

## 5-SPEED GETRAG TRANSMISSION SECRETS, MYTHS, TRUTHS, CONVERSIONS

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Last updated: 7/16/2003

### Introduction:

How do you even pronounce it? Get-rag, Get-trag, soft G? long G? No matter, it is one of the most desired Fiero transmissions. What's a 2-seat sports car with a V6 mid-engine car without a row through the gears trying to make you feel like a Jones, Unser, Andretti, etc.!

### History:

Introduced as a running change in the 86 model year, the Getrag 5-speed replaced the 4-speed Muncie unit used on the V-6 Fiero's in about June of 86, near the end of the 86 model run. There is no count on 5-speeds vs. 4-speeds in 86, (best estimates are about 2000), but approximately the last 10 percent of the production run had the Getrag when you ordered a V6 (the 4 cyl. kept the 5-speed Isuzu starting in 1985 all the way through and including the 87-88 Tech 4's).

The transmission was actually designed and used in Germany for a few years then modified for use in American FWD cars and the Fiero. It was built by GM in their Muncie, Indiana plant for use in GM V6 cars, hence the occasional reference to Muncie/Getrag. Many GM manuals refer to it as the Muncie 5 speed. The case was redesigned to fit GM V-6's and the Quad 4's. GM decided it was more economical to buy the Getrag design than start from scratch to design their own 5 speed transmission for the higher torque 2.8 and larger V-6's. All late 86's, 87 & 88 V6 manual transmission Fiero's had the 5-speed Getrag. A little calculation (no hard #'s are available to my knowledge) would indicate about 20,000 5-speed Getrag's were built in late 86, + 87, + 88.

### Application:

General Motors used the Getrag in all 5-speed V6 and Quad 4 applications (And the rare 4-cylinder turbo) and they are all basically identical. They all have a final drive ratio of 3.61:1. In the Quad 4 Getrag's, GM varied some of the gear ratios of the individual gears (1st - 5th) depending on the application but they all retained the 3.61 final drive ratio. On the V-6 Getrag's, 1st - 5th gear ratios are always the same and all have the 3.61 final drive ratio. Quad 4 Getrag's only fit Quad 4's and will not bolt up to a V6 unless you swap the bell housing case half to the V-6 type. A V6 Getrag will also bolt up to the Fiero 4 cylinder, 3.1, 3.4 (push rod and DOHC) and 3.8. In addition, a rare 3.94 final drive was used in the 92-93 Quad 4

hi-performance with the W41 option. This 3.94 final drive gear set can be installed into any Getrag but you cannot get them new anymore and are hard to find used.

### **Converting to a FWD Getrag:**

I see numerous Fiero owners who:

- A. want to upgrade a 4-speed to a 5-speed,
- B. change an automatic to a 5-speed,
- C. use a 5-speed with an engine conversion.

Since so few Fiero specific Getrag's were made, and since obviously many are still in operation, you do have an option: Obtain a 5-speed Getrag from a non-Fiero car and transplant it into your Fiero! A general list of cars that used this transmission on a 2.8 or 3.1 are as follows:

- Cavalier 87-89
- 6000 87-88
- Beretta 87-89
  
- Celebrity 87-88
- Corsica 87-89
- Cimarron 87-88
  
- Fierenza 87

Other 1987-94 FWD Getrag's have a different internal slave cylinder/arm set-up. On these Getrag's the slave bolts directly to the bell housing and the release arm is inside the transmission. I currently offer an adapter to use these later year Getrag's to be used in the Fiero. Cars that use this type of Getrag are typically the Grand Prix, Grand Am, Etc. Most, if not all, Quad 4 Getrag's have this internal arm set up.

Expect prices to vary greatly from one salvage yard to the next. I have seen them sell for \$50 to \$250 and up. Typically when I call around I tell them I need any 5-speed from a V-6 FWD GM car. They will have the Hollander exchange book and will be able to see if they have a Getrag in stock. This same book will say the FWD Getrag's interchange if you turn an arm around. That is a misprint, and is why I bought a FWD Getrag, which lead me into making the FWD conversion parts.

