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Five Speed Conversion for CS
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Many times in the past I have been asked about the difficulty of installing a later model 5-speed transmission into the older CS automobiles. At our shop we perform this conversion every other week. The limiting factor is the availability of suitable five speed transmissions. If your old automatic transmission has died or is about to, now is the time to consider its replacement by a manual version. The great news is that the CS has been drilled to accept almost any transmission used by BMW. The determining factor (other than the size of your wallet) is the presence of a mechanical speedometer drive. It is possible to modify an 82 and later trans to work with an older type speedo, but it is not worth the effort. Any of the large 6 cylinder five speeds, before 1982, will fit and drive the speedo. The speedo drive is the same for either four or five speed, but the auto drive unit will not fit. Be certain to get the drive as it costs a fair bit. I recommend the overdrive 5 speed out of the 528i; a close ratio (1:1 fifth) has the same external dimensions. This was a common trans in euro cars, but it is not as durable as the overdrive, also the reduction in noise and wear is not gained. I have found the sport box (close ratio) to be a poor choice as most big block 6 cylinder cars have lots of torque and don't really need a close ratio box. In addition we have had really bad luck with the c/r 5 box (the lay bearings fail and the gear set is usually in bad shape ** really noisy**).

The conversion is not cheap. There are many pieces involved, but everything is straight forward, and the ability to shift into fifth at speed is awesome, not to mention the reduction in the wear on the engine and the reduced noise level in the passenger compartment is worth every dime. In my own cars I have over logged more than 150,000 miles on these conversions. They are reliable and tested. The transmission is one of the most durable ever used by BMW. We have probably installed or sold as a package 100 of these units. READ don't be shy. It works. I will describe the process and at the end list the components.

The five-speed conversion for a CS is not difficult, but there are a great number of steps. The layperson might not immediately understand some of these steps, but they have a reason.

1. Remove the exhaust system (you need lots of room) up to the exhaust manifolds.
2. Remove the drive shaft. A custom unit must be fabricated, shorten a 4 speed by 3.75 inches or lengthen an automatic .75 inches, replace u-joints as necessary, replace center carrier bearing and renew hardy disc. This is custom work and very few shops can do it.
3. Remove transmission and shifter assembly (be sure to disconnect the reverse light switch). An automatic is a pain here, remove the bolts trans to engine and flywheel to torque converter. This is a heavy unit use a jack to support and drop. The four speed is quite easy to remove. Separate the trans from the bel housing (four 19mm nuts), free the clutch throw-out fork retainer spring and extract the trans. Remove the bel housing and clutch slave cylinder. ***Unbolt the engine electric ground. Be certain to reconnect this ground. It is the most important connection on the car, we often add a second ground across a motor mount.***

4. Remove flywheel and replace the rear crankshaft seal. It will never be easier to reach. Install a new pilot bearing, if you don't it will fail later .Use the new sealed bearing type and get rid of the old felt and tin plate pieces.

Now that you have your beautiful machine in a million pieces, most of which you never thought you would see out of the vehicle, take a good rest. Let your nerves recover. It will be a BMW again. If you think you might be in over your head, you might want to have a consultant around. The assembly should go fairly smoothly, but I would allow plenty of time as you will probably need a key part that will have to be ordered.

1. Reinstall manual transmission type flywheel and clutch (we use Alpina B7 type it's cheap).
2. Install late style bel housing, throw out bearing, throw out fork and pivot (Plus retainers).
3. Bolt up the five speed (uses the same hardware as the four speed). We renew the rear trans seals at this time.
4. Install five speed shift assembly, trans cross member (this just straddles the large openings on the bolt track) and drive shaft. To support the rear of the five-speed shift platform use an airflow meter mount (all holes are present). We use a blend of Redline MTL and 80/90 mineral oil (50:50 part for easy shifting and part for noise reduction).
5. Install five-speed drive shaft
6. Replace exhaust system. The exhaust hanger from a 2800 auto trans fits best to support the exhaust at the rear of the transmission.

If this sounds simple it is. The real trick to the installation is in knowing the various pieces that need to be combined to fit the five speed simply and easily into the CS.

The following is a list of the parts required to install a five speed overdrive trans into a CS.

