

# Z1 VR TRANSMISSION SWAP INSTALLATION MANUAL



|  |                    |
|--|--------------------|
| This Installation Manual is intended for the following models: |                    |
| 2008-2015  | Infiniti G37 (VHR) |
| 2009-2020  | Nissan 370Z        |

## PROLOGUE:

Study these instructions completely before proceeding to assembly. The installer must have a thorough knowledge of automotive systems operation. If unfamiliar with any of the concepts outlined in this instruction, we recommend the installation be completed by a qualified professional.

## WARNING!

Extreme caution should be taken when performing maintenance or performance upgrades to your vehicle. Please observe and abide by any Warning or Caution labels placed on the various components and tools used when servicing your vehicle. If you have any questions regarding installation or the various components included with the Z1 Motorsports VR Transmission Swap, consult with a Professional Mechanic, or contact Z1 Motorsports for more information.

## **PARTS INCLUDED:**

| Item       | Quantity | Description                               |
|------------|----------|---|
| 1          | 1        | Crank Position Sensor Cutting Template    |
| 2          | 1        | Crank Position Sensor Cover               |
| 3          | 1        | Transmission Mount Top Plate (AWD or RWD) |
| 4          | 1        | O2 Sensor Bracket                         |
| <b>RWD</b> |          |   |
| 5          | 1        | Driveshaft                                |
| <b>AWD</b> |          |   |
| 6          | 1        | Driveshaft Spacer                         |
| 7          | 4        | M12 x 1.25 Bolt, 50mm                     |

## **TOOLS REQUIRED:**

- Hydraulic Jack
- (2) 2-Ton (or greater) Jack Stands
- Ratchet
- Ratchet Extension(s)
- Assorted Metric Wrenches
- Assorted Metric Sockets
- Torque Wrench
- Pliers
- Cutoff Wheel/Dremel
- Marker

## **SAFETY REQUIREMENTS:**

- Always wear safety glasses and any necessary protective garments. If using any fluids, chemicals, or solvents, a respirator is recommended.
- Always turn the ignition to the OFF position and disconnect the NEGATIVE battery terminal.
- Always use properly rated jack stands when working under your vehicle.
- Always keep limbs and parts away from moving drivetrain parts.
- Only operate drivetrain in safe space and well-ventilated areas.

## **BEFORE YOU BEGIN:**

Remove contents from the Z1 Motorsports VR Transmission Swap and verify that ALL necessary hardware is present.

This Guide **DOES NOT** go over the process of removing the OE Transmission from your vehicle. If you are not comfortable removing the transmission yourself, it is highly recommended to take your vehicle to a competent shop to perform this installation.

This Guide also **DOES NOT** go over the process of installing an aftermarket Transmission Cooler.

## **TABLE OF CONTENTS**

|                                    |    |
|------------------------------------|----|
| DISASSEMBLY:.....                  | 4  |
| CLEARANCING THE TRANSMISSION:..... | 6  |
| TRANSMISSION TOP MOUNT: .....      | 9  |
| SHIFT LINKAGE .....                | 12 |
| DRIVESHAFT .....                   | 13 |
| O2 SENSOR BRACKET .....            | 15 |

## **DISASSEMBLY:**

1. Place the transmission in Park position (or in Reverse gear if equipped with a manual transmission). Apply the parking brake.
2. Locate proper jacking points on vehicle's chassis (refer to vehicle's Owner Manual). Raise and support vehicle using jack & jack stands.
3. Refer to your Factory Service Manual (FSM) to remove your Exhaust, Driveshaft(s), and Transmission.

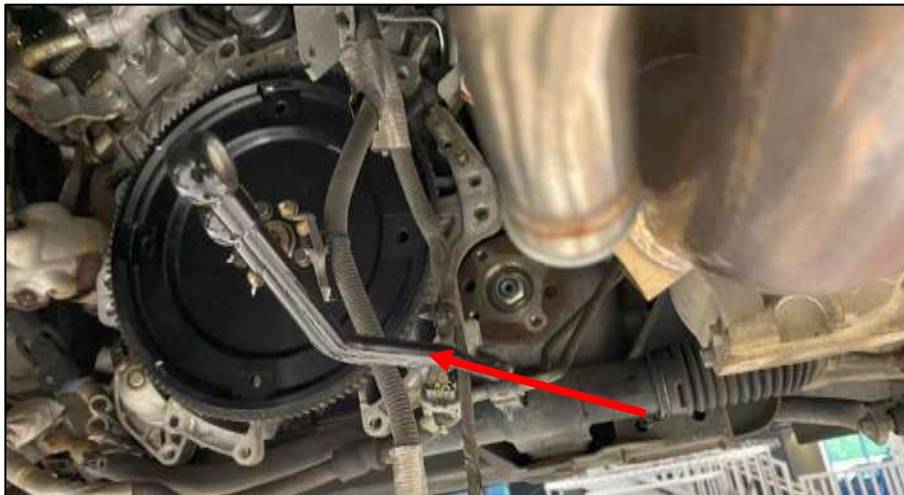
**NOTE:** The Transmission Cooler Lines will need to be modified and reused or removed in place of another Cooling System.

