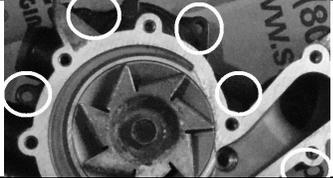


YouTube Part 1: <https://www.youtube.com/watch?v=CBtaioRMx0>

YouTube Part 2: <https://www.youtube.com/watch?v=j8JUY8C2c08>

<b>BMW PARTS</b>			
Slip Ring Seal	11411741870	\$16.37	
Spacer Bush	11511464902	\$ 7.86	
Shaft Seal	11411460329	\$ 11.17	
New Design Impeller(optional)	11411461173	\$ 10.96	
Small O-ring	11411460403	\$ 1.14	
Large Red O-ring	11111460392	\$1.80	
<b>OTHER</b>			
<ul style="list-style-type: none"> <li>• Engine oil (filter)</li> <li>• Coolant (Water Wetter)</li> <li>• Permatex Form-a-Gasket 2</li> </ul>			

<b>Step</b>	<b>Description</b>	<b>Picture</b>
<b>0. PREP</b>		
0.1 Drain engine oil	Drain plug - 8mm Allen	
0.2 Drain coolant	Disconnect temp sensor lead Temp sensor - 14mm socket	
0.3 Disconnect oil switch lead	Front - blue - temp sensor Rear - white - oil switch	
<b>1. REMOVE RADIATOR GRILL</b>		
1.1 Brake line bracket	5mm Allen	
1.2 Mounting uscrews	Philips - 7/side, 2 top	
<b>2. REMOVE WATER PUMP</b>		
2.0	Place rag on ground under pump	
2.1 Cover	(Break impeller bolt - 13mm socket) 9 x 5mm Allen Rubber mallet	
2.2 Water/oil pump	2 x 5mm Allen long under impeller 5 x 5mm Allen	
2.3 Pull boots through body		
<b>3. REMOVE OLD SEAL</b>		

<u>Step</u>	<u>Description</u>	<u>Picture</u>
3.1 Remove impeller	13mm socket 6mm Allen	
3.2 Remove spindle	Replace impeller bolt a few threads and then tap out the main spindle from the front (check spindle for wear)	
3.3 Remove old seal	Using a screwdriver, carefully tap around the perimeter of the old seal from the back of the pump	
	Old seal removed	
<b>4. INSTALL NEW PARTS</b>		
4.1 Install shaft seal	Light coat of grease around shaft seal perimeter to ease installation Tap in (spring side up) using a socket (18mm) as a drift	
4.2 Install slip ring seal	Tap in (blue stripe down) using a socket (27mm) as a drift	
4.3 Install spindle	<ul style="list-style-type: none"> <li>• Lightly grease long spindle shaft</li> <li>• Gently push through by hand from rear until it stops</li> <li>• Use impeller bolt to pull it through</li> <li>• Add spacer to impeller bolt when threads bottom out and repeat to finish pulling spindle through until gears flush on rear</li> </ul>	
4.4 Install spacer and impeller	<ul style="list-style-type: none"> <li>• Install spacer (cup in) and impeller (33Nm) – or torque later after pump installed</li> <li>• Check spindle friction – if too tight then back out impeller bolt a little and tap while ensuring rear gears remain flush</li> </ul>	

<b>5. INSTALL WATER PUMP</b>		
5.1 Install body	<ul style="list-style-type: none"> <li>• Install new O-ring on driving gear – thin coat of oil</li> <li>• Make sure U-hole in engine block is clear</li> <li>• Install red O-ring</li> <li>• Run sensor leads through hole</li> <li>• Apply thin coat of sealant making sure not to get any in the U groove (I don't think the red O-ring needs any)</li> <li>• Get the 5 bolts finger tight</li> <li>• Get the two long bolts finger tighten</li> <li>• Tighten all 7 bolts in criss-cross pattern to 10Nm</li> <li>• Tighten oil switch (if necessary 40Nm – really hard LOL)</li> </ul>	
5.2 Install cover	Apply light coat of sealant Finger tighten bolts Criss-cross tighten to 10Nm	
5.3 Install temp sensor	9 Nm	
5.4 Attach sensor leads	White – oil (rear) Blue – temp (front)	
5.5 Refill engine oil	<b>Make sure drain plug is in first!</b>	
5.6 Refill coolant	<b>Install hose ending!</b>	
	3 oz. Water Wetter 60/40 water/coolant	
5.7 Reinstall radiator grill	7 Phillips per side 2 Phillips top 5mm brake line bracket	