

# P420HP / P422HP / P423HP / P425HP Repair Instructions

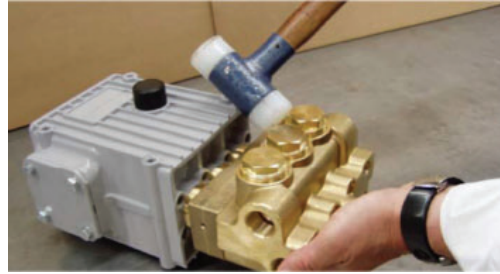
*Note: Always take time to lubricate all metal and nonmetal parts with a light film of oil before reassembly. This step will ensure proper fit, at the same time protecting the pump nonmetal parts (i.e., the elastomers) from cutting and scoring.*

## Changing the Seals



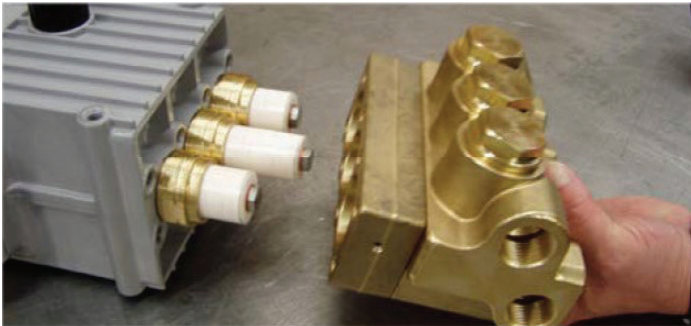
(Photo 1)

Remove the 8 socket screws (34) (photo 1) on the valve casing (26).



(Photo 2)

Using a plastic hammer, tap off the valve casing (photo 2).



(Photo 3)

The seal retainers (20) will remain either in the drive casing or in the seal casing (25) (photo 3).

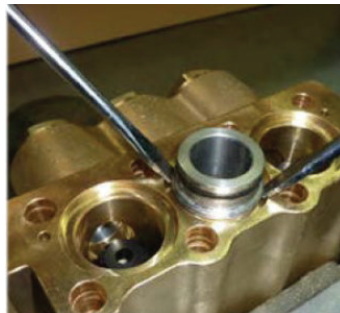


Carefully lever the seal casing off the valve casing by placing two screw drivers in the seal casing side notches. Be careful not to damage casing surfaces (photo 4).

(Photo 4)



The seal sleeves (21) will remain either in the seal casing (25) or in the valve casing (26) (photo 5).



(Photo 6)

Lever seal sleeves (21) out of the valve casing or respectively the seal casing (25) using two flat screwdrivers placed in the sleeve grooves (photos 6 and 7).



(Photo 7)

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(Photo 8)

Then lever seal retainers (20) out of the seal casing (25) with two flat screwdrivers if necessary (photo 8).

Examine o-rings (20A/21A/25B) and support rings (21B) and replace if necessary.

Cover new o-rings lightly with oil before fitting.



(Photo 9)

Remove drip return ring (22A) and support ring (24) from seal case (photo 9).



(Photo 10)

The high pressure seal (23) in the seal casing (25) can be pushed out carefully by hand (photo 10).



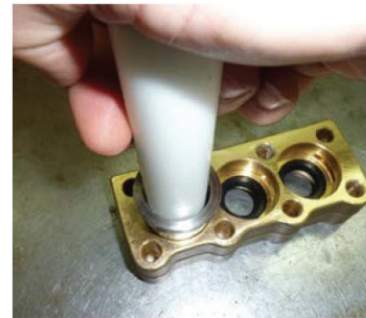
(Photo 11)

Drip return ring (23B) must be carefully levered out with a flat screwdriver (photo 11).



(Photo 16)

Next take support ring (24) out of seal retainer (applies only to P425HP and P420HP). Examine grooved rings (23 and 23B) and support rings (24) and replace if necessary (to fit see photo 16 and 17).



(Photo 17)

**IMPORTANT!** Pay careful attention not to damage the surfaces in the seal casing as these are sealing surfaces.

Check plunger surfaces (16). Damaged surfaces lead to accelerated seal wear. Deposits of all kinds must be removed from the plungers.

**IMPORTANT!** Plunger surfaces are not to be damaged. If there are lime deposits in the pump, care must be taken that the drip-return bores in parts (25 and 26) are clean and ensure trouble-free drip-return (photo 20).

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(Photo 13)

When fitting the drip-return seal, put in the support ring (42) first (only for P425HP and P420HP). Then make sure that the seal is fitted with its profile facing up (photo 13).



(Photo 14)

Then carefully press the greased seal into its recess in the seal retainer (20) (photo 14).

