Part Number: PTR09-35050

Kit Contents

Item #	Quantity Reqd.	Description
1	2	ST-40 Four-piston calipers
2	2	Caliper adapter brackets
3	2	332mm x 32mm Rotor assys.
4	4	High-performance street pads
5	1	Installation instructions
6	1	Break-in procedure tag
7	1	Owner's document

Hardware Bag Contents

Item #	Quantity Reqd.	Description
1	4	7/16-20 Self-locking jet nuts
2	4	12mm Washers
3	2	Banjo fitting gaskets
4	2	Rubber end caps

Additional Items Required For Installation

Item #	Quantity Reqd.	Description
1		

Recommended Tools

Safety Tools	
Chassis lift	
Eye protection	safety glasses/face shield
Work gloves	
Fluid drip trays	one per side
Special Tools	
Sheet metal snips	Snap-on #DAR9A
Torque wrench: ½ inch drive	90 lbs.-ft set range
Torque wrench: 3/8 inch drive	45 lbs.-ft set range
EBS-20 brake flush system	automated system
Scotchbrite pad	
Installation Tools	
21mm deep socket	1/2" drive
½ inch air impact gun	
17mm socket	1/2" drive
14mm socket	3/8" drive
12mm socket	3/8" drive
11mm combination wrench	
10mm combination wrench	
10mm flare nut wrench	
½ inch socket	3/8" drive
½ inch drive ratchet	or ½ inch drive breaker bar
3/8 inch drive ratchet	
Needle-nose pliers	
Plastic mallet	or other non-marring mallet
Special Chemicals	
Toyota Brake Fluid	#00475-1BF03
Toyota Brake Cleaner	#00289-2BC00-CA
Soap solution	Liquid dish soap

Color Applicability/Trim Level

Accessory Color / Vehicle/Trim Color										

Conflicts

Note: None

General Applicability

Note: 2005+ X-Runner

Recommended Sequence of Application

Item #	Accessory	
1	Cal. adapter brackets	
2	Rotor assemblies	
3	Calipers	
4	Stainless brake hoses	
5	Bleed brakes	

*Mandatory

Legend

STOP **STOP:** Damage to the vehicle may occur. Do not proceed until process has been complied with.

OPERATOR SAFETY: Use caution to avoid risk of injury

CRITICAL PROCESS: Proceed with caution to ensure a quality installation. These points will be audited on a completed vehicle installation

GENERAL PROCESS: This highlights specific processes to ensure a quality installation. These points will be audited during the accessory installation

TOOLS & EQUIPMENT: This calls out the specific tools and equipment required for this process

Please see bottom of page 16 for important "Care and Maintenance" information!

A. Check Kit Contents

1. Check kit for contents and damage.

B. Prepare Rotors

1. Use a Scotchbrite pad and a soap solution of liquid dish soap and water to thoroughly wash the rust inhibitor off the rotors. Use the Scotchbrite only on the rotors, not the brake hats. Rinse with clean water and dry with compressed air or paper towels.

C. Vehicle Preparation

1. Use a vehicle hoist and lift X-Runner using the jacking points. If a vehicle hoist is not available, then use a hydraulic jack to lift X-Runner. Use owners manual to locate proper vehicle jacking points.

Caution: Always use jack stands to support vehicle, never work on vehicle using only the jack.

D. Remove Front Wheel/Tire Assemblies

1. Use 21mm deep socket and ½ inch air impact gun to remove both front wheel lug nuts.
2. Remove front wheel/tire assemblies and save for re-use.

E. Disconnect Front Brake Hoses

1. Use fender covers to protect vehicle paint.
2. Turn the steering wheel to the right if you are working on driver side; it allows easier access to the brake hoses. Turn the wheel to the left if you are working on the passenger side.
3. Place a drip tray directly below the inboard brake line connection. This connection is where the rubber hose attaches to the steel brake line.

Caution: Brake fluid will damage most painted surfaces. Immediately clean any spilled brake fluid from all painted surfaces.

