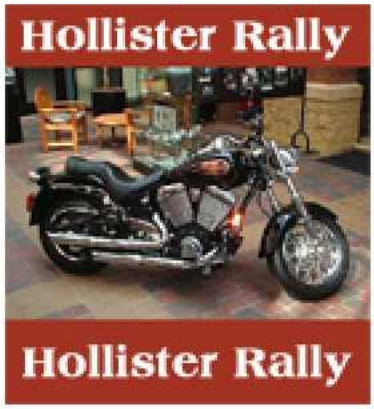
Excelsior-Henderson Super X
Transmission Cassette Assembly Removal



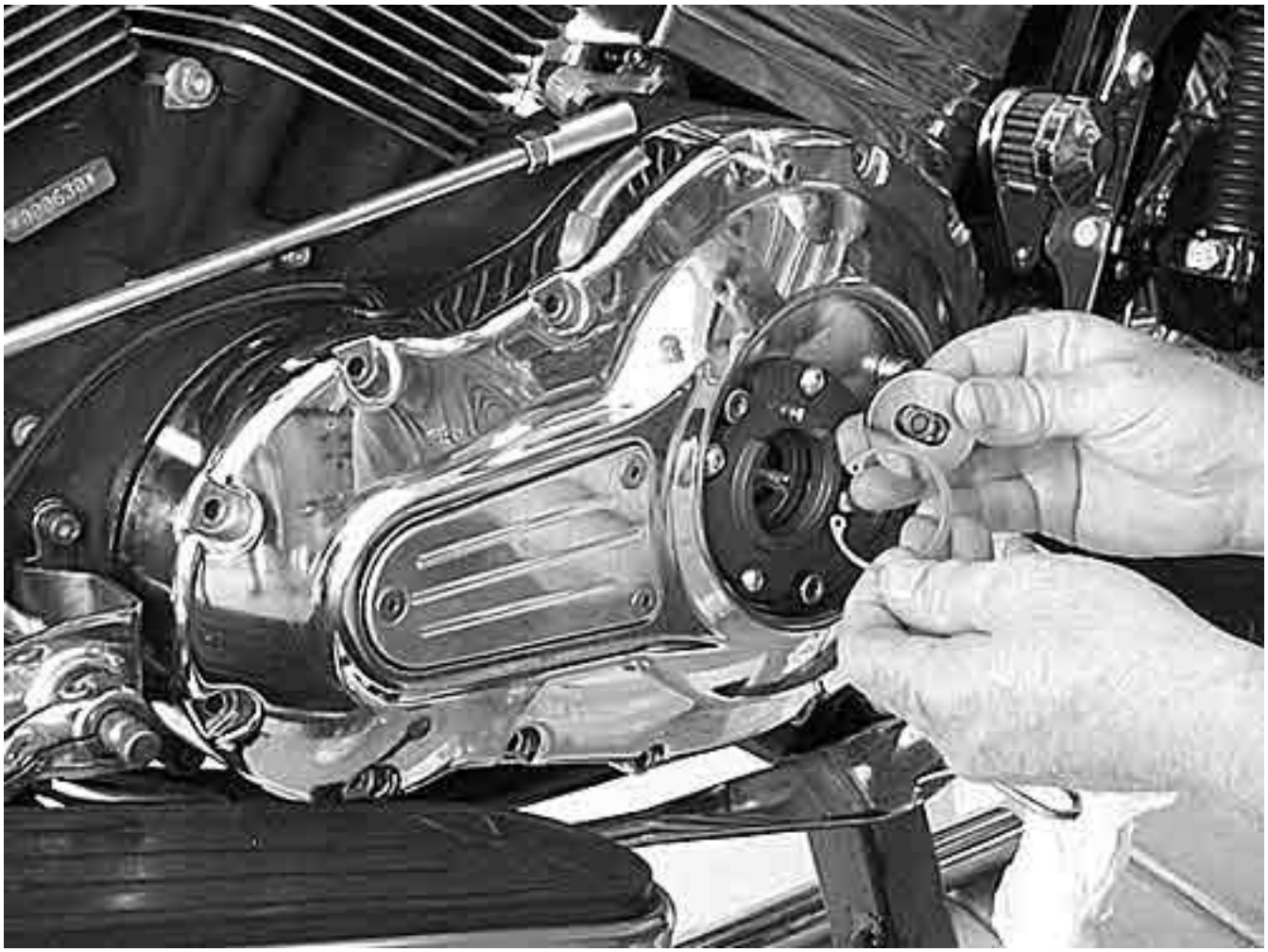
The Excelsior-Henderson Resource Board in conjunction with X-Man, Ol Pancho, Jim Kepford and the Resource Board Members bring to you photographic instructions on how to remove the Excelsior-Henderson Super X X-Twin Transmission Cassette Assembly.

Thanks to :

Excelsior-Henderson Resource Board:
X-Man & Ol Pancho:
Jim Kepford (Snowy 91) :

Preparation

Drain engine oil from both drain plugs. Although a motorcycle lift is not necessary it does make matters easier. Draining the oil with the bike in the upright position will yield more drainage. When taking off the Primary Cover beware of the extra oil that will not be drained by the two drain plugs so have an oil pan underneath the Primary Cover to catch this excess oil. Disconnect the battery.



STEP 1
Clutch Slave Cylinder Piston Removal and Installation

This step is mandatory as the Clutch Adjustment Screw will remain bolted in place and you will not be able to remove the Primary Drive Cover (3699-0035R) without releasing the Hex Nuts retaining the Slave Cylinder Piston in place.

Remove the three Hex. Button Head Screws (5199-0653) holding the Clutch Access Cover (3899-0001C) in place; remove Clutch Adjustment Screw (4199-0019) Hex Nuts (5199-0497) the outer one is the locking nut; remove Retaining Ring (5599-0004); pump clutch hand lever slowly to push Slave Cylinder Piston (4199-0010) out of cavity being careful not to scratch or drop Slave Cylinder Piston so you do not damage the surfaces that come into contact with the seals.

When reinstalling insure that Retaining Ring sharp edge is outward. This is also a good time to replace the Clutch Seals. It has been found that the standard “O” shape seals work best of the three designs produced at the factory. If the Slave Cylinder Piston exhibits scratches, carefully chuck it into a drill press by securing a bolt and nut through the center of it and polish the surfaces at a safe rotational speed.

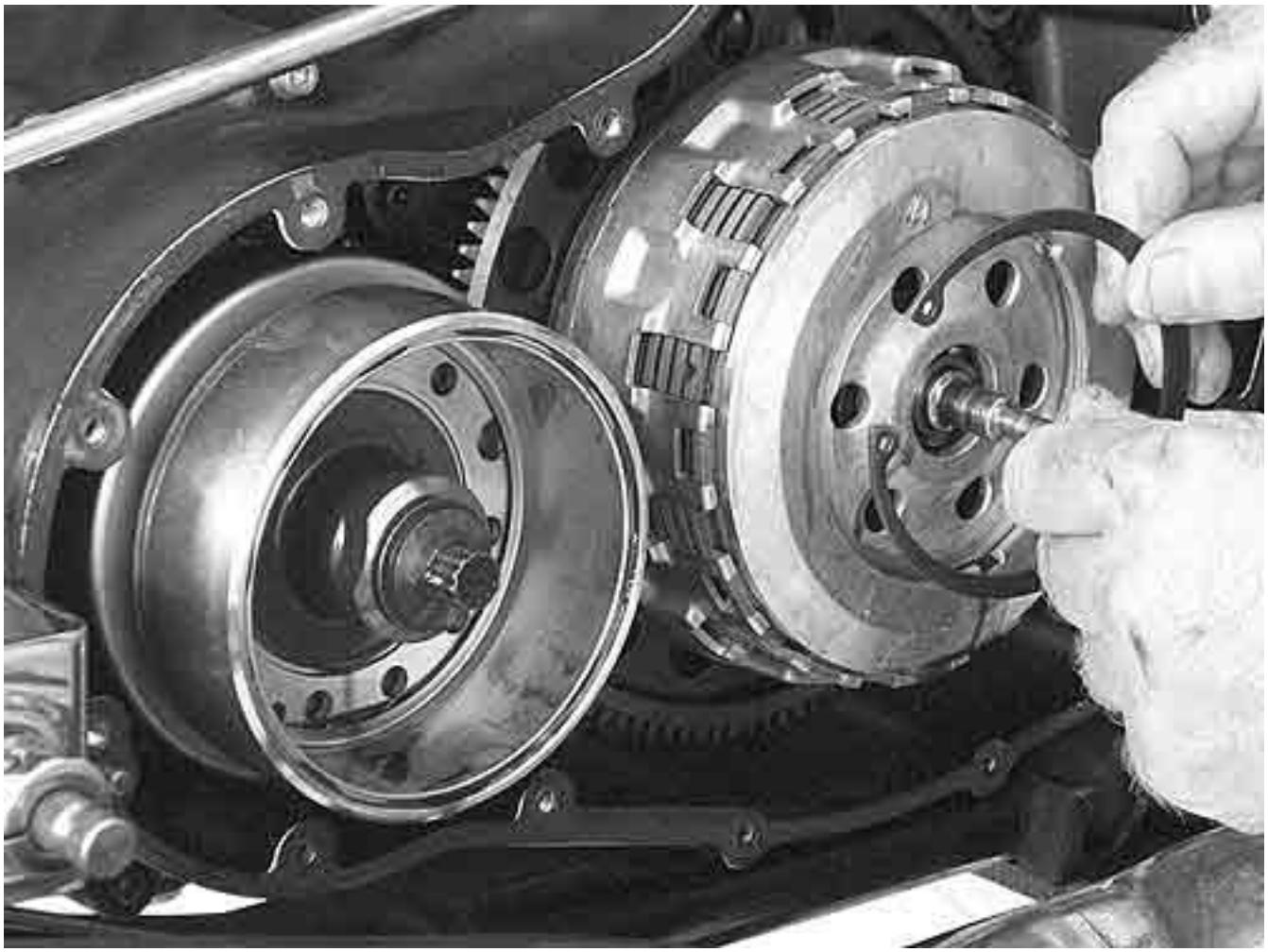
STEP 2
Primary Drive Cover Removal and Installation

Unbolt the Banjo Bolt (5199-0529) located at the bottom of the Primary Drive Cover just underneath the Clutch Slave Cylinder Assembly; remove the rear Foot Lever (2199-0006C) allowing the Primary Drive Cover enough clearance to be pulled off; disconnect the Stator Wire harness by following it to where it connects at the engine.

Because the Stator consists of powerful magnets, you must pull the Primary Drive Cover parallel to the engine keeping the gap between the engine and the Primary Drive Cover equidistant all around. This will prevent chipping of the Stator magnets and wedging the Stator which will prevent the removal of the Primary Drive Cover.

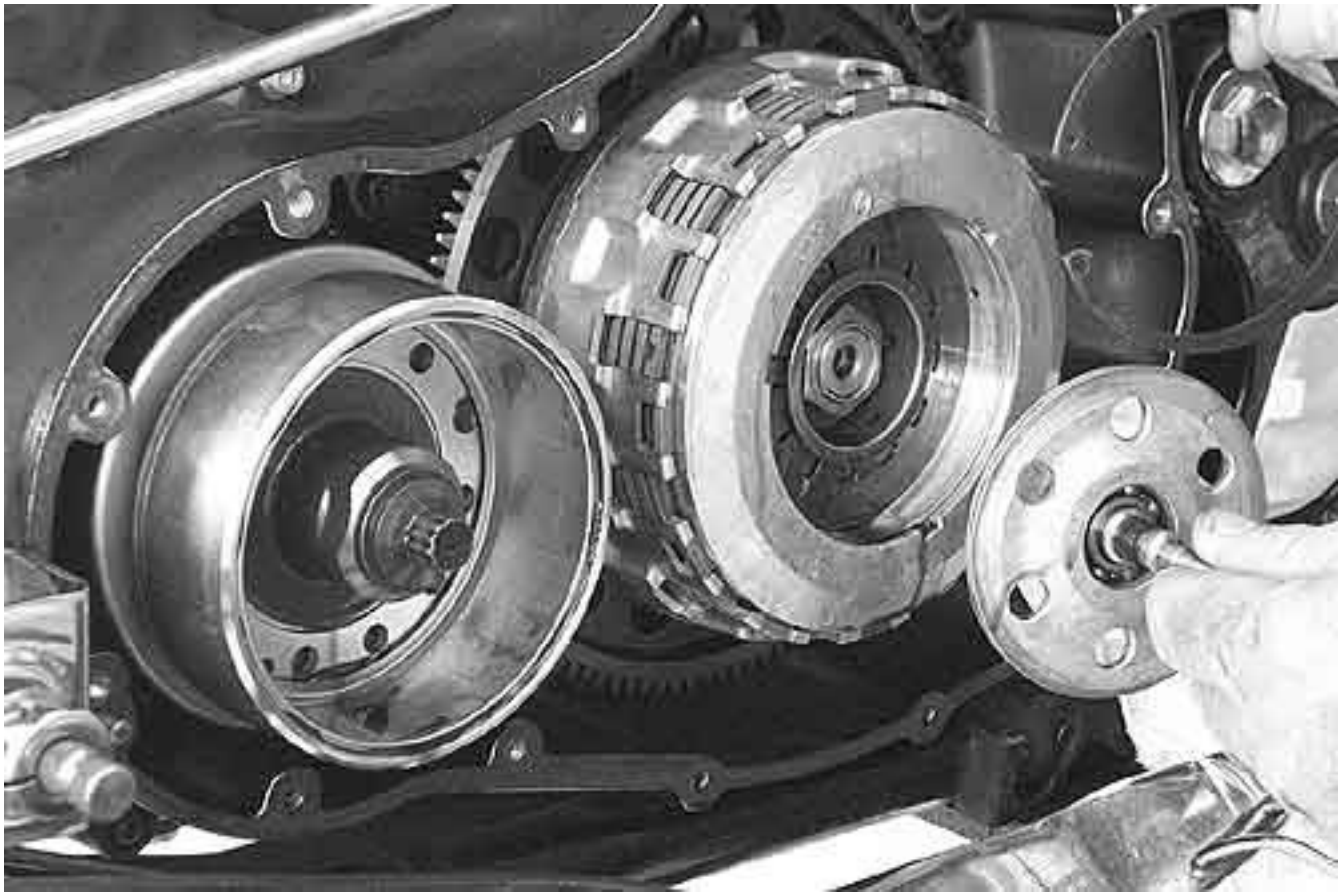
CAUTION: Keep a firm grip on the Primary Drive Cover as you remove and install it or the magnets will rapidly slam the Primary Drive Cover onto the engine catching fingers, hands or anything else in its way!

