

## Kärcher Improves Pumps with U-Seals



**Pumps affected:** See attached list.

Starting in September 2008, we began to introduce a product improvement to our pumps. These pumps will come with a new “U” seal designed packing assembly. The new design will give better performance and longer life on the seals. The new seal is “U” shaped compared to the “V” shaped seal we’ve used for years and can handle higher temperatures up to 185°F and spreads the load better against the seal and manifold.

Engineering has done extensive testing in our factories in Italy, Germany and Camas and also out in the field. We tested the “U” seals against our existing “V” seals and another major pump manufacturer, for many hours, over several months. Our new “U” seal came out on top and outlasted all other seals. We’ve sent multiple “U” seal kits out to dealers to install in their hardest and toughest customer’s machines and the new “U” seals have dramatically improved those customer’s performance and seal life.

The new “U” seal pumps will have the same pump part number as before and will have a “U-Seal” label on the pump to identify that the pump is equipped with the U-seals. The pump identification label will also have a “.1” added on the end of the pump model number on the pumps that have “U” seals.

## Tech Tip November 2008

Pumps with “V” seals will accept a “U” seal packing assembly complete as replacements but not a “seal kit only”. “V” seal only kits will continue to be available for a short time as we advise our customers to convert to “U Seal packing assemblies complete.

### Questions and Answers:

**Q: What pumps are affected?**

A: See attached list.

**Q: When will this change happen?**

A: Began September, 2008.

**Q: What is different about these seals?**

A: They are “U” shaped, with a different intermediate ring and pressure ring to give a better performing, longer lasting seal than the “V” seal design.

**Q: Do I have to stock both “U” and “V” seals now?**

A: You can, but we recommend you stock just the “U” seal packing assembly complete and when you do a repair on a “V” seal pump you replace the “V” seal packing assembly complete with the new “U” seal packing assembly complete. We think the customer will appreciate the added benefit of having the longer lasting seal.

**Q: What is the part number of the new “U” seal assembly and are they in stock?**

A: The “U” seal packing assembly complete kit part numbers are listed below.

**Q: Do the seal packing assemblies complete install the same as before?**

A: Yes, with some slight changes to the individual pieces they install the same. Please see the attached U-Seal Packing Assembly Breakdown, Pump Breakdown and Pump Servicing Instructions to assist you in the assembly.

**Q: Can I return my existing inventory?**

A: Yes you can return your "V" seal kits and "V" seal packing assemblies complete for full credit. You pay return freight. Parts and packaging must be in brand new condition. See photo.



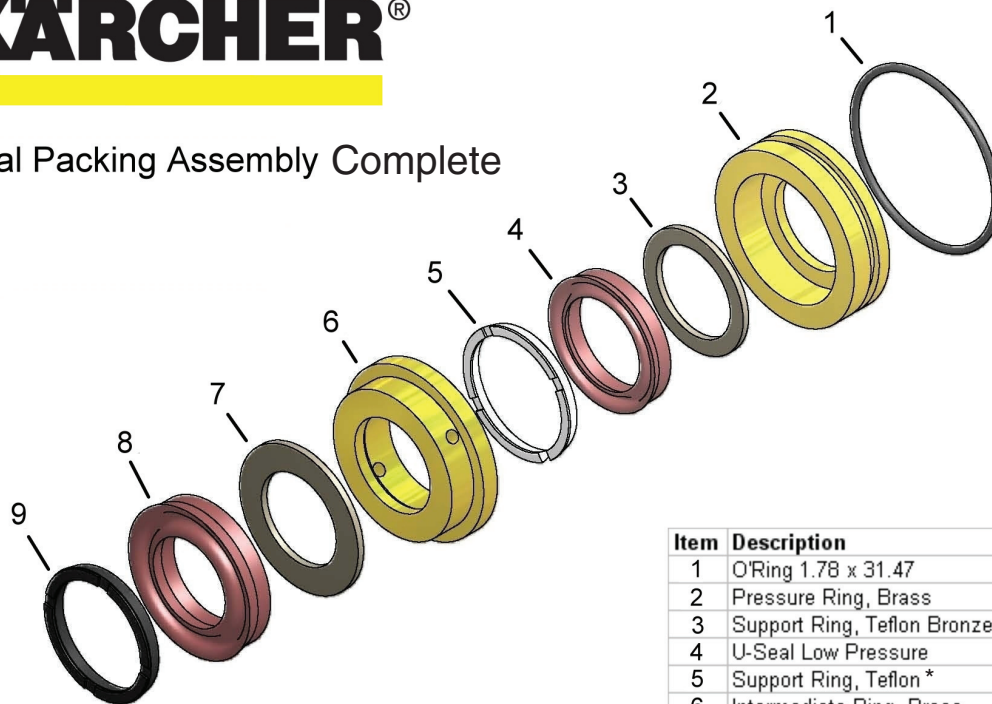
Part # 98026180

Example of "Brand New Condition". No tears, wrinkles, bends, tape, oil marks on packaging. Must be complete and ready to sell "as new".