3. Do not remove the master cylinder fluid reservoir cap yet. Leave it in place until the new components are installed.

4. Use a 10mm flare nut wrench to loosen the steel line fitting where it attaches to the stock brake hose. (Fig. E4)

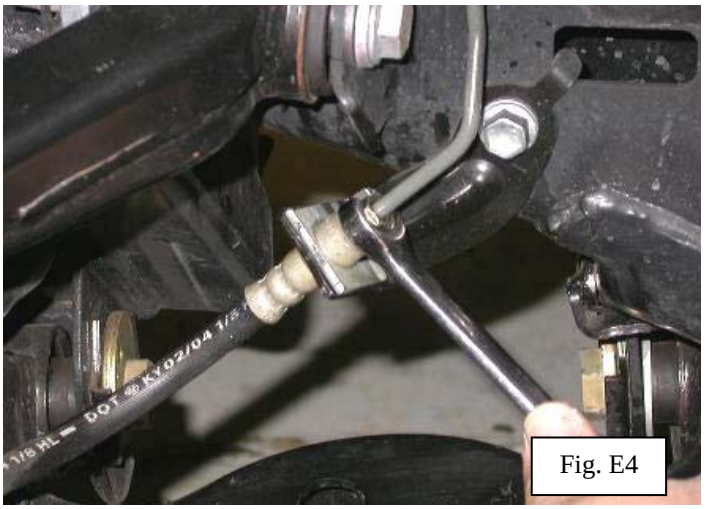
Fig. E4

5. Use a pair of needle-nose pliers to remove the brake line retaining clip. (Fig. E5)

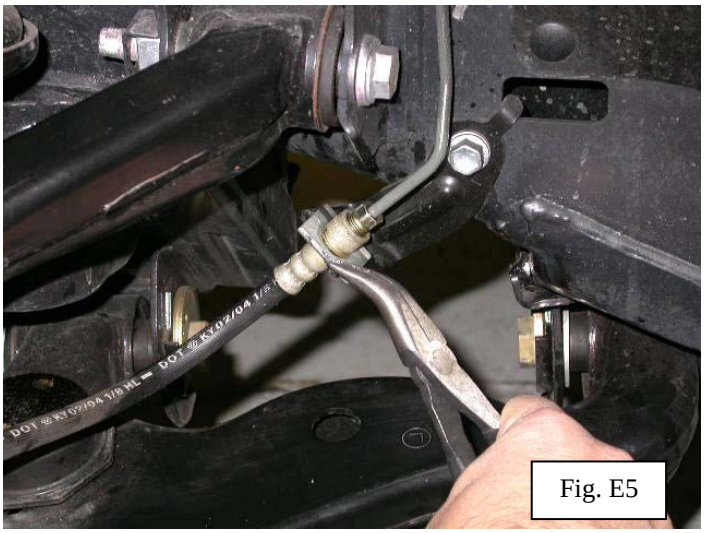
Fig. E5

6. Remove the steel line fitting and place one of the supplied rubber caps over the end of the line to stop fluid loss during the installation. (Fig. E6)

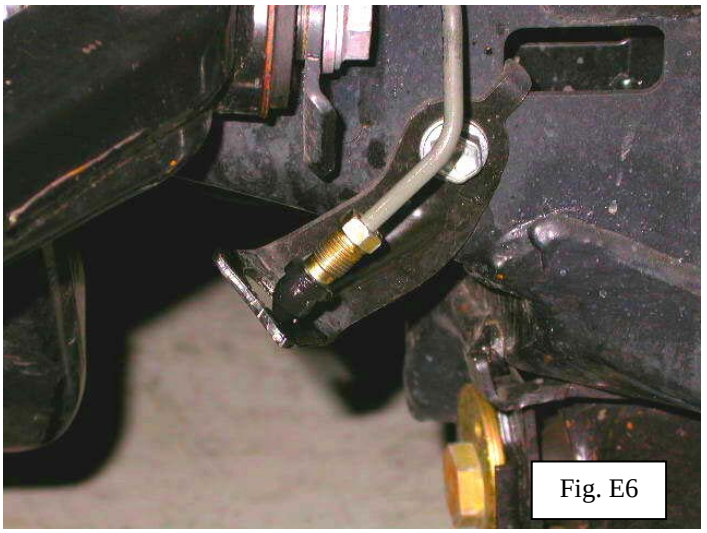
Fig. E6

7. Remove the original equipment (OE) brake hose locator bolt and retain the bolt for reuse. (Fig E7)

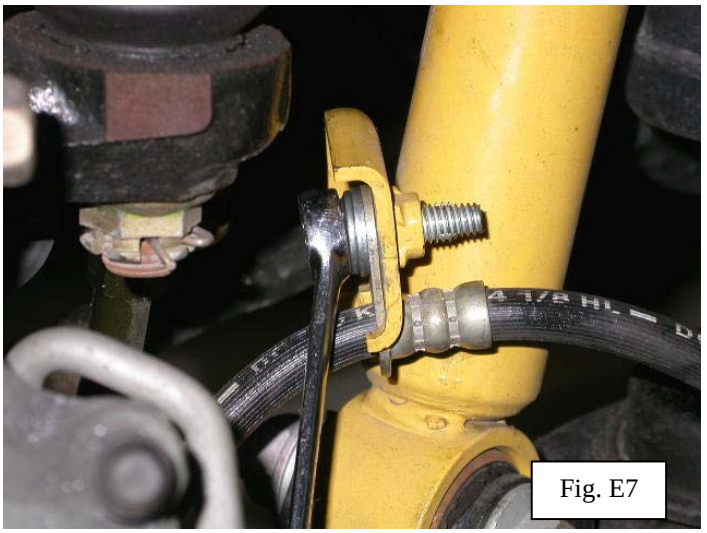
Fig. E7

F. Remove Factory Brake Calipers and Rotors

1. Loosen/remove the 17mm bolts from the original equipment (OE) brake calipers, and save for re-use. (Fig. F1)

Note: The 14mm banjo bolt may have to be loosened to access the top 17mm bolt.

2. Remove the OE calipers, with the OE brake lines attached.
3. Remove the OE rotors from each hub.

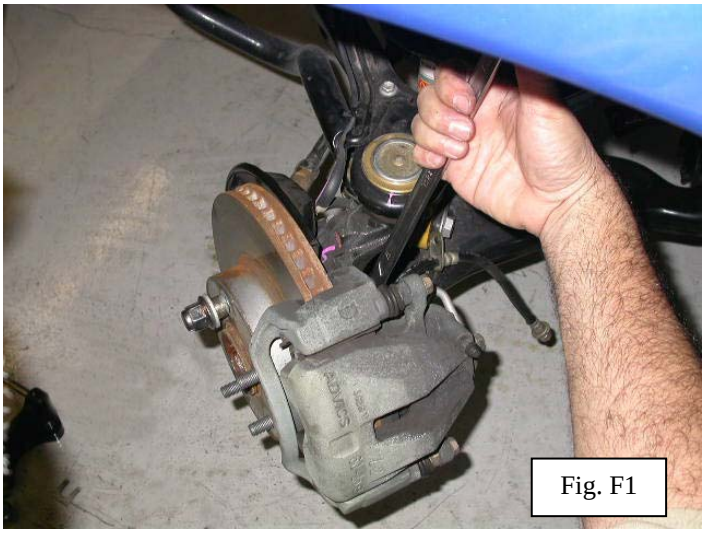
Fig. F1

G. Remove OE Dust Shields

1. Loosen/remove the three 10mm retaining screws from the original equipment (OE) dust shields. (Fig. G1)
2. Rock the dust shield from side to side, while pulling it toward you, until it comes free from the register.
3. Rotate the dust shield on the hub, so that the caliper clearance cutaway portion of the mounting flange is accessible.