Installation: Use new Primary Cover Gasket (3699-0015) when reinstalling Primary Drive Cover; install new Crush Washers (5299-0130) at the Banjo Bolt when reinstalling.



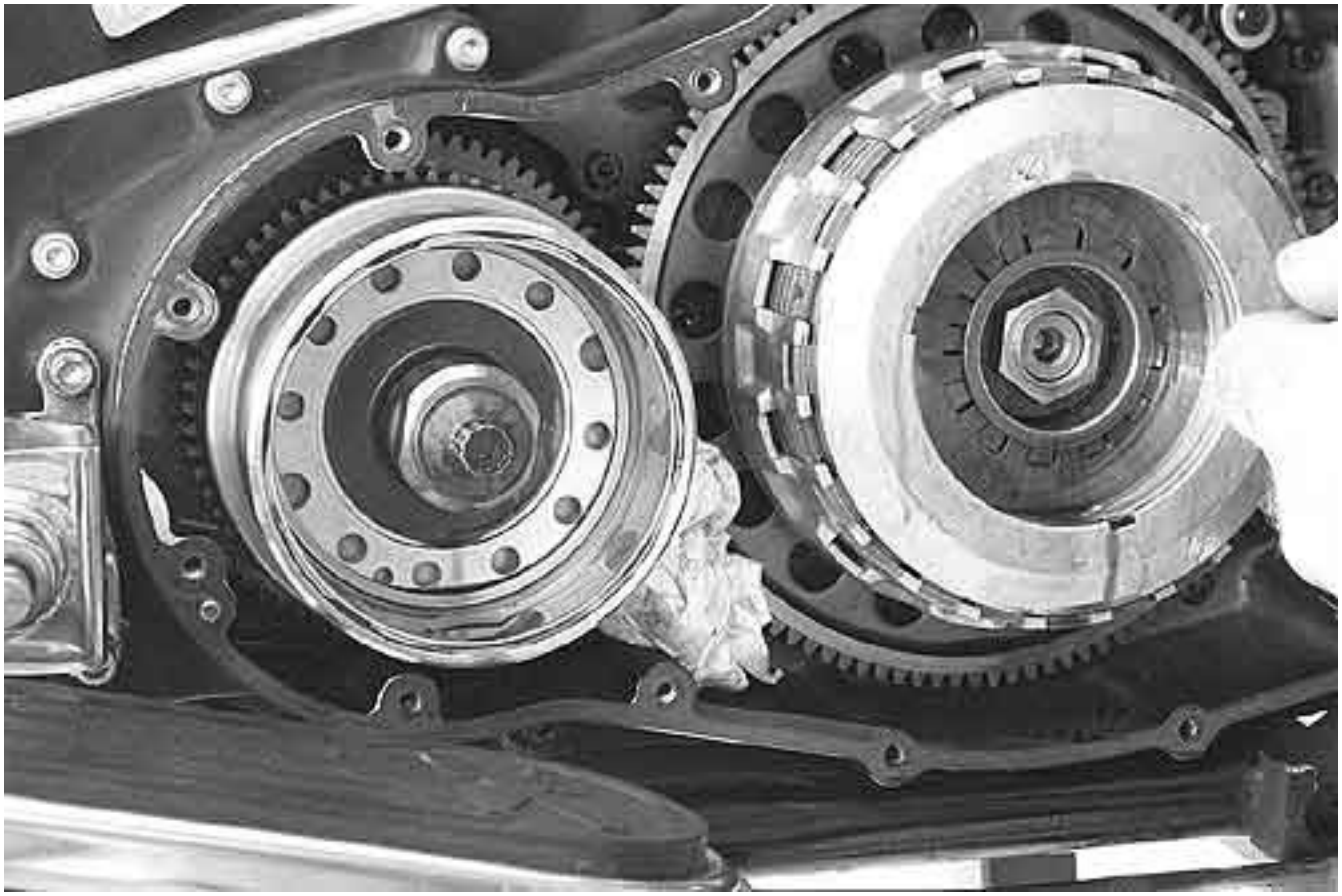
STEP 3
Lift Plate Assembly Removal and Installation

Remove Retaining Ring (4299-0020); grasp and pull Clutch Adjustment Screw pulling toward you to remove Lift Plate Assembly. When reinstalling insure that Retaining Ring sharp edge is outward.



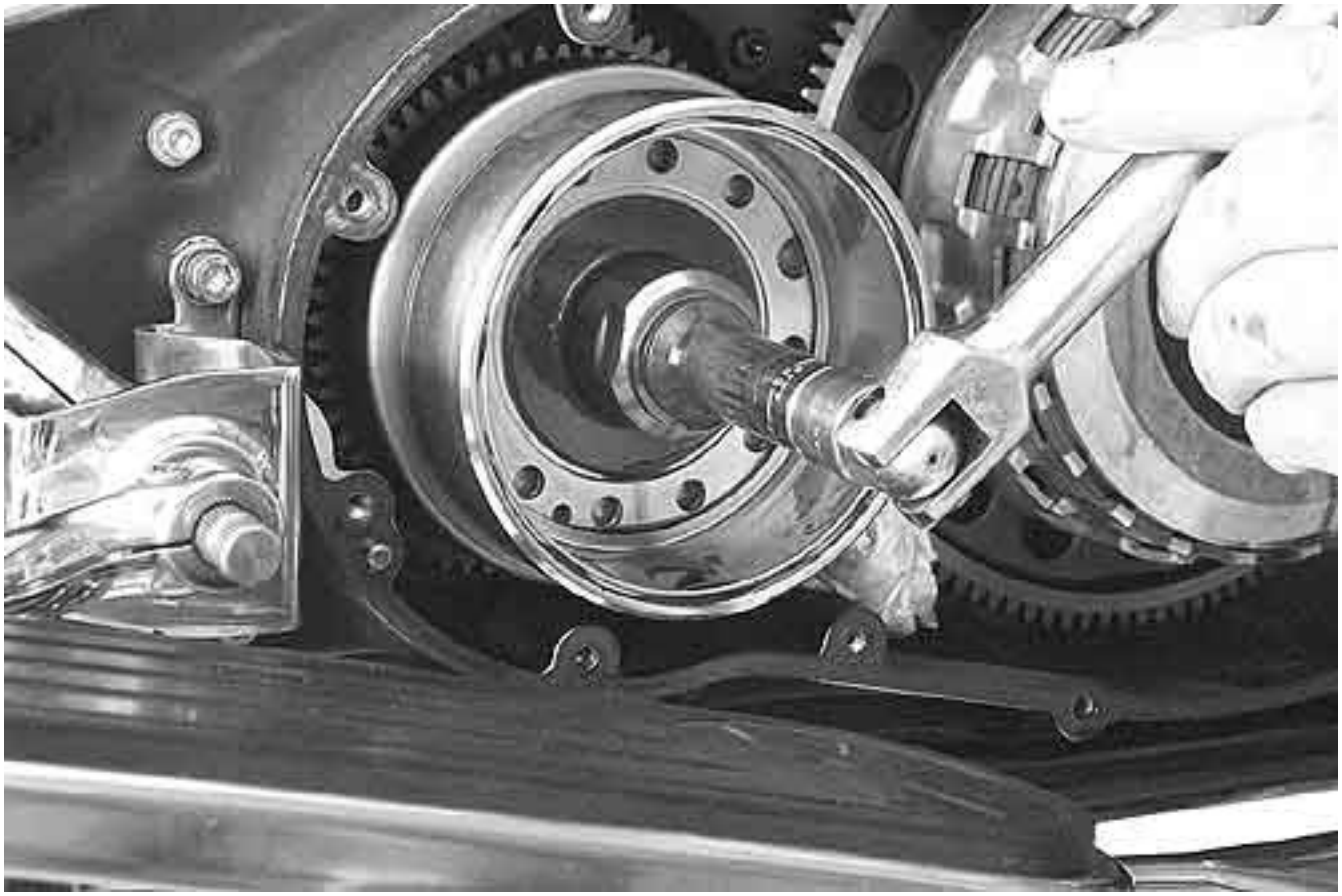
STEP 3.1
Lift Plate Assembly Removal and Installation

Remove Retaining Ring (4299-0020); grasp and pull Clutch Adjustment Screw pulling toward you to remove Lift Plate Assembly. When reinstalling insure that Retaining Ring sharp edge is outward. Photograph shows what you will see after removing Lift Plate Assembly.



STEP 4
Alternator Rotor Removal and Installation

In preparation of the Alternator Rotor (3699-0017) removal wedge a rag in between the Crankshaft Starter gear (3799-0019) and Clutch Basket Assembly Gear (4299-0002) to prevent the shafts from turning.

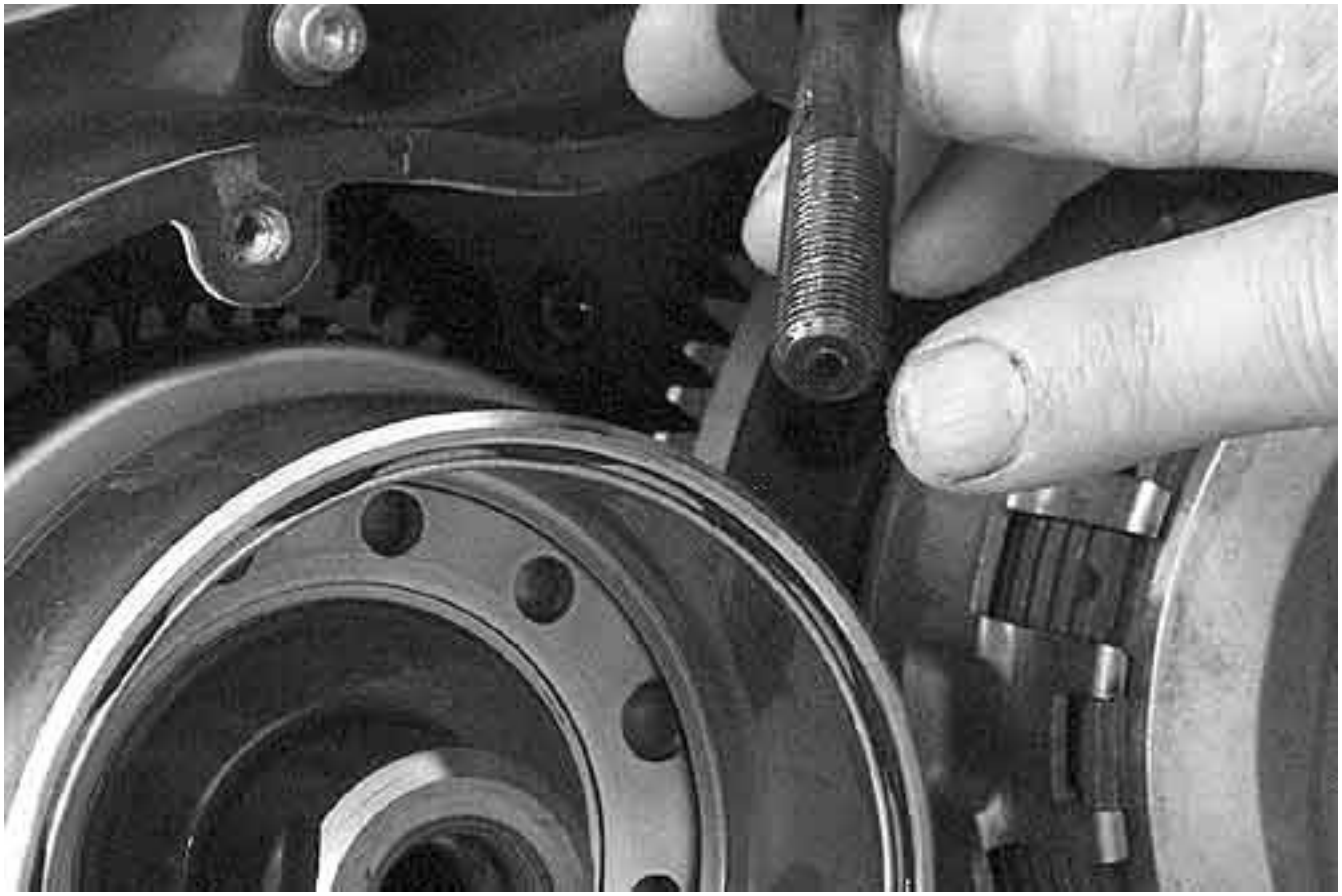


STEP 5
Alternator Rotor Bolt Removal and Installation

There were two different Crankshaft assemblies used in the 1999 model year X-Twin® engine. The early Crankshaft have a Hex Nut (5199-0530) in lieu of the Alternator Rotor Bolt (6000-0008) used in the later engines. The photographs show the later assembly used in the majority of X-Twin® engines.

Using a 12 pt. socket to remove the Alternator Rotor Bolt (6000-0008) by using a counterclockwise motion.

