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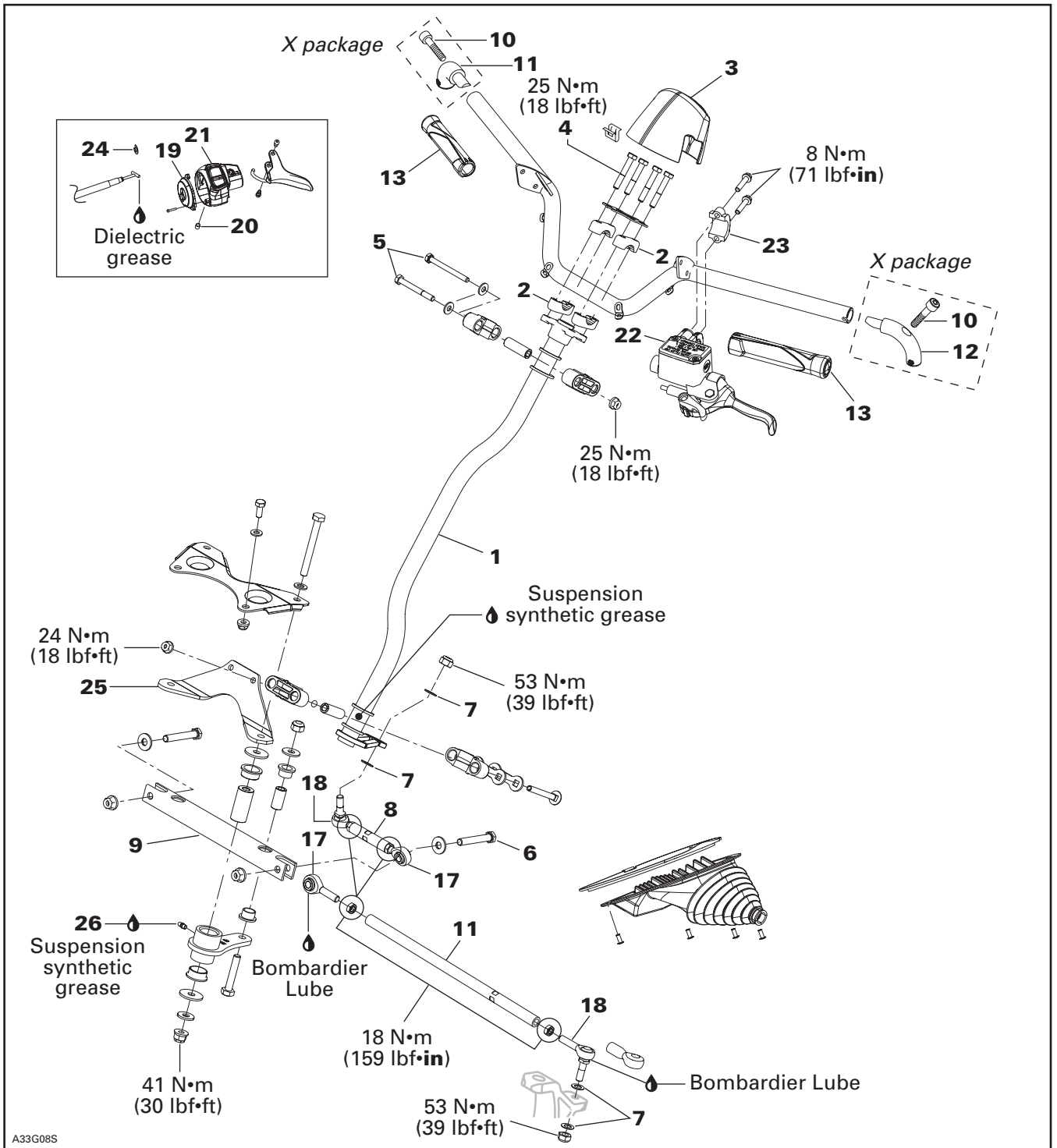
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# STEERING SYSTEM

All REV Series



## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

## DISASSEMBLY AND ASSEMBLY

### 13, Grip

**NOTE:** These models feature an integrated heating element in the plastic sleeve of the grip.

**CAUTION:** Removing grip from handlebar might damage the heating element. Do not remove needlessly.

**NOTE:** If heating grip does not work and needs to be replaced, the grip can be cut with a knife for removal.

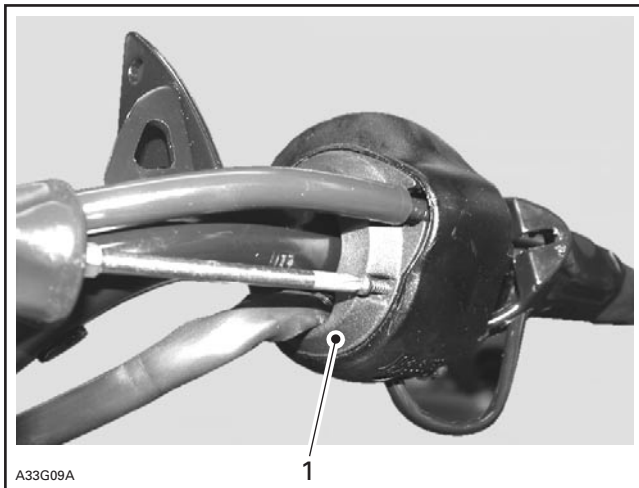
#### Throttle Side:

Unfasten windshield.

**NOTE:** Throttle lever housing no. 21 must come off handlebar along with grip.

Remove cap no. 3. Unplug RH harness on top of steering column. Cut locking ties retaining RH harness to handlebar.

Remove throttle lever housing cover no. 19.



1. Throttle lever housing cover

Remove circlip no. 24 from throttle cable housing. Unfasten throttle cable from throttle lever, then pull out throttle cable housing from throttle lever housing no. 21.

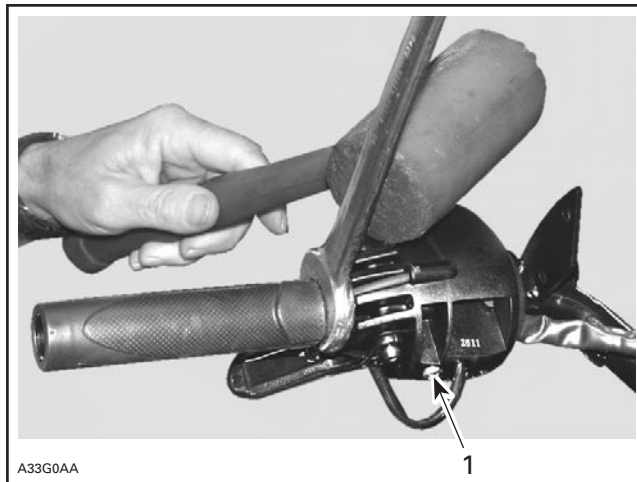
Remove J-hook from end of grip on so equipped models.

Loosen screw no. 20 retaining throttle lever housing to handlebar. See photo below.

Insert the open side of a 23 mm (7/8 in) wrench against the inner end of grip.

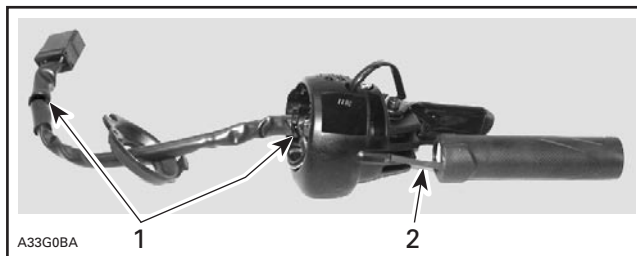
**CAUTION:** Pay attention not to damage wires with the wrench.

Using a plastic hammer, tap on the side of the wrench end to make the grip slide out.



1. Screw retaining throttle lever housing

Cut locking ties on harness. Using the multilock-terminal housing extraction tool AMP (P/N 755430-2), push the 3 wires of the heating grip harness out of connector housing. Note the position of the wires for reinstallation.



1. Locking ties  
2. Heating grip harness

Pull heating grip harness out of throttle lever housing.

For installation refer to brake side grip installation below.

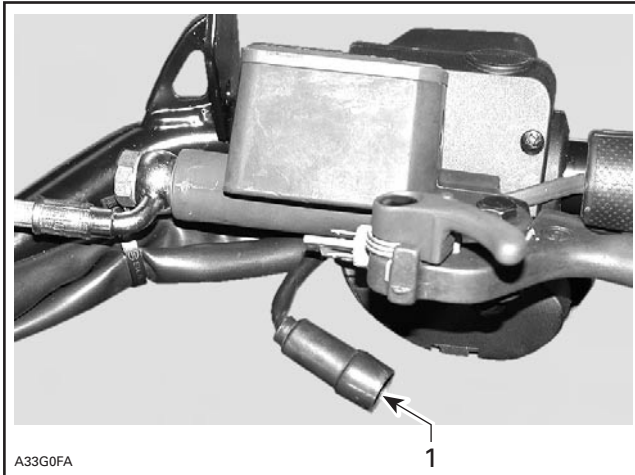
## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

#### Brake Side:

Unclip windshield.

Unplug connectors from brake light switch located on master cylinder **no. 22**.