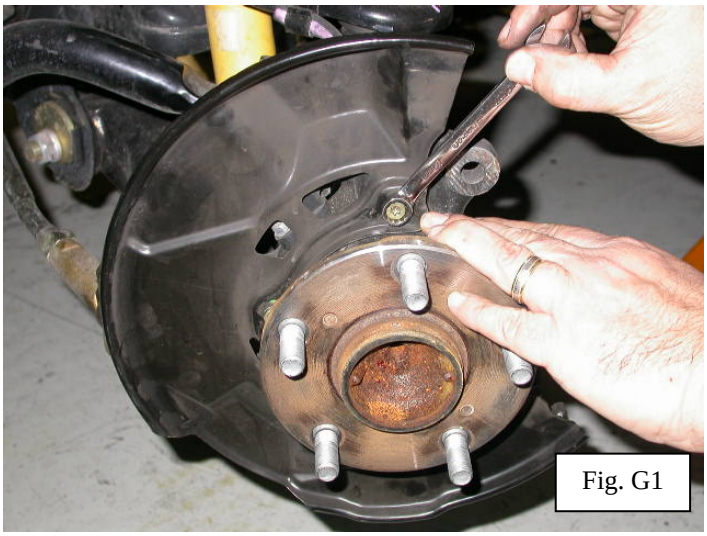
Fig. G1

4. Use sheet metal snips to cut both ends of the cutaway portion of the dust shield mounting flange. (Fig. G2)

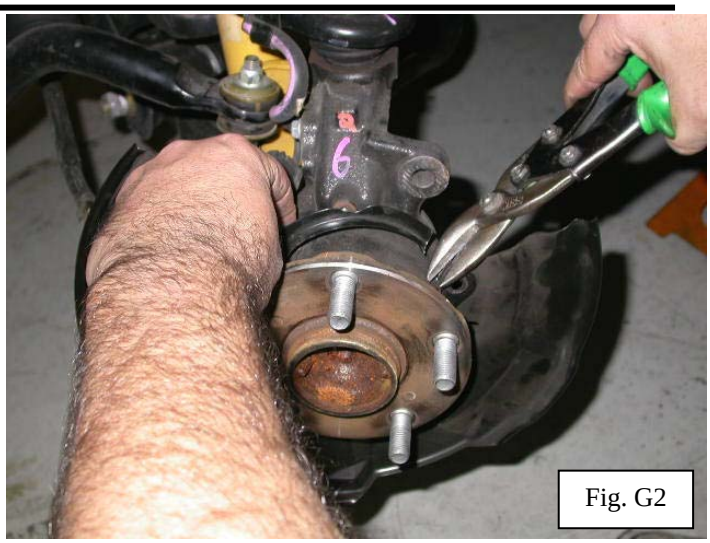
Fig. G2

5. Remove the OE dust shield. (Fig. G3)
6. Repeat Steps 2 through 5 for the opposite side.

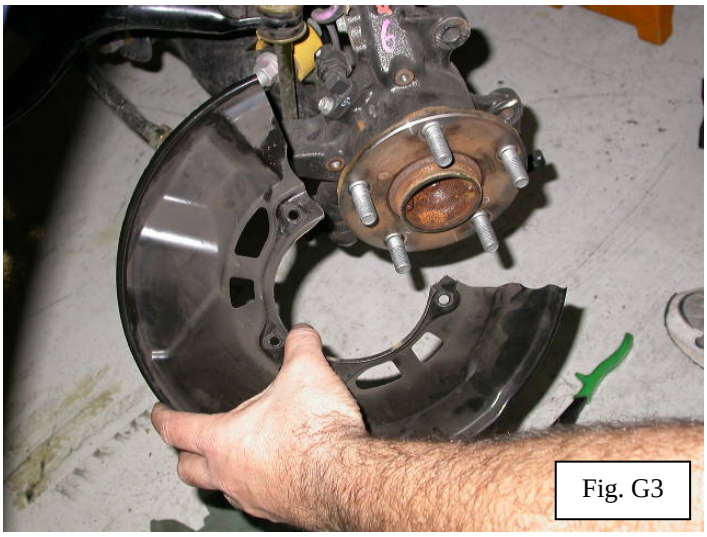
Fig. G3

H. Install Caliper Brackets

1. Remove the jet nuts and washers from the caliper mounting bracket studs, and retain them for later use.
2. Install the caliper brackets, using the OE caliper bolts. (Fig. H1)

Caution: The caliper brackets can be installed in two different positions: either the ½ inch bracket studs can be closer (outboard) to the wheel studs or further away (inboard). The correct position is inboard as shown.