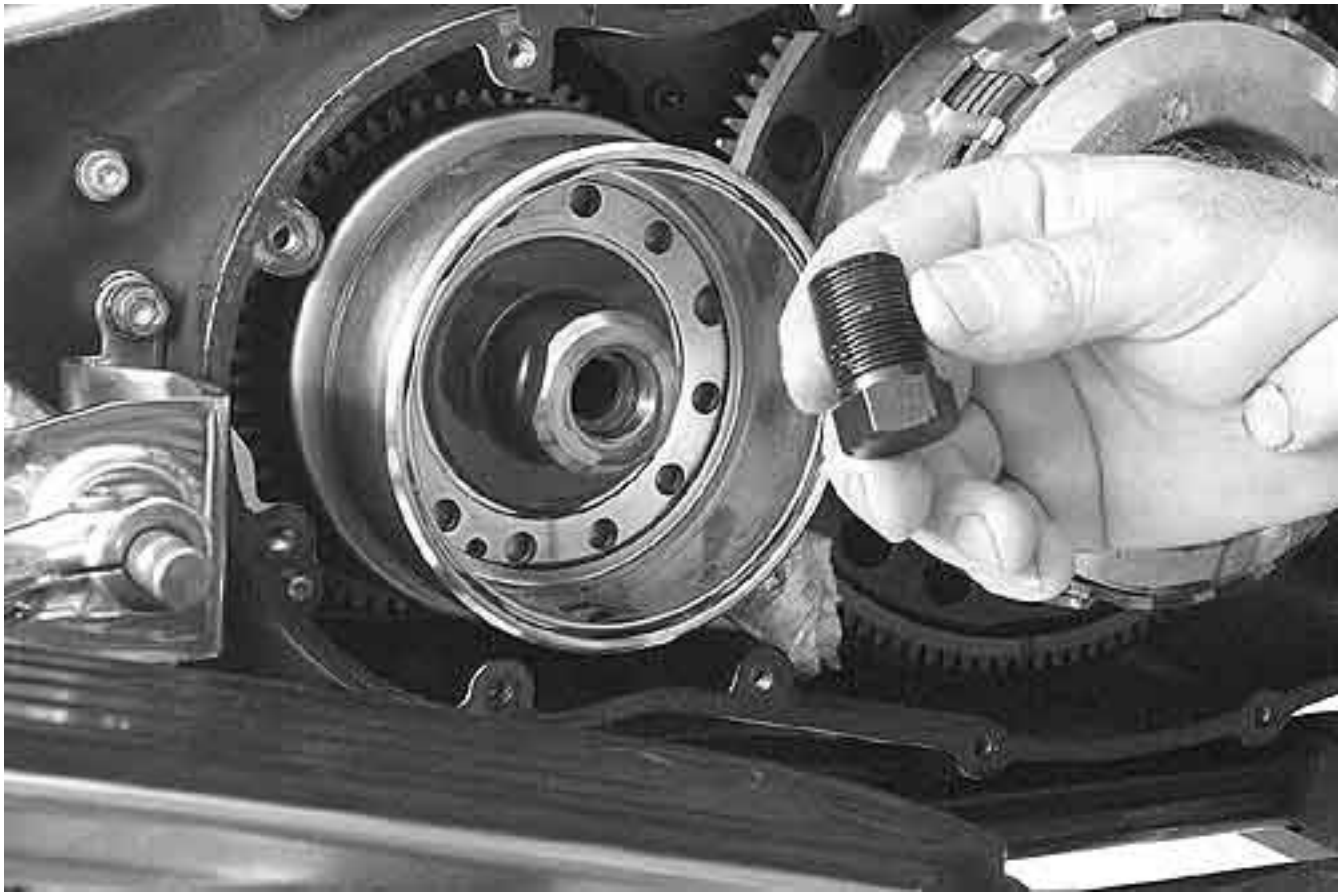
NOTE: For early model X-Twin® engines simply remove the Hex Nut (5199-0530) in counterclockwise motion along with the Hardened Washer (5299-0038).



STEP 6
Alternator Rotor Bolt Oil Orifice Removal

In the end of the Alternator Rotor Bolt is a set screw with an orifice drilling through it. The factory now recommends the removal of this orifice to provide more oil delivery to the Stator for cooling purposes; remove set screw with appropriate Allen Head wrench and save.

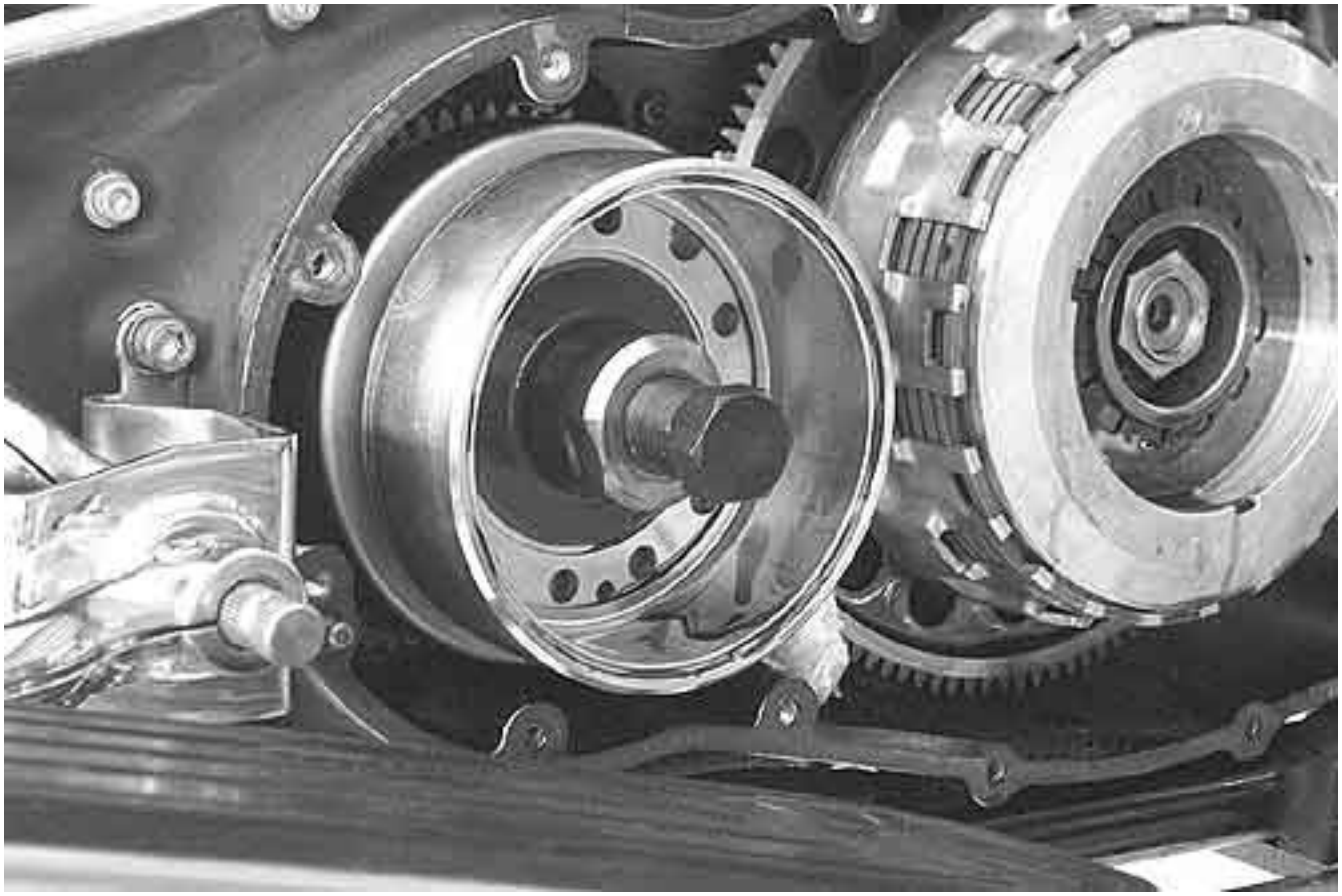
NOTE: In the early model X-Twin® engines remove Set Screw oil orifice (5199-0640) located at the end of the crankshaft.



STEP 7.1
Alternator Rotor Removal

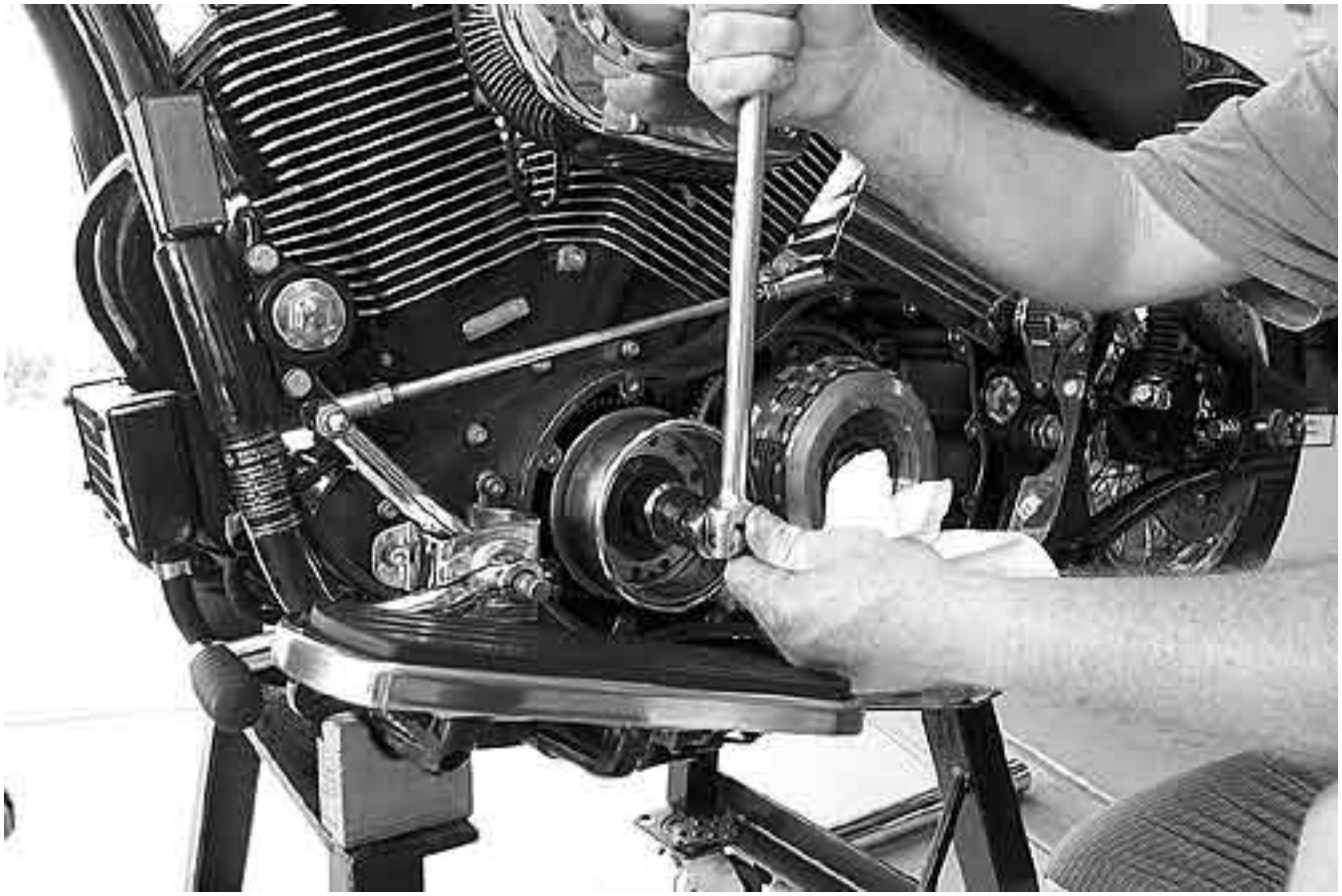
Use Alternator Puller (6999-0028A) made by Kent-Moore* to remove Alternator Rotor.

*Kent Moore can be contacted at (800) 345-2233, http://www.kent-moore.spx.com/; the price of the Alternator Puller (6999-0028A) was $28.41 at the time these instructions were made. Thanks to Ed Tobolik owner of Super X® 1984 for this information.



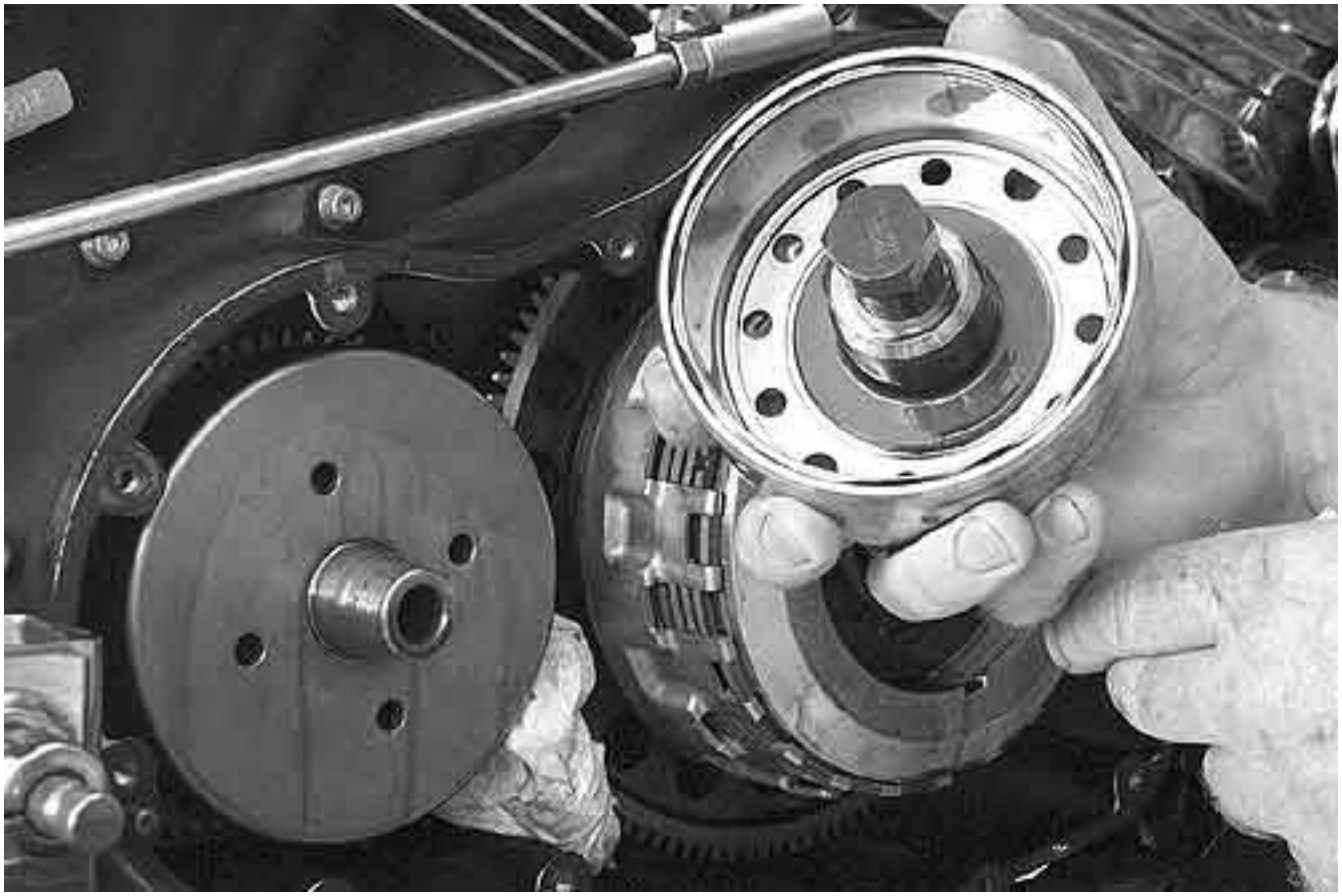
STEP 7.2
Alternator Rotor Removal

Photograph shows Alternator Puller (6999-0028A) engaged.



