



## **PARTS INCLUDED:**

Item	Quantity	Description
1	1	Clutch Fork
2	1	Clutch Slave Cylinder Bracket
3	1	Transmission Dust Shield
4	1	Clutch Slave Cylinder Heat Shield
5	1	Clutch Pivot Ball
6	1	2.8mm Pivot Ball Washer
7	1	5mm Pivot Ball Washer
8	3	M6 x 1 Steel Socket Head Screw, 12mm Long
9	2	M8 x 1.25 Steel Flanged Hex Head Screw, 25mm Long
10	1	M10 X 1.50 Steel Flanged Hex Head Screw, 25mm Long
11	1	M10 X 1.50 Steel Flanged Hex Head Screw, 70mm Long
12	1	Loop Clamp
13	1	OEM Specification Koyo Throw-out Bearing
14	1	Insulated Stainless Steel Clutch Line
15	1	Throw-out Bearing Sleeve
16	1	Clutch Slave Cylinder
17	1	Throw-out Bearing Retainer Spring
18	1	Clutch Release Fork Retainer Spring
19	2	Transmission Ring
20	1	Z1 DE Transmission Front Cover
21	1	Transmission Front Cover Gasket

## **TOOLS REQUIRED:**

- 2-Ton (or greater) Hydraulic Floor Jack
- (4) 2-Ton (or greater) Jack Stands
- (2) Wheel Chocks
- Torque Wrench
- Assorted Metric Wrenches/Socket (10-19mm)
- Assorted Screwdrivers
- Ratchet w/ extensions
- Funnel or Fill Pump
- T55 Torx Bit
- T30 Torx Bit
- Assorted Metric Allen/Hex Wrenches
- Pliers and other assorted hand tools
- Shop towels
- Ruler/Straight Edge
- Zip lock bags (organize and label hardware)
- Measuring Calipers (0-150mm)
- Brake Clean
- Zip Ties
- Lithium-based Grease

## **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/secure the **NEGATIVE** battery terminal(s).
- Always use properly rated jack stands on a level surface 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 HR V2 CSC Elimination Kit and verify that ALL necessary hardware/parts are present.

It is recommended that this kit is installed when the vehicle requires a clutch and/or transmission fluid service, due to the necessity of removing the transmission and loss of fluid.

Consult with the Nissan Factory Service Manual (FSM) regarding the removal and installation procedure of OEM components.

Users with the OS Giken Twin Disc Clutch will have to use a different Clutch Fork Pivot Ball and grind a bit of their Transmission for added clearance.

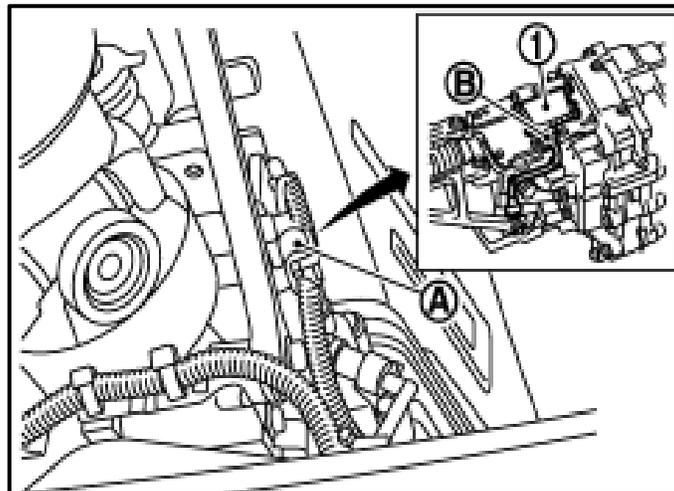
## **PROCEDURE:**

1. Place the transmission in Park position (or in Reverse gear if equipped with a manual transmission). Apply the parking brake.
2. Assure the car's ignition is in the **OFF** position, and the **NEGATIVE (-)** battery terminal is disconnected.
3. Locate proper jacking points on vehicle's chassis (refer to vehicle's Owner Manual). Raise and support vehicle using jack & jack stands. Assure that vehicle is raised to a minimum of 16" for removal of transmission.
4. Remove and set aside the exhaust system from behind the catalytic converters/test pipes.
5. Remove and set aside the Driveshaft as outlined in Nissan FSM.
6. Remove the Transmission Drain Plug and empty the Transmission of fluid.
7. Remove the Crankshaft Position Sensor as outlined in the Nissan FSM.
8. Remove the Starter Motor as outlined in the Nissan FSM.
9. Disconnect the OEM CSC Hydraulic Lines and drain fluid.

**NOTE: DO NOT** depress the clutch pedal during removal procedure or master cylinder damage can occur. Insert a suitable plug to the clutch hose after removing. Clutch fluid can damage painted surfaces. Clean up clutch fluid spills immediately and wash the affected area with water.

10. Remove the Rear Plate Cover as outlined in Nissan FSM.
11. Disconnect the Park/Neutral Position Switch Connector.
12. Disconnect the (2) two Heated Oxygen Sensors as outlined in the Nissan FSM.
13. For those vehicles equipped with S-MODE, disconnect the gear lever position sensor connector (A), as shown in *Figure 1*.

**NOTE: DO NOT** remove connector (B). Remove rear engine mounting insulator mounting nuts as outlined in FSM.



*Figure 1*

14. Remove the Rear Engine Mounting Member as outlined in Nissan FSM.

15. Disconnect the Back-up Lamp Switch connector. Remove the harness and brackets and temporarily secure them to a position where it will not inhibit work.
16. Remove (12) twelve engine and transmission mounting bolts.
17. Remove Transmission as outlined in Nissan FSM.

**WARNING:**

Secure Transmission Assembly to a suitable jack before removing it. The Transmission Assembly must not interfere with exhaust piping, wire harnesses, or clutch hose. The input shaft of transmission must not interfere with Pressure Plate. Do not hold the control lever housing during installation or damage can occur to the control lever housing from deformation.

18. Remove and set aside Pressure Plate, Clutch Disc, and related hardware.
19. Remove and set aside Flywheel and related hardware.
20. If reusing Clutch and Flywheel components, perform an inspection of components according to the Factory Service Manual to ensure proper function. If you are not reusing the Clutch and Flywheel, skip to *Step 21*.
21. Assemble new Clutch and Flywheel configuration on a work bench. Center Clutch Disc on Flywheel and mount Pressure Plate to Flywheel with Hardware. Torque Bolts to **29 ft-lbs**, just as if it were being installed in vehicle.

22. Measure the Stack Height of your Clutch and Flywheel Assembly. Use our [Stack Height Measurement Guide](#) to measure Stack Height if needed. Once Stack Height has been determined, use the tables below to determine the needed shim for the pivot ball that will be installed later on in *Step 31*.

**IMPORTANT**

Measure stack height of clutch & flywheel assembly. **Recommended precision is within 0.5mm.** This measurement must be from the engine-side of the flywheel to the transmission side of the clutch pressure plate, where the pressure plate fingers contact the throw-out bearing.

Be very careful to note the location at which the pressure plate fingers contact the throw out bearing by placing the throw out bearing as axially centered as possible against the pressure plate. Ensure that the throw out bearing seats properly on the pressure plate fingers – different clutches mate to different throw out bearings, as specific by the end user. **This measurement will determine the crucial amount necessary to shim the pivot ball. A miscalculation could require repeated instances of removing and installing the transmission.**

Depending on the Throwout Bearing you received, the shim required may be different. Confirm your Throwout Bearing and the Stack Height of your Clutch and Flywheel Assembly Below in *Table 1* and *Table 2* to determine proper Pivot Ball Shim.

Table 1 – Clutch/Flywheel Stack Height with RCT4000SA Throwout Bearing:

Clutch	Flywheel	Stack Height	Pivot Shim
Z1 HR Kit	Z1 Flywheel	82.5mm	5mm
Other	Other	82-85.5mm	5mm
Other	Other	85.5-89mm	2.8mm



Table 2 – Clutch/Flywheel Stack Height with BRG017 Throwout Bearing:

Clutch	Flywheel	Stack Height	Pivot Shim
Other	Other	83.3-86.6mm	5mm
Other	Other	86.6-90.1mm	2.8mm



*Figure 2*

**NOTE:** We recommend inspecting your rear crankshaft seal prior to installation of the flywheel/clutch assembly. Leaking oil from a worn/failed crankshaft seal can cause premature wear or slippage of the clutch assembly. Now is a good time to replace this seal as preventative maintenance.

23. Disassemble the Clutch and Flywheel.

24. Reinstall the flywheel to backside of engine as outlined in the Nissan FSM. Ensure flywheel is properly aligned with factory timing dial pin in accordance with *Figure 3*. Torque flywheel in typical star pattern as outlined in the Nissan FSM to **65 ft-lbs**.

