

Part Number: PTR13-34140

Kit Contents

Item #	Quantity Reqd.	Description
1	2	Spring/Shock Assembly, Front
2	2	Shock, Rear
3	1	Bracket, Speed Sensor Wire

Hardware Bag #1 Contents

Item #	Quantity Reqd.	Description
1	2	Flange Nut, M12 x 1.25
2	1	Flange Bolt, M8 x 1.25
3	1	Bracket, Speed Sensor Wire Harness Spacing

Additional Items Required For Installation

Item #	Quantity Reqd.	Description

General Applicability

4x4, 5.7L, Access and Crew Max Models

Conflicts

B-Cab Models and all 2WD Models

Recommended Sequence of Application

Item #	Accessory
1	TRD Suspension
2	TRD Skid Plate
3	TRD Dual Exhaust

*Mandatory







Recommended Tools

Personal & Vehicle Protection	Notes
Special Tools	Notes
Alignment Equipment	Turn plates needed
Paint Marker	To mark the alignment cam position
Scan Tool	Toyota
Installation Tools	Notes
3/8" Sockets	12mm, 14mm deep
1/2" Sockets	17mm, 19mm, 22mm & 24mm
Open-End Wrench	22mm, 27mm & 30mm
1/2" Crowfoot	18mm & 30mm
Ratchet	3/8" & 1/2"
Ratcheting Wrench	14mm, 17mm & 18mm
Adjustable wrench	6"-8" long
Screw Driver	Long Phillips #2
Torque Wrench	3/8" & 1/2" (40" long)
Air tools	NOTE: Do not use for final assembly
Special Chemicals	Notes

Vehicle Service Parts (may be required for reassembly)

Item #	Quantity Reqd.	Description

Legend

	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.
	CAUTION: A process that must be carefully observed in order to reduce the risk of damage to the accessory/vehicle and to ensure a quality installation.
	TOOLS & EQUIPMENT: Used in Figures calls out the specific tools and equipment recommended for this process.
	REVISION MARK: This mark highlights a change in installation with respect to previous issue.
	SAFETY TORQUE: This mark indicates that torque is related to safety.

Care must be taken when installing this accessory to ensure damage does not occur to the vehicle. The installation of this accessory should follow approved guidelines to ensure a quality installation.

These guidelines can be found in the "Accessory Installation Practices" document.

This document covers such items as:-

- Vehicle Protection (use of covers and blankets, cleaning chemicals, etc.).
- Safety (eye protection, rechecking torque procedure, etc.).
- Vehicle Disassembly/Reassembly (panel removal, part storage, etc.).
- Electrical Component Disassembly/Reassembly (battery disconnection, connector removal, etc.).

Please see your Toyota dealer for a copy of this document.

1. Remove the Front OE Spring/Shock Assemblies.

- (a) Cover the driver's seat for protection.
- (b) Place the vehicle in Park (AT) or in gear (MT).
- (c) Put a brake hold tool in place.
- (d) Raise the vehicle.
- (e) Remove the front wheels.
- (f) Use a 19mm socket to remove the bolt and disconnect the sway bar (Fig. 1-1). Retain the bolt for reinstallation.