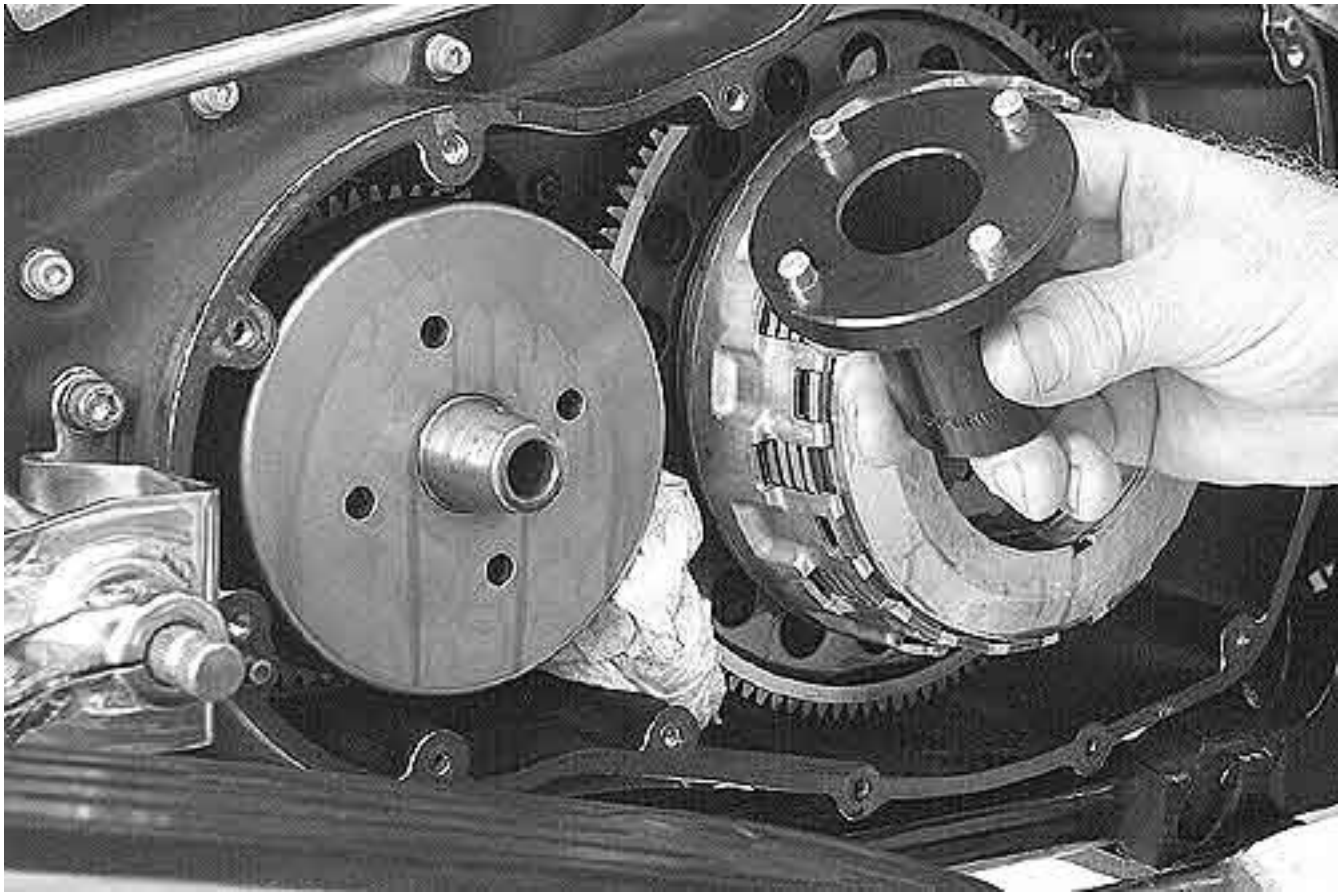
STEP 7.3
Alternator Rotor Removal

Using a 1/2” breaker bar pull in a clockwise motion screwing the Alternator Puller into Alternator Rotor housing releasing the Alternator Rotor. The Alternator Puller presses against the crankshaft to free the Alternator Rotor.



STEP 7.4
Alternator Rotor Removal

Photograph shows Alternator Rotor removed and Alternator Puller in place.

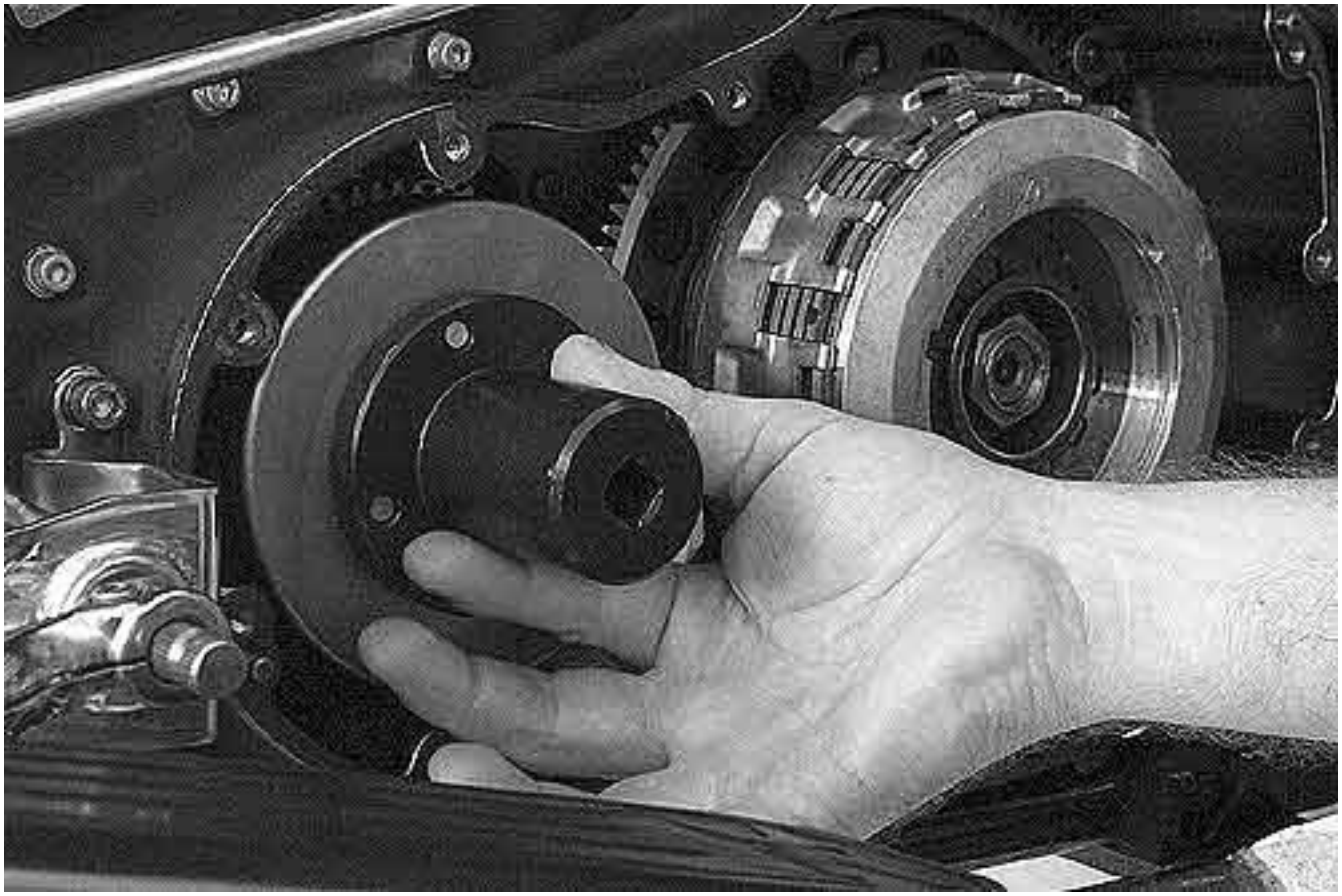


STEP 8.1
Spring Retainer Removal and Installation

Use Torsional Compensator Wrench (6999-0041A) made by Kent Moore* for the removal and installation of the Spring Retainer (3399-0049).

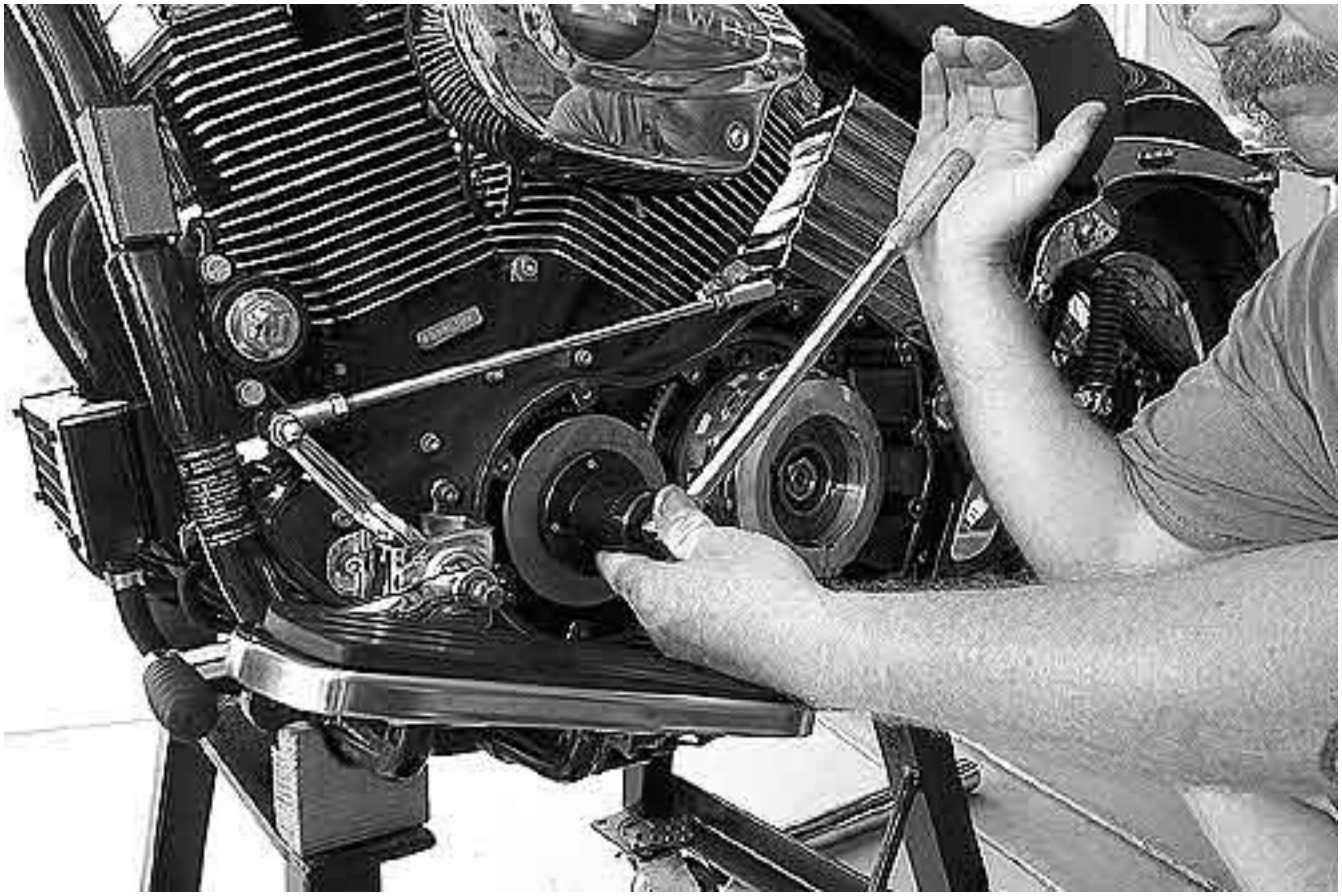
NOTE: On early model X-Twin® engines use the same tool. However the part number for the Spring Retainer is 3399-0335.

*Kent Moore can be contacted at (800) 345-2233, http://www.kent-moore.spx.com/; the price of the Torsional Compensator Wrench (6999-0041A) was $60.74 at the time these instructions were made. Thanks to Ed Tobolik owner of Super X® 1984 for this information.



