Flyin' Miata INSTALLATION INSTRUCTIONS

NC CLUTCH / FLYWHEEL
08-XXXXX

Thanks for purchasing our NC clutch kit and/or flywheel. If you have any questions during installation or suggestions for improvement to the product or the instructions - please don't hesitate to call or email.

WARNING: Not everyone can perform every installation. It is critical that you be honest with yourself in regards to your ability. We're more than happy to help, but there are only so many things we can do from the other end of a phone / computer. If in doubt, discuss the install with us before you dive in. Improper installation could cause injury and / or death!

Required tools:

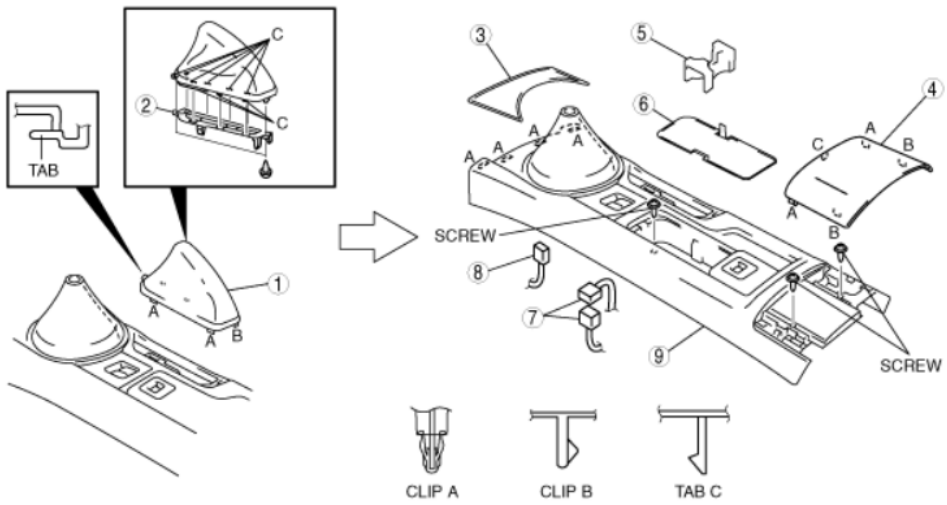
- **Full metric socket & wrench set**
- **Torque wrench (10-120 lb-ft)**
- **Jack stands & floor jack**
- **Transmission jack or floor jack with transmission adapter**
- **Long ratchet extension(s)**
- **Wobble socket adapter**
- **Needle nose pliers**
- **Sharpie or paint pen**
- **Transmission output plug (FM pt# 35-36100)**
- **Flywheel locking tool (FM pt# 35-36530)**
- **Slide hammer with internal jaws (removing pilot bearing)**
- **Clutch grease (moly base)**
- **Thread sealant**
- **Brake clean**
- **Blue Loctite**