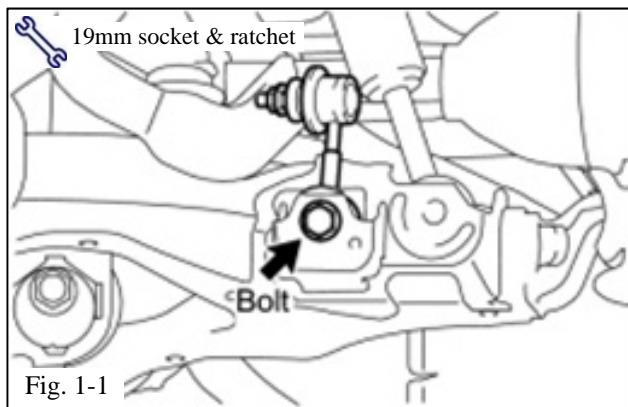


Fig. 1-1

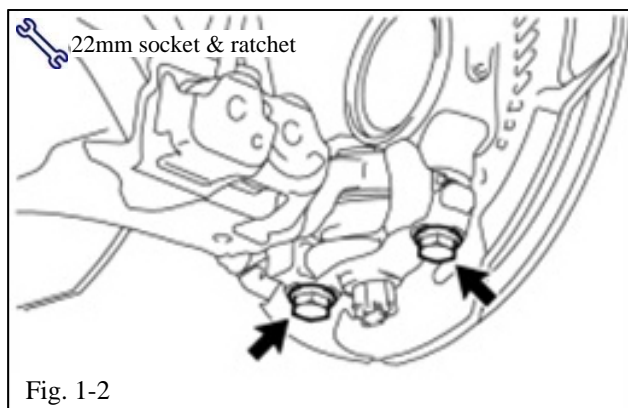
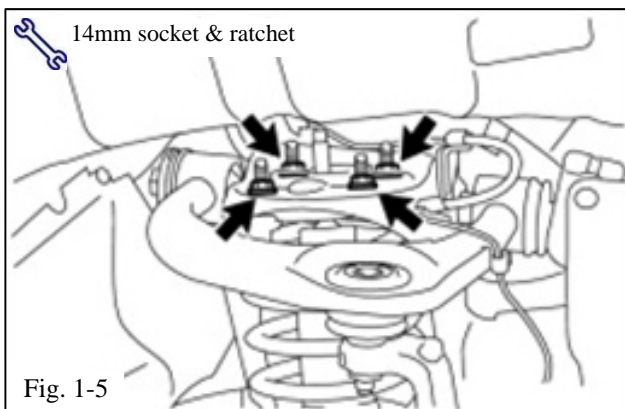
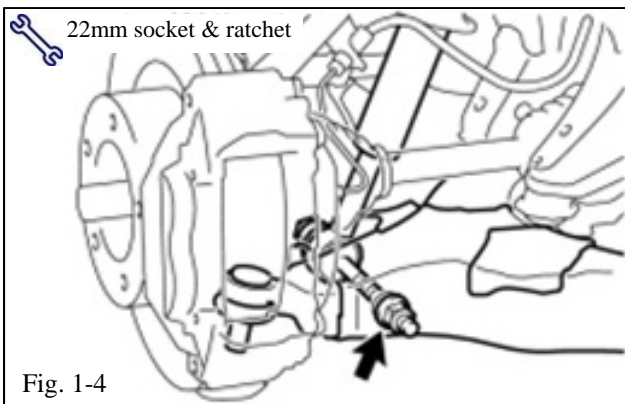
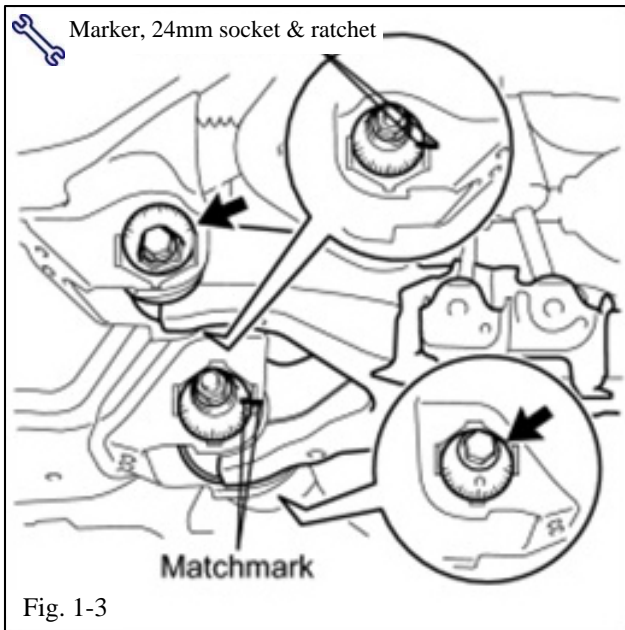


Fig. 1-2

- (g) Use a 22mm socket to remove the two bolts from the lower ball joint assembly (Fig. 1-2). Retain them for reinstallation.



⚠ (h) Place matchmarks on the front and rear lower alignment cams to indicate the original position before loosening them. This will provide a point of reference (Fig. 1-3).

(i) Use a 24mm socket to loosen (**do not remove**) the lower control arm cam bolts & nuts so the lower control arm can swing down freely later.

(1) At the front of the arm, loosen the bolt head facing forward.

(2) At the rear of the arm, loosen the nut facing rearward.

(j) Use a 22mm socket to remove the nut and bolt from the lower end of the shock assembly (Fig. 1-4). Retain them for reinstallation.

(k) Let the lower control arm swing down.

(l) Repeat Steps 1(f) through 1(k) for the other side of the vehicle.

(m) Rotate the sway bar downward to allow for more room to remove spring/shock assemblies.

(n) Use a 14mm socket to remove the four nuts on the upper side of the OE front shock absorber with coil spring assembly (Fig. 1-5).

(o) Support the weight of the assembly and carefully remove it from the vehicle.

⚠ CAUTION: Take care not to damage the axle CV boot or steering rack boot while removing the assembly.

(p) Repeat Steps 1(n) and 1(o) on the other side of the vehicle.

2. Install the TRD Front Spring/Shock Assemblies.

- (a) Identify left- and right-hand assemblies.
- (b) Lift the TRD spring/shock assembly into place and install the four nuts onto the upper side of the front shock absorber with coil spring assembly (Fig. 2-1).

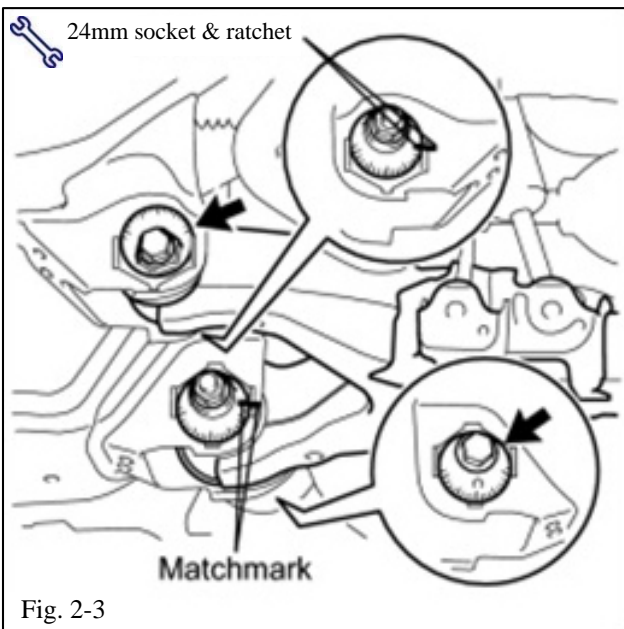
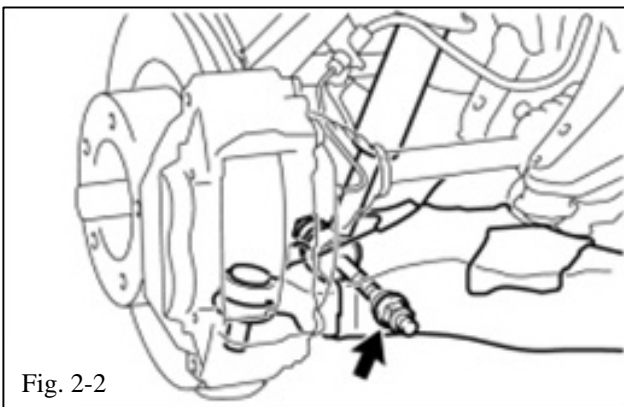
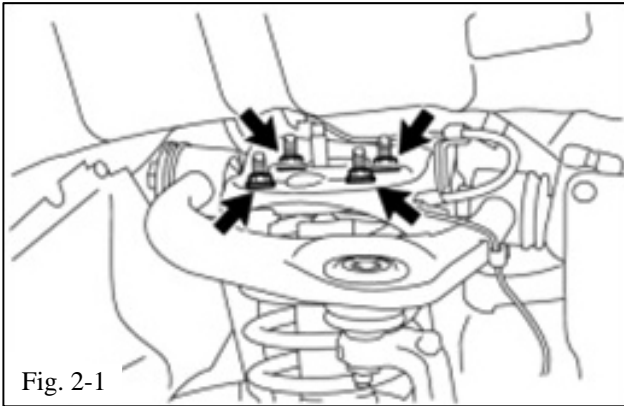
NOTE: Only hand tighten the nuts at this time.