STEP 8.2
Spring Retainer Removal and Installation

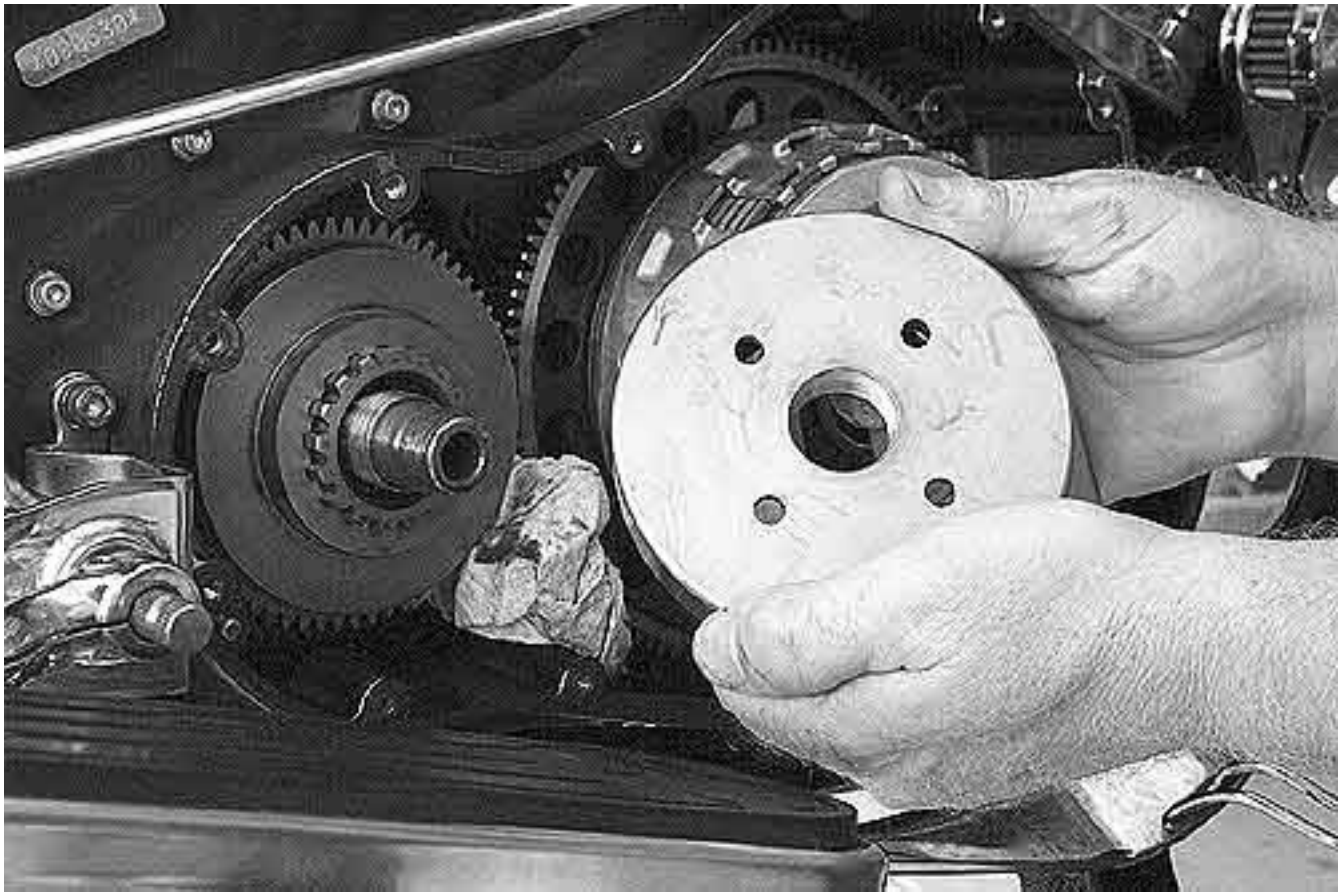
Torsional Compensator Wrench for the removal and installation of the Spring Retainer shown engaged in four holes of Spring Retainer.



STEP 8.3
Spring Retainer Removal and Installation

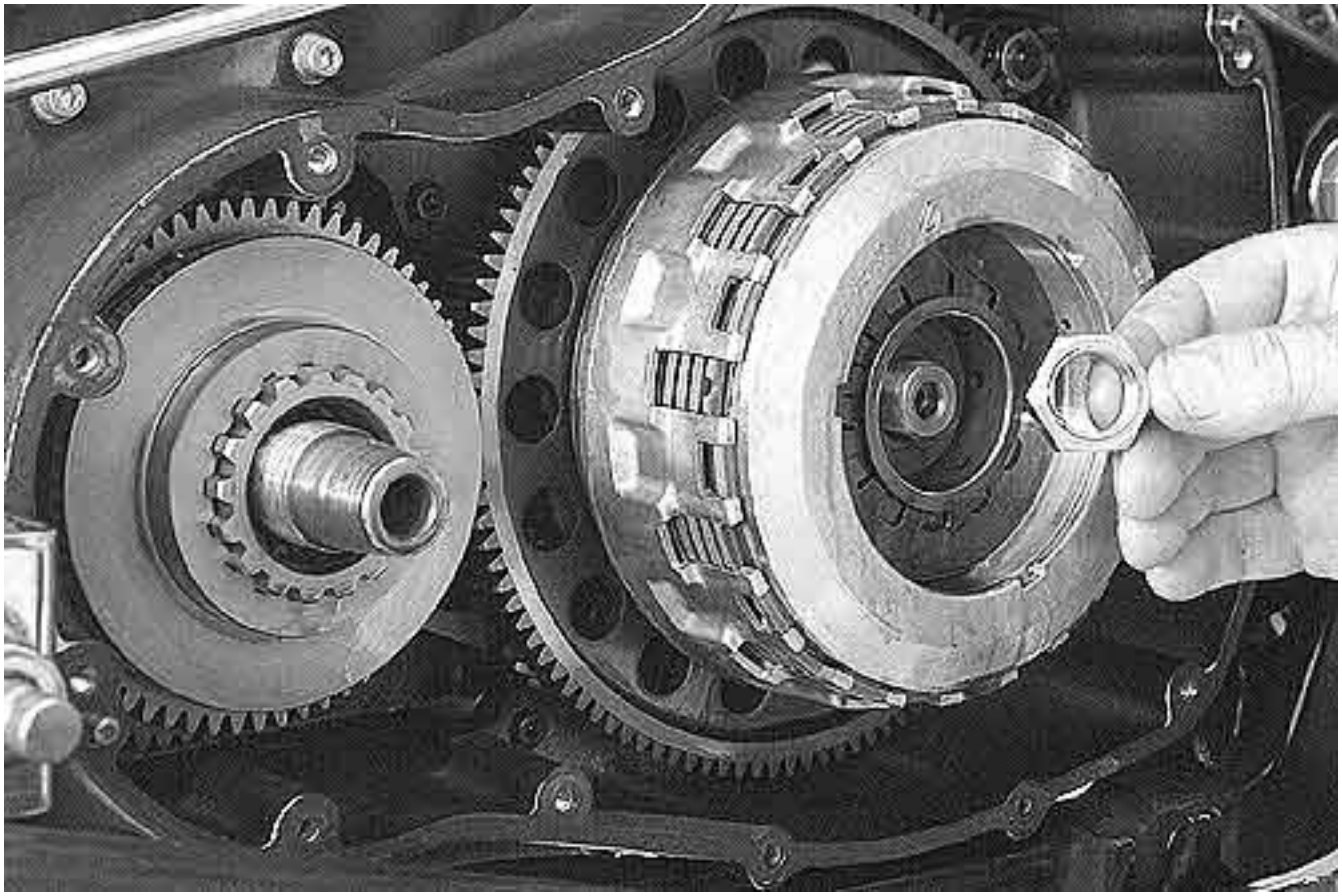
Using a 1/2” breaker bar with Torsional Compensator Wrench remove the Spring Retainer with counterclockwise motion.

Install with clockwise motion.



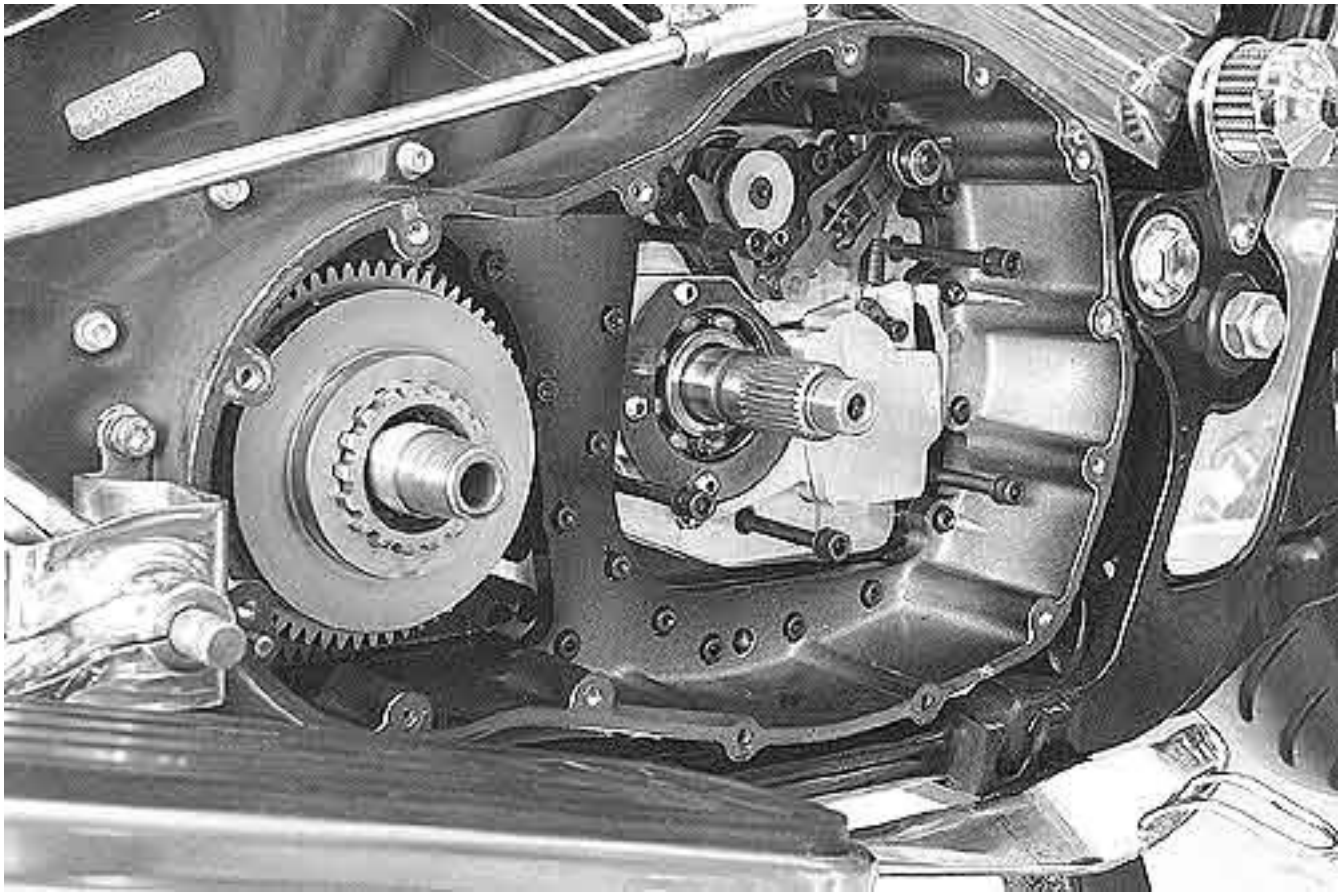
STEP 8.4
Spring Retainer Removal and Installation

Photograph shows Spring Retainer removed.



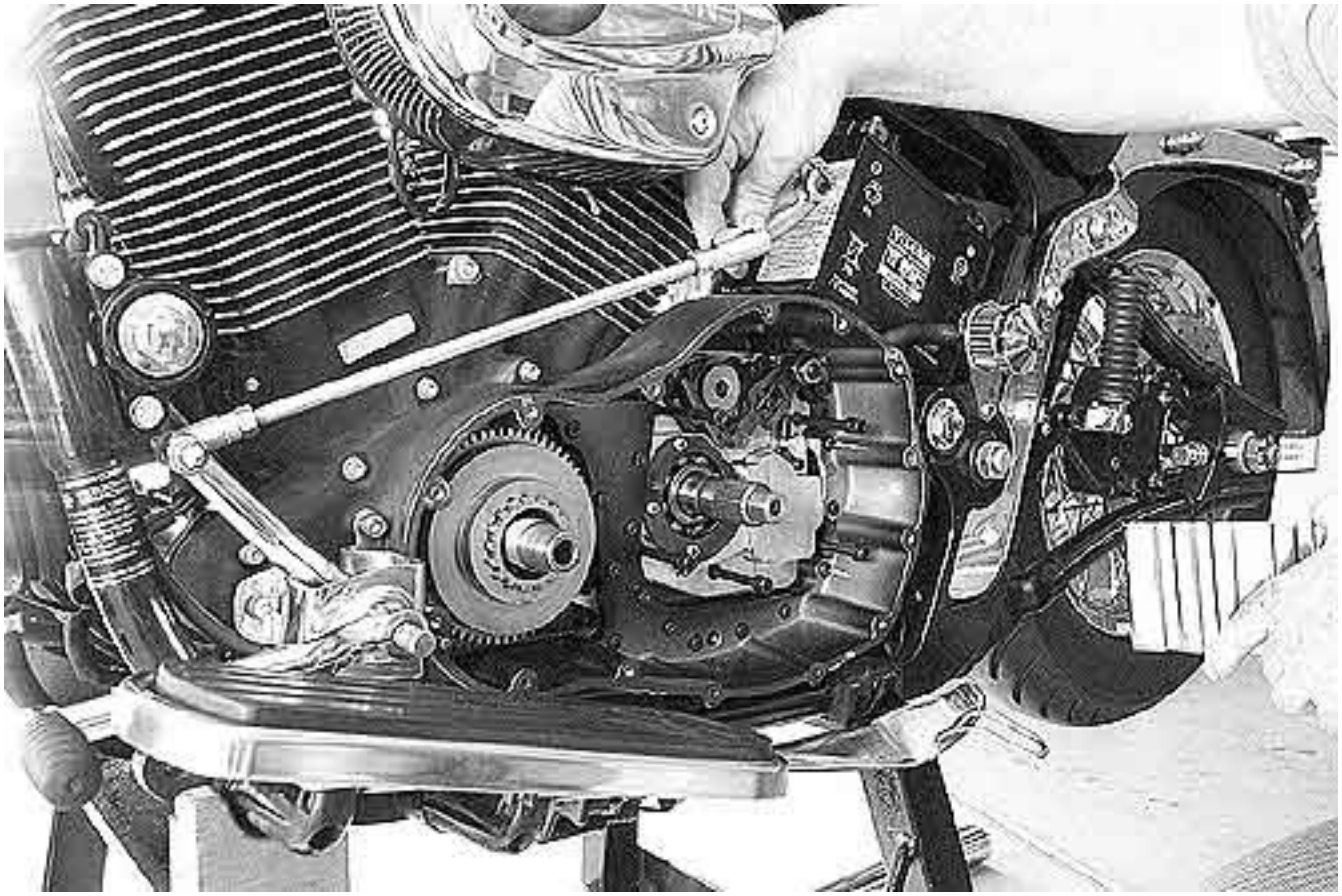
STEP 9
Clutch Assembly Lock Nut Removal and Installation

Remove Lock Nut (4299-0018) and Spring Washer (4299-0019) from Clutch Assembly. Remove complete Clutch Assembly (4299-0001).