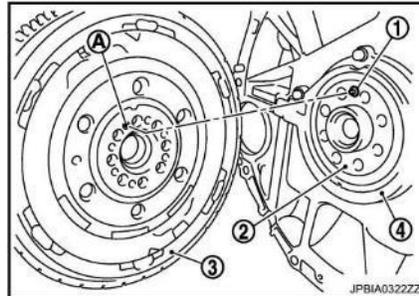


Figure 3

25. Install clutch disc and pressure plate using an splined alignment tool per Nissan FSM. Tighten to specified torque evenly in two steps in order as shown in *Figure 4*. First torque to **11 ft-lbs**, and then **29 ft-lbs**.

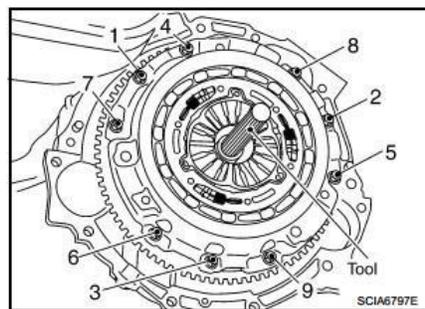


Figure 4

26. Locate Transmission. Remove Concentric Slave Cylinder assembly as outlined in Nissan FSM. See *Figure 5* below.

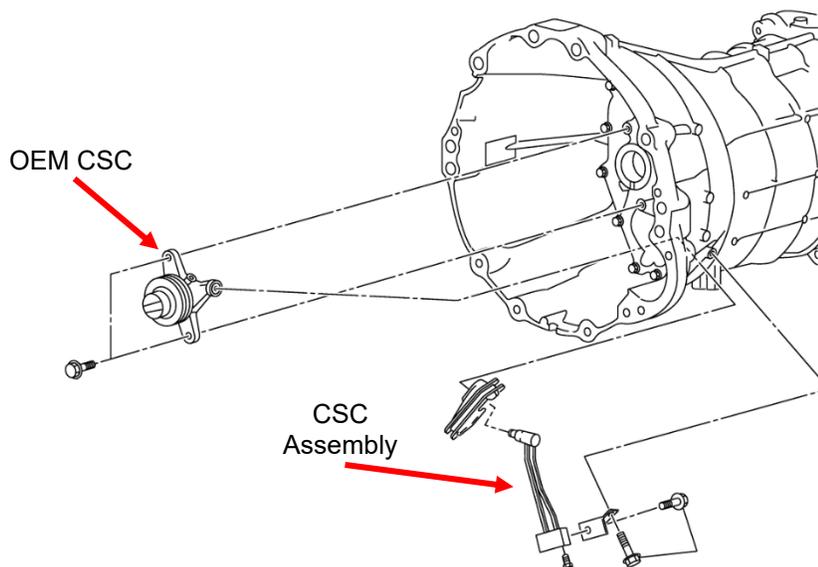
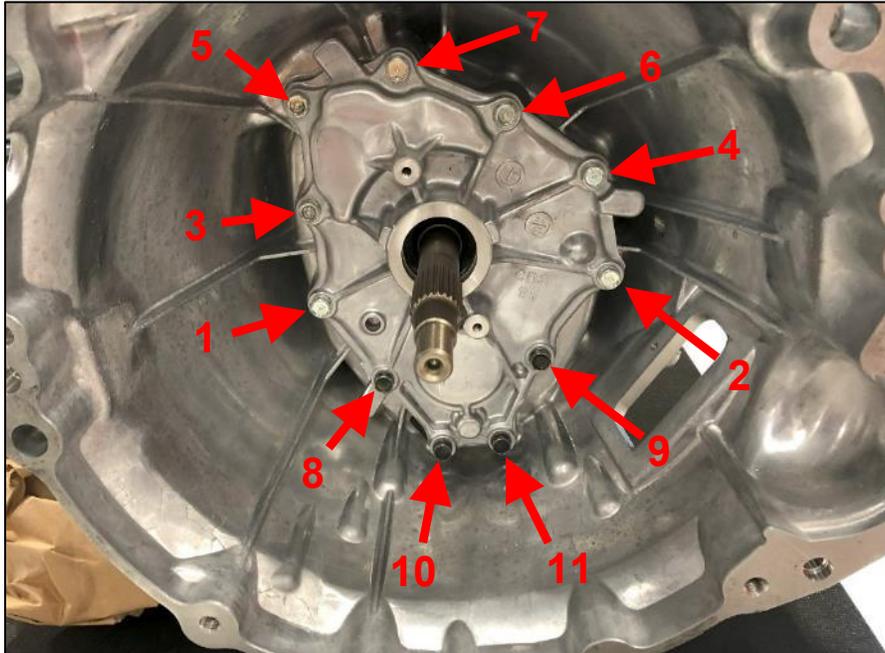


Figure 5

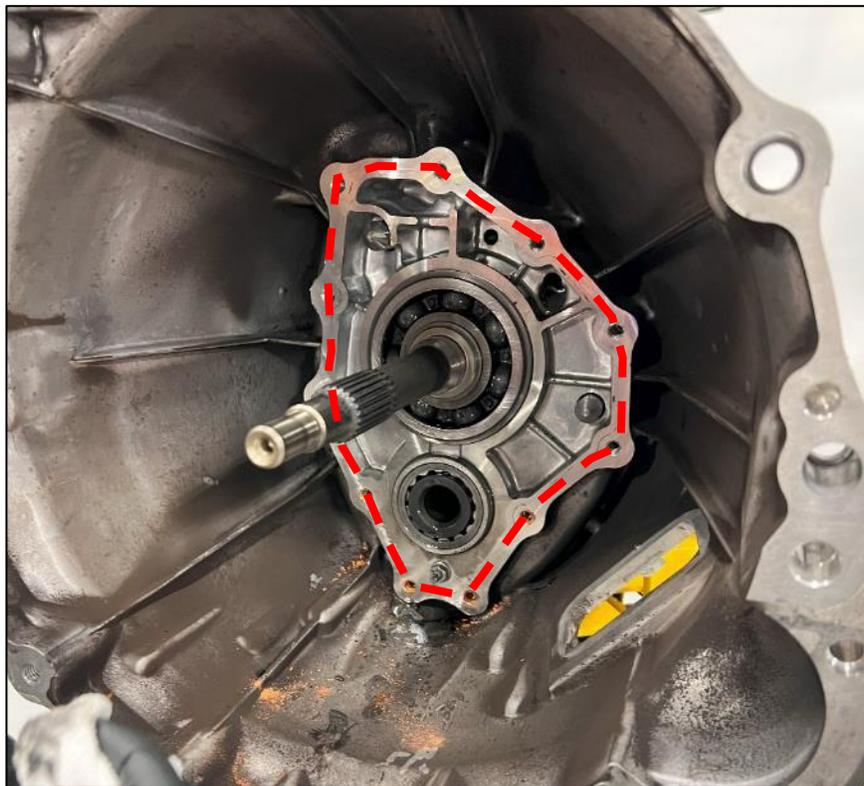
27. Remove and set aside mounting bolts (#1-7) and sealing bolts (#8-11). Remove and discard the OEM transmission front cover & gasket. *Figure 6.*

