TOYOTA 4RUNNER 2021 – TRD SUSPENSION KIT

Preparation

Part Number: PTR61-89210

Kit Contents

Item #	Quantity Reqd.	Description
1	2	Coil / Shock Assembly, Front
2	2	Shock, Rear
3	2	Parking Brake Protector Bag

Hardware Bag #1 Contents

Item #	Quantity Reqd.	Description
1	2	Sleeve protector, black
2	2	Ø15 mm clamp, black
3	2	Ø15.9 mm clamp, gray

Hardware Bag #2 Contents

Item #	Quantity Reqd.	Description

Additional Items Required For Installation

Item #	Quantity Reqd.	Description

General Applicability

MY21 and newer 4Runner models

Conflicts

4Runner equipped with X-REAS and/or KDSS

Vehicle Service Parts (may be required for reassembly)

Item #	Quantity Reqd.	Description

Recommended Sequence of Application

Item #	Accessory
1	TRD Suspension
2	LED Fog Lamps (during suspension install)
3	TRD Wheel & Tire
4	Wheel Alignment
5	TRD Skid Plate

*Mandatory

Recommended Tools

Personal & Vehicle Protection	**Notes**
Special Tools	**Notes**
Alignment Equipment	Turn plates needed
Brake Pedal Depressor	Must NOT engage to steering wheel
Paint Marker	To mark the alignment cam position
Installation Tools	Notes
Sockets	**10mm, 11mm, 12mm, 14mm, 17mm, 19mm, 21mm & 22mm**
Ratchet	3/8” & 1/2”
Crowfoot	14mm, 22mm
Ratcheting Crowfoot	Blue-Point BFCRM14A
Wrench	19mm, ,21mm, 22mm
Ratcheting Wrench	14mm & 17mm
Adjustable Wrench	Regular & small
Torque Wrench	3/8” & 1/2"
Screw Driver	Long Phillips
Air tools	NOTE: Do not use for final assembly
Clip Removal Tool	
Tape	
Channel-lock Pliers	
Special Chemicals	Notes
-	-

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.

REGULATORY MARK: This mark indicates the component is related to regulatory compliance

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.

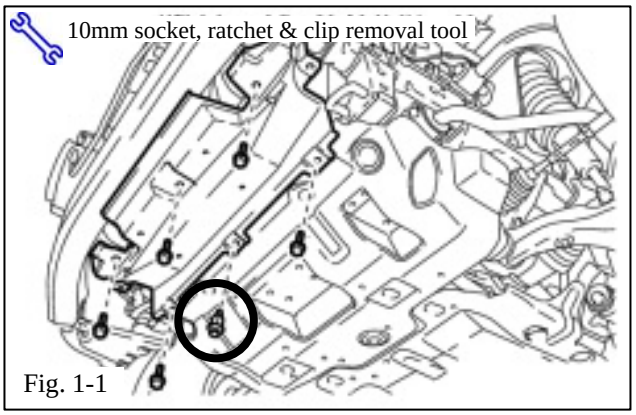

Fig. 1-1

1. Remove the Front OE Shock Assemblies.

(a) Place the vehicle in Park.

(b) If the DC cut fuse is installed and battery connected, place the vehicle ignition in the ACC ON position (engine not running) so that the wheels may steer freely.

(c) Put a brake pedal depressor tool in place.

NOTE: Do NOT use a brake pedal depressor which engages the steering wheel. The steering wheel must be free to turn for later steps.

(d) Raise the vehicle.

(e) Remove the front wheels.

(f) Remove the clip (circled), 5 bolts and the front lower bumper cover (Fig. 1-1).

(g) Use a 12mm socket to remove the four bolts from the engine under cover sub-assembly (Fig. 1-2). Remove the cover and retain it and the bolts for reinstallation.

NOTE: Dispose of the front lower bumper cover, engine under cover and fasteners **IF** working with a TRD PRO vehicle. They will not be reused and will be replaced with the TRD Skid Plate.

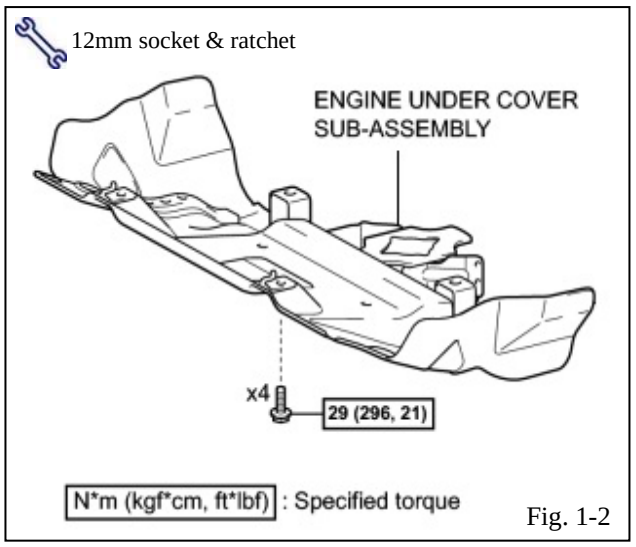

Fig. 1-2

(h) Remove the front shock absorber with coil spring assembly.

(1) Use a 19mm wrench and 19mm socket to remove the lower bolt, nut and washer (Fig. 1-3). Retain them for reinstallation.

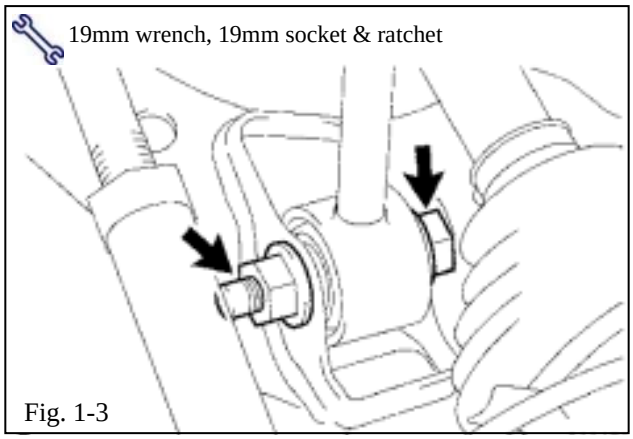

Fig. 1-3

HINT: Push down on the brake caliper slightly to allow the bolt to slide out.

(2) Use a 19mm socket to remove the two bolts from the lower ball joint assembly (Fig. 1-4). Retain them for reinstallation.