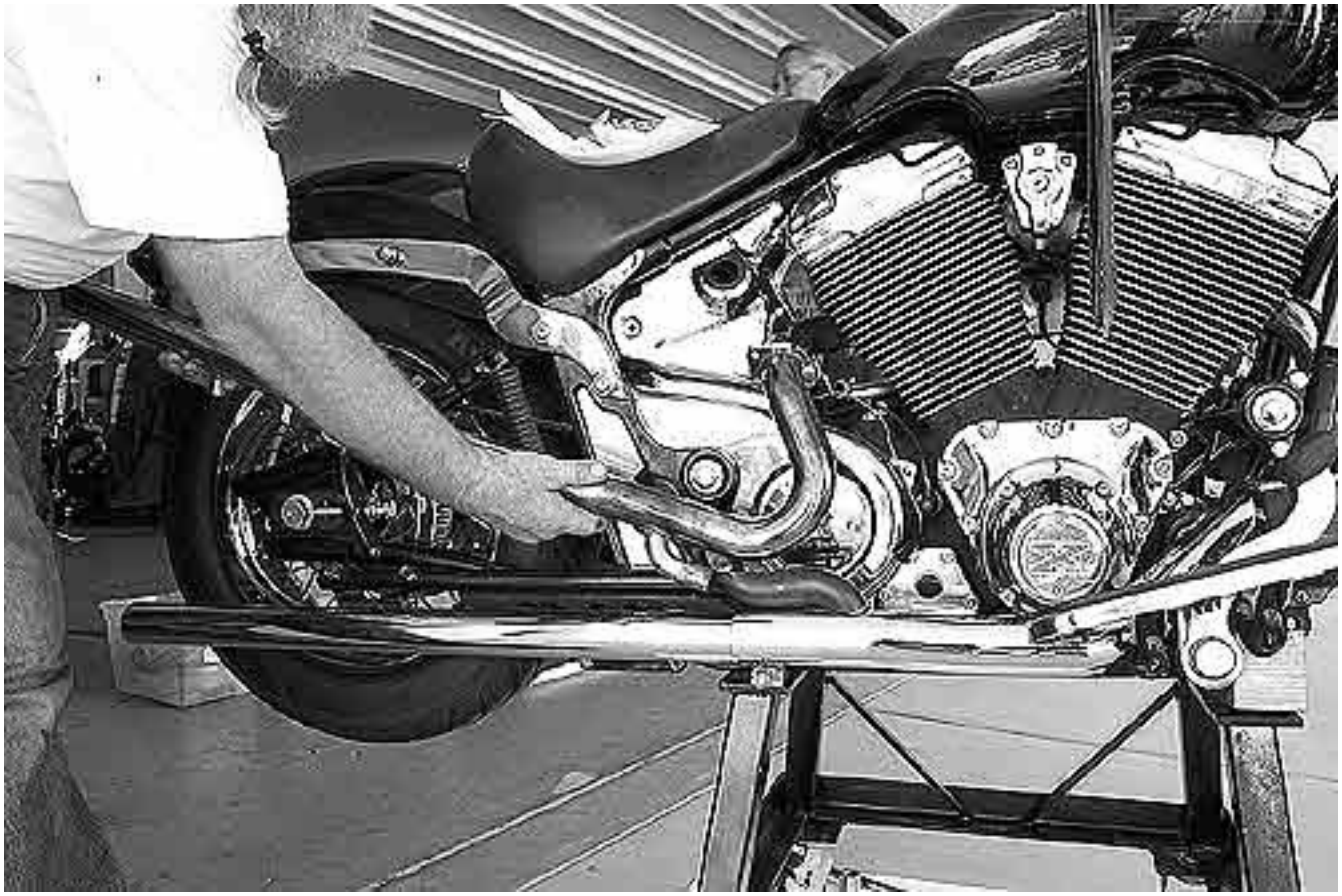
STEP 10
Transmission Assembly Removal and Installation

Back off Hex. Socket Head Screws (5199-0520) holding in Transmission assembly, but leave them in place with enough threads because in Step 15.1 you will need to free the Transmission Cassette by tapping on the Output Shaft for the Output Sprocket side of the engine.



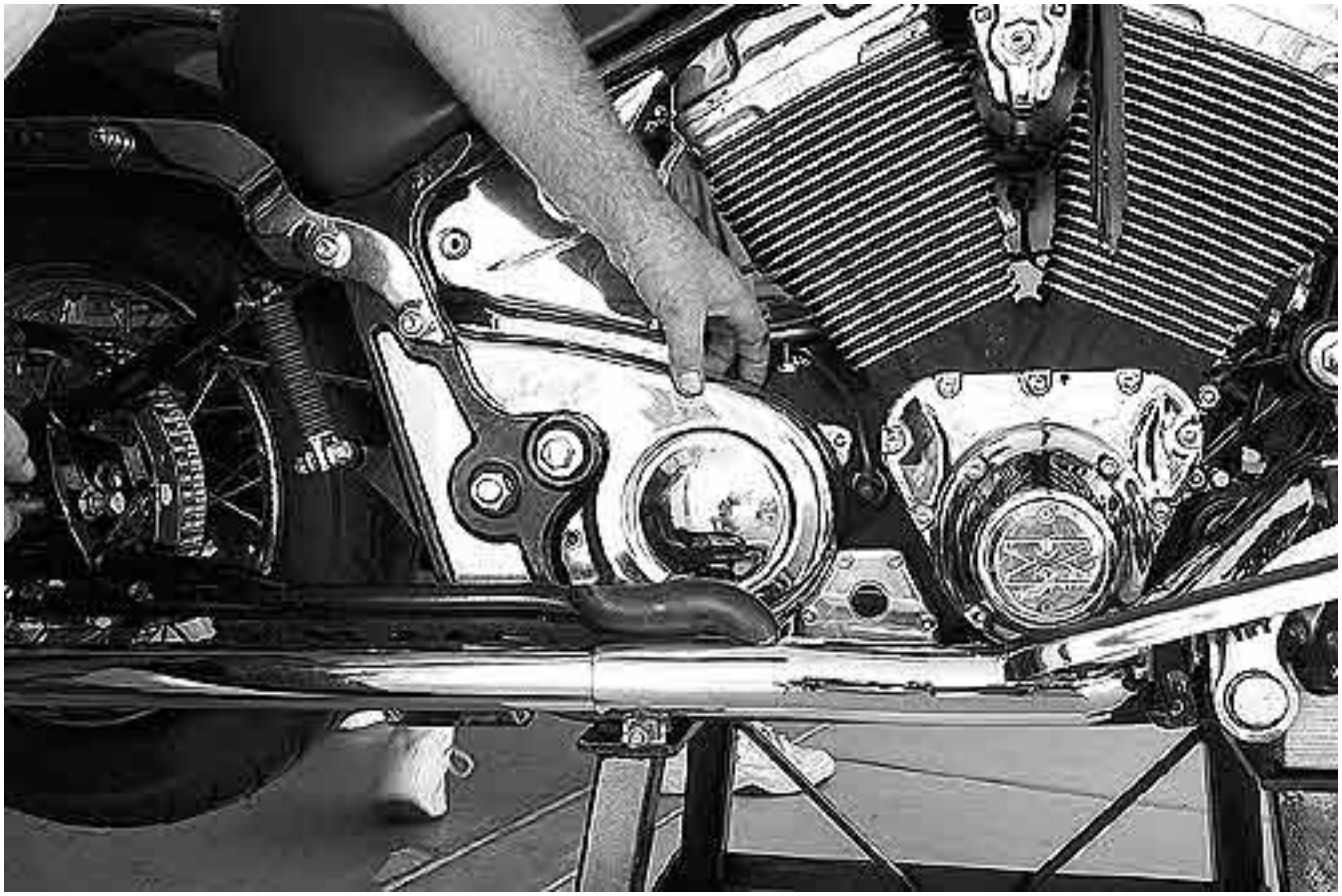
STEP 11
Transmission Assembly Removal and Installation

Remove Socket Hd. Screw (5199-0366) from Transmission Lever (2199-0032H), but the balance of the Shifter Rod Assembly (2199-0066) connected. This will allow the Shift Linkage shaft (6000-0023) to slide past engine housing later when you physically pull out the Transmission Cassette, later in the process.



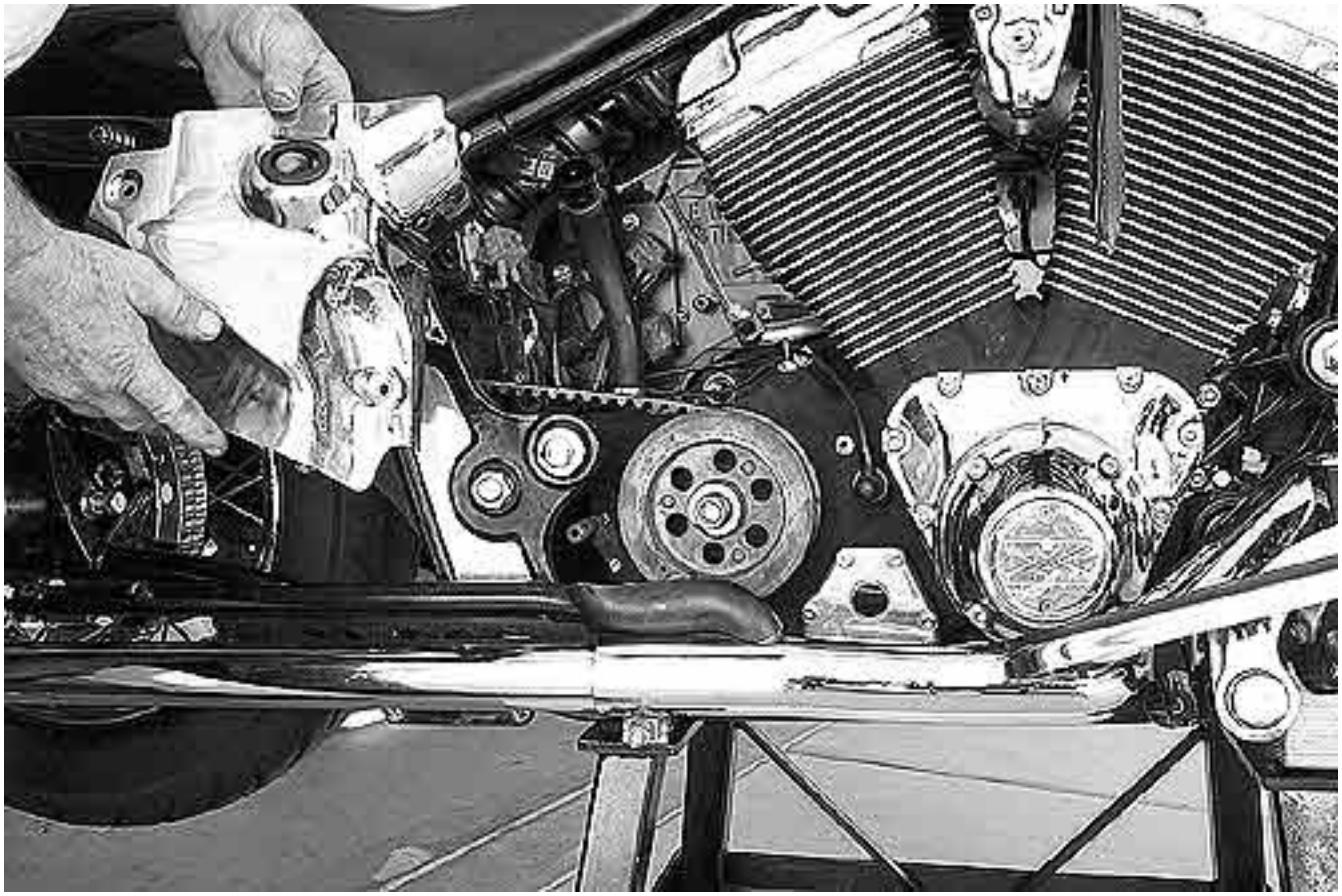
STEP 12
Rear Exhaust Pipe Removal and Installation

Unscrew the Oxygen Sensor (4599-0011) located on the backside of the Rear Exhaust Pipe (4599-0014); it is easier to unplug the sensor from underneath the battery box on the battery box side and putting the sensor in a safe place. Remove the Rear Exhaust Pipe Cover (4599-0013) by undoing the two Cover Clamps (hose clamps 4599-0026). Loosen Muffler Clamp (4599-0058) and remove Muffler. Loosen the bolt and spread the integral clamp of the Crossover Cover (4599-0056). Unbolt the two Hex. Hd. Screws (5199-0090) fastening the Muffler (4599-0029) to the Exhaust Support (4599-0052D) Unbolt the two Hex. Flange Nuts (5199-0491) from the cylinder head. Carefully move pipe from side-to-side while pulling toward the rear of the bike to slip Exhaust Pipe off the Crossover pipe built onto the Front Exhaust Pipe (4599-0012) slipping the pipe off. Be mindful of the Exhaust Seal Ring (3199-0029).



