



WORKSHOP MANUAL

EVO 2

EVO 2X



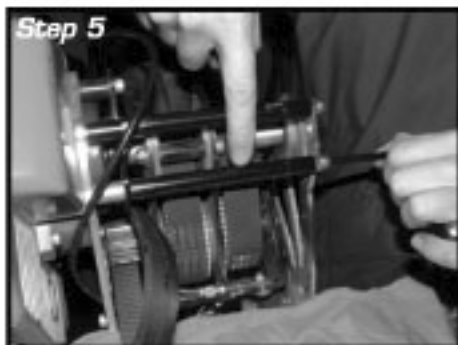
Puzey Designed. Built 4 Lifestyle.

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B. REMOVAL AND REPLACEMENT OF BELT

The main drive belt on an Evo 2 or 2x is easily changed by following the steps below. Place the powerboard on a soft-covered work surface so as not to damage the scooter.



1. Loosen the "Auto Belt Tension Screw" under the powerboard. This will allow the gearbox to move back, loosening the belt and making it easier to remove.

2. Remove the loaded belt from the rear pulley, put it to the side of the wheel so it is well clear.

3. Partially remove the rear wheel axle bolt just enough so that one spacer may be removed and the belt can pass between the pulley and the side plate.

4. Pull the belt out from the front of the gearbox assembly as shown, this will help to remove it from the gearbox.

5. Remove the lower of the two spacers between the engine and gearbox sideplate by removing the bolt that goes through the spacer tube.

6. Lift the gearbox while rotating it forwards. This will allow it to be lifted high enough to pass the belt over the gear drive pulley easily. The gearbox does **not** need to be removed, just rotated enough so that the belt can clear the side plate.

To reinstall the belt, reverse this procedure.

C. REMOVE AND INSTALL GEARBOX

When removing the gearbox from an EVO 2, we recommend that you place the powerboard on a work surface or table. It is also recommended that a soft work cover is used to stop the scooter from getting damaged. If the scooter is placed on the table with the handle folded slightly this will make the unit very stable and easy to work on.



1. Place the scooter and the tools out on the table with the protective cover. Also place a cover on the aluminium deck of the scooter, this will protect the deck from damage.



2. Loosen the "Auto Belt Tension Screw" under the powerboard. This will allow the gearbox to move back, loosening the drive belt.



3. Remove the drive belt from the wheel pulley.



4. Pull the belt out from the front drive pulley. This will allow the gearbox to rotate easily.



5. Remove the lower of the 2 long spacers first, by removing the long bolt that goes from the side plate through to the engine.



6. Make sure the gearbox is now free to rotate out towards the front of the powerboard.



7. Remove the top bolt from the 2nd spacer. The spacer can not be removed as it is fixed to the engine plate from the engine side. Just the bolt needs to be removed.



8. Remove the 3 bolts (2 short, 1 long) from the bottom of the side plate. This will allow the side plate to be removed.



9. Remove the side plate from the powerboard and this will give good access to the gearbox for removal.



11. It is recommended that the engine is held for support when the top bolt is removed in case the remaining bottom bolt is missing or loose. **Important: Always remove the top bolt last.**



13. If it is preferable to remove the gearbox completely, this may be done by disconnecting the cable clamp under the box and removing the shift cable. The engine can also be easily removed at this stage, if necessary.



15. When re-attaching the shift cable to the gearbox, be sure not to make the cable too tight or the drive system will have a tendency to run in 2nd gear only. Hand tightening will usually produce sufficient tension in the shift cable.



10. Remove the top three engine bolts, beginning with the two side bolts. Always remove the top bolt last. **Important: Please read step 11 prior to performing step 10.**



12. With the bolts out, the gearbox can be removed easily. Note that the shifting cable remains attached to the gearbox, preventing the assembly from being completely removed. Place the gearbox on the deck of the powerboard to work on it.



14. Reassembly should start with fitting the engine back to the engine plate, then fitting the gearbox back in the same way it was removed. Following the previous steps in reverse will guide the reassembly process.



16. Once all the parts have been reassembled, pull the starter cord to verify that all the engine bolts are properly fitted. If engine bolts have been installed in the wrong place, one of them will usually protrude into the flywheel, preventing the engine from turning over when the cord is pulled.

Important: Be sure not to over-tighten the engine bolts as this may strip the threads in the engine cover.