Torque specs

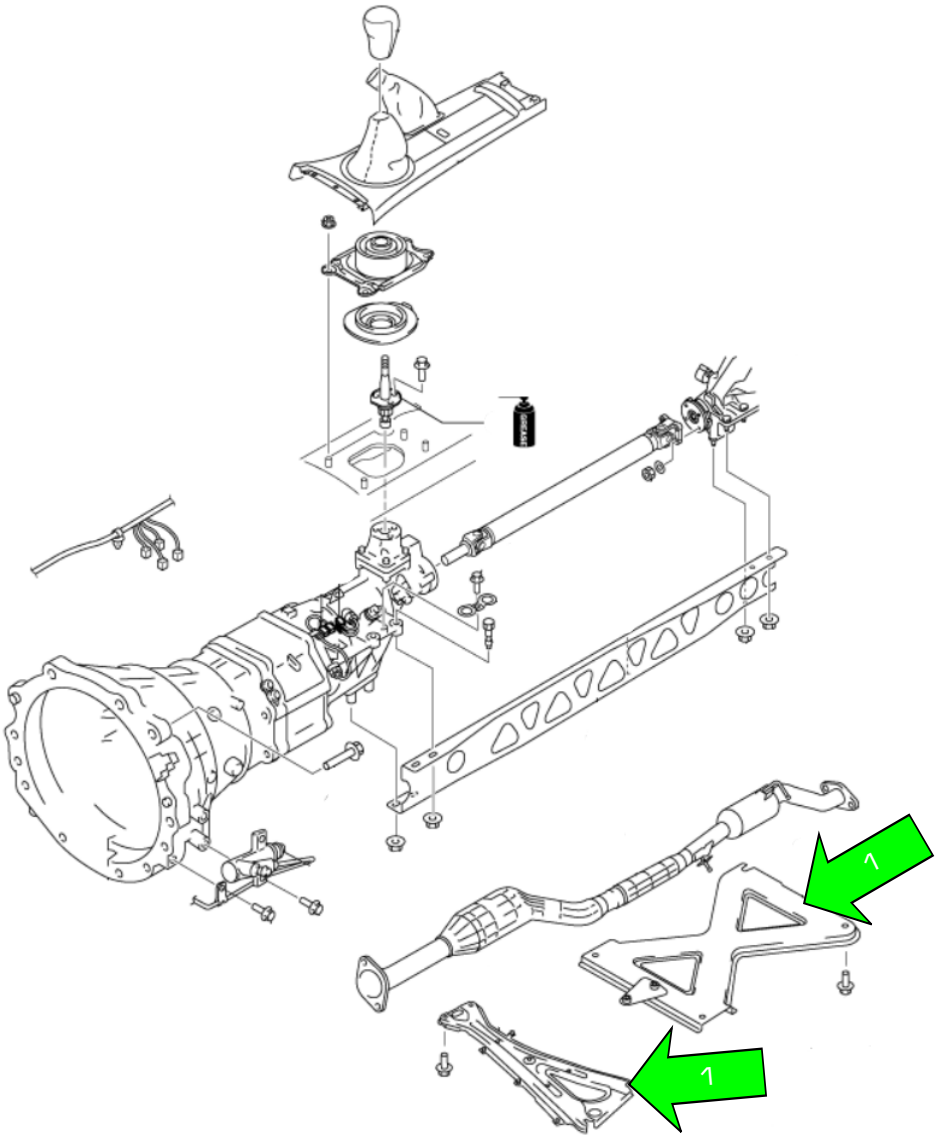
- **Flywheel bolts: 79.7–85.5 lb-ft (torque in 3 stages)**
- **Pressure plate bolts: 18.5–22.4 lb-ft (torque in 3 stages)**
- **Bellhousing bolts: 28-38 lb-ft**
- **Slave cylinder bolts: 13.7-18.8 lb-ft**
- **Driveshaft flange bolts: 37-43 lb-ft**
- **PPF nuts: 93-113 lb-ft**
- **Shift lever bolts: 69-95 lb-in (not lb-ft!)**
- **Chassis bracing bolts: 13.1-19.5 lb-ft**

Note: these instructions are written assuming a complete replacement of the clutch, flywheel and related components. If you're replacing only a portion of the parts, be aware you may need to skip some steps or portions of steps.

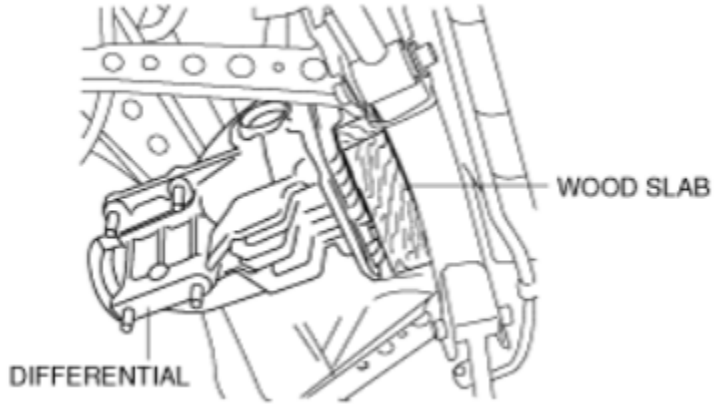
1. Remove the components that cover the shift lever:
   - Parking brake lever boot (1)
   - Shift knob (2 - not shown)
   - Rubber mat (3)
   - Rear cover (4)
   - Cup holder guide (5)
   - Box mat (6)
   - Power window main switch connector (7)
   - Console (9)



2. Remove the two rubber shift boots to expose the shift lever. Remove the shift lever. Place a rag or paper towel in the shift turret to keep any debris out.
3. Raise the car and properly support it. Remove the two chassis braces that span below the midpipe (1). Then remove the midpipe and set it aside.