STEP 13
Output Sprocket Cover Removal and Installation

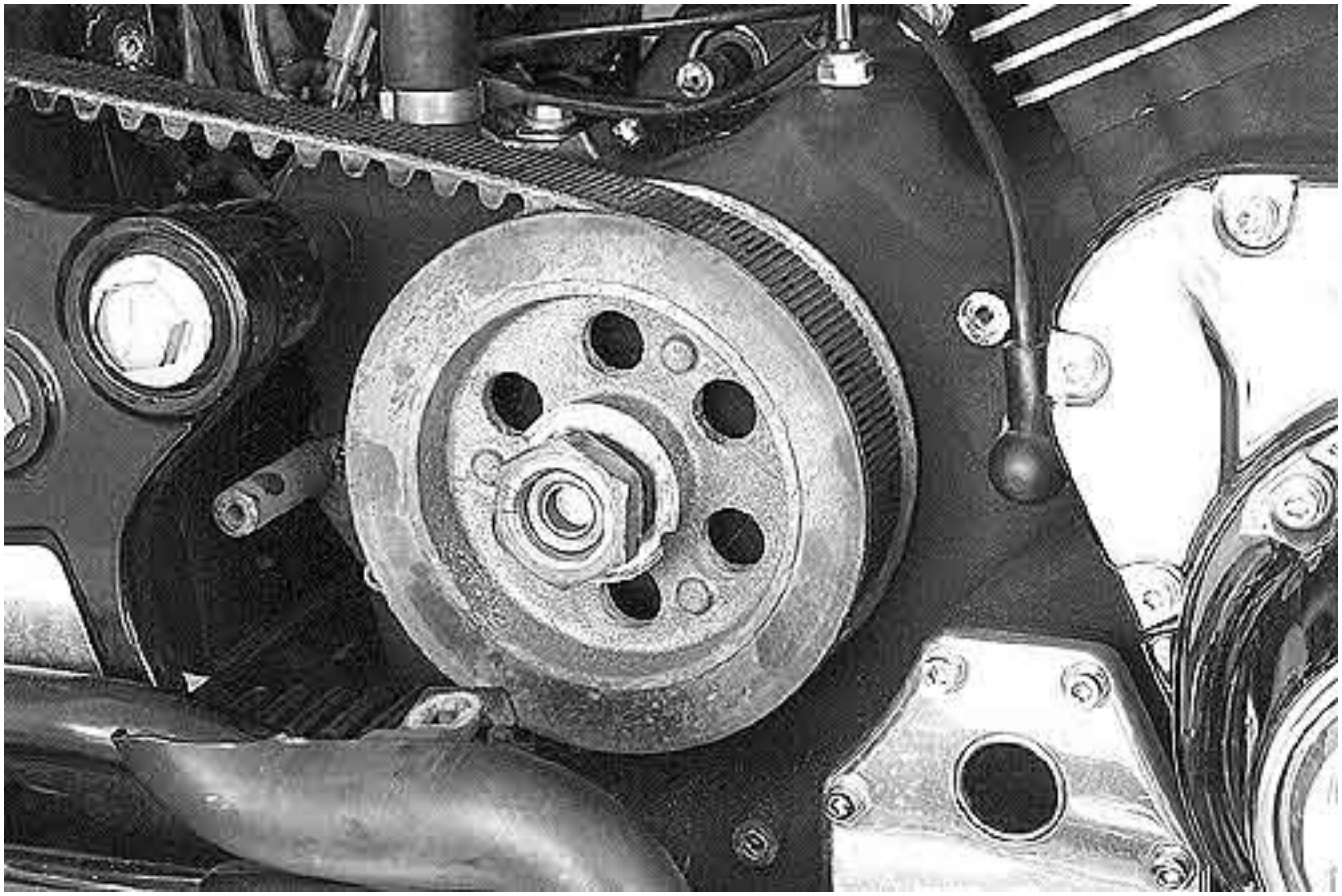
Remove the three Hex. Socket Hd. Screws (5199-0129) that secure the Output Sprocket Cover (3899-0003C-01 or 3800-0001BK) to the engine. Be careful to keep the rubber Grommets (6299-0007) these screws pass through in place on the Output Sprocket Cover.



STEP 14
Electronics Cover Assembly Removal and Installation

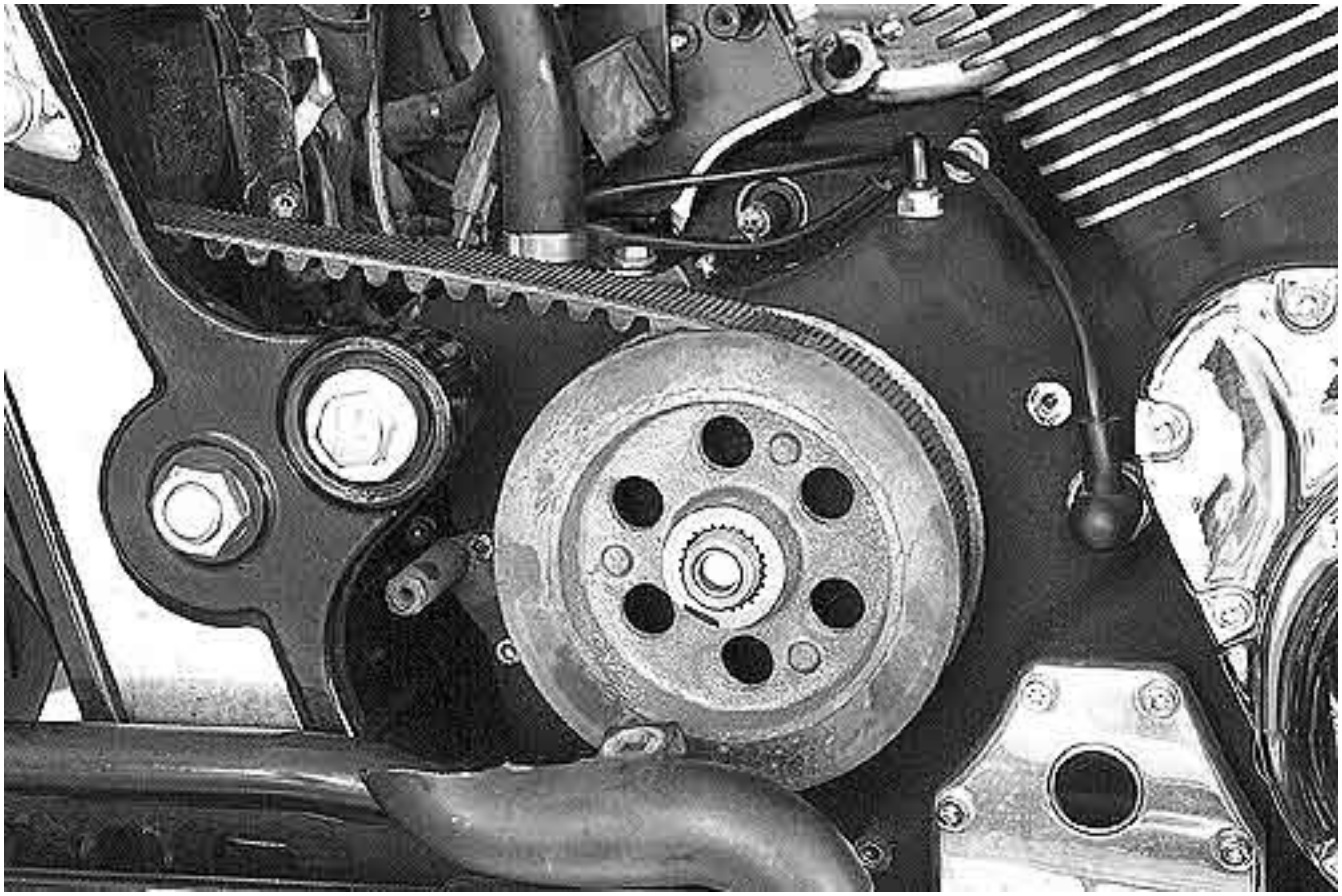
Remove the three Button Hd. Screws (5199-0130) securing the Electronics Cover (2699-0198BK). Remove Oil Filler Cap & Dipstick Assembly (3899-0037); remove the Electronics cover.

Before installation this is good time to check all the connections, but before doing so disconnect the battery for safety reasons.



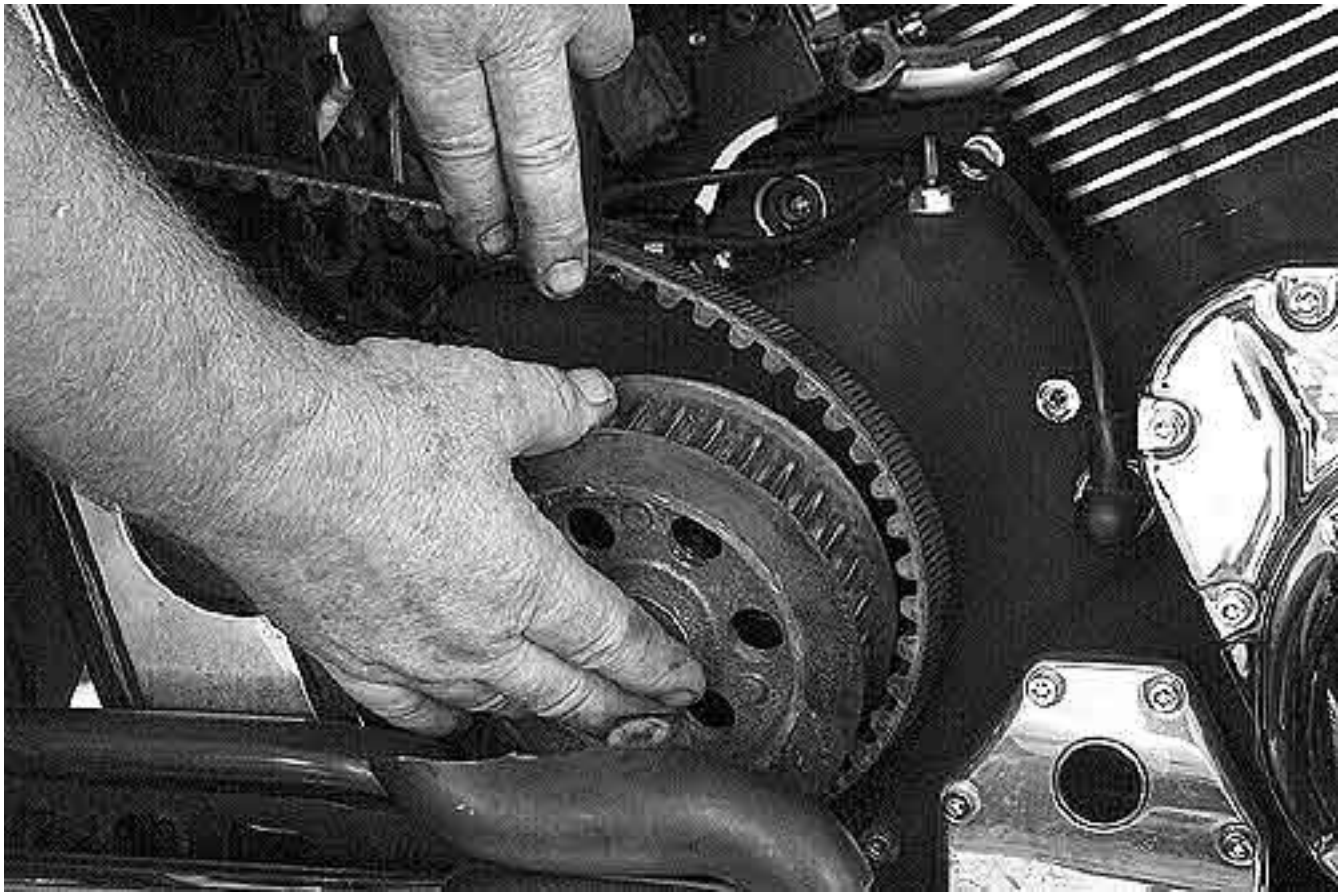
STEP 15.1
Output Sprocket Removal and Installation

Loosen the rear wheel Tensioner Bolts (5199-0605) allowing ample slack in the Drive Belt to slip over the Output Sprocket (3899-0029). Back off, but do not remove, the Hex Nut (5199-0499) on the end of the Output Shaft. Using a rubber mallet or hard plastic faced hammer tap the on the nut and Output Shaft to dislodge the Output Shaft that in turn pushes the entire Transmission Cassette Assembly out of its engine cavity.



STEP 15.2
Output Sprocket Removal and Installation

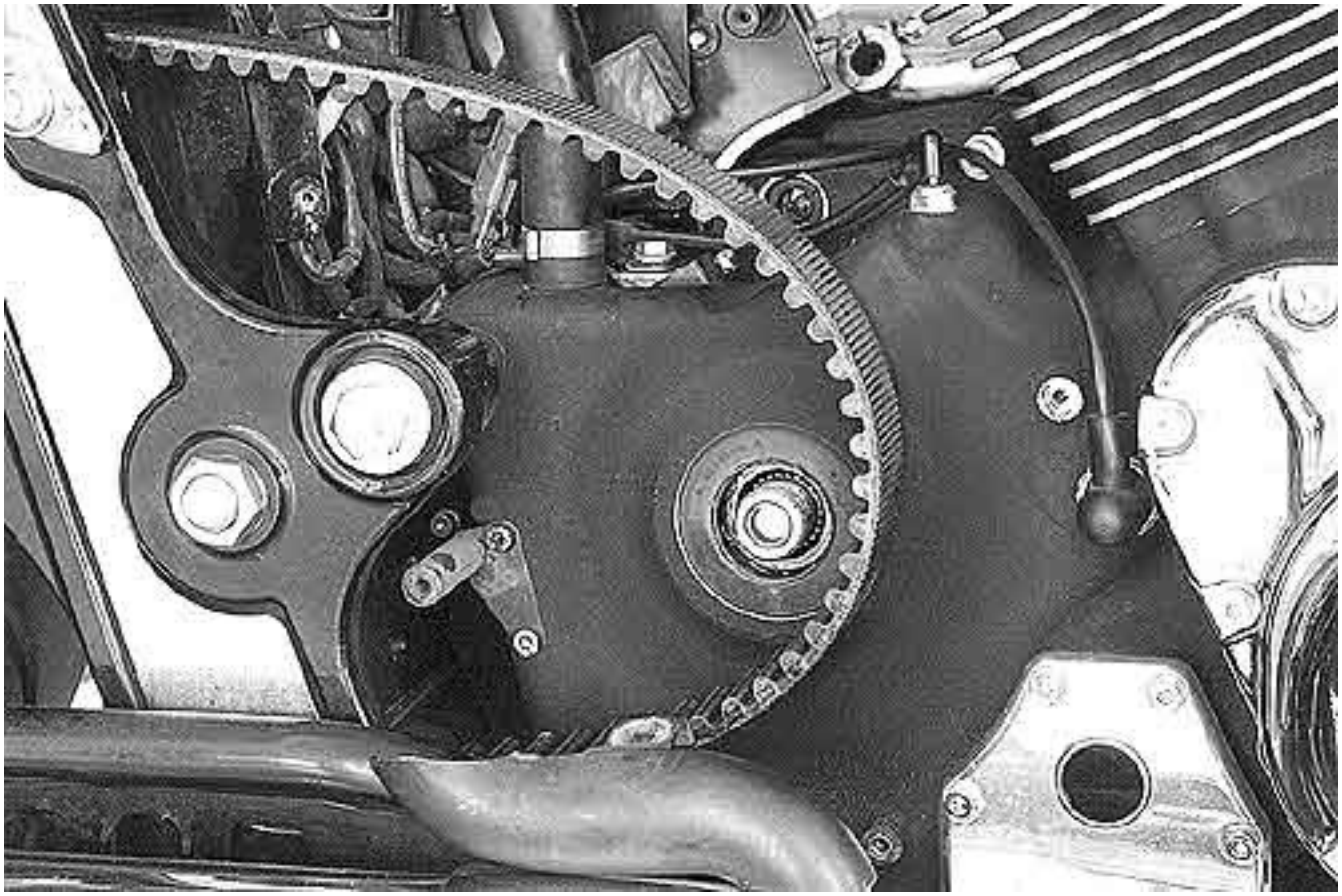
Remove the Hex Nut (5199-0499) and Locking Washer (5299-0129) in preparation of removing the Output Sprocket and Drive Belt.