**NOTE:** Be sure to label which bolts (#8-11) are sealing bolts in accordance with *Figure 6.*



*Figure 6*

28. Clean the mating surface for the new Z1 Transmission Front Cover Gasket. *Figure 7.*



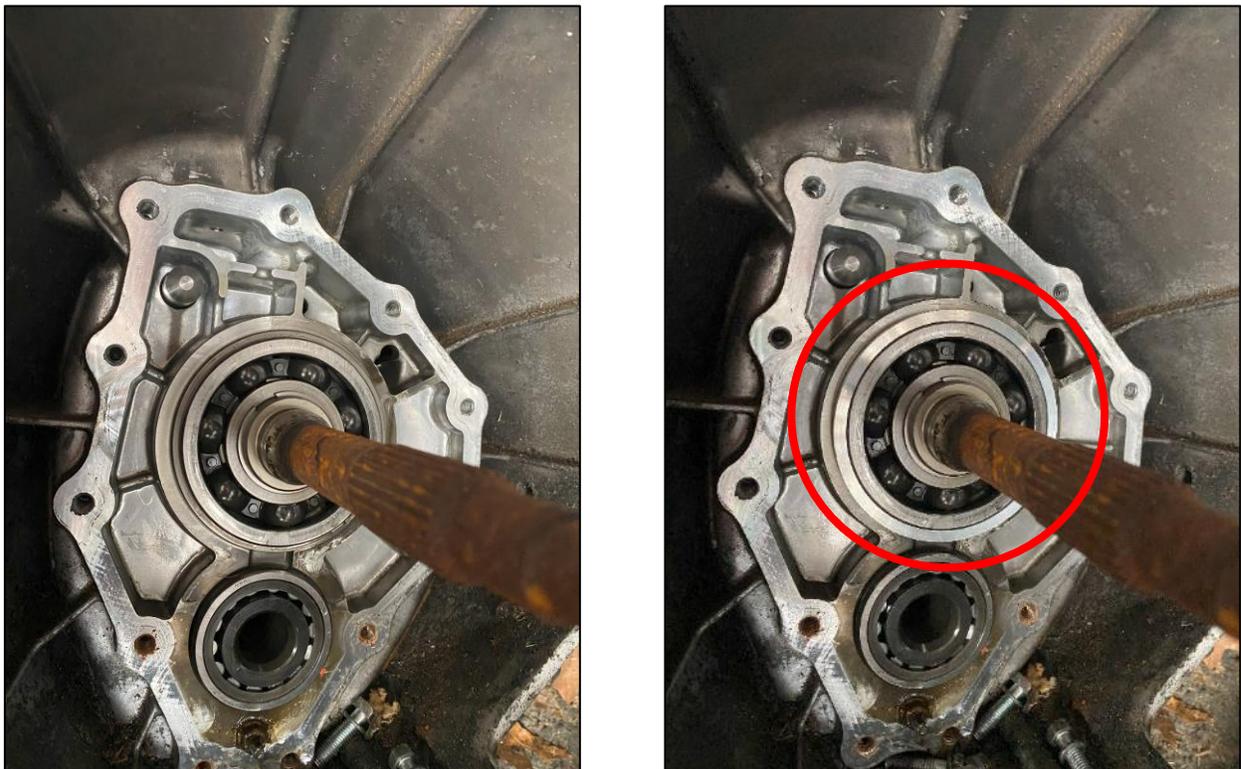
*Figure 7*

29. Look at the OE Front Cover for the Numbered Marking on the right side. If the Cover reads **CD 8**, you will use the Thicker Transmission Ring. If it reads **CD 5**, you will use the Thinner Transmission Ring. *Figure 8.*



*Figure 8*

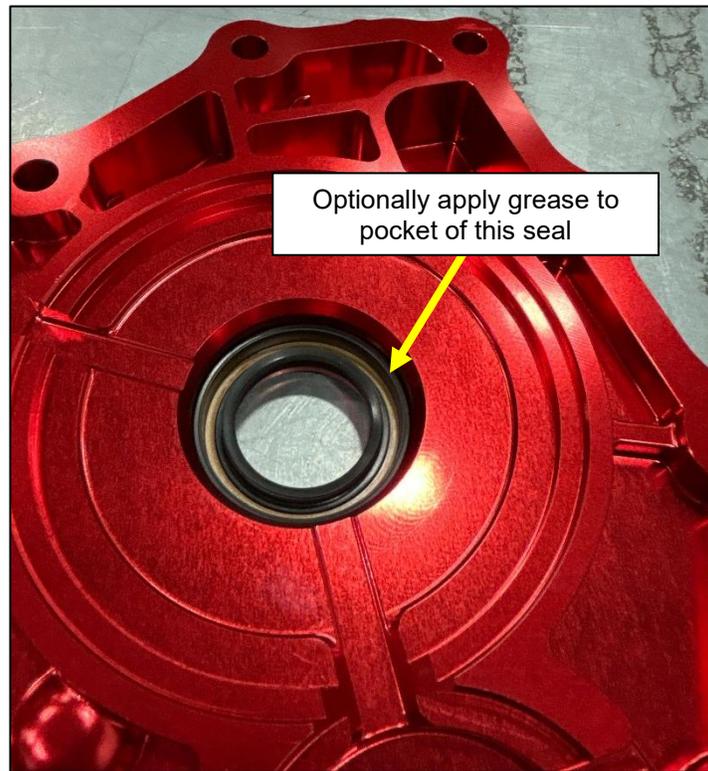
30. Locate the Transmission Ring determined in *Step 29*. Place it on the outside of the Output Shaft Bearing. *Figure 9.*



*Figure 9*

31. Locate the provided Z1 Transmission Front Cover and Transmission Front Cover Gasket. Line up and install the Transmission Front Cover with the Front Cover Gasket to the Transmission. Use hardware removed in *Step 27* to secure the Front Cover and Gasket in place. Make sure to line up the Input Shaft Bearing of the Transmission with the mating surface of the Cover. The cover may need to be slightly lifted up when tightening the bolts.

**NOTE:** It is recommended to apply a small amount of all-purpose grease or petroleum jelly into the pocket of the Seal on the Back of the Transmission Front Cover. *Figure 10*.



*Figure 10*

32. Tighten front cover bolts in order as shown in *Figure 6* above and torque to **13 ft-lbs**. Use Gray RTV sealant on bolts #8-11.

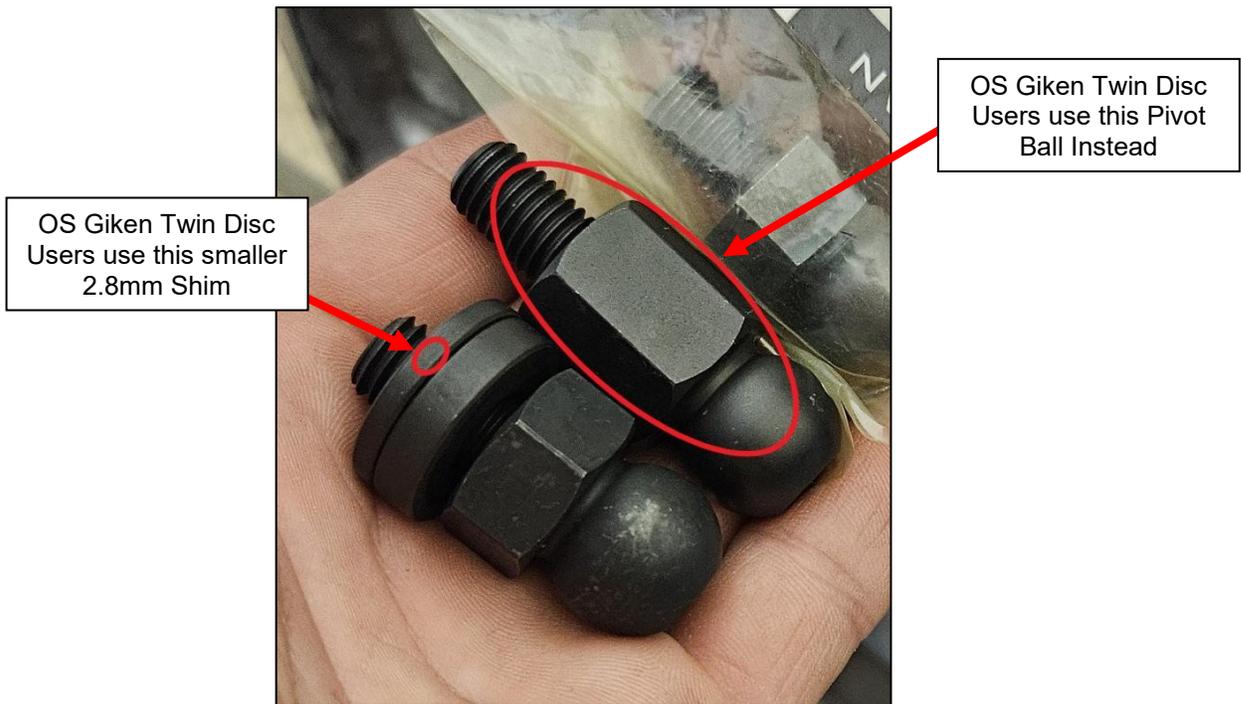
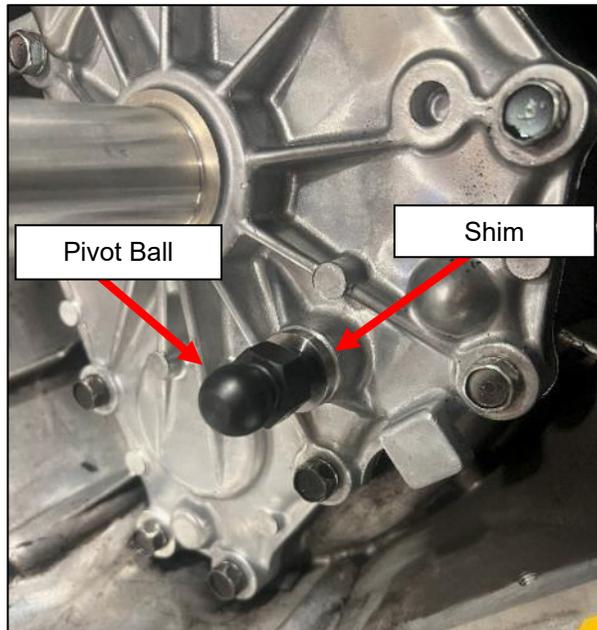
**NOTE:** *Figure 11* below contains a Red Transmission Front Cover. Subsequent photos will show a Silver Transmission Front Cover. The installation process is the same.