RWD Vehicles can reuse the Coolant Lines from the original transmission, however, the system must be flushed or replaced if the Original Transmission was damaged. Contaminants from the old Transmission can stay in the lines and damage the new VR Transmission if not cleaned/flushed properly.

AWD Vehicles can also reuse the Transmission Cooler Lines, but the brackets securing the lines will need to be removed to adjust the lines as necessary, and they are difficult to remove. It is suggested to install an aftermarket Transmission Cooler System.

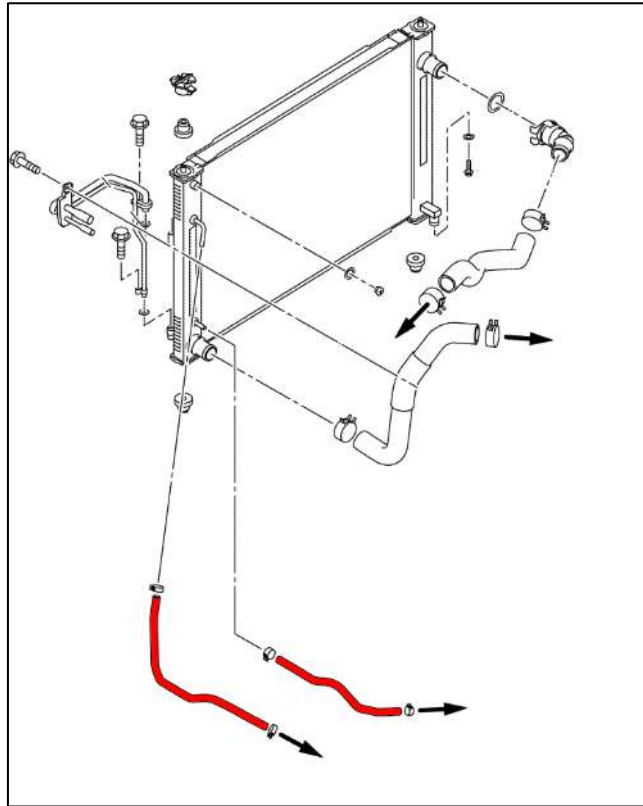
If you decide to install an aftermarket Transmission Cooler, continue to *Step 4*. If you are reusing your OE Lines, properly flush the system, use new Crush Washers when reinstalling the Banjo Bolts and continue to [Clearancing the Transmission](#).

4. Remove the OE Transmission Cooler Lines. We found it is easiest to cut them once they have been disconnected. You can optionally lower the Front Subframe slightly to maneuver them out of the vehicle.  
*Figure 1.*



