

# K3V/K5V Series Axial Piston Pumps Repairmanual

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## *Disassembly*

### 3.3.1

Before disassembling, spread rubber sheet, cloth or similar material over the overhaul workbench top so as to prevent parts from being damaged.

Remove dust, rust and other contaminants from surfaces of the pump with cleaning oil.

### 3.3.2

Remove the drain port plug (468) and drain off the hydraulic oil from the pump casing.

a.

Remove all plugs from both the front and rear pumps.

### 3.3.3

Remove the hexagon socket headed bolts and remove regulator from front pump.

a. Similarly, remove the regulator from rear pump.

3.3.4. Loosen hexagon socket head bolts (401) which tighten the swash plate support (251), pump casing (271) and valve block (312).

a.

If a gear pump or is fitted to the rear surface of the pump, then remove it before working on the pump unit.

b.

Repeat this sequence for both the front and rear pumps.

### 3.3.5.

Place pump horizontally on the workbench with its regulator mounting surface face down.

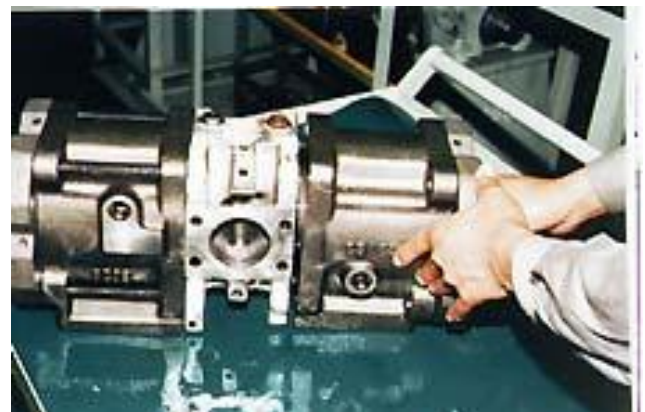
Remove the hexagon socket head bolts (401) and separate the pump casing (271) from it's valve block (312).

a

Before lowering this surface onto the bench, spread the rubber sheet on to the work bench so as to prevent this surface from being damaged.

b.

Repeat this sequence for both the rear and front pumps.



## 3.3.6.

Lift the cylinder (141) out of the pump casing (271) straight over the drive shaft (111). Additionally extract the pistons (151), set plate (153), spherical bush (156) and cylinder springs (157) simultaneously.

a.

Take care not to damage any of the sliding surfaces of the cylinder, spherical bush, shoes, swash plate, etc.

b.

Repeat this sequence for both the rear and front pumps.

## 3.3.7.

Remove the hexagon socket head bolts (406) and remove the seal cover (Front) (261).

a.

By fitting a bolt into the "pulling-out" tapped hole of the seal cover, will easily remove it.

b.

Take care not to damage the oil shaft seal installed in the cover.

Similarly for the rear pump, remove the hexagon socket headed bolts on rear pump, and remove it's seal cover (Rear) (261) and rear cover (262).

IF a gear pump is fitted, remove this first.

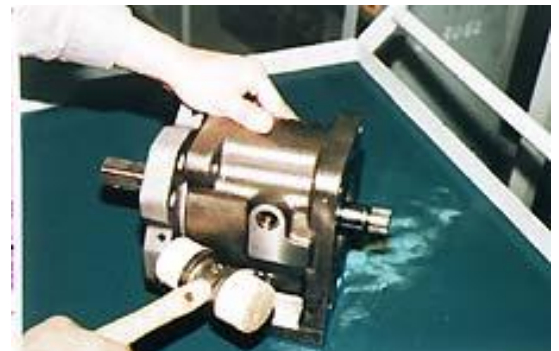
3.3.8. By tapping lightly on the flange section of the swash plate support (251) where it interfaces with the pump casing side, separate the swash plate support from it's pump casing.

a.

Remove the drive shaft simultaneously with it's swash plate support.

b.

Repeat this sequence for both the rear and front pumps.



### 3.3.9.

Remove the shoe plate (211) and swash plate (212) from the pump casing (271).

a.

Repeat this sequence for both the rear and front pumps.

### 3.3.10. Tapping lightly on the external shaft

end of drive shafts (111, 113) with plastic hammer, extract each drive shaft from it's swash plate support. If required, extract the rolling bearing (123), bearing spacer (127), and snap ring (824) from the drive shaft (111,113).

a.

Repeat this sequence for both the rear and front pumps.

b.

Don't reuse the bearings that you have extracted.

### 3.3.11.

Remove the valve plates (313, 314) from the valve block (312).

a.

These may be removed during sequence 5.

If required, execute sequence 12 and 13.

### 3.3.12.

Remove the stopper (L)(534), stopper (S)(535), servo piston (532) and tilting pin (531) from pump casing (271).

a.

In removing the tilting pin, use a protection shield to prevent the pin head from being damaged.

b.

Loctite has been applied in production to the fitting areas of the tilting pin and servo piston, so care must be taken to prevent servo piston damage.



3.3.13. Remove the needle bearing (124) and spline coupling (114) from the valve block (312).

a.  
Don't remove the needle bearing unless it definitely requires replacement.

b.  
Don't loosen the hexagon stroke adjustment nuts of valve block or swash plate support. If loosened, the flow setting will be changed



### 3.4. Assembly Procedure

3.4.1.