1. Connectors unplugged

Unplug LH harness on top of steering column. Cut locking ties retaining brake light switch/heating grip harness to handlebar.

Using the multilock-terminal housing extraction tool AMP (P/N 755430-2), push the 3 wires of the heating grip harness out of connector housing. Note the position of the wires for reinstallation.

Pull heating grip wires out of brake light switch/heating grip harness.

Insert the open side of a 23 mm (7/8 in) wrench against the inner end of grip.

**CAUTION:** Pay attention not to damage wires with the wrench.

Using a plastic hammer, tap on the side of the wrench end to make the grip sliding out.

Installation is the opposite procedure of the removal but pay attention to the following.

Clean handlebar ends and inside of heating grip with isopropyl alcohol. Let dry before installation.

#### **WARNING**

Handlebar end and inside of heating grip must be clean and dry before installing heating grip to ensure proper adhesion.

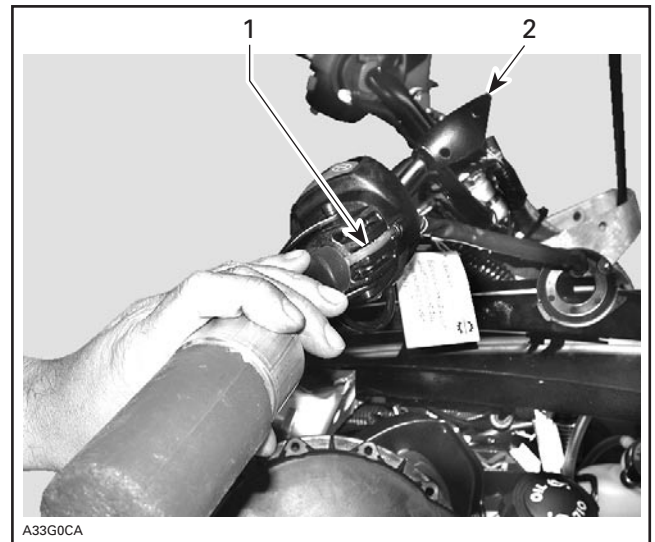
Position grip on handlebar with its harness aligned with windshield bracket. See next photo.

Use the appropriate insertion tool to properly install grip.

**CAUTION:** Installing grip without the insertion tool is likely to damage its heating element.

Position the insertion tool at the outside end of grip.

Using a plastic hammer, tap on tool to push grip on. Continue to tap until grip bottoms.



1. Harness  
2. Windshield bracket

Properly route harness then reinstall removed parts.

Reinstall terminals and replug connectors. Test grips to ensure they heat properly.

## 1, Steering Column

Unfasten windshield. Remove cap **no. 3**, console cap and console. Refer to STEERING COLUMN POSITION ADJUSTMENT for console removal.

Cut locking ties retaining harnesses to steering column.

Unbolt handlebar ass'y and move it aside.

Remove tuned pipe.

Detach the short tie rod **no. 8** from the steering column. Note that a hardened flat washer **no. 7** goes on each side of steering column lever.

Disengage carriage bolts **no. 6** from steering column support **no. 25**. Remove lower plastic U-clamps from steering column.

Disengage carriage bolts **no. 5** from steering support. Remove upper plastic U-clamps from steering column.

Pull steering column from top.

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

If, for any reason, the master cylinder has been removed from handlebar note that its clamp must be installed with the embossed arrow pointing downward.

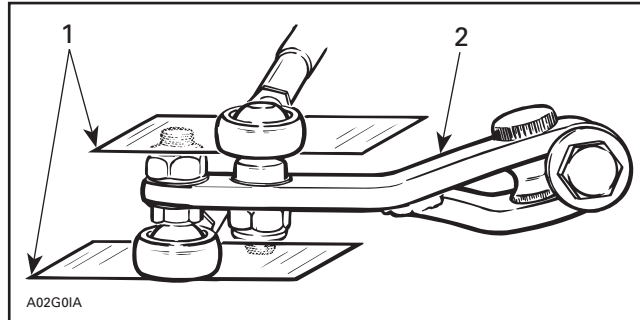
Refer to HANDLEBAR POSITION ADJUSTMENT for handlebar reinstallation.

#### 14, RH and LH Swivel Arm

At assembly respect UP mention.

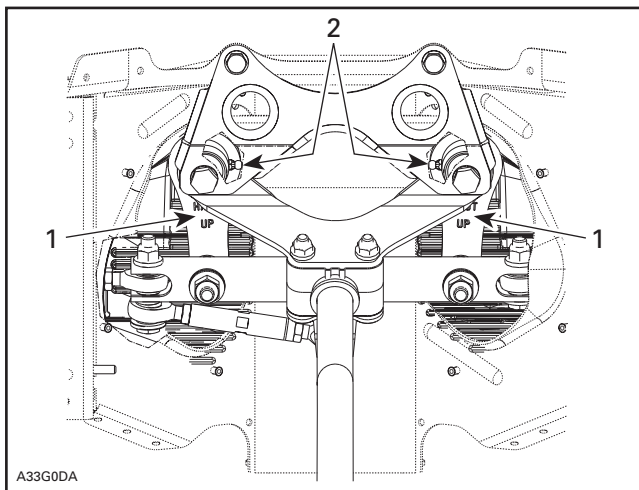
Their grease fitting no. 26 must face toward center of vehicle.

For proper torque specifications refer to the specific exploded view for the vehicle being serviced.



TYPICAL

1. Parallel with steering arm
2. Steering arm



1. UP mention
2. Grease fittings

#### 17,18, Ball Joint (left hand and right hand threads)

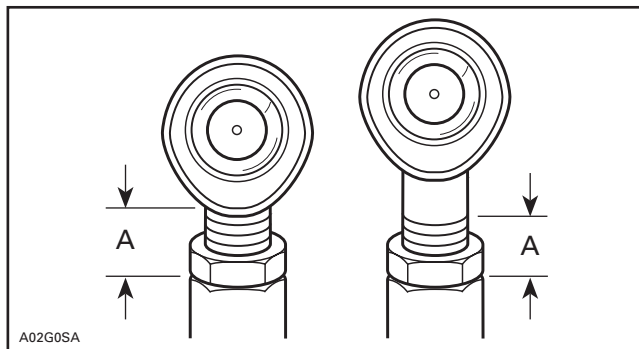
The maximum external threaded length not engaged in the tie rod must not exceed 20 mm (25/32 in).

**⚠ WARNING**

The cut off section of the ball joint must run parallel with the swivel bar no. 9. When tightening lock nuts, restrain ball joint with appropriate size wrench. The maximum external threaded length not engaged in the tie rod must not exceed 20 mm (25/32 in).

#### 7, Hardened Washer

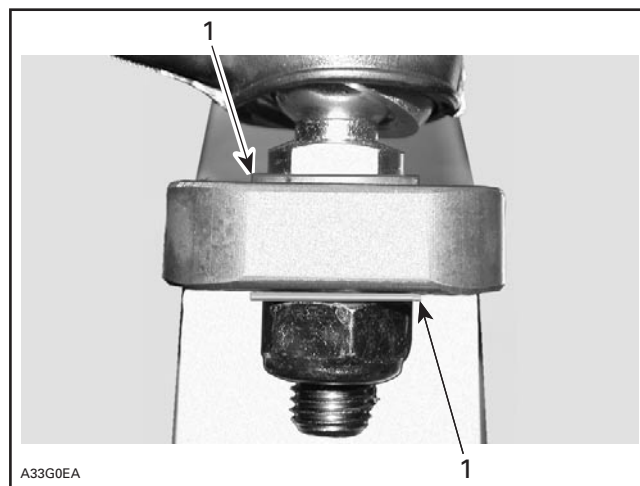
Install a hardened washer on each side of the ski leg and each side of the steering column lever.



TYPICAL

A. 20 mm (25/32 in) max.

The ball joint should be restrained when tightening the tie rod end lock nut. Align it so the tie rod end is parallel to the steering arm when assembled on the vehicle, refer to the following illustration.



TYPICAL

1. Hardened washers

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

## INSPECTION

Check skis and runners for wear. Replace as necessary. Refer to FRONT SUSPENSION.

Check the general condition of the steering system components for wear. Replace if necessary.

### 13, Heating Grip Element

Refer to TESTING PROCEDURE for checking heating element of grip.

### 17,18, Ball Joint (left hand and right hand threads)

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

## ADJUSTMENT

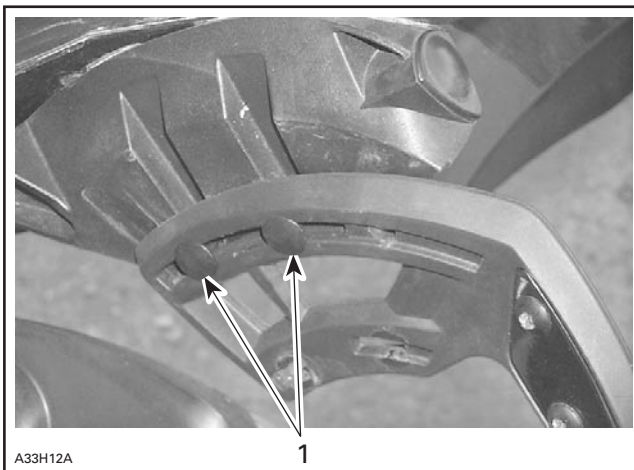
### Steering Column Position Adjustment

Steering column position is adjustable. Proceed as follows.