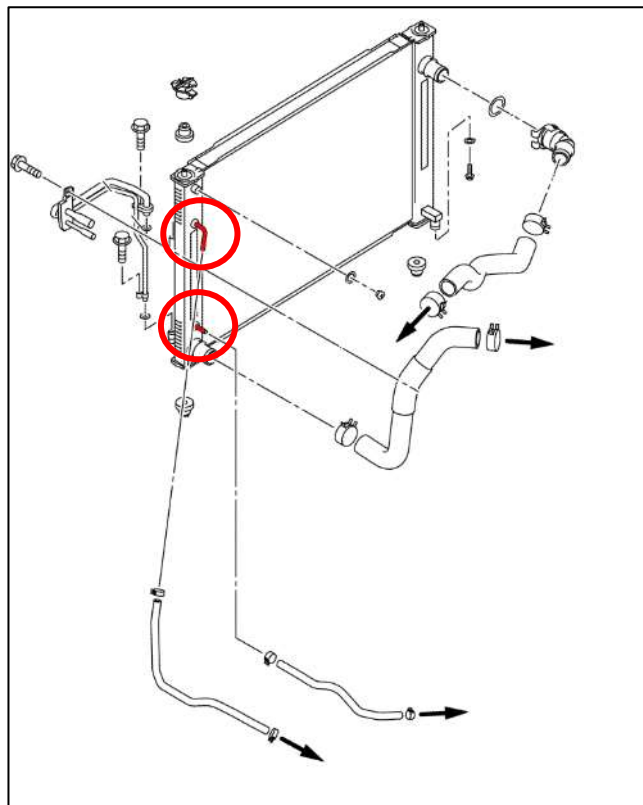
*Figure 1*

5. Remove the (2) two Transmission Cooler hoses connecting to the Radiator. Use caution as coolant will leak.  
*Figure 2.*



*Figure 2*

6. Using one of the hoses removed in *Step 5*, loop the inlet and outlet of the Transmission Cooler on the Radiator together, and secure with the OE Hose Clamps. Cut the Hose to length as needed. *Figure 3.*



*Figure 3*

## **CLEARANCING THE TRANSMISSION:**

1. Locate your new VR Transmission and the Z1 Cutting Template.
2. Position the Z1 Cutting Template onto the passenger side of the Transmission as shown below. *Figure 4.*



*Figure 4*

3. Mark the outline of the template with a Paint Pen and remove the Template afterwards. *Figure 5.*



*Figure 5*

- Using an Air Saw, Dremel, or another similar cutting device, cut out the marked section of the Transmission. *Figure 6.*



*Figure 6*

- Using a file, deburring tool, or Dremel, clean up any sharp edges of the cut. *Figure 7.*



*Figure 7*



6. Install the Plug into the old port for the Crank Position Sensor. You can optionally use a bit of RTV to hold the plug in place, but it will be sandwiched into position once the transmission is installed into the vehicle.  
*Figure 8.*



*Figure 8*

7. After clearancing, install the new Transmission into the vehicle and check for clearance between the Crank Position Sensor and the Bellhousing. If there is contact between the Transmission Bellhousing and the Crank Position Sensor, the Transmission will need to be removed and clearanced more.

**MAKE SURE THE LOCATING DOWEL PINS ARE INSTALLED IN THE ENGINE. IF THEY ARE NOT, CHECK THE OLD TRANSMISSION OR BUY NEW ONES. NOT HAVING THE LOCATING PINS CAN CAUSE THE TRANSMISSION TO BE MISALIGNED AND CAUSE FLEX PLATE DAMAGE.**



## TRANSMISSION TOP MOUNT:

1. The OEM Transmission Crossmember must be used with the new VR Transmission and Transmission Mount. If still attached to the Original Transmission, remove the (2) two nuts securing the Transmission Cross Member to the OEM Transmission Mount. Retain this Hardware. *Figure 9.*