D. STRIPPING GEARBOX ASSEMBLY

Once the gearbox is removed from the frame, follow these basic steps to strip it.



1. Place the gearbox on a soft-covered work surface.



2. Remove the clutch drum, gearbox bracket, spacers and shaft bearing from the top shaft. To remove the clutch drum, it may be necessary to grip the shaft with a wrench. (Remove the long spacer on the shaft first to make room for the wrench.) The holes in the drum are there so a screwdriver may be placed through them for better grip.



3. Remove the clutch plates and drive belt. The clutch drive gear parts should then easily slide off once the clutch lever plate is removed from the side of the gearbox.



4. The 2nd gear drive pulley can now easily be removed.



5. The three bolts and spacers that hold the centre section together can now be removed, allowing it to be stripped. We recommend removing the drive pulley on the lower main drive shaft before the centre section bolts are removed.



6. The centre section should now look like this, ready for stripping. Remove the side plates and drive belts.



7. The final step in disassembling the unit, if necessary, is to remove the locking key on the owner drive shaft, allowing the bearing on the inside of the shaft to be removed.

E. ADJUSTMENT AND ASSEMBLY OF GEARBOX

This section is intended as a guide for dealers to adjust and assemble the gearbox correctly. Owners are strongly advised to have this work done by a dealer



1. Begin with the splined main drive shaft and ensure that it has the "C" clip fitted on the splines:
a. Slide the main bearing with plastic holder on to the shaft as shown with the large shoulder away from the splines.
b. Then add the small retainer washer with the metal shoulder facing the bearing as shown.
c. Finally, slide the one-way bearing inset bush onto the shaft, pushing it as far as possible towards the bearing.



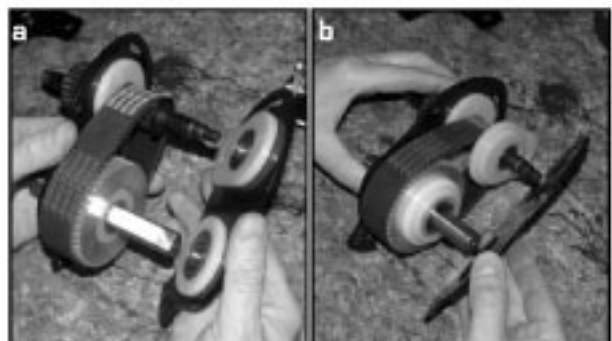
2. Next, fit the 1st gear pulley with the one-way bearing fitted inside the gear. When fitting the one-way pulley to the shaft, it is very important to ensure that the drive direction of the gear is correct. To verify this, hold the splines in the left hand while rotating the pulley with the right hand. When rotated clockwise, the pulley should drive the shaft without slipping, and when rotated counter-clockwise, the gear should slip freely without driving the shaft.
a. Add the second retainer washer with the metal shoulder on the outside, opposite to the retainer washer fitted earlier.
b. Add the second main bearing to the shaft with the large shoulder towards the gear, as shown.



3. Fit the side plate with the top shaft to the main drive shaft. Ensure that the small gear on the top shaft is on the same side of the plate as the large one-way pulley assembly.



4. The drive belt can now be fitted to the pulleys.



5. The second side plate can now be fitted. There are two ways to do this:
a. Add the bearing cups and bearings to the side plate before fitting or...
b. Fit the bearings and bearing cups to the shafts before attaching the side plate.



6. The spacer tubes must now be added in the correct locations and in the correct sequence. First, fit the shortest spacer and bolt between the plastic slider cams on the top drive shaft. The bolt must be facing in the direction shown, with the head on the side of the 2nd gear drive pulley. When the bolt is tightened, the plastics should still be able to slide in the slots.



7. Next, fit the bottom bolt spacer positioned at the big pulley and cable connection point.

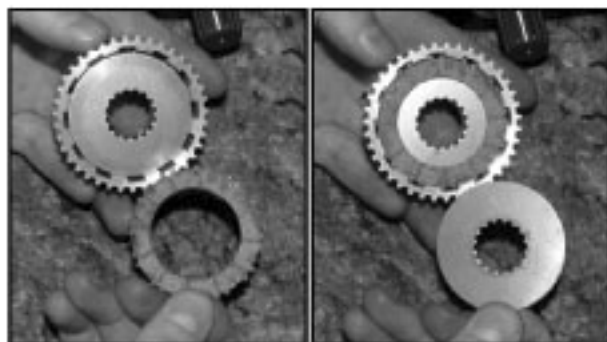


8. The mid rear bolt spacer is the final one to be installed, with the long clutch pressure plate bracket bolt through it. The long end of the bolt should protrude on the side of the spline and 2nd drive gear. Once all the spacers are installed and the alignment of the side plates is correct, tighten the bolts.