There are 2 positions.

**NOTE:** Following procedure describes how to change steering column position from rearward to forward position.

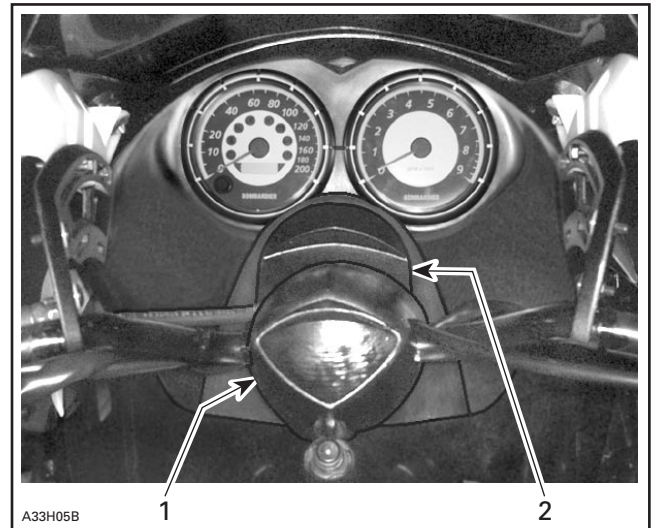
Unscrew 4 bolts retaining windshield assembly to handlebar. Remove windshield assembly.



ONE SIDE SHOWN — REARWARD POSITION

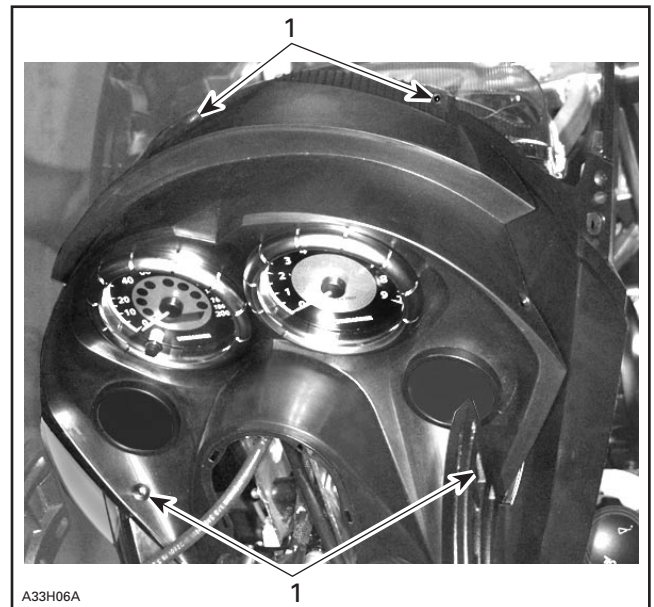
1. Bolts retaining windshield assembly

Remove cap no. 3 and console cap.



1. Cap  
2. Console cap

Unscrew 4 bolts retaining console.

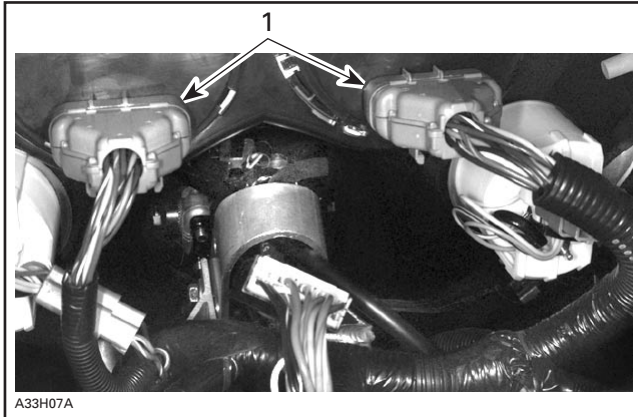


1. Bolts retaining console

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

Slightly lift console to gain access to electrical connector housings. Unplug the 2 large connector housings and the separate 3 wire connector.



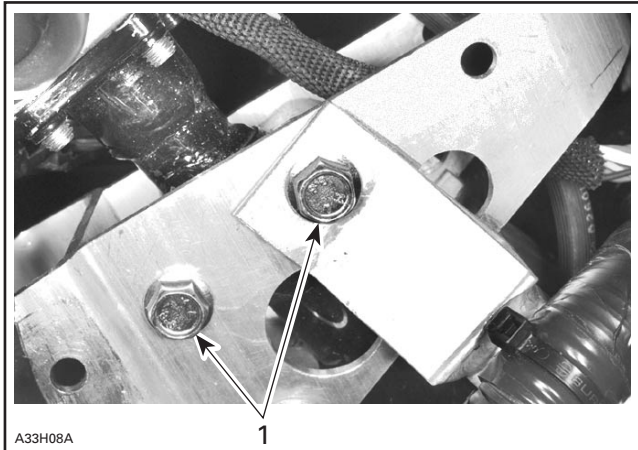
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#### TYPICAL

1. Large connector housings

Remove console.

Remove 2 bolts no. 5 retaining top of steering column.

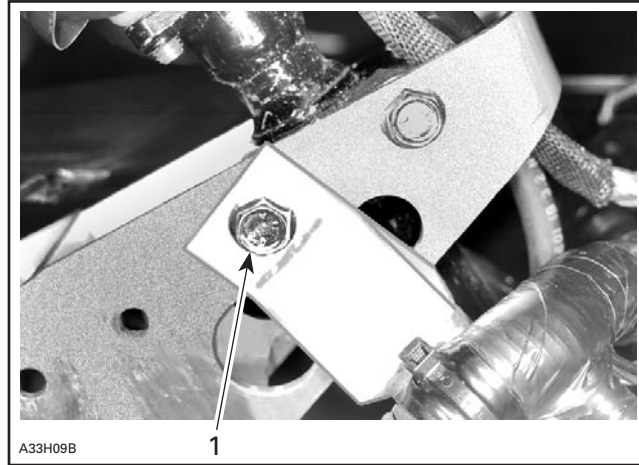


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#### STEERING COLUMN IN REARWARD POSITION

1. Two bolts retaining top of steering column

Move steering column to forward position.



A33H09B

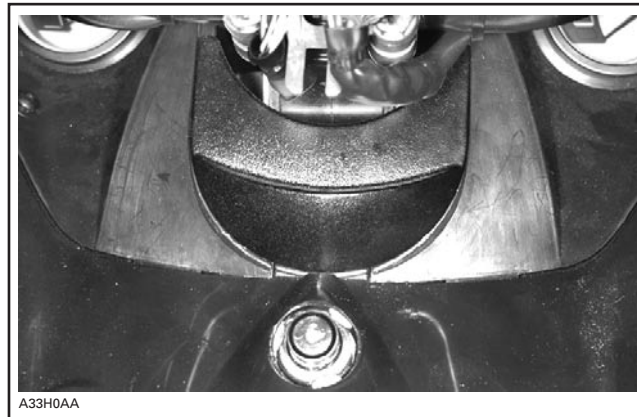
#### STEERING COLUMN IN FORWARD POSITION

1. Longer bolt

Reinstall the 2 bolts no. 5. Always install the longer bolt on thicker portion to be bolted. Use new lock nuts. Torque nuts to 25 N•m (18 lbf•ft).

Reconnect the electrical connectors and reinstall all removed parts.

Position of console cap will be inverted. Instead of being above it will be beneath steering column.



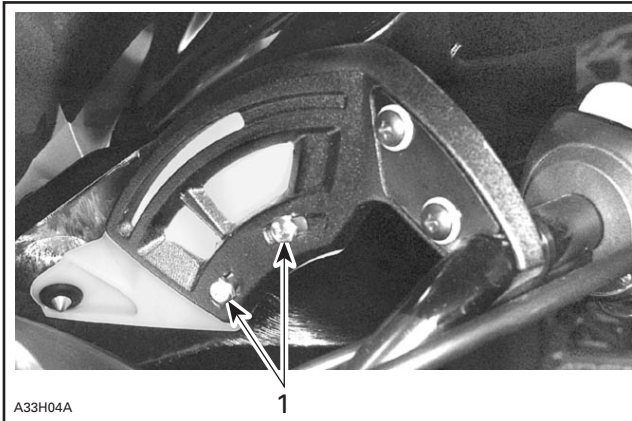
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#### CONSOLE CAP INSTALLED BENEATH STEERING COLUMN

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

Reinstall windshield assembly to handlebar. Refer to WINDSHIELD ADJUSTMENT below.



ONE SIDE SHOWN — FORWARD POSITION

1. Bolts retaining windshield assembly

Readjust throttle lever housing no. 21 and switch housing accordingly to optimal angle so that you will not need to release your grip to operate levers.