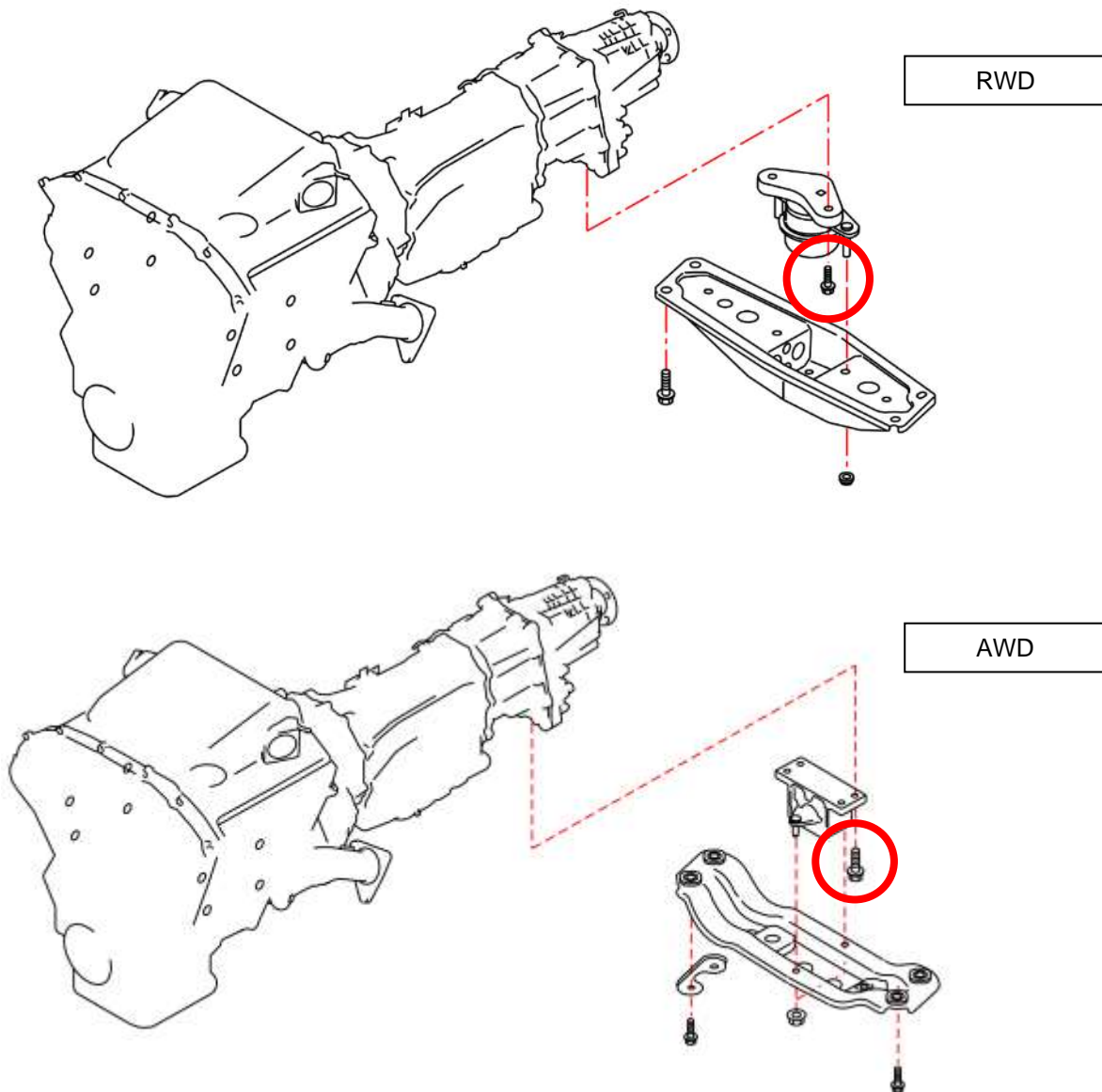
**NOTE:** AWD and RWD vehicles will have different Transmission Crossmembers, the AWD vehicles have the Mount oriented 90° from the RWD Mount shown below.



*Figure 9*

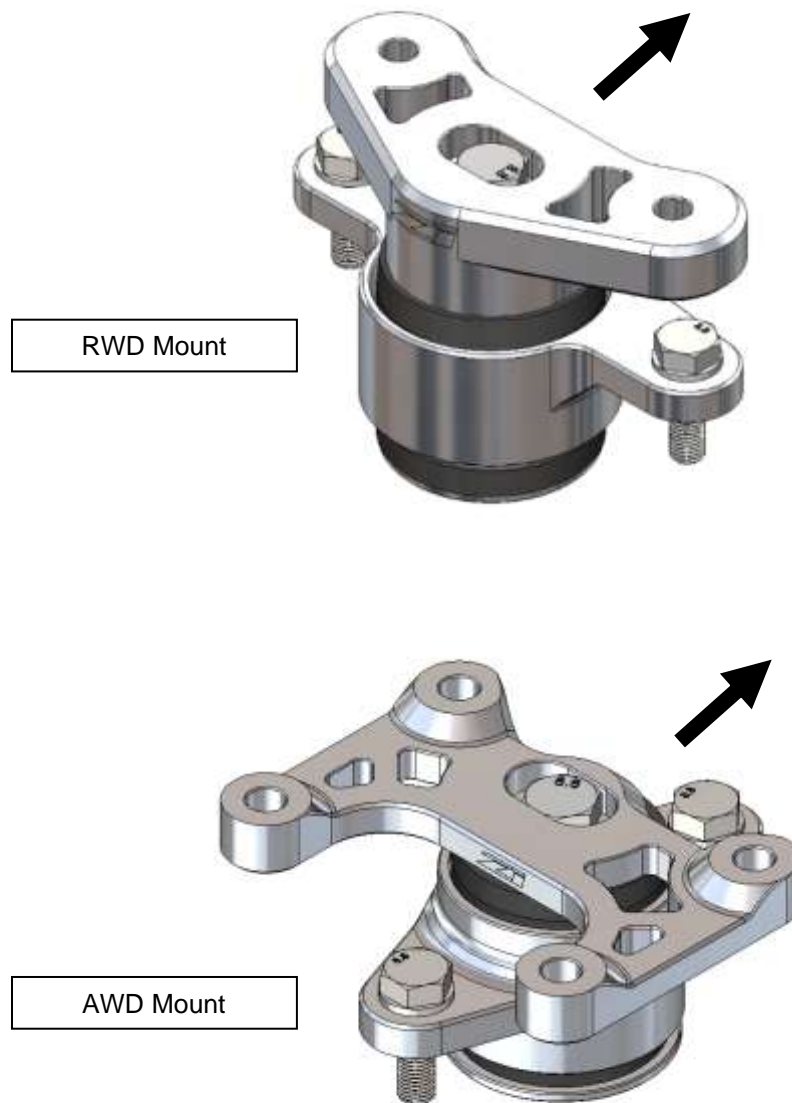
2. **RWD Vehicles:** Remove the (2) two bolts securing the OEM Transmission Mount to the Transmission. Retain this hardware. *Figure 10.*