3. Torque the bolts to 55 lbs.-ft.

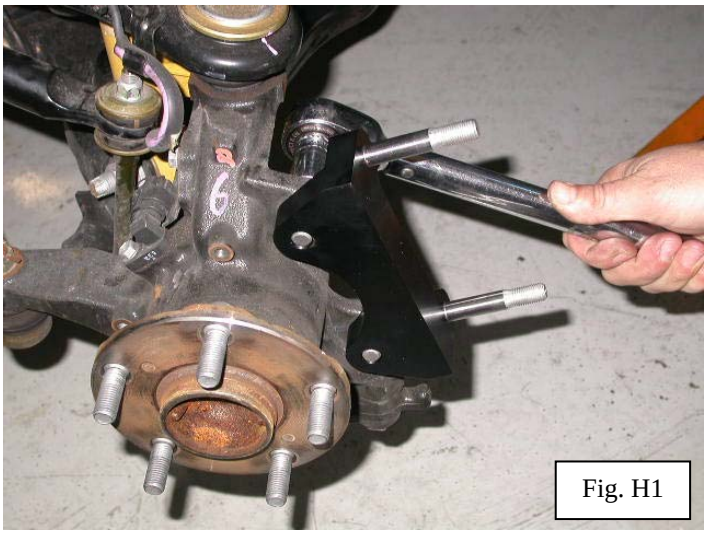
Fig. H1

I. Install Rotor Assemblies

1. Install the rotor assembly, seating it squarely on the hub face. Place a wheel nut on one of the studs (finger-tighten only), to prevent the rotor from falling off of the hub. (Fig. I1)

Caution: Rotor hats have small L (left) or R (right) stickers. Install "L" assembly on driver side and "R" assembly on passenger side.

2. Repeat Step 1 for opposite side.
3. Once rotors are in place, remove the "L" and "R" stickers and clean any adhesive residue.

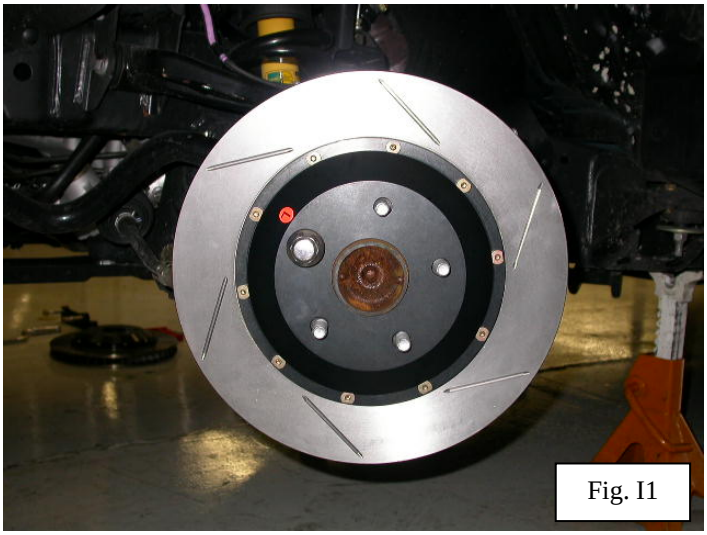
Fig. I1

J. Install Calipers

1. Remove foam insert from between brake pads before installing calipers.
2. Install the calipers, with pads, onto the adapter brackets, orient calipers so that the bleed screws are positioned on the top side of the calipers.
3. Take care to ensure that the calipers are square and evenly started on both studs. It may be necessary to use a plastic mallet to gently tap the calipers into position. (Fig. J1)

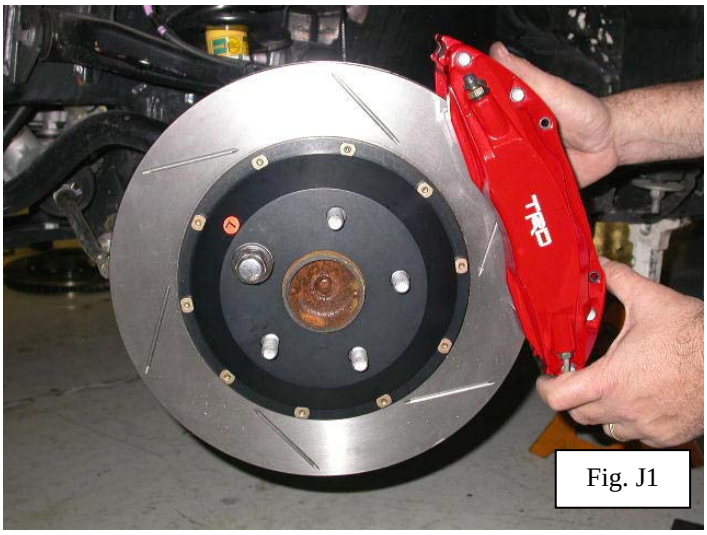

Fig. J1

4. Install the Jet nuts onto each stud, with one 12mm washer under each nut. Torque nuts to 40 lbs.-ft. (Fig. J2)
5. Once calipers are in place, remove the "L" and "R" stickers and clean any adhesive residue.

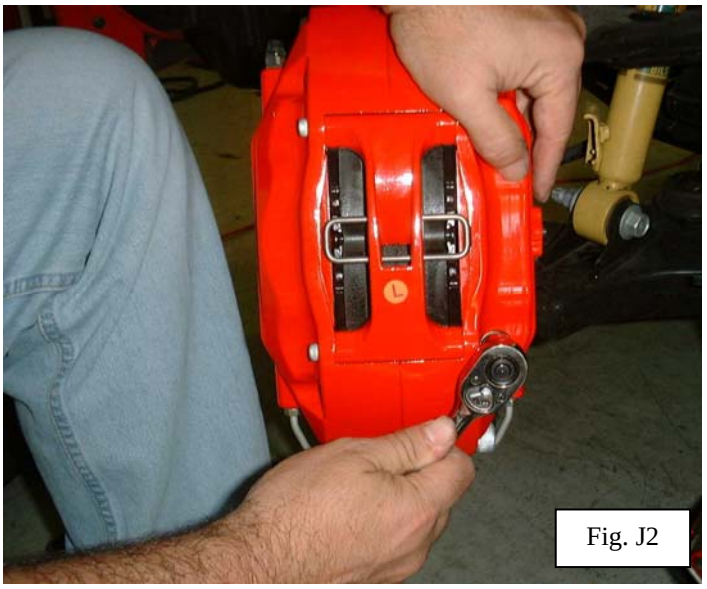
Fig. J2

K. Attach TRD Brake Lines

1. Install the supplied OE aluminum gaskets (Toyota Part #47389-50020) over the banjo fittings on the stainless steel brake hoses.
2. Insert the banjo bolt through the fitting and screw into the caliper. Finger-tighten only at this time. (Fig. K1)