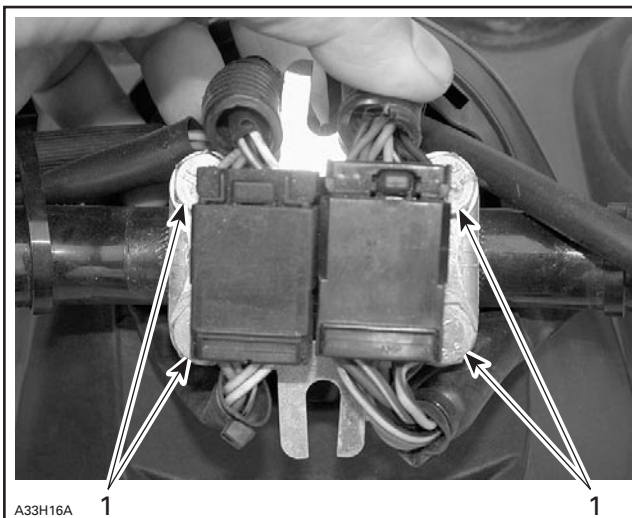
#### WARNING

Adjust with vehicle at rest in a safe place. Securely retighten all fasteners. Never rotate throttle lever to operate with fingers instead of thumb.

### Handlebar Position Adjustment

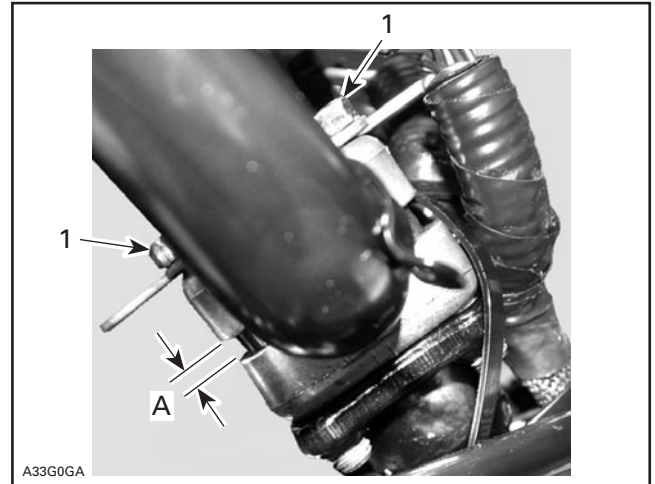
The handlebar position can be adjusted to suit driver's preferences.

Loosen all 4 bolts retaining handlebar to steering column.



1. Four bolts

Move handlebar to the desired position. Torque all 4 bolts no. 4 to 25 N•m (18 lbf•ft).



1. Torque to 25 N•m (18 lbf•ft)

A. Equal gap all around

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

#### WARNING

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

Readjust throttle lever housing no. 21 and switch housing accordingly to optimal angle so that you will not need to release your grip to operate levers.

#### WARNING

Adjust with vehicle at rest in a safe place. Securely retighten all fasteners. Never rotate throttle lever to operate with fingers instead of thumb.

Readjust windshield for proper fit with console. Refer to WINDSHIELD ADJUSTMENT below.

### Windshield Adjustment

The windshield can be adjusted to properly fit with console.

Before adjusting windshield, make sure it is installed on the proper bracket slots according to steering column position. See above photos.

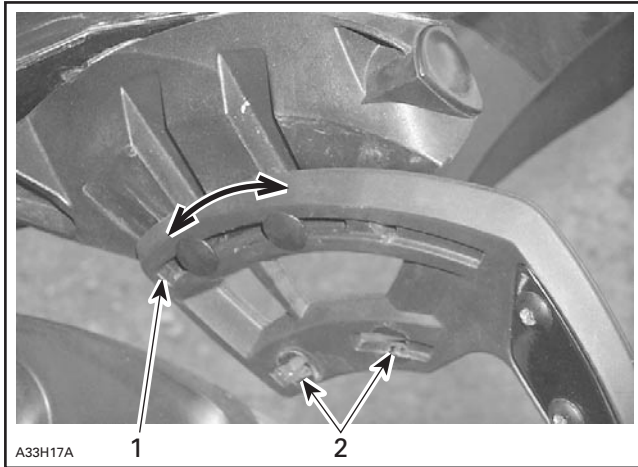
Slots in brackets allow different windshield positions. Move windshield to fit with console. Retighten 4 nuts to 5 N•m (44 lbf•in).



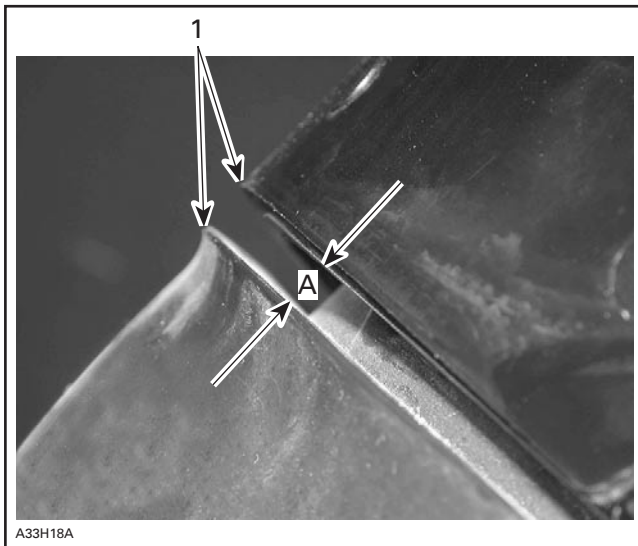
## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

Check that windshield does not touch console after adjustment.



1. Slot when windshield is installed for rearward steering column position
2. Slots when windshield is installed for forward steering column position



#### PROPER FIT OF WINDSHIELD VERSUS CONSOLE

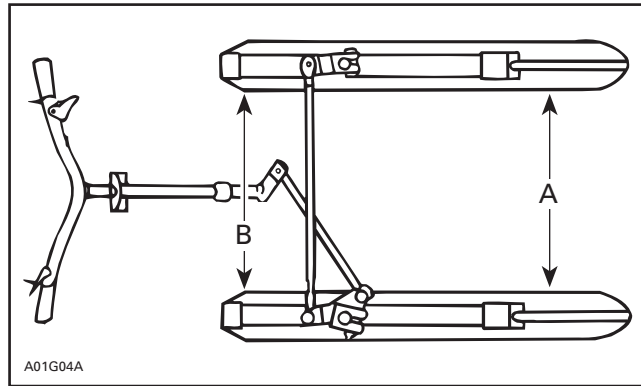
1. In line
- A. 8 to 12 mm (3/8 to 1/2 in)

## STEERING ADJUSTMENT (skis)

### Definitions

#### TOE-OUT:

A difference measured between the front edge of the skis "A" and rear edge "B" as viewed from the top.



### Adjustments

#### SKI ALIGNMENT AND TOE-OUT

Ski alignment and toe-out are performed by adjusting length of left and right tie rods no. 11.

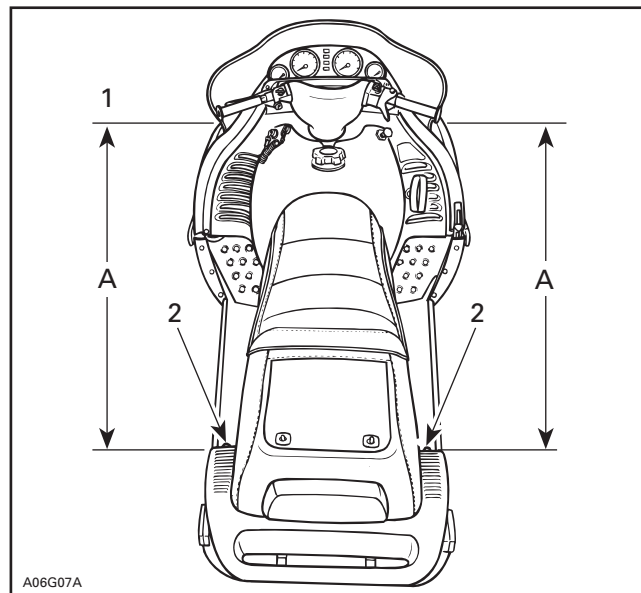
### ⚠ WARNING

Do not attempt to adjust skis in a straight ahead position by turning ball joint on tie rod no. 8.

#### Procedure:

1. Position handlebar so that it is horizontal 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

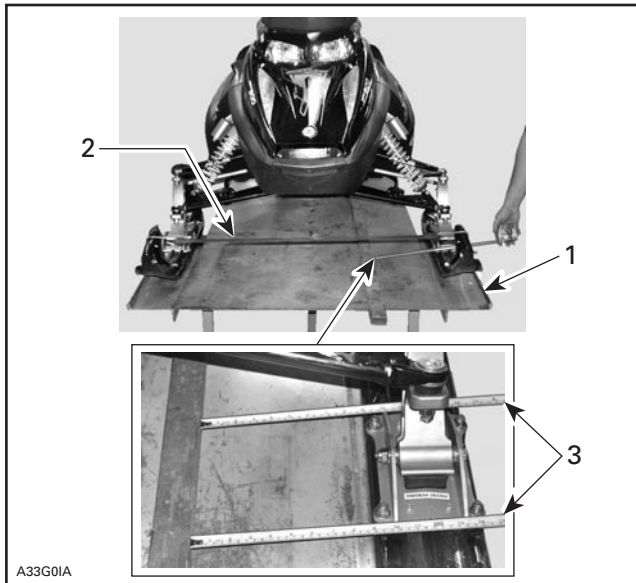
1. Equal distance "A" on each side
2. Same reference point

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 02 (STEERING SYSTEM)

2. Hook a rubber cord in front of skis to keep them closed and to take all slack from steering mechanism.
3. Leave the vehicle on the ground on its own weight.
4. Place a straight edge against pre-adjusted track and measure the distance between front and rear of ski bridge.