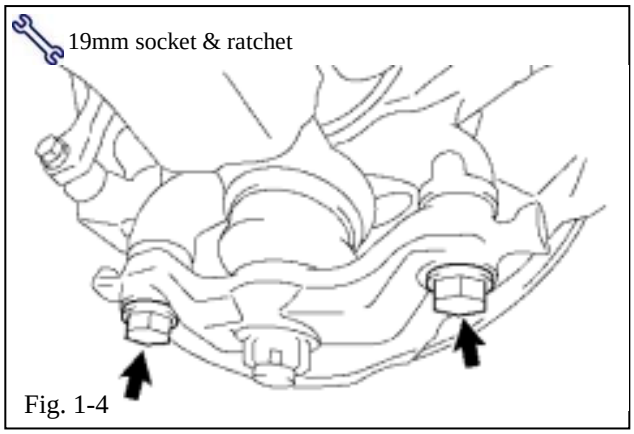

Fig. 1-4

NOTE: Do NOT use the anti-theft steering lock to resist loosening torque. If necessary, steer the hubs all the way to the full RH steering lock to break the lower ball joint bolts loose.

(3) Place matchmarks at the top of the front and rear alignment cams to indicate the original position before loosening them. This will provide a point of reference (Fig. 1-5).

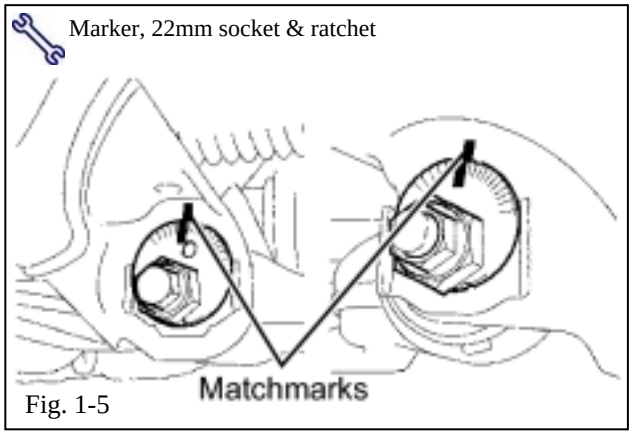

Fig. 1-5

(4) Use a 22mm socket to loosen (**do not remove**) the lower control arm cam bolts & nuts to allow the lower control arm to swing down freely.

NOTE: At the front of the arm, loosen the bolt head facing forward. At the rear of the arm, loosen the nut facing rearward.

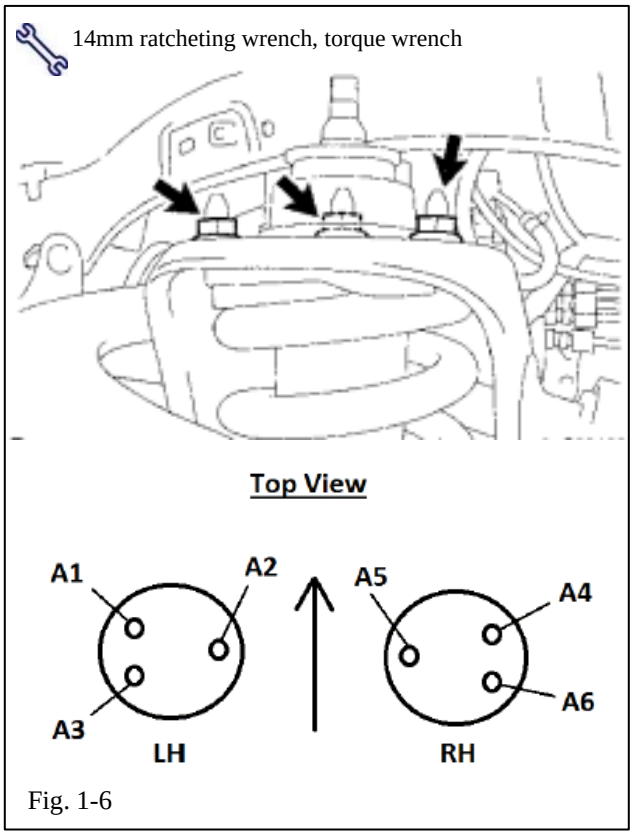

Fig. 1-6

(5) Use a 14mm ratcheting wrench to remove the three nuts on the upper side of the OE front shock absorber with coil spring assembly (Fig. 1-6). Remove the assembly from the vehicle.

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

2. Install the TRD Shock Absorber Assembly.

(a) With the bottom spring coil end to the outward side of the vehicle (Fig. 2-1), use a 14mm ratcheting wrench to temporarily install the three nuts onto the upper side of the front shock absorber with coil spring assembly (Fig. 1-6).

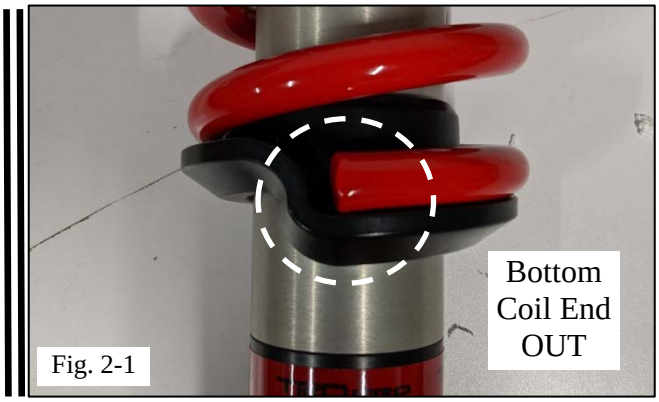

Fig. 2-1

Fig. 2-2

⚠ **NOTE:** The shock absorbers are labeled LF & RF on the bottom of the spring seat (Fig. 2-2). Ensure the proper unit is installed on the correct side of the vehicle.

(b) Align the lower shock mount to the lower control arm, then raise the lower control arm and assemble it to the lower shock mount.

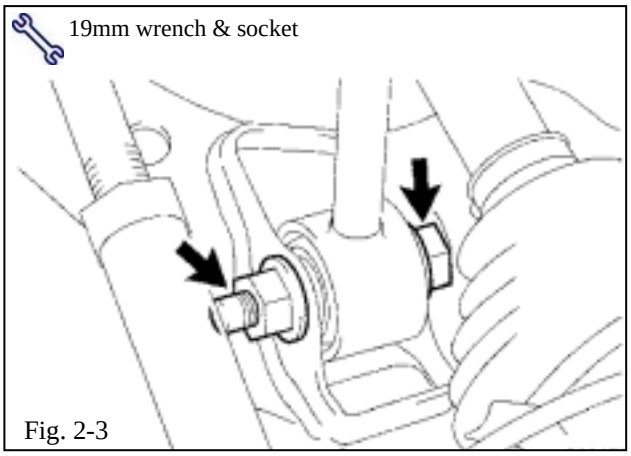

Fig. 2-3

(c) Use a 19mm wrench and a 19mm socket to temporarily tighten the lower bolt, nut and washer as shown in Fig. 2-3.

