

FPC-250 Hydraulic Cylinder-Pump Unit

Disassembly

1. Fasten the piston rod head in a vice, push the pedal upward (to open the relief valve) and pull the cylinder to full extension.
2. (2.1) Fix the square bottom piece of the unit in a vice, cylinder facing up. (2.2) Fit the special wrench tool on the stuffing box and tighten the screw.
3. Grab the handles of the tool and loosen the stuffing box by turning counter clockwise. Unscrew the stuffing box.
4. (4.1) Slowly pull up the piston rod and (4.2) piston from the cylinder.
5. Loosen the unit from the vice and empty the oil into a suitable container.
6. Refix the unit in the vice and lift up/remove the outer cylinder pipe (= oil reservoir). Remove the o-ring from the bottom groove and clean the groove and adjacent surfaces.
7. (7.1) Fix the unit in a vice, bottom up. Unscrew the two M8 bolts and (7.2) lift off the pedal housing.
8. (8.1) Unscrew and (8.2) remove the relief valve insert. Carefully turn pump housing upside down to get the valve spring and steel ball out.
9. Use a thin mandrel to push out the relief valve piston. Remove the o-rings on the valve tube and the valve insert.
10. (10.1) Unscrew the union nut over the pump piston, (10.2) remove piston and (10.3) disassemble. Remove the o-ring and back-up ring.
11. Turn the pump housing in the vice so the cylinder faces up. (11.1) Unscrew the suction valve (hex-headed screw) and (11.2) remove the spring and the steel ball. Remove the o-ring in the screw head.
12. Unscrew the pressure/venting valve (slot-headed screw). Remove the spring and the steel ball from the pump housing and the o-ring from the screw head.
13. Remove the pump housing from the vice and clean/rinse thoroughly. Clean all orifices with pressurized air.
14. Fix the piston rod in a vice (with soft/aluminium jaws). Be careful not to damage the surface of the rod when fastening. Remove all seals from the piston and unscrew the piston (counter clockwise) from the rod, preferably using a pin-wrench. **Note!** The piston is secured with Loctite. Remove the inside seals from the piston.
15. Pull the stuffing box off the rod and remove the outer o-ring and the rod seals inside.

Service

16. Make sure all parts are cleaned. Use pressurized air to clean all orifices and a flock-free cloth/towel to wipe all surfaces.
17. Fit new seals on all parts (cylinder piston, stuffing box, pump housing, pump piston, relief valve, suction valve and pressure valve). Refer to the partslist (overleaf) for correct placement of the various seals.

Reassembly

18. Apply a little oil on the piston rod and fit the stuffing box. Take care not to damage the stuffing box seals on the rod thread.
19. Apply a small amount of thread sealant (Loctite 2701 or similar) on the piston rod and fit the piston. Tighten well.
20. Insert new steel ball and spring (11.2) (if available) in the suction valve orifice and fit the lock screw. Repeat procedure for the pressure/venting valve (12).
21. Carefully insert the pump piston and spring (10.2) in the pump base and use the special pipe tool to push the piston down. Fit the union nut over the piston. Screw and tighten the nut.
22. Reassemble (9), insert (8.2) and tighten (8.1) the relief valve.
23. Refit the pedal housing (7.2, 7.1). Tighten the bolts well.
24. Turn the pump unit in the vice so that the cylinder tube faces upward. Insert the outer cylinder tube over the inner tube and push it down over the o-ringed flange on the pump housing. Take care not to damage the o-ring.
25. Pour approximately 400 cc of hydraulic oil (ISO VG 22) into the reservoir *between* the outer and inner cylinder tubes.
26. Insert the piston/rod/stuffing box assembly into the inner cylinder tube (4.2) and push the piston all down to the bottom of the cylinder tube. Screw (4.1) the stuffing box into the outer tube, fit (2.2) the special tool and (3) tighten well (26).
27. The cylinder-pump unit is now ready to be vented. Follow venting procedure overleaf.



Manufacturer

SSH Stainless a-s

Kuopiovej 18 • DK-5700 Svendborg • Denmark

Tel.: +45 62 21 85 31 • Fax: +45 6221 7840 • www.ssh-stainless.dk

FPC-250 Hydraulic Cylinder-Pump Unit

Venting

1. Mount the pump in a vice in vertical position and wait approximately 1 minute before further action.
2. Push the pedal upwards to full extension.
3. Keep the pedal in the extreme up position while pulling the piston rod up/out to its end position.