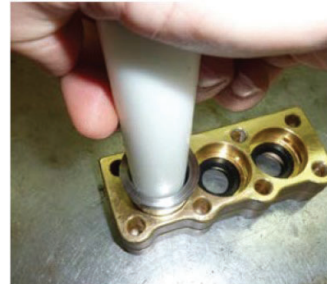


(Photo 15)

To fit the high pressure seal (23), put the seal sleeves (21) into the seal casing (25) (photo 15).



(Photo 16)



(Photo 17)

Place the seal casing onto the seal sleeves (21). Then put the greased seal (23) into the fitting sleeve with its **profile** facing **down** (photo 16) and press it into its recess in the seal casing (25) (photo 17).



(Photo 18)

Lever out the o-rings (25B) (photo 18) with a small screwdriver; examine them and replace if necessary (photo 19). Coat the o-rings with silicon grease and place them in their recesses in seal casing (25).



(Photo 19)



(Photo 20)

**IMPORTANT!** Make sure that the drip return bores in the seal casing and valve casing are free of lime and other deposits (photo 20).

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(Photo 21)

Carefully put the seal retainers (20) together with the greased drip return seal (22) and support ring (24) onto the plunger (photo 21).



(Photo 22)

Using a fitting sleeve, press the seal retainers (20) over the plunger and into their recess in the drive casing (photo 22 and 23). Then turn seal retainers (20) so that the Ø8 side bore faces down (photo 23).



(Photo 23)



(Photo 24)



(Photo 25)

Finally push drip return ring (22A) then support ring (24) onto the plungers (photo 24 and 25).

## Checking the Valves



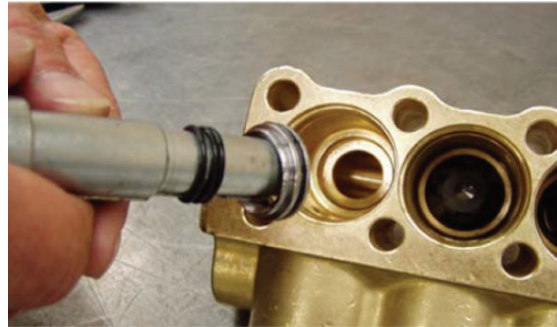
(Photo 26)

**To check suction valves:** The spring tension cap (30) of the suction valve can now be removed by carefully levering it off the valve seat (27) with a screwdriver (photo 26)

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(Photo 27)



(Photo 28)



(Photo 29)

Then pull out the exposed valve seat (27) (photo 27) using a size 4 (20-30mm) extractor tool (photo 28). Examine the individual suction valve parts (photo 27 and 28) and replace if necessary. Check o-rings (31) and replace if necessary.

When refitting, place the valve plate (28) on the valve seat (27); put the valve spring (29) onto the centring neck of the valve plate (photo 29).



(Photo 30)

Then place the spring tension cap (30) on top and press it down with the thumb until it clicks into the valve seat (photo 30).



(Photo 31)

Place the suction valve onto its recess in the valve casing (26), and press it down with the thumb until it clicks into position (photo 31).



(Photo 32)

To check discharge valves: Screw off plugs (32) (tool size 32) (photo 32).



(Photo 33)

Using a screwdriver, lever out the spring tension cap (30) (photo 33).



(Photo 34)

Remove the valve parts and take out the valve seat using a size 4 (20-30 mm) extractor tool (photo 34).



(Photo 35)

if necessary. When refitting, place valve plate (28) on valve seat (27); put the valve spring (29) onto the centring neck of the valve plate (photo 35).



(Photo 36)

Then place spring tension cap (30) on top and press it down with the thumb until it clicks into the valve seat (photo 36).

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(Photo 37)

Place the discharge valve onto its recess in the valve casing (26) and press it down with the thumb until it clicks into position (photo 37).



(Photo 38)

Screw in plugs (32) and tighten at 107 ft.-lbs. (145 Nm) (photo 38).



(Photo 39)

Now put seal casing (25) together with the mounted seal sleeves (21) onto the valve casing (26) (photo 39).



(Photo 40)

Then using a plastic hammer, tap the seal casing until it lies evenly on the valve casing (photo 40).

**IMPORTANT!** When refitting the seal casing, make sure that the greased o-rings (25B) are fitted and do not fall out during positioning (photo 18 and 20).



(Photo 41)

Push the valve casing together with the seal casing over the plungers and onto the drive (photo 41 and 42).



(Photo 42)



(Photo 43)

Screw in the hexagon socket screws (34) and tighten evenly and crosswise at 29.5 ft.-lbs. (40 Nm) (photo 43).