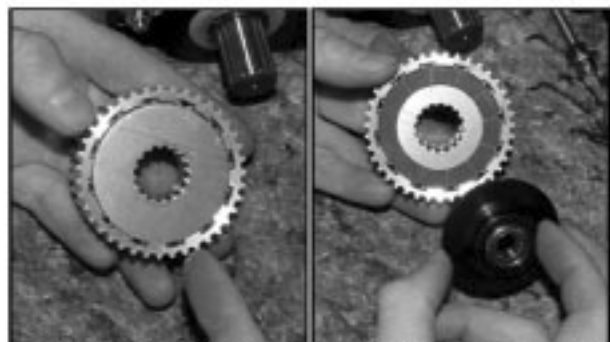


9. Next, assemble the 2nd gear with the clutch plates and pressure plates as described in this sequence of pictures.

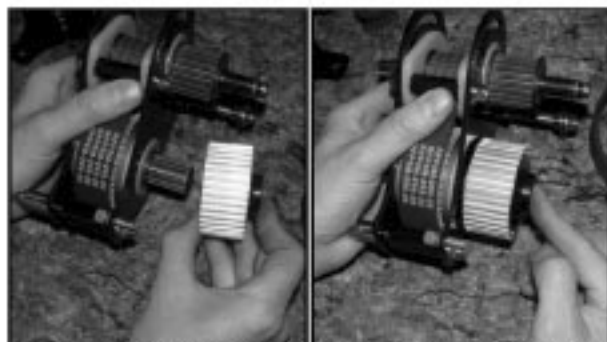
a. First, add a pressure plate (steel) to the bearing face in the gear. *(Never add a clutch plate to the side of the bearing!!)*



b. Now add a clutch plate on top of the pressure plate, followed by a second pressure plate. One side of the gear is now complete.



c. To complete the other side of the gear, add a pressure plate, then a clutch plate, and finally the thick pressure plate with the thrust bearing fitted into it.



d. Next, add the fully assembled 2nd gear to the splined shaft, but make sure that the 'C' clip is properly fitted before doing so. Some "fiddling" may be required to get the pressure plate splines to align with those on the shaft before the gear will slide on.



10. Once the 2nd gear and drive belts are in place, the clutch pressure plate lever should be installed. Once this is in place, the 2nd gear will not easily slide off the drive shaft.



11. The pressure plate lever is fitted to the pressure plate and the protruding long bolt. Use the two nuts supplied to position the pressure plate lever on the long bolt so it is parallel to the side plates. It is very important that the pressure plate lever does not work at an angle to the pressure plate as this will quickly result in bearing failure.



12. It is important to adjust the pressure plate lever to the correct position, which is found when the pressure plate lever moves fractionally away from the clutch pressure plates upon release. This can be tested by hand-squeezing and releasing the pressure plate lever, after which it should not be in contact with the clutch pressure plates. If the lever is set too tight, 2nd gear will tend to engage, causing resistance in the drive system and sluggish performance.



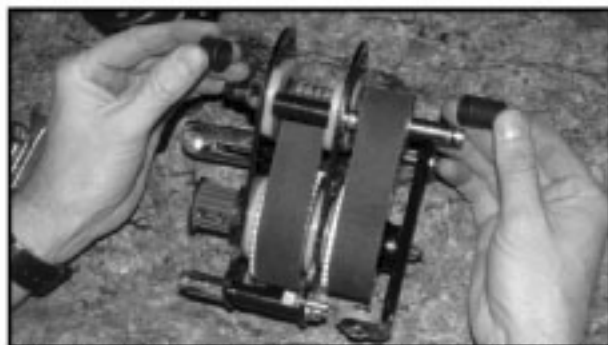
14. Tighten the bolt on the cam blocks, but take care not to over tighten it as this will damage the plastic parts.