NOTE: Hand tighten for moving the vehicle to alignment.

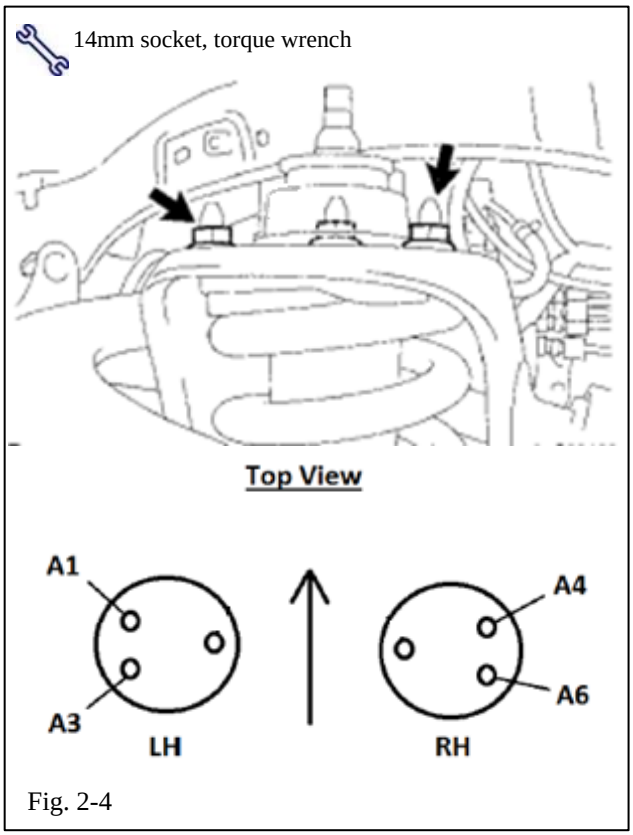

Fig. 2-4

(d) Use a 14mm socket to torque the two outboard nuts (LH: A1 & A3, RH: A4 & A6) on the upper side of the front shock absorber with coil spring assembly (Fig. 2-4).

Torque: 71 N·m (724 kgf·cm, 52 ft·lbf)

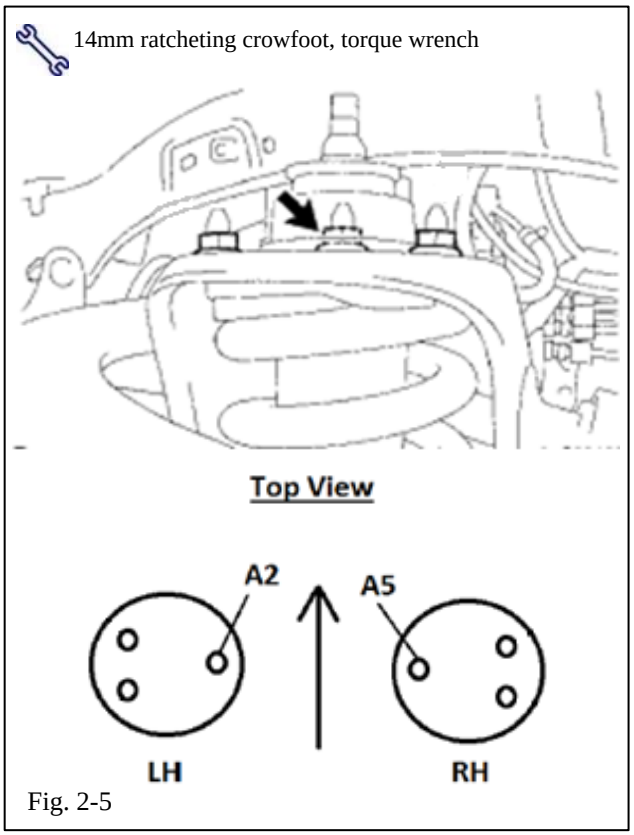

Fig. 2-5

(e) Use a ratcheting 14mm crowfoot adapter (Blue-Point part # BFCRM14A) to torque the inboard nut (LH: A2, RH: A5, Refer to Fig. 2-5).

Torque (w/ crowfoot): 65 N·m (663 kgf·cm, 48 ft·lbf)

Fig. 2-6

NOTE: Position the adapter at the angle shown relative to the torque wrench head (~10:00-11:00 o'clock position, Fig. 2-6).

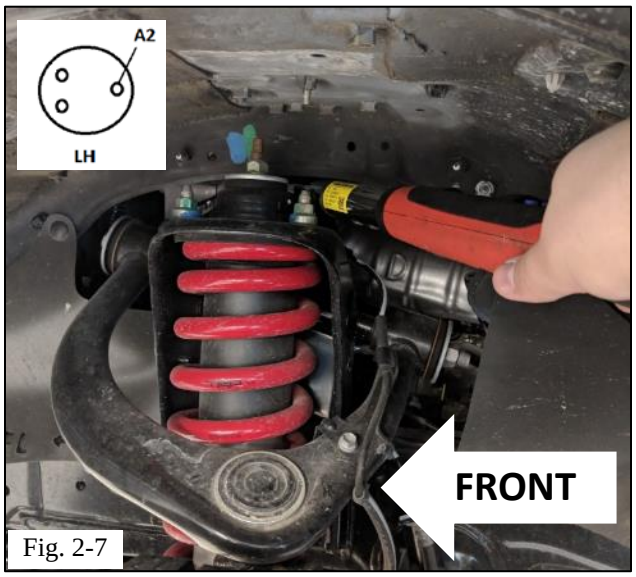

Fig. 2-7

⚠ **NOTE:** For LH side (nut A2), the torque wrench should pass the shock top toward the REAR of the vehicle (Fig. 2-7).