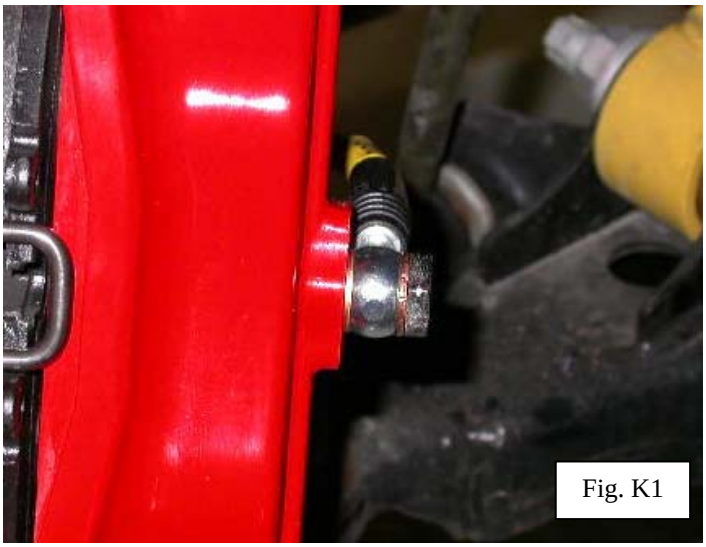
Fig. K1

3. The orientation of the banjo fitting should be such that the stainless steel brake hose is pointing toward the lower bolt that mounts the caliper bracket. (Fig K2)

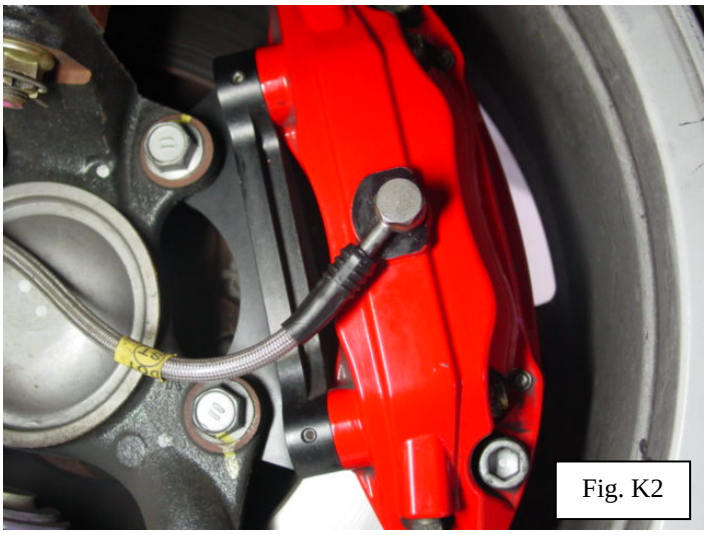
Fig. K2

4. Attach the brake hose locator to the bracket on the front shock using the bolt removed in Step E7. (Fig. K3)
5. Tighten the banjo bolt to 14 lbs.-ft. of torque.

Caution: Do not overtighten the banjo bolt, as doing so can strip the aluminum threads, causing irreparable damage to the caliper.


Fig. K3

6. Carefully align the flats on the stainless steel brake hose end and insert it into the chassis bracket. (Fig. K4)
7. Remove the rubber cap from the steel brake line and screw the steel fitting into the stainless steel hose end installed in the previous step. Finger-tighten only. (Fig. K4)

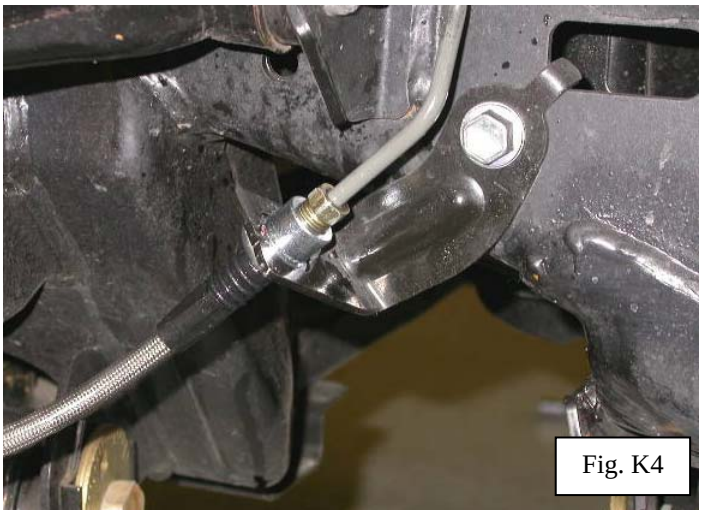
Fig. K4

8. Reinstall the brake line retaining clip. If needed, use a plastic mallet to tap the clip into place. (Fig. K5)


Fig. K5

9. Tighten the steel line fitting using a 10mm flare wrench. (Fig. K6)
10. Repeat Steps 2 through 9 for the opposite side brake hose installation.
11. Turn the steering wheel lock-to-lock and check both brake hoses for any binding and also clearance to all suspension components.
12. If necessary, adjust the hoses by loosening the banjo bolts on the calipers, and realigning the hoses, or by loosening the inboard end of the hoses and slightly re-clocking the fittings. After any adjustments, repeat Step 11.


