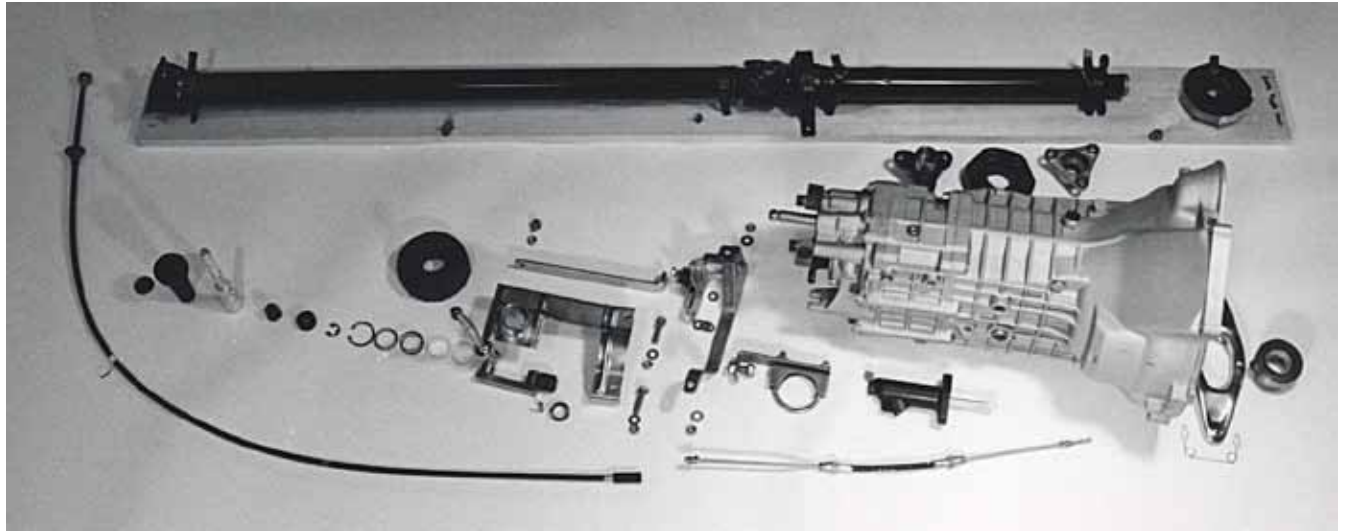


2002 5 Speed Conversion

Getrag 232 to 245 for the 2002, 2002tii and 1600

Complete 5 Speed Conversion Kit with Shortened Driveshaft, Lower Shifter Assembly, Brackets and Installation Hardware



MM Transmission 5 Sp 245 Getrag

OPTION - MM Sport OD 5 Speed Getrag

Driveshaft

- MM HiTorque Driveshaft
 - with MM HiTorque 3 Bolt Flange
 - New Center Support Bearing
 - Guide Bushing
- HiTorque Guibo, Flex Disc, 6 Bolt with
 - 6 Bolts, 10 x 1.15 x 50mm long
 - 6 Nuts, 10mm locking
 - Shift Coupler (Bronze Bushing)

OPTION - MM Driveshaft with

- Stock 4 Bolt Driveshaft Flange

OPTION - Stock Guibo

- and 8 Bolt Flex Disc

Clutch & Other Components

- 25mm Throw Out Bearing
(for use with 215mm clutch 74-76 2002s)

OPTION

- 288mm HiTorque Pressure Plate
(for use with 25mm Throw Out Bearing used in 69-73 2002s & all 2002 tiis)

OPTION

- 30mm Throw Out Bearing
(for use with Stock or Heavy Duty 228mm Pressure Plate, 69-73 2002s & all 2002 tiis)
- Release Bearing Lever & Clip
- Slave Cylinder

- Speedo Cable
- MM Hydraulic Line & Components

Flange Conversion, Driveshaft & Transmission

- MM HiTorque 3 Bolt Driveshaft Flange
 - with 6 Bolt Hi Torque Guibo
 - guide busing

OPTION - 4 Bolt Driveshaft Flange with

- Output Flange Nut, 20 x 1.5 x 30mm drive
- Lock Retainer
- Use with Stock 8 Bolt Guibo

Lower Shifter Assembly

- Short Shift Kit from Auto Solutions
 - Short Throw Lever (Bronze)
 - Extension Rod
 - Shift Coupler (Bronze Bushing)
- Upper Shift Lever**
- Aluminum Shift Lever: 135, 157, or 179mm
 - Shift Knob, vinyl & 5 Sp. Shift Pattern Insert