In simple words we are trying to install the 528i five-speed transmission into the CS. The dimensions of the 528i tunnel are the same as the Coupe. If a trans assembly from a 6 or 7 series is used the shifter components will need to be exchanged for a 528i. All of the bolts, mounts, etc. are the same. It's a bolt in. The problems occur because of a change in 1974 to the bel housing and throw out bearing components. The bel housing is different, and must be used with the five speed (trust me on this one). The clutch slave cylinder is of the new style for this bel housing, ditto hydraulic hose, throw out bearing, fork, and pivot. The five speed trans cross member is needed to clear the trans, and the shorter five speed shifter pieces are needed for the shift knob to pop up through the opening in the tunnel (again the 528i). Add the corrected length five speed drive shaft and we are shifting. The 528i has a mounting bracket in the tunnel to support the rear of the shift platform. By using an airflow meter mount, it is possible to pick up the rear of the shift platform and hang it from the tunnel using the rear auto shifter mount point. The speedometer cable for the automatic is the correct length for the five-speed conversion.

A few special notes for those going from automatic to manual. You will need a flywheel and new securing bolts (long 28mm type) [same as Bavaria]. Pressure plate retaining bolts 8mmX20mm. The bolts that secure the auto to the engine are different from those that attach the manual bel housing. You must get this hardware early. The bolts are unusual lengths, as always special order. The manual radiator is different (there is no cooling tank on the right), as is the right hand bracket, you can retain your auto radiator if you like. The shifter surround will have to be modified. If you turn the platform over the opening for the manual is partially cut. Peel the vinyl back, complete the opening, build up the leading edge of the platform, under the vinyl, to

flush, pull the vinyl back into position and glue. Install zippered shift boot with tacks or staples.
It will be necessary to remove the starter interrupt relay. Follow the black wire down from the back of the ignition switch. It will go into a relay. Unplug the black wire and plug it into the clear connector under the fuse box with a similar black wire. This will be occupied with a black and white wire from the same relay. Remove the relay and extra wires.
You should also remove all of the wires for the shift indicator and the lamp assembly. A jumper will have to be made up for the reverse lamps. Two wires from the switch on the transmission to the connector in the passenger compartment at the firewall below and to the left of the steering column. This connector has three wires gray/red, blue/white and violet/black. Use the last two.
You will need to change out the pedals. This is a simple bolt in. Use a pair of pedals from a Bavaria. They go right in. Be certain to install the return springs. ** 1974 and later clutch pedal has a top bracket that will not fit into the early pedal box. The early pedals will fit all pedal boxes. Do not try to use 528i pedals, the bushing split does not line up (trust me again).** You will need to install a clutch master and the special bolt to attach it to the clutch pedal (also 2 nylon bushes). The holes are in the body (the shift indicator wires feed through this opening).*** The really bad news is that the clutch master cylinder is now extinct. We are trying to get another production run.*** A used unit may have to be reconditioned. Next install the hose to the slave. The brake fluid reservoir will have to be changed out for the manual type with clutch feed hose. Install with feed hose. Bleed clutch.

Parts List

Late bell housing	**Purchase used unit**
Throw out bearing	**21-51-1**
Throw out fork	**21-51-1-204-229**
Fork pivot	
Fork retainer spring	
Clutch kit, with pilot and rear main seal	
Late clutch slave cylinder and 8mm nuts (2)	**21-52-1**
Extension hose for slave	**21-52-1**
5-speed transmission Purchase used unit	
5 cross member	**23-71-1-175-314**
Trans mount	**23-71-1-245-552**
Auto speedo cable	
5 shift platform	**25-11-1-205-386**

Shift platform mounts (2)	
5 shill rod	**25-11-1-220-539**
E21 3 series lower shift lever	**25-11-1-220-213**
Shift lever bushings	**23-41-1-666-133**
Retainer clips	**25-11-1-220-379**
Shift joint	**25-11-1-220-198**
Foam pad	**23-41-1-200-936**
Shill shaft seal	
Trans output seal	
Hardy disc	**26-11-1**
Center support bearing	**26-11-1**
AFM mount and 6mm hardware	**13-62-1-359-216**