*Figure 11*

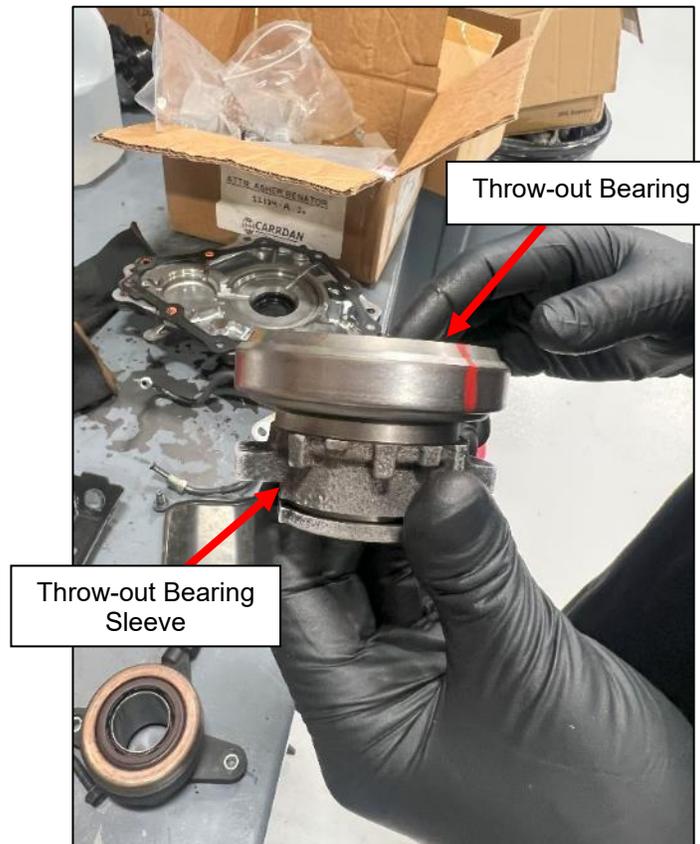
33. Install Pivot Ball with previously determined Pivot Ball Shim from *Step 22* . Apply a small amount of thread locker on the Pivot Ball threads prior to installing. If using the 2.8mm shim, torque to **30 ft-lbs**. If using the 5mm shim, torque to **24 ft-lbs**. *Figure 12*.

**NOTE:** Users with an OS Giken Twin Disc Clutch will use the Larger Pivot Ball with the **SMALLER 2.8mm** included shim. See bottom image below.



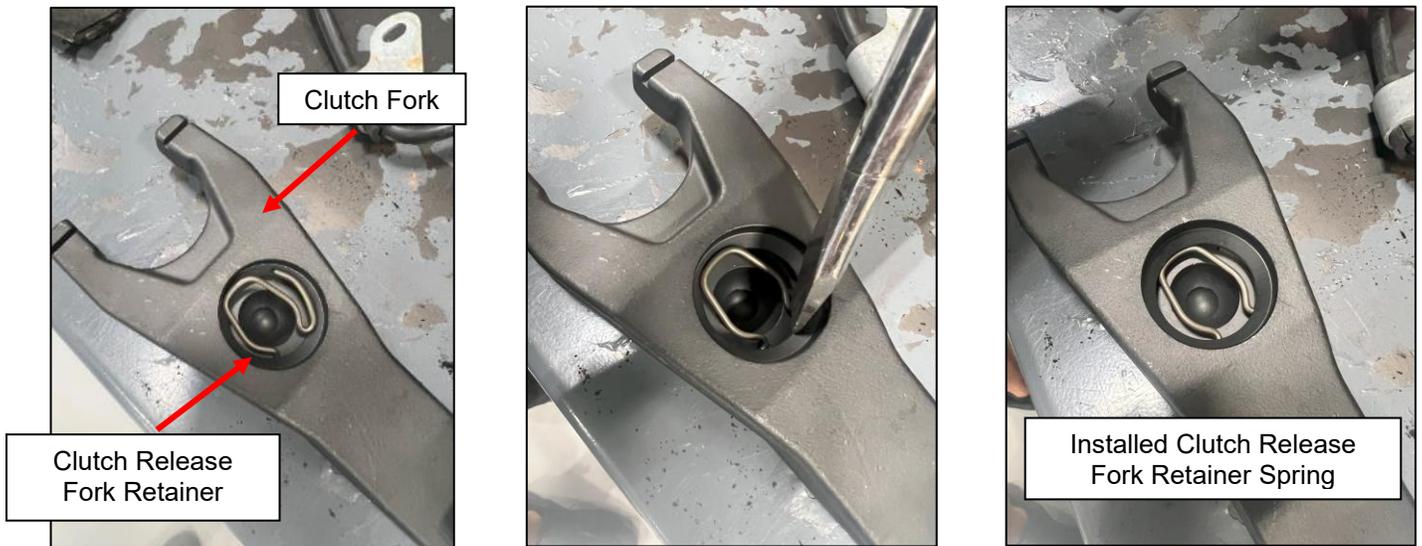
*Figure 12*

34. Locate the Throw-out Bearing and the Throw-out Bearing Sleeve. Using a press, install the Throw-out Bearing onto the Bearing Sleeve and ensure the bearing is pressed on evenly. Ensure that the flat stamped, part number side of the Throw-out Bearing is facing the transmission. *Figure 13.*



*Figure 13*

35. Locate the Clutch Release Fork Retainer Spring and the Clutch Fork. Install the Pivot Ball Retaining Clip into the Clutch Fork. Use of a screwdriver or similar tool may be necessary to get the Retaining Clip to seat in the Clutch Fork Properly. *Figure 14.*



*Figure 14*

36. Locate the Throw-out Bearing Retainer Spring and the Throw-out Bearing and Sleeve assembly. Apply a small amount Lithium-Based Grease on the inside of and to the ears of the Throw-out Bearing Sleeve as seen below in *Figure 15.* Install the Retainer Spring onto the Throw-out Bearing Sleeve.



*Figure 15*

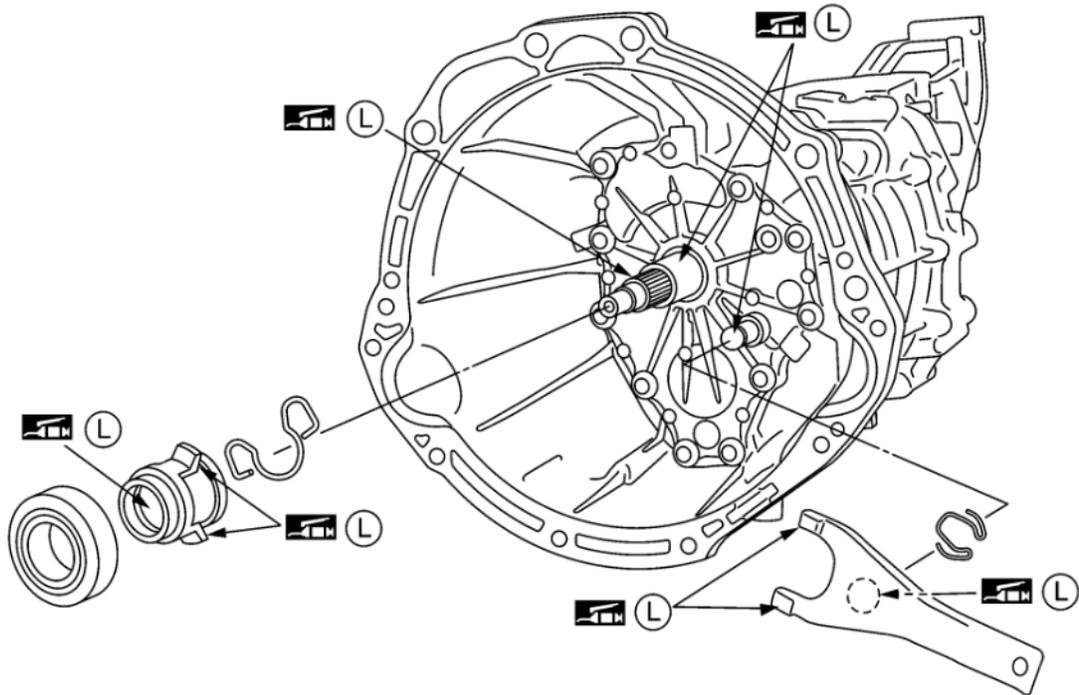
37. Apply a small amount of Lithium-Based Grease to Clutch Fork, Clutch Release Fork Retainer Spring, Pivot Ball, and Input Shaft, seen in *Figure 16*.

