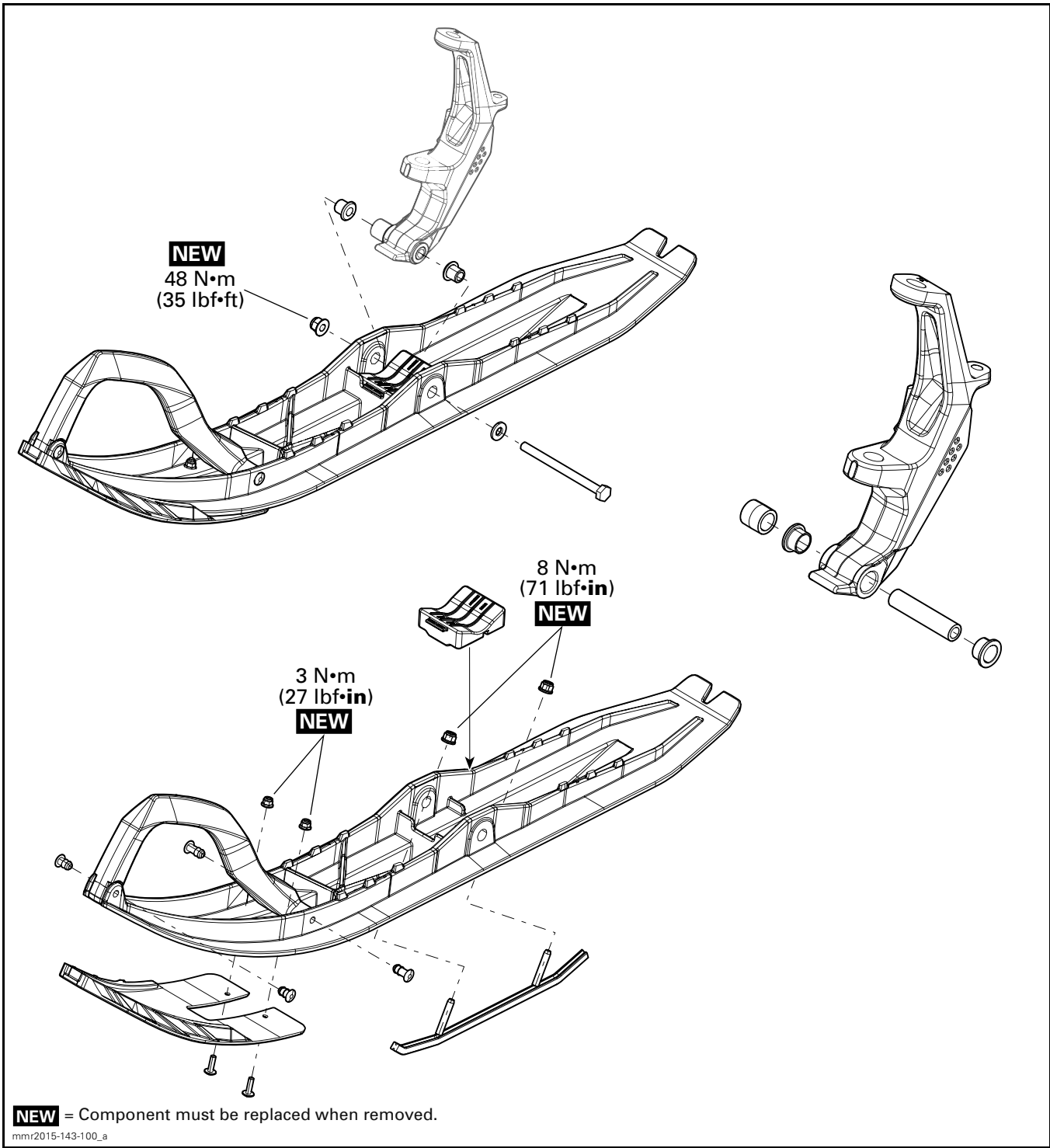


# STEERING SYSTEM

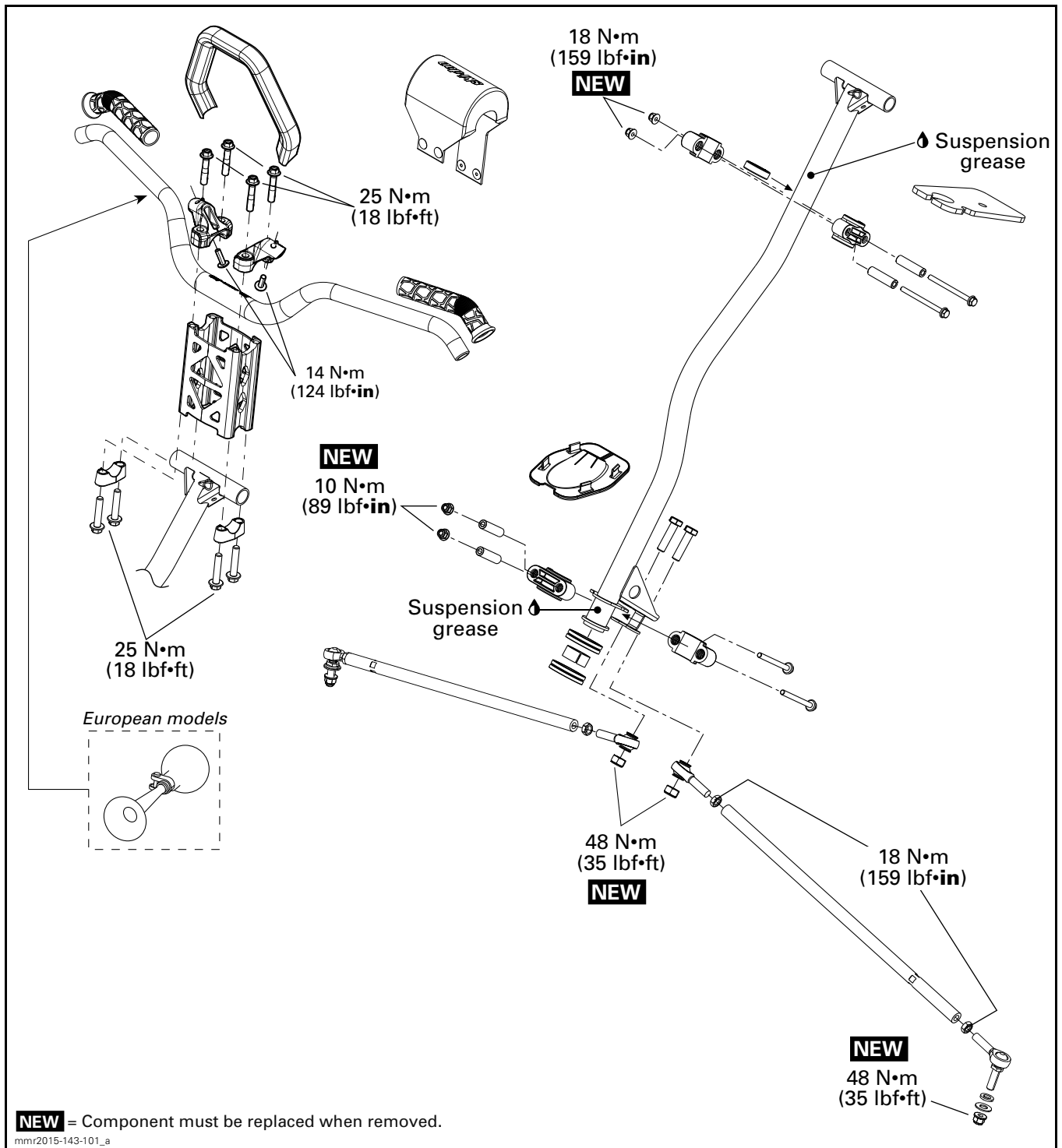
## SERVICE PRODUCTS

<b>Description</b>	<b>Part Number</b>	<b>Page</b>
SUSPENSION GREASE .....	293 550 033 .....	396

SKIS



## STEERING COLUMN AND TIE-RODS




GENERAL

When removing or replacing a part of the steering mechanism, perform the steering alignment, refer to *STEERING ALIGNMENT* in this subsection.

