

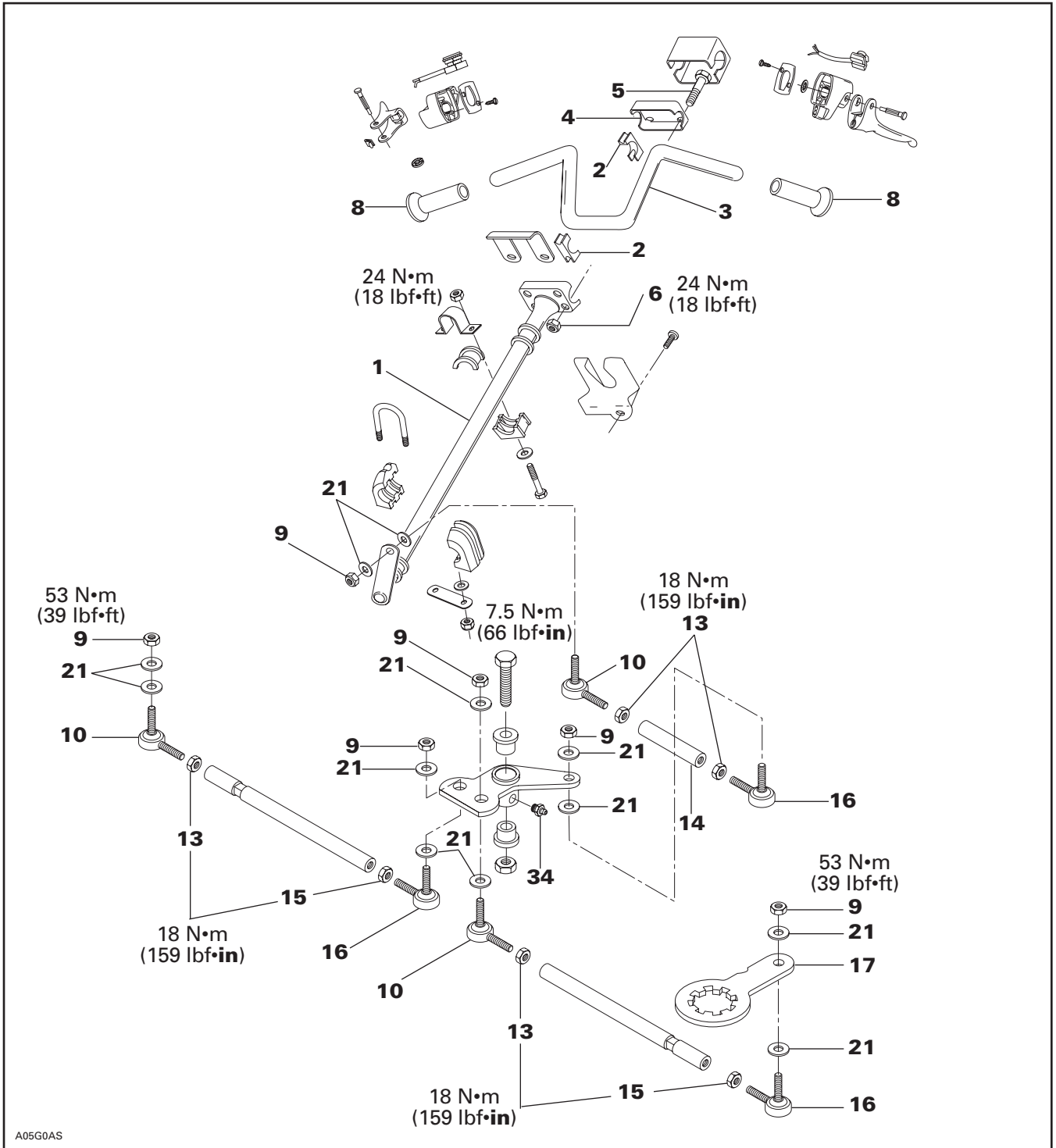
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STEERING SYSTEM

Tundra/R

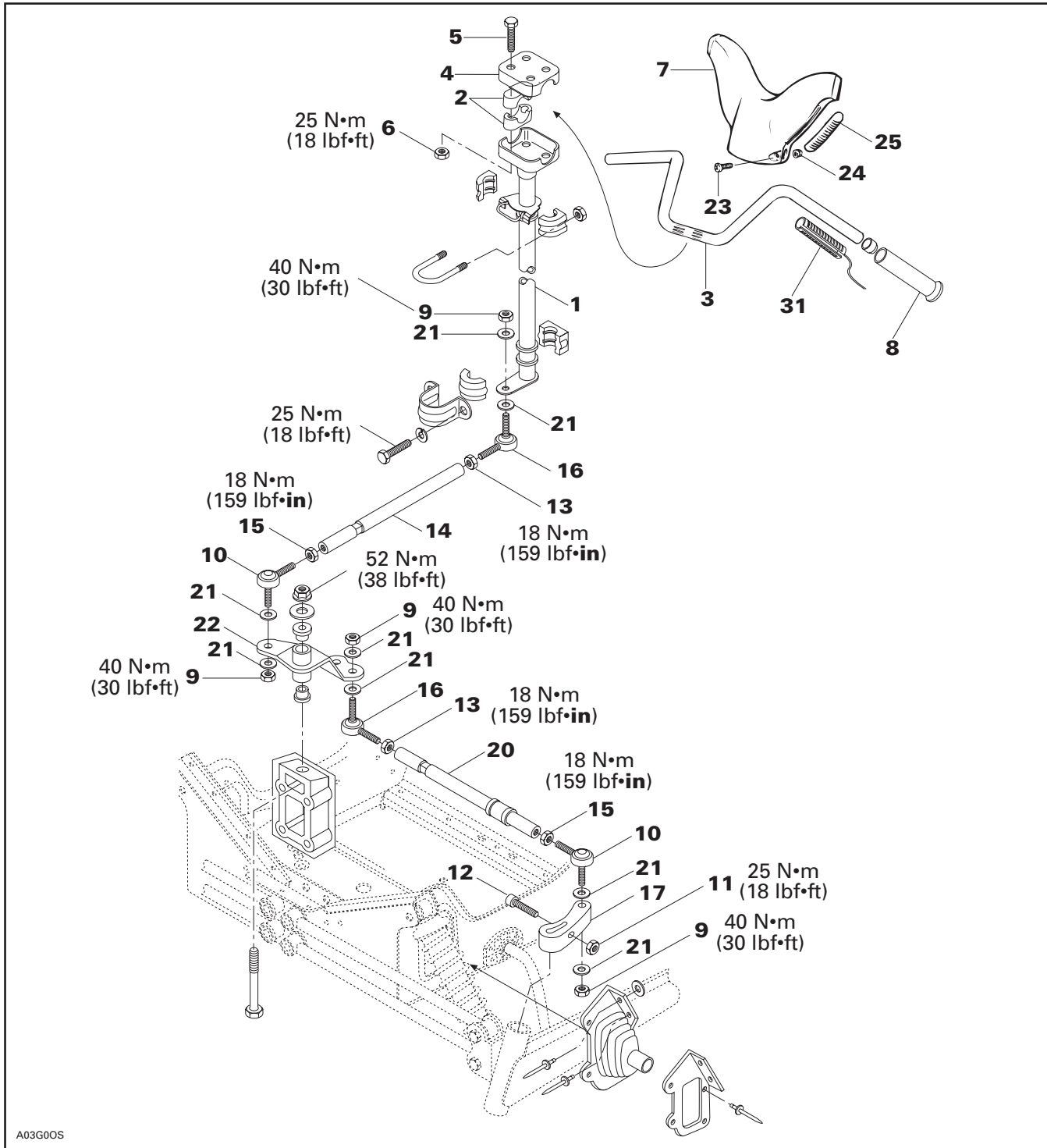


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Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)

S-Series



A03G00S

INSPECTION

Check skis and runner shoes for wear, replace as necessary. Refer to SUSPENSION AND SKI SYSTEM 08-03.

17,36, Steering Arm and Ski Leg

Make sure steering arm and ski leg splines interlock (if applicable).

WARNING

All parts having worn splines have to be changed by new ones.

Check general condition of steering system.

Check general condition of steering system components for wear and replace if necessary.

DISASSEMBLY AND ASSEMBLY

8, Grip

Grips can be removed and installed without any damage by injecting compressed air into the handlebar or by heating them with a heat gun.