Base Pump #	PUMP SEAL REFERENCE		U-Seal Kit Part No.	U-Seal Packing Kit Complete Part No.
	Description	MODEL		
87152290	PUMP, KÄRCHER KH5050R, 5 @ 5000, 1650RPM	KH5050R	98044920	98044930
87152280	PUMP, KÄRCHER KH5050L, 5 @ 5000, 1650RPM	KH5050L		
87152140	PUMP, KÄRCHER KD3030R.1, 3 @ 3000, 1650 RPM	KD3030R.1	87253540	87253550
87152330	PUMP, KÄRCHER KG2530G.1, 2.5 @ 3000, 3400 RPM	KG2530G.1		
87152340	PUMP, KÄRCHER KG3030G.1, 3 @ 3000, 3400 RPM	KG3030G.1		
87152350	PUMP, KÄRCHER KG3035G1.1, 3 @ 3500, 3400 RPM	KG3035G1.1		
89049000	PUMP, KÄRCHER KG3535G1.1, 3.5 @ 3500, 3400 RPM	KG3535G1.1		
89049010	PUMP, KÄRCHER KG4030G1.1, 4 @ 3000, 3400 RPM	KG4030G1.1		
87152100	PUMP, KÄRCHER KE2825F.1, 2.8 @ 2500, 3450 RPM	KE2825F.1		
87152120	PUMP, KÄRCHER KE3525F.1, 3.5 @ 2500, 3450 RPM	KE3525F.1		
89048550	PUMP, KÄRCHER KD3025R.1, 3 @ 2500, 1200 PRM	KD3025R.1	87253560	87253570
87152130	PUMP, KÄRCHER KD4020R.1, 4 @ 2000, 1550 RPM	KD4020R.1		
87152090	PUMP, KÄRCHER KE2020S.1, 2.1 @ 2000, 1725 RPM	KE2020S.1	87253580	87253590
87152110	PUMP, KÄRCHER KE2825S.1, 2.8 @ 2500, 1725 RPM	KE2825S.1		
89048620	PUMP, KÄRCHER KM3540R.2, 3.5 @ 4000, 1850 RPM	KM3540R.1		
89049030	PUMP KÄRCHER KS3040G.2, 3 @ 4000, 3400 RPM	KS3040G.2		
87152360	PUMP, KÄRCHER KS3540G.2, 3.5 @ 4000, 3400 RPM	KS3540G.2		
89049060	PUMP, KÄRCHER KS4040G.2, 4 @ 4000, 3400 RPM	KS4040G.2		
87152370	PUMP, KÄRCHER KS5030G.2, 5 @ 3000, 3400 RPM	KS5030G.2		
87152170	PUMP, KÄRCHER KM4035R.2, 4.8 @ 3500, 1500 RPM	KM4035R.2	87253600	87253610
87152180	PUMP, KÄRCHER KM4035L.2, .2 @ 3500, 1300 RPM	KM4035L.2		
87152150	PUMP, KÄRCHER KM4030R.2, 4 @ 3000, 1000 RPM	KM4030R.2	87253620	87253630
89048600	PUMP, KÄRCHER KM4030L.1, 4 @ 3000, 1000 RPM	KM4030L.2		
89048650	PUMP, KÄRCHER KM5030R.1, 5.1 @ 3000, 1550 RPM	KM5030R.2		
87152160	PUMP, KÄRCHER KM5030L.1, 5.1 @ 3000, 1550 RPM	KM5030L.2	87253640	87253650
87152300	PUMP, KÄRCHER KX8030R.1, 8 @ 3000, 1460 RPM	KX8030R.1		
89048900	PUMP, KÄRCHER KX8030L.1, 8 @ 3000, 1460 RPM	KX8030L.1		
87152310	PUMP, KÄRCHER KX1025L.1, 10.6 @ 2500, 1725 RPM	KX1025L.1		
87152320	PUMP, KÄRCHER KX1025R.1, 10.6 @ 2500, 1725 RPM	KX1025R.1		
87152730	PUMP, KÄRCHER KT4035R.1, 4.2 @ 4000, 1325 RPM	KT4035R.1	89164880	89163220
87152740	PUMP, KÄRCHER KT4035L.1, 4.2 @ 4000, 1325 RPM	KT4035L.1		
89049500	PUMP, KÄRCHER KT4040R.1, 4 @ 4000, 1030 RPM	KT4040R.1		
89049570	PUMP, KÄRCHER KT6035R.1, 6 @ 3500, 1540 RPM	KT6035R.1		
87152770	PUMP, KÄRCHER KT6035L.1, 6 @ 3500, 1540 RPM	KT6035L.1		
89049510	PUMP, KÄRCHER KT4040L.1, 4 @ 4000, 1030 RPM	KT4040L.1		
87152750	PUMP, KÄRCHER KT5030R.1, 5 @ 3000, 1060 RPM	KT5030R.1	89164870	89163230
89049530	PUMP, KÄRCHER KT5030L.1, 5 @ 3000, 1060 RPM	KT5030L.1		