**AWD Vehicles:** Remove the (4) four bolts securing the OEM Transmission Mount to the Transmission. Retain this hardware. *Figure 10.*



*Figure 10*

3. Locate the Z1 Transmission Mount, it will look different depending on a RWD or AWD application. Orient the Z1 Mount the same way as the OEM Mount. When viewing the Z1 Mount from the back of the vehicle, the Z1 Logo should be visible. *Figure 11.*



*Figure 11*

4. Attach the Z1 Mount to the new VR Transmission using the OE Hardware removed in *Step 2*. Torque the bolts to **36 ft-lbs**.
5. Install the OEM Transmission Crossmember onto the Z1 Transmission Mount and secure with the OE Hardware removed in *Step 1*, and torque to **36 ft-lbs**.
6. Reinstall the Transmission into the vehicle. Once fitment is confirmed, reinstall the OE Hardware that secures the Transmission Mount to the Chassis. Torque the (4) four bolts to **36 ft-lbs**.

Only proceed to the next sections after the VR Transmission has been installed. Use your Factory Service Manual for the installation procedure.

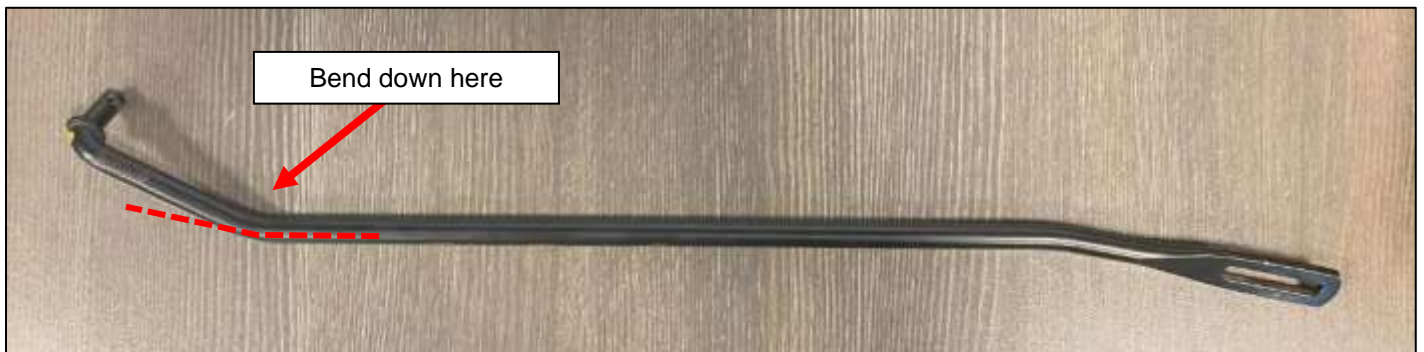
## SHIFT LINKAGE

1. **AWD Vehicles** can reuse the OE Shift Linkage; however, you must extend the length of the channel slightly. Take a small Dremel bit or file and slightly elongate the channel. *Figure 12.*



*Figure 12*

2. **RWD Vehicles** will need to modify their OE Shift Linkage to be slightly extended. Place the Shift Linkage in a Vise and bend where shown below in *Figure 13.* It will not need to be bent much, so go slowly.



*Figure 13*

3. Reinstall the Shift Linkage onto the Transmission after installation. Confirm that the vehicle shifts into all gears without issue. If the vehicle has issues shifting into reverse, the Linkage may need to be bent and extended more.