Trans. Crossmember & Shift Bracket

- Rear Crossmember
- Shift Bracket, Support Arm & Mount
- Exhaust Downpipe Bracket
 - 2 Isolation Blocks - large hole
 - 2 Socket Head Bolts, 10 x 40 mm
 - 2 Lock Washers, 10 mm
 - Foam Pad

2002 5 Speed Conversion

Getrag 230 Conversion for the 2002, 2002ti and 1600

5 Speed Conversion Advantages in the 2002

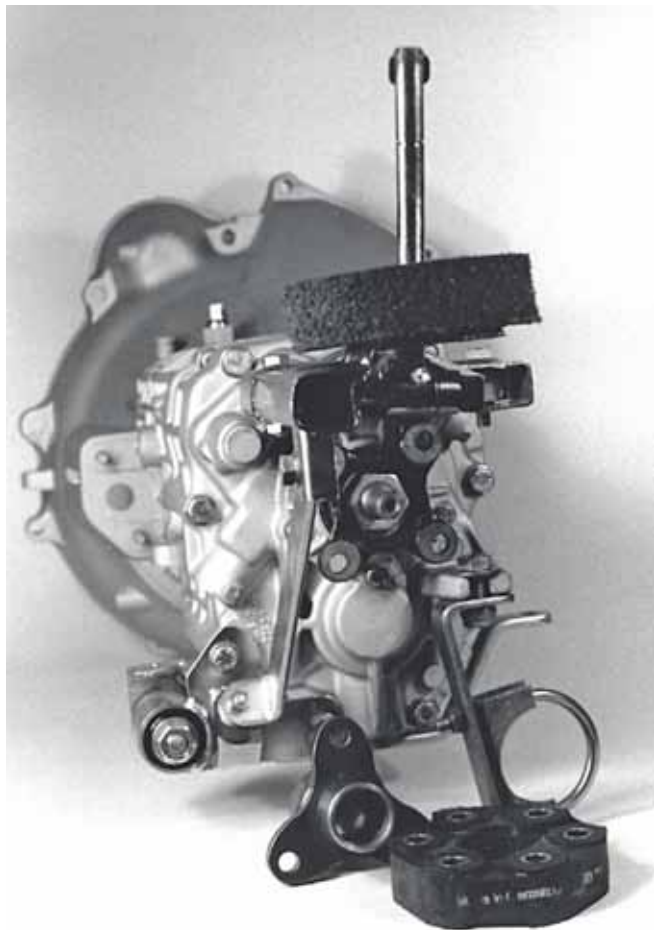
The factory 18% overdrive 5 speed offers the following advantages when the 5th gear is in use!

- 12% increase in fuel mileage
- 30 - 40% increased engine life
- reduces annoying engine and fan noises

By substituting our Metric Mechanic Sport 245 OD 5 Speeds instead - these gains are even greater.

Metric Mechanic's Hassle Free, Time Saving 5 Speed Conversion Kits!

Our conversion Kits are so streamlined and complete that installing them is simply a "bolt-in" operation. This is because many of the parts used in our conversion are manufactured by us and designed to eliminate the need for any further fabrications or modifications. Besides taking special care to "work the bugs out" for a hassle-free bolt-in project, our kit is comprehensive and includes all related hardware.



Flange Connection Explained

(connecting the output flange of the transmission to the driveshaft flange)

The 245 Getrag transmission as used in the 2002, 5 speed conversion came with a 4 bolt flange in the 1980 320i and a 3 bolt driveshaft flange in the 1981 & 1982 320i. The stock 2002, 8 bolt guibo is fairly prone to cracking and coming apart. Converting over to the 3 bolt flange system allows using a much stronger and more reliable 6 bolt guibo that can handle high engine torque outputs up to 200 ft. lbs.

If your transmission has a 4 bolt flange, we can shorten the stock 2002 driveshaft by 3 9/16" since it uses a 4 bolt driveshaft flange. The 4 bolt driveshaft flange collar is very short and is a pain to get properly aligned in the cut driveshaft tube.

We align it by chucking up the front half of the driveshaft in a lathe and using a dial indicator to set the run out on the driveshaft at less than .005" before tacking and welding on the flange.

We prefer shortening the stock 2002 driveshaft by 3" and welding on our MM HiTorque 3 bolt flange because the 3 bolt flange has an extra long 30mm collar to properly align the flange in the cut driveshaft tube. It greatly simplifies the driveshaft shortening procedure and increases the reliability of the guibo.