Fig. K6

L. Bleed Brakes: EBS-20 System

1. If available, TRD recommends using an automated brake flush system such as the EBS-20 from Environmental Brake Services. If using the EBS-20 system (Fig. L1), then proceed to Step 2. If using the manual procedure, then proceed to Section M.

Fig. L1

2. The EBS-20 brake flush system is a self-contained machine, incorporating a brake fluid intake nozzle, a combined brake fluid fill/vacuum unit, four bleed screw adapters, a user control panel with display, and a receptacle which holds used brake fluid for later disposal (Fig. L2).

Fig. L2

3. Install a bottle of brake fluid in the receptacle located on the side of the EBS-20, taking care to ensure that the fill nozzle on the machine is inserted into the brake fluid bottle (Fig. L3).

Fig. L3

4. Place a protective cover over the vehicle's fender. Carefully remove the cap from the brake fluid reservoir. Install the two-part fill unit onto the mouth of the brake fluid reservoir, taking care to ensure that it snaps firmly into place (Fig. L4).


Fig. L4

5. Apply the locking mechanism over the fill unit, and tighten it down securely, using the incorporated chain (Fig. L5).

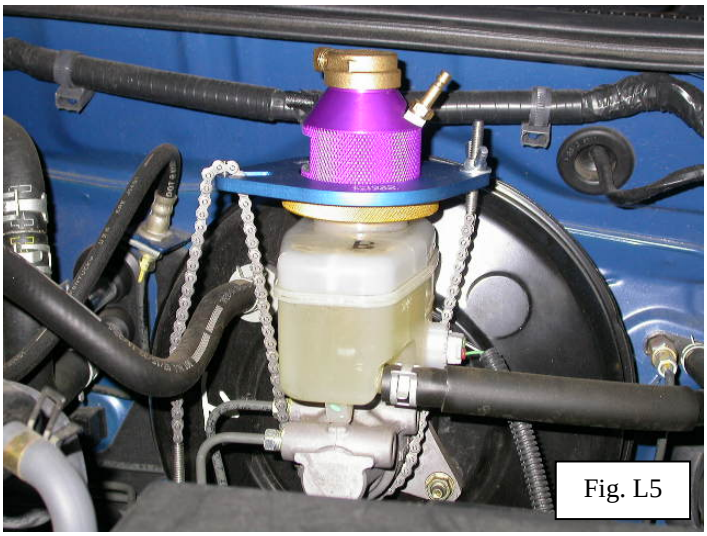
Fig. L5

6. Attach the fill/vacuum hose to the fill unit on the vehicle, taking care to ensure that the fitting clicks firmly into place (Fig L6).

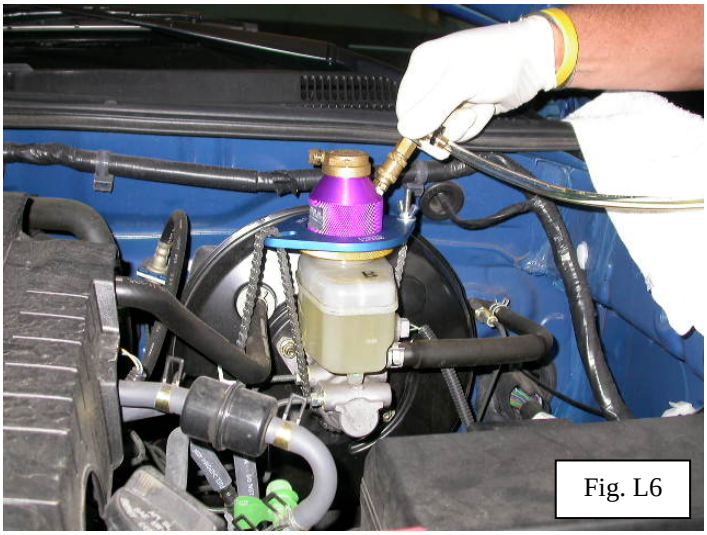
Fig. L6

7. The EBS-20 brake flush system incorporates two bleed screw adapters for each caliper, which fit snugly over the bleed screw nipples (Fig. L7).


Fig. L7

8. Loosen both bleed screws, using an 11mm combination wrench, then hand-tighten them again, to prevent fluid loss. Attach a pair of bleed screw adapters to the bleed screws on the caliper, then open each bleed screw 1/4 turn, using the open-end side of the 11mm combination wrench (Fig. L8).

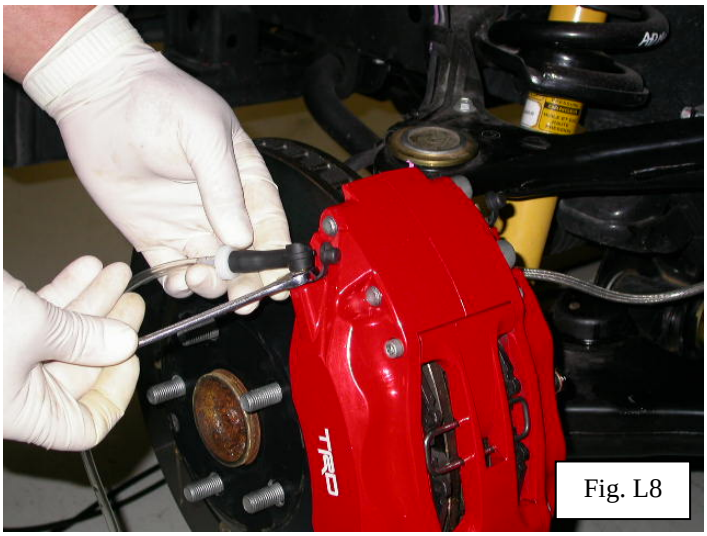

Fig. L8

9. Once the bleed screw adapters are securely in place, switch on the EBS-20 at the switch labeled POWER.

10. Press F2, and wait while fluid is pumped through the system, to fill the master cylinder. Once the EBS-20 system indicates that the master cylinder is full, press STOP.