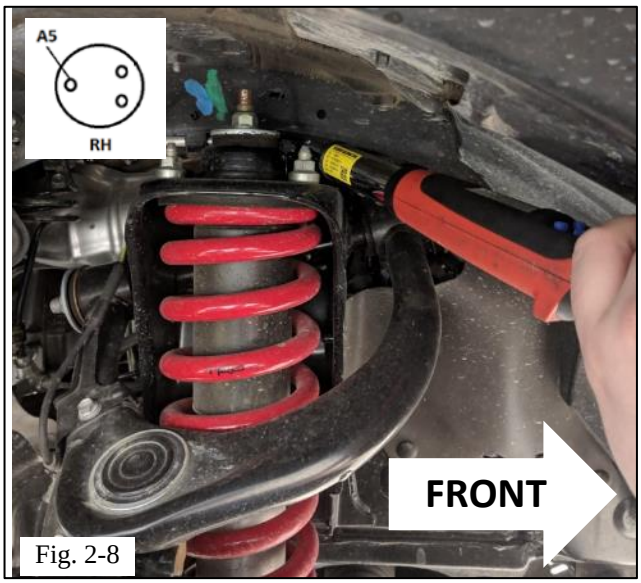

Fig. 2-8

⚠ **NOTE:** For RH side (nut A5), the torque wrench should pass the shock top toward the FRONT of the vehicle (Fig. 2-8).

(f) Push down on the steering knuckle so that it aligns with the lower ball joint assembly.

(g) Use a 19mm socket to install and torque the front lower ball joint attachment with the two bolts (Fig. 2-9).

WARNING: You **MUST** hand start these bolts before using an air tool.

Torque: 160 N·m (1631 kgf·cm, 118 ft·lbf)

NOTE: Do NOT use the anti-theft steering lock to resist tightening torque. If necessary, steer the hubs all the way to the full LH steering lock to to tighten the lower ball joint bolts and perform torque audit.

19mm socket & torque wrench

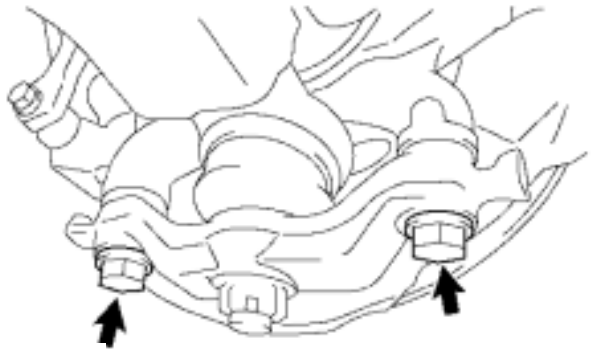

Fig. 2-9

(h) Align the adjustment cams to the marks made in Step 1(g)(3) (Fig. 2-10).

(i) Use a 22mm socket to temporarily tighten the lower control arm bolts (Fig. 2-10). Snug with a ratchet is acceptable until alignment.

22mm socket & ratchet

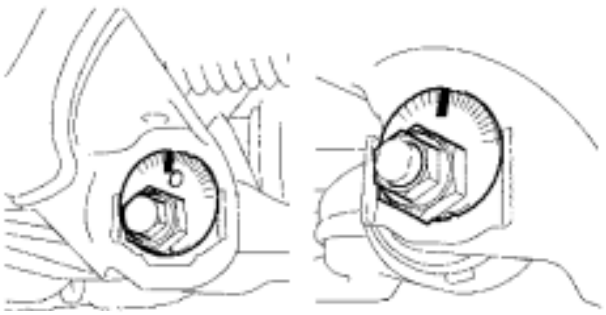

Fig. 2-10

(j) Increase clearance of front speed sensor wire harness by loosening the bolt (Fig. 2-11) and rotating the top of the wire harness bracket outward, towards the wheel hub.

10mm socket & ratchet

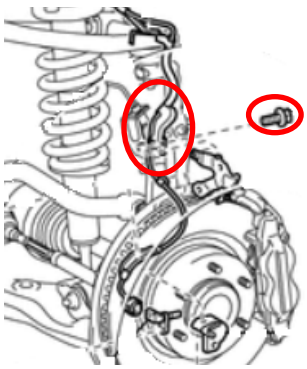

Fig. 2-11

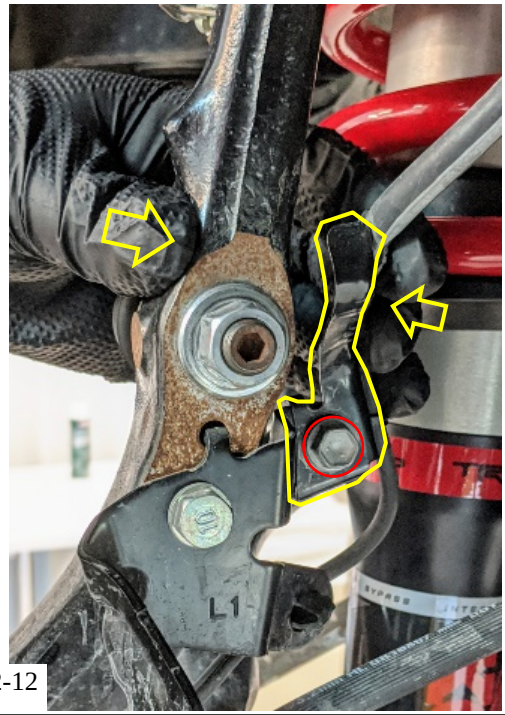

Fig. 2-12

(k) While pinching the bracket towards the knuckle (Fig. 2-12), tighten the bolt to secure the bracket's position.

Torque: 13 N·m (127 kgf·cm, 9 ft·lbf)

(l) Repeat steps 2(b)-(k) for the opposite side.

(m) Install the front TRD Pro* wheel/tire assemblies onto the vehicle. Refer to latest installation instruction for 4Runner TRD Alloy Wheels.

***NOTE**: If utilizing alignment equipment with wheel rim clamps, reinstall original wheels. See page 13 for additional info.

CAUTION: Do not use an impact wrench to install or remove wheel locks.

CAUTION: Proper tightening sequence must be followed and torque audit for all wheel fasteners **MUST** be performed and recorded per wheel installation instructions.

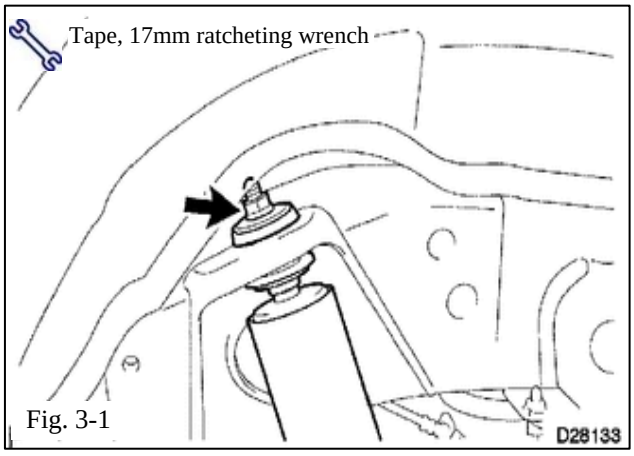

Fig. 3-1

3. Remove the Rear OE shocks.

(a) Support the rear axle housing using a tall stand or a floor jack if working low to the ground.

