

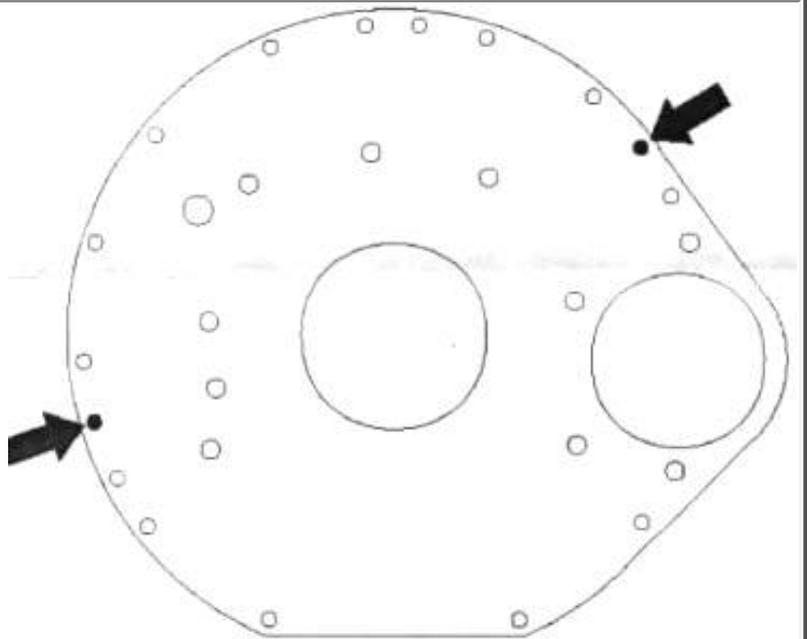
Gunst now provides a kit that contains the bearing and sleeve as well as a pair of dowel pins, a bolt, a steel strap a spring and a packet of grease as shown on the right. The spring, strap and bolt are used to provide a preload of about 15 pounds to keep the bearing spinning when there is no pedal force. The grease is to lubricate the sleeve - front cover interface. The pins serve to align the gearbox with the rear engine plate. The instructions with the bearing kit were in German. Wiard Pless provided the following translation.



Important! Prior to installation make sure the two dowels between the engine plate and the gearbox are present. Missing dowels can cause rough jerky clutch operation as the release bearing is not centric to the clutch (See drawing)

The same applies for the two dowels between engine and engine plate.

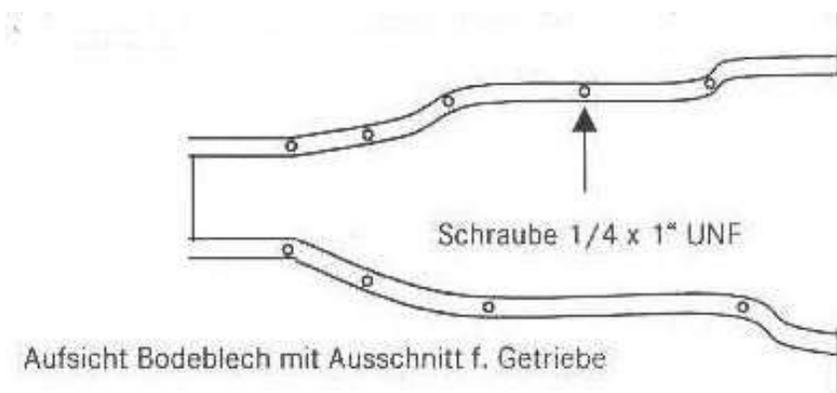
When renewing the release bearing we recommend to check the complete hydraulic mechanism. The release bearing should not be used with a clutch having rounded spring tips. In sporadic cases it can cause whistling noises