## U-Seal Packing Assembly Complete



Item	Description	Qty
1	O'Ring 1.78 x 31.47	3
2	Pressure Ring, Brass	3
3	Support Ring, Teflon Bronze	3
4	U-Seal Low Pressure	3
5	Support Ring, Teflon *	3
6	Intermediate Ring, Brass	3
7	Support Ring, Teflon Bronze	3
8	U-Seal High Pressure	3
9	Support Ring, Delron	3

\* Not on 15mm pumps



V-Seal



U-Seal





## V-Seal Packing Assembly Complete



## U-Seal Packing Assembly Complete



# Servicing Kärcher Pumps

## Kärcher Valve Assemblies

(Figure 1)

1. Make sure pump is anchored in place; if possible leave in machine.
2. Remove valve plugs.
3. Examine valve plug o-rings and replace if there is any evidence of cuts, abrasions, distortion or dryness.
4. Remove valve assembly (retainer, spring valve, valve seat) from valve cavity.
5. Remove o-ring from valve cavity.
6. Only one valve kit is necessary to repair all the valves in the pump. The kit includes new o-rings, valve seat, valve, spring and retainer, all pre-assembled.
7. Install new o-ring in valve cavity. Make sure the old o-ring was removed and only the new o-ring is in place.
8. Insert assembly into valve cavity. Make sure that the valve is centered.
9. Replace valve plug and torque to specifications.

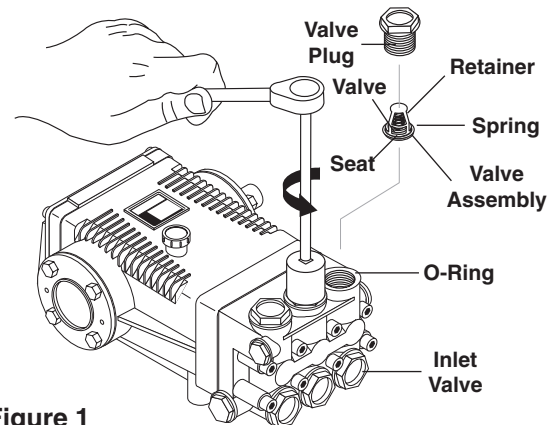


Figure 1

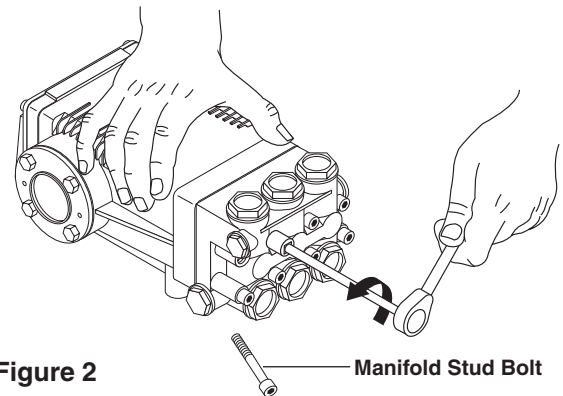


Figure 2

## Removing Manifold Head:

1. Remove the manifold stud bolts (Figure 2). Make sure bolt washers are in place.
2. Separate head from crankcase. (Figures 3 & 4). First rotate the crankshaft to separate the manifold head from the crankcase. Use two screwdrivers, one on each side, to help separate. Be careful not to scratch the manifold. It may be necessary to tap the head lightly with a mallet.
3. The packing assembly complete may come off with the head. Slide off the packing assembly and examine plungers. Plunger surfaces should be smooth and free from cracks, scoring or pitting; if not, replace. (Figure 4)