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



#### TYPICAL

1. Straight edge
2. Rubber cord
3. Measure at rear and front of ski bridge

If adjustment is needed:

- Loosen jam nuts of both tie rods **no. 11**.

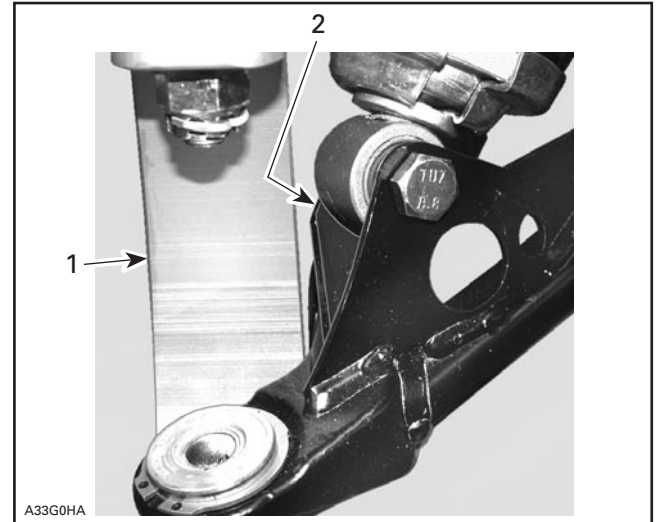
MODEL	TOTAL TOE-OUT ± 1 mm (± 3/64 in)
All REV Series	2 (5/64)

- Turn the tie rod to change its length.

#### **⚠ WARNING**

Never lengthen tie rod so that the external un-engaged threaded portion of ball joint exceeds 20 mm (25/32 in).

Once ski alignment is done check that ski leg rests against lower arm when the handlebar is fully turned. Check on both sides.



#### RIGHT HAND SIDE SHOWN

1. Ski leg
2. Lower arm

If the ski leg does not rest against lower arm on one side, check for bent parts. If no bent parts are found adjust length of short tie rod **no. 8** accordingly. Readjust ski alignment and toe-out.

Length of short tie rod **no. 8** (ball joint center to the other ball joint center) should be 132.5 ± 0.5 mm (5.217 ± .020 in).

## LUBRICATION

### **⚠ WARNING**

**Do not lubricate throttle cable or housing.**

Use suspension synthetic grease (P/N 293 550 033) on:

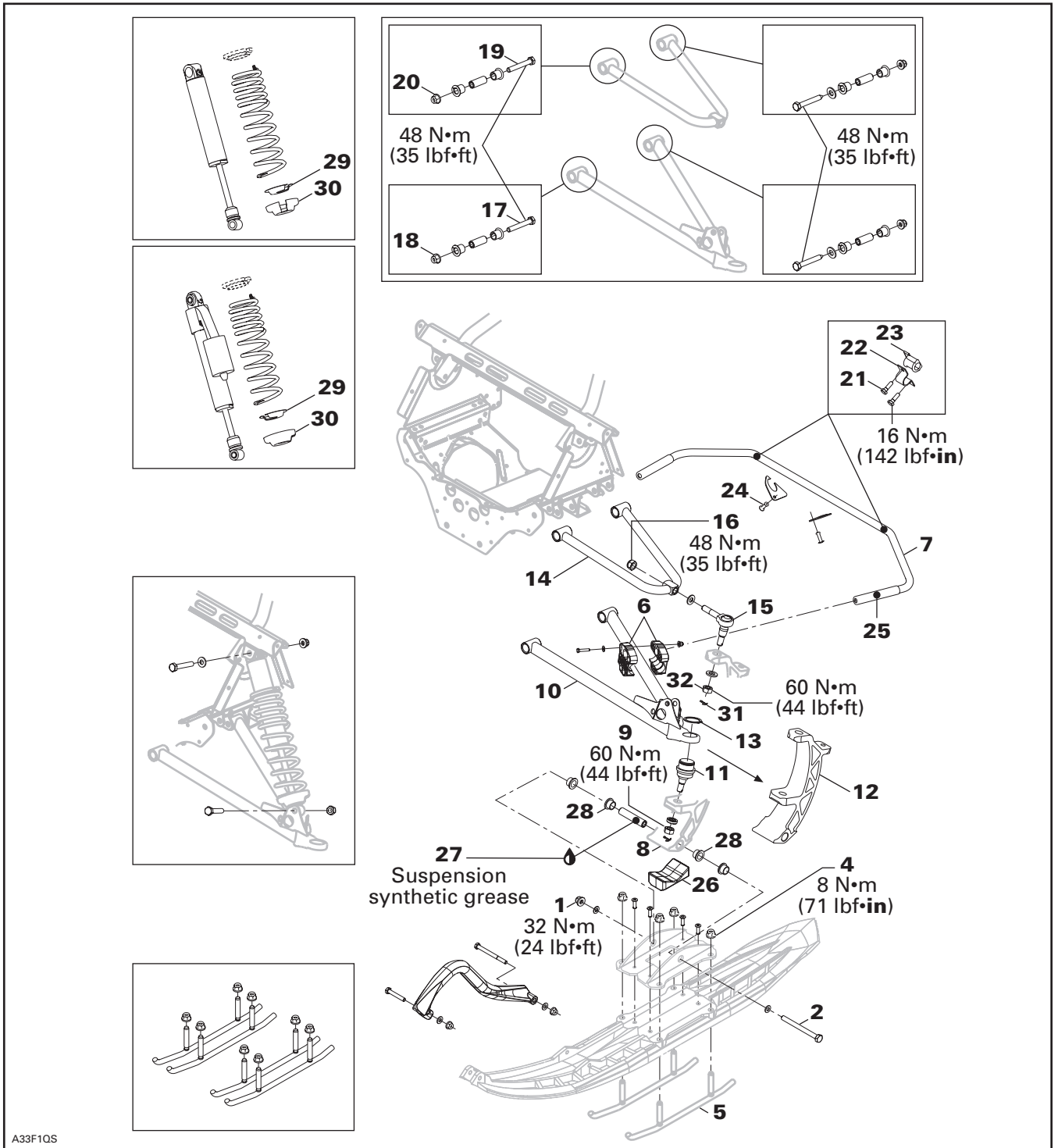
- Grease fitting **no. 26** of LH and RH swivel arms.
- Lower steering column bushing.

Use BOMBARDIER LUBE (P/N 293 600 016) on:

- Tie rod ball joints.

# SUSPENSION AND SKI SYSTEM

*REV Series*



A33F1QS

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)

**NOTE:** The same procedure applies on both sides.

## GENERAL INSPECTION

Check for looseness, bent, worn out, rusted or other damage on components. Ensure cotter pins are in good condition and properly secured. Replace the faulty component.

To check upper arm bushings and ball joint:

- Let vehicle weight compress the suspension.
- Firmly grab upper part of ski leg and try to move sideways to feel the free-play.
- If excessive play is felt, replace the faulty component.

To check lower arm bushings and ball joint:

- Raise front of vehicle off the ground from the frame to release the suspension.
- Firmly grab lower part of ski leg and try to move sideways to feel the free-play.
- If excessive play is felt, replace the faulty component.

## DISASSEMBLY

### Ski

Lift front of vehicle and support it off the ground.

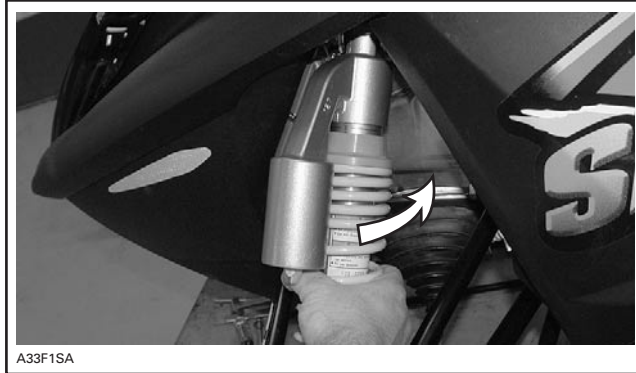
Unscrew nut **no. 1** then pull screw **no. 2** out. Remove ski **no. 3**.

Unscrew nuts **no. 4** and remove ski runners **no. 5**.

### Shock Absorber

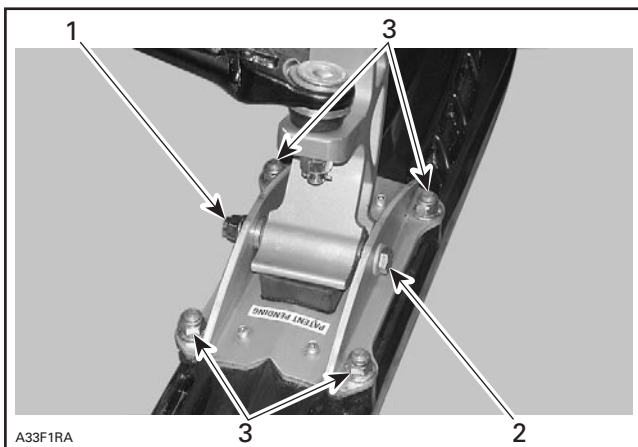
Open hood and remove side panels.