During assembly/installation, use the torque values and service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

 **WARNING**

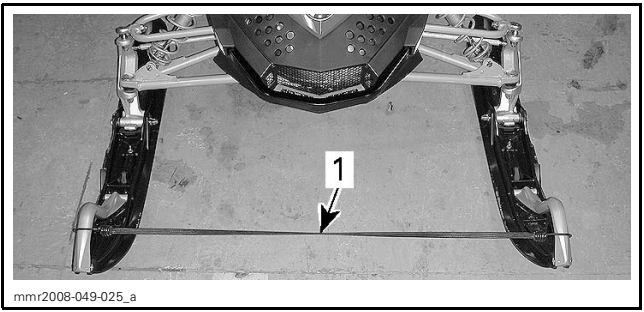
Torque wrench tightening specifications must be strictly adhered to.  
Locking devices when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.) must be replaced.

**NOTICE** Hoses, cables and locking ties removed during a procedure must be reinstalled at the same location.

ADJUSTMENT

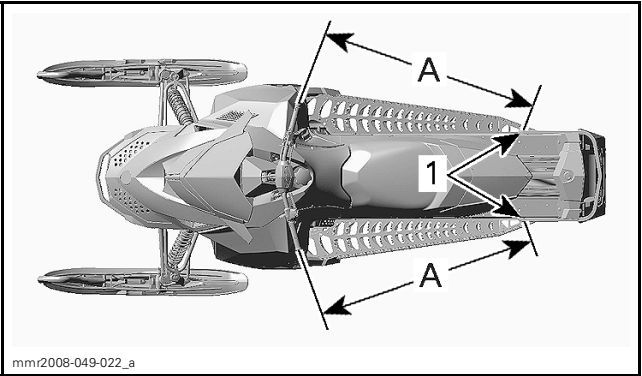
STEERING ALIGNMENT

- Ski alignment is performed by adjusting the length of left and right tie-rods.
1. Leave the vehicle on the ground on its own weight.
  2. Attach ski handles together with a bungee cord.



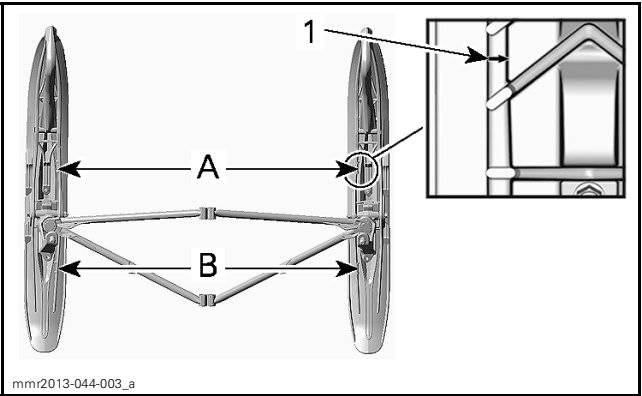
TYPICAL  
1. Bungee cord

3. Position handlebar so that it is 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 to each side.



TYPICAL  
1. Same reference point  
A. Equal distance on each side

4. Ensure track is properly aligned.
5. Verify if skis are in straight-ahead position by placing a straight edge against track and measuring distance between front and rear ski bridges and straight edge.
6. With skis in straight ahead position, adjust the toe-out.
7. Measure the distance between front and rear ski bridges in line with arrows on skis.
8. Use the following illustration and this equation to determine the steering adjustment.