**NOTE:** Be careful to avoid getting any grease on the Clutch Disc, Pressure Plate, Flywheel or the Face of the Throw-out Bearing. This can cause noise, poor disengagement, clutch slippage, or damage to the clutch assembly. Wipe up any excess grease.



*Figure 16*

**NOTE:** Below is a diagram of the Throw-out Bearing assembly and all locations that must be lubricated with the Lithium-Based Grease. *Figure 17.*



 (L) : Apply lithium-based grease including molybdenum disulphide.

*Figure 17*

38. Install the Throw-out Bearing and Sleeve Assembly onto the Input Shaft of the Transmission.

39. Insert the Clutch Fork Assembly through the “window” of the Transmission, and attach it to the Throw-out Bearing and Sleeve Assembly. The Throw-out Bearing Retainer Spring will be moved to hold the Clutch Fork to the Throw-out Bearing Sleeve. *Figure 18.*



*Figure 18*

**NOTE:** The Throw-out Bearing Retainer Spring must attach to the Clutch Fork as seen below. *Figure 19.*



*Figure 19*

40. Apply a thin coat of Lithium-based Grease to Input Splines of the Transmission. *Figure 20.*

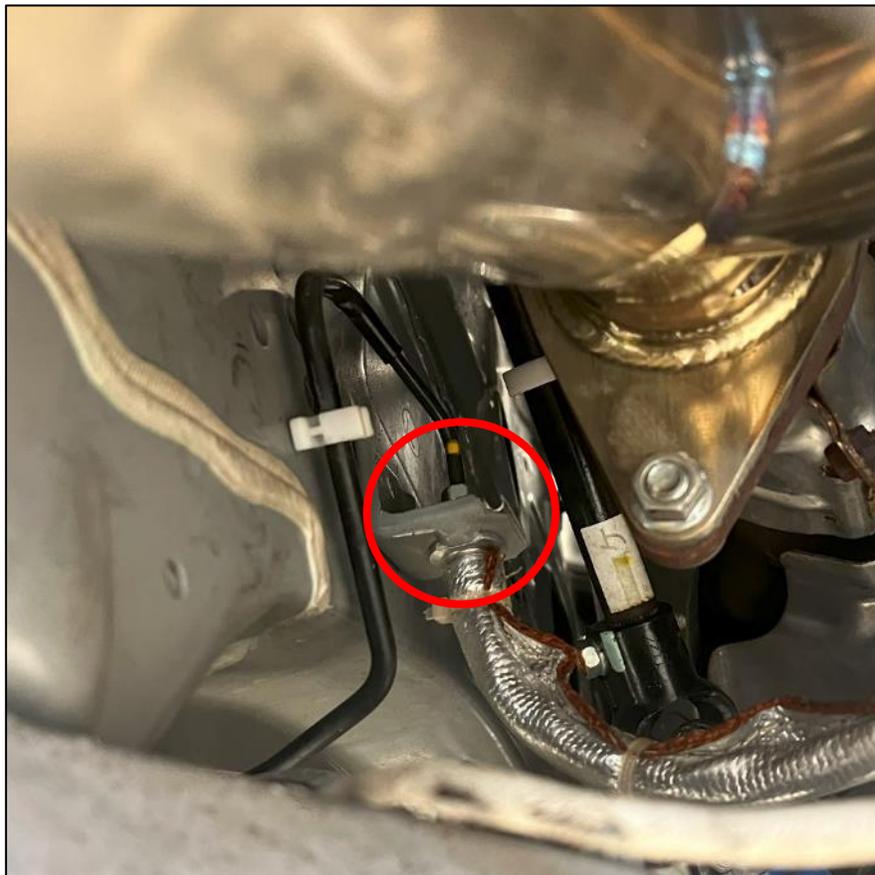


*Figure 20*

41. Inspect for smooth operation of components before reinstalling transmission by sliding Clutch Fork. The Clutch Fork should move freely within the “window” of the transmission housing where the OEM Concentric Slave Cylinder Assembly was previously located.

**NOTE:** Users with the OS Giken Twin Disc Clutch should clearnce their Transmission before proceeding. Visit the [last page of the Guide](#) for instructions on how to clearance the Transmission.

42. Remove OEM Clutch Line from Clutch Hard Line. It is located near the Driver Side Exhaust. *Figure 21* below. This is best done before the transmission is installed to give you more room to work.



*Figure 21*

43. Locate the Z1 Stainless Steel Insulated Clutch line. Install it where you removed the OEM Clutch Line from the OEM Hard Line. Torque to **12 ft-lbs.** *Figure 22.*

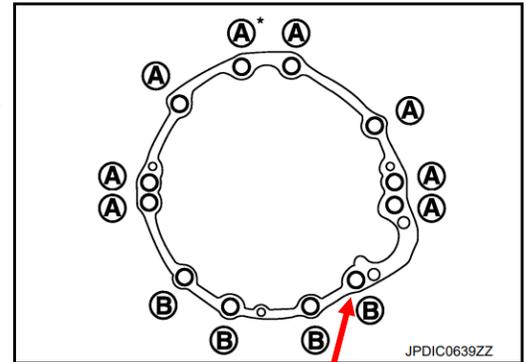


*Figure 22*

44. Reinstall the Transmission to engine. Assure that Transmission-to-Engine bolts are torqued to Specification, as shown below in *Figure 23*. Also leave out the Starter Bolt noted below, it will be replaced in *Step 45*.

- Tighten transmission assembly mounting bolts to the specified torque. The figure is the view from the vehicle forward.

Bolt symbol	A	B
Insertion direction	Transmission to engine	Engine to transmission
Number of bolts	8	4
Bolt length mm (in)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)

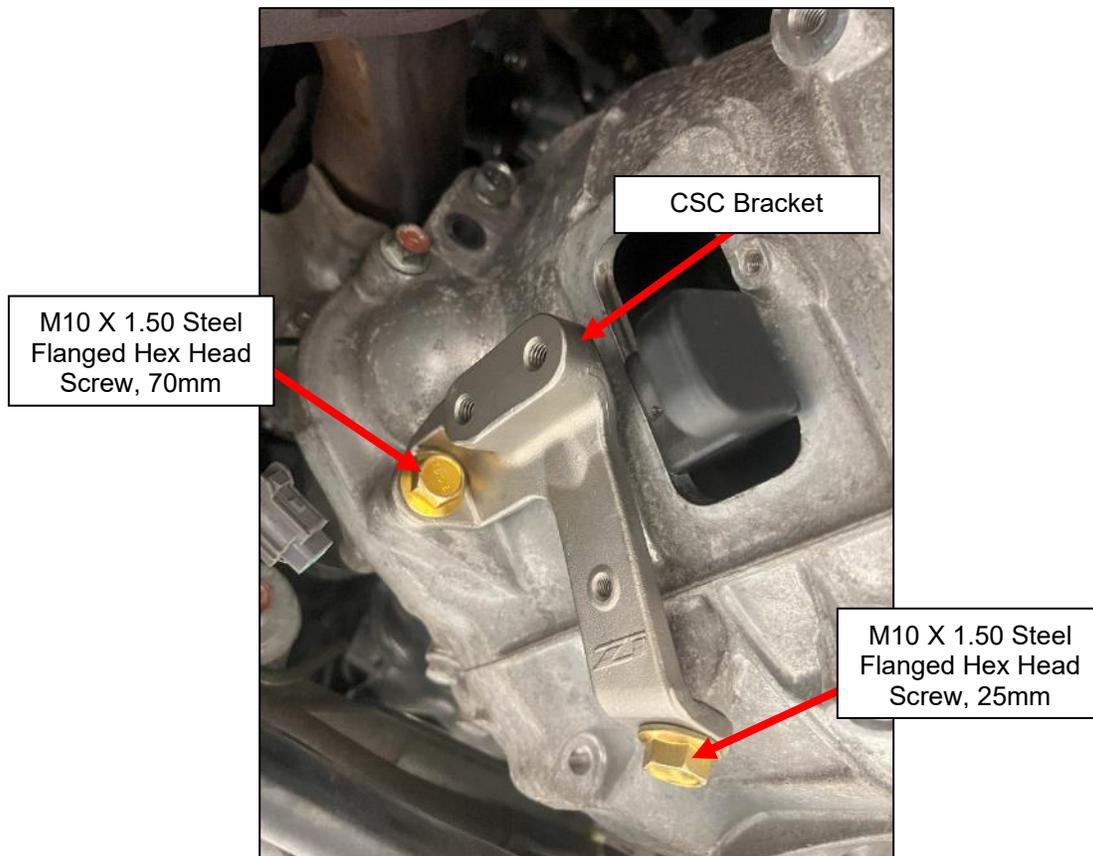


Leave this bolt out, it will be replaced.

