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Auto to Manual Conversion

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09-25-2009, 01:42 PM

#1

big_stroker
 High Tech Redneck

Auto to Manual Conversion

As a lot of you know I have just completed the swap from a 4r100 to a ZF6 in my 1999.9 F-250. Here are the steps I have taken to do so.



Join Date: Jul 2009
Location: Union City, IN
Posts: 332
Points: 1,545
Thanks: 13
Thanked 30 Times in 28 Posts

There are 3 ways to do this. Get a wrecked donor truck from a junk yard. This would probably be the easier way if you have the money to have tied up in a truck. Andy (Moore20017.3) on PSN did this and once he was done with the swap made money.

I on the other hand didn't have the time or money to get another truck. So I got all my parts piece by piece to [complete](#) the swap.

Another way to do this is to get someone that is looking do a manual to auto swap. There are lots of people doing this also.

Here is a list of parts you will need.

6 Speed floor hump out of junk yard truck.

Clutch Pedal Assembly

ZF6 Transmition and Transercase

A pre-bleed Master/Salve Cylinder kit from Ford

New clutch and flywheel I also recommend the upgraded Clutch Fork from [South Bend](#).

Manual PCM (Optional)

First off the ZF6 is a much taller transmission then the 4r100 therefore I had to find a floor hump out of a Super Duty that used to have a manual. I would look in a junk yard for this. I found mine for \$100. If you look at my pictures below you will be able to tell how big you should cut it to make it work right.

Once you have the cut out hump from the manual lay it over the floor hump in your truck. Mark the out side edges all the way around with a marker so you know where it will line up at. Once you have done this go in about 1" from them marks and make the marks where you are going to cut. This will be your lip so you will have something to screw the new floor hump 2 when you go to install it.

Here are some pictures.









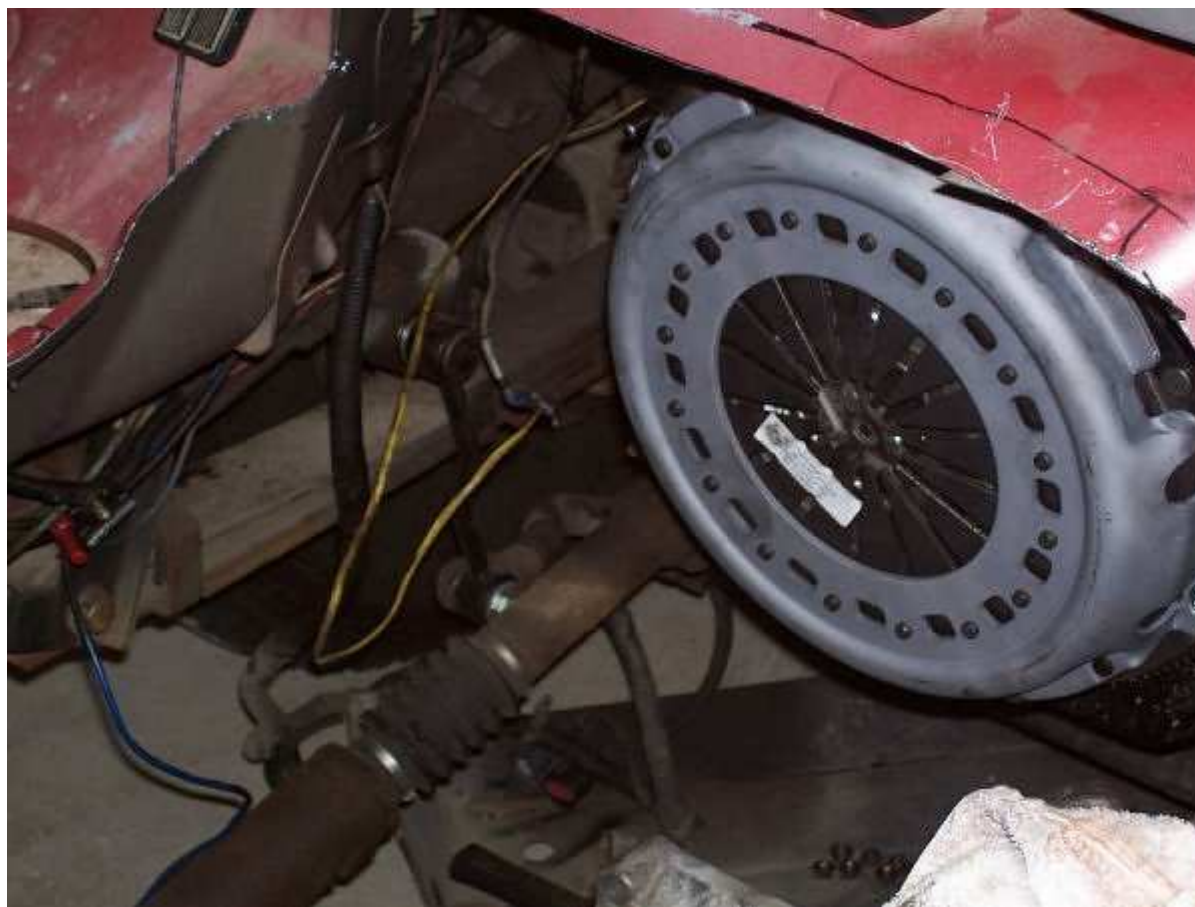
With the old floor hump out of the way there is LOTS of room to get to the tranny bolts. This is one reason i didn't bolt the floor hump back in place yet.

Time to remove the old auto tranny. If you are trying to do this swap then you probably have enough understanding to remove the old tranny.