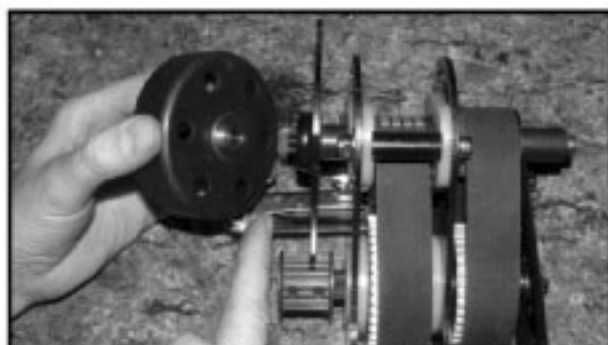
16. Fit the gearbox bracket to the short side of the top shaft, making sure the bearing side is towards the pulleys.



13. Next, adjust the cam blocks on the top shaft to achieve the correct tension in the drive belts. It is important to adjust the tension correctly as the belts will jump gear teeth if too loose, and too much tension will cause power loss in the drive system. A good test for the correct tension is to ensure that the top shaft turns freely by hand.



15. Install the top shaft spacers by sliding them onto the shaft. The short spacer should be on the short side of the shaft, which should be on the clutch housing side of the gearbox.



17. Next, fit the clutch housing to the stud, which will ensure that the bracket is secure.

18. Finally, fit the retainer bearing to the top shaft and tighten the end bolt. This will tighten the spacers and bearings to the clutch housing. The assembly of the gearbox should now be complete. Turn the drive shafts by hand to check that they are operating smoothly and properly assembled. The gearbox is now ready to be fitted to the scooter.

F. INSTALLATION OF POWER PIPE

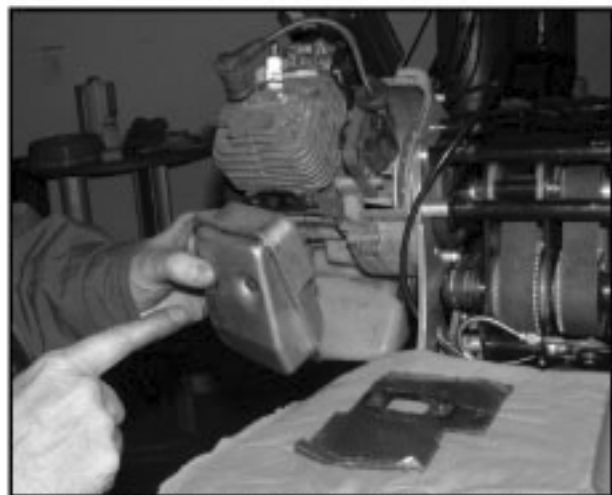
Place powerboard on a clean stable table, preferably on top of a work blanket with the rear wheel just off the edge of the table. It is also recommended that you place a cover on the scooter deck to prevent scratches and damage during installation.



1. When removing the power pipe from the bag make sure you have all the bolts, springs and correct pipe parts to install the pipe.



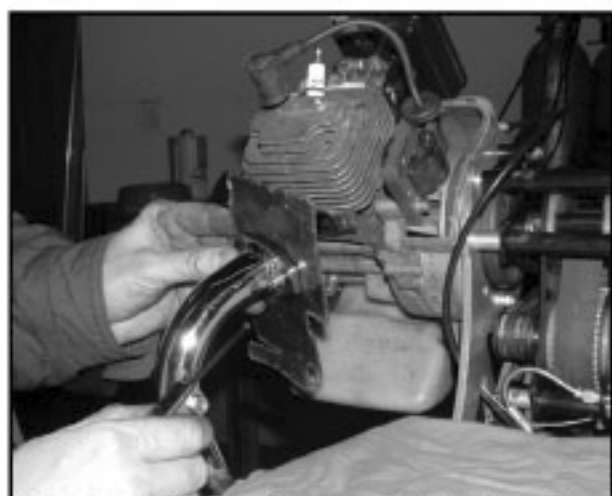
2. Remove the air filter and the green (or aluminium) cover from the engine. To slip the engine cover off, several small screws that hold it in place need to be removed.



3. Remove the original exhaust muffler from the engine and take care with the insulation blanket between the engine and the muffler.



