



Using a Gear Pump Repair Kit (Carbon Bearings)

Before considering the repair of a worn gear pump, it is necessary to determine whether the pump can be restored to a reasonably good performance (60 – 80% of new pump performance).

Before Repair Inspection:

1. Remove screws, cover from body, remove gears with shafts from body.
2. Gears are usually the most noticeably worn part of a used gear pump. They can easily be replaced. Check the amount of bearing wear by sliding a new shaft into each of the 4 bearings and determine by "wiggling" if the bearings are worn oversize. Bearings are replaceable. Most important is the amount of metal wear which may have occurred in body and cover. The wear on the cover is readily recognizable (circular wear pattern). This surface can be restored if wear pattern is light.
3. Determine body wear as follows:
 - o Inside diameter wear: Insert a new gear into body and check the amount of clearance between the outside diameter of the gear and the inside diameter of the body. If this space is much of .006", success of the repair job will be very doubtful since this metal loss in the body cannot be replaced.
 - o Bottom wear: Place a ruler or straight edge across the body flange and a new set of gears and hold it against the light. If the gear is more than .005" below the body flange surface, repair becomes difficult or impossible.

Pump Repair Procedure

Old Bearing Removal:

There are two methods of removing the old carbon bearings. Available facilities and personal preference determine which method should be used.

Bearing Puller Method:

Purchase from Snap-on Tool Corp. The blind hole bearing puller parts. Loosely assemble too, push collet through to the bottom of the bearing to be removed. The jaws of the collet will expand to grip the bearing by hand tightening the collet on the expanding rod. Position the assembly so the flange surface is supported, and the weight of the puller is down. By raising the slide hammer and slamming down, the bearing will be removed with several strokes. Repeat procedure for remaining bearings.

Chip-out Method:

Using a small chisel or screw driver, the bearings can be chipped away in small pieces because of their brittleness. Caution: do not mark or damage bearing bore with chisel.



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New Bearing Insertion:

Clean out all four bearing bores very carefully. Press new bearing in place with color-coded end (unground end) down towards the bottom of the blind hole. Use either a homemade pusher or the old shaft/gear assembly and a small arbor press for this operation. If a press is not available, the moving jaws of a vise can be used. The least desirable method is pounding the bearings in place with a hammer on top of the pusher. Bearings may crack or chip easily from hammer blows. When in place, bearings must be flush with their respective casting surfaces, neither above or below.

Restoring Cover Surface:

Rub cover on a piece of fine grit emery cloth on top of a flat metal plate until most or all of the wear marks have disappeared. Caution: apply even pressure so that sanded surface remains flat and at right angles to the bearing holes.

Restoring Pump Body:

As explained under "Before Repair Inspection", nothing can be done to restore lost metal on the inside diameter of the body bore (gear chamber). If bottom of body is worn (straight edge test with gears), the body depth can be made shallower by rubbing down the flange surface in the same manner as the cover surface (explained above). Again, proceed cautiously in order to keep flange parallel to bottom face. Match body depth to gear width (straight edge test across gears). Running clearance will be achieved with gaskets on assembly.

Seal or Packing Replacement:

If pump is equipped with a lip seal, it should be replaced with a new seal at this point. Use a screwdriver to pry out of the pump body, press new seal in the same place. Note that lettering on seal casing must be on outside of pump, garter spring and lip facing the inside of the pump. If pump is equipped with a packing type seal (stuffing box), replacement of the two asbestos-graphite rings is done easiest after conclusion of pump assembly.

Re-assembly of Pump:

Insert shafts and gears into pump body. Rub a thin film of grease on flange. Set cover in place and bolt cover onto body with cover screws. While tightening screws, check drive shaft and gears for free rotation. If gears are binding after screws are tightened, it may be necessary to add another gasket between cover and body. Do not add gasket unnecessarily as pump performance will suffer from excessive internal clearance. Replace packing rings (if applicable) as mentioned above.