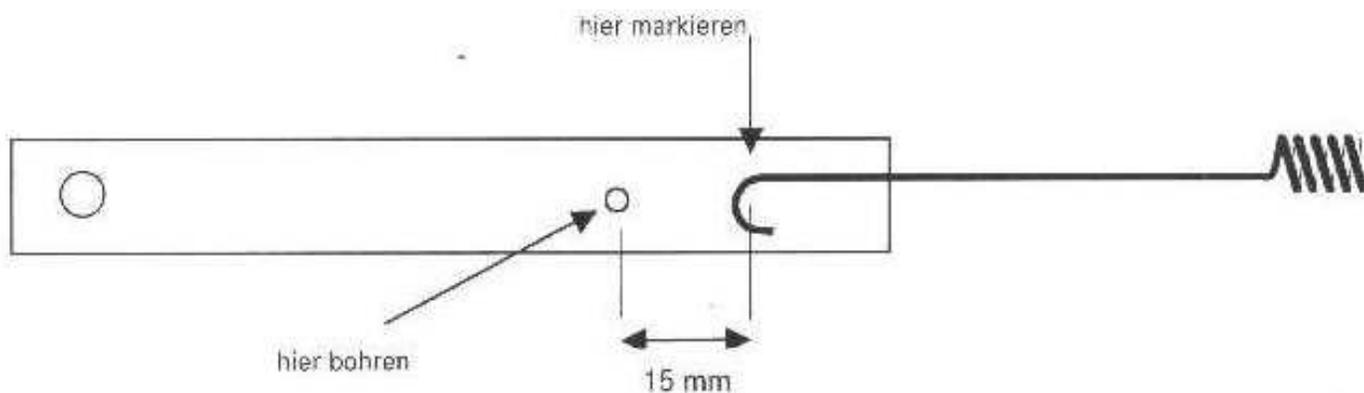
Installation of the Release Bearing

1. When installing a new release bearing make sure the clutch is in a good condition. Especially check that the spring tips are in the same position parallel to the fly wheel and do show not any signs of wear. Worn spring tips restrict the rolling and consequently prevent a soft clutch action. Temporarily install the release bearing without grease on the shaft of the gearbox. If it does not slide smoothly locate high spots and sand down. If considerable force is required to push on the release bearing most likely the tube on the shaft is damaged (crack, out of round)
2. Apply grease supplied (do not use grease containing solids) and install release bearing. Also apply a thin layer of grease to the surface of the release bearing and the spring tips.
3. Install gearbox and clutch slave cylinder. Secure the push rod in the center hole of the clutch cross shaft lever. (Make sure that the extended center line of the push rod is in the center of the clutch slave cylinder.) Don't install the prop shaft yet.
4. Press the clutch pedal several times and then with clutch pedal pressed and in gear turn the exit flange of the gearbox. If you are able to turn the flange the clutch is working properly.

5. Connect prop shaft and install gearbox cover. Change the 2nd gearbox cover securing screw (engine side) on the left side with the supplied $\frac{1}{4}$ x 1" screw (see drawing).



6. On this screw install from underneath the supplied metal strip in such a way that it is pointing forward.
7. Install spring in lower hole of the clutch cross shaft lever.
8. Now just line up the spring with the metal strip and mark as shown in the drawing.



9. From the marking measure 15mm and at this point drill a 3mm hole, install the metal strip and hook up spring. Now the release bearing will have the necessary consistent pressure on the clutch.

A few weeks before I received the bearing kits from Gunst, Casey Van den Dorpel sent an email describing a clutch problem he had. Casey pointed out that there are two precision drilled holes in the gearbox casting that require 3/8 inch bolts, have very little clearance and serve an indexing function to keep the gearbox centered on the flywheel and clutch. These are the same two holes that Gunst says to use dowels. I measured those holes and found them considerably smaller than the starter mounting holes which also use 3/8 inch bolts. With that advanced notice, I understood Gunst's use of the dowels. I'm not sure if the dowels are really needed, but it's clear that one should as a minimum use 3/8" bolts and not use 5/16" bolts in those two positions. I will follow Gunst's recommendation and use the dowels.

The preload spring is also very interesting. Dick Taylor used something different with the KOYO bearing. He put a much stiffer spring in the slave cylinder. That spring had a force of about 20 pounds. He then used an external spring going the other way to lighten the load. He had a turnbuckle in series with the external spring so that it could be adjusted. He ended up using a net preload of about 10 pounds on the KOYO bearing. (In the note on release bearings I point out that modern vehicles use a substantial preload spring. I also point out that TR250 (1968) was very early to use the self adjusting clutch ---- probably one of the first. By contrast, the Toyota Land Cruiser was still using the obsolete technology in 1986.)