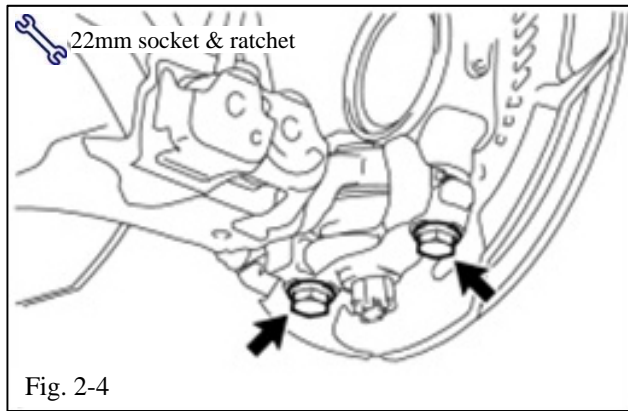
- (c) Raise the sway bar up above the lower control arm so that the sway bar can be attached later.

- (d) Raise the lower control arm into position and attach the lower spring/shock assembly nut & bolt (Fig. 2-2).

NOTE: Hand tighten for moving the vehicle to alignment.

- (e) Align the adjustment cams to the marks made in Step 1(h) (Fig. 2-3).
- (f) Use a 24mm socket to temporarily tighten the lower control arm bolts (Fig. 2-4). Snug with a ratchet is fine until alignment.

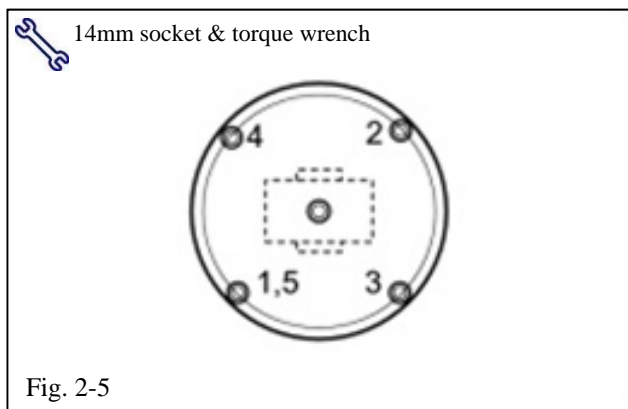




- (g) Use a 22mm socket and extension to install and torque the front lower ball joint attachment to the steering knuckle (Fig. 2-4).

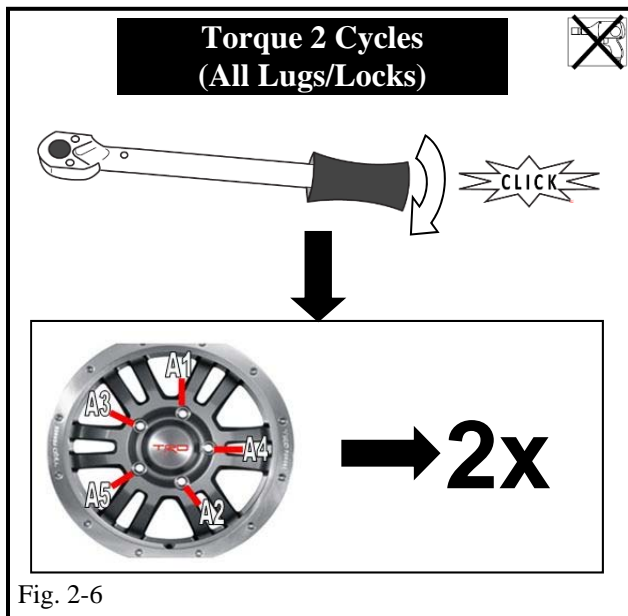
STOP **WARNING:** You **MUST** hand start these bolts.
HINT: Push down on the upper control arm with a covered pry tool.

S **Torque: 300 N·m (3059 kgf·cm, 221 ft·lbf)**



- (h) Tighten the four upper shock assembly nuts in a crisscross fashion (Fig.2-5).

S **Torque: 45 N·m (459 kgf·cm, 33 ft·lbf)**



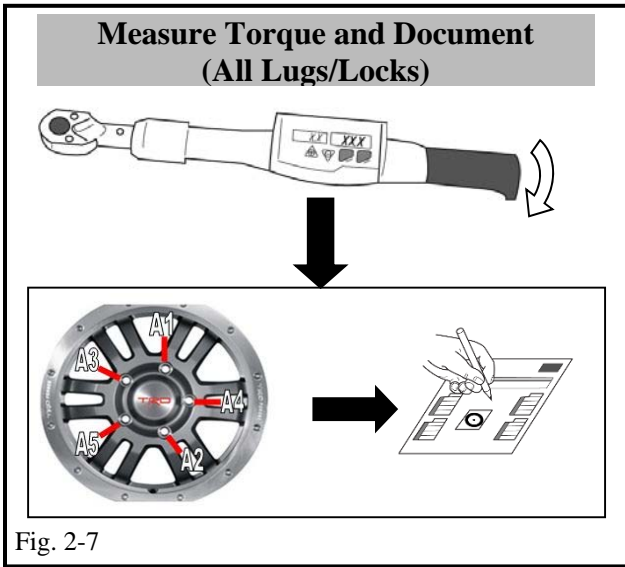
- (i) Install the front wheel/tire assemblies onto the vehicle. Hand start the lug nuts during installation. Tighten the lug nuts in sequence 1 through 6 or equivalent star pattern (Fig. 2-5). Ensure that the socket does not scuff the wheels. Tighten to 131 N·m (97 ft·lbf) using a torque wrench.