NOTE! Do not turn or leave the pump in horizontal position when the piston rod is fully extended.

Unscrew and remove the M6 venting screw on top of the piston rod head.

NOTE! Under the venting screw is a small (Ø4.8 mm) steel ball. Take care that the ball remains in the hole (i.e. is not blown or pulled out).

4. Slowly pump the pedal downward until bubble-free hydraulic oil exits the venting hole.

Reinsert the 4.8 mm steel ball and tighten the M6 vent screw.

Pump the piston rod down to full retraction position.

If necessary, repeat steps 2 to 4.

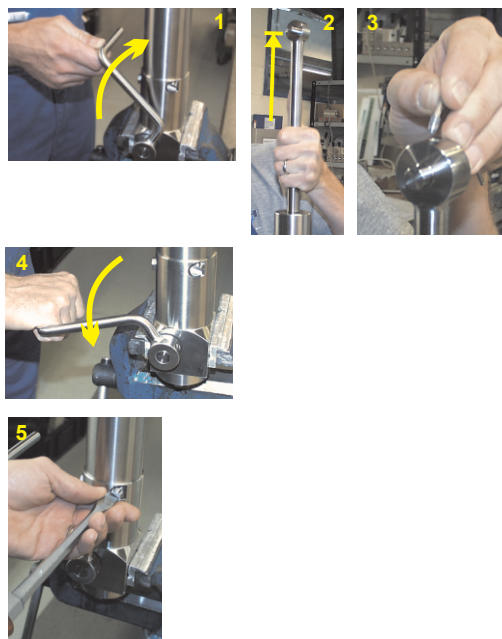
5. If the pumping is without any effect the venting procedure (2 to 4) was unsuccessful and air is still trapped in the pump. Remedy through following steps:

Loosen the screw (slotted head) on the right hand side of the pump 2-4 turns (counter-clockwise).

Slowly push the pedal downward until oil exits under the head of the screw; then re-tighten the screw.

Make a few pumping movements with the pedal - or continue pumping until the piston rod reaches the fully retracted position.

Repeat steps 2 to 4.



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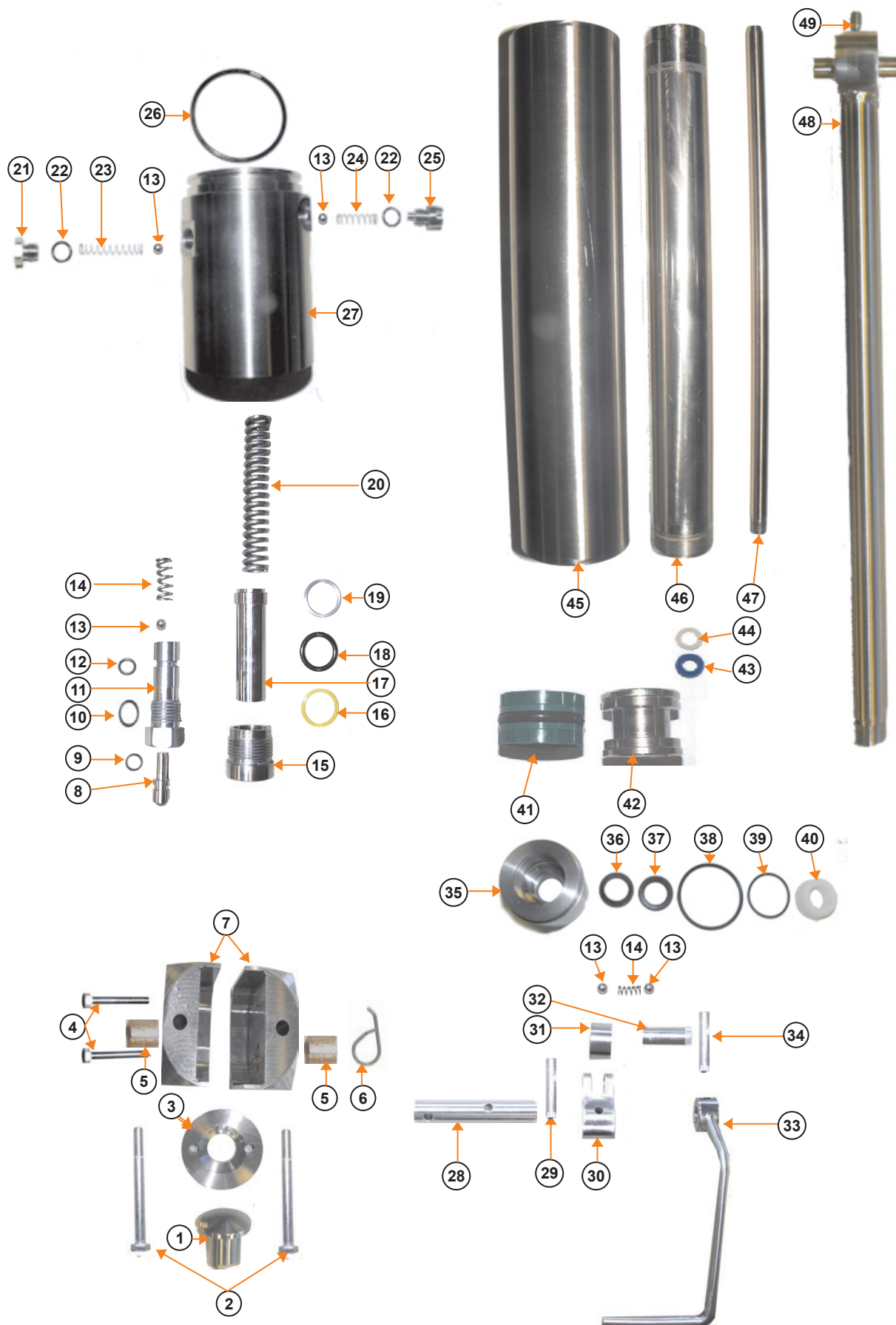
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SERVICE INSTRUCTION