Most front wheel drive Getrag's use a steel pick-up cog on the differential carrier for the speedometer. This will need to be replaced with the plastic gear used in the Fiero. You may also use the Dakota Digital converter. [www.dakotadigital.com](http://www.dakotadigital.com). SGI-1. Signal generator interface. I know some have used it and have had good luck with it. If you use the correct gear then any 85-88

Manual speedometer sending unit will work. The GM part # for the correct large differential gear is 8672319, about \$14. You will also need the correct small gear that goes on the speedometer sending unit. Get that at any GM dealer. To install this large differential gear, you will need to "split the case". I have all the necessary instructions on my web page to accomplish this task. While this sounds difficult, it is actually "very doable" for the average do-it-yourselfer. The correct sealant to use between the case halves when reassembling them is Loctite 518 gasket eliminator flange sealant, although silicone will work just fine. A GM dealer will sell you the 518 sealant (their packaging) for a lot more than if purchased elsewhere. It may be hard to find elsewhere though. I hope to have it on my web page soon.

There is one design change in all of these Getrag's used in the front wheel drive V-6 vehicles. The rod where the shift arms connect to is shorter than the Fiero Getrag's. When the Fiero shifting arms are installed on these transmissions, 1st and 2nd gear select will not be possible. Also, the upper cable will be at a severe angle, which will greatly reduce cable life. Since I was able to have a Beretta and a Fiero Getrag transmission on hand, I was able to design the FWD Fiero Short Arm Shift Conversion Assembly. This assembly replaces the Fiero unit and allows the shorter shifting arm Getrag to be used in the Fiero. This is offered on my web page along with reproduction Getrag brackets. To change a FWD Getrag to the Fiero style longer arm is very labor intensive and requires the transmission to be completely disassembled. It is much easier and economical to use the FWD conversion arms I offer.

### **Parts Needed to Convert from a Non-Getrag Fiero:**

When converting from a non-Getrag Fiero, you will need to use these V6 Fiero Getrag specific parts: The cast iron release arm that goes from the slave to the arm in the bell housing, GM part No. 14105798 (no longer available from GM), slave and shift arm assembly complete (aluminum), GM part No. 10040978 (no longer available from GM). The Fiero Getrag slave cylinder. All the Fiero master cylinders have the same size bore so either can be used. The early master cylinder is aluminum while the later is steel. The clutch pedal should be replaced if it is aluminum. Also needed are Fiero Getrag front and rear transmission mounts, Getrag shift and select cables (I have aftermarket ones available) plus any 5-speed shifter assembly (The part in the center console, 4 cylinder ones are the same and are plentiful), and Fiero manual transmission axles. (85-88) All the manual transmission axles used in the Fiero are the same whether V-6 or 4 cylinder. I have all the brackets listed above reproduced and are on my web page.

### **Wear and Tear and Rebuilding Tips:**

What to watch for: The Getrag is an extremely durable and long lasting transmission but it has one major problem. That involves the Timken side bearings on the differential assembly (Where the axles exit the transmission). As these bearings wear, the differential assembly will twist during acceleration and deceleration. If the wear gets too great, this will put pressure on the main shaft, which has the pinion gear hobbled onto it. The ring gear and the pinion gear run parallel to each other. When pressure is applied to the main shaft pinion gear, this shaft will fail. The shaft will be pushed into the bearing, and the bearing face, which is the shaft itself, will deteriorate. The pinion gear is on the end of the shaft with only a bearing race after it. The shaft is, unfortunately, the bearing race on this end. A new shaft is expensive if needed. (GM part# 14082129).

When checking for wear - just shaking an axle is not a true indicator of wear. There is a certain amount of play between the axle and the differential. A better test is to shake an axle up and down and watch the opposite axle for movement. A "perfect" test is no movement on the opposite axle. Any movement means the differential bearings are worn and replacement of the bearings may be advised. You can use a trans with slight wear. Replace only if serious looseness is noted, or if you want to have a "perfect" trans. I also sell the add-on axle stabilizer bearings that take a lot of load off these differential bearings. These are on my web page. These are strongly recommended anytime you have the transmission or axles out as cheap insurance!