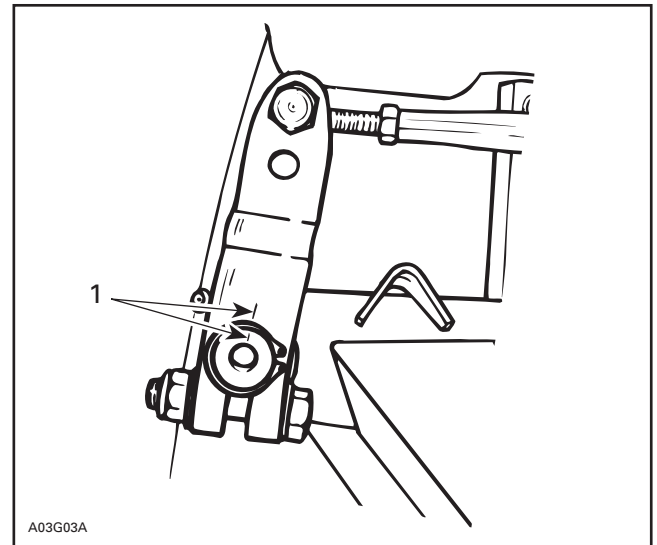
1, Steering Column

Remove steering pad then handlebar ass'y.

Detach short tie rod from steering column working under engine. On S-Series remove air intake silencer and carburetor(s) to gain access.

17, Steering Arm

To maintain correct steering geometry when reassembling, punch mark the steering arm and ski leg before removal.



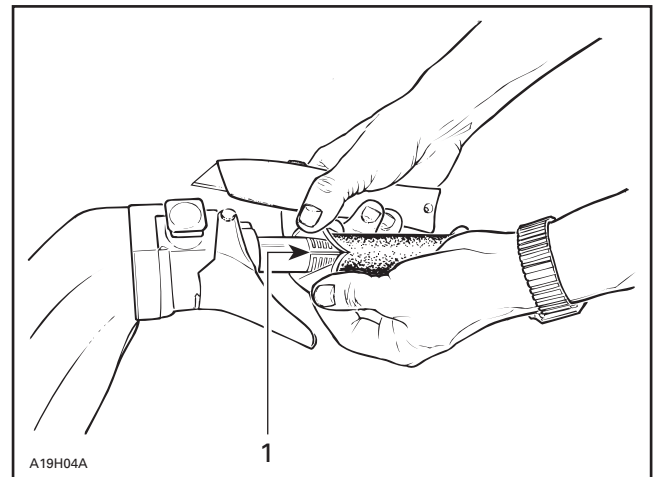
TYPICAL

1. Punch marks

31, Heating Grip Element

On vehicle equipped with heating grips, grips might be unremovable as explained earlier, in this case, carefully proceed as follows to prevent damaging heating elements.

Locate the grip heater wires inside handlebar; look through end of grip. Start cutting grip exactly opposite heater wires and immediately peel open to locate gap in heating element, as shown.



1. Gap in heating element opposite wires

Continue cutting along gap and remove grip. If required, slowly peel heating element from handlebar and remove.

Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)

To install, stick heating element to handlebar making sure wires do not interfere with operation of accelerator or brake handle.

◆ WARNING

Never use lubricants (e.g. soap, grease, etc.) to install handlebar grip, use instead a mix of soap and water. Mix 40 parts of water with one part of dish washing soap (recommended: Ultra Joy, Sunlight or Palmolive).

Insert new grip with a rubber mallet. Heat grip with a heater gun or a spot light to facilitate installation.

INSPECTION

To verify heating elements refer to TESTING PROCEDURE 06-07.

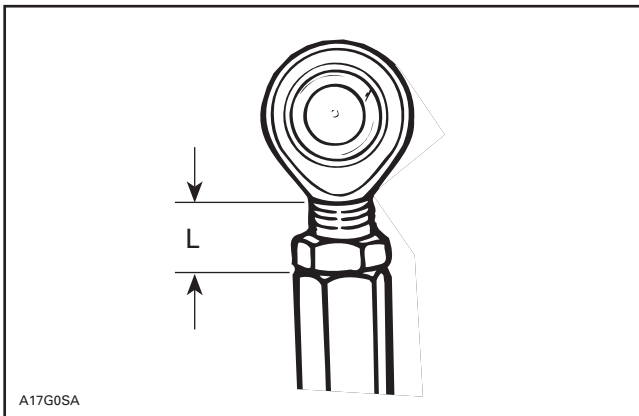
10,16, Ball Joint (left hand and right hand threads)

Inspect ball joint ends for wear or looseness, if excessive, replace.

Screw threaded end of ball joint into tie rod.

Tundra Series

The maximum external threaded length not engaged in tie rod must not exceed the value L in the following chart:



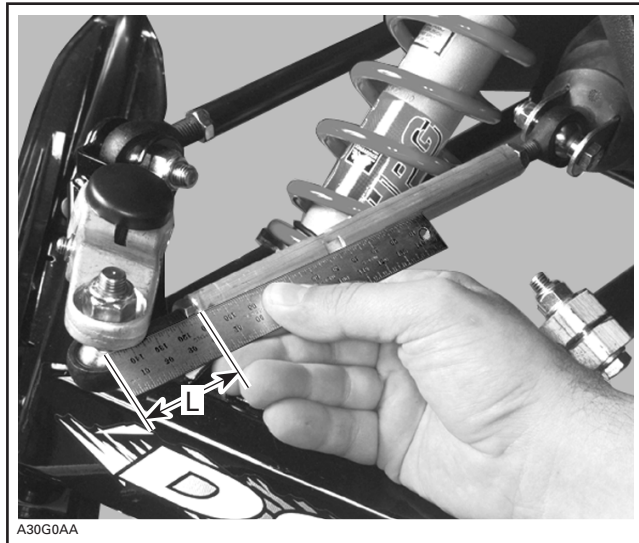
A17G0SA

TYPICAL

MODEL	L	
	mm	(in)
Tundra series	17	(43/64)

S-Series

The maximum ball joint length exceeding tie rod is measured from tie rod to ball joint center. It must not exceed the value L in the following chart.



A30G0AA

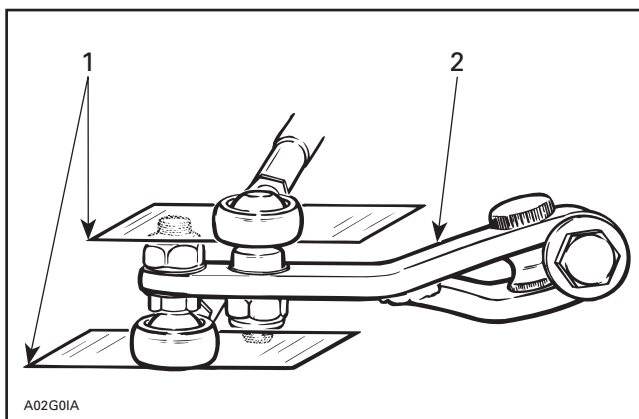
TYPICAL

L: Ball joint length exceeding tie rod

MODEL	L	
	mm	(in)
S-Series	34	(1-11/32)

All Models

The cut-off section of the tie rod end must run parallel with the horizontal line of the steering arm when assembled on vehicle. The ball joint should be restrained when tightening tie rod end lock nut. For torque specifications see specific exploded view.



A02G0IA

TYPICAL

1. Steering arm
2. Parallel with steering arm

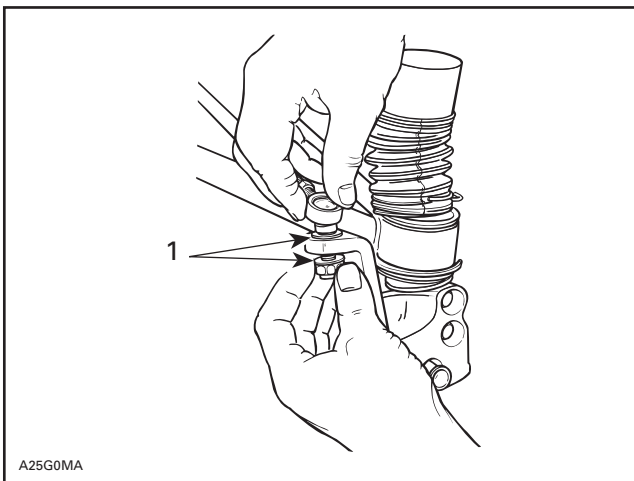
Section 08 STEERING/FRONT SUSPENSION
Subsection 02 (STEERING SYSTEM)

◆ WARNING

The cut-off section of the ball joint must run parallel with the steering arm. When tightening lock nuts, restrain ball joint with appropriate size wrench. Ensure not too many threads are kept outside of the tie rod according to the thread length chart.