Reduce spring preload by turning adjusting ring towards position 1 and continue until it stops.



Remove lower screw then upper screw of shock absorber.

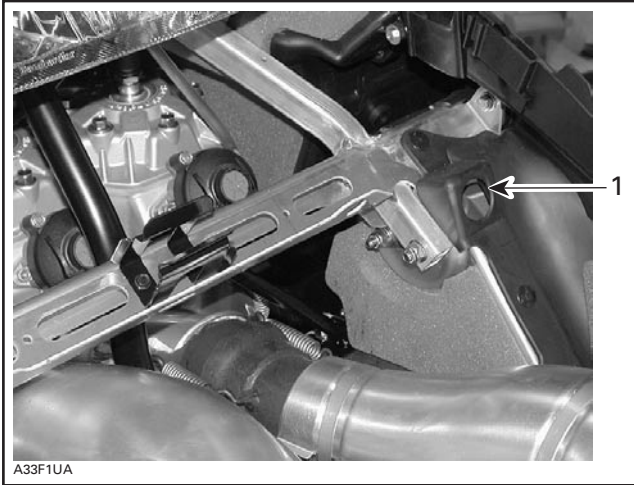
**NOTE:** To retain upper screw while unscrewing nut, remove access plug in engine compartment.



1. Unscrew nut
2. Remove screw
3. Ski runner nuts

## Section 08 STEERING/FRONT SUSPENSION

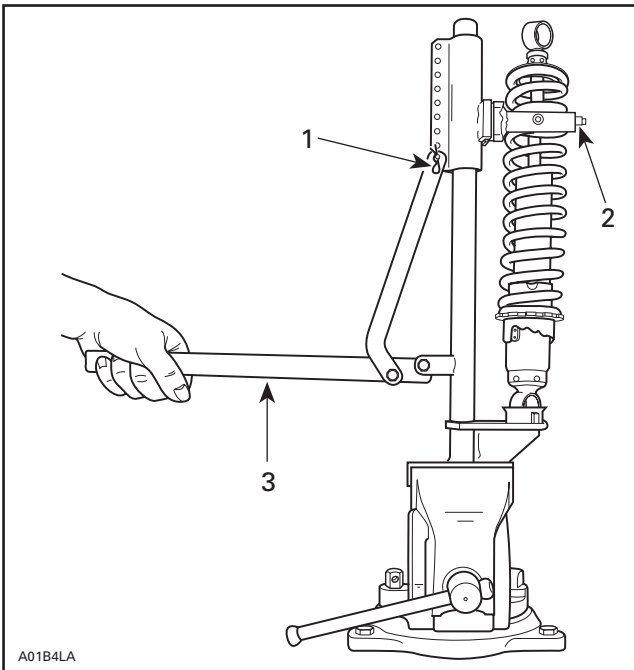
### Subsection 03 (SUSPENSION AND SKI SYSTEM)



1. Access hole to reach upper screw.

For shock absorber spring disassembly use shock absorber spring remover (P/N 529 035 504) in a vise. Mount shock absorber in it and turn shock absorber so that spring coils match spring compressor.

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

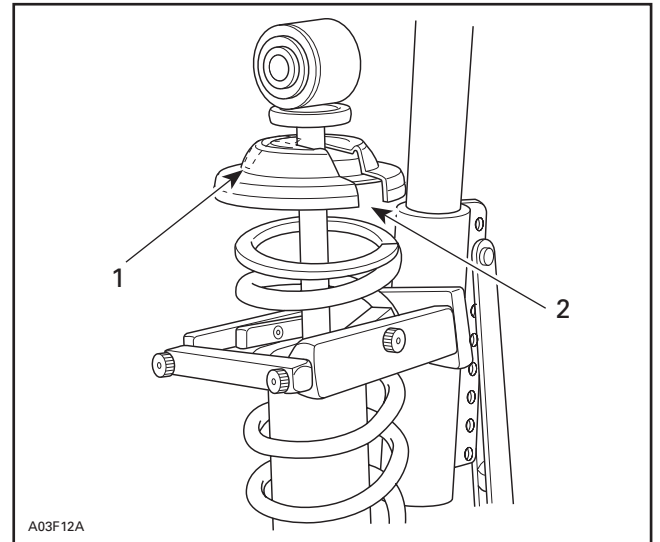


#### TYPICAL

1. Clevis pin
2. Bar
3. Handle horizontal

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

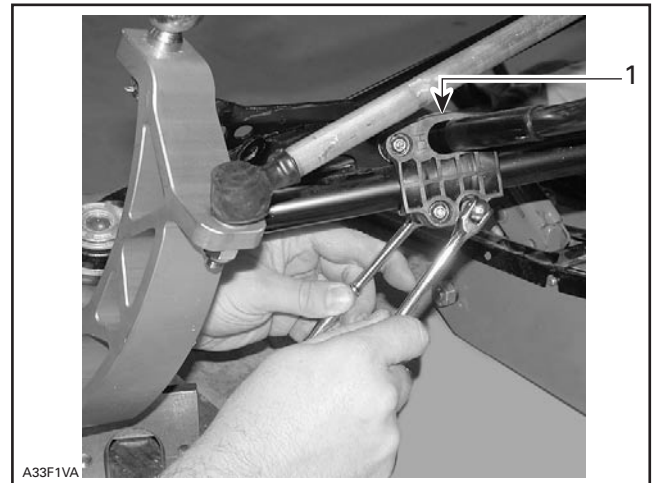
At installation, cap opening no. 30 must be 180° from spring stopper no. 29 opening.



1. Cap opening
2. Spring stopper opening

### Lower Arm

Remove sliding blocks no. 6 of stabilizer bar no. 7.



1. Sliding blocks

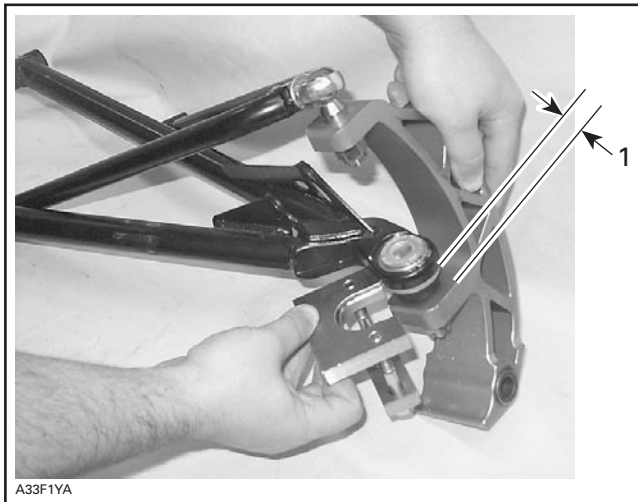
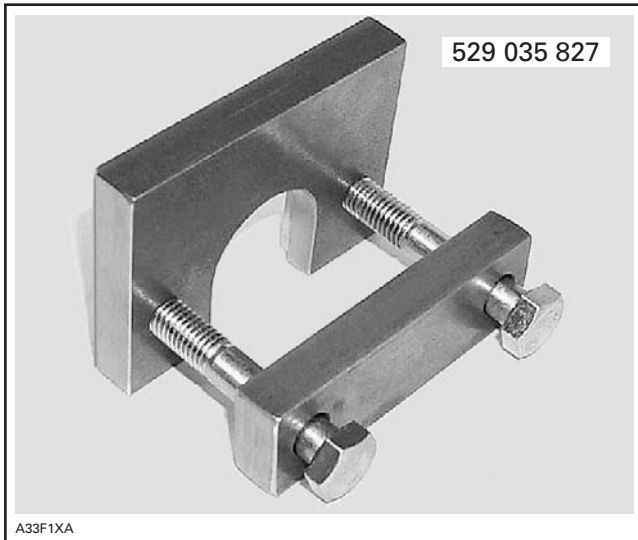
Remove cotter pin no. 8 and unscrew ball joint nut no. 9.

Raise lower arm no. 10 so that ball joint no. 11 becomes parallel with ski leg no. 12.

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)

Install ball joint remover (P/N 529 035 827) and detach ball joint from ski leg.

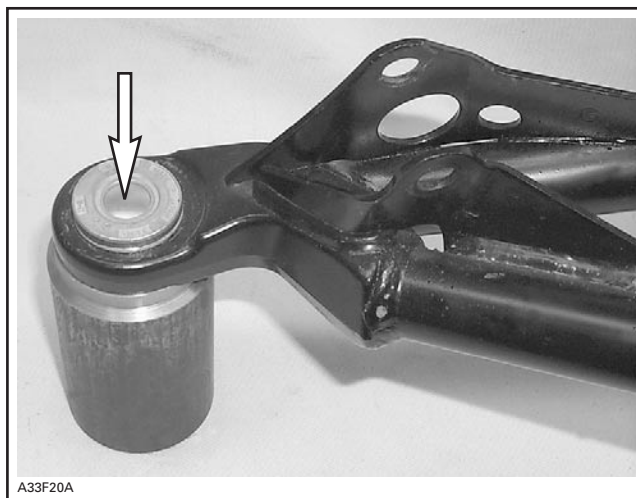


1. Ball joint parallel with ski leg

Remove lower arm from frame. For front screw no. 17 removal, hold nut no. 18 from engine compartment.

