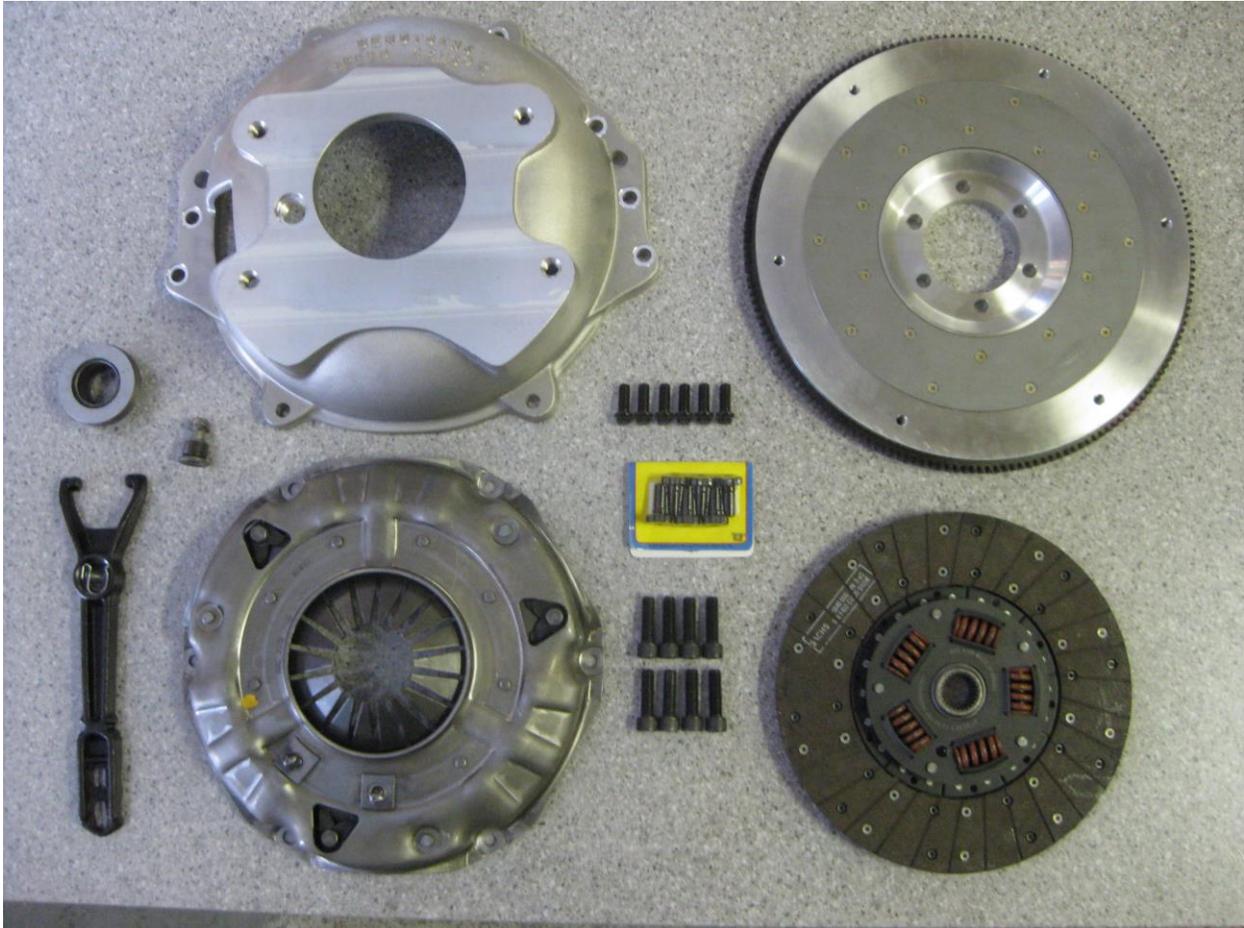


# **BENDTSEN'S**

## **Oldsmobile Installation Instructions**

**303/324/371/394 Oldsmobile and 331 Cadillac (49 - 53 only) to manual transmission.**



We assume that the person installing this kit has a certain amount of mechanical aptitude and ability. It is not for the beginner. Make sure you clean all surfaces when mating these parts together. Always check bolt clearances. We try to make everything as simple as possible to help you, but the ultimate responsibility as to the assembly of the kit is up to the installer. Check and recheck as you go. We can't foresee every change or modification that could possibly occur in the building of a custom vehicle. Especially when we are dealing with 50-year-old motors.

A few common sense installation tips.

Install all bolts before tightening in any sequence.