\*: Tightening the bolt with air breather tube.

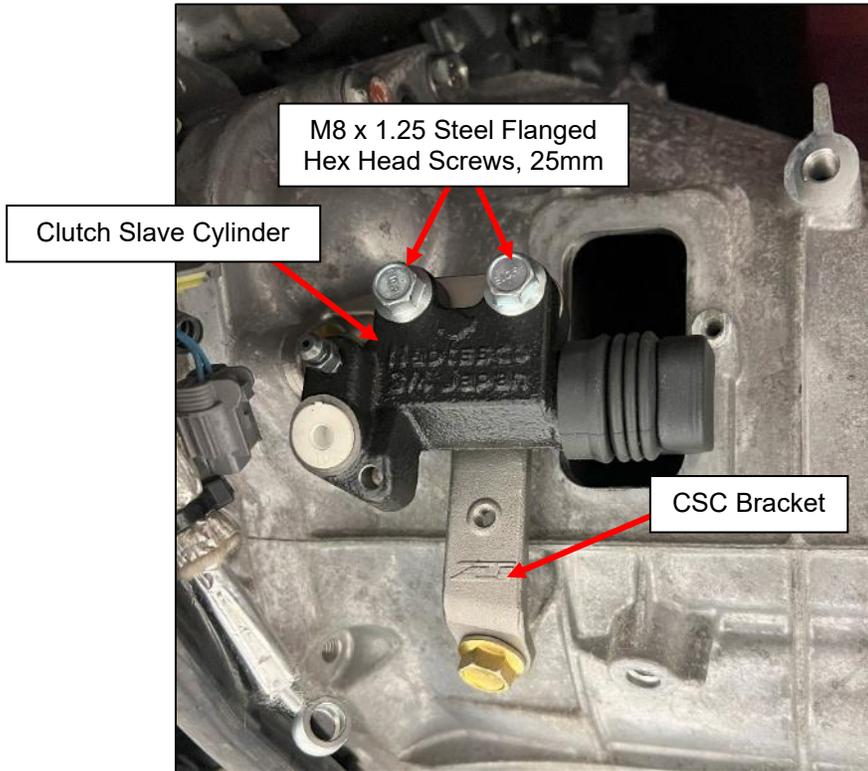
*Figure 23*

45. With the Transmission reinstalled, locate the Clutch Slave Cylinder (CSC) Bracket, (1) one M10 X 1.50 Steel Flanged Hex Head Screw, 25mm Long, and (1) one M10 X 1.50 Steel Flanged Hex Head Screw, 70mm Long. Install the CSC Bracket onto the Transmission using the 25mm M10 x 1.50 Flanged Hex Head Screw on the bottom of the CSC Bracket, and the 70mm M10 x 1.50 Flanged Hex Head Screw on the upper mounting point of the CSC Bracket. Torque both the 25mm Screw and 70mm Screw to **34 ft-lbs**. The 70mm Screw replaces the OEM starter bolt left out in *Step 44*. *Figure 24*.



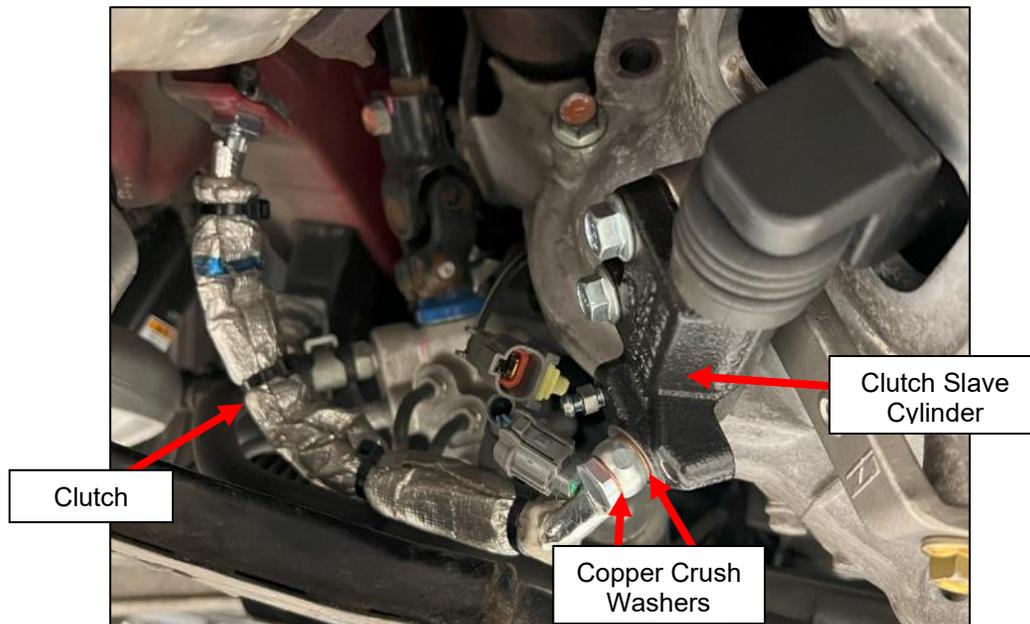
*Figure 24*

46. Locate the Clutch Slave Cylinder (CSC) and (2) two M8 x 1.25 Steel Flanged Hex Head Screws, 25mm Long. Position the CSC onto the CSC Bracket, as shown below in *Figure 25* and install the (2) two M8 x 1.5 Screws. Torque the M8 x 1.25 screws to **18 ft-lbs**.



*Figure 25*

47. Connect the Clutch Line to the Clutch Slave Cylinder. Make sure to use the included Copper Crush washers included with the Clutch Line. Torque to **14 ft-lbs**. **DO NOT REUSE COPPER CRUSH WASHERS.** *Figure 26*.



*Figure 26*

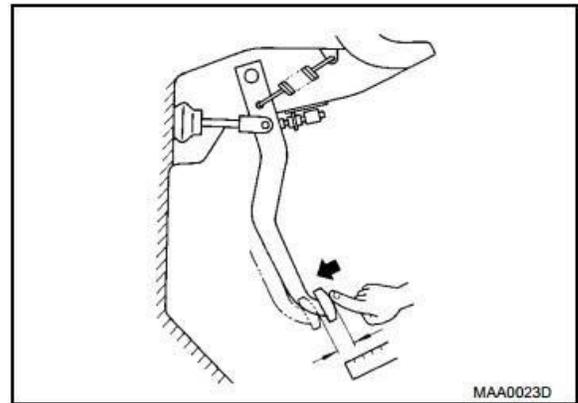
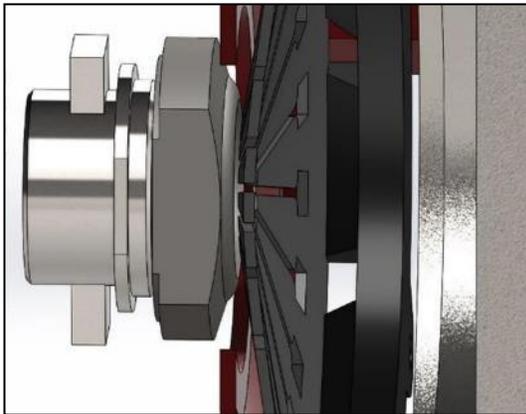
48. Bleed the Clutch Hydraulic System and ensure proper function. Follow FSM for further details.

**NOTE:** Use DOT 4 Hydraulic Brake Fluid. Ensure that the Clutch Fluid Reservoir does not become empty, as it will draw air into the hydraulic system. Ensure that debris does not enter the hydraulic system. Do not reuse clutch fluid.

49. This Step is Optional. Locate and remove the clutch pedal assembly helper spring (09+ vehicles only) in the footwell next to the clutch pedal. Removal of the helper spring will introduce a stiffer pedal, but will increase pedal feel and reduce play. If you either don't have a Clutch Helper Spring, or want to leave yours installed, skip to *Step 50*.

50. Adjust clutch pedal position. There should be approximately 2.0-4.0mm of pedal free play when actuated by hand, pressing until throw out bearing contact with pressure plate can be felt. If needed, adjust the clutch pedal position as outlined in Nissan FSM (CL-8).