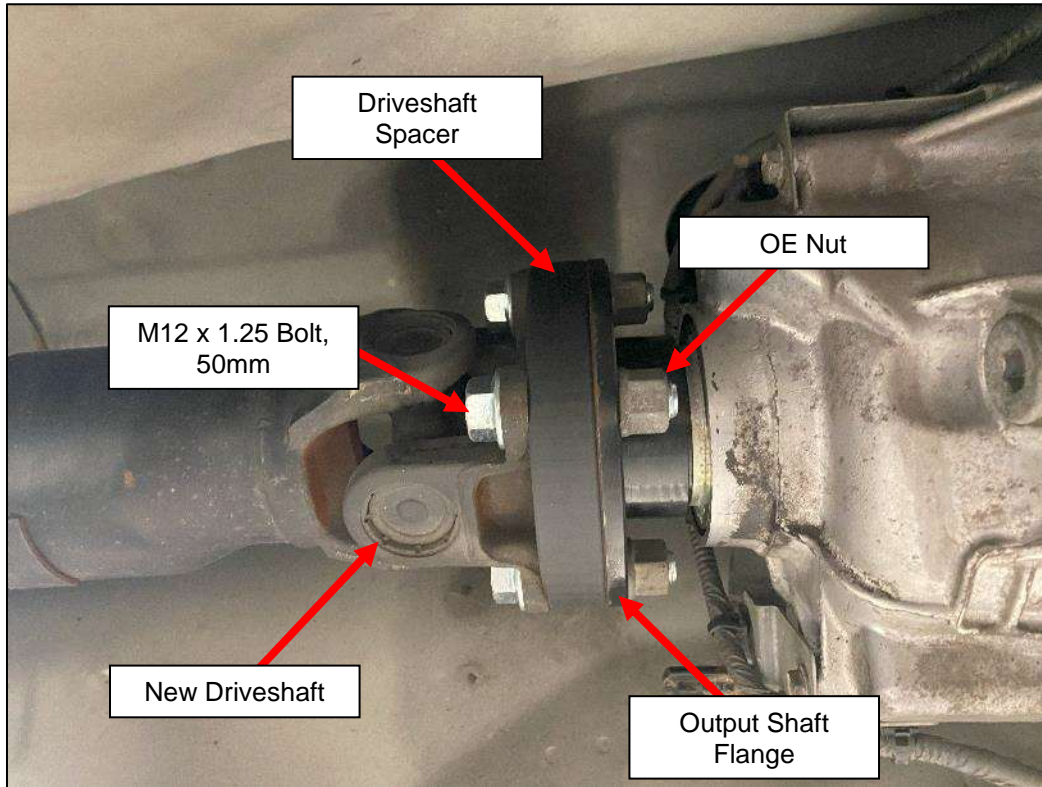


# DRIVESHAFT

**NOTE:** The new VR Transmission must be installed before proceeding to install either the new Driveshaft or the Driveshaft Spacer.

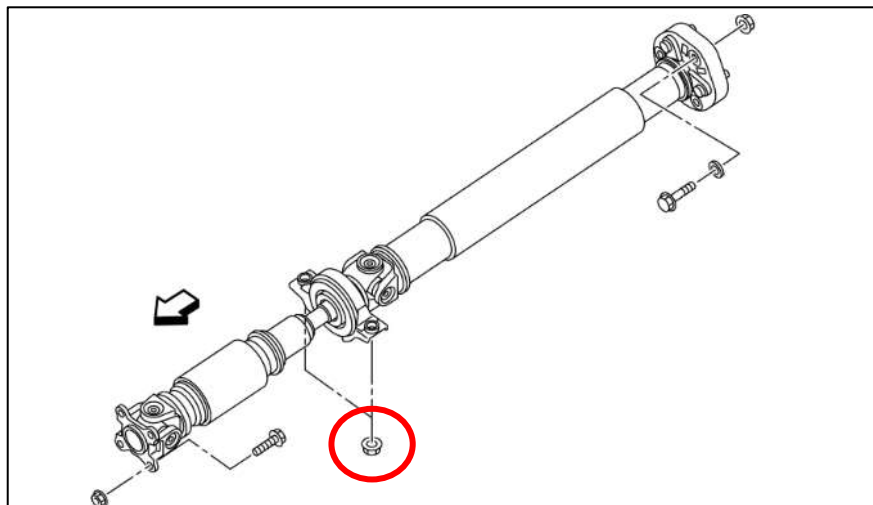
## 1. AWD OWNERS:

- a. Locate the Drive Shaft Spacer and Hardware. Position the Spacer between the Output Shaft Flange and the Driveshaft. Loosely Secure with the (4) four M12 x 1.25 Bolt, 50mm and the OE Driveshaft Nuts.  
*Figure 14.*



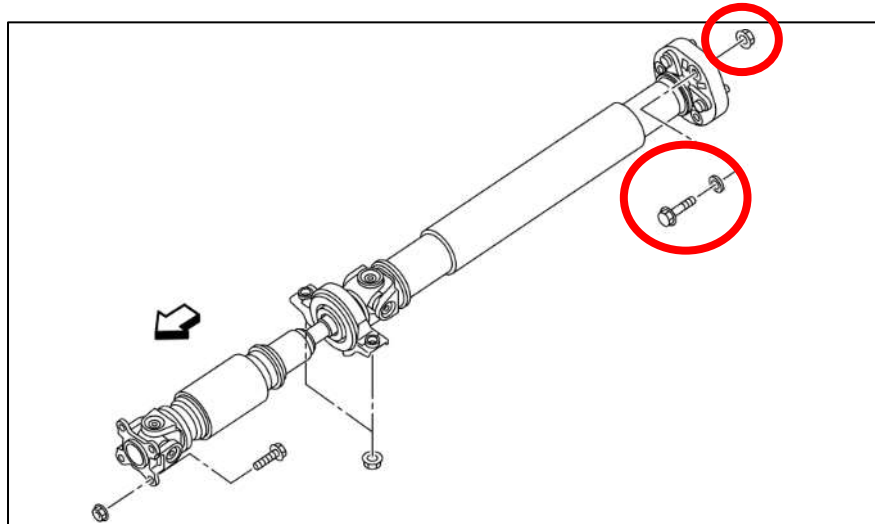
*Figure 14*

- b. Loosely install the (2) two OE Nuts that secure the Center Driveshaft Bearing Bracket to the vehicle.  
*Figure 15.*



*Figure 15*

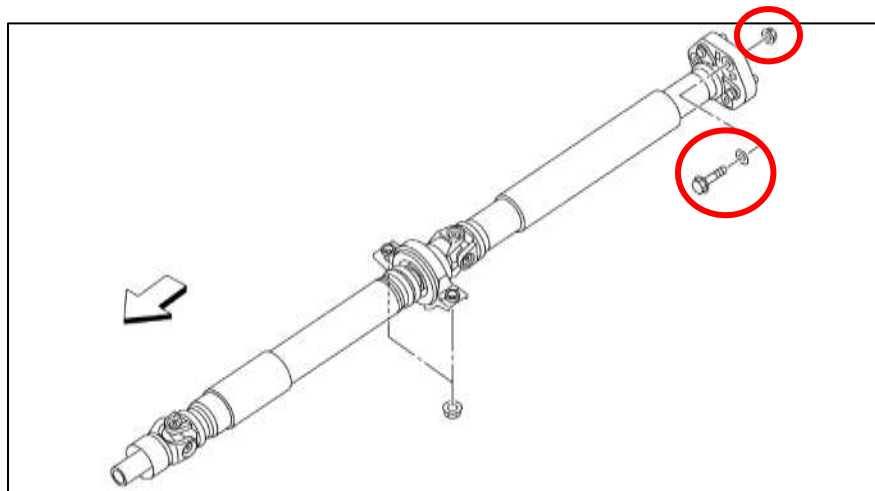
- c. Loosely install the OE Nuts and Bolts with OE Washers to the Rear Pinion Flange. *Figure 16.*



*Figure 16*

- d. Once positioned, torque the Front Driveshaft bolts to **59 ft-lbs.**
- e. Torque the Rear Driveshaft bolts to **54 ft-lbs.**
- f. Torque the (2) two nuts securing the Center Driveshaft Bearing Bracket to **33 ft-lbs.**
2. **RWD OWNERS:** Locate the new Driveshaft.
- a. Install the Slip Yoke into the rear of the Transmission.
- b. Position the Rear Driveshaft Flange to the Rear Pinion Flange. Secure with the (4) four OE Bolts with Washers and Nuts. We recommend using Medium Strength Thread Locker on the Driveshaft bolts. *Figure 17.*

**NOTE:** The new Driveshaft is a One-Piece Driveshaft and will not have the Center Driveshaft Bearing or Bracket as shown in *Figure 17* below.



