



Motorcycle Gas Tank Company

NEW for 2001 **EXACT**
Reproduction Indian Tanks

Tooling: The Indian Motorcycle Gas Tank Company recognized a need for gas tanks that can not be identified from original Indian gas tanks. After recognizing this need we obtained a "New Old Stock" set of Indian Gas Tanks. We took this set of tanks to a computer digitizer. Using the digitizer we completely measured and modeled the entire surface area of the original tanks! Once modeled, we had complete new tooling made using the latest in CNC technology to accurately duplicate our modeled tanks. This has afforded us the most accurate tooling, since what came out of the Indian factory in the 40's.

Stamping: We have teamed up with one of the nations leading hydroforming companies to supply us with the gas tank blanks using our tooling. Being ISO 9001 certified and using the latest in Statistical Process Control methods and techniques allows them to produce the gas tank blanks as accurate as the original Indian factory!

Assembly: Our tanks are completely welded together, using the latest in TIG welding techniques. The experience of our welding team is unsurpassed in industry! Using only qualified welders with a special appreciation of the tanks they are producing, allows us to obtain finished gas tanks that are 100% duplicates of the original Indian tanks!

Available Tanks:

- 1938-1939 Chief, Four & Scout
- 1940-1941 Chief, Four & Scout
- 1941 Model 741 Scout
- 1942-1946 Chief
- 1947 Chief
- 1948-1953 Chief

1938-1953 Indian Chief Tanks

\$675/pr

(other model prices varie)

Benefits:

- 100% Accurate Shape – Can not be identified from original tanks
- Tig Welded Construction (prevents warpage)
- Stronger than brazed or silver soldered tanks
- All tanks Pressure Tested
- All tanks Prefitted
- 1932-1937 Chief, Four & Scout
- 1909-1916 Early Models

YES – We make tanks for all models: Chief, Four, Scout, Racing Scout, 741 Scout, early Chief/Four screw top tanks, even 1909-1916 tanks! (If we don't make it, call and see if we can supply your needs)

Starklite Cycle

2220 Eastridge Ave Ste E, Riverside, Ca. 92507
PH 909.656.1998 - FAX 909.780.0857

E-Commerce Web Site: <http://www.starklite.com>

The Tech Corner Bottom End Rebuilding

by: Gary Stark

Rebuilding your Indian bottom end can be a rewarding and satisfying project. Since the bottom end is the heart of the engine, a properly rebuilt bottom end will provide miles of trouble free service. On the other hand, if steps are skipped your bottom end rebuild could wear out prematurely, and cause expensive damage to other engine parts.

If you are at home in your workshop don't be scared and try your next bottom end rebuild. And at any time if you feel intimidated you can always farm the work out to an expert who makes a living working on Indians.

While starting work on your bottom end you will need some basic tools, and maybe some specialty tools. When looking at the costs of the tools, remember to compare how much fun it will be to work on your own bike and tell everyone that you rebuilt the motor yourself!

To rebuild the bottom end we will need the following tools:

Common tools – in every mechanics toolbox

1. Socket set
2. Open end/Box end Wrench set (2 sets helpful)
3. Screwdrivers
4. Drill & Drill Bits
5. Small Chisel
6. Brass Punch
7. Steel hammer

Special tools – These make the job easier

1. Flywheel Truing stand (Can be substituted by using a lathe bed with dead center ends, and dial or digital indicators)
2. Pinion gear puller
3. Upper Rod bushing Installation/Removal tool
4. Torque Wrench
5. Lower Rod race installation/removal tool
6. Micrometer – 0-1"
7. Dead Blow Hammer minimum 2lb. (Don't use a steel hammer)
8. Feeler Gauges (.005min - .012max)
9. Impact Wrench (optional)

Supplies:

1. Lapping compound
2. Red loctite
3. Assembly lube/grease
4. 320 sandpaper
5. Gasket Sealer

Next month we will begin on how to assemble your bottom end.



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Flywheel Assembly

1. Check your rods that the male rod nests into the female rod totally, making contact at the top of notch in female rod. Usually the male rod will fit better one way than the other. Make sure the male rod does not hang up within the notch.
2. Assemble the pinion shaft to the right flywheel. Make sure the key does not bottom in the flywheel, as this can prevent the taper on the shaft from seating properly.
3. Grease nut and shaft threads. Tighten to 100 foot/lbs. (For added assurance the following can be done: Place a spacer over the end of the pinion shaft, and tap the shaft deeper into the taper, retorquer nut, and tap again, retorquer).
4. Bend the lockwasher slightly and install with the concave side towards the flywheel. Now final torque the nut by lining up the screw hole in the flywheel to the lockwasher. (Always tighten to line up, never loosen the nut). Install the set screw into the lockwasher using Blue Loctite.
5. Repeat the above procedure on the drive shaft side flywheel.
6. Install the crankpin in the right hand flywheel. Make sure that the oil holes in the crankpin lines up with the oil hole in the flywheel.
7. Tighten the crankpin nut to 100 foot/lbs. Align the locktab by tightening the nut further, do not install the locktab yet.
8. Check the alignment of the oil holes using an air hose to blow through the pinion shaft.
9. Grease your crankpin thrustwashers, and install them in the machined areas on the flywheels.
10. Insert your bearing cages in the male rod, with the cages back to back
11. Insert the bearing cages in the female rod with the cages facing outward.
12. Install the rods on the crankshaft. The female (forked) rod goes toward your front cylinder.
13. Assemble the left flywheel to the crankshaft and torque the nut to 100 foot/lbs.
14. Measure the distance between the crankpin thrustwashers and the rods. Your rod side play should be .010-.020". If the sideplay is incorrect determine if you need thicker or thinner thrustwashers, and replace the current thrustwashers until you have achieved the proper endplay.