21, Hardened Washer

Install a hardened washer on each side.



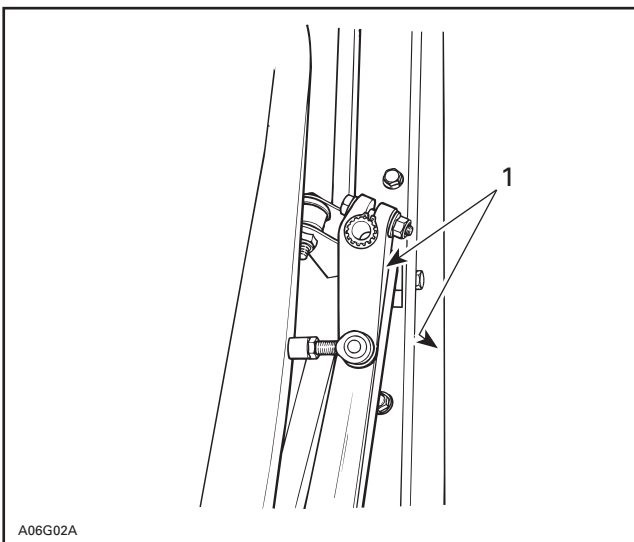
TYPICAL

1. Hardened washers

17,36, Steering Arm

The steering arm angles should be equal on both sides when skis are parallel with vehicle.

Steering arm must run parallel to ski.



1. Parallel

9,13,15, Ball Joint Nut and Jam Nut

Tighten ball joint jam nuts to specified torque (see illustration).

11,12, Steering Arm Nut and Bolt

Tighten steering arm nuts to specified torque (see illustration).

ADJUSTABLE HANDLEBAR

1,3, Steering Column and Handlebar

If applicable, remove the steering clamp and nuts holding the handlebar to the steering column. Tighten nuts to the specified torque (see illustration).

2,4,5,6, Handlebar Support, Steering Clamp, Bolt and Nut

Install the 4 handlebar support, steering clamp, the 4 screws and nuts to the column, as illustrated.

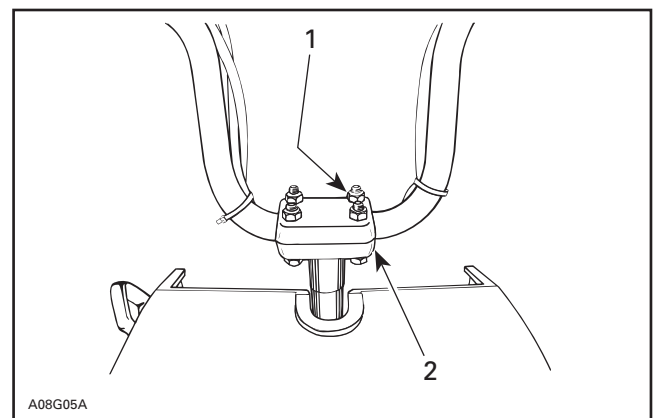
See applicable exploded view for each model.

Adjust the steering handle to the desired position.

Lock the handle in place by tightening the 4 nuts to 26 N•m (19 lbf•ft).

▼ CAUTION

Tighten the nuts equally in a criss-cross sequence and ensure there is an equal gap on each side of the clamps.



TYPICAL

1. Torque 26 N•m (19 lbf•ft)
2. Equal gap all around

Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)

◆ WARNING

Avoid contact between the brake handle and the windshield by **NOT** adjusting the handlebar too high.

◆ WARNING

Make sure that the steering pad and all controls are properly fixed to their normal location on the handlebar.

▼ CAUTION

Plastic alloy components such as fuel tank, windshield, controls, etc. can be cleaned using mild detergents or isopropyl alcohol and a soft clean cloth. Never clean plastic parts with strong detergent, degreasing agent, paint thinner, acetone, etc. Do not apply isopropyl alcohol directly on decals.

7,23,24,25, Steering Pad, Bolt, Nut and Rubber Attachment

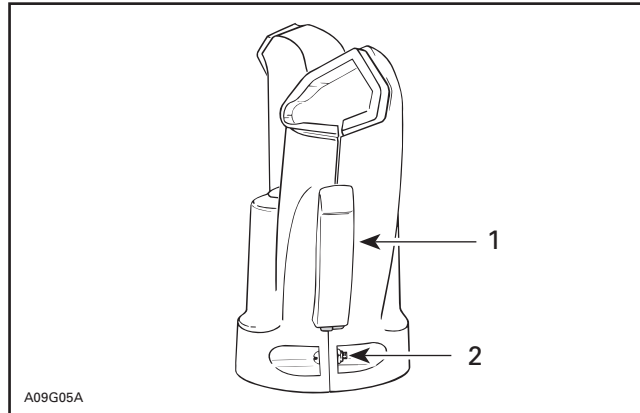
▼ CAUTION

Prior to installation, perform handlebar adjustment.

Properly fit the steering pad to the handlebar. Assemble using the 2 rubber attachments, nuts and bolts.

◆ WARNING

Make sure that the steering pad and all controls are properly fixed to their normal location on the handlebar.

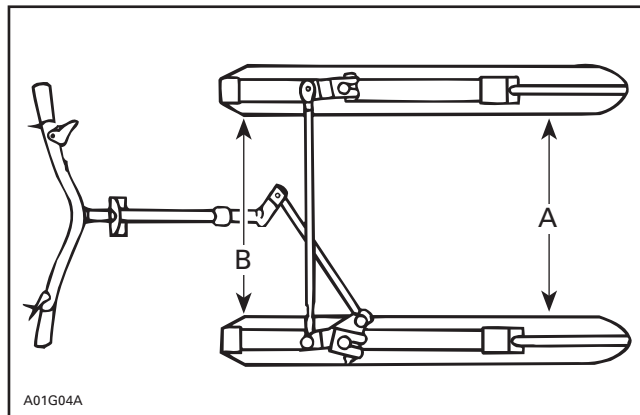


1. Rubber attachment
2. Nut and bolt

STEERING ADJUSTMENT DEFINITIONS (skis)

Toe-Out

A difference in measurement between front edge A and rear edge B of skis as viewed from top side of suspension system. It is adjustable.



Camber

A specific inward or outward tilt angle of ski leg compared to a vertical line when viewing vehicle from front. **This angle is not adjustable on these models.**

ADJUSTMENTS

Tundra/R

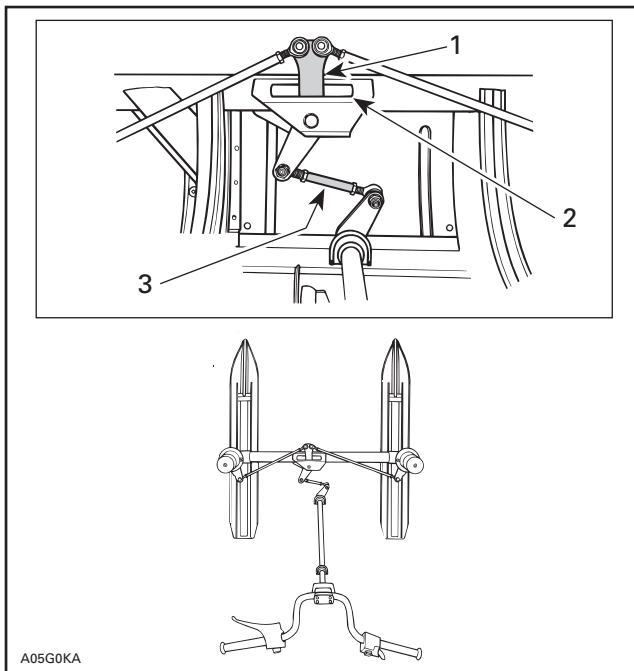
Adjustments should be performed following this sequence:

- Pivot arm centering/horizontal handlebar.
- Set toe-out.

