

# BW350 Clutch Maintenance

## Pilot Bushing and Clutch Disk Inspections

As part of your annual condition inspection the Pilot Bushing in the end of the engine crankshaft and the clutch disk should be checked for wear and any developing damages.

Typically the problems pictured here are caused by severe abuse and excessive loads. The parts chosen for your installation were selected for this application to avoid these conditions. However nothing lasts forever and wear and tear over time can cause similar looking problems. These pictures will help you in conducting visual inspections.

This is a picture of a brand new pilot bushing that is commonly used in all LS V8 standard transmission installations, and the one used with all the BS350 installations.

Dorman part# 14650



Another part to consider  
ACDelco part# 10125896



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The first one has a smooth bore and the second one has what is called a fingered bore with slots intended for holding grease. There are pro and con theories on which is better, but the most common one are the smooth bore. Both are "self" lubricating.

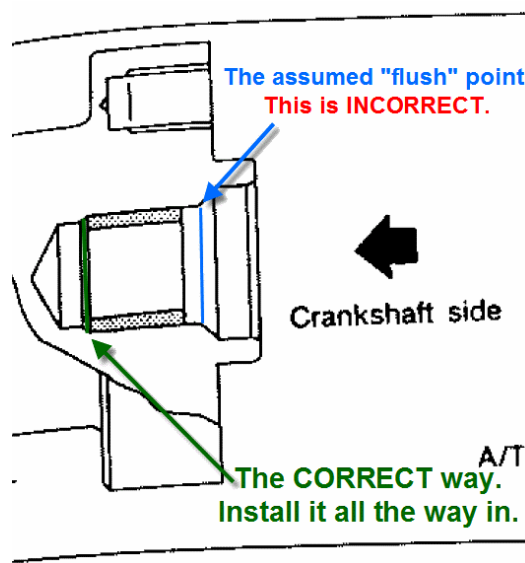
Things to check for are excessive wear (ID is 0.60" new), out of round, scouring, etc.

Another option is the needle bearing version below.

Chevy part# 14061685



There is considerable debate on the subject of bushing versus bearing, and both camps will swear that theirs is hands down better because the other one failed on them. Whichever camp you decide to go with the most important thing is the correct installation shown below. Getting this wrong the first time is probably what convinced members of each camp to go the other way.



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All of these bearings should be greased with any good grade of axle grease. A thin layer is sufficient as excess grease could easily sling out on the flywheel and clutch disk.

The pressure plate and flywheel should be inspected for wear, glazing, hot spots, etc. Both can be resurfaced by any automotive machine shop. The maximum amount of material that can be removed is 0.045”.

This bearing is what supports the end of the input shaft and keeps it centered with the engine crankshaft. If the bushing wears out too much the clutch disk will be off center forcing the damping hub to compensate. It will last for a while, but eventually the hub is forced to fail as in the picture below. This can also do damage to the input shaft bearings in the gearbox.

Ram Clutch part# 6121

New



Busted



There are warning signs in a car installation that show up during the actuation of the clutch pedal every time the gears are shifted, usually at higher RPM's.

The signs are;

1. chirping, chattering, and squeaking noises
2. jerky clutch engagement
3. clutch doesn't seem to lock up or slips
4. a new vibration that keeps getting worse and varies with RPM

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These will show up in your aircraft installation but the noises and any jerkiness will happen only during engine start up. Because this happens automatically at idle any noise or jerkiness will be less and harder to notice. But a new vibration that increases over time and gets worse at higher RPMs will be much easier to notice.

This is an avoidable result with regular maintenance checks. These should be done during your annual inspection. TIP – leaving the propeller mounted to the gearbox makes this a lot easier and faster. The combined weight will require using a hoist.

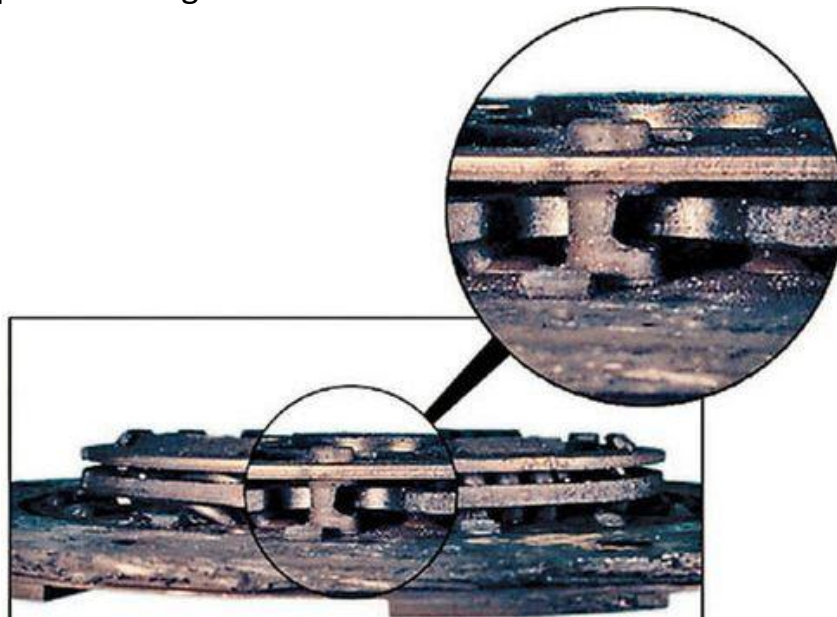
Removal of an old damaged bushing can be done with bushing puller rented/barrowed from an auto parts store.