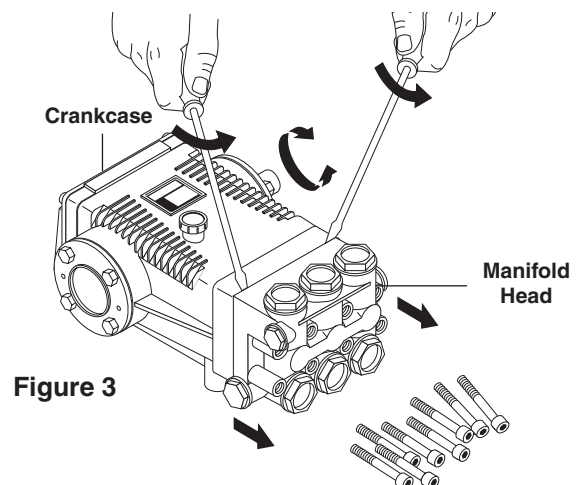
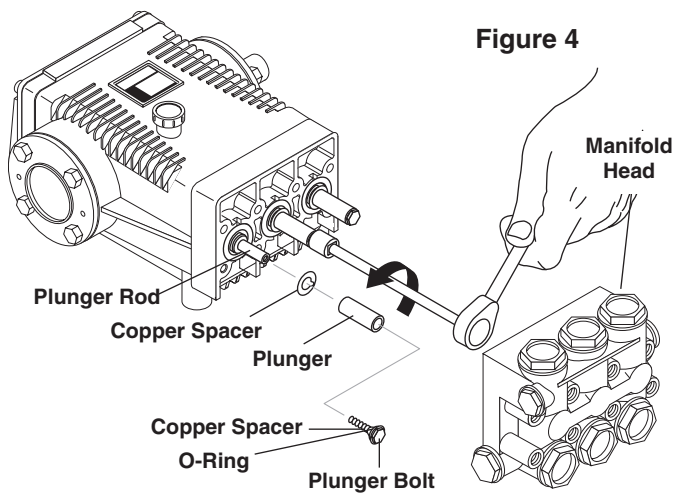


Figure 3

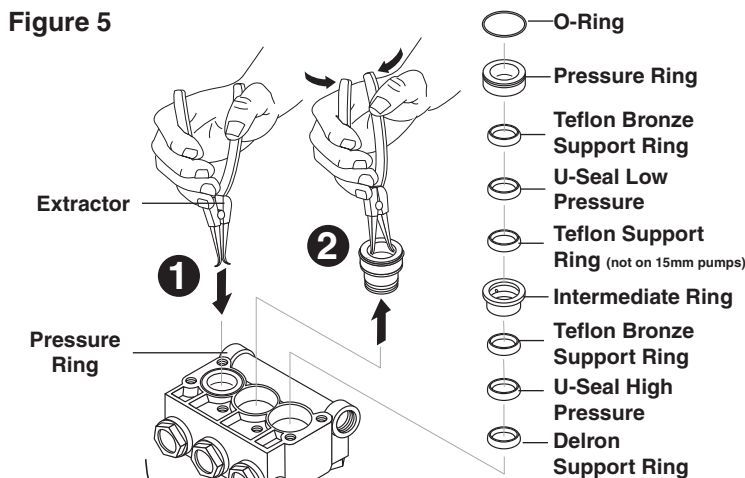


## Replacing Plungers:

(Figure 4)

1. Remove stainless steel plunger bolt and plunger from plunger rod.
  2. Separate plunger bolt from plunger.
  3. Install new o-ring, copper spacer, and teflon ring on plunger bolt.
- NOTE:** A film of grease on the outside of the o-rings insures a better installation.
4. Carefully press plunger bolt into plunger.
  5. Slide new plunger over the plunger rod and torque to specifications.

Figure 5



## Replacing Packings:

**NOTE:** Kärcher's packing extractor and insertion tool will help make this job easier. See attached breakdown of the Kärcher Pump Tool Kit.