Pivot Arm Centering/horizontal Handlebar

Turn handlebar until pivot arm is well centered in slot of its bracket.

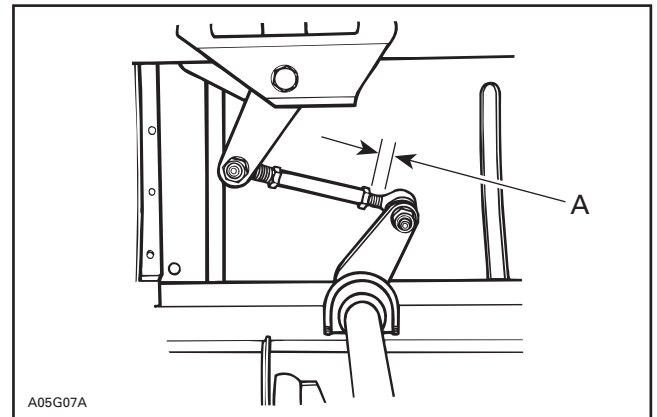
Check if handlebar is horizontal. To adjust, loosen lock nuts of short tie rod and turn it accordingly.



1. Pivot arm centered in slot
2. Slot
3. Turn to adjust

WARNING

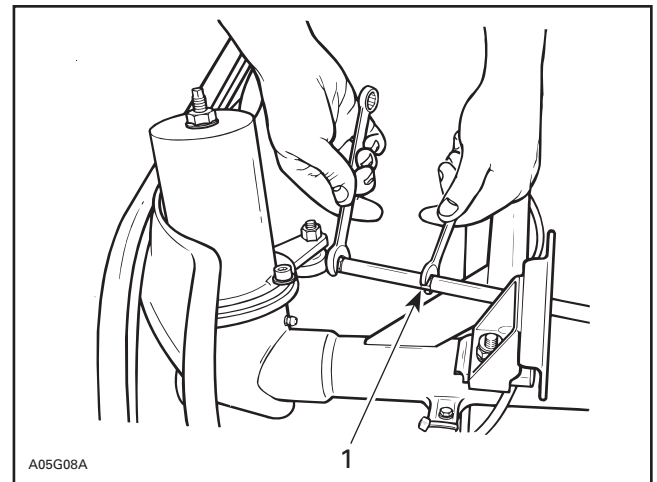
Maximum ball joint external threaded length not engaged in the tie rod end must not exceed 17 mm (43/64 in). Torque lock nut to 18 N•m (159 lbf•in).



A05G07A

A. 15 mm (19/32 in) max.

Restrain tie rod while firmly retighten nuts so that ball joint sockets run parallel with steering arm and pivot arm.



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LONG TIE ROD SHOWN

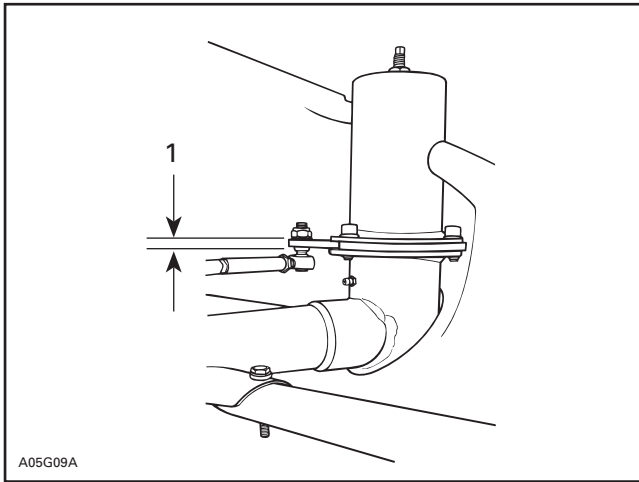
1. Restrain tie rod to tighten lock nuts

WARNING

Ball joint sockets must run parallel with steering arm and pivot arm. Tie rod must be restrained when tightening lock nuts.

Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)



LONG TIE ROD SHOWN

1. Ball joint parallel with arm

Ensure that pivot arm is still centered and check ski toe-out.

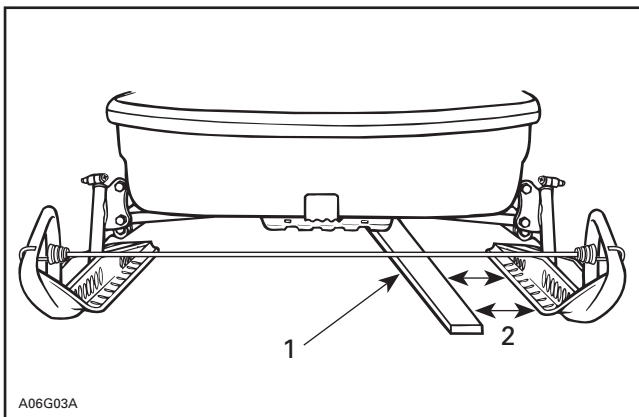
Toe-Out

Raise front of vehicle so that skis are off the ground.

Loosen lock nuts of long tie rods and turn each tie rod so that skis are in a straight ahead position. To adjust toe-out, slightly turn both tie rods exactly the same amount.

Check external threaded length not engaged and firmly retighten nuts as specified above.

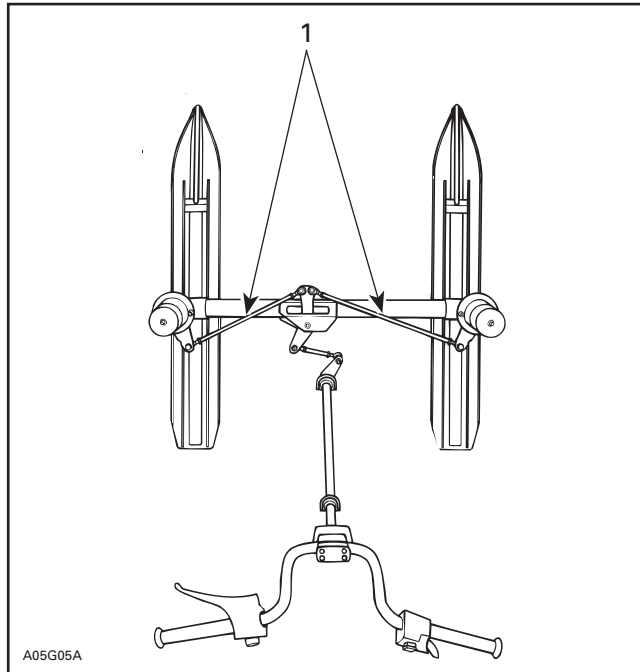
NOTE: To make sure skis are in straight-ahead position, place a straight edge against pre-adjusted track and measure distance between front and rear of skis and straight edge. Distances should be equal. After ski toe-out adjustment, distance at front of ski must be 3.0 mm (1/8 in) more than at rear on both sides for a total toe-out of 6 mm (1/4 in).



TYPICAL

1. Straight edge

2. 3.0 mm (1/8 in) more at front than at rear



1. Turn to adjust

S-Series

Adjustments should be performed following this sequence:

- Pivot arm centering.
- Check for horizontal handlebar.
- Set toe-out.

Pivot Arm Centering

◆ WARNING

Do not attempt to adjust skis straight ahead position by turning ball joint on tie rod **no. 14**.

13,14,22, Jam Nut, Tie Rod and Pivot Arm

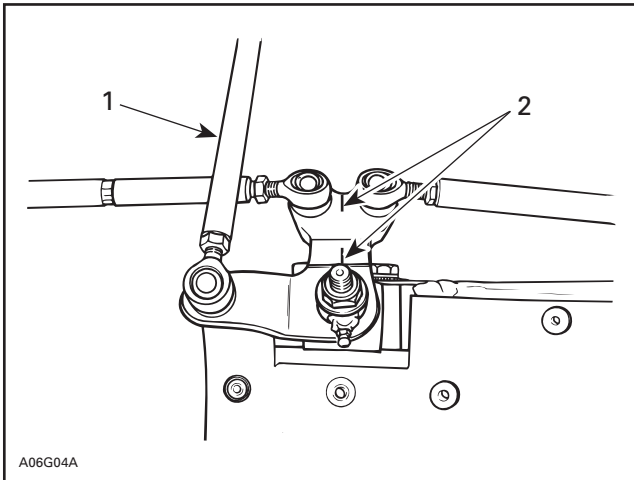
With handlebar in straight position, center of pivot arm must be in line with end of bolt. Loosen jam nuts on tie rod **no. 14** (LH threads on steering column end) and turn tie rod accordingly. Tighten jam nuts to 18 N•m (159 lbf•in).