Any higher (50 K or more) transmission may need a new clutch release arm. If you buy a transmission with a lot of wear on the carrier bearings, you probably will need to buy a new main shaft. A \$250+ Getrag unit that needs an overhaul may be a better bargain than a \$750 unit that needs a minor overhaul anyway. There is always a possibility that there could be some items in a high mileage unit that would be worn and in need of replacing. Because of the prices of some of these internal parts, this quickly makes it foolish to consider a high priced unit that needs an overhaul. You may want to make it clear (In writing) that the yard you buy from guarantees a "rebuildable core". I bought a Getrag with 134,000 miles on it, which looked like few, if any, oil changes were done on it, and the main shaft and Timken side bearings were the only major problems (The side bearings had quite a bit of wear). The rest of the internal parts showed remarkable little wear!

### **Miscellaneous Tips:**

FWD Getrag's have a long axle assembly arm bolted on the case. This easily unbolts and the axle can be pulled from the differential. With the outer housing removed grab the axle with the large pliers etc. and hit the pliers with a hammer to release it.

Axle seals are very tough to install. Tip: Remove some or most of the sealant that is on the seal and use some of the Loctite # 518 sealant. Find a suitable round driver that will match the outer lip area to tap the seal in. (Try a piece of PVC pipe). Anything less is asking for trouble! If the wire spring falls off when installing the seal just use two small Allen wrenches to reinstall it.

You will also want to obtain part of the wiring harness from the donor car that goes to the reverse light switch (It's on the transmission on the Getrag) if you are converting from a non-Getrag Fiero Fiero. This will allow for a detachable connection when rewiring for the reverse lights.

### **Overhauling a Getrag:**

Overhaul: When a Getrag is overhauled, there are a couple of items that must be replaced, at a minimum. They are the input shaft bearing (Where the throw out bearing rides on) GM part# 14082181. The main shaft side bearing below it, (GM part# 14092035) the 2 differential bearings, (GM part# 9437733) and the axle seals, (GM part# 90342143). If the transmission has over 70,000 miles, the clutch release arm and bearings may also need to be replaced. The 2 large sealed bearings on the opposite side are normally reusable unless this is a high mileage unit. (Over 100K). The rest of the internal parts must be checked and replaced if necessary. More than likely, none will be needed.

Who should overhaul a Getrag? Since this transmission is such a low production and durable unit, very few people are familiar with them. Few, if any transmission shops are knowledgeable on these units and should probably be avoided. These shops do most of their business in automatic transmissions and generally exchange failed manual units with salvage units. I am fortunate enough to have a transmission rebuilding shop in my area, which only rebuilds manual transmissions (Also rear axles and transfer cases). They do not remove or install them, only rebuild them.

These are things that you should be looking for in a re-builder, since the overhaul involves both a manual transmission and a rear axle set-up. Setting up the correct "Crush" on the side bearings for the differential is extremely important for long life, since this is the weak link of the Getrag. Improper crush will greatly reduce the service life of the side bearings. Two different size shims are used in the rebuilding process, 62mm and 63mm OD. When GM built these transmissions, they had special assembly jigs and used a "select fit" single thickness shim. The GM service manual lists these shims. More than likely, when a Getrag is overhauled, the shim thickness will most likely change from the original, because of the new bearings that are installed. When a re-builder sets the "crush" on the differential bearings. Typically they will add shims until they feel the rotating resistance is correct (This involves splitting the case several times). My re-builder stocks several thickness of shims for this purpose. Most

transmission shops might stumble at this point and possibly not do the job correctly. They may just use the old shims, which could be too thick or too thin. Since it is no small effort to redo this, it should be done correct the first time.

### **Summary:**

In summary, if you are going to convert to a 5-speed Getrag, you should not only consider your options, (may be less expensive to find and buy a 86-88 V6 with the Getrag, or find one in a salvage yard with a blown engine!!), but shop carefully, get a warranty if possible, exchange privilege, check parts availability, and most of all be prepared for a long labor of love in this replacement.

I will be happy to discuss the Getrag swap with anyone interested, plus provide the necessary shift kit that will mate the FWD Getrag to the Fiero.

I can be reached most evenings at 262-835-9575 or e-mail at [rodney1@execpc.com](mailto:rodney1@execpc.com).