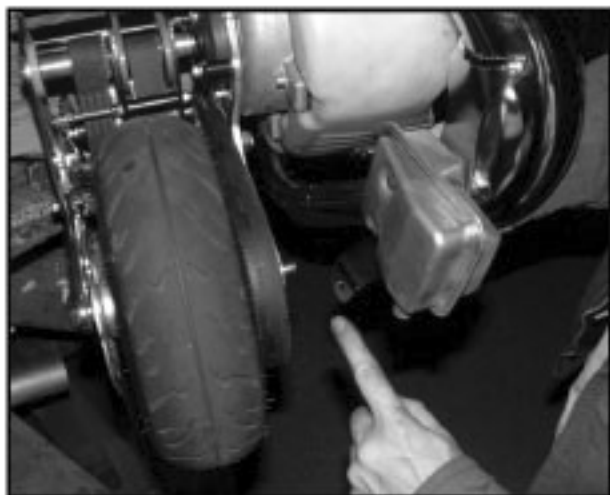
4. Fit the original Muffler to the expansion pipe section with the original bolts and in the direction shown in the picture (no gasket needed).



5. Install the header pipe part with the insulation.



6. Screw in the bolts but do not tighten them until the pipe is fully installed. These header pipe bolts should only be tightened once the entire pipe is properly fitted. It may be necessary to "wiggle" the pipe by hand to achieve a perfect fit.



7. Install the large expansion section by fitting it to the header portion, previously attached to the front of the engine. Then, swivel the pipe into place on the axle bolt, as shown. Next, fit the spring into the header joint before fully tightening the axle bolt and the header bolts. **Check that the pipe is not touching the fuel tank or the tank will be damaged!**



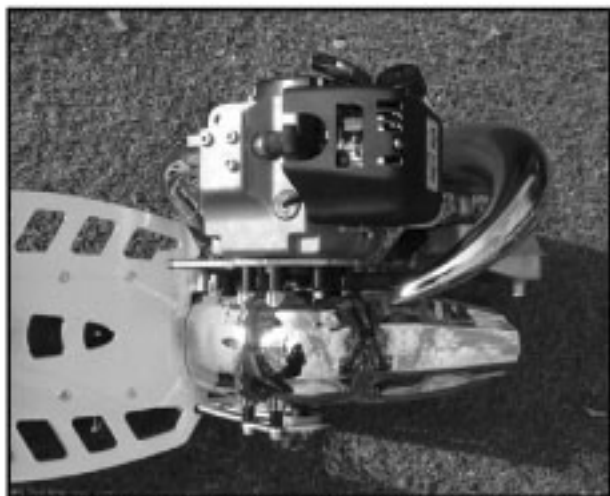
9. Cut the cover as shown, removing only the centre section.



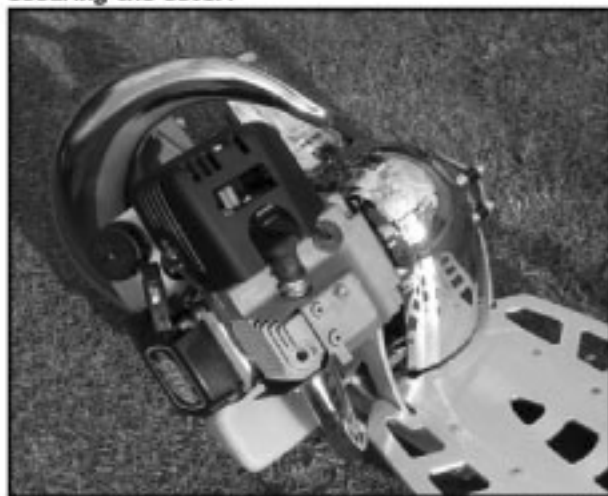
8. The engine cover needs to be cut to accommodate the new pipe. It is recommended that a simple center cut is made and that the exhaust be allowed to melt the cover to fit correctly. This will produce a close fitting, attractive result.



10. Re-fit the cover to the engine, allowing the header pipe to bend the plastic fingers on the cover where the center piece was removed. **It is important that the correct screws are used in each location when securing the cover.**



11. This is how the finished installation should look. **Always be careful as the pipe gets extremely hot during use.** (Note that the engine in this picture has an after-market aluminum cover and a chrome mud cover has been fitted.)



12. The pipe can now be tested. The performance of the powerboard will be very different and the carburettor mixture screw may need to be adjusted slightly for peak performance. In addition to improving the performance of the powerboard, your new pipe can also be expected to reduce engine noise.