228mm Clutch Assembly

If your 2002 has a 228mm flywheel or you are considering converting from a 215mm to the 228mm, you may want to consider our 228mm HiTorque Pressure Plate because it uses the 320i 25mm Throw Out Bearing.

If you go scouting for a used 228mm Flywheel, be sure to get the bolts as well because they are longer (27mm vs 20mm) for the 215 flywheel. If you use the stock 228mm clutch assembly, you will need to use our 30mm conversion Throw Out Bearing. Dollar wise and performance wise, you'll come out ahead if you go with the HiTorque Clutch set-up.

2002 5 Speed Conversion

Getrag 232 to 245 for the 2002, 2002tii and 1600

5 Speed Conversion for the 2002, Conventional Method versus the Metric Mechanic Way

	Conventional 5 Speed Kit & Installation	Metric Mechanic 5 Speed Kit & Installation
Rear Transmission Mounting Bracket	Fabrication Required: A crossmember must be fabricated to provide rear support for the transmission. Generally, this is done by relocating the stock crossmember about 3.5" to the rear. To do this, you'd need to attach a set of mounting ears to the tunnel area to drill and bolt or weld in, the ears. Using this mounting system requires beating out the right side of the tunnel and the area around the clutch slave cylinder with a 3 to 5 lb. sledge hammer. Often, the transmission may need to be removed and re-installed several times to establish clearance between the transmission and the tunnel. Of all the procedures needed, none is a greater headache than this.	Bolt In: We have devised an innovative type of Rear Mounting Bracket that uses the stock 2002 crossmember mounting points and bolts to the back of the Getrag 245 transmission. This mounting bracket uses a cylindrical type mount to reduce side-to-side movement of the transmission which in turn eliminates the need to beat out the tunnel. Sometimes a small amount of clearance may be needed for the clutch slave cylinder. This is easily achieved by pushing the tunnel away from the slave cylinder with a small pry bar.
The Shift Bracket	Modification Required: The shift bracket needs to be shortened so that it's centered in the shift hole correctly and then re-welded.	Bolt In: Our Shift Bracket is cut and re-welded in a jig fixture for proper fit.
Support Arm for Shift Bracket	Fabrication or Modification Required: The stock 2002 Support Arm is weak and prone to bend. Some choose to modify this arm or fabricate something in its place.	Bolt In: Our support arm is much stronger than stock and uses a replaceable rubber mount.
Lower Shifter	Modification Required: The extension rod needs to be shortened, fitted and re-welded.	Bolt In: The Short Shift Kit extension rod has a special 10mm offset which centers the shifter in the shift bracket and the shift hole in the tunnel.
The Hydraulic Line from the Clutch Slave to the Clutch Master Cylinder	Improvisation Required: The stock hydraulic line that runs from the clutch slave cylinder is too short and improperly bent.	Bolt In: Our Conversion Kit comes with a special 3 piece hydraulic line to solve this problem.
Exhaust Downpipe Bracket	Improvisation Required:	Bolt In: Our kit contains a downpipe hanger bracket.
HiTorque Driveshaft	Modification Required: The 8 bolt guibo, as used on the 2002, is very prone to cracking and coming apart. The 6 bolt guibo is much more reliable. This adaptation can be done by cutting off a 3 bolt, 320i driveshaft flange and welding it to a shortened 2002 driveshaft.	Bolt In: Our HiTorque driveshaft comes with a special 3 bolt MM flange and a new center support bearing.
HiTorque Driveshaft Flange	Adaptation & Welding Required: A 3 bolt 320i flange will suffice for this adaptation with one drawback; the collar is very short and difficult to align properly on the driveshaft.	Welding Required: Metric Mechanic's special 3 Bolt flange has an extra long collar for easy installation and welding onto a 3" shortened 2002 driveshaft.
Driveshaft	Modification Required: The stock driveshaft needs to be shortened 3.5625". Many local driveshaft companies don't want to fool with the BMW 2 piece driveshafts. Others try to use the Close Ratio 5 speed 2002 driveshaft, but it's about .5" too long and won't work.	Bolt In: We supply you with a pre-cut driveshaft equipped with a new center support bearing and guibo (flex disc).
Four Bolt Drive Flange	Modification Required: Most 245 transmissions didn't come with a 4 bolt drive flange. These flanges can be very difficult to find due to their limited availability.	Always Available: If you purchase the "MM 5 Speed Conversion Kit" from us, this flange is included. It can also be purchased by itself.
Speedo Cable	Limited Availability:	Always Available:
Installation Time	Twenty to Sixty Hours:	Four to Twelve Hours:
Installation Quality	Adequate, looks homemade!	Excellent, looks like a factory installation: