

4X4 ENGINEERING

SDVDJ70CHD

Toyota Landcruiser 70 Series VDJ models 2007-Current



Parts List

ITEM	PART NO	DESCRIPTION	QTY
1	333-790-100	CLUTCH COVER - 70 SERIES - 1VD-FTV	1
2	333-790-150	CLUTCH DISC - 70 SERIES - 1VD-FTV	1
3	333-793-000	BEARING - CLUTCH RELEASE - 70 SERIES - 1VD-FTV	1
4	333-793-050	BEARING - SPIGOT - 1VD-FTV	1
5	333-792-900	TOOL - CLITCH ALIGNMENT - 1VD-FTV	1
6	333-791-000	CYLINDER - HYDRAULIC - CLUTCH SLAVE - 1VD-FTV	1
7	333-792-200	BOLT - HEX - M10 X 1.25 X 20MM	8
8	333-793-100	GREASE – CLUTCH	1

Installation Guide

1 Remove gearbox from vehicle as per manufacturer specifications.

2 Remove the OE clutch cover and flywheel from vehicle.

3 **ATTENTION!!**

The flywheel **MUST** be machined prior to the installation of the Safari Armax Clutch regardless of vehicle kilometres.

FLYWHEEL MACHINING SPECIFICATIONS:

Surface runout:
0.1mm

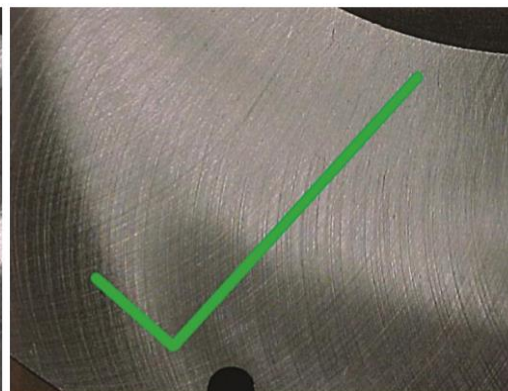
Step height: 0.5mm

Before installing the machined flywheel to the vehicle check the following:

- Surface finish
- Step height
- Surface runout



INCORRECT: Flywheel machined with a polish finish which may promote clutch shudder



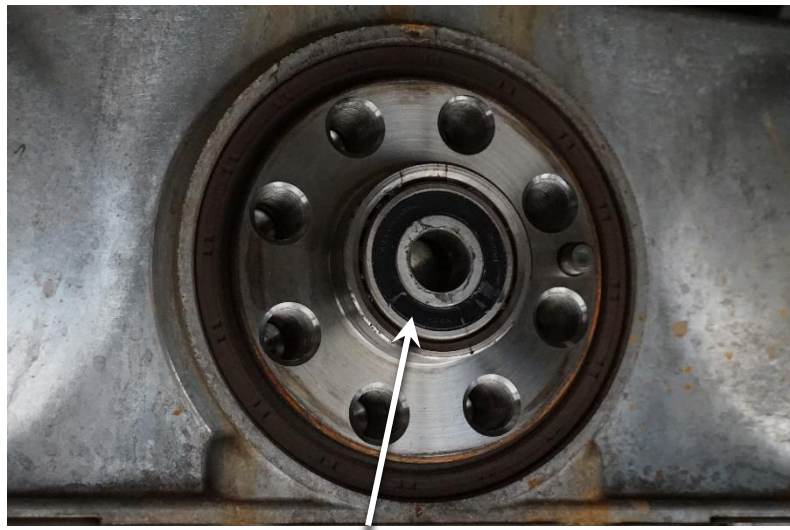
CORRECT: Flywheel ground to replicate the surface finish of its mating cover assembly.

4

Remove the spigot bearing from vehicle using a slide hammer.

Install the new spigot bearing (Item 4) to the crankshaft.

Note: Check condition of rear main seal and replace if required.



Remove and replace spigot bearing

5

Remove the clutch fork and original thrust bearing from the gearbox.

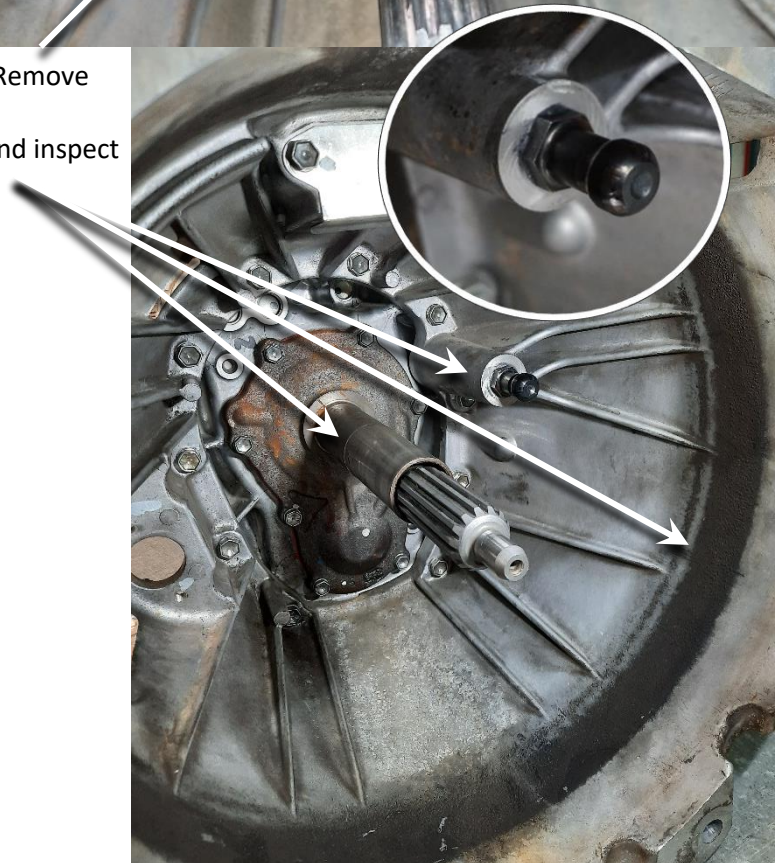
Clean all surfaces and inspect the clutch fork, pivot ball and release bearing shaft for wear. Replace as required.

Clean bell housing ensuring that it is totally free from material from the previous clutch



Remove

Clean and inspect



- 6 Grease the clutch fork surfaces where it contacts the release bearing, pivot ball and slave cylinder push rod. Lightly grease the release bearing shaft.



**ONLY GREASE THE
RELEASE BEARING
SHAFT LIGHTLY**

- 7 Install the new release bearing (Item 3) onto the clutch fork as shown.



- 8 Install the clutch fork and release bearing (Item 3) to the release bearing shaft and clip the clutch fork to the pivot ball.

After installation move the fork back and forth to check the release bearing slides smoothly.



- 9 Lightly grease the input shaft with the supplied grease (Item 8).

Install the clutch disc onto the input shaft.

Remove the clutch disc and clean excess grease from both the input shaft and the clutch disc splines.

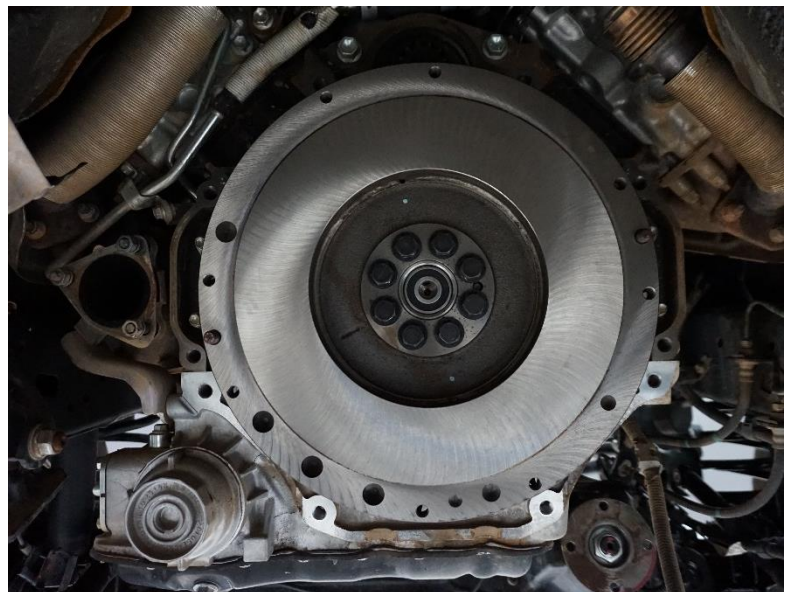
Note: Excess grease should be cleaned as it can contaminate the clutch disc. Always wear clean gloves when handling the clutch disc. The clutch disc should only be held on the outer circumference to avoid contamination.



- 10 Install machined flywheel to vehicle. Tighten to 182Nm in 3 stages using a star pattern.

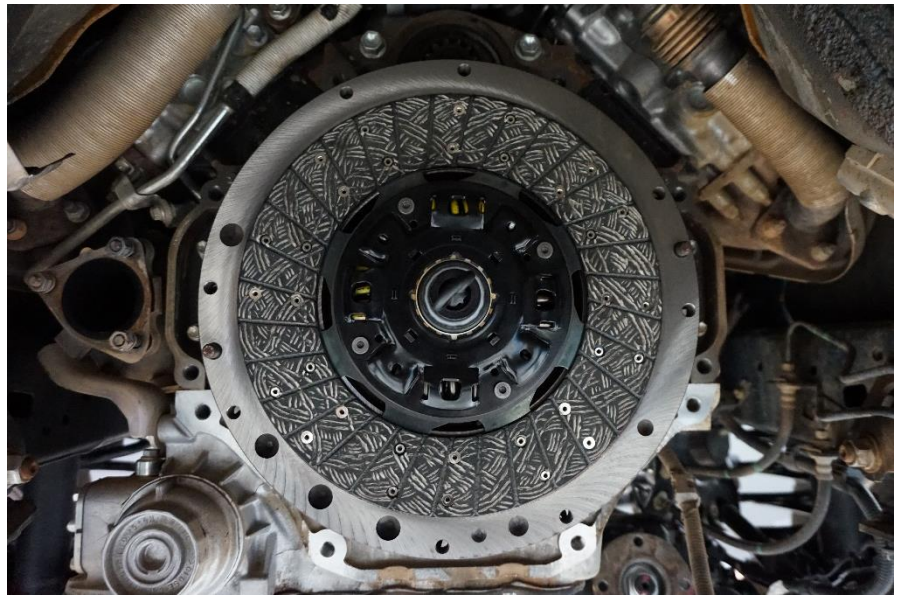
The flywheel must always be machined before installing a Safari Armax Clutch to a vehicle.

The Flywheel must be clean and free of oil prior to installing clutch disc.



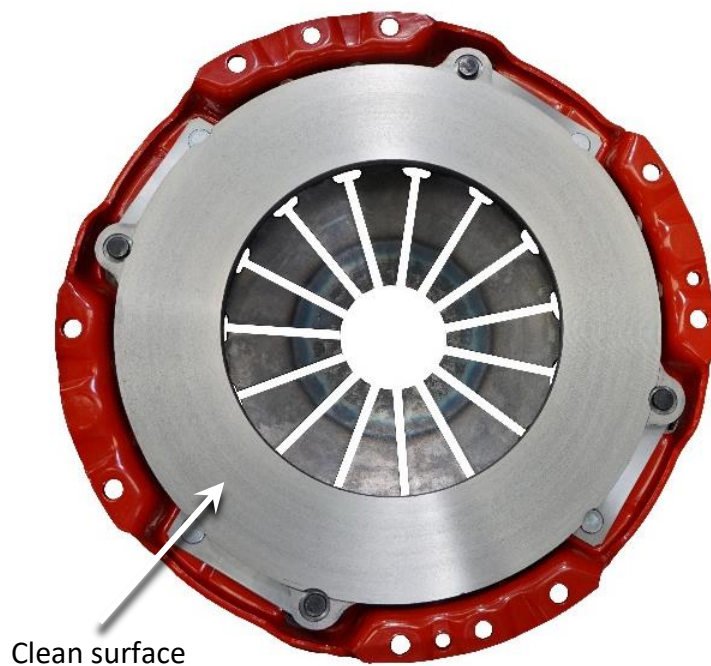
Install clutch disc (Item 2) onto the flywheel using the clutch alignment tool (Item 5). Note the orientation of the clutch disc (Item 2).

Note: Always wear clean gloves when handling the clutch disc. The clutch disc should only be held on the outer circumference to avoid contamination.



Clean the clutch cover (Item 1) machined surface and ensure it is free of oil.

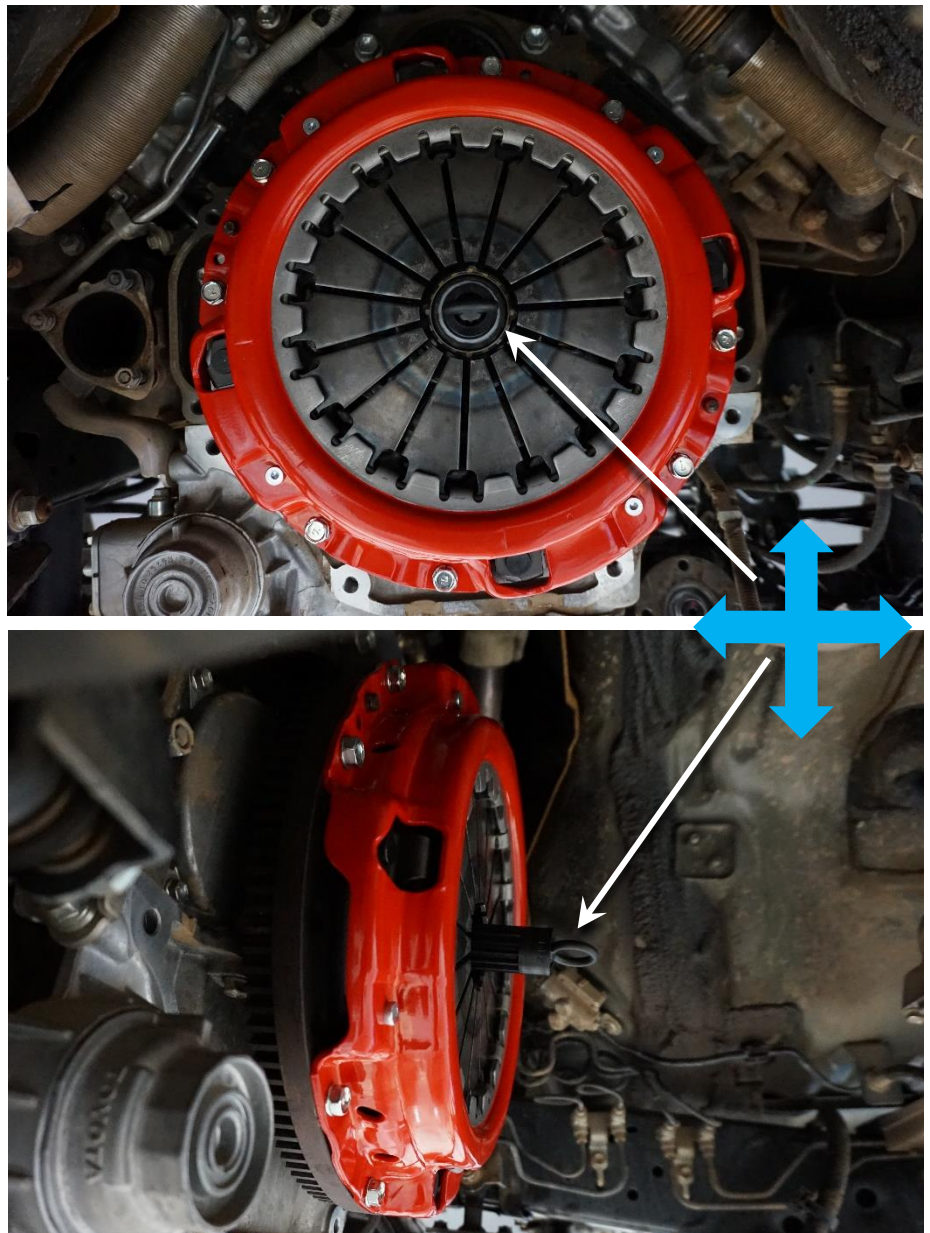
Install the clutch cover (Item 1) to the flywheel, finger tighten the supplied clutch cover bolts (Item 7).



Align the clutch disc with the alignment tool and lightly tighten the opposing clutch cover bolts.

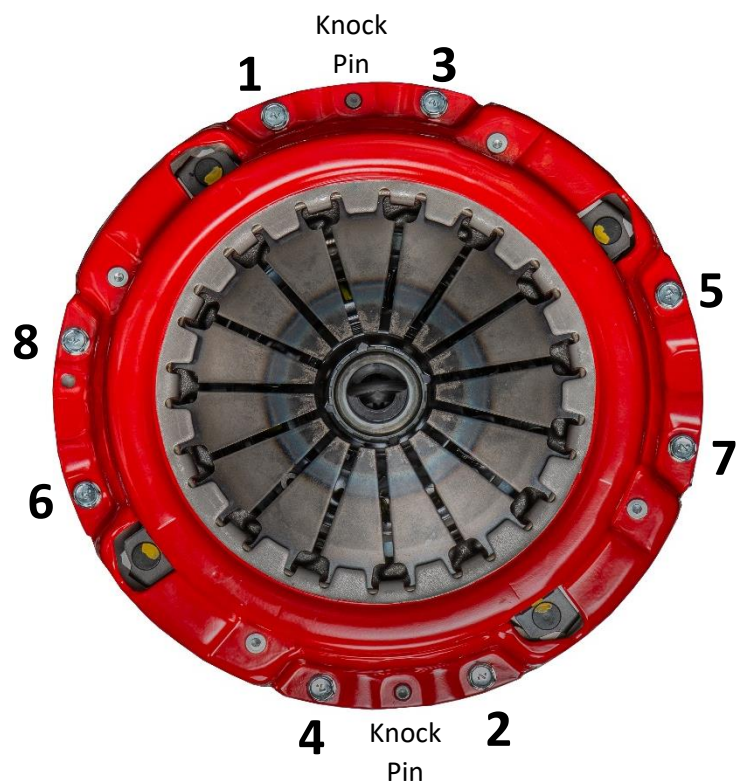
Move the alignment tool up and down, right and left lightly after checking that the clutch disc assembly is in the centre.

The alignment tool should slide in and out of the clutch disc and the spigot bearing with ease. If not, loosen the clutch cover bolts and re-align.



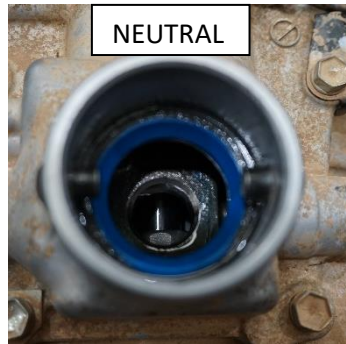
Following the order in the illustration, tighten the bolts evenly one turn at a time until tight. Final tighten the clutch cover bolts to 40Nm in 2 stages.

Recheck that the alignment tool slides in and out of the clutch disc and spigot bearing easily.



- 15 Move the shift selector on the gearbox forward and engage 4th gear.

When installing the gearbox rotate the rear tail shaft flange to help the input shaft spline engage with the clutch disc.



16 Pre-Gearbox installation checklist

1. Spigot bearing has been replaced and is installed correctly.
2. Release bearing has been replaced and is installed correctly.
3. Clutch fork and pivot ball have been greased.
4. Flywheel machined and correctly tightened to 182Nm.
5. Clutch cover and clutch disc correctly aligned.
6. Clutch cover tightened in correct sequence and torqued to 40Nm.
7. Fourth gear selected on gearbox.

17

Install the gearbox into the vehicle. Ensure that the gearbox mates with the engine correctly before tightening any bell housing bolts.

If the gearbox doesn't mate to the engine correctly check the following: Gearbox to engine alignment, input shaft spline alignment or recheck clutch disc alignment.



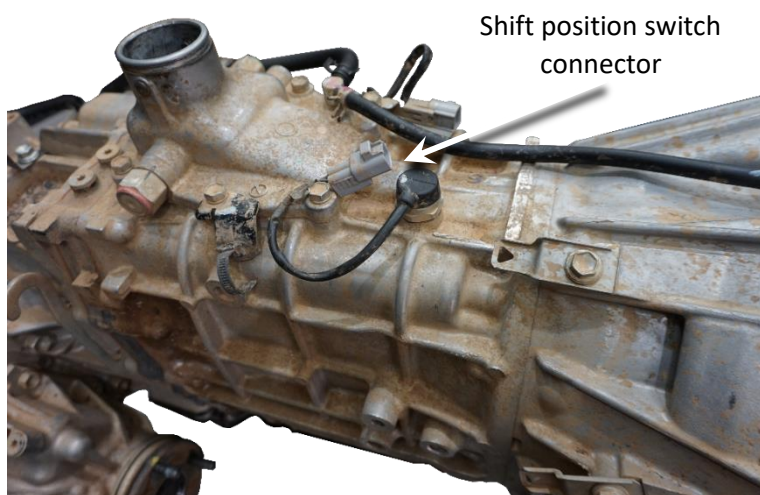
18

Complete installation of gearbox and associated components

ALL MODELS

19

Once the gearbox installation is complete, please check that the shift position switch connector is connected.



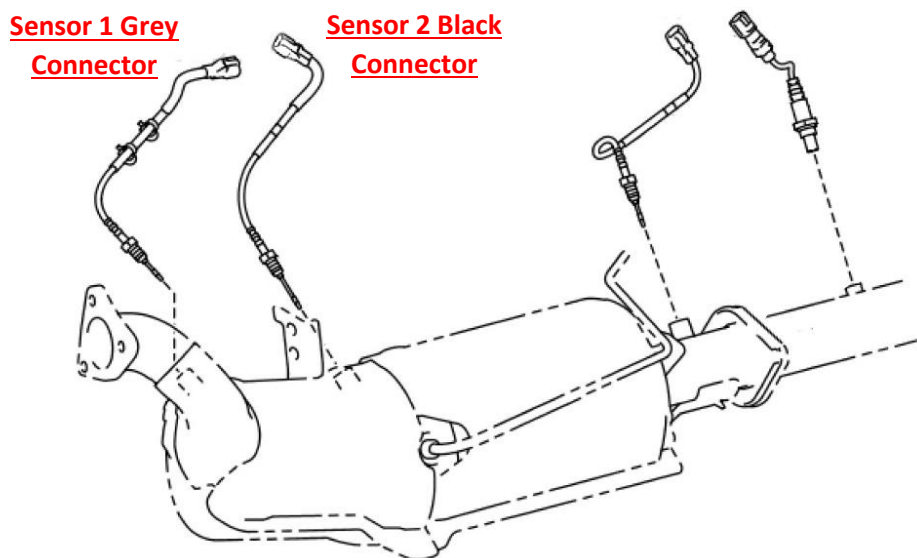
DPF MODELS ONLY

20

For DPF equipped vehicles ensure that exhaust temperature sensor connectors 1 and 2 are orientated correctly.

WARNING: please ensure the black wiring harness connector is plugged into the black sensor connector, please ensure the grey wiring harness connector is plugged into the grey sensor connector.

Failure to orientate these connectors correctly will STOP the DPF regeneration process and void the product warranty



Slave Cylinder

1

Using a hose line clamp tool, clamp the flexible line going to the slave cylinder as shown.



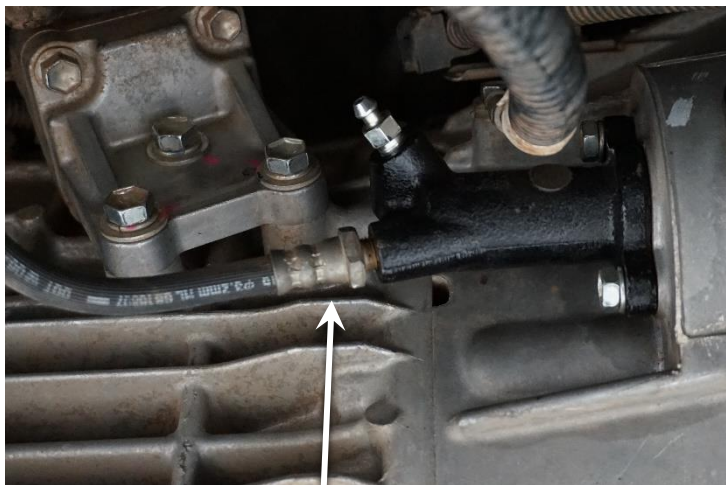
Clamp flexible hose

2

Loosen the hose from the slave cylinder with a spanner by half a turn.

Remove the slave cylinder from the gearbox.

Loosen the slave cylinder from the flexible hose and remove from vehicle.



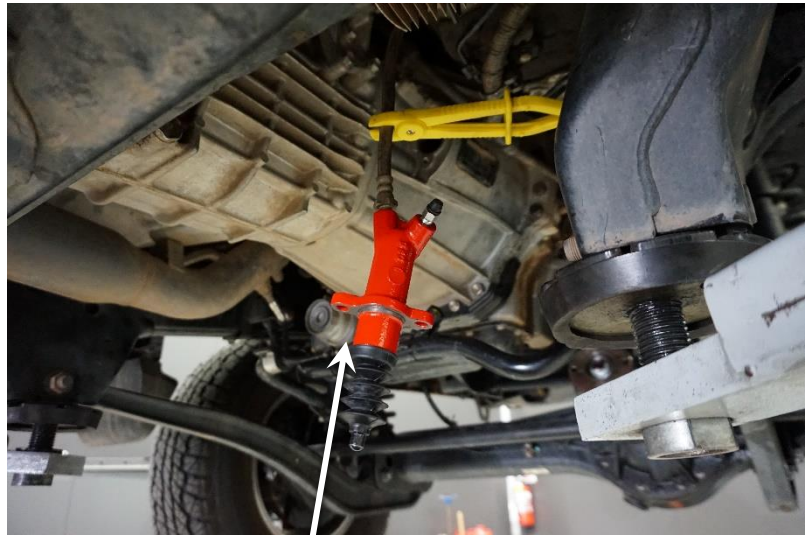
Loosen



Remove

3

Install the Armax slave cylinder (Item 6) to the flexible line.

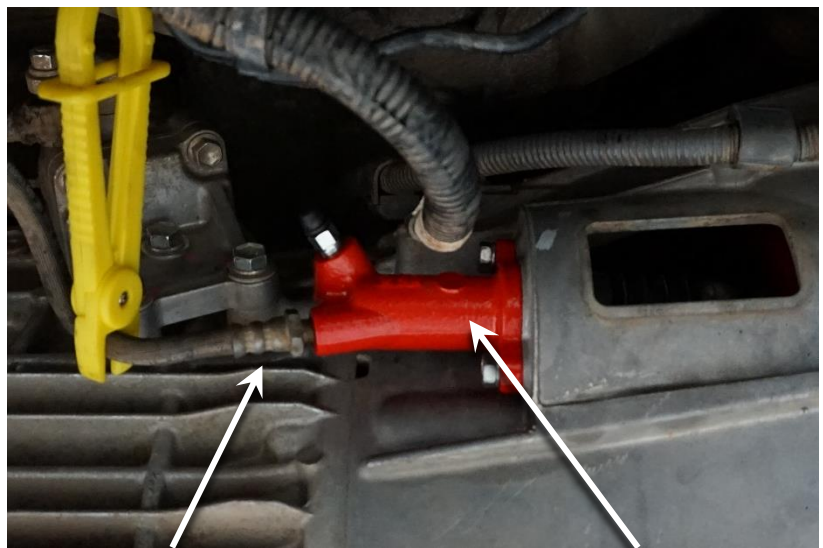


Install Armax slave cylinder (Item 6)

4

Install the Armax slave cylinder (Item 6) to the gearbox, ensure the slave cylinder (Item 6) locates correctly on the clutch fork.

Tighten the flexible line on the slave cylinder.



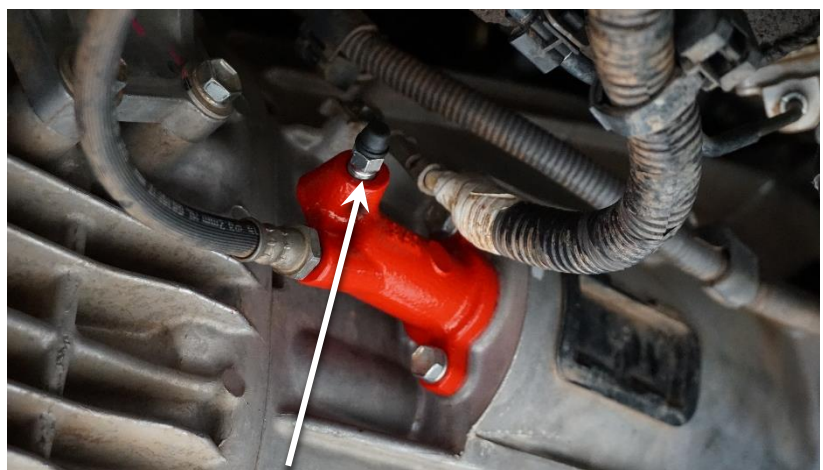
Tighten hose

Install slave cylinder

5

Bleed all the air from the slave cylinder system.

Safari use and recommend Toyota genuine dot 3 brake fluid.



Bleed nipple

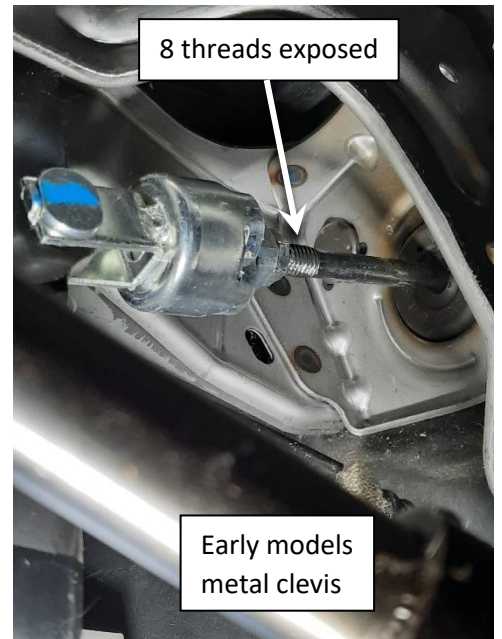
6

Check over all bolts are tight, check hose connections for leaks.

Clutch Adjustment

1

Before starting the engine adjust the clutch master cylinder push rod as shown.



2

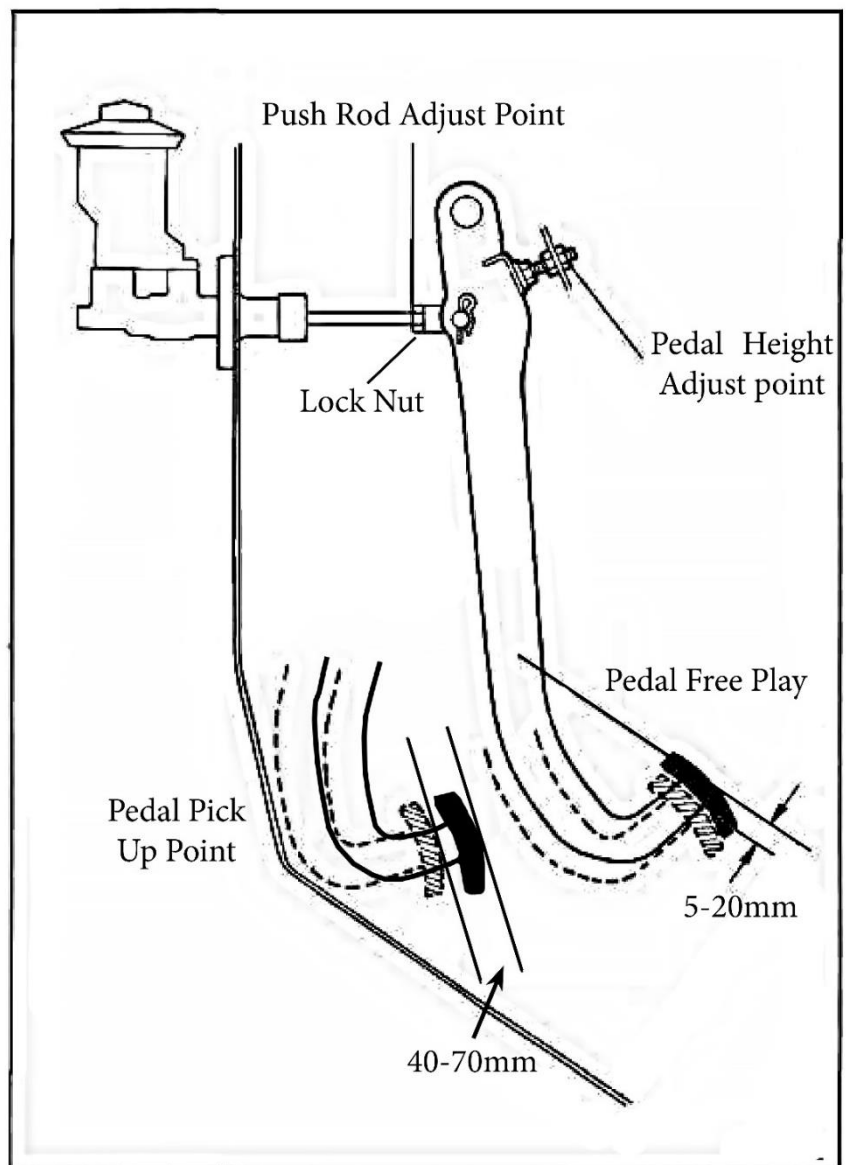
Start engine and select first gear. With the handbrake applied slowly release the clutch pedal and check pedal pick up point. The pick-up point is when the clutch begins engaging the engine and should be between 40mm and 70mm.

3

If adjustment is necessary, loosen the 12mm lock nut on the push rod adjust point.

4

Rotate the push rod clockwise to make the pick-up point higher. Rotate the push rod anti-clockwise to make the pick-up point lower.



- 5 Check pedal free
play is within 5-
20mm
- 6 Once correctly
adjusted tighten the
push rod lock nut