothing 12x1.5	1
9	8321093	Cooler \varnothing 280-12	1
10	8221112	Bracket for cooler	1
11	7621010	Lock nut M8	3
-	2121103	Cooler complete <i>Pos. 4-5, 7-11</i>	1