STEP 15.3
Output Sprocket Removal and Installation

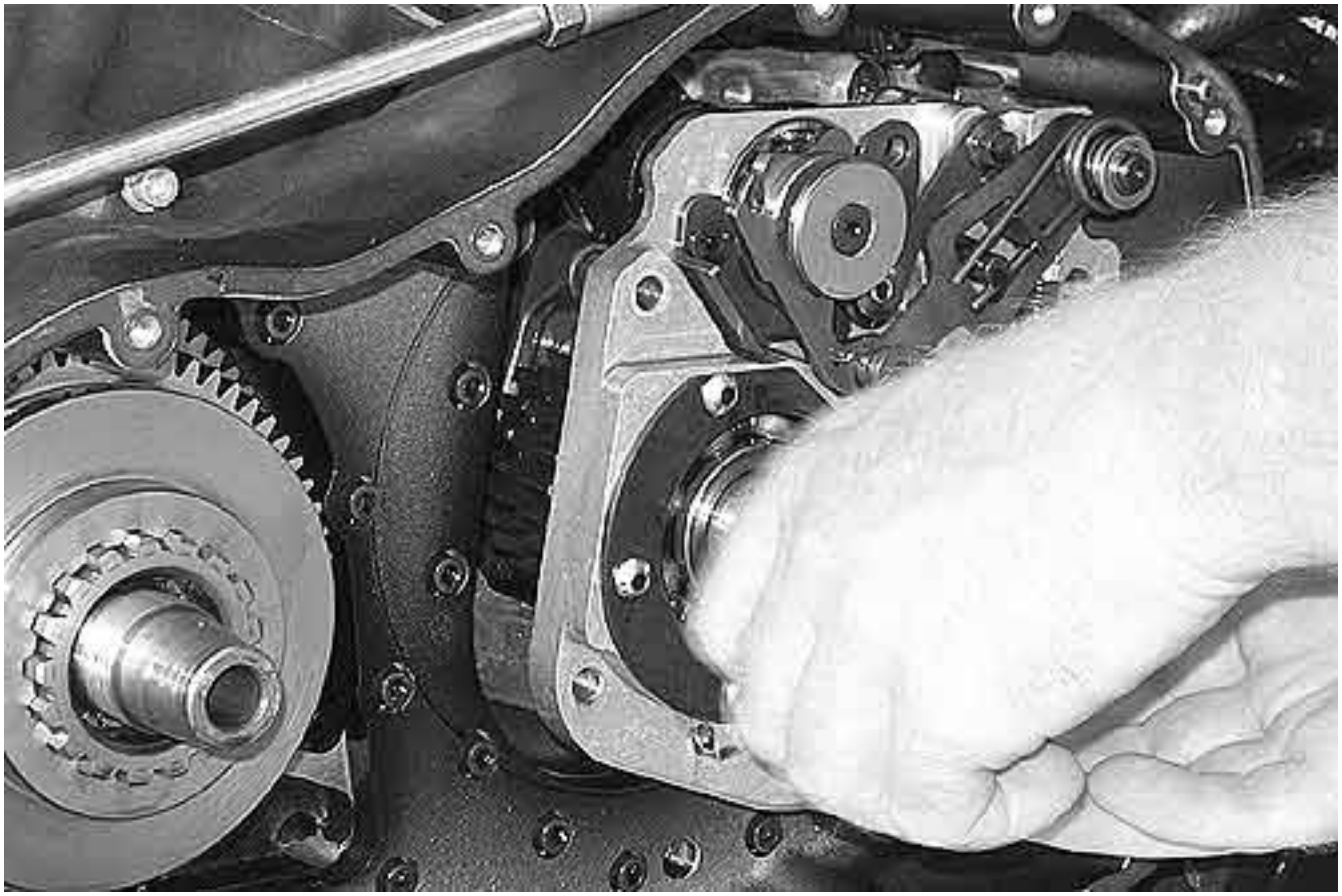
Remove the Output Sprocket (3899-0029).

Before reinstalling you might want to prep, prime and paint the Output Sprocket. Most Output Sprocket exhibit heavy rusting.



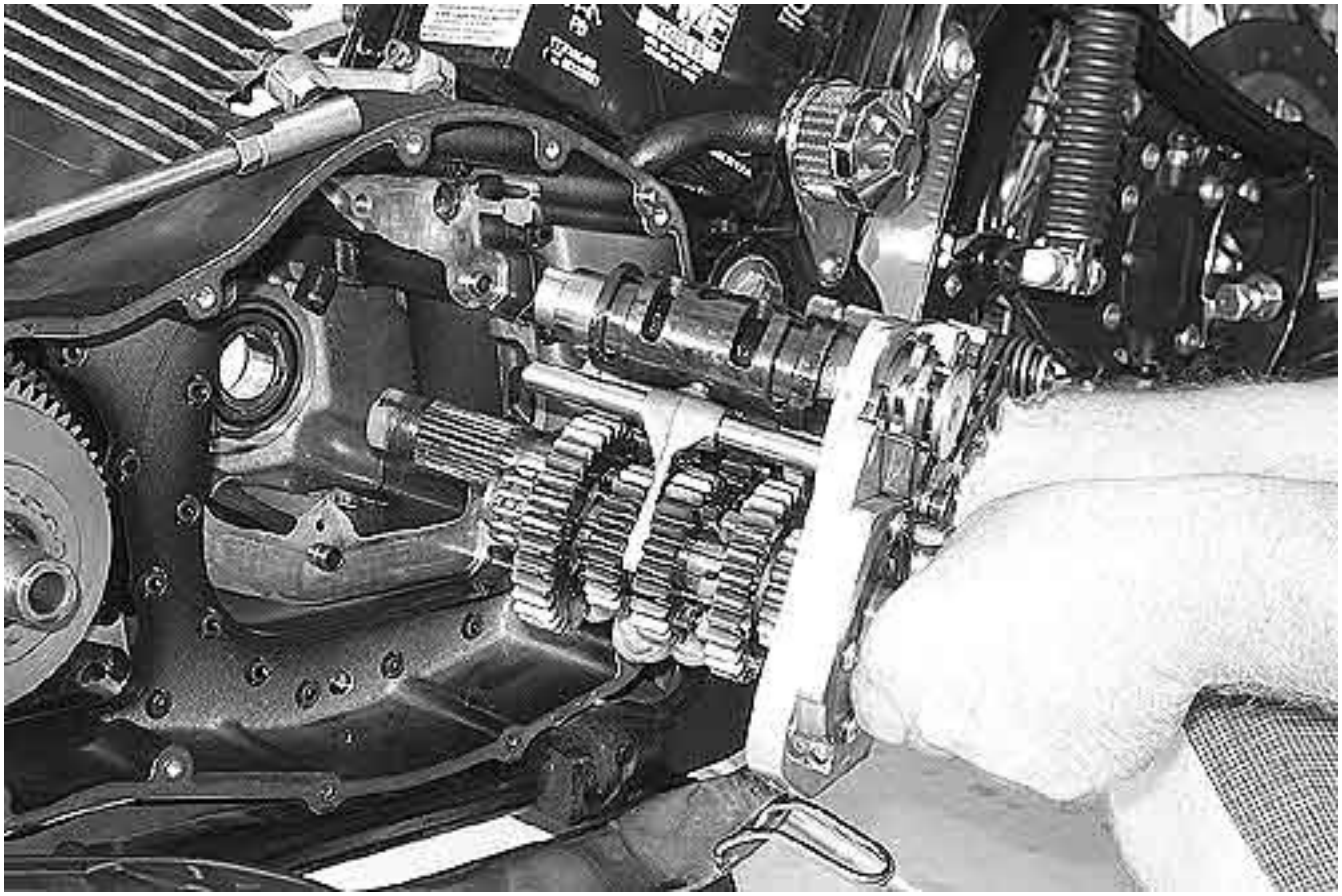
STEP 15.4
Output Sprocket Removal and Installation

Preparation on this is complete and this is how it should look. It is time to go to the other side and complete the Transmission Cassette Removal.



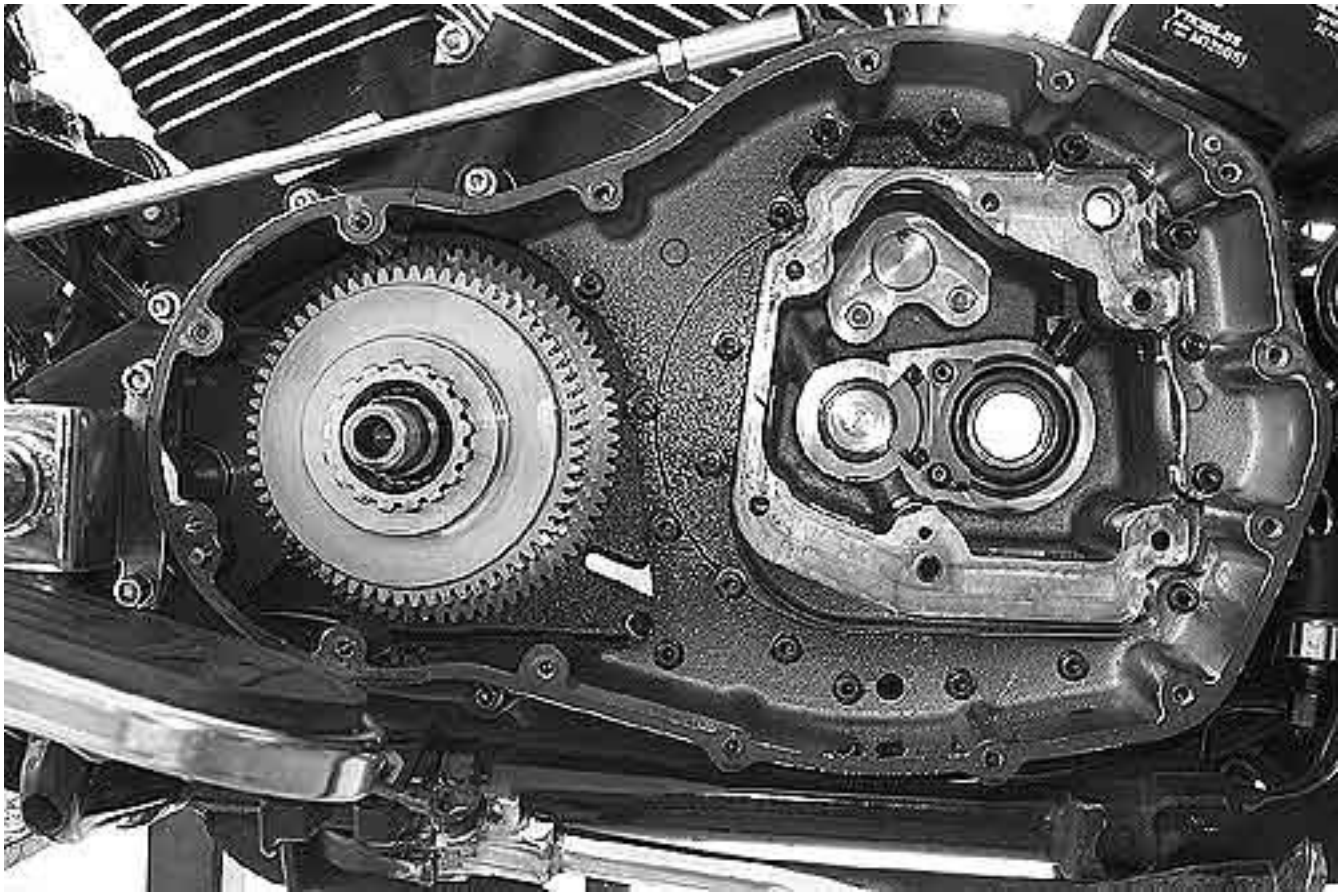
STEP 16.1
Transmission Cassette Removal and Installation

Remove Hex. Socket Head Screws (5199-0520) holding in Transmission assembly, that you previously loosened up, but did not take all the way out; grasp the Input Shaft Assembly (6000-0015) with one hand, and slowly pull out.



STEP 16.2
Transmission Cassette Removal and Installation

This is the Transmission Casette Assembly after removal.



Final Step

This is what you should be looking at after the transmission cassette has been removed. Clean and remove any oil coking in casing and Priamry Cover. Clean and remove any filings in primary cavity and transmission cavity. If you notice broken gear teeth and teeth go accounted, guide a magnetic pick up through the two square openings you will see in the bottom of transmission cavity,

Did you remember to remove the Alternator Stator Bolt or in the case of the early model V-Twin® engines, the Set Screw orifice to provide more oil to the Stator? Did you remember to get a Primary Cover Gasket?

Install oil pump scavenge pump pick tube and plug second aft scavenge pump hole in primary case housing.