

Maintenance (Restoration) Tips: by LeRoy Burgess

The primary case to engine crankcase flat head screws are 7/8 inch long. The primary case to transmission flat head screws are 1 inch long. When you install the primary case, if you install the 1 inch screws in the crankcase when you kick the engine the first time the flywheel will hit the end of the 1 inch screw. If you kicked it hard enough you will bend the end of the screw. You can now try to turn the bent screw out of the aluminum crankcase and destroy the threads in the crankcase or remove all of the other primary case screws, drill the head off the bent screw, remove the primary case, disassemble the crankcase and remove the bent screw from the inside.

The manual says when installing the push rod tubes to "tighten the push rod tube against the tappet guide, and then back it off one-half turn". This is the minimum amount of to be backed off and three quarters turn is better. If the tube is not backed off the expansion of the tube can break the cylinder head rocker arm box off the head.

The TT Warrior has a different tappet guides that the Scouts and Warriors. It does not have a nut to compress a seal but has an o-ring in a groove. When screwing the tube down into the tappet guide use a light and watch down the tube to be sure the edge of the tube does not cut the o-ring or push it out of its groove. An oil leak here can empty an oil tank in a short time.

The push rod tubes have a slot cut in the top for an Indian special tool to turn them with. If the slots are damaged and can't be used cut new slots 90 degrees from the originals and use the special tool or make one to fit the slots. Tubes are easily damaged by pliers and pipe wrenches. When they get out of round at the

bottom they will not seal well and leak. Check your tubes before installation to be sure they are round, and fix them if they are not.

At some point cylinder head to frame braces were added to the Scouts. If your vertical does not have them, find the special head bolts and braces and install them. They stabilize the engine in the frame. They were standard on Warriors.

At some point the left rear engine anchor plate had an ear added that would pick up the top front transmission screw. A long screw replaced the original screw, passed thru the transmission, two nuts that tightened against the transmission and the anchor plate and finally another lock washer and nut on the end. This was standard on Warriors.

Keep the bolts holding the oil tank to the frame and the oil tank clamped tight. Loose bolts will allow the oil tank to vibrate and crack the brackets and tank and wear grooves on the frame. TT Warriors had an additional bracket to fasten the oil tank to the engine.

When assembling front forks be sure and use thin lock washers and nuts on the bottom end of to attach the internal plunger. If the nuts overhang the end of the plunger stud the axle will not pass thru the lower fork.

The right hand foot peg has a nice large bolt attaching it to the primary case. On street machines this seems to work OK. However, the primary case is attached to the engine and transmission by seven 1/4 inch screws. If the bike is used for off road the weight to an adult standing on the foot pegs will flex the primary case enough to loosen the screws and wallow out the threaded holes. If you use your bike this way frequently check the primary case to insure it remains tight.

Late transmission cases had a 1/2 inch hole centered in the bottom case flange (below the output sprocket) to drain that area of water and small debris. This is a good modification to do if your bike does not have it.

Early rocker arms did not have an oil squirt hole to squirt oil on the valve stems. Later ones did. This was obviously an improvement.

The original B-78 bearings used in the rocker arms with oil squirts had small oil holes in the sides to pass oil to the squirt hole. Modern B-78 bearings don't seem to have this hole.

The 1762010 front fork seal used on Warriors is a Timken 3214. The SKF 13985 is supposed to be equivalent but it will not fit over the fork tube.

Early crankcase sump cups had very fine screens use the later cups with a coarser screen.

The first generator drive cluster gears were of phenolic and steel construction for quiet running. Unfortunately these phenolic gears would come apart and block the return oil sump screen with predictable results. Service Bulletin I-12, August 1, 1949 told how to install the steel gear with your other existing steel gear. Supplement 1 to this bulletin tells you to add a second pin between the two gears. Production switched to the two piece gear. The pins can fail and not drive the outside gear. Check this cluster gear to make sure the two gears are tight together. The final fix was a one piece gear. The two piece gear is fine, just be sure the pins are tight and the gears secure to each other. Even if you find an NOS phenolic gear **do not use it**. There are still some around in remaining parts stores.

Oil pumps were improved during production and by service bulletin by adding an o-ring between the driving gear and the pump cover. This o-ring should have a .036 inch washer between it and the drive gear to compress the o-ring. These are frequently missing and easily lost during disassembly.