S **Torque: 131 N·m (1336 kgf·cm, 97 ft·lbf)**

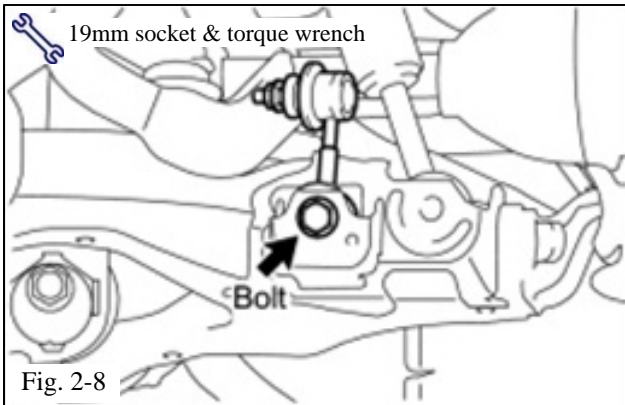
- (j) Re-torque all lug nuts in the same 1-5 sequence (Fig. 2-5).

S **Torque: 131 N·m (1336 kgf·cm, 97 ft·lbf)**

STOP **CAUTION: DO NOT USE AN IMPACT WRENCH TO INSTALL OR REMOVE WHEEL LOCKS.**
!



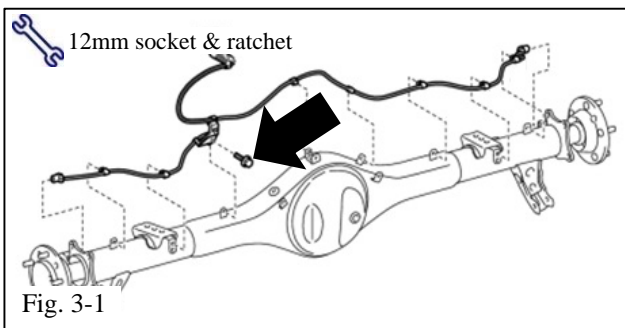
- (k) With the vehicle still on the lift, use a digital torque wrench to measure the torque of each lug nut/lock and record it on the Torque Audit Sheet (Fig. 2-7). (PPO installation only. Does not apply to DIO installation).
- (l) Lower the vehicle so it is sitting on the ground.



- (m) Fasten the sway bar end links to the lower control arm (Fig. 2-8).

|| S Torque: 120 N•m (1224 kgf•cm, 89 ft•lbf)

3. Install the Speed Sensor Wire Harness Spacer.



- (a) Remove the bolt fastening the speed sensor wire harness bracket to the axle housing (Arrow, Fig. 3-1).



- (b) Use the factory bolt to install the spacing bracket (Fig. 3-2).

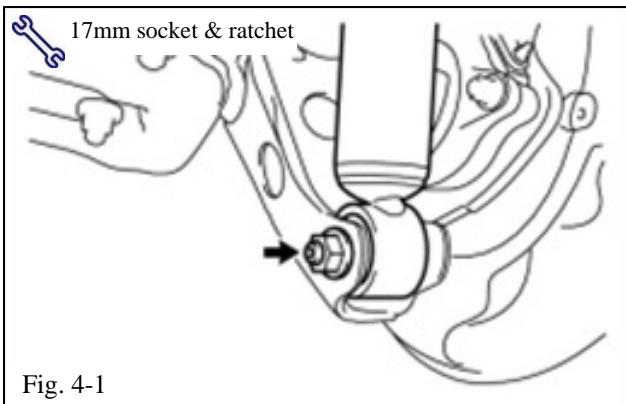
Torque: 13 N•m (127 kgf•cm, 81 in•lbf)

- (c) Attach the speed sensor wire harness bracket to the spacing bracket with the provided bolt (Fig. 3-2).

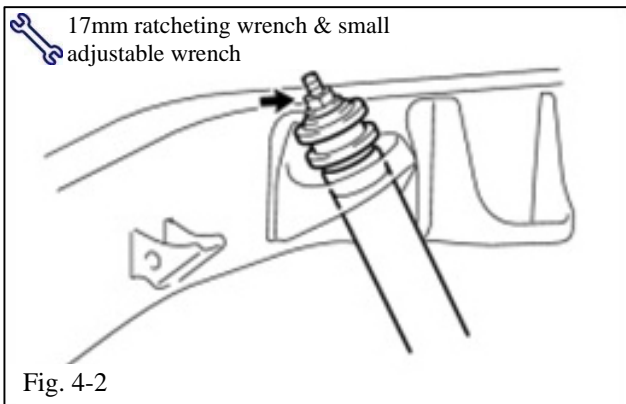
Torque: 13 N•m (127 kgf•cm, 81 in•lbf)

4. Remove the Rear OE shocks.

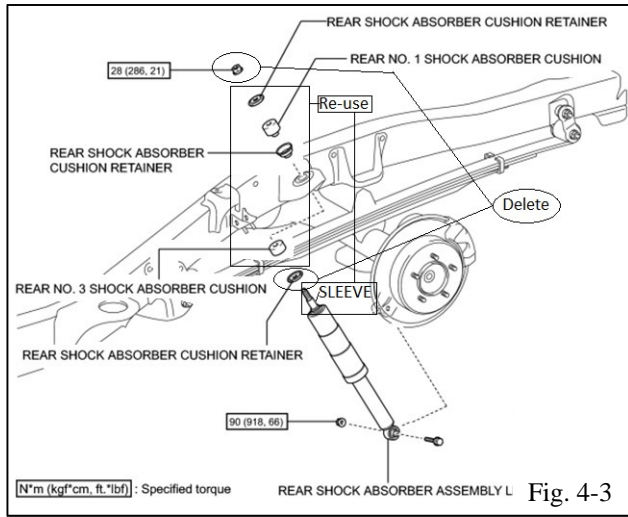
- (a) Remove the rear wheels.
- (b) Support the rear axle housing using a tall stand or a floor jack if working low to the ground.
- (c) Use a 17mm socket to remove the lower shock absorber nut and bolt (Fig. 4-1). Retain the nut and bolt for reinstallation.