Fit the servo piston (532), tilting pin (531), stopper (L)(534) and stopper (S)(535) to the pump casing (271).

a.  
In tightening the servo piston and tilting pin to the pump casing, use a protector to prevent the tilting pin head and feedback pin from being damaged.

b.  
Apply loctite (medium) to the threaded section of tilting pin and servo piston and allow to set.

3.4.2.

Fit the swash plate support (251) to it's pump casing (271), by tapping the former lightly with a hammer.

a.  
Repeat this sequence for both the rear and front pumps.

3.4.3.

Place pump casing with its regulator-fitting surface down on the bench. Fit the tilting bush of the swash plate to it's tilting pin (531), and then fit the swash plate (212) to it's swash plate support (251) correctly. Simultaneously fit the O-ring.



a.  
Confirm with ones fingers that the swash plate is bedded down correctly by ensuring that it could be removed smoothly.

b.  
Apply grease to the sliding sections of the swash plate and swash plate support, and then smoothly fit the drive shaft through it.

c.  
Repeat this sequence for both the rear and front pumps.  
In the case that one has disassembled the roller bearings then sequence 4 and 5 should be followed.



3.4.4.  
Install the bearing spacer (127) on to the drive shaft (111,113), and then next install the roller bearing (123) to this drive shaft.

3.4.5  
Install the snap ring (824) onto the drive shaft (111,113).

3.4.6.  
Fit the drive shaft assembly (complete with bearing (123), bearing spacer (127) and snap ring (824)) to it's swash plate support (251).

a.  
Do not tap the drive shaft with a hammer as damage may occur.

b.  
Assemble the shaft assembly into it's support by tapping the outer race of bearing lightly with plastic hammer. Fit them fully, using steel bar or so on.

c.  
Repeat this sequence for both the rear and front pumps.  
In the case that an oil seal has been replaced follow sequence



3.4.7.

3.4.7.

Install the new oil seal (774) into the seal cover (F)(261) and seal cover (R)(263).

3.4.8.

Assemble the front seal cover (F)(261) into the pump casing (271) and fix it with the hexagon socket head bolts (406). Similarly, assemble the rear seal cover (R)(261) or rear cover (263) into pump casing (271) and fix it with hexagon socket head bolts.



a.

Apply grease lightly to the oil seal within the seal cover.

b.

Assemble them carefully, taking full care not to damage the oil seal.

3.4.9. Install the cylinder springs (157), spacer (158) and spherical bush (156) onto the cylinder (141). Fit the pistons (151) and shoe (152) through the set plate (153).

a.

Repeat this sequence for both the rear and front pumps.



3.4.10

Assemble the piston shoe (151,152) and set plate (153) group onto and into the cylinder bores of the cylinder (141), springs (157), spherical bush (156) and spacer (158) group.

a.

Repeat this sequence for both the rear and front pump



3.4.11.

Fit the splined phases of the retainer and cylinder sub-assembly into the pump casing.



a.  
Repeat this sequence for both the rear and front pumps.

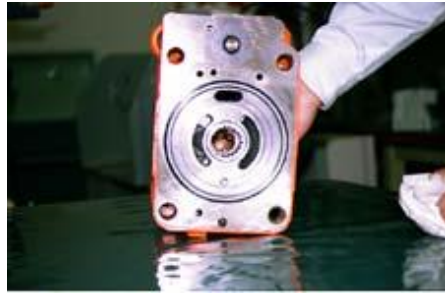
b.  
If the needle bearing has been replaced then follow sequence 12.  
3.3.12 2

Install the needle bearing (124) and splined coupling (114) into the valve block (312).

3.4.13.

Fit the valve plate (313) on to the valve block (312), utilising the location pin.

a.  
Take care not to mistake the suction and delivery directions of the valve plate.



3.4.14.

Fit the valve block (312) to its pump casing (271), and tighten the hexagon socket headed bolts (401). Simultaneously install the O-Ring.

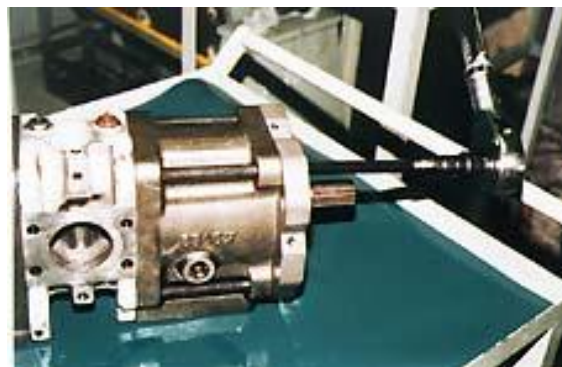
a.  
Repeat this sequence for both the rear and front pumps.

b.  
It is easiest to assemble the rear pump first.

c.  
Take care not to mistake the Valve plate / Valve Block direction of rotation.

NOTE: For clockwise rotation (viewed from input shaft side)  
Fit the valve block with the regulator up and with the delivery flange left, when viewed from shaft end.

NOTE: For counterclockwise rotation (viewed from input shaft side)  
Fit the valve block with the regulator up and with the delivery flange on the right side, when viewed from the shaft end.



3.4.15.

Place the feedback pin of tilting pin into the feedback lever of regulator. Then fit the regulator and tighten the hexagon socket head bolts.

a.

Take care not to mistake the regulator of the front pump for that of the rear pump.

3.4.15.

Fit the drain port plug (468).

a.

Repeat this sequence for both the rear and front pumps.

This concludes the reassembly procedure.