◆ WARNING

Never lengthen tie rod so that portion of ball joint exceeds 34 mm (1-11/32 in). See photo in INSPECTION above.

Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)



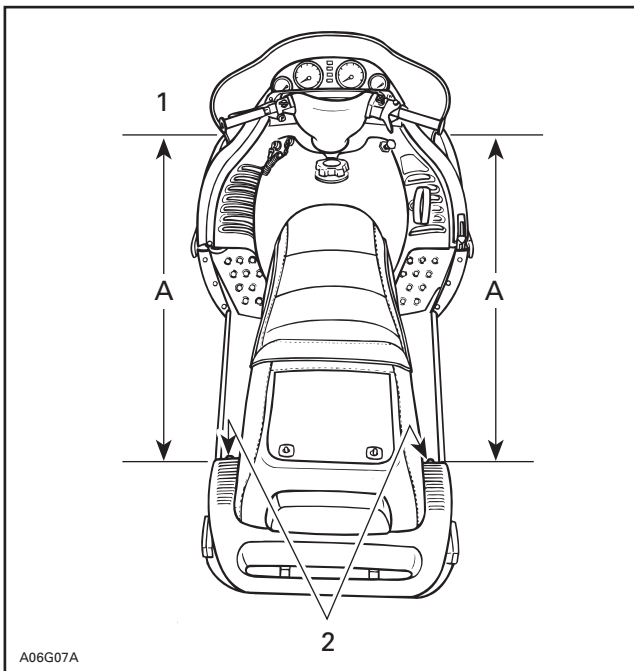
TYPICAL — S-SERIES

1. Tie rod no. 14
2. Center of pivot arm in line with bolt end

Handlebar and Ski Toe-Out

Check that handlebar is horizontal when skis are in straight ahead position by measuring from the extremities of the grips to the rear most edge of the tunnel, as shown.

NOTE: The reference point must be the same relative to each side.



TYPICAL

1. Equal distance A on each side
2. Same reference point (rivet)

Adjustment is performed by adjusting length of left and right tie rods no. 20.

◆ WARNING

Do not attempt to adjust skis straight ahead position by turning ball joint on tie rod no. 14.

Procedure:

- Loosen jam nuts no. 13 and no. 15 of both tie rods no. 20.
- Turn the tie rod on one side to shorten its length.
- Lengthen the other one by turning it exactly the same amount, so that toe-out is not changed.

◆ WARNING

Never lengthen tie rod so that threaded portion of ball joint exceeds 34 mm (1-11/32 in). See photo in INSPECTION above.

- Close front of skis manually to take all slack from steering mechanism.

NOTE: A rubber cord must be hooked in front of skis to keep them closed.

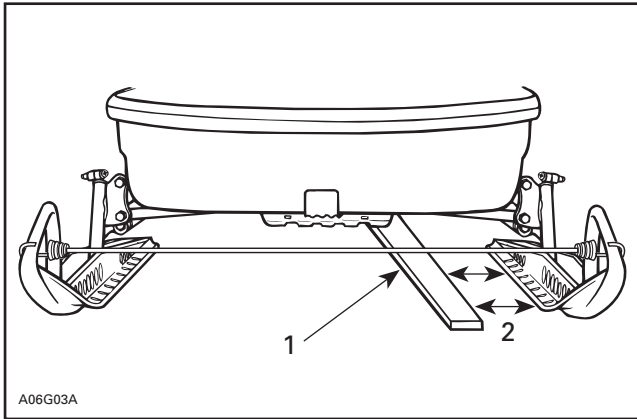
Toe-out is 0 mm (0 in) when skis are in a straight-ahead position and the front of vehicle is lifted off the ground.

NOTE: To make sure skis are in a straight-ahead position, place a straight edge against pre-adjusted track and measure the distance between front and rear of skis and straight edge. Distances should be equal. After the ski toe-out adjustment, distance must be equal.

To reduce tolerance when measuring, set one ski to proper toe-out then measure from that ski to the opposite ski.

Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)



TYPICAL

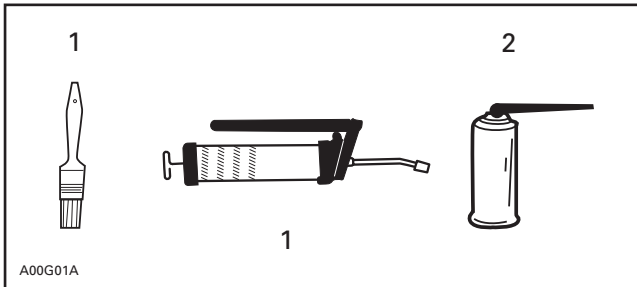
1. Straight edge
2. Measure here

LUBRICATION

◆ WARNING

Do not lubricate throttle and/or brake cable, housing and spring coupler bolts.

The following symbols will be used to show what type of lubricant should be used at the suitable locations.



1. Synthetic grease (P/N 413 711 500)
2. BOMBARDIER LUBE (P/N 293 600 016)

Grease Fitting and Ski Leg

Use synthetic grease only (P/N 413 711 500).

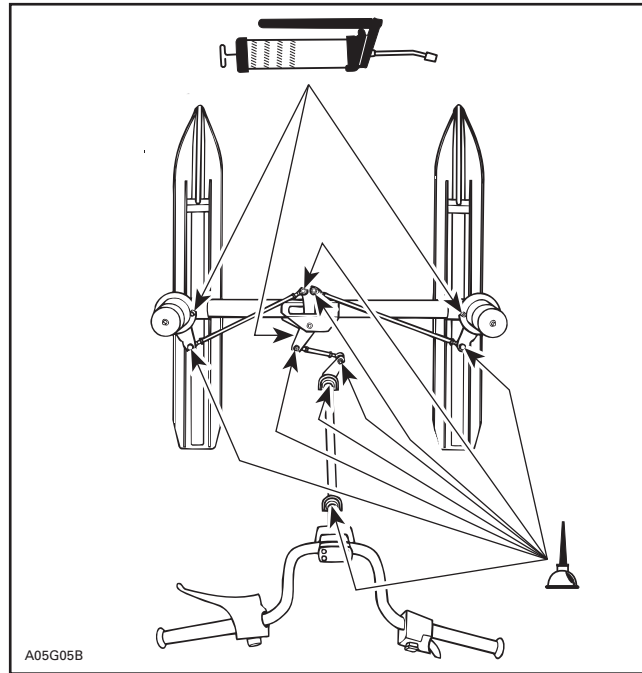
Tundra/R

Lubricate front suspension posts and pivot arm at grease fittings. Pump five strokes of grease gun on each post.

NOTE: There are 3 grease fittings.

Oil ball joints and steering column bushings.

NOTE: There are 8 lubrication points.