- (d) Use a 17mm ratcheting wrench to remove the nut while keeping the piston rod from rotating with an adjustable wrench (Fig. 4-2).



- (e) Remove the nut, retainer, No. 1 cushion, cushion retainer and shock absorber.

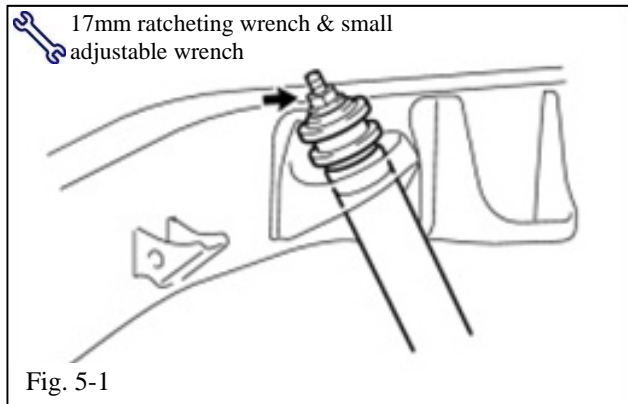


- (f) Remove the lower retainer, No. 3 cushion and sleeve from the shock absorber (Fig. 4-3).
- (g) Discard the nut and shock absorber.
- (h) The cushion and sleeve will be reused.

5. Install the TRD Rear Shock Absorbers.

- (a) Place the lower retainer and No. 3 cushion onto the TRD rear shock absorber.
- (b) Use the supplied nut to install the TRD rear shock absorber (Fig. 5-1).

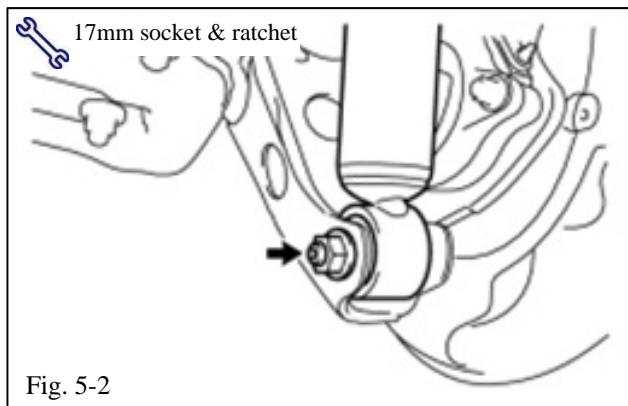
NOTE: Only hand tighten the nut at this time.



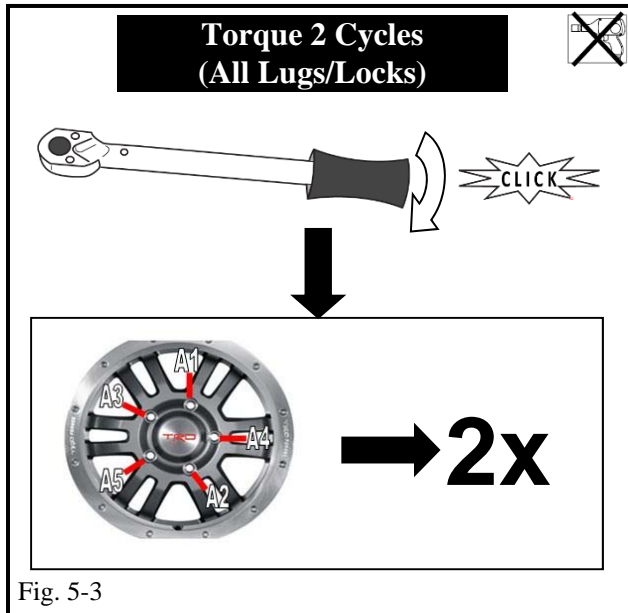
- (c) Reuse the factory nut and bolt to fasten the TRD rear shock absorber to the truck axle housing (Fig. 5-2).

NOTE: Only hand tighten the nut at this time.

- (d) Confirm stepped upper retainer is seated squarely in the frame opening.
- (e) Torque upper shock nut (Fig. 5-1).



S Torque: 28 N•m (286 kgf•cm, 21 ft•lbf)



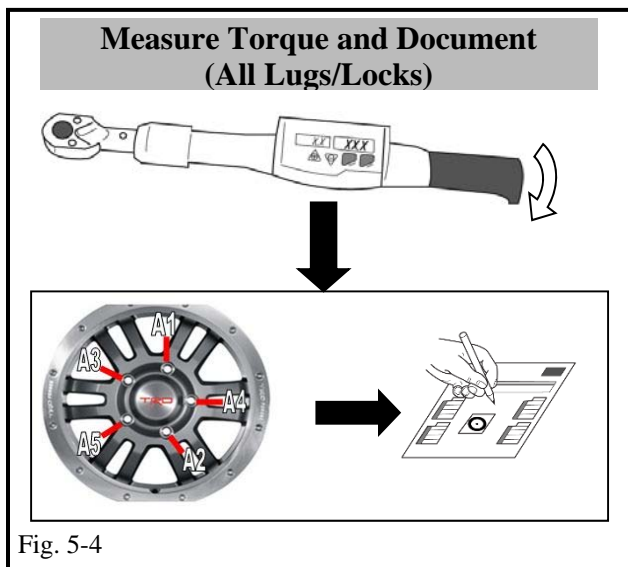
- (f) Install the rear wheel/tire assemblies onto the vehicle. Hand start the lug nuts during installation. Tighten the lug nuts in sequence 1 through 6 or equivalent star pattern (Fig. 5-3). Ensure that the socket does not scuff the wheels. Tighten to 131 N·m (97 ft·lbf) using a torque wrench.

