

Double Row Timing Chain for Dummies

Contributed by Ray Brutti
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I just finished my first timing chain job on my 1975 R90/6 with a double row chain. I wanted to type it up while all that info is still fresh in my mind. I am a novice mechanic, but I got plenty of help from List Gurus, local Airheads and a local shop. I did all the hands on work myself. Here is what I learned . . .

YOU CAN DO IT. You will want to replace everything. Don't do a rinky dink job that will need to be redone sooner rather than later. Replace the chain \$35, crankshaft nose bearing \$10 and sprocket \$65. Also replace the tensioner \$10 and spring \$2, and all gaskets and seals \$17. These are 2003 prices. I got everything from Motobins and Eurotech. I found that the most worn piece was the crankshaft sprocket. The chain and bearing actually do not wear that much, but that sprocket is half the size of the cam sprocket and made of some soft stuff. The teeth get narrow and pointy. The gap between the teeth gets really wide as the sprocket wears. That's where most of the slop in the old chain comes from.

REMOVING THE OLD CHAIN . . . First remove the tensioner and spring. Before you cut the endless chain installed at the factory, make sure that somebody else has not done this before you. Look for a master link. If you need to cut, there are two methods. Either cut with a pair of bolt cutters or dremmel off the heads of a couple of link pins and shove the link out. It is wise to cover the openings into the crankcase with tape or stuff with rags to keep flying debris out. If you use bolt cutters, that chain will tend to explode little bits of sharp metal everywhere. **WEAR SAFETY GLASSES.** Same if you use a dremmel cutter. Point the dremmel away from the engine so dust and debris go elsewhere, but still wear the glasses. I used the dremmel method and it worked great.

REMOVING/REPLACING THE BEARING AND SPROCKET . . . you can use various pullers and heat to remove the old bearing and sprocket. I don't know about that. I cheated and borrowed the real deal tools from a shop that was willing to rent them to me. The R&R took less than 10 minutes and worked like butter . . . no heat, fender removal or wheel removal. I even think it would be very worthwhile to trailer the bike to a shop that has the BMW or Ed Korn puller/press and have them do it. I don't like to buy expensive tools that I might only use once. Whatever you do, do not damage the end of the crankshaft with a cheezy puller or you will be screwed. Before you use pullers on the bearing and sprocket, be sure to run a correct size bolt with a flat washer all the way into the end of the crankshaft so the puller has something solid to push against. If you forgo the tools and decide to use heat, cook up a pot of oil in your driveway until a drop of water sizzles, drop in the new sprocket, heat it up real good, remove with tongs, put it on the shaft so the keyway lines up and proceed to work it on with a mallet and a large deep socket that just fits the inside diameter of the sprocket. Same with the bearing.

LINING UP THE SPROCKETS . . . line up the timing mark on the crankshaft sprocket and the camshaft sprocket. The mark on the larger cam sprocket will be on a valley between teeth. The mark on the smaller crank sprocket will be on a tooth, but it is behind the bearing so it is hard to see. A good way to cheat is to get that mark on the big sprocket to point straight up, high noon, then rotate the flywheel until the OT top dead center mark is exactly in the middle of the inspection window. Now go back and check the gears. The mark on the smaller crank sprocket tooth will be at 6 o'clock, directly opposite the mark on the larger cam sprocket. Get out the flashlight and peek behind the bearing.

Make double sure these marks line up. After you get the chain all hooked up, check it again. Rotate the engine in a clockwise direction as you look at it from the front. Check it again. And again. Do not button things up until you are sure these marks line up directly opposite each other or you will be doing this job again real soon.

INSTALLING THE DOUBLE ROW CHAIN . . . It does not matter if you install the master link from the front or the back, however it is much easier to just push it in from the front. In fact, I find this process easiest to do at the bottom of the chain at about 4 o'clock pushing the link in from the front. There is very little clearance here, but no chance of parts falling into one of those holes into the crankcase. When the link is half way in, slip in the plate that goes between the links. Push the link the rest of the way in then slip on the plate that goes on the back of the master link. It should pop right on with a screwdriver dipped in a bit of grease to hold the plate while you slip it into position.

FINALLY, FITTING THAT DAMN CLIP . . . The master link is held together by a horseshoe shaped clip that theoretically clicks right onto the notches cut into the end of the pins on the master link. That clip must be facing with the open end of the horseshoe away from the direction of the engine's rotation, clockwise as you face the front of the engine. Sounds simple, doesn't it. This is complicated by the fact that some chains are shipped with master links held together by two tiny cir-clips instead of the one horseshoe shaped clip. I prefer the single clip but no matter, they both go on the same with the exception that the cir-clips do not need to face any particular direction.

Now here is the secret tip to getting on those @\$%^&# clips. It's not so hard really, it just takes good light, calm nerves, fresh eyes . . . and two tiny flathead screwdrivers. Dip one of the tiny screwdrivers in a bit of grease to hold the clip while you pick it up and put it into position. Then use the other tiny screwdriver to push the clip home as it clicks into place. It

might take a few tries, but it can be done. It may be handy to have a small magnet in case you drop the clip and need to go fishing, but if it's coated in grease, it won't get far. Finally, when you are done, get a small mirror and a flashlight and have a real good look at the clip(s) on the backside of the chain. Make doubly sure they are seated on the master link and will not come off.

CHECK YOUR WORK . . . Check the clip(s) again. After all is said and done, check to make sure those timing marks are still aligned. Then check everything again. Do not rush. Keep in mind the old motto. "There may not be enough time to do a job right, but there is always enough time to do it over."

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