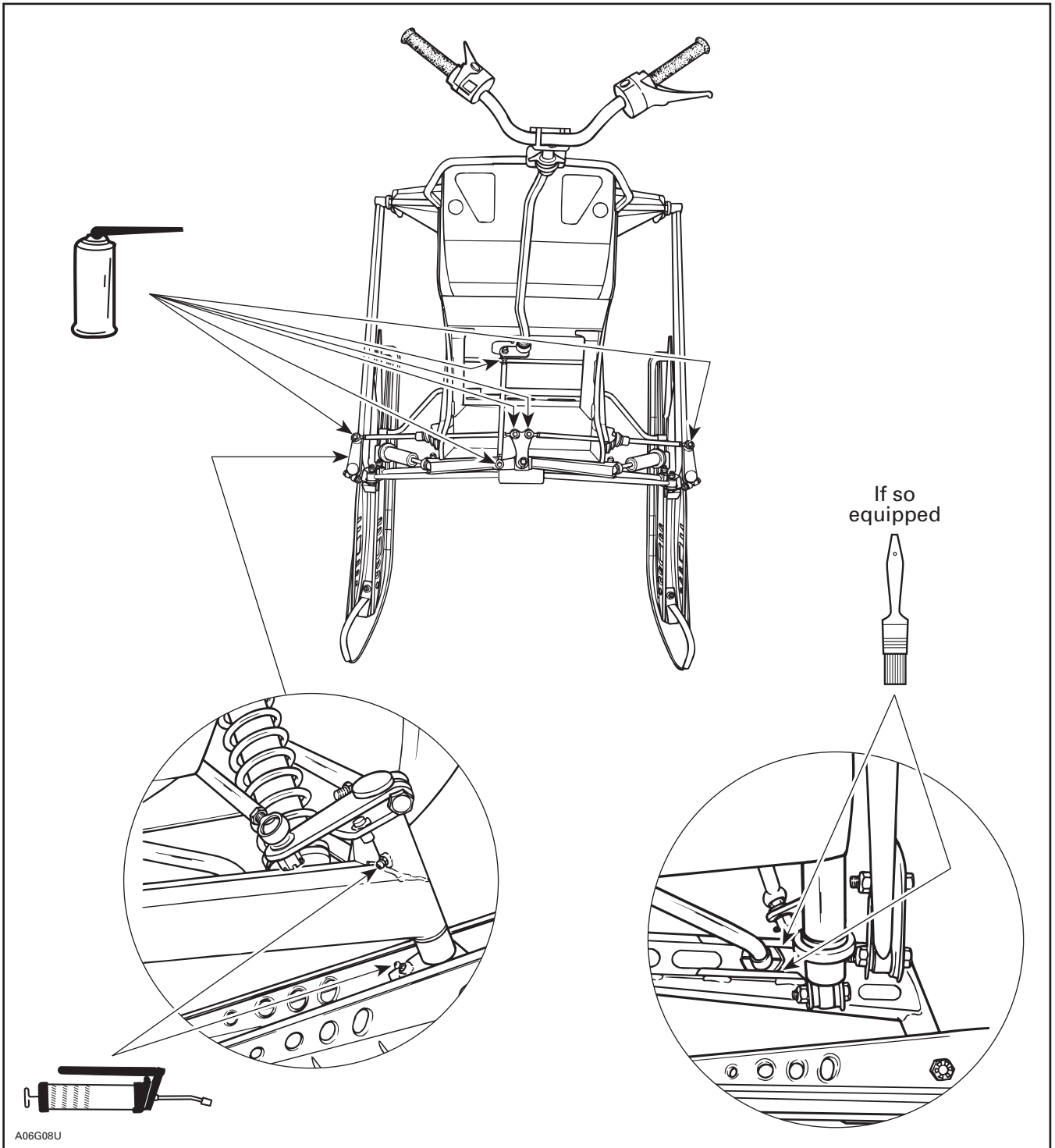
S-Series

Lubricate:

- Steering column.
- Ski legs, ski pivots and idler arm.
- Stabilizer sliders with grease, and oil their ball joints if so equipped.

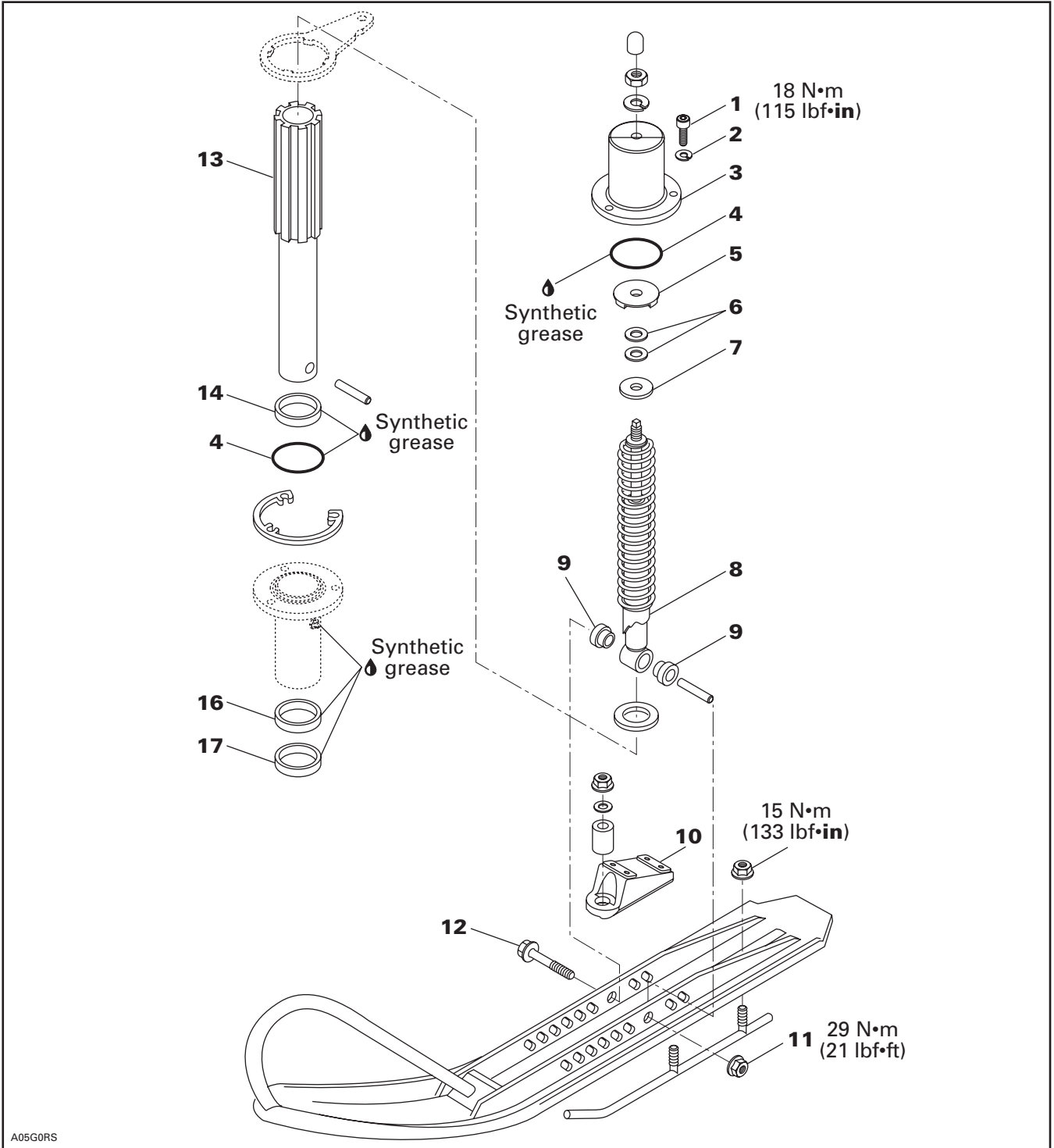
Section 08 STEERING/FRONT SUSPENSION
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S-Series



SUSPENSION AND SKI SYSTEM

Tundra/R



Section 08 STEERING/FRONT SUSPENSION

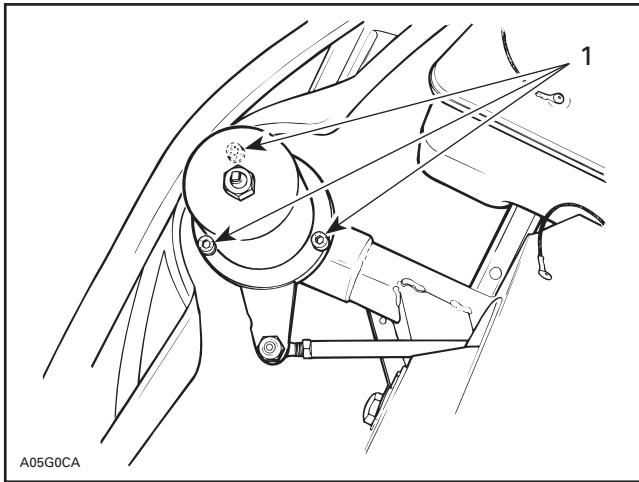
Subsection 03 (SUSPENSION AND SKI SYSTEM)

ON-VEHICLE COMPONENT REMOVAL

8, Shock

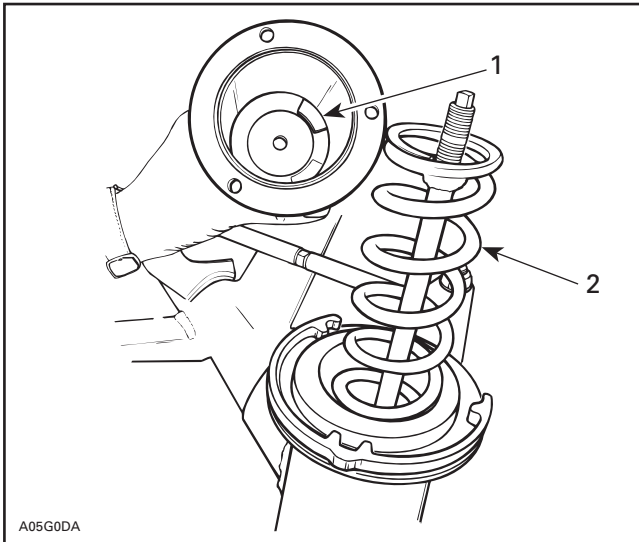
Lift front of vehicle and support off the ground.