S **Torque: 131 N·m (1336 kgf·cm, 97 ft·lbf)**

- (g) Re-torque all lug nuts in the same 1-6 sequence (Fig. 6-10).

S **Torque: 131 N·m (1336 kgf·cm, 97 ft·lbf)**

STOP **CAUTION: DO NOT USE AN IMPACT WRENCH TO INSTALL OR REMOVE WHEEL LOCKS.**



- (h) With the vehicle still on the lift, use a digital torque wrench to measure the torque of each lug nut/lock and record it on the Torque Audit Sheet (Fig. 5-4). (PPO installation only. Does not apply to DIO installation).

Total Toe:
0°16' +/-10' (0.262° +/-0.16°)
3.74 +/-2.0 mm (0.15 +/-0.08
in.)
Camber:
0°15' +/-45' (0.25° +/-0.75°)
Caster:
2°39' +/-45' (2.65° +/-0.75°)
Cross Camber and Caster:
30' (0.50°) or less

6. Adjust the Wheel Alignment.

(a) Place the vehicle on an alignment lift and stop the vehicle with the front tires placed on the turn plates. Leave the vehicle shifter in the “Neutral” position.

+ (b) Place tire chocks in front and behind the driver’s side rear tire.

(c) Raise the vehicle to ideal height and lower the lift onto stops.

! **NOTE:** This step is critical to confirm vehicle is level.

(d) Place the laser reflector heads onto the wheel tire assemblies.

(e) Select the appropriate vehicle from the menu.

(f) Perform the calibration procedure as instructed by the screen.

(g) Be sure the turn plates are free to move.

! (h) Install a brake hold tool.

(i) Perform Caster reading procedure as instructed by the computer (Fig. 6-1).

(j) Adjust the lower control arm cams to get the camber and caster alignment settings centered (Fig. 6-2).

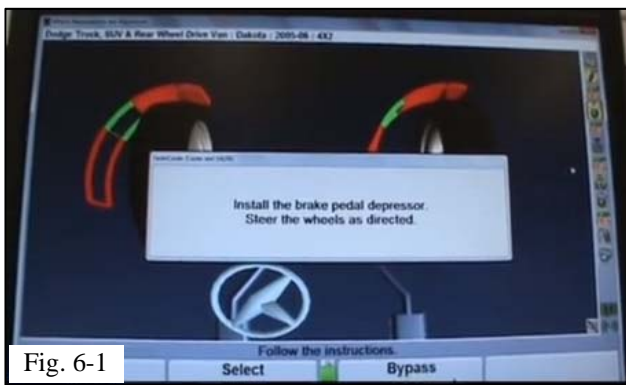


Fig. 6-1

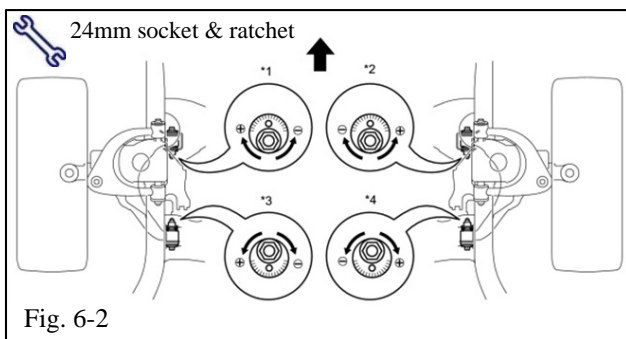
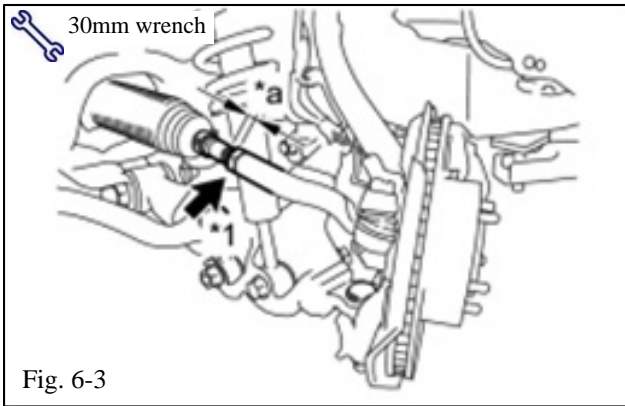