(b) Apply tape to the nearby body flange and use a 17mm ratcheting wrench to remove the nut. If the shock rod spins, the hard dust cover may be gripped with gloves or a strap wrench (Fig. 3-1).

(c) Remove the nut and upper cushion.

(1) Retain the upper cushion.

(2) Discard the upper nut. The nut will not be reused.

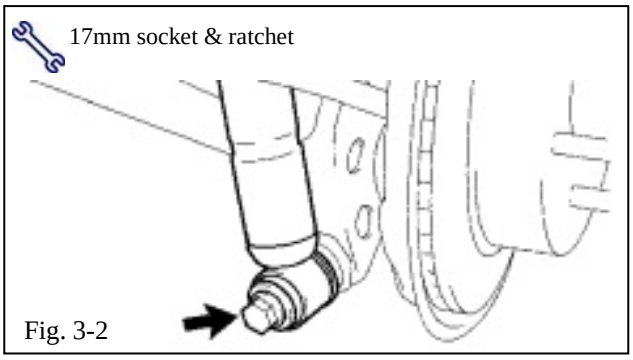

Fig. 3-2

(d) Use a 17mm socket to remove the lower shock absorber bolt and separate the shock absorber (Fig. 3-2).

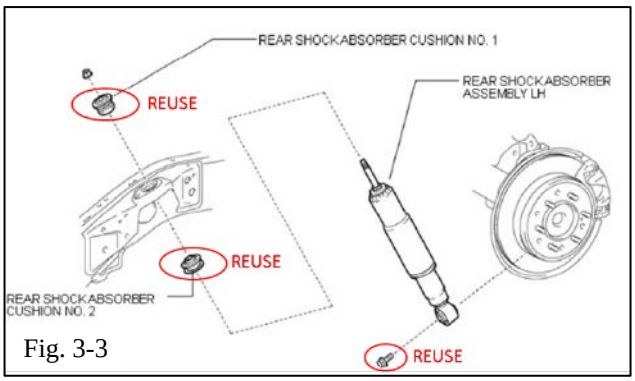

Fig. 3-3

(e) Retain the top cushion (No.1), lower cushion (No.2) and lower bolt (Fig. 3-3).

(f) Discard the top nut and shock absorber.

NOTE: Remove BOTH OE rear shock absorbers before beginning TRD rear shock install to allow adequate clearance.

4. Install the Parking Brake Cable Protectors.

(a) Wrap protector sleeve onto the parking brake cable. To locate the sleeve position, align the end of the sleeve with the end of the rubber parking brake cable sheathing towards the brake end of the cable (Fig. 4-1).

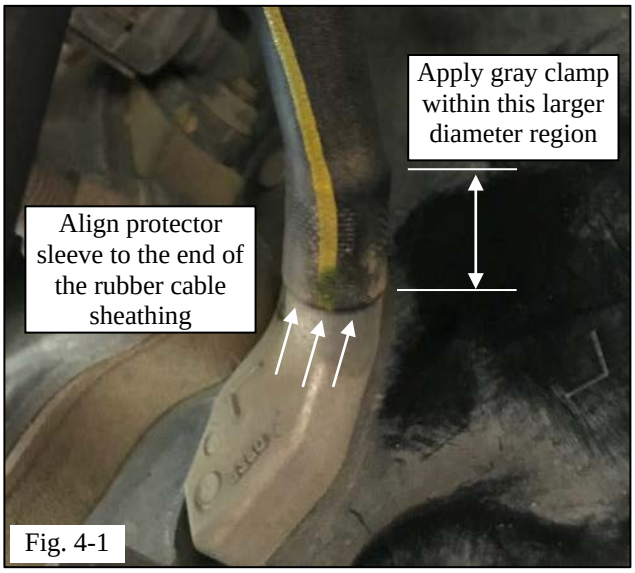

Fig. 4-1

(b) Ensure the seam opening is facing vehicle forwards (Fig. 4-2).

(c) Install the protector sleeve clamps:

(1) Install the **gray clamp** onto the brake-side portion of the sleeve (Fig. 4-1 – Fig. 4-2). Ensure the gray clamp is on the rubber-over-aluminum portion of the cable.

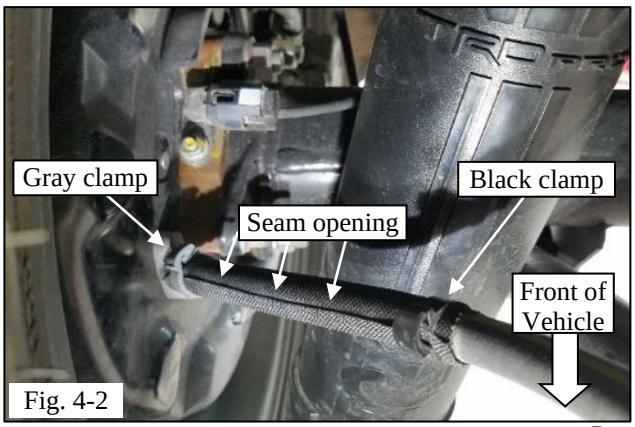

Fig. 4-2

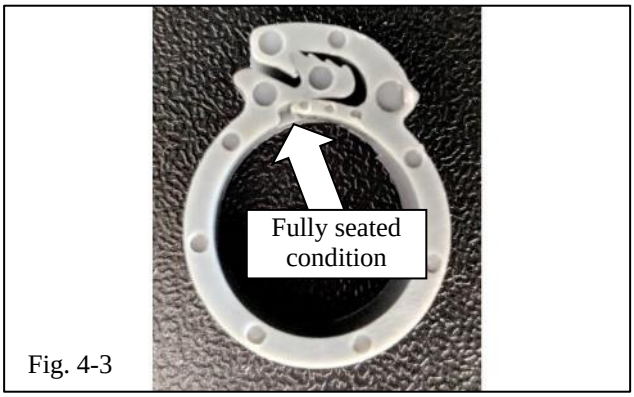

Fig. 4-3

(2) Secure **gray clamp** with channel-lock pliers. Ensure clamp is fully seated (Fig. 4-3).

(3) Install the **black clamp** on the opposite end (inboard side) of the sleeve protector (Fig. 4-2). Leave roughly a clamps' width (8 mm) to the edge of the protector. Secure **black clamp** with channel-lock pliers. Ensure clamp is fully seated (Fig. 4-3).

