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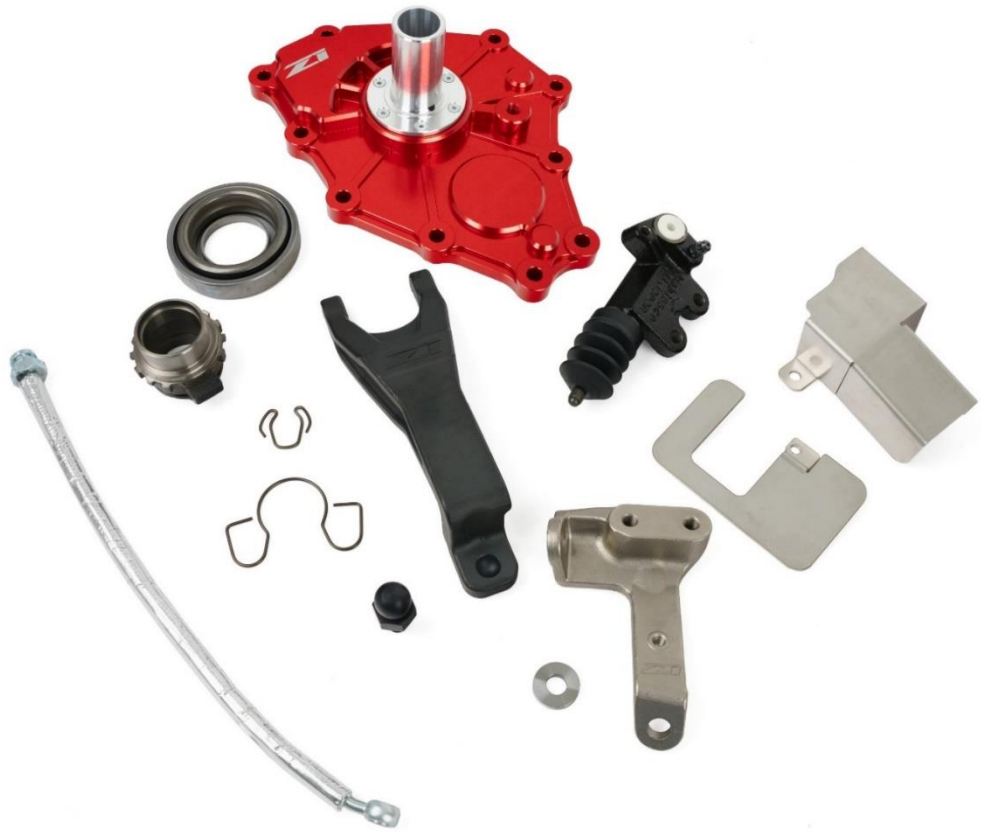
Z1 HR V2 CSC ELIMINATION KIT INSTALLATION MANUAL



This Installation Manual is intended for the following models:	
2007-2008	Nissan 350Z
2007-2008	Infiniti G35 Sedan
2009-2020	Nissan 370Z
2008-2013	Infiniti G37

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 HR V2 CSC Elimination Kit, consult with a Professional Mechanic, or contact Z1 Motorsports for more information.

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	1	Z1 DE Transmission Front Cover
20	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/Sockets (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.

NOTE: 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.

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

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 exhaust system from behind catalytic converters/test pipes.

5. Remove and set aside driveshaft as outlined in Nissan FSM.

6. Remove transmission drain plug and empty transmission of fluid.

7. Remove crankshaft position sensor as outlined in Nissan FSM.

8. Remove starter motor as outlined in Nissan FSM.

9. Disconnect 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 rear plate cover as outlined in Nissan FSM.

11. Disconnect Park/Neutral position switch connector.

12. Disconnect (2) two heated oxygen sensors as outlined in Nissan FSM.

13. For those vehicles equipped with S-MODE, disconnect 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.

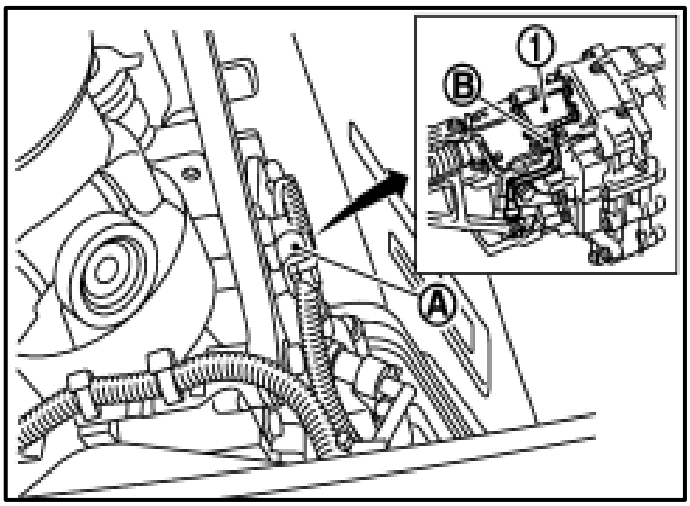


Figure 1

14. Remove rear engine mounting member as outlined in Nissan FSM.

15. Disconnect 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 clutch and flywheel.

24. Reinstall 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 65ft-lbs.

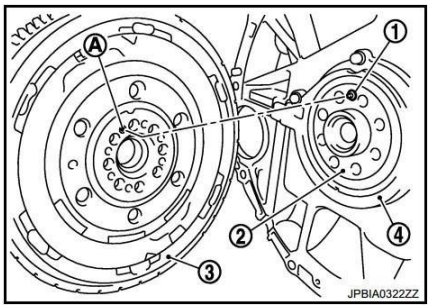


Figure 3

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 11ft-lbs, and then 29ft-lbs.

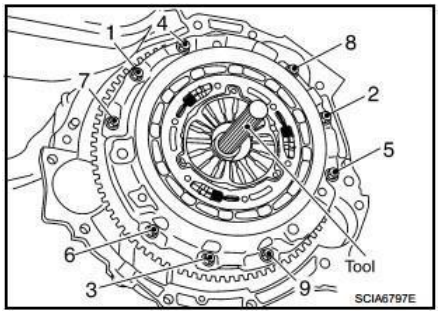


Figure 4

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

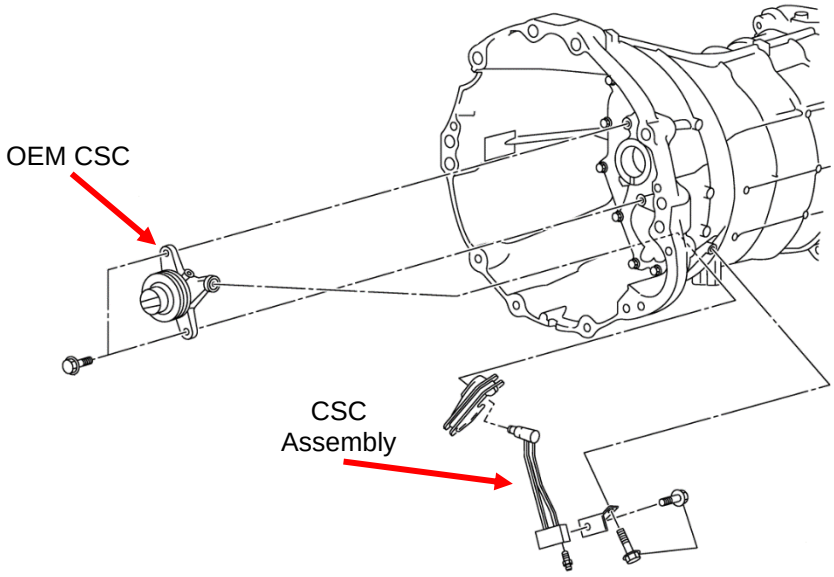


Figure 5

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.*

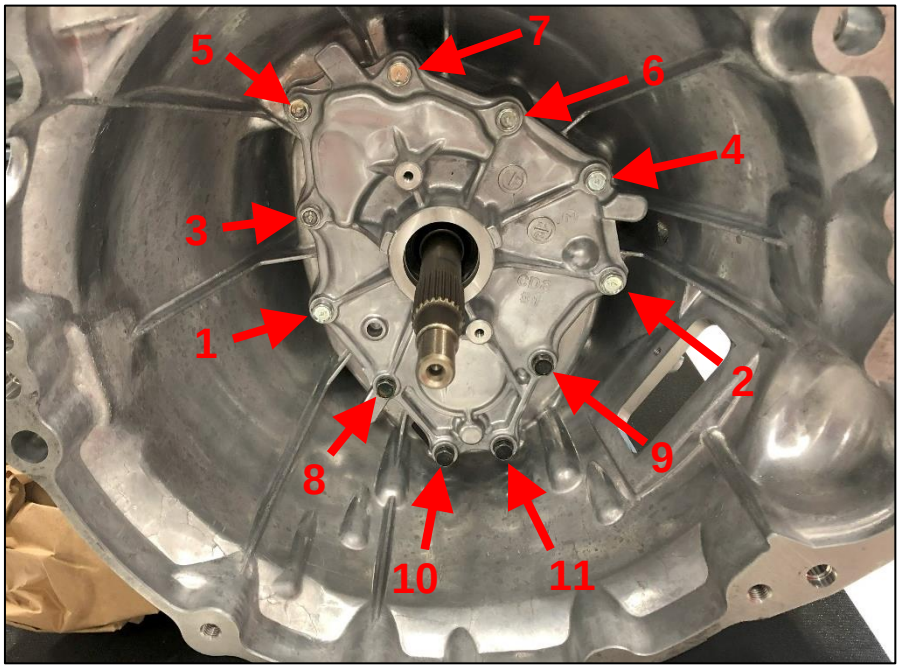


Figure 6

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

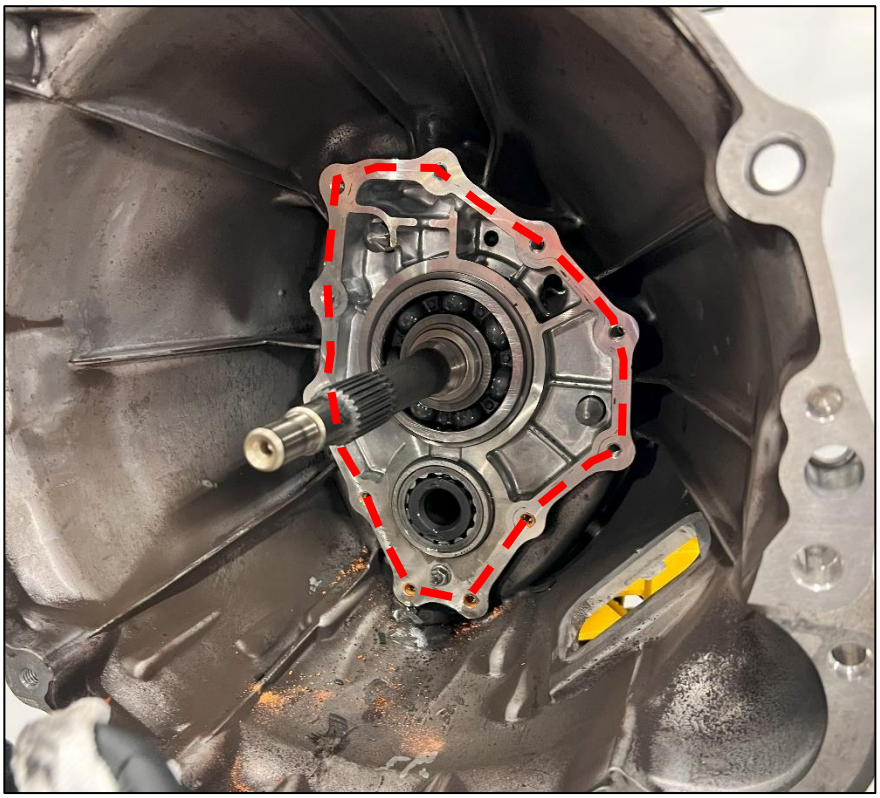


Figure 7

29. 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.

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

    NOTE: *Figure 8* below contains a Red Transmission Front Cover. Subsequent photos will show a Silver Transmission Front Cover. The installation process is the same.

Figure 8

31. 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 9.*

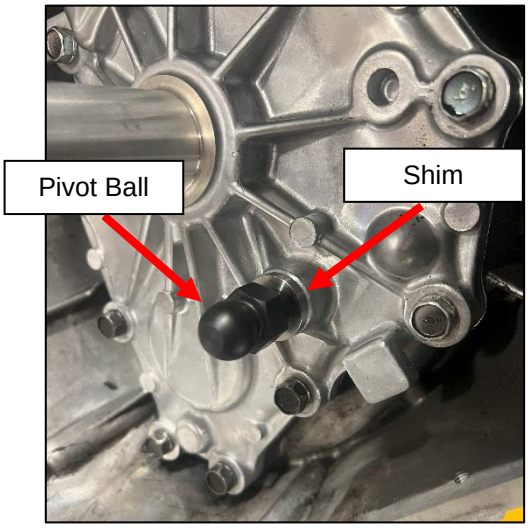


Figure 9

32. Locate the Throw-out Bearing and the Throw-out Bearing Sleeve. Using a press, install the Throw-out Bearing onto the Bearing Sleeve and assure bearing is pressed on evenly. Assure that the flat stamped, part number side of the Throw-out Bearing is facing the transmission. *Figure 10.*

Figure 10

33. 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 11.*

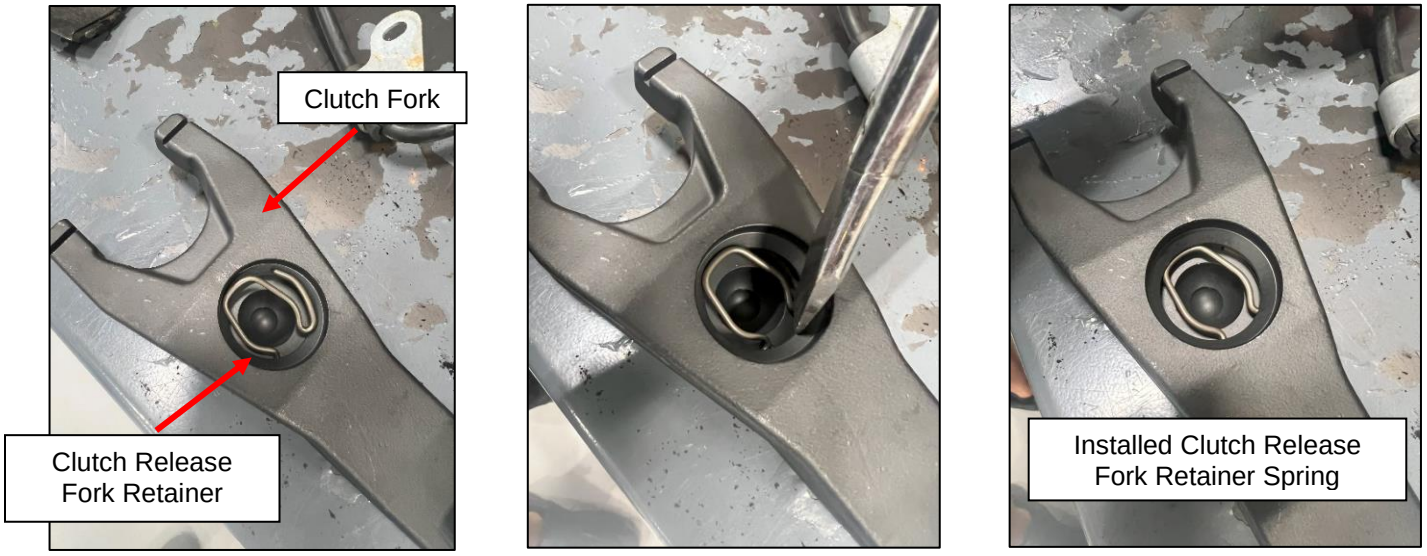


Figure 11

34. 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 12.* Install the Retainer Spring onto the Throw-out Bearing Sleeve.

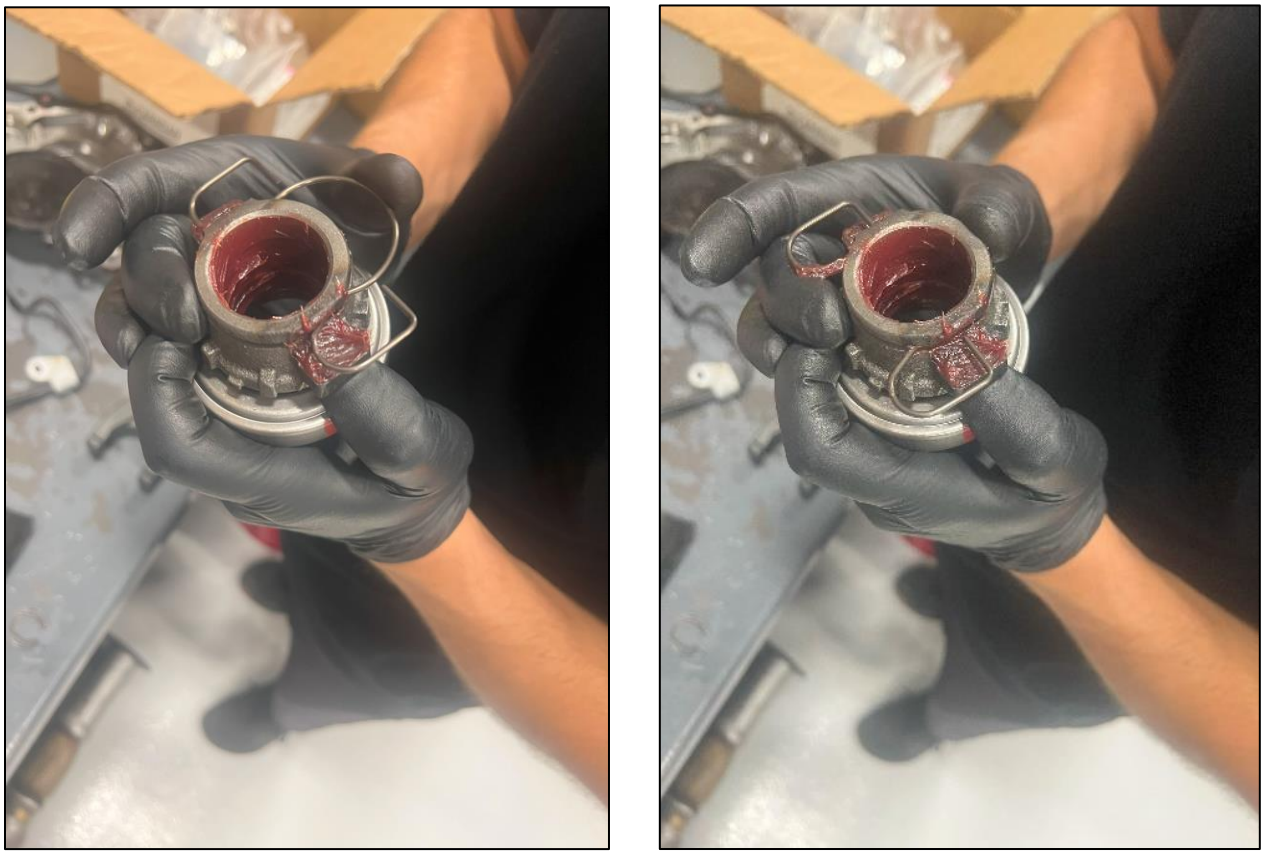


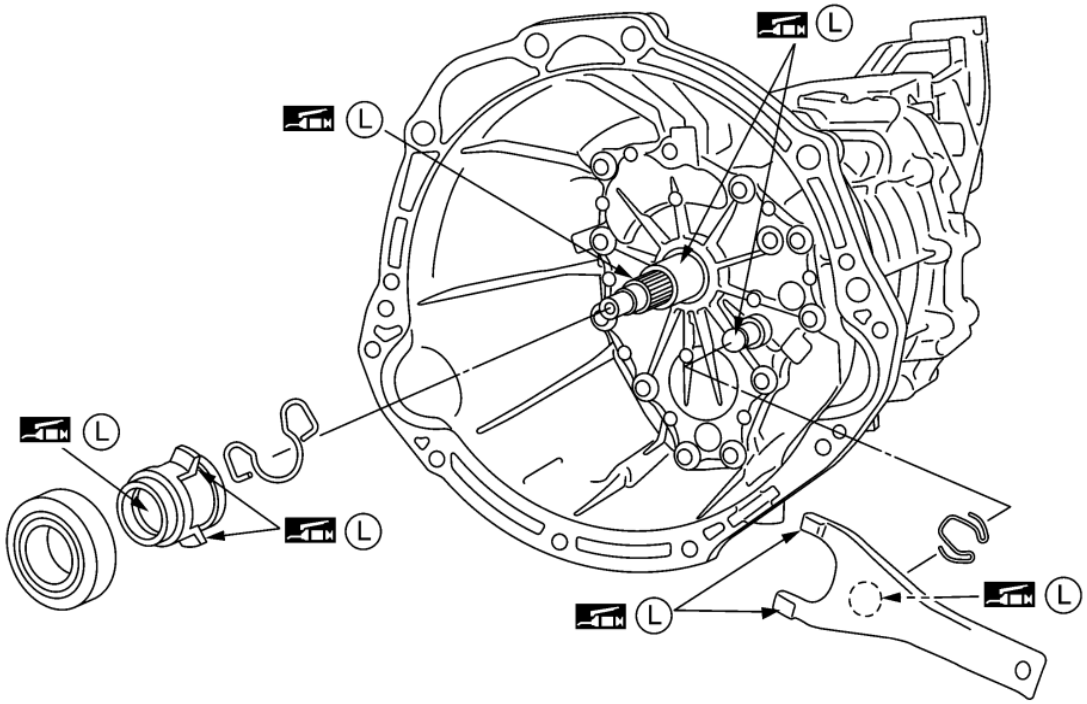
Figure 12

35. Apply a small amount of Lithium-Based Grease to Clutch Fork, Clutch Release Fork Retainer Spring, Pivot Ball, and Input Shaft, seen in *Figure 13.*

    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 13

NOTE: Below is a diagram of the Throw-out Bearing assembly and all locations that must be lubricated with the Lithium-Based Grease. *Figure 14.*



: Apply lithium-based grease including molybdenum disulphide.

Figure 14

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

37. 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 15.*

Figure 15

NOTE: The Throw-out Bearing Retainer Spring must attach to the Clutch Fork as seen below. *Figure 16.*

Figure 16

38. Apply a thin coat of Lithium-based Grease to Input Splines of the Transmission. *Figure 17.*

Figure 17

39. 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.

40. Remove OEM Clutch Line from Clutch Hard Line. It is located near the Driver Side Exhaust. *Figure* 18 below. This is best done before the transmission is installed to give you more room to work.

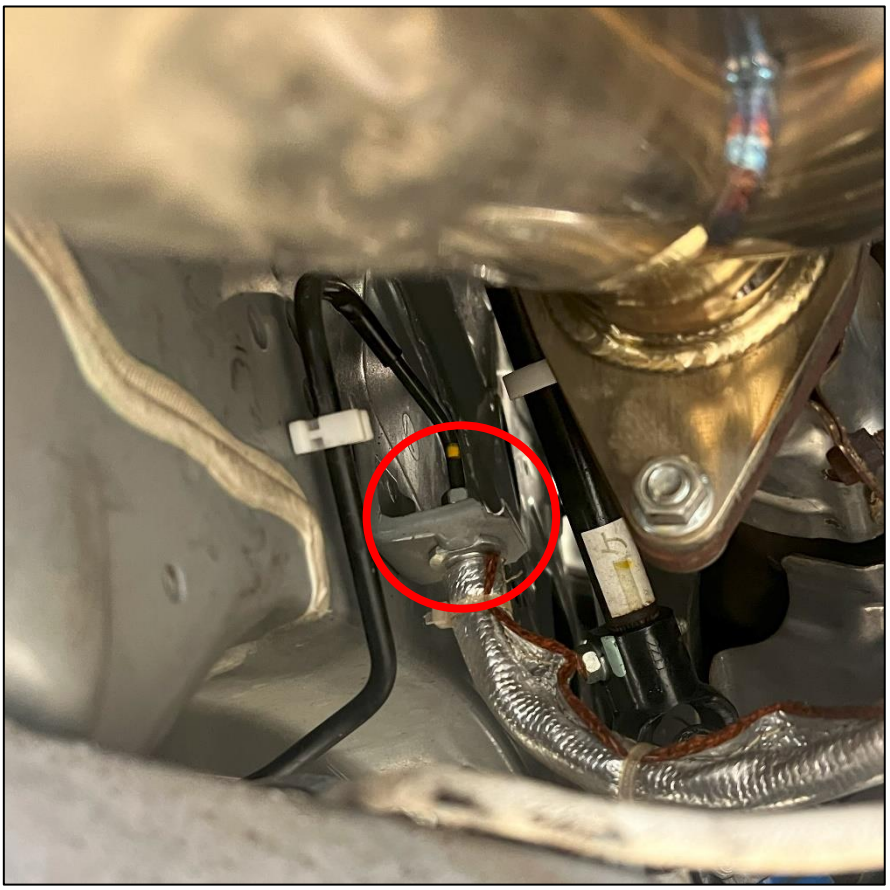


Figure 18

41. 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 19.*

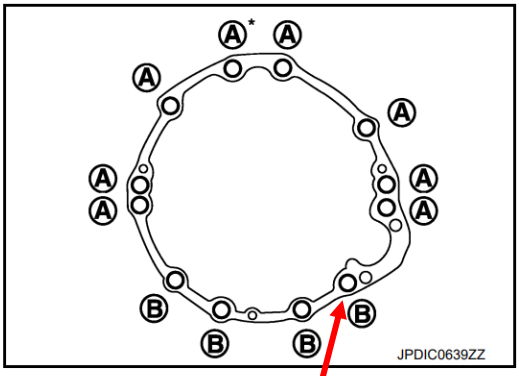
Figure 19

42. Reinstall the Transmission to engine. Assure that Transmission-to-Engine bolts are torqued to Specification, as shown below in *Figure 20.* Also leave out the Starter Bolt noted below, it will be replaced in *Step 43.*

- 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)

*: Tightening the bolt with air breather tube.



Leave this bolt out, it will be replaced.

Figure 20

43. 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. *Figure 21.* Torque both the 25mm Screw and 70mm Screw to 34 ft-lbs. The 70mm Screw replaces the OEM starter bolt left out in *Step 42.*

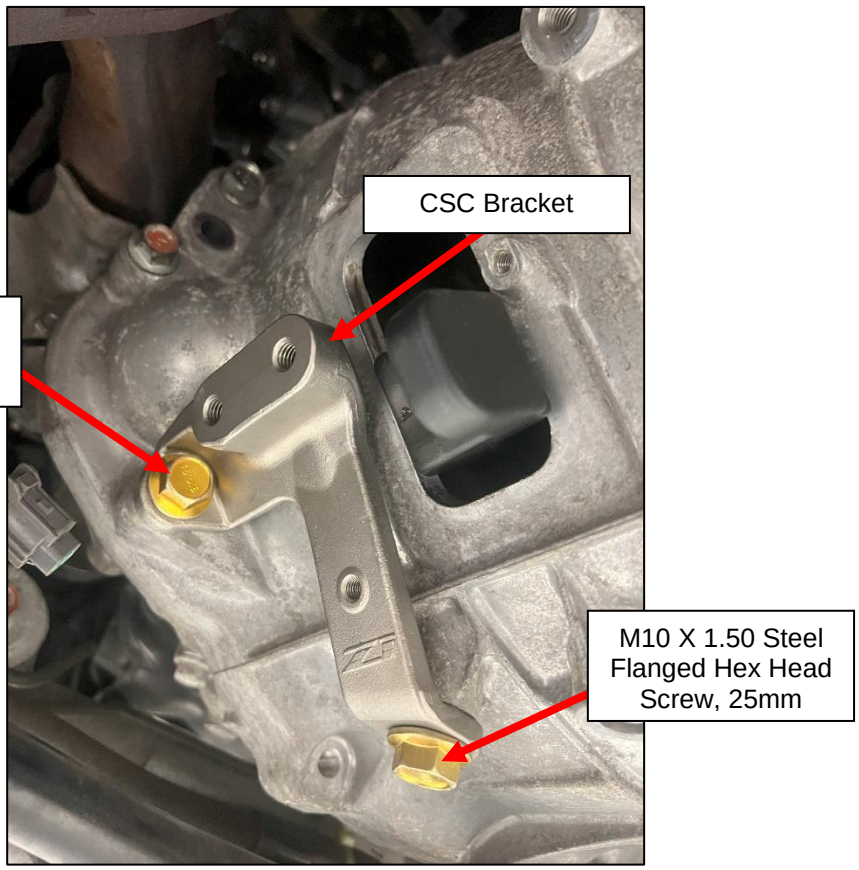


Figure 21

44. 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 22* and install the (2) two M8 x 1.5 Screws. Torque the M8 x 1.25 screws to 18 ft-lbs.

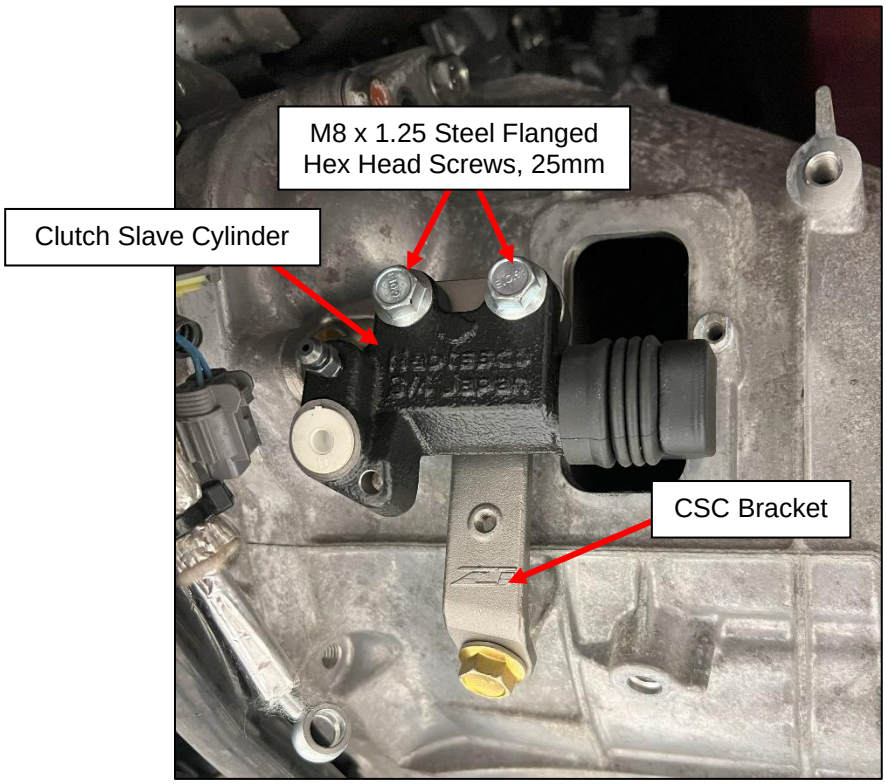


Figure 22

45. 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 23.*

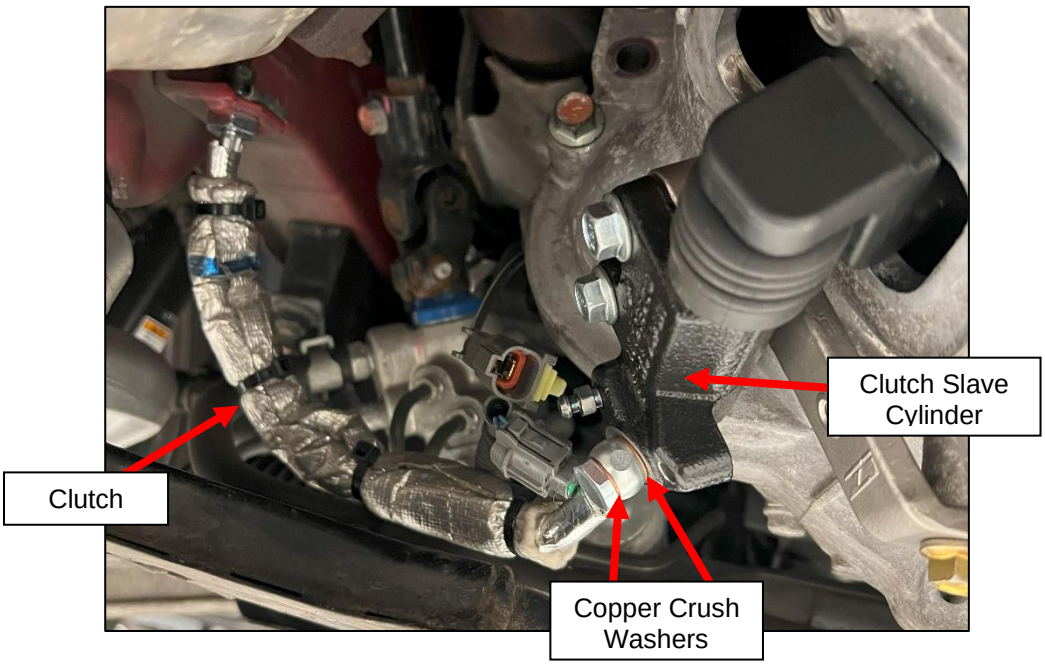


Figure 23

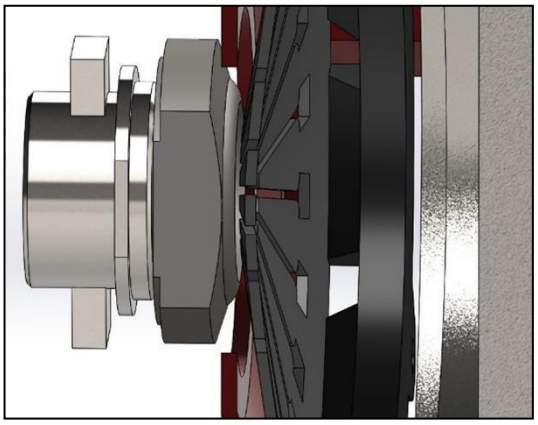
46. Bleed the Clutch Hydraulic System and ensure proper function. Follow FSM for further details.

    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 hyrdaulic system. Do not reuse clutch fluid.

47. 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 48.*

48. 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 24.*



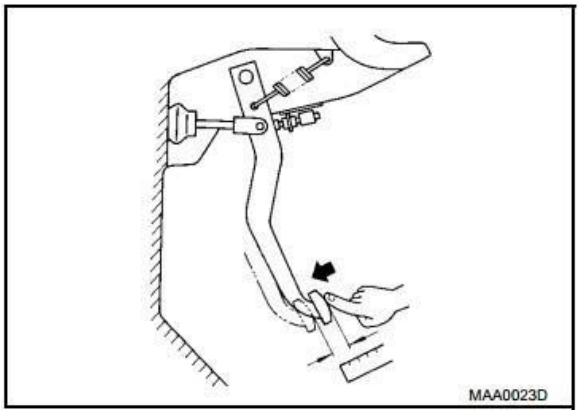


Figure 24

49. 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.

50. Locate the Transmission Dust Shield and (1) one M6 x 1 Steel Socket Head Screw, 12mm Long. Postion the Dust Shield Behind the Clutch Slave Cylinder and install the M6 Screw into the OEM factory hole, as seen in *Figure 25.* Torque to 80 in-lbs.

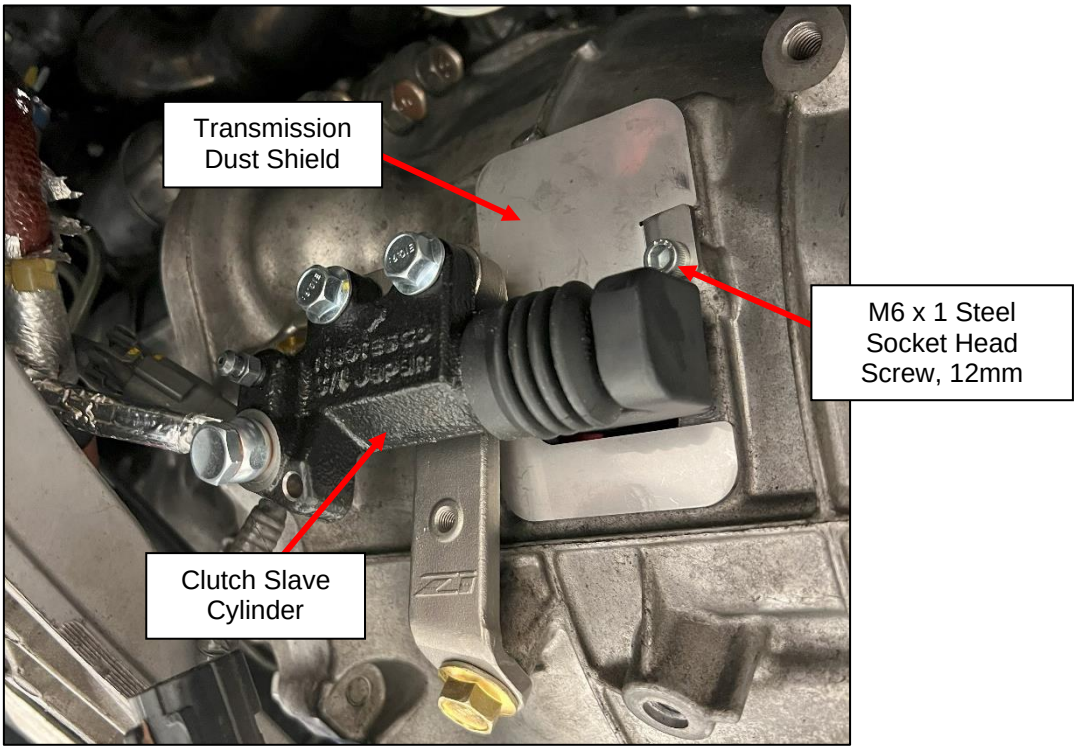


Figure 25

51. 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 26.* The Loop Clamp will hold the wiring harness removed when pulling the transmission. Torque M6 Screws to 80 in-lbs.

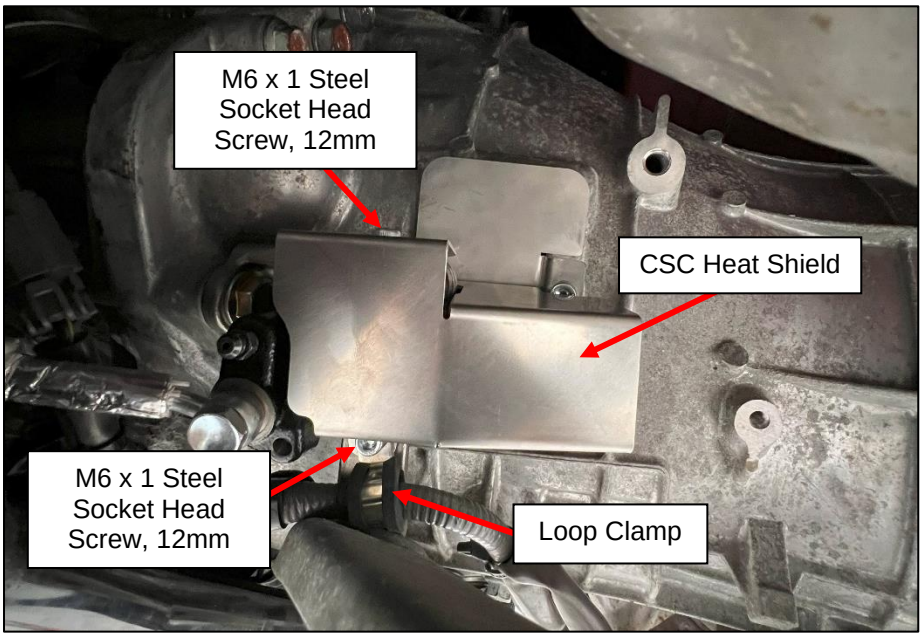


Figure 26

52. 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.

53. Inspect and fill Transmission and Clutch Fluid levels.

54. Follow *Steps 4-15* in reverse order to re-install components onto vehicle.

55. 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.

56. Properly lower vehicle from jack stands.

57. 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 48.*

END

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