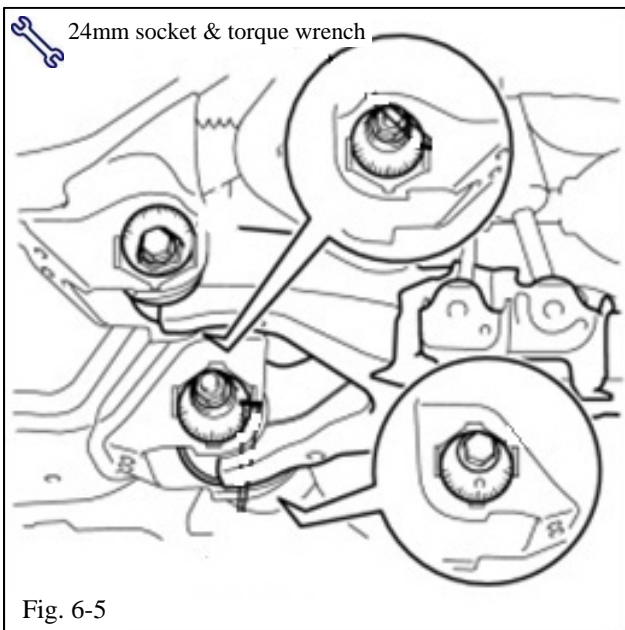
Fig. 6-2



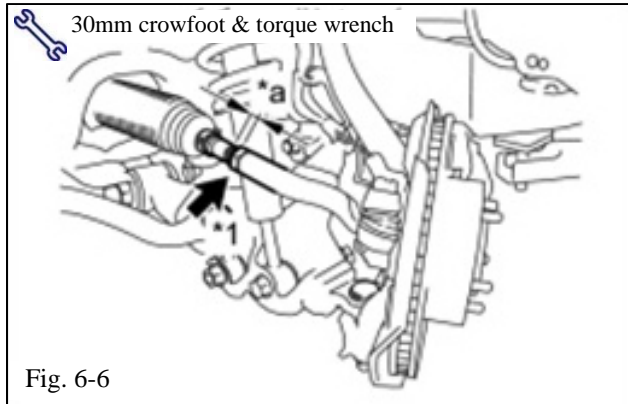
- (k) Loosen tie rod lock nuts and roughly adjust the toe settings (Fig. 6-3).
- (l) Recheck the caster measurements by following the procedure as instructed on the screen.
- (m) Start the engine.



- (n) Center the steering wheel and install a steering wheel lock (Fig. 6-4).
- (o) Turn the engine off.
- (p) Make any final Caster/Camber adjustments as necessary.



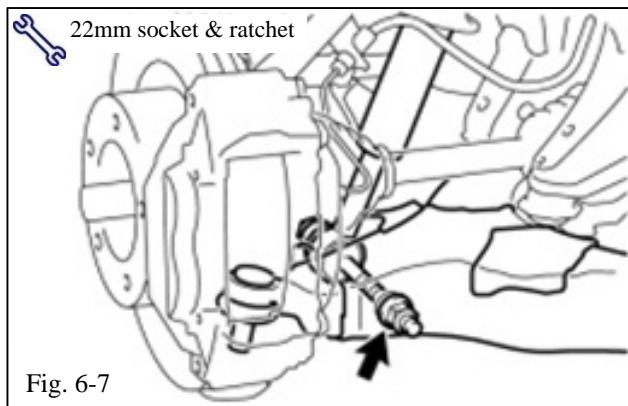
- (q) Tighten the lower control arm bolts (Fig. 6-5).
- ⚠ Torque: 280 N•m (2855 kgf•cm, 207ft•lbf)**
- (r) Perform a final toe adjustment.



(s) Tighten the tie rod end lock nuts (Fig. 6-6).

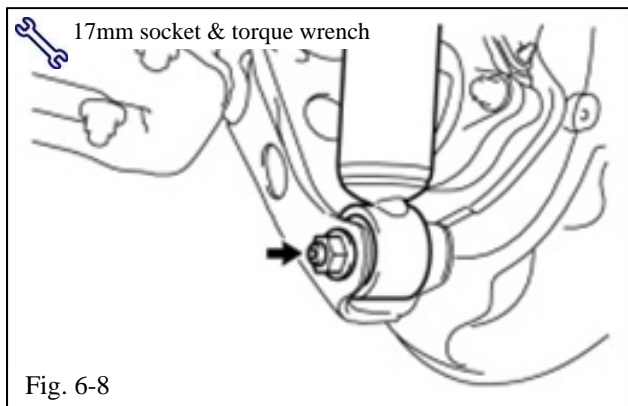
NOTE: If a crowfoot is used on a standard torque wrench, turn the crowfoot 90° to the lever arm of the torque wrench and use the torque value below.

⚠ Torque: 82 N•m (836 kgf•cm, 60ft•lbf)



(t) Tighten the front lower shock nuts.

⚠ Torque: 195 N•m (1988 kgf•cm, 144ft•lbf)



(u) Tighten the rear lower shock nuts (Fig. 6-8).

⚠ Torque: 90 N•m (918 kgf•cm, 66ft•lbf)

(v) Remove the alignment heads from the wheel assemblies and return them to a safe location.

+ (w) Roll the vehicle back and chock the tires.

(x) Fix the turn plates in place.

7. Clear the Zero Point Calibration Data (Using Techstream).




(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Turn the Techstream on.

- (d) Select the skid control ECU to clear the zero point calibration data using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / Reset Memory

8. Perform a Zero Point Calibration of the Master Cylinder Pressure Sensor and Deceleration Sensor (Using Techstream).

-  • While obtaining the zero point, do not vibrate the vehicle by tilting, moving or shaking it and keep it stationary. (Do not start the engine.)
-  • While obtaining the zero point, do not depress the brake or accelerator pedal.
-  • Obtain the zero point on a level surface (with an inclination of 1° or less).

- (a) Enter the Test Mode.
- (1) Turn the ignition switch off.
 - (2) Check that the shift lever is in neutral.
 - (3) Turn the ignition switch on. DO NOT START ENGINE.
 - (4) Select the skid control ECU to Test Mode using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / Test Mode.

(b) Obtain the zero points of the master cylinder pressure sensor and deceleration sensor.

(1) Keep the vehicle stationary on a level surface for 1 second or more.

HINT:

- The zero point calibration is performed only once after the system enters test mode.
- Calibration cannot be performed again until the stored data is cleared once. See the vehicle repair manual for instructions to clear stored data (using a jumper wire at the OBD connector).

(2) Check that DTC C1336 is erased.

(3) Turn the ignition switch off.

9. Adjust the Vertical Headlamp Aim.

(a) Prepare the vehicle in accordance with the following conditions (Fig. 9-1):

(1) Place the vehicle in a location that is dark enough to clearly observe the cutoff line. The cutoff line is a distinct line, below which light from the headlights can be observed and above which it cannot.