**NOTE:** Contact between the bearing and the pressure plate while disengaged will result in premature failure of the bearing. Approximately 0.5-1.0mm of clearance of air gap should be present between the contact point of the throw out bearing and the fingers of the clutch pressure plate, as shown. This can be confirmed by either manually testing play of the return spring with the slave cylinder detached, or by pressing the clutch pedal with the return spring and slave cylinder attached. *Figure 27*.

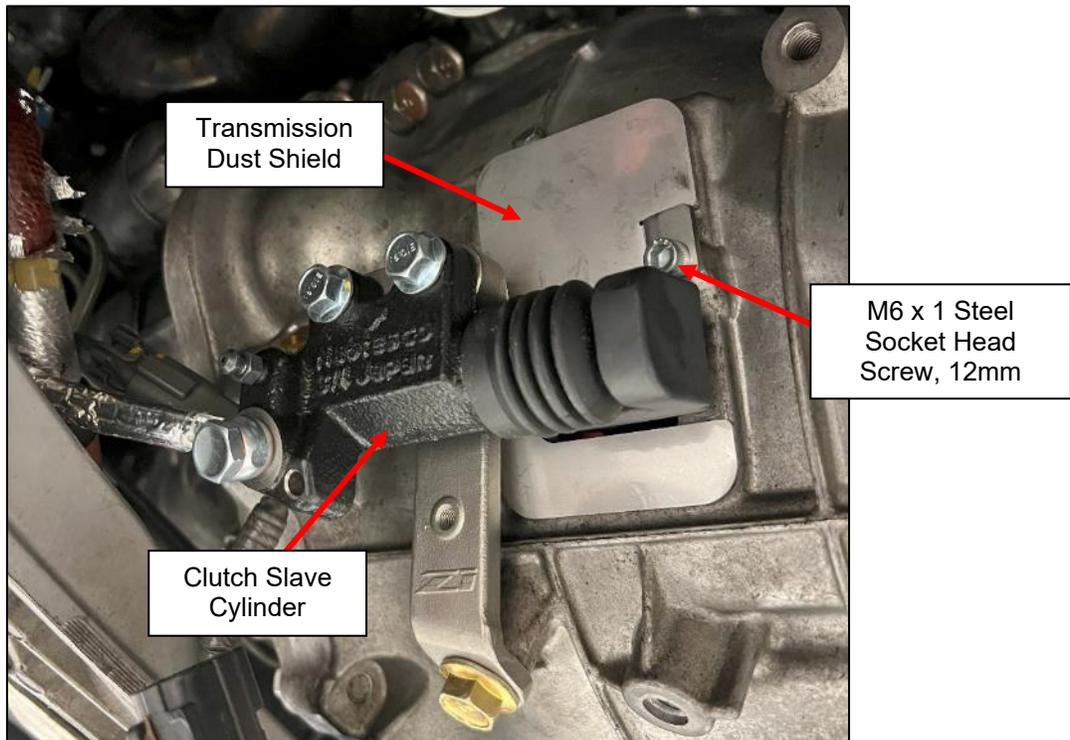


*Figure 27*

51. Once proper pedal adjustment is confirmed, verify clutch fork movement inside the transmission housing window. Have an assistant engage the clutch pedal several times while verifying adjustment. Assure that clutch fork does not touch either the front or rear of transmission housing window.

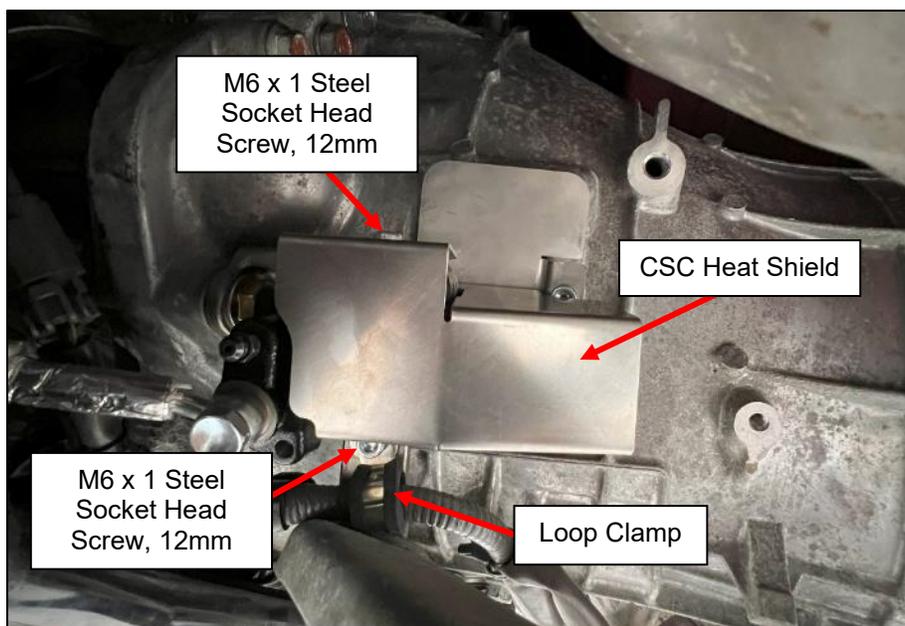
**NOTE:** If the Clutch Fork touches the **REAR** of the window, remove transmission and **INCREASE** Pivot Ball shim height. If the Clutch Fork touches **FRONT** of the window, remove transmission and **DECREASE** Pivot Ball shim height.

52. Locate the Transmission Dust Shield and (1) one M6 x 1 Steel Socket Head Screw, 12mm Long. Position the Dust Shield Behind the Clutch Slave Cylinder and install the M6 Screw into the OEM factory hole, as seen in *Figure 28*. Torque to **80 in-lbs.**



*Figure 28*

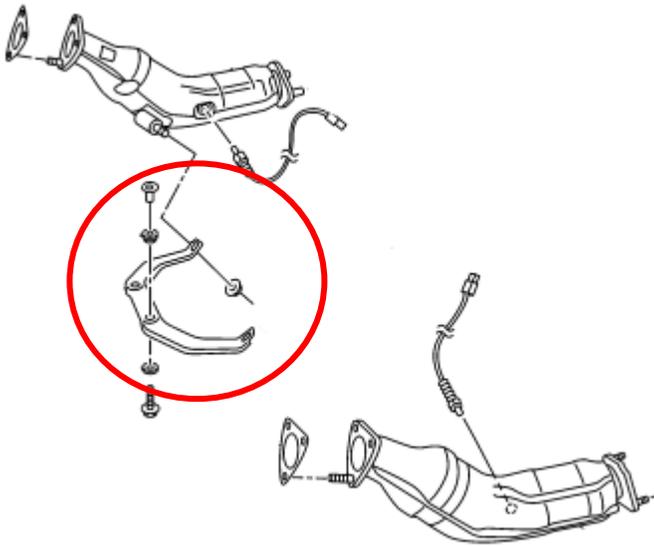
53. Locate the Clutch Slave Cylinder Heat Shield, Loop Clamp, and (2) two M6 x 1 Steel Socket Head Screws, 12mm. Position the Heat Shield over the Clutch Slave Cylinder. Install (1) one M6 Screw on top of the Heat Shield into the Clutch Slave Cylinder Bracket. Place the Loop Clamp over the lower mounting hole of the Heat Shield and install (1) one M6 Screw. *Figure 29*. The Loop Clamp will hold the wiring harness removed when pulling the transmission. Torque M6 Screws to **80 in-lbs.**



*Figure 29*

54. Ensure that there is little play in the clutch line to ensure it does not get worn against the transmission or the heat shield. Failure to do so could cause premature wear of the clutch line. Secure Stainless Steel Clutch Line with zip ties if necessary.
55. Inspect and fill Transmission and Clutch Fluid levels.
56. Follow *Steps 4-15* in reverse order to re-install components onto vehicle.