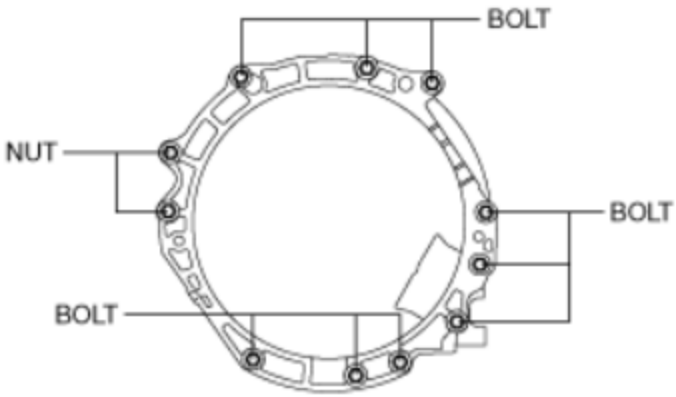


4. Make a mark that spans between the flange of the driveshaft and the pinion flange on the differential. This will allow you to orient the driveshaft in the same position during reassembly. Remove the driveshaft. Insert a transmission output plug into the back of the transmission. This can help prevent making a huge mess should the transmission tilt back too far. Alternatively, you could drain the fluid before removing the transmission if you're replacing the fluid anyway.
5. Place a transmission jack under the transmission and raise it until it just contacts it. Remove the nuts on the power plant frame (PPF). As you remove the PPF, place a block of wood between the back of the differential and the subframe to limit the differentials droop.

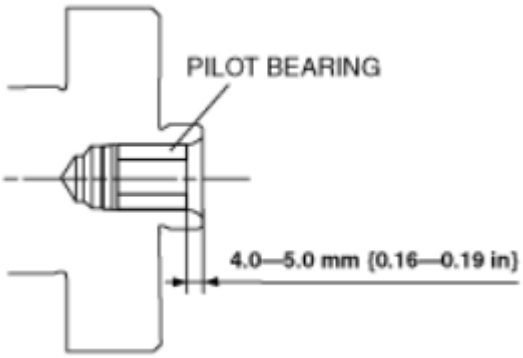


6. Unbolt the clutch slave cylinder and hard line clamp from the transmission.
7. Unplug the electrical connectors on the top of the transmission just forward of the shift turret. Depending on the submodel, you will have either two or three sensors. Note that some sensors have individual plugs per wire (multiple plugs per sensor). Using needle nose pliers, unclip the harness from the transmission.

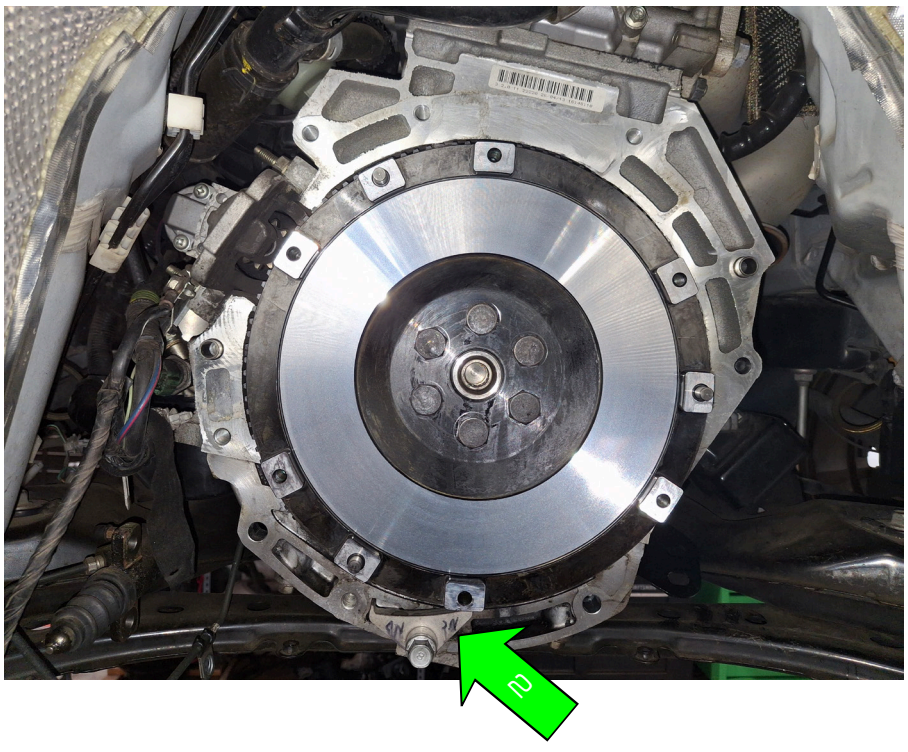
8. If not already done, secure the transmission to the transmission jack. Remove the bellhousing bolts and nuts. Using a long extension and wobble helps to reach the bolts at the top. Also note there are two bolts at the bottom that install from the front of the car.