If you are having wet sumping problems the main cause on well used oil pumps is the size of the hole in the pump body the shaft of the pump gears passes through. If the hole in the aluminum pump body is worn, oil from the tank will pass back thru the feed gears, thru the shaft hole and into the scavenge gears and then into the crankcase. Other sources of wet sumping are the oil system check valves and seats and around the drive gear. The thin oil pump gaskets must be used so keep oil from escaping around the sides of the gear. Be sure the pump is free after tightening the attach screws.

The generator shown in the Indian repair manual is a G805 not the G805A most frequently found on existing verticals. Put your generator back together like you took it apart. Generator brushes can be fabricated from electric drill brushes using a Dremel tool and file. Select the nearest drill brush and go from there.

There are two diameters of wire were used to make clutch springs. The early ones have .072 dia. wire and the later .080 dia. wire.

An October 28, 1950 Kit was provided by Indian to install an adjuster mechanism for the primary chain. Install this to keep the primary chain from eating the inside of the primary case. This was standard on Warriors.

All Warrior and TT Warrior oil tanks have a large recess (dent) hand hammered into the back side forward of the bracket to clear the float bowl of the larger Amal 276 carburetor. This obviously allowed use of existing stocks of oil tank parts.

Original Arrow and Scout rims are actually 18.25 inches in diameter at the tire mounting. This was to fit the Armstrong made Indian tires. Modern made 3.25X18 and 3.50X18 tires will not seat properly, unless forced, which may cause internal damage to the bead and be dangerous. The Warriors and TT Warriors used a standard rim like the Sport Scouts and 741's. Use of these rims is the best solution for rims on a vertical that you want to ride. With these rims some of the spoke nipples show a slight cocking of the nipple and bend in the spoke when installed. The original Indian assembled rims were the same way. Buchanan spoke nipples are not a perfect fit for the Indian rims and somewhat increase the cocking effect but have not been a problem.

The vertical headlight dimmer switch was a very fragile switch and easily broken. By the early 1960's many of the active verticals had British type dimmer switches installed. These switches were flat on the sides with round ends and combined the dimmer switch and horn button in one unit. The wiring was installed on the outside of the handlebar. This installation is common to verticals in different parts of the country so may have been sold as a replacement by the then Matchless/Indian spares sales. Or at least sold by the Indian dealers as something they had in stock for the Matchless or other English cycles then being sold through Indian dealers.

Scout crankshafts have an early and late configuration. The early crankshafts have a small rectangular area removed from the edge of the flywheel for balance plus drilled holes. The later crankshafts have a large mill cut for balance plus drilled holes.

Scout and Warrior crankshafts look identical, even the embossed numbers on the crank are the same. The difference can only be determined by removing the small plugs on the end of the crank journals. Scouts have about a 7/8" hole down the center of the journals, Warriors have a 5/8" hole.

The end plugs of the crank journals must be removed during overhauls as the crank journals will always be full of sludge and dirt.

Some of the reproduction pistons now being supplied have very heavy wall piston pins. The crankshafts definitely need to be rebalanced if these are used.

If you sleeve the cylinders, when the outside of the sleeve is turned have a collar left on the top of the cylinder sleeve equal to the original amount of steel cylinder that protruded above the casting. This will insure the sleeve does not slip down and contact the flywheel.

There are two different styles of lower fork covers. The original design was cylindrical and would sometimes rub on the lower fork tube. The later style was expanded slightly just below the upper end to allow more clearance.

Scout lower fork tubes have a block that holds the brake back plate bolt brazed to the tube. Warrior lower fork tubes have a bracket that completely encircles the tube to hold this bolt. The Warrior lower forks also have a drain screw on the bottom of the tube assembly.

Early brake pedals had needle bearings with seals. Later brake pedals had bushings. The bushings (2) are a thin wall, split bushing. These may be made from Standard Motor Products X4265 starter bushings available from auto supply stores. These bushings are too long and must be shortened. Since they are thin a good way to shorten them is with a Dremel tool with a cutoff wheel.

Copper/asbestos gaskets may be replaced with the parts as follows: (These parts after tightening (crushing) will be slightly larger diameter than the oil caps.)

1454005: Large oil caps/crankcase sump plug use AN900-24 or MS35769-39.

1455005: Small oil caps/overhead oil lines/rocker arm shafts use AN900-8 or MS35769-9. 1455002:

Overhead oil line crankcase fitting/crankcase vent fitting use AN900-5 or MA35769-5.

AN900/MS35769 Gaskets are available from Aircraft Spruce and Specialty Co. (www.aircraftspruce.com) 1-877-4-SPRUCE.