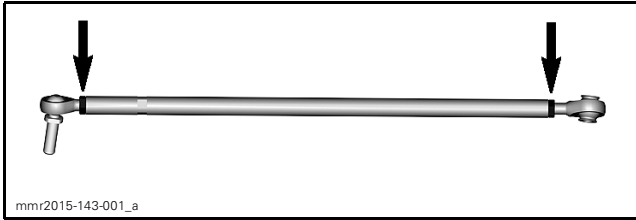


TYPICAL  
1. Arrow on ski  
 $A - B = 5 \text{ mm } (.197 \text{ in})$

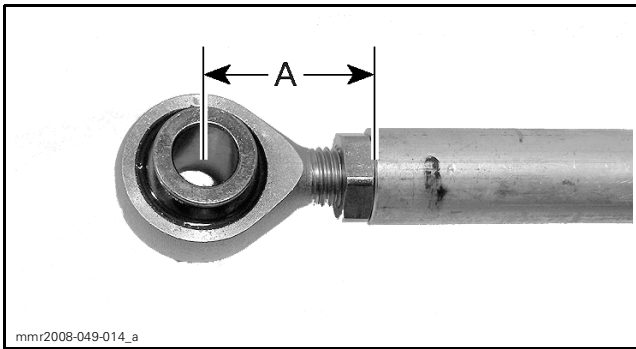
STEERING ALIGNMENT	
Toe-out	5 mm (.197 in)

9. If adjustment is needed, loosen tie-rod jam nuts then turn tie-rods to change their length.
10. Tighten jam nuts to specification.

TIGHTENING TORQUE	
Jam nuts	18 N•m (159 lbf•in)



**NOTE:** The maximum tie-rod end length not engaged in the tie rod must not exceed 34 mm (1.339 in).



A. 34 mm (1.339 in) maximum

## PROCEDURES

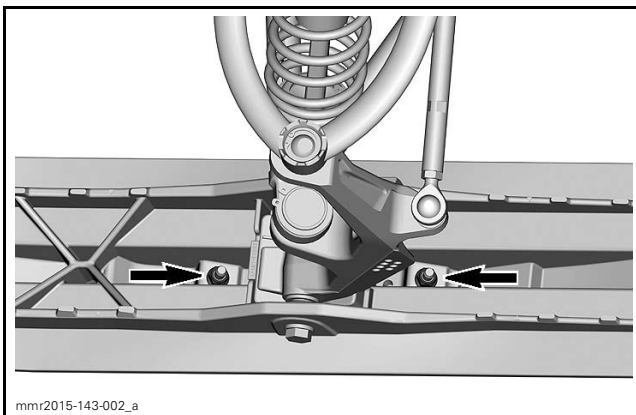
### SKI RUNNER

#### Ski Runner Inspection

Refer to *PERIODIC MAINTENANCE PROCEDURES*.

#### Ski Runner Removal

1. Lift the front of vehicle and support it off the ground.
2. Unscrew the ski runner nuts then remove ski runners.



#### Ski Runner Installation

The installation is the reverse of the removal procedure. Pay attention to the following.

tighten ski runner nuts to specification.

TIGHTENING TORQUE	
Runner nuts	8 N•m (71 lbf•in)

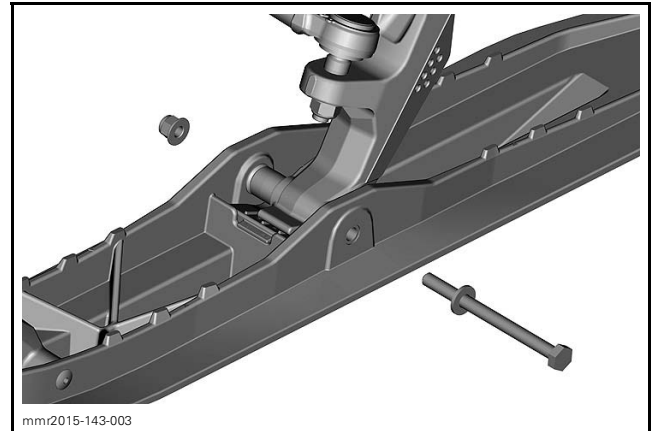
## SKIS

### Ski Inspection

Refer to *PERIODIC MAINTENANCE PROCEDURES*.