Once the old tranny is out of the way you can remove the old flex plat. Also remember to remove the spacer that is behind this as it is no longer needed with the new fly wheel. Also remove the spacer that is between the transmission and motor at this time.



Now its time to install your new clutch. If you got your clutch kit from [South bend](#) it came with a new flywheel and everything you need. If not make sure you have the correct flywheel and I highly recommend putting in a new pilot barring at this time if it is a used flywheel. The one from [South Bend](#) already has a new one in it.



You are now ready to install the new zf6.

BUT FIRST!!!! You will need to measure the pins coming out of your engine, and then measure the cast on your zf6 and make sure that it will fit without hitting. There are different casts of the ZF6. Some will fit without modification like mine, and some you will need to grind down the pins on the motor so they will not hit on the ZF6.

Make sure you do this. If not, you could crack the housing on the ZF6 and it would be no good.

Now you can install the ZF6. Here are some pictures of how I did this. Don't laugh too hard. I didn't have a tranny jack.







[1999.5 Ford F-250 7.3l 4x4 PSD](#) DI Short block, Ported Heads, Head studs, Over size valve springs, DI Push Rods, DI RR, GTP38R, GSL 392 fuel pump with 3/8 line feeding 238cc Injectors from Nate @ Unlimited Diesel and Tuning from Matt @ Gearhead Automotive

[Auto to ZF6 Completed](#)

520hp and 926tq - 5/23/09

[Dyno Sheet](#)

Last edited by big_stroker; 09-25-2009 at 01:49 PM.



09-25-2009, 01:44 PM

#2

big_strokerHigh Tech Redneck
ThreadstarterJoin Date: Jul 2009
Location: Union City, IN
Posts: 332
Points: 1,545
Thanks: 13
Thanked 30 Times in 28 Posts

There are also some tranny lines that need to be modified to make work with the ZF6. You can do 1 of 3 things. Get the correct lines. Cut and redo a one of the lines to make it fit correct. Or do what i did and just nicely bend it around without kinking it and make it work.



Now if you got the ZF6 and Transfer case together in one piece you are good. If not make sure you have the transfer case that came off the manual.

I learned while doing my swap that the out put shaft of the manual and the auto tranny's are different. If you don't have the transfer case don't worry. You can switch the input shaft of the transfer case to make it work with the manual.

I decided to switch. I had a electronic transfer case and I got a manual shift one with the ZF6 and I would rather have the manual shift.

If you get a manual shift and change from a electronic there is already a hole in the floor for the shifter. You just have to unscrew it and take the plate off.



Now its time for you to put in your new clutch pedal assembly and Master/Slave cylinder.

All I can say is this is kind of a ***** to do. But once its up there you are good.





Yes the Clutch and Brake pedal are close together but once you drive it a few times you will never have any issues.

Now its time to put the floor hump back in place. I used red RVT sealant around it and the put in self taping screws so that if I need to drop the tranny again it will be easy to get to the bolts.

Cut your hole in your carpet and you are almost there. They carpet don't fit the best but it does fit and look descent.





Next up wiring.

I left wiring harness in place from the auto for now. There are 4 wires that need to be crossed over on the gear selection plug to make the truck run correct and start. I will get a picture of these and post them ASAP.

I do plan at some point in time to delete this harness and just jump these wires up at the plug on the fender well. Just ran out of time. So right now my back up lights and 4x4 lights do not work. But who needs them anyway.

Another thing you will need done is to get a PCM or have your PCM returned to a manual PCM. You don't have to do this but it would be a good idea. If you are running a chip you will need to send it back and have it returned for a manual as well.

If you have any other questions about this swap PLEASE ask me because I may have left out something.

Thanks,
Trey

[1999.5 Ford F-250 7.3l 4x4 PSD](#) DI Short block, Ported Heads, Head studs, Over size valve springs, DI Push Rods, DI RR, GTP38R, GSL 392 fuel pump with 3/8 line feeding 238cc Injectors from Nate @ Unlimited Diesel and Tuning from Matt @ Gearhead Automotive

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520hp and 926tq - 5/23/09
[Dyno Sheet](#)



The Following 2 Users [codyr6](#) (09-25-2009), [NCfarmboy](#) (09-26-2009)
Say Thank You to
big_stroker For this
addition to TDG:

09-25-2009, 10:39 PM

#3

[codyr6](#)

Member



Join Date: Oct 2007
Location: Melbourne Beach FL

I actually just made another thread about this in the general discussion. I dont have any funding now but not that I ahve a decent idea of what to do and what all the parts are called and look like im atleast headin in the right direction for now! Great instructional!



College- the biggest scam yet. 2 more years left..!

Posts: 315
Points: 666
Thanks: 52
Thanked 37 Times in 18 Posts

2004 6.0L F-350 33's with 3.5in Strait Pipe CuStOm Side Exit Exhaust. Pioneer DvD touchscreen, Kicker 10inch subwoofer, Kicker Amp, Blacked out Windows.

2005 Kawasaki Mean Streak. V&H Pipes, Power Commander.

US Army Vet- 1st Cav HOOAH!



09-26-2009, 08:20 PM

#4

NCfarmboy
Haulin' Hay

Looks great! Congrats on the install



Join Date: Dec 2008
Location: North Carolina
Posts: 457
Points: 2,741
Thanks: 54
Thanked 22 Times in 20 Posts



11-29-2009, 05:15 AM

#5

BlackCoyote

Junior Member

Join Date: Nov 2009

Posts: 1

Points: 216

Thanks: 0

Thanked 0 Times in 0 Posts



Did you get confused the first few times you drove your truck.... if the auto and manual shifters were still in place. that would be a great theft delay for the amature carjacker



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