(d) Repeat steps 4 (a)-(c) for the opposite side.

5. Install the TRD Rear Shock Absorbers.

(a) Remove the new upper nut from the TRD rear shock absorbers. Set aside for later use.

(b) Install the lower cushion no.2 (Fig. 3-3) onto both shock absorbers.

(c) Identify the left and right shock absorbers by their respective part numbers found on the end cap of each external reservoir (Fig. 5-1).

Fig. 5-1

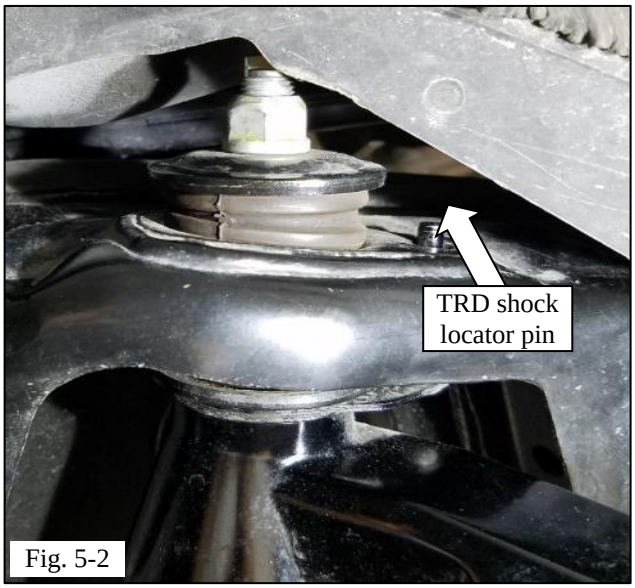

Fig. 5-2

(d) Set upper cushion no.1 (Fig. 3-3) on top of the chassis shock mount. Insert the shock upper stud end into the chassis shock mount and through the upper cushion no.1 (Fig. 5-2).

(e) Ensure that the TRD shock locator pin is properly aligned and easily slides into the frame hole directly forward of the shock stud hole (Fig. 5-2).

(f) Hand tighten the upper nut onto the shock stud.

(g) Start lower bushing of shock onto the lower shock mount pin. While positioning axle, tap bushing onto pin using rubber mallet. Use a 17mm socket to temporarily install the shock absorber lower mount bolt removed in Step 3(e) (Fig. 5-3).

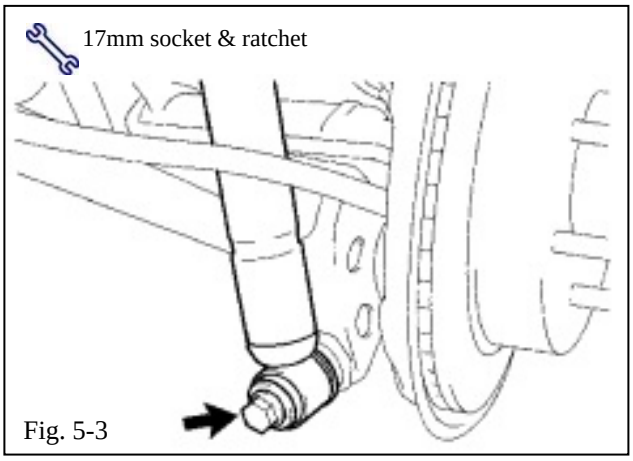

Fig. 5-3

HINT: Carefully support and raise/lower axle using a pole jack for improved alignment of lower shock absorber bushing to axle pin.

(h) Tighten the **new supplied nut** (Fig. 5-4).

Torque: 25 N·m (255 kgf·cm, 18 ft·lbf)

CAUTION: Support shock absorber while applying torque to upper nut. Grip reservoir with a gloved hand or strap wrench to stabilize shock absorber and prevent rotation. **DO NOT** use locator pin to prevent rotation of shock. If a strap wrench is used, be sure to apply surface protection to prevent damage to the label.

Fig. 5-4

(i) Repeat steps 5(b)-(h) for the opposite side.

(j) Install the rear TRD Pro wheel/tire assemblies onto the vehicle. Refer to latest installation instruction for 4Runner TRD Alloy Wheels.

***NOTE:** If utilizing alignment equipment with wheel rim clamps, reinstall original wheels. See page 13 for additional info.

CAUTION: Do not use an impact wrench to install or remove wheel locks.

CAUTION: Proper tightening sequence must be followed and torque audit for all wheel fasteners **MUST** be performed and recorded per wheel installation instructions.

6. Adjust the Wheel Alignment.

(a) Move vehicle to alignment machine.

(b) Install the wheel clamps.

(1) When aligning vehicle using wheel clamps that grip the rim, be sure to align vehicle with the original steel or aluminum wheels.

(2) When aligning vehicle using wheel clamps that grip the tire, the new TRD wheel / tire assemblies can be used.

NOTE: The purpose of this differentiation is to help prevent paint damage on the new wheels.

(c) Use a 19mm wrench and 19mm socket to torque the front lower shock bolts (Fig. 6-1).

Torque: 95 N·m (969 kgf·cm, 70 ft·lbf)

19mm socket, 19mm wrench & torque wrench

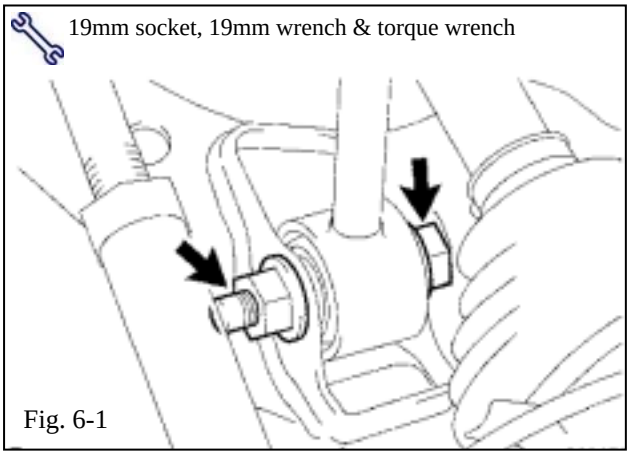

Fig. 6-1

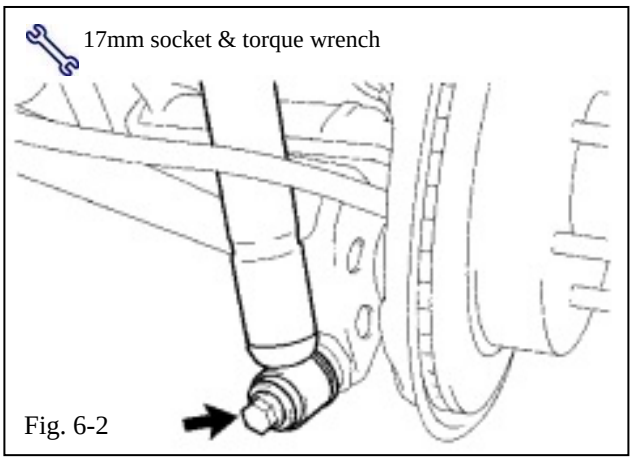

Fig. 6-2

(d) Use a 17mm socket to torque the rear lower shock bolts (Fig. 6-2).