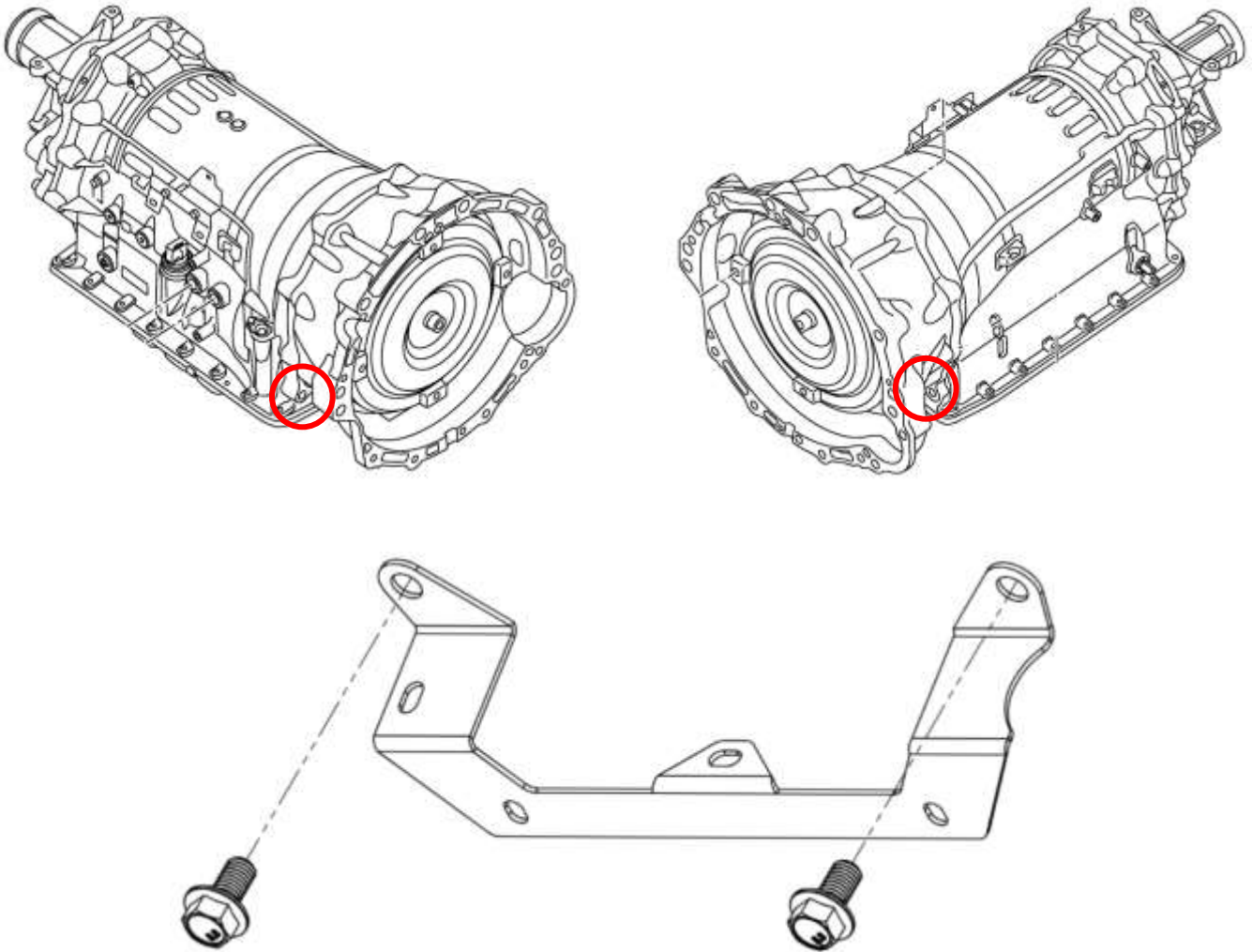
*Figure 17*

- c. Torque the Driveshaft Bolts to **54 ft-lbs.**



## O2 SENSOR BRACKET

1. Locate the O2 Sensor Bracket. Using the supplied M10 Bolts, install the Bracket into the bottom two exposed threaded holes in the Transmission. *Figure 18.*



*Figure 18*

2. Clip the connectors of the O2 Sensors into the bracket. *Figure 19.*



*Figure 19*

**END**

**Additional Technical Support:**  
Contact Z1 Motorsports at [info@z1motorsports.com](mailto:info@z1motorsports.com)  
Or call 770-838-7777 between 9am and 6pm ET