### Ski Removal

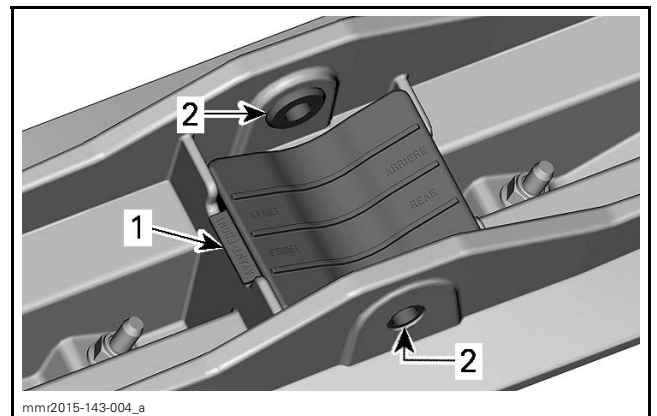
1. Lift front of vehicle and support it off ground.
2. Unscrew nut then pull ski bolt out.



3. Remove ski from vehicle.

### Ski Installation

1. Make sure bushings are installed in ski holes.
2. Install the ski stopper. Position indicator in front and make sure the bump in the ski is in the groove of the ski stopper.



1. Ski stopper
2. Bushings

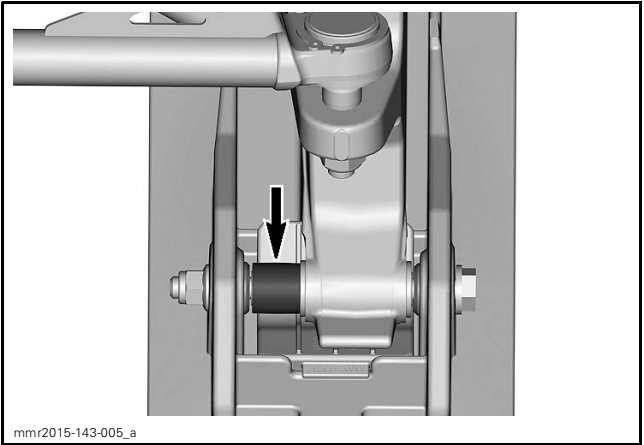
3. Determine the desired ski stance (2 positions).

**Section 07 CHASSIS**  
**Subsection 03 (STEERING SYSTEM)**

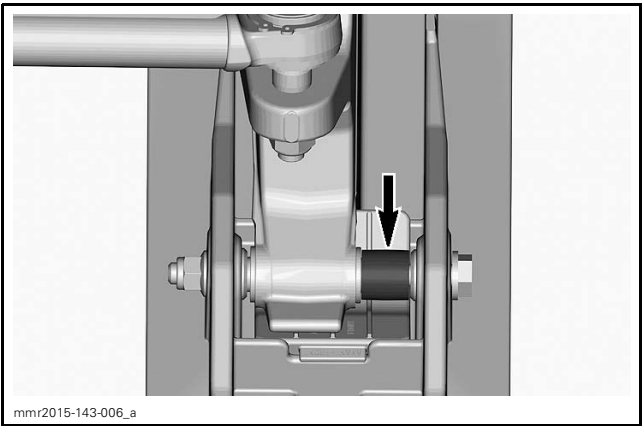
4. Install the spacer inside for the narrower stance and outside for the wider stance.

**WARNING**

Proceed to the same setting for both skis.