Torque: 98 N·m (1000 kgf·cm, 72 ft·lbf)

Alignment Settings

- **Camber: -0°1' +/-30' (-0.02° +/-0.5°)**
- **Caster: 3°15' +/-30' (3.25° +/-0.5°)**
- **Cross camber and cross caster difference should be 30' (0.5°) or less.**
- **Toe-in: A + B: 0°10' +/-0°9' (0.16° +/-0.15°) and C - D: 2.29 +/-2 mm (0.09 +/-0.08 in.)**

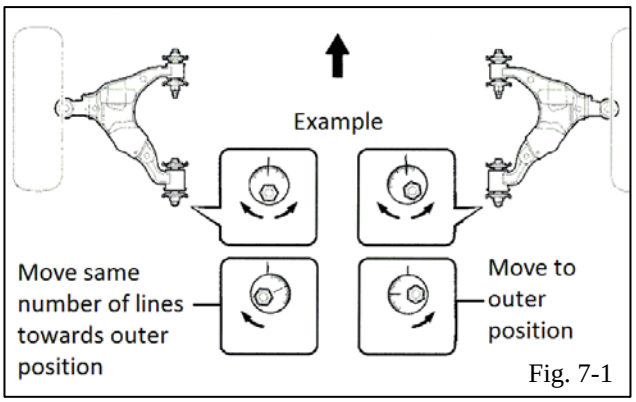

Fig. 7-1

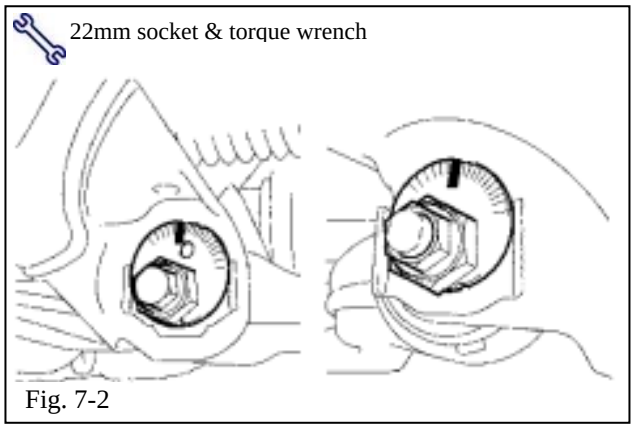

Fig. 7-2

7. Measure/Adjust the Camber and Caster.

(a) Rotate the front and rear adjustment cams to get as close as possible to the nominal specifications listed above (Fig. 7-1).

NOTE: Cross camber and cross caster difference should be 30' (0.5°) or less. Having the left and right-side numbers match is more critical than getting the measured value to the nominal specification.

NOTE: Caster can only be measured while a brake hold tool is in place applying the brakes.

(b) Use a 22mm socket to torque the front and rear lower control arm bolts (Fig. 7-2).

S **Torque: 175 N·m (1785 kgf·cm, 129 ft·lbf)**

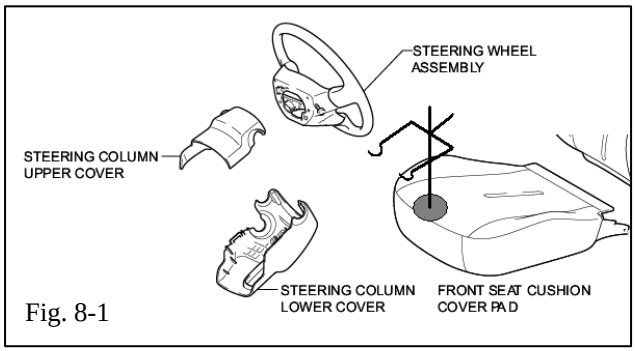

Fig. 8-1

8. Measure/Adjust the Toe-In.

Toe-in: A + B: 0°10' +/-0°9' (0.16° +/-0.15°)
C - D: 2.29 +/-2 mm (0.09 +/-0.08 in.)

(a) Install a steering wheel holding tool. Make sure that the steering wheel is completely straight.

HINT: Line up the horn pad with the plastic garnish covering the steering column (Fig. 8-1).

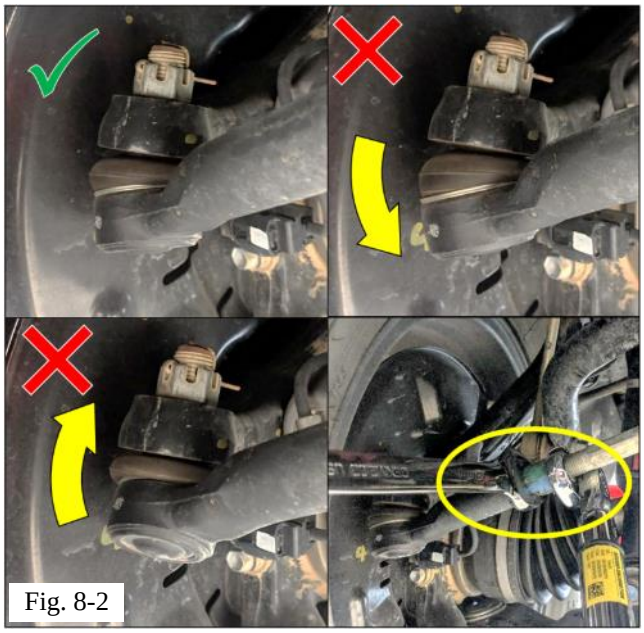
Fig. 8-2

NOTE: Ensure the outer tie rod end joint remains in a neutral position. Use a 21mm open end wrench on the built-in wrench flats to hold the outer tie rod steady while loosening and tightening the lock nut (Fig. 8-2).

