

1.5MM LOOSE NEEDLE BEARING KIT FOR 091 TO 094 4TH GEAR CONVERSION

Updated 10/1/12

4915-INST

GENERAL NOTES

The Weddle 4915 loose needle kit allows the installation of a VW 091 4th gear (38mm bore) onto an 094 Vanagon "Waterboxer" mainshaft. The kit consists of 77 loose needle rollers and an aluminum spacer ring. A lathe will be required to make minor modifications to both halves of the 091 4th gear set. VW gears are very hard on the surface (59-61 Rockwell C scale), so we recommend a carbide cutter or ceramic insert.

SPLINED GEAR MODIFICATION

The splined half of the 091 4th gear has a shoulder that must be removed so it will fit on the 094 pinion shaft (See Figure 1). The width of the gear after machining should be 17.20mm.

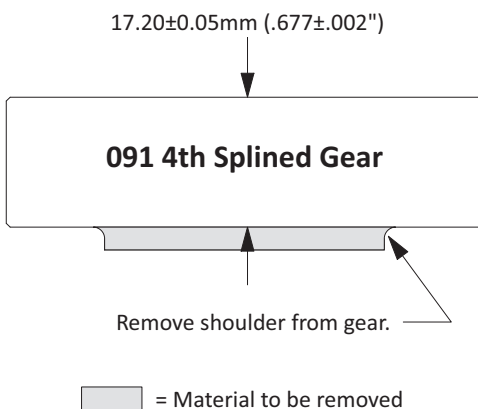


Figure 1: 091 Splined Gear Modification

IDLER GEAR MODIFICATION

The idler half of the 091 4th gear must have a small step machined in the inner bore to clear the 094 3rd-4th slider hub circlip (See Figure 2).

INSTALLATION

1. After the 3rd-4th slider hub and retaining clip are installed on the 094 mainshaft, slide the aluminum spacer ring over the 4th gear bearing journal and position it adjacent to the circlip. It is critical that the spacer sleeve goes on BEFORE the loose needles to prevent the needles from falling into the gap in the circlip.

2. Use thick grease to hold the loose needles in place as you position them around the circumference of the 4th gear bearing journal. Make sure to use all 77 needles. With the full complement of needles pushed flush up against the bearing journal, there should be little or no gap left between the needles.

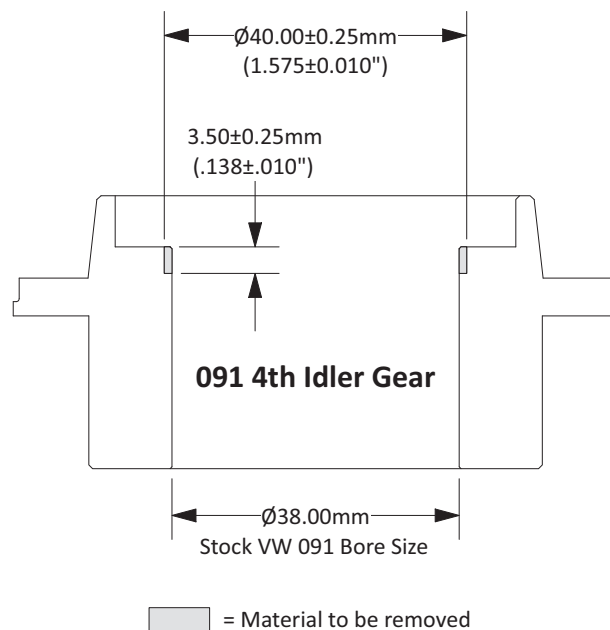


Figure 2: 091 Idler Gear Modification

3. Slide the 4th gear (with synchro ring) into position. Once 4th gear is in place, the needles should stay put. If you have to remove 4th gear again before final assembly, be careful—some of the needles may stick to the bore of the gear when you slide it back off the shaft.

TECH TIP: The 1.5mm needles are very small and easy to lose. We recommend buying some extras and keeping them on hand in case you come up short. They can be purchased using Weddle part number 4915NR.