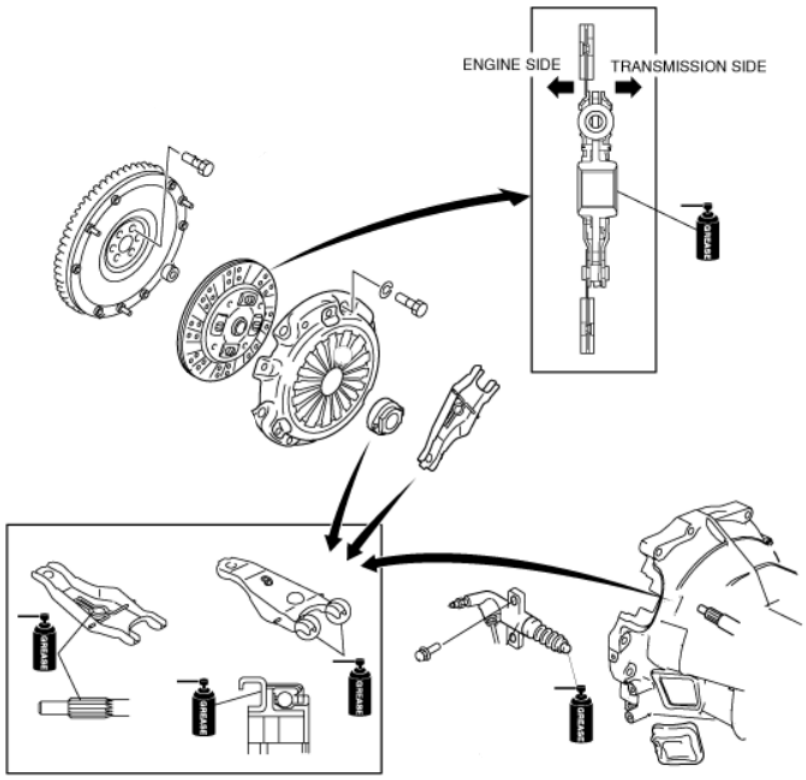
9. Carefully slide the transmission back and lower it out of the car.
10. This step requires the use of a flywheel locking tool (2 - bottom of page). Remove the pressure plate and clutch disc. We recommend either resurfacing or replacing the flywheel. Remove the flywheel and check the condition of the rear main seal. Now's a good time to replace it if it is leaking or if you know it's old.
11. The pilot bearing does not need to be removed unless you are replacing it. Remove the pilot bearing from the crankshaft using a slide hammer with internal jaws. Install the new pilot bearing. Use a socket with an OD of 21mm or less to install it. Be sure the seal within the bearing is facing toward the back of the car. The pilot bearing should sit recessed within the crankshaft by 4-5mmm, as shown.



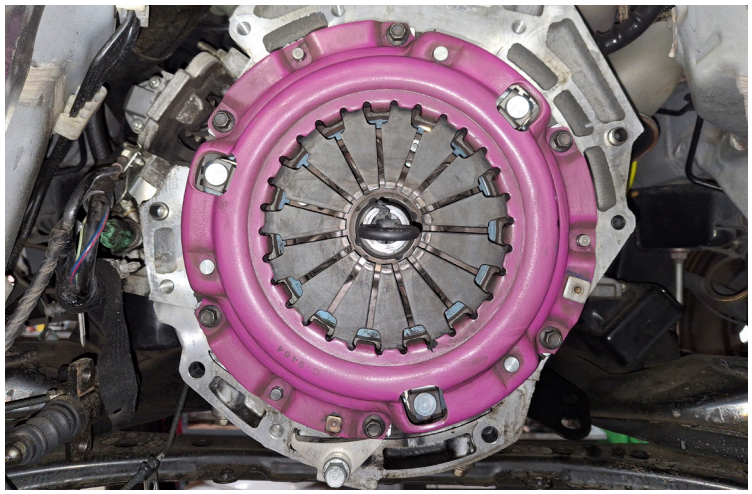
12. Install the flywheel. If reusing the bolts, apply a thread sealant as the bolt holes in the crankshaft are open to the crank case. New bolts typically come with sealant preinstalled. Torque the bolts using a crisscross pattern in stages up to 85 lb-ft.
13. Thoroughly clean the surface of the flywheel with brake clean.