Unscrew shock piston pin nut then remove washer. Unscrew 3 Allen screws retaining cover **no. 3**, then remove stopper **no. 5**, washers **no. 6**, washer **no. 7**.



1. Allen screws

NOTE: These washers and stopper can be wedged in cover.



1. Washers and stopper wedged in cover
2. Spring

Pull out spring then check shock as described below in **inspection**.

Suspension Free Operation

Remove cover and check for free movement of ski leg by lifting end of ski.

DISASSEMBLY

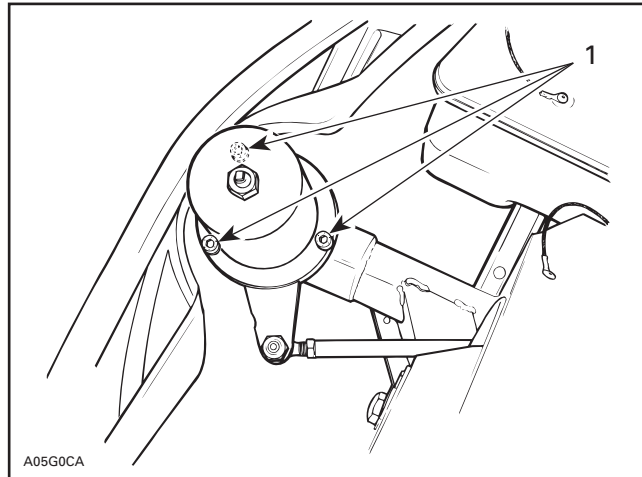
Lift front of vehicle and support off the ground.

1,2,3,5,6,7,9,11,12, Bolt, Lock Washer, Cover, Stopper, Bushing and Nut

Remove ski bolt, nut, bushings and ski.

Unscrew shock piston pin nut then remove washer. Shock with spring will fall off the ski leg.

Unscrew 3 Allen screws retaining cover, then remove stopper and washers.

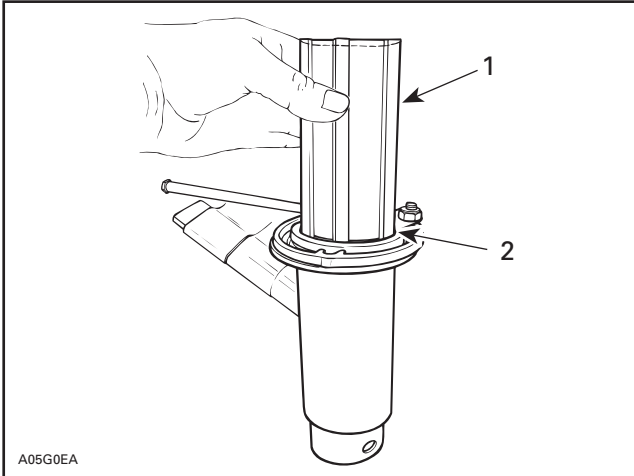


1. Allen screws

NOTE: These washers and stopper can be wedged in cover.

4,13,14,16,17, O-Ring, Ski Leg, Bushing and Seal

Pull up ski leg. Steering arm will not interfere.



1. Pull up ski leg
2. Steering arm in place

Remove seal and O-rings. Drive out bushing if worn out.

INSPECTION

13, Ski Leg

Check straightness of ski leg. Check for scored or scratched surface. Replace as required.

5, Stopper

Check condition of stopper. Replace it when deteriorated.

Grease Fitting

Ensure that grease fittings are not clogged.

10, Stopper

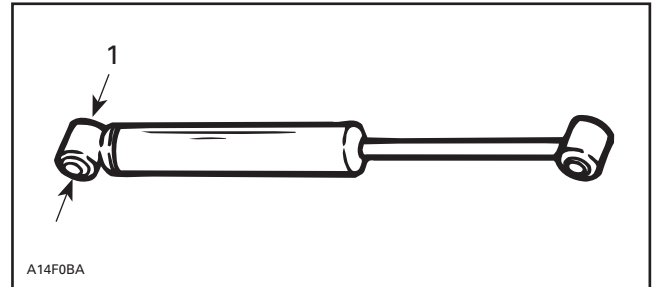
Check stopper for crack or deterioration. Replace as required.

13, Ski Leg

Check that splines on ski leg and steering arm interlock properly with no excessive free play. Renew as necessary.

8, Shock Absorber

Secure the shock body end in a vise.



1. Clamp

CAUTION

Do not clamp directly on shock body.

Examine each shock for leaks. Extend and compress the piston several times over its entire stroke checking that it moves smoothly and with uniform resistance.

Pay attention to the following conditions that will denote a defective shock:

- A skip or a hang back when reversing stroke at mid travel.
- Seizing or binding condition except at extreme end of either stroke.
- Oil leakage.
- A gurgling noise, after completing one full compression and extension stroke.

Renew if any faults are present.

Section 08 STEERING/FRONT SUSPENSION

Subsection 03 (SUSPENSION AND SKI SYSTEM)

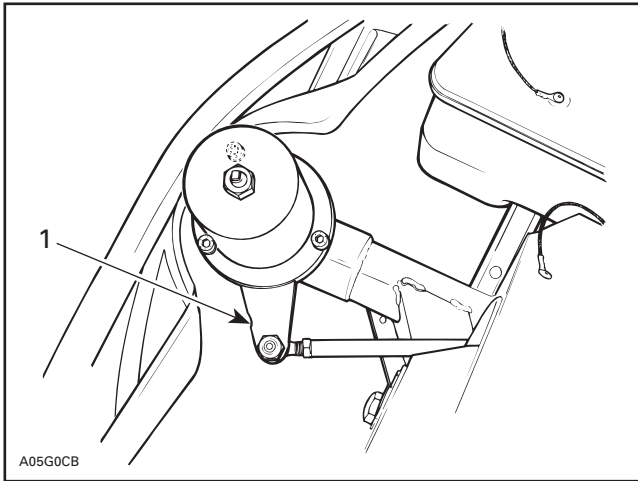
INSTALLATION

For assembly, reverse the disassembly procedure. However, pay attention to the following.

Apply synthetic grease (P/N 413 711 500) as illustrated in exploded view above.

Tighten nuts and screws to proper torque as mentioned in exploded view.

Steering arm notch must face outside of vehicle.