To remove ball joint, proceed as follows:

- Remove snap ring no. 13.
- Install ball joint remover support (P/N 529 035 873) under joint.
- Press joint out.



## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)

#### Tie Rod

Refer to STEERING SYSTEM section and remove tie rod from ski leg.

#### Upper Arm

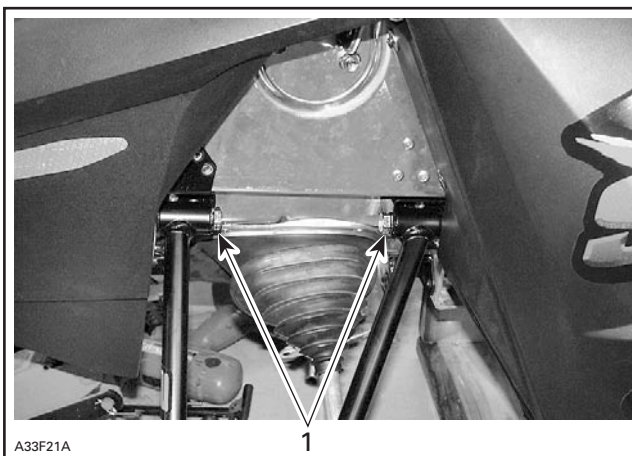
Remove cotter pin no. 31 and unscrew ball joint nut no. 32.

Install ball joint remover (P/N 529 035 827) and detach ball joint from ski leg.



Remove ball joint from upper arm.

Remove upper arm no. 14 from frame. For screws no. 19 removal, hold nuts no. 20 from engine compartment.



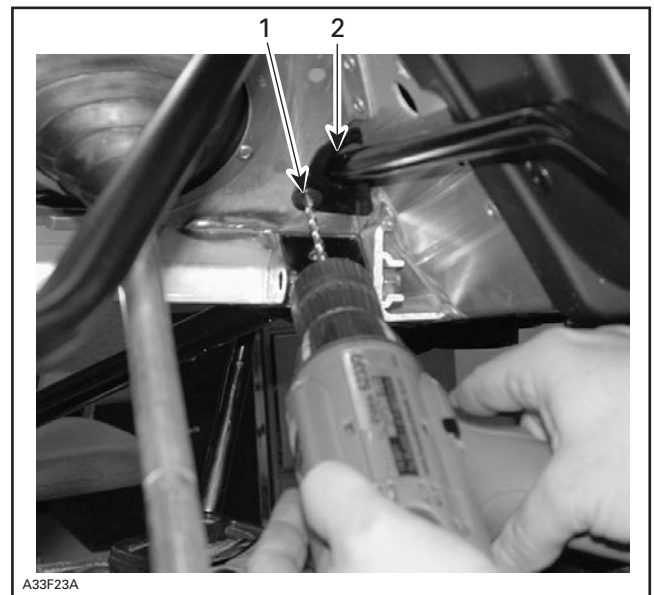
1. Remove screws while holding nuts from engine compartment

#### Stabilizer Bar

Remove screws no. 21 from clamps no. 22.



Using a 4.8 mm (3/16 in) drill bit, drill rivet no. 24 out. Remove cap.

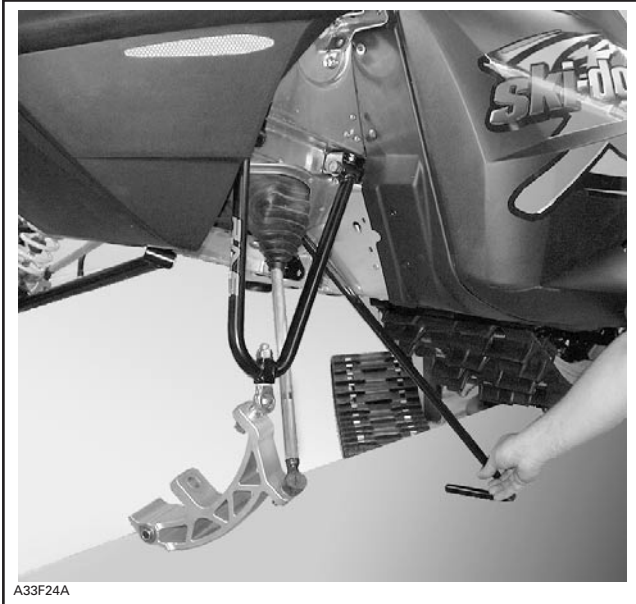


1. Drill rivet out with a 4.8 mm (3/16 in) drill bit  
2. Cap

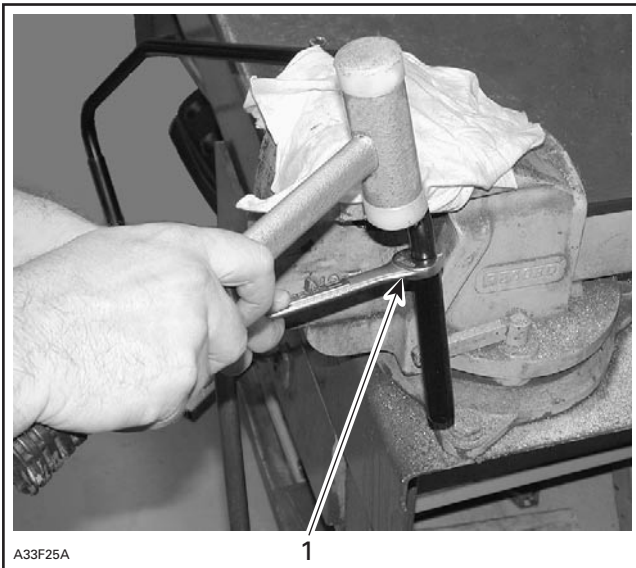
## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)

Lift front of vehicle enough so that stabilizer bar no. 7 can be rotated downward to allow to slide it out.



To remove bushing, use a 16 mm (5/8 in) open wrench and tap bushing out as shown.



1. Use a 16 mm (5/8 in) open wrench to push bushing out

## INSPECTION

Check all plastic bushings for wear. Replace as required.

Check condition of ski leg no. 12. Replace as required.

Check for straightness of lower and upper arms. Replace as required.

Check condition of ball joints. Replace as required.

Check skis and runners no. 5 for wear, replace as necessary.

Check condition of ski stopper no. 26. Replace it when deteriorated.

To check condition of shock absorber, refer to SUSPENSION then look for SHOCK ABSORBER INSPECTION.

## INSTALLATION

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

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

**Nuts with a cotter pin:** After applying the proper torque, continue tightening as necessary to allow cotter pin insertion. Ensure to properly secure cotter pin.

### **WARNING**

Always install new cotter pins at assembly and properly bend their ends.

## Stabilizer Bar

Ensure to properly position stabilizer bar before insertion in frame.

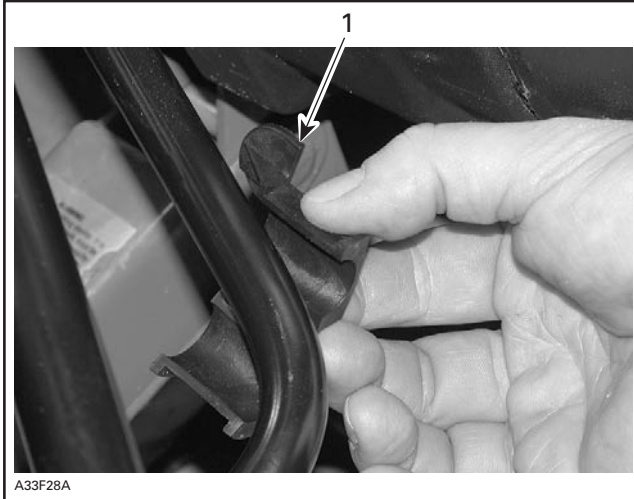




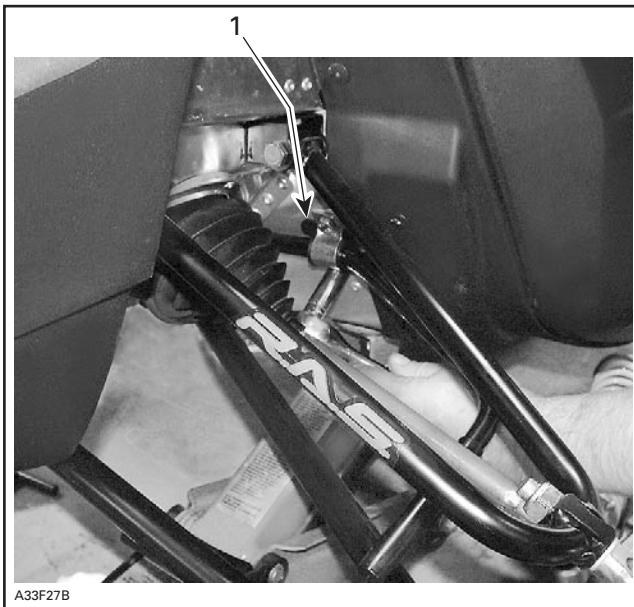
## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)

Install the stabilizer bar bushing no. 23 making sure to place its tab over the access hole located on the LH side.