11. Press START, to bring up the menu, and then press F3 to begin fluid exchange (Fig. L9).

Note: The brake fluid which flows out of the bleed screws will contain air bubbles.

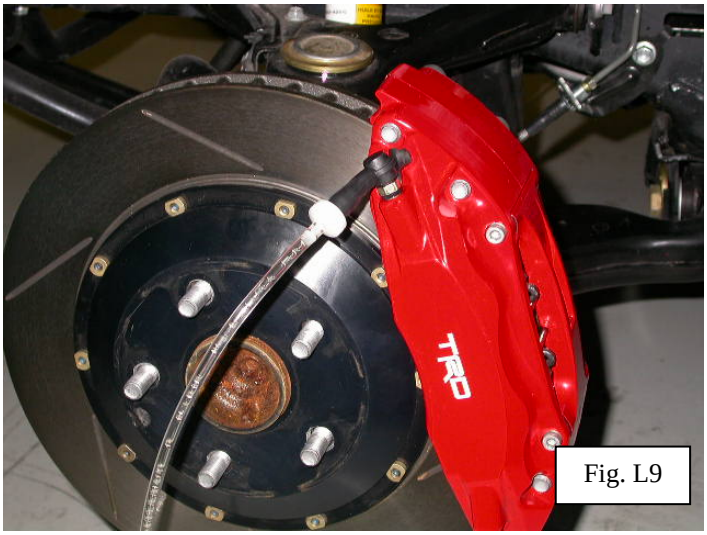

Fig. L9

12. After 30 seconds of brake fluid exchange with fluid flowing out of the bleed screws and through the clear tubing, tighten each bleed screw, and then press STOP (Fig L10).

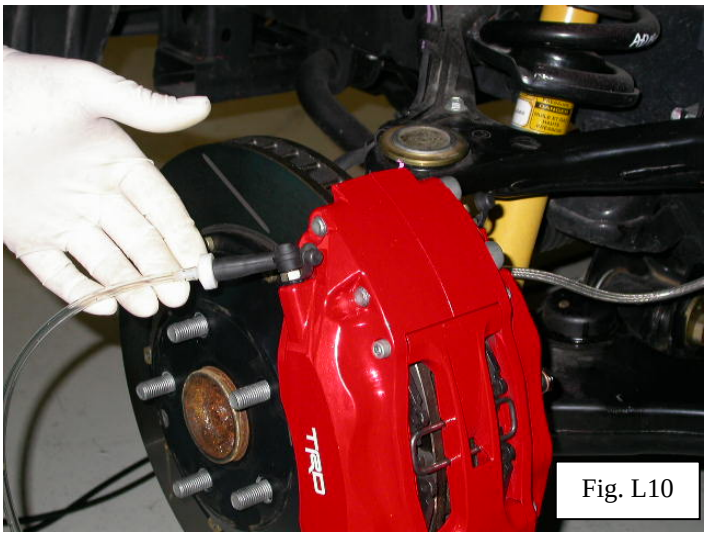

Fig. L10

13. Remove the bleed screw adapters, and then recheck each bleed screw, using an 11mm combination wrench, to ensure that it is fully closed (Fig L11).

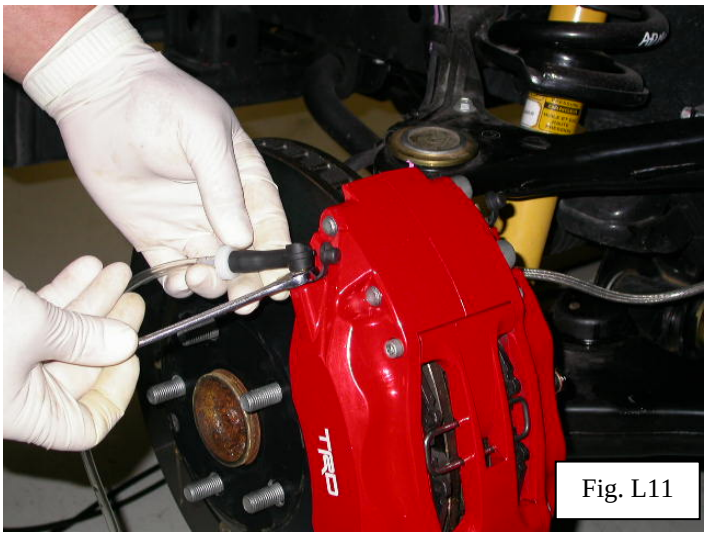

Fig. L11

14. Remove the fill/vacuum hose from the fill unit on the vehicle's brake fluid reservoir, using a cloth to catch any drips (Fig. L12).


Fig. L12

15. Remove the top portion of the fill unit from the mouth of the brake fluid reservoir.

16. If necessary, attach the EBS-20 suction trigger nozzle to the fill/vacuum hose, and press F1 to activate the system's vacuum function (Fig. L13).


Fig. L13

17. Use the nozzle to remove any brake fluid that is above the fill line maximum level indicated on the OE fluid reservoir (Fig. L14).


Fig. L14

18. Release the chain on the fill unit locking mechanism, and remove it, along with the bottom portion of the fill unit (Fig. L15).