NARROWER STANCE — LEFT SKI SHOWN



WIDER STANCE — LEFT SKI SHOWN

5. Install ski bolt and tighten to specification.

TIGHTENING TORQUE	
Ski bolt	48 N•m (35 lbf•ft)

**SKI HANDLES**

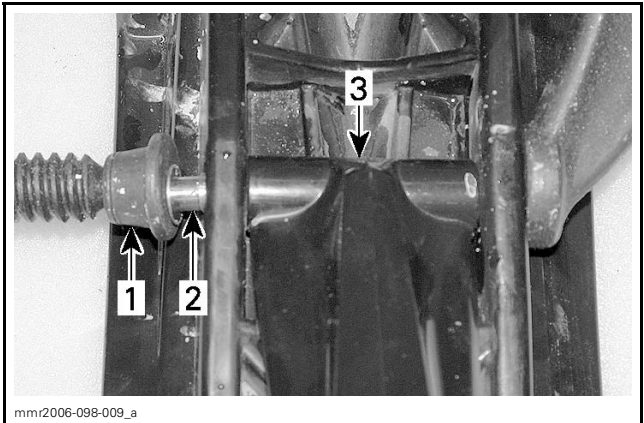
**Ski Handle Removal**

1. Remove ski from vehicle.
2. Using a 9 mm (3/8 in) drill bit, remove ski handle rivets. Only drill the head of rivet. Do not try to drill all the way through the rivet. Angle the drill bit to reduce the chance of spinning the rivet in the ski.
3. Remove handle from ski.

4. Place handle in hot water for 10 minutes then using a punch, drive the inner part of rivet out of handle.

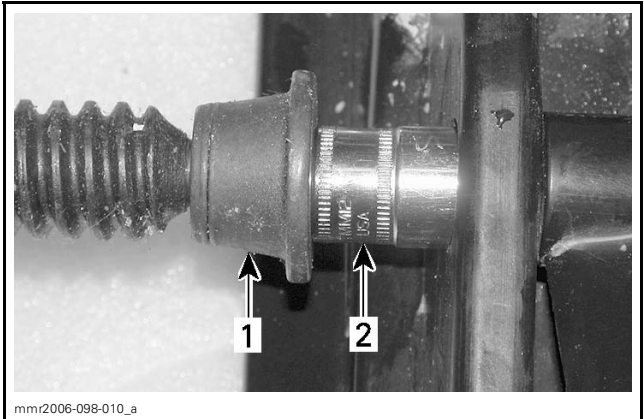
**Ski Handle Installation**

1. To install rivets, use a C-clamp and a short 10 mm socket.
2. Place a rivet in position and insert it into ski and ski handle. Repeat the procedure for the other side.



1. C-clamp
2. Rivet
3. Handle

3. When both rivets are installed, use the short 10 mm socket to push rivet heads against the ski.



1. C-clamp
2. 10 mm socket

**SKI FLOTATION EXTENSION**

**Condition Utilization**

The key to the adjustable nose is to reduce the tip-hop that can slow down the vehicle.

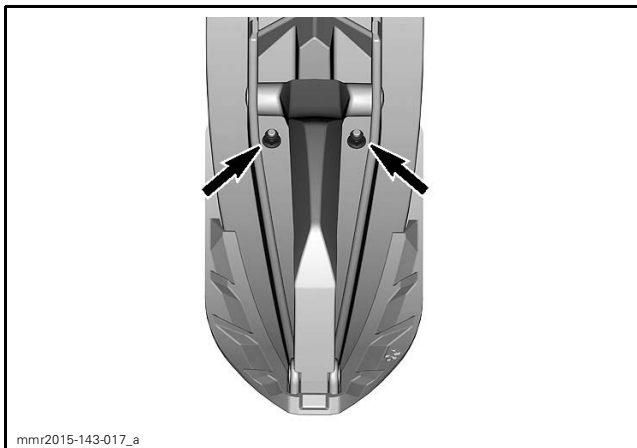
In snow conditions with less than 41 cm (16 in) of fresh powder, specially when there is a crust, the narrow tip stays in the snow - which helps to main-

tain a carve. Also, when side hilling, and crossing a snowmobile rut, the narrow shape moves the impact point - where a change in snow density acts to tip-up the ski - more towards the spindle. This reduces kick back by 50% compared to the wider configuration, minimizing its impact on the attitude of the snowmobile holding a side hill.