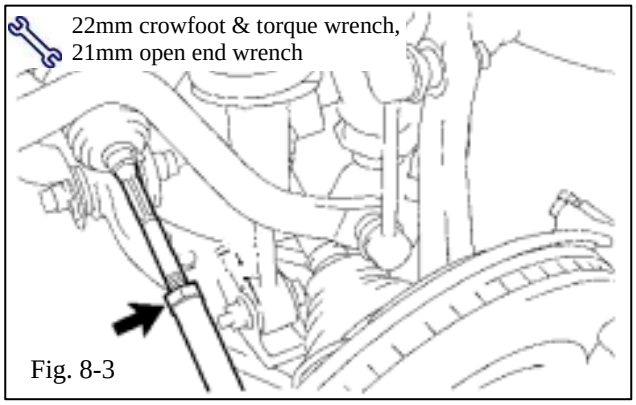

Fig. 8-3

(b) Use a 22mm crowfoot to torque the locking nut and be sure not to upset the final toe readings (Fig. 8-3).

Torque: 88 N·m (897 kgf·cm, 65 ft·lbf)

(c) Remove the alignment sensors and return them to the machine.

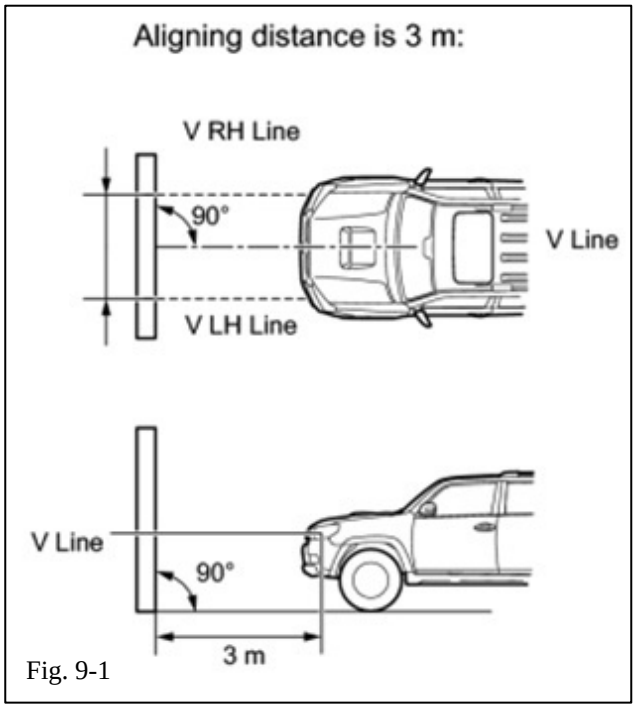

Fig. 9-1

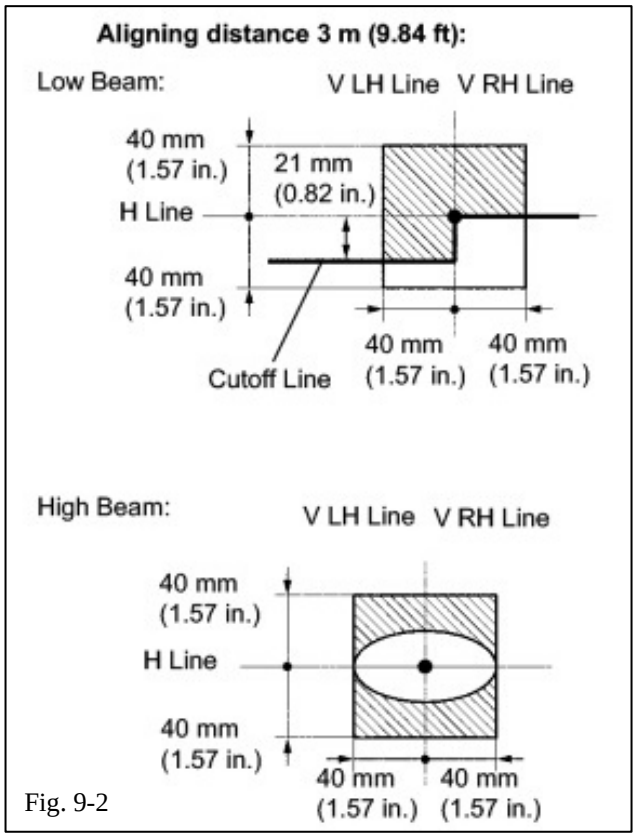

Fig. 9-2

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.

(5) Measure the height to the center mark on the headlight lens. This is your H Line height.

(6) Mark this height on the wall in front of the vehicle (ex: use masking tape).

(b) Adjust the vertical aim of the lamps (Fig. 9-2).

(1) Cover the headlight on the opposite side to prevent light from the headlight not being adjusted from affecting the headlight aiming process.

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.

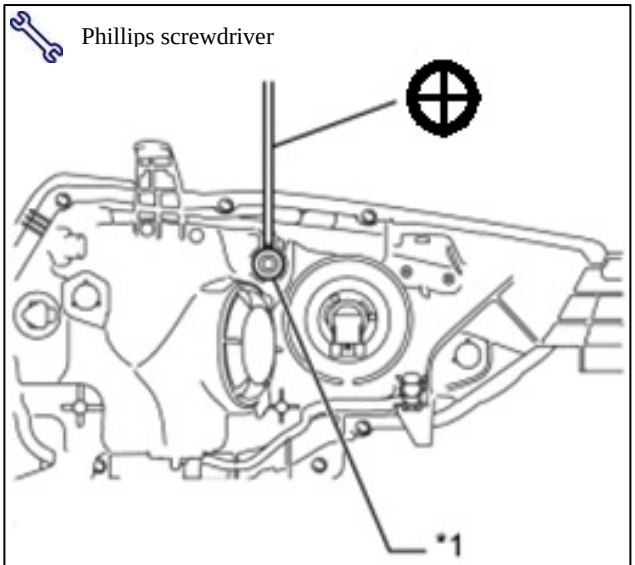

Fig. 9-3

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

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:
Accessory Function Checks	
☐ Verify the locator pin on rear shocks are thru the locator hole on the frame	All four shock absorbers are corner-specific.
☐ Verify the protector sleeve clamps have closed completely and secure	Ensure the proper unit is used on the correct corner of the vehicle.
☐	Use part numbers printed on the absorber for identification.
Vehicle Function Checks	
☐ Check the steering wheel	The steering wheel should be straight
☐ Verify the headlight aim	The headlight aim should be in spec
Vehicle Appearance Check	
☐ After accessory installation and removal of protective cover(s), perform a visual inspection.	Ensure no damage (including scuffs and scratches) was caused during the installation process. (For PPO installations, refer to TMNA Accessory Quality Shipping Standard.)