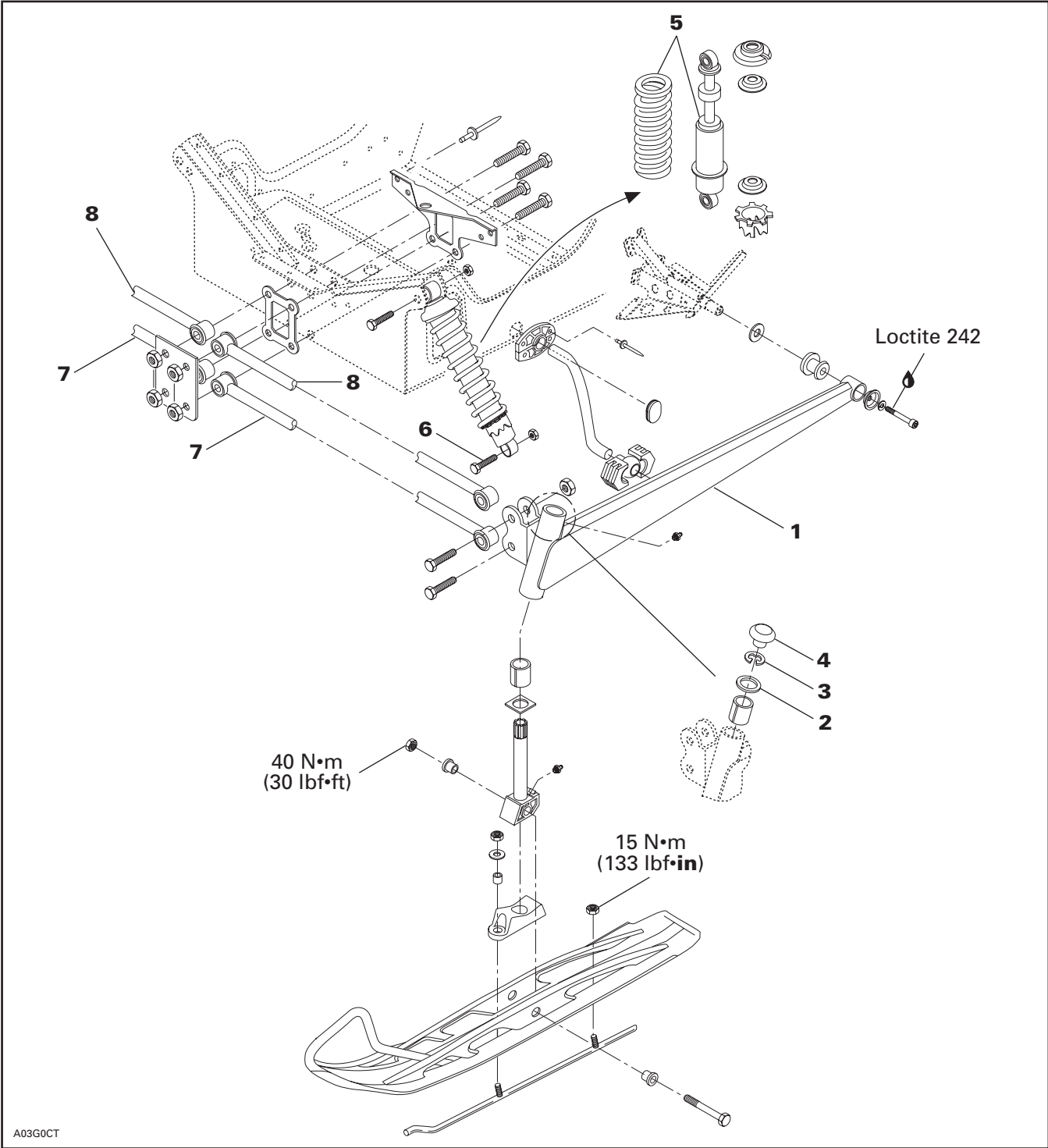
1. *Recess facing outside*

16,17, Seal

Install seal before reinstalling ski leg.

Section 08 STEERING/FRONT SUSPENSION
Subsection 03 (SUSPENSION AND SKI SYSTEM)

S-Series



Section 08 STEERING/FRONT SUSPENSION

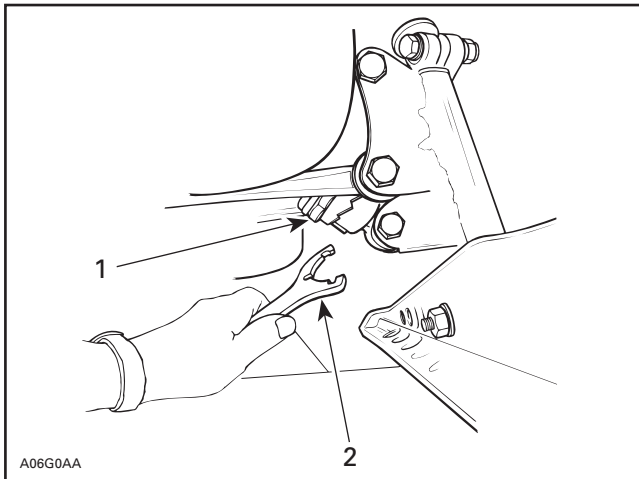
Subsection 03 (SUSPENSION AND SKI SYSTEM)

DISASSEMBLY

5, Shock

Lift front of vehicle and support it off the ground.

On models so equipped reduce spring preload by turning adjusting ring accordingly with special key in vehicle tool box.



1. Shock cam
2. Special key

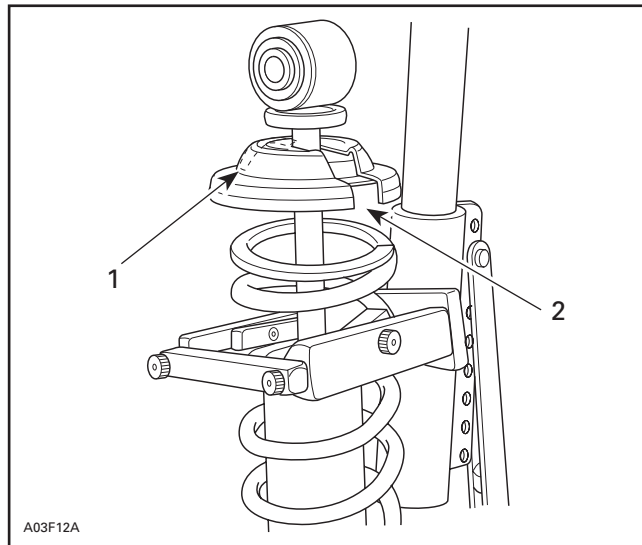
Remove lower bolt then upper bolt of shock.

For shock spring disassembly, use shock spring remover (P/N 529 027 100) in a vise. Mount shock in it and turn shock so that spring coils matched spring compressor.

Close and lock bar. Adjust handle horizontal by changing position of clevis pin.

Push down on handle until it locks. Remove spring stopper and cap then release handle.

At installation, cap opening must be 180° from spring stopper opening.



1. Spring stopper opening
2. Cap opening

1, Swing Arm

Lift front of vehicle and support it off the ground.

Unbolt ski.

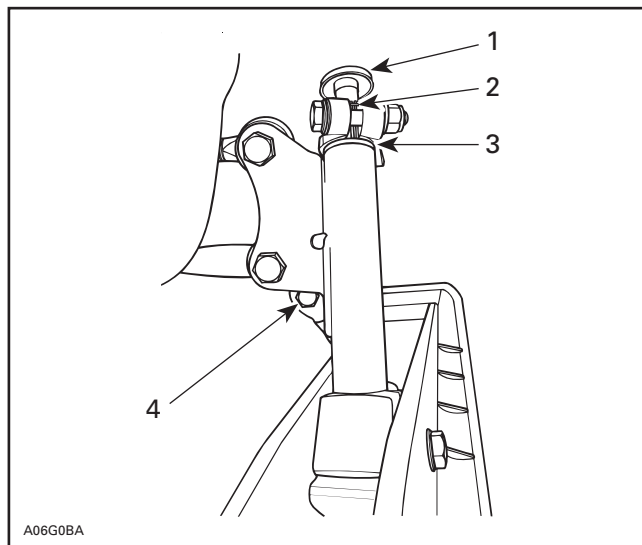
Remove cap, circlip then slacken steering arm bolt and pull up steering arm. Note shim positions. Ski leg may fall off from swing arm.

Unbolt lower end of shock from swing arm.

Unbolt half arms and tie rods.

Unbolt rear of swing arm from frame.

Pull swing arm off the vehicle. Stabilizer bar will disengage ball joint at swing arm inside rails.



1. Cap no. 4
2. Circlip no. 3
3. Shims no. 2
4. Bolt retaining lower end of shock no. 6

INSPECTION

Check all rubber cushions for crack and wear. Replace as required.

Check straightness of splines and proper interlocking with steering arm. Replace as required.

Check for straightness of swing arm. Replace as required.

Check if grease fittings are not clogged.

Check proper action of sliding blocks in swing arm.

Check skis and runners for wear, replace as necessary.

Check condition of ski stopper. Replace it when deteriorated.

To check condition of shock on all S-Series models, refer to Tundra shock inspection.

INSTALLATION

For assembly, reverse the disassembly procedure. However, pay attention to the following.

Apply synthetic grease (P/N 413 711 500) to ski leg components.

Tighten nuts and screws to proper torque as mentioned in exploded view.

7,8, Upper Half Arm and Tie Rod

Position half arms and tie rods horizontally before tightening nuts.