You can also use an M18x2.5 or a ¾-10 tap. As the tap cuts threads through the bushing it will bottom out against the crankshaft and then push the bushing out.

If the ID is not too damaged hydraulic pressure can be used. Pack the bushing and the cavity behind it with grease. Then hammer a snug fitting shaft or round bar through the center of the bushing will force it out. Sometimes a socket wrench installed backwards on an extension will work too.

If you see any damage to the pilot bushing check the clutch disk for any signs of unusual wear, burning, or glazing on the friction surface.

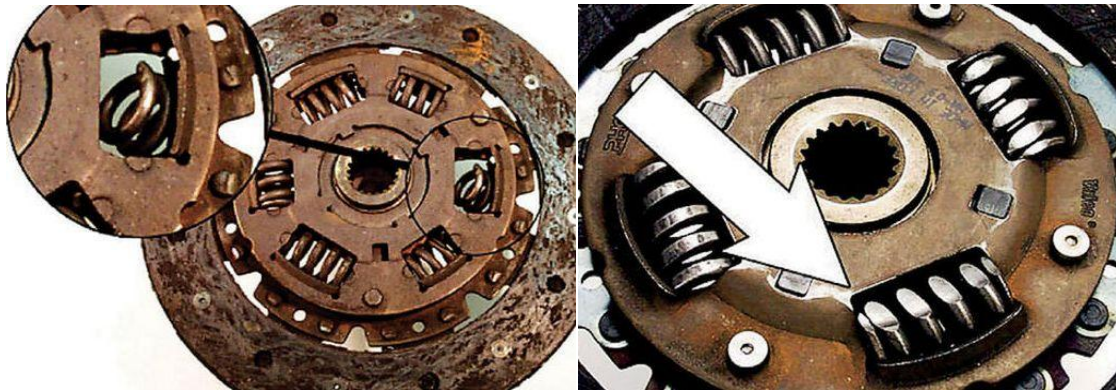
In the hub pay particular attention to the bolts that hold the hub together and for signs that the hub stops are damaged.



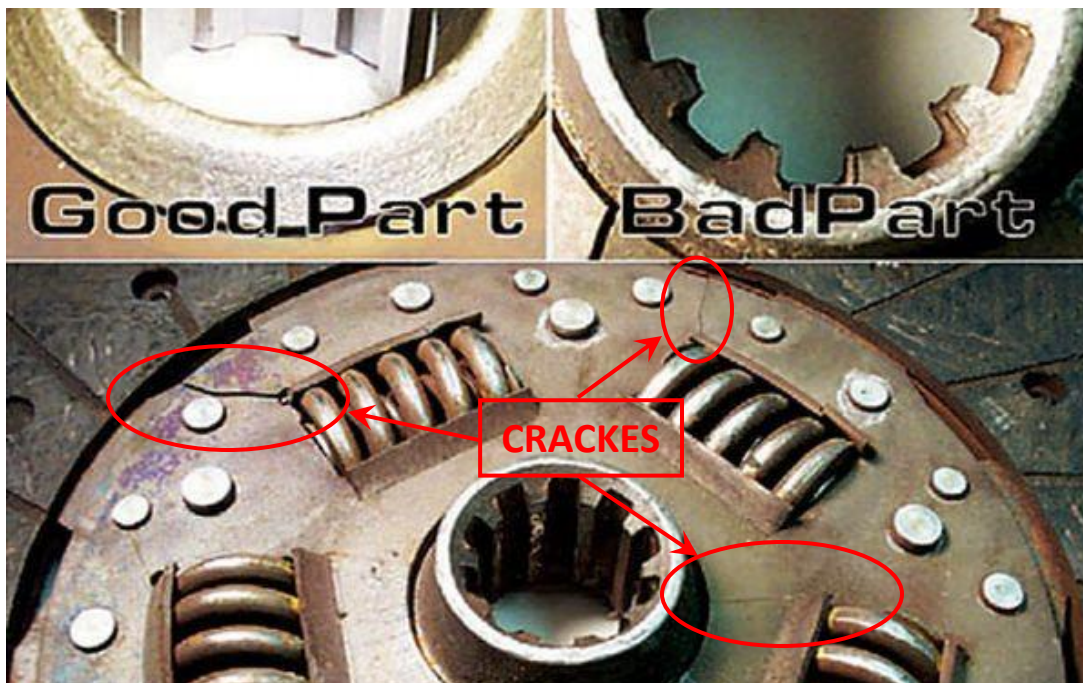


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The springs should be secure in their pockets without any signs of wear.



Check the splines for any wear like below. The front and back plates of the hub should be checked for any signs of cracking too.



If the bushing or clutch disk shows any signs of wear or damage immediate replacement is required! If the flywheel or pressure plate has issues get them serviced. Don't risk your safety by flying with parts worn beyond limits.

If your inspection discovers anything unusual contact us by phone at 936-827-5126 and email us at [stuart@autopsurs.com](mailto:stuart@autopsurs.com) including some pictures.