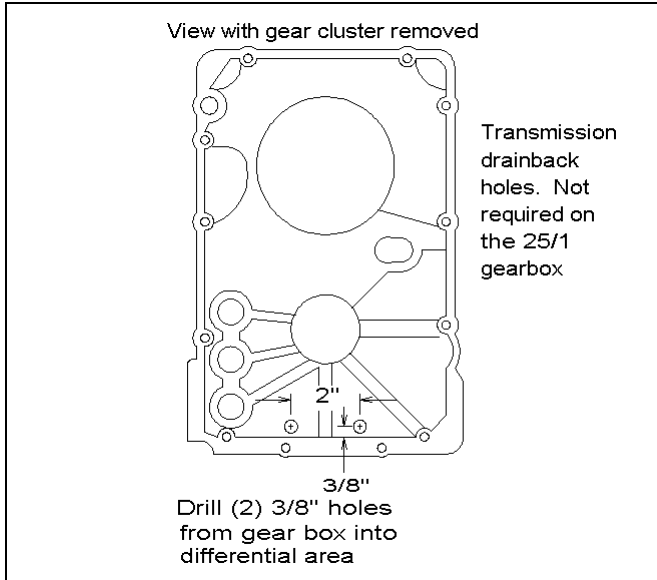


**-PARTS PREPARATION-**

See the diagram on the following page for dimensions for the following modifications:

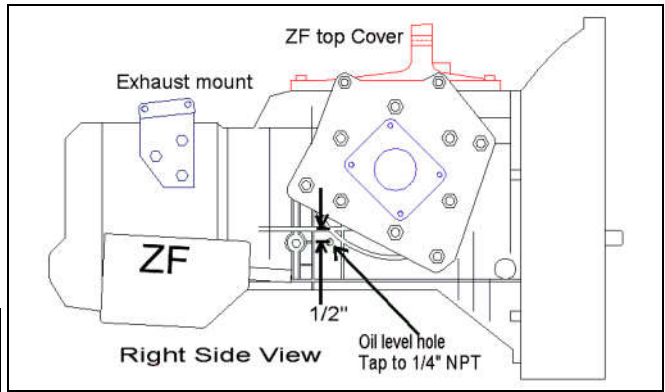
**Drill 2 holes** between the differential section and the gearbox as indicated. In my experience, this is only necessary on the 25/2 gearboxes. The 25/1 series already has the holes. Try to have the holes as close to the bottom of the case as possible. They allow oil to flow freely between the two sections.



*ltrans, end view*

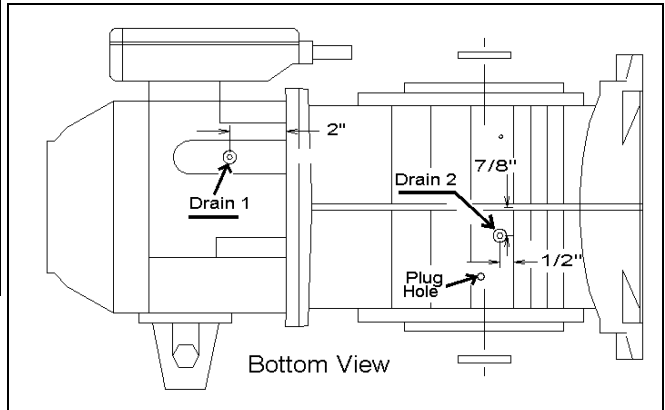
**Remove the vent tubes** from the inside and outside of the (now) bottom of the differential section of the case. They are a press fit into the case. You must drive the internal tube out through the outside hole with a punch. Tap the case ( $5/16-18$ ) from the outside and use a cap screw to plug the hole. Use gasket sealer or silicone on the threads to prevent leakage.

**Drill and tap an oil level hole** in the right side of the case in the position shown. The hole should be drilled to  $1\frac{5}{32}$ " and tapped  $1/4$ " NPT, and a pipe plug installed. When filling the transmission from the top, the oil level should reach the bottom of the hole.