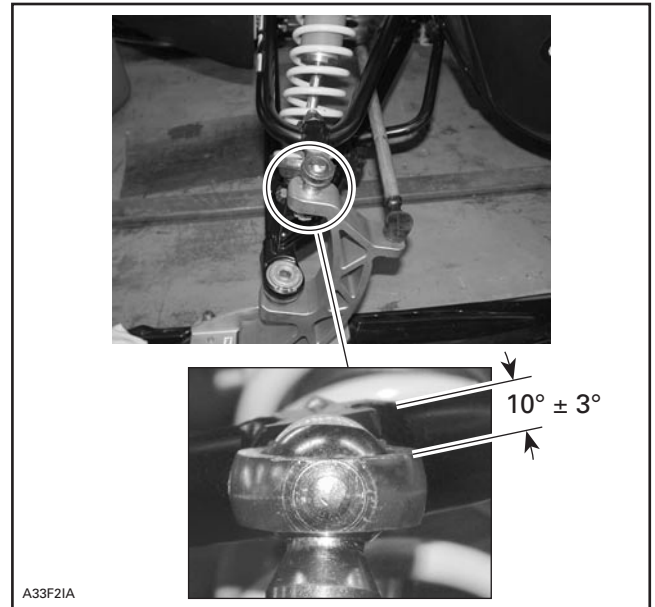
1. Install bushing as shown



1. Tab here to obstruct access hole

### Upper Arm

When installing ball joint to upper arm, ensure to tilt it with the proper angle as shown.



### Lower Arm

Position lower arm below stabilizer bar.

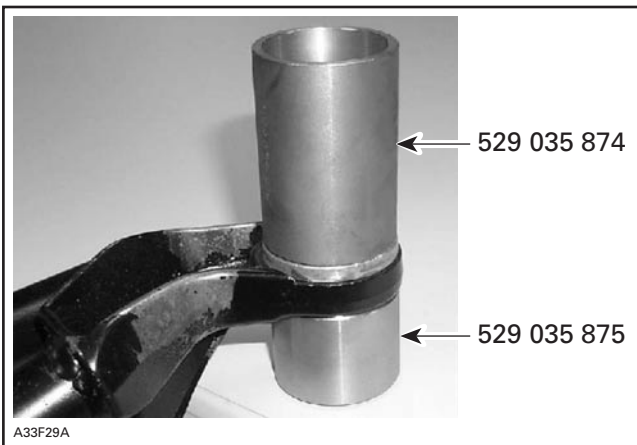
Prior to installing ball joint in lower arm, ensure to clean the tapered surfaces with the Pulley flange cleaner product (P/N 413 711 809). Surface contacts must be clean and free of dirt, oil and grease. Apply the cleaner on a rag then use the rag to clean the surfaces of ball joint and ski leg.

To install ball joint, proceed as follows:

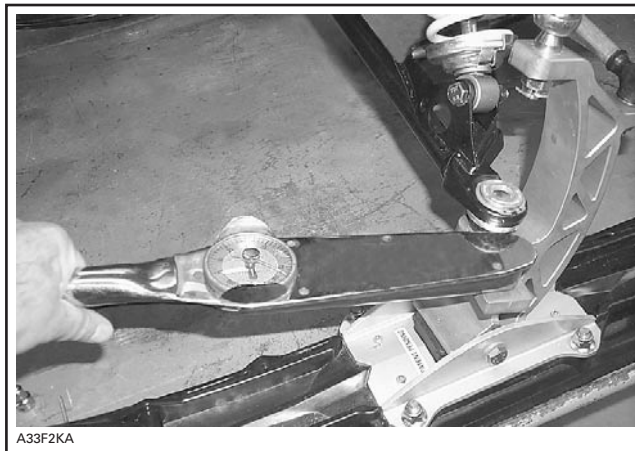
- Install ball joint support (P/N 529 035 875) on top side of lower arm (operating position).
- Position ball joint installer (P/N 529 035 874) on bottom side of lower arm (operating position).
- Press joint in.
- Install snap ring no. 13.

## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)



To properly torque ball joint nut, use the A-arm nut wrench (P/N529 035 876).

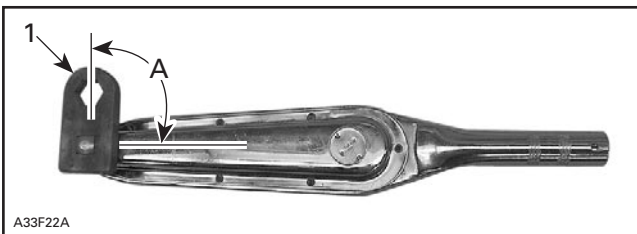


### Stabilizer Bar

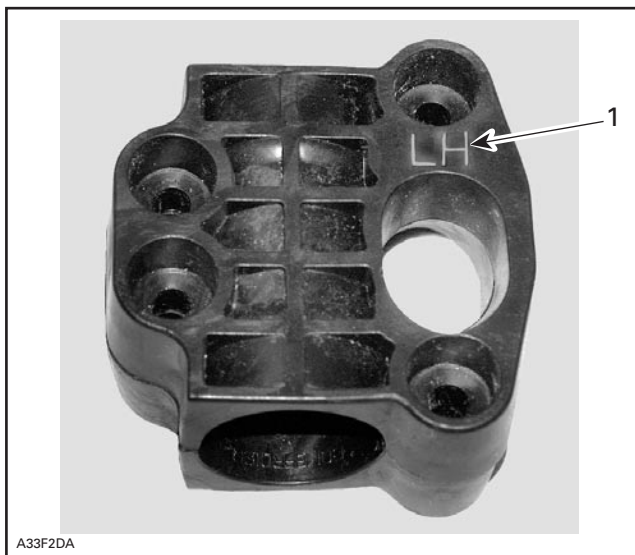
Notice that LH and RH sliding blocks are different. Look for their molded identification with LH or RH letters.



Ensure to install the tool perpendicularly (90°) to torque wrench.



1. Tool perpendicular (90°) to torque wrench  
A. 90°



1. Molded identification for proper side installation

To install sliding blocks:

- Temporarily rotate the rear block by 180°.
- Insert on stabilizer bar end and push beyond the lower arm.
- Rotate block back by 180° to its normal position.
- Install the other block half.
- Install screws and nuts.
- Ensure blocks slide easily when compressing and releasing suspension.

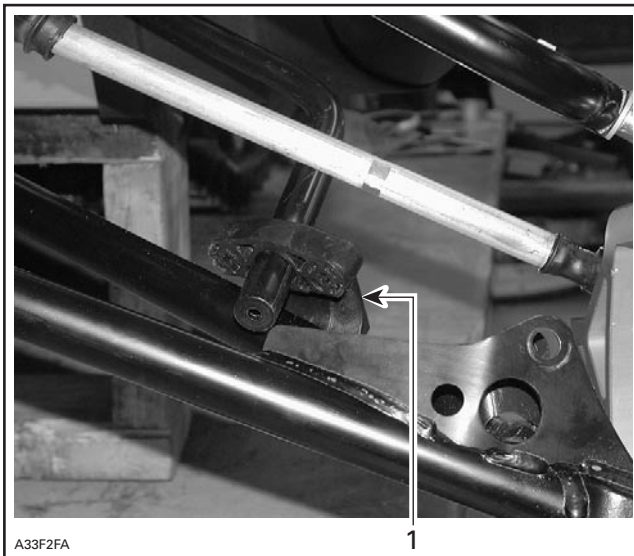
## Section 08 STEERING/FRONT SUSPENSION

### Subsection 03 (SUSPENSION AND SKI SYSTEM)



A33F2EA

1. Temporarily rotate block by 180° for its insertion

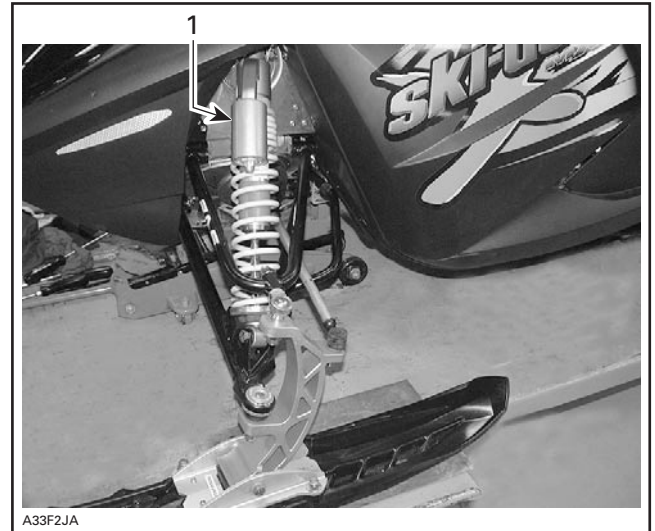


A33F2FA

1. Push block on bar end beyond lower arm then rotate back to its normal position

## Shock Absorber

Ensure to reinstall shock absorber so that its reservoir (if so equipped) is pointing toward front.



A33F2JA

1. Reservoir pointing toward front

Readjust shock absorber preload.

## Ski

Apply suspension synthetic grease (P/N 293 550 033) between bushing no. 28 and spacer no. 27 and also on inner tube of ski leg.

## Adjustment

Proceed with ski alignment. Refer to STEERING SYSTEM.