1. Use loctite and torque bolts where applicable.
2. Don't over tighten bolts. There is NO warranty on stripped threads
3. Super-clean everything! Remove all burrs.

4. Be careful and don't assume. Check everything and be sure.

Oldsmobile changed so much over the years that it would be impossible (without writing a novel) to list all the information here. The bottom line is that Olds changed their flywheel diameter and ring-gear tooth count 3 times. That means they have at least 3 different starters with different starter locations in the lower bellhousing (cast inspection cover). They also changed the crankshaft bolt hole locations. Most Olds engines have one bolt hole that is .070 offset on the crankshaft. Some Olds cranks have 6 symmetrical bolt holes. The different combinations are listed on my website. The flywheel that is included with this kit has one bolt hole that is elongated. This is to fit both style crankshafts. It is difficult at best to try to cover all the possible combinations you can find in the Olds motors. This (and the fact that they have extremely long block extensions) is the reason no-one has made adapters for these motors before.

Make sure that the crank flange is super-clean (no burrs). I've enclosed a picture of an Olds crank with an arrow pointing to the offset bolt hole. Look at the position of the factory notch in the crank compared to the position of the offset bolt hole. This will be the same on all offset crankshafts. There is a '0' stamped next to the offset bolt hole in the new aluminum flywheel. Make sure it is lined up correctly. The aluminum flywheel has a replaceable insert that is the same size as other inserts sold in the aftermarket catalogs.

Install the provided flywheel. If you have a 303 or 324, the flywheel should not have a balance weight. If everything goes on OK, install the provided bolts. They are 12 point ARP bolts. Torque them to factory specs. Make sure that they don't hit the block behind the crank. Check to see if the ring gear hits the block. Some of the Olds blocks have more material in the flywheel area than others. I can only surmise that it was because of the 166 tooth ring gears used with the slim-jim transmissions. These flywheels had a smaller diameter. If this is the case, you will have to grind material away to clear the flywheel ring gear. I've enclosed a picture of the area that can be a problem.



At this point I would recommend installing the lower bellhousing and starter to make sure the starter is going to work with the provided flywheel. You can turn the engine over with the starter to make sure everything is going to work. At this time I would be looking for depth of starter engagement, distance of the drive to the flywheel ring-gear. If the engine will start and run, you can also make sure there is no vibration.



The arrow in the picture above shows the position of the offset bolt hole in relation to the notch in the crankshaft. The 1949 to 1953 cranks had a pilot bearing hole because the early Hydro's used this hole to center the input shaft with a bearing just like the manual trans did. The 1954 and 1955 cranks probably had the pilot hole in them also because they still used the Hydro's. The 1956 and later Olds crankshaft only had a pilot bearing hole drilled if it came from the factory with a manual trans. The Jetaway trans came out in 1956 and it had a different style input and torque converter driveplate. If you are rebuilding your engine it would be wise to have the machine shop machine a pilot bearing hole for you.



The 3 different inspection covers.





The number of teeth on the original flywheel dictates which inspection cover / starter combination you will use. Of course these can be changed as a unit to accommodate using a different flywheel than the engine originally had.

Here are the 3 types of lower inspection housings / starter housings that came stock on the different year Old's engines. The greenish blue one is the 166 tooth unit used on the Slim-Jim cars. The bottom (gold) unit is a 1954 to 1964, 176 tooth ring-gear type cover. The middle one is a 145 tooth ring-gear style cover from a 1949 to 1953 Olds. The 145 and the 176 locate the starter in the same spot, but take different starters. The tooth pitch was the difference. The early motors (& Cadillac) used a coarse pitch gear and the 1954 and later engines used the fine pitch gear. You can use the 176 tooth flywheel in all the motors if you get the right starter and the balance is correct. They also rotate the starters differently. The cover in the bottom pictures have extra bolt bosses that if used, rotate the starter correctly for the older motors. Some covers have 2 sets of bolt holes.

You should now be ready to bolt on the clutch, pressure plate and bellhousing. The clutch and pressure plate assembly is a common 11 inch Chev setup. This makes it easy to buy local replacement parts, hi-perf aftermarket parts, and just makes it easier to hold depressed at a stoplight. The throwout bearing is the longer of the 2 styles that Chev used. A hydraulic throwout bearing assembly sold by numerous aftermarket companies will work just fine as long as you are aware that they need to be shimmed out towards the diaphragm fingers. The fork is installed onto the pivot ball installed in the bellhousing by greasing it and then just hitting it sharply onto the ball-stud with the spring in place.

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