*Zf\_mods\_side*

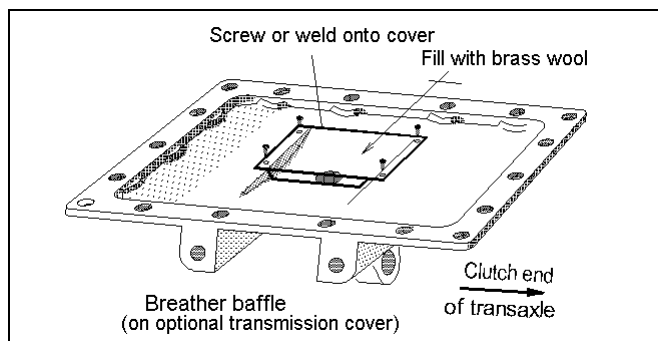
**Drill and tap two  $1/4$ " NPT drain holes** in the bottom of case as illustrated. If the transfer holes between the differential and the gearcase are low enough, the oil can be drained exclusively from the rear hole.



*transbot*

## -PARTS PREPARATION-

**Install a baffle and vent fitting** in the (now) top access plate. The baffle will prevent oil from being thrown out of the fitting by the rotating ring gear. E.R.A. makes a plate for this purpose that must be welded or screwed to the inside of the cover. *If you make your own:* The baffle plate must allow clearance for the ring gear on the left. Therefore the plate must be biased toward the right side of the gearbox access plate.



man\btrnsbaff

Stuff brass wool from a scouring pad through the vent hole into the baffle area. Even so, a dump tank may be necessary to prevent excessive oil loss at race speed. ERA offers an optional breather conversion kit with dump tank that can be installed by the customer. Do not overfill the gearbox. The initial fill should be 2.7 qts. Refilling after draining will be 2.5 qts. You may want to check the accuracy of the fill level hole the first time you fill the gearbox.

### ASSEMBLY

Clean the case of drilling chips.

Install 3 longer studs (10mm. diameter x 40mm.) into the left side plate for the slave cylinder bracket. See the diagram.

Insert the ring gear/differential spool assembly into transaxle case so that it is on the left side of the pinion (as the transaxle will be mounted in the car) without the side bearings installed. Remember the breather tube that was removed from the inside bottom of the case? That's the side that the ring gear goes on!

Install the ring gear bearings onto the spool. *Make sure that they are fully seated on the spool.*

Assemble gear cluster plate into case. Use non-hardening aircraft gasket sealer between the cases. Torque all bolts to 16 lb.ft.

Rotate the axles in the side plates, feeling for irregularities. If the bearings feel worn, now is the time to install new ones (FAG 6207 C2 is OEM, we replace with a slot-filled bearing Fafnir 207W) and also the seals.

Install new bearing cups in the side plates, noting the shims underneath the cups on each side. Don't mix them up. Install the side plates with the old gaskets onto the case, temporarily torquing the 6 inner fasteners to about 25 lb.-ft.

Measure the backlash between the pinion and ring gear. It is easier to do this on the edge of the pinion gear. The ring gear bearings are preloaded and prevent the gear from rotating freely.

The **proper backlash** is etched on the outside edge of the ring gear, with some other numbers. Look for "0,20" or "0,25" or a similar number. This is the backlash in millimeters. Multiply by .0394 for the inch equivalent.

**Adjust the ring gear backlash** by changing the shims behind the cups of the differential bearings in each side plate. Removing the bearings requires a puller. See the transmission service manual for details. If the ring gear bearing preload was correct before disassembly, the total thickness of shims behind the *right plus the left* bearings should remain the same. It will only be necessary to redistribute the total thickness of the shims.

The **lash will change about 90%** of the amount of change of the shim thickness underneath the bearing cup. i.e. If you need to reduce the lash by .009", increase the thickness of the shim pack on the ring gear side by .010" and decrease the shim thickness on the opposite side by .010".

After the shims have been changed and the bearings re-installed, install the side plates. If the clearance change was small, you might want to "go for it" and use the new side gaskets now. Otherwise, check the clearance again with the old gaskets. Torque the side plate bolts/nuts to 45 lb.ft., in two steps, using a criss-cross pattern.

Install the **top access plate** with the baffle installed. Torque the bolts to 15 lb.ft.

Install the **transmission mounting bracket** on the top cover using the  $\frac{3}{8}$ " x 10" USS threaded rod supplied. Don't forget to replace the shims between the top cover and the side covers. The face bar with the  $\frac{5}{8}$ " holes faces forward toward the engine. Torque the cross-shaft nuts to 45 lb.ft.