Next month aligning the flywheels.

When installing the cages into the rods, the male cages will be back to back. While the cages in the female rods will be have the open end facing your flywheel thrustwashers as pictured.



The Tech Corner

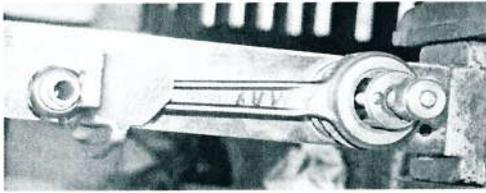
Bottom End Rebuilding

Part III

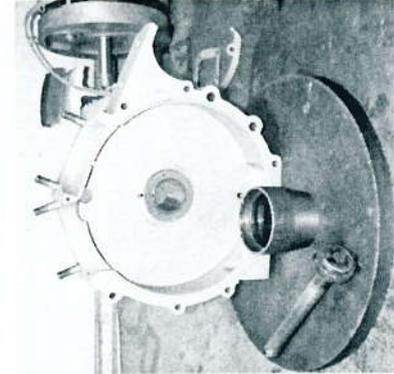
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Now that we have prepped the majority of our parts, we have a few more items to check:

1. Check the Drive Shaft, Pinion Shaft for concentricity of centers to the running surfaces. (This is not possible to do on the crank pin). This can easily be checked by placing the pins in dead centers on a lathe and using a dial indicator.
2. Check that the press fit of the pinion gear on the pinion shaft is proper.
3. Check that the shafts and thrustwashers are properly hardened. They should measure 60-62Hrc
4. Measure all of your roller bearings for the bottom end. It's possible to find a mismatched size in a batch of 100+ bearings. They should all be within $\pm .0001$ " (one tenth of a thousandth)
5. Check that your rods are straight

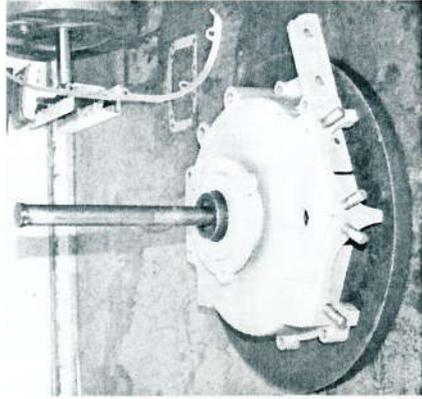


Rod tool - holds rods on lower races to allow you to check for straightness



When installing the drive race we use this special tool that will properly support the case around the drive housing when installing the housing. We also use this special driver that fits the race during installation.

6. Check flywheels to make sure that the dowel pins are in place to hold the thrustwashers. If any are broken or missing, replace as required. If you are unable to drill out a dowel pin, you can drill a new hole near the old one. And install two new dowel pins. Use your thrustwasher as a guide as to where to drill the second dowel pin hole, as you will notice they are not exactly 180 degrees apart.
7. Once the flywheels are ready we are close to our actual build. One of the final steps before actual assembly is to lap our pins into our flywheels. Use a small amount of valve lapping compound and place it on the shafts, and



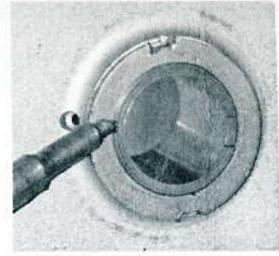
Notice how the cover is supported, it is not touching except around the inside of the case by the drive housing (As supported by the special tool in the previous photo). If the case is not supported in this fashion, you could break your crankcase.

10. Place the crankcase on a firm table. The case must be supported securely in the area around the race.

11. Install drive race into the case, the oil hole should be towards the top of the cases. It's possible for the drive race to just drop into place due to the expansion of the cases. Do not be alarmed, as this is normal. We still need to seat the race in the case. With a large hammer, and brass punch tap the race until you hear a ringing sound that indicates the race is bottomed in it's hole.

12. Allow the cases to cool to room temperature. Install the nut on the drive shaft housing and tighten. If you don't have a wrench, a chisel can be used. Do not overtighten. Once it is tight, stake the nut in place with a punch to keep the nut from loosening.

13. Rightside crankcase: Check fit of race to case before heating. If it's ok, then oven heat to 200-250 degrees, and freeze the race. Install the race into the case (snap ring groove first) until it stands approximately .020" above the surface of the case



A punch is used to stake the drive housing nut into the drive housing. This prevents the nut from loosening

8. To insure a proper fit, all pin nuts can be lightly surfaced to assure a proper fit against the flywheels.

9. Now lets move back to our crankcases: We need to install the drive race into the left side crankcase. Check the fit of the drive race into your case. With all parts at room temperature, the race should not fit into your case. If so, you will need an oversize drive housing. Otherwise, Heat your cases (oven preferred method) to 200-250 degrees f. While the case is heating in the oven you can freeze the race in your freezer.

Next issue we will continue working on our rods and install the races in them.