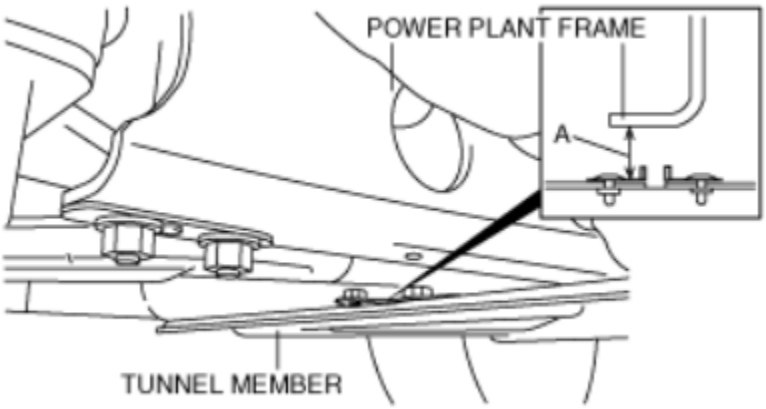
14. Observe the proper clutch disc orientation and install it along with the pressure plate onto the flywheel. Install the clutch alignment tool into the clutch disc and ensure the end of the tool inserts into the pilot bearing. Ensure the pressure plate slides onto the alignment dowels of the flywheel and then install the hardware. We recommend using a drop of blue Loctite on the pressure plate bolts. Torque the bolts using a crisscross pattern in stages up to 22 lb-ft.

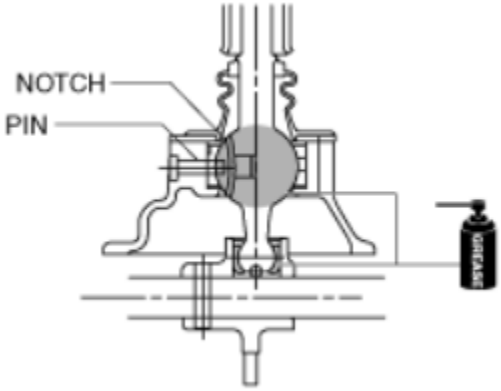


15. Replace the throwout bearing. Apply a small amount of moly grease in the areas indicated and install the new throwout bearing. Pay extra attention to not applying too much grease on the input shaft as it will “sling” outward when spinning and will contaminate the clutch disc.



16. Reinstall the transmission. Ensure the engine and transmission are in alignment and carefully slide the transmission forward until the bellhousing is seated on the engine. If you're unable to get the transmission seated, figure out what the issue is - do not try to force it. The issue will often be a misaligned clutch disc, so you may need to loosen (or remove?) the pressure plate to re-align the disc. You can also try rotating the input shaft as you attempt to seat the transmission. To do this, temporarily shift the transmission into gear and temporarily install the driveshaft onto the output shaft, then rotate the driveshaft as you attempt to seat the transmission.
17. Tighten down all of the bellhousing bolts (28-38 lb-ft), reinstall the wiring harness, and plug in the connectors.
18. Reinstall the PPF. Raise the front end of the PPF (transmission side) or the transmission with the transmission jack, and adjust dimension A to 26.7—34.7 mm {1.06—1.36 in} (lower surface of PPF-upper surface of the tunnel member) as shown in the figure. Torque the PPF nuts to 93-113 lb-ft





19. Reinstall the driveshaft (37-43 lb-ft), exhaust, clutch slave cylinder, and under-chassis bracing.
20. Reinstall the shift lever, re-greasing the ball and topping off the turret fluid only as necessary. Overfilling the turret fluid will make a mess. The specification is ~290-330cc (~1/3 qt).
21. Reinstall the remainder of the interior parts. Installation is the reverse of removal, refer back to step 1 for more details.
22. Clutch pedal adjustments are typically not necessary. If you're having trouble with disengagement please reach out to our customer support team.