(2) Place the vehicle at a 90° angle to the wall.

(3) Keep a 3 m (9.84 ft) distance between the center of the headlight bulb and the wall.

(4) Place the vehicle on a level surface.

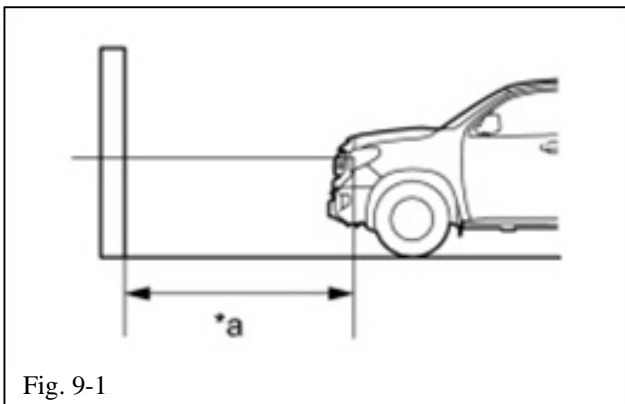


Fig. 9-1

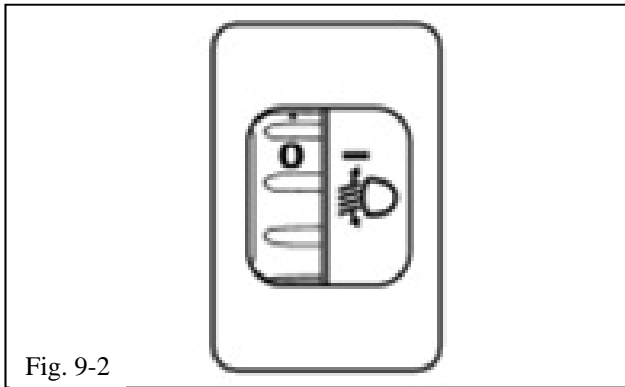


Fig. 9-2

- (5) If equipped, set the headlight leveling switch dial to 0 (Fig. 9-2).
- (6) Measure the height to the center mark on the headlight lens. This is your H Line height.
- (7) Mark this height on the wall in front of the vehicle (ex: use masking tape).

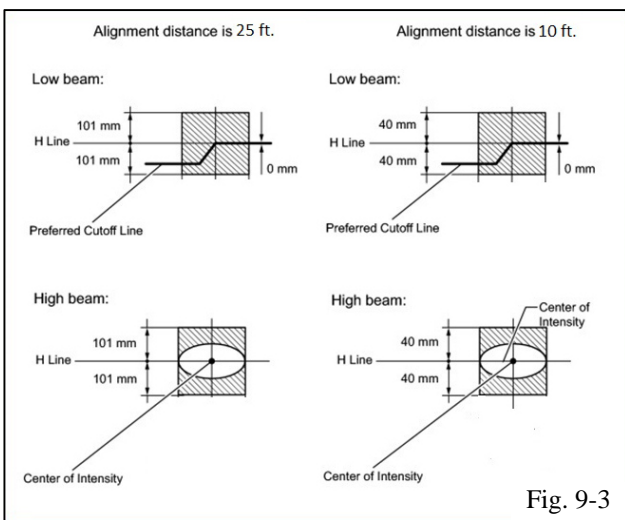


Fig. 9-3

- (b) Adjust the vertical aim of the lamps (Fig. 9-3).
- (1) Cover the headlight on the opposite side to prevent light from the headlight not being adjusted from affecting the headlight aiming process.

STOP NOTICE: Do not keep the headlight covered for more than 3 minutes. The headlight cover can be damaged due to high heat.

- (2) Turn on the headlamps.

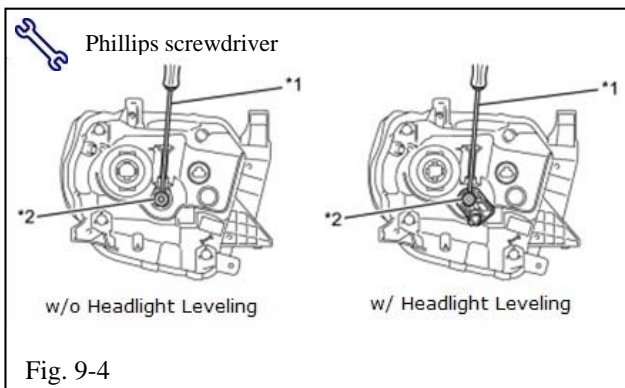


Fig. 9-4

- (3) Adjust the headlight aim to within the specified range by turning aiming screw “*2” with a screwdriver (Fig 9-4).

NOTE: The final turn with the screwdriver should be in the clockwise direction. If you pass the correct adjustment point, loosen the screw and then retighten it, so that the final turn of the screw is in the clockwise direction.

NOTE: Since the low-beam light and the high-beam light are a unit, if the aim on one is correct, the other should be correct. The high-beam should only need verification and no adjustment, but check and adjust if necessary.

Checklist - these points **MUST** be checked to ensure a quality installation.

Check:	Look For:
<p><u>Accessory Function Checks</u></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	
<p><u>Vehicle Function Checks</u></p> <p><input type="checkbox"/> Check the steering wheel.</p> <p><input type="checkbox"/> Verify the headlight aim.</p> <p><input type="checkbox"/> Check the VSC warning light on the dash .</p>	<p>The steering wheel should be straight.</p> <p>The headlight aim should be in spec.</p> <p>The VSC warning light on the dash should be off when the engine is running.</p>
<p><u>Vehicle Appearance Check</u></p> <p><input type="checkbox"/> After accessory installation and removal of protective cover(s), perform a visual inspection.</p>	<p>Ensure no damage (including scuffs and scratches) was caused during the installation process. (For PPO installations, refer to TMS Accessory Quality Shipping Standard.)</p>