FPC-250 Hydraulic Cylinder-Pump Unit - Parts overview



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FPC-250 Hydraulic Cylinder-Pump Unit - Partslist

Pos	Qty	Designation	Article no.	Pos.	Qty.	Designation	Article no.
1	1	Mushroom nut (bottom fixation)	27250001	26,38	1	O-ring, 50.00*3.00 N70	60300120
2	2	Bolts, M8*90	80148090	27	1	Pump housing	27250027
3	1	Bottom flange (bottom fixation)	27250003	28	1	Pumping shaft	27250028
4	2	Bolts, M5*40	80145040	29	1	Pin, Ø6*26 mm	27250029
5	2	Slide bearings, bronze	27250005	30	1	Cranking bracket	27250030
6	1	Hairpin spring	27042605	31	1	Roller	27250031
7	1	Pedal housing	27250007	32	1	Pedal shaft, Ø10.0/ø6.2*22.8	27250032
8	1	Release valve pin & ball	27260008	33	1	Pedal compl.	27250033
9	1	O-ring, 6.00*1.20 N70	60120014	34	1	Pin, Ø6*35 mm	27250034
10	1	O-ring, 10.00*1.00 N70	60100045	35	1	Stuffing box, cylinder	27250035
11	1	Release valve housing	27250011	36	1	Scraper, 20/28*4/7	62102028
12	1	O-ring, 8.00*1.50 N70	60150013	37	1	Rod seal, 20/28*6.3	66202028
13	5	Steel ball, Ø6 mm	40451018	39	1	O-ring, 35.00*2.00 N70	60200110
14	2	Spring, Ø6/ø4*17 mm	40451016	40	1	Bushing	27250040
15	1	Stuffing box, pump piston	27250015	41	1	Piston seal unit	66103222
16	1	Back-up ring, 16/20*1.3	61016201	42	1	Piston	27250042
17	1	Pump piston w. stop ring	27250017	43	1	Rod U-seal	66311016
18	1	O-ring, 15.08*2.62 N70	60262036	44	1	Back-up ring, POM, 15.4/10.5*4	27250044
19	1	Back-up ring, steel, 19.8/16.5*1.5	27250019	45	1	Outer cylinder tube/reservoir	27250046
20	1	Spring, Ø12/ø8*75 mm	27250056	46	1	Inner cylinder tube/cylinder	27250047
21	1	Plug, 1/8" BSP	27250021	47	1	Delivery pipe	27250048
22	2	O-ring, 9.00*1.50 N70	60150014	48	1	Piston rod	27250049
23	1	Spring, Ø5.5/ø4.7*35 mm	27031017	49	1	Set screw, M5, hex socket	80130608
24	1	Spring, Ø5.5/ø4.7*21 mm	27031016				
25	1	Plug, slotted, 1/8" BSP	27250025				
Spares & Repair Kits							
N/A	Reconditioning kit (seals, springs, etc.)		27250100	N/A	Repair tool kit 1 x Stuffing box wrench 1 x Pipe mandrel		27250101

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