**NOTE:** If your vehicle was equipped with an Exhaust Mounting Bracket, it will not be able to be replaced as it interferes with the Slave Cylinder Bracket. Z1 Motorsports recommends removing it anyways, as it can create cracks on your Catalytic Converters/Exhaust system over time. Reinstall the OE Nuts onto the Exhaust Downpipes to prevent rattling. *Figure 30.*



*Figure 30*

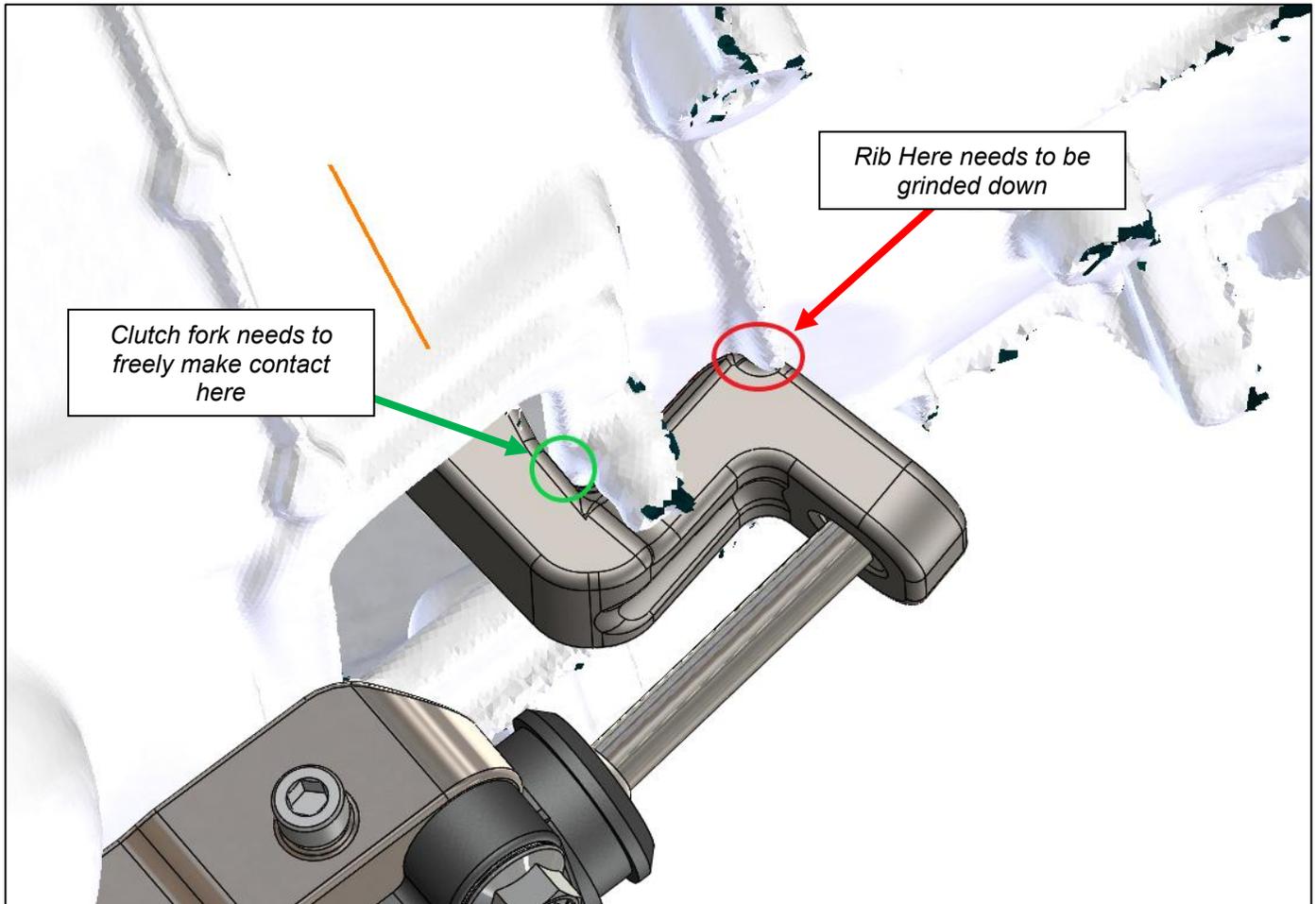
57. Start Engine and inspect for leaks. Shift through **ALL** gears to ensure proper engagement. Ensure that there is no difficulty shifting into any gears or engaging the clutch in any gears. Re-adjust if necessary.
58. Properly lower vehicle from jack stands.
59. Perform a final test drive of the vehicle.

**Additional End-User Product Care Information:** Because of the very narrow window in which this product was designed to function as a bolt on solution, this product may require fine-tuning and adjustment. Similar to a clutch adjustment, it is strongly recommended to ensure proper clutch engagement and throw out bearing disengagement, typically at oil change intervals. As the clutch wears, the stack height will increase as the pressure plate fingers lift rearwards away from the engine through normal clutch function and operation. To accommodate this, it may be necessary to simply adjust the clutch pedal as done in *Step 50.*

## OS GIKEN TRANSMISSION MODIFICATION

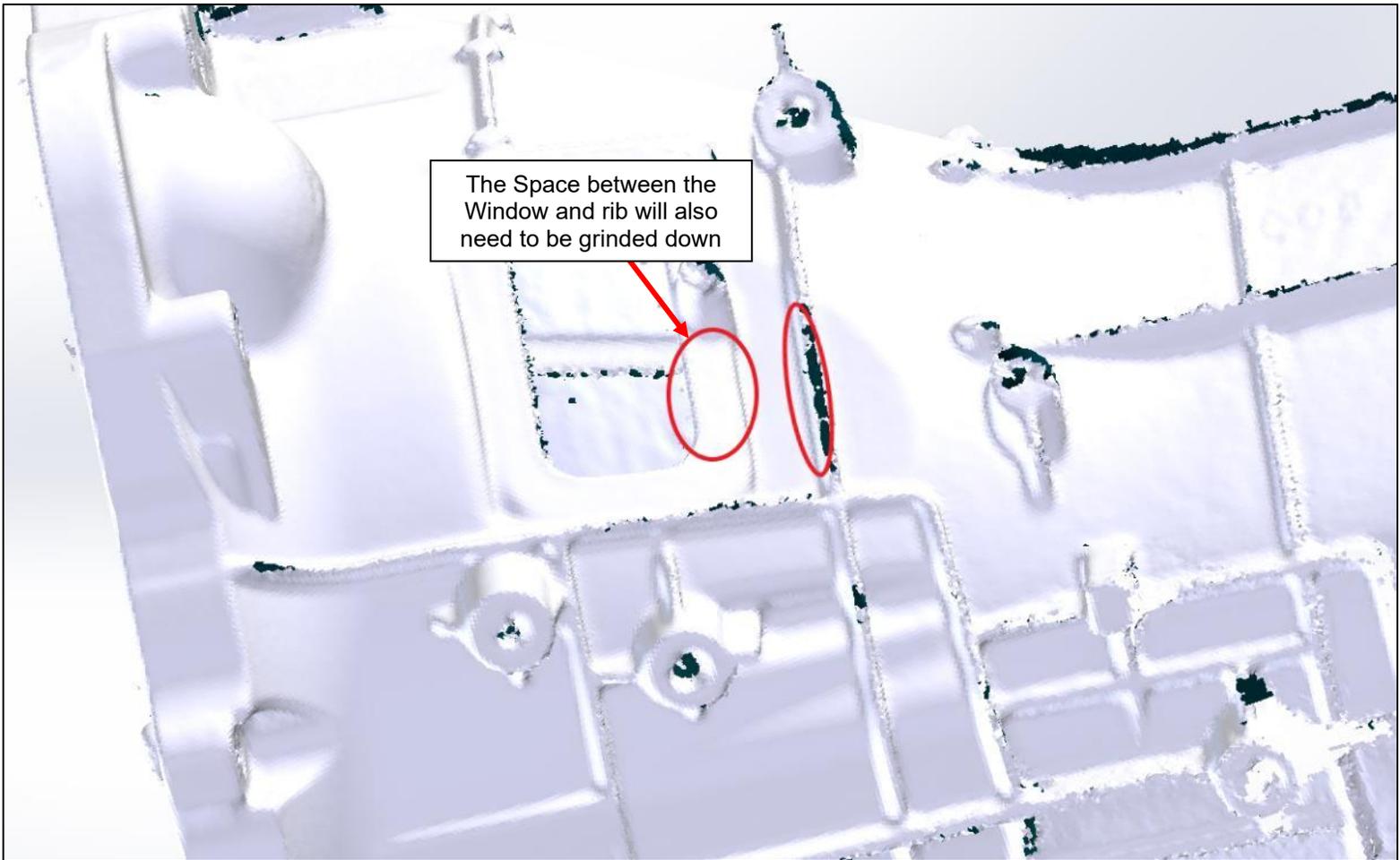
Users with the OS Giken Twin Disc Clutch will need to clearance the Transmission Fork Window and the outside of the Bellhousing to allow the Clutch Fork to have proper movement. A Dremel/Rotary Tool will be need to grind the Transmission.

The Clutch Fork will need to make contact with the “Window” of the Transmission when the Clutch Pedal is pressed. That means the Rib on the Transmission Bellhousing and the space between the Rib and the Window will need to be shaved down slightly. *Figure 31.*



*Figure 31*

The area between the Clutch Fork "Window" and the Bellhousing Rib will also need to be grinded down slightly to avoid contacting the Clutch Fork. *Figure 32.*



*Figure 32*

**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