Fig. L15

19. Replace the cover on the vehicle's brake fluid reservoir, taking care to ensure that it is snapped firmly in place.

M. Bleed Brakes: Manual Procedure

1. If the brakes were bled using an automated brake flush system in Section L, then proceed to Section N. If using the manual procedure, then proceed to Step 2.
2. Fill reservoir with brake fluid. Fluid: SAE J1703 or FMVSS No. 116 DOT3. (Fig. M2)
3. Remove rubber cap and connect clear vinyl tubing to **passenger** side **outboard** bleed screw. Use a small container on the opposite end of the tubing to catch any drained brake fluid.
4. Use an assistant to depress the brake pedal several times. With the pedal held down, use an 11mm wrench to loosen the bleed screw.
5. When the fluid stops coming out through the tubing, or the brake pedal is to the vehicle floor, tighten the bleed screw, then release the brake pedal.
6. If necessary, repeat Step 5 until a solid stream of fluid is coming out of the tubing.
7. Check master cylinder reservoir and add fluid if needed.

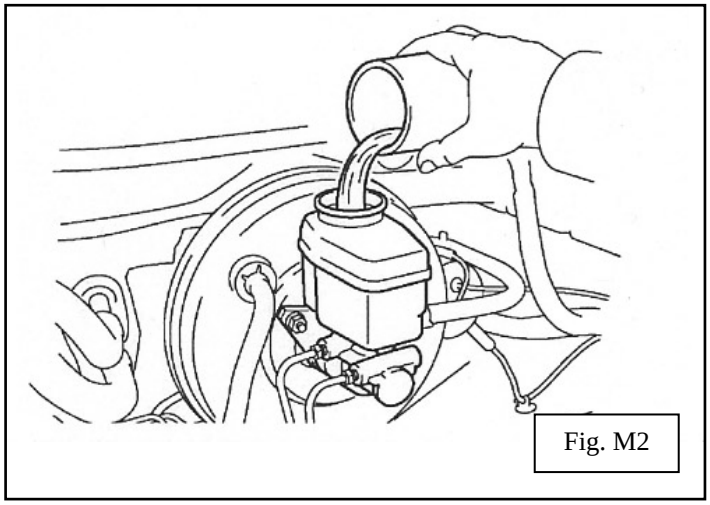

Fig. M2

Caution: DO not allow master cylinder reservoir to run dry and draw in air.

8. Connect the clear tubing to the **passenger** side **inboard** bleed screw, and repeat Steps 4 through 7.
9. Connect the clear tubing to the **driver** side **outboard** bleed screw, and repeat Steps 4 through 7.

10. Finally, connect the clear tubing to the **driver** side **inboard** bleed screw, and repeat Steps 4 through 7.

11. After bleeding the front brake system, gently tap the caliper body with a plastic mallet to dislodge any small air bubbles, and then perform Steps 3 through 10 again.

N. Clean Calipers

1. Remove any traces of brake fluid which may remain in the bleed screw nipples by spraying brake cleaner into each one, and using a cloth to wipe away any excess (Fig. N1).

Fig. N1

O. Check for Leaks

1. Have a second person depress brake pedal slowly 3-4 times and hold brake pedal down. Check for fluid leaks while the brake pedal is depressed. Check all connections at both ends of front brake hoses, and all bleed screws.

2. Cover all 4 bleed screws with the attached rubber caps.

P. Re-install Wheels

1. Reinstall the OE wheels.

2. Use an assistant to start vehicle engine, depress brake pedal and hold. Torque the lug nuts to 85 lbs.-ft.

3. If the OE wheels are not used, then see owner's document for the brake caliper template. The brake caliper template must be used to insure there is adequate clearance between new brake components and non-OE wheels and balancing weights.

Note: Both wheels should not rotate when the lug nuts are being torqued. If the wheel/s rotate, then re-check for fluid leaks. If no leaks

are found, remove wheels and repeat brake bleeding procedure.

Q. Lower Truck

1. Lower truck from lift or jack stands and apply brakes to ensure they are functioning properly before driving vehicle away.

R. Place Documents

1. Place break-in procedure tag on inside mirror, and owner's document in glove box.

S. Move Vehicle

1. Carefully move vehicle at low speed and apply brakes gently several times to ensure that all components are working correctly.

Warning: Do not drive vehicle and apply brakes aggressively until rotors have been properly bedded or broken-in.

Care and Maintenance

- Your brake calipers have a painted finish. Immediately clean off any spilled brake fluid, wiping it off with a soft, clean terry-cloth towel.
- Bedding-in rotors and pads is critical to the optimum performance of your new brakes. When bedding-in new parts, you are not only heat-cycling the pads, you are also depositing a layer of pad material onto the rotor face. If not bedded-in properly, an uneven layer of pad material will be deposited onto the rotor, causing vibration.

Section III: Audit Criteria

Check:	Look For:
Rotor preparation.	• Clean rotors without any rust inhibitor
Caliper bracket bolt torque.	• Bolt torque is 55 lbs.-ft.
Rotors installed on correct sides of vehicle.	• “L” rotor installed on driver side and “R” rotor installed on passenger side.
Caliper Jet nut torque.	• Jet nut torque is 40 lbs.-ft.
Banjo fitting gaskets.	• New Banjo fitting gaskets
Banjo fitting clocking.	• Banjo fitting orientation should be as shown in Fig K2.
Banjo bolt torque.	• Bolt torque is 14 lbs.-ft.
Brake line clearance.	• After securing the brake line, check the position to ensure the line is not binding or touching any moving part of the suspension. Adjust the line, if necessary, by re-clocking the inboard line fitting or the caliper-side connection.
Bleed screws.	• Bleed screws fully closed.
OE brake fluid reservoir.	• Brake fluid is at maximum fill line.
Banjo fitting gaskets, caliper assemblies, and stainless brake hose connection leaks.	• Check all components, to ensure that no brake fluid has leaked.
Wheel lug nuts.	• Wheel lug nut torque is 85 lbs.-ft.
Glove box and inside mirror.	• Owner’s document in glove box and break-in procedure tag installed on inside mirror bracket.