1. Remove manifold from crankcase. (Figures 2 & 3). Many times the packing assembly complete will stay on the plunger. If not, use your thumb, finger or extractor to remove packing assembly from pump manifold cavity.
2. Insert extractor through intermediate ring holes. Extract entire packing. (Figure 5). The U-seal high pressure packing and Delron support ring may not come out with the extractor and may have to be removed by hand. Keep track of the order of the components when you remove them, so you can follow the same order when you replace them.
3. Re-install the U-seal high pressure packing and Delron support ring and press firmly into cylinder (Figure 6) until they will go no further, using the proper insertion tool piston and bushing (items 13 and 14 from Kärcher Tool Kit). (Figure 7)
4. By hand, insert the intermediate ring, pressing it firmly into the cylinder until it will go no further. Install the teflon support ring into the cylinder and the remaining packing assembly in the order shown and press firmly into cylinder. Grease outer edges.
5. Repeat this sequence for each cylinder.
6. Lightly coat each plunger with oil or grease and carefully remount manifold. Torque head in sequence to specifications. (Figure 8).

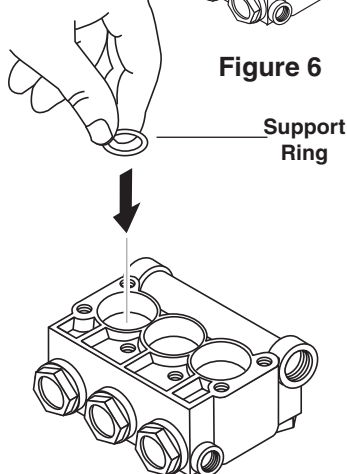


Figure 7

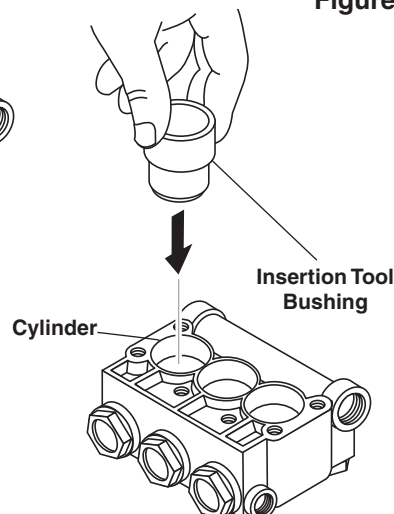
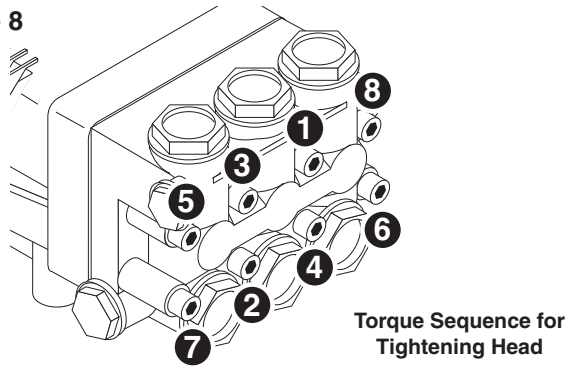


Figure 8



### Torque Sequence for Tightening Head (Figure 8)

1. Install all head bolts fingertight.
2. Torque to specifications in sequence shown.



## Kärcher Pump Tool Kit

Complete Kit Part # 9.802-954.0



ITEM#	PART NUMBER	DESCRIPTION	PUMP	QTY
1	9.802-564.0	Bushing, Oil Seal Inserter, Plunger Rod	KT	1
2	9.802-581.0	Piston, Oil Seal Inserter, Plunger Rod	KT	1
3	9.802-580.0	Piston, Oil Seal Inserter, Plunger Rod	KM	1
4	9.802-563.0	Bushing, Oil Seal Inserter, Plunger Rod	KM	1
5	9.802-571.0	Wrench, Allen 8mm, Manifold bolts	KT	1
6	9.802-567.0	Wrench, Allen 6mm, Manifold bolts	KM	1
7	9.802-570.0	Wrench, Allen 5mm, Crankcase cover bolts	KM-KT	1
8	9.802-565.0	Bushing, Oil Seal Inserter, Crankshaft	KT	1
9	9.802-566.0	Bushing, Oil Seal Inserter, Crankshaft	KM	1
10	9.802-568.0	Extractor, Piston Seal	All	1
11	9.802-579.0	Piston, Seal Inserter, Manifold	KM	1
12	9.802-573.0	Bushing, Seal Inserter, Manifold	KM	1
13	9.802-578.0	Piston, Seal Inserter, Manifold	KT	1
14	9.802-572.0	Bushing, Seal Inserter, Manifold	KT	1
15	9.802-569.0	Hammer, Plastic Head	All	1
16	NA	Screwdriver Flatblade	All	1
17	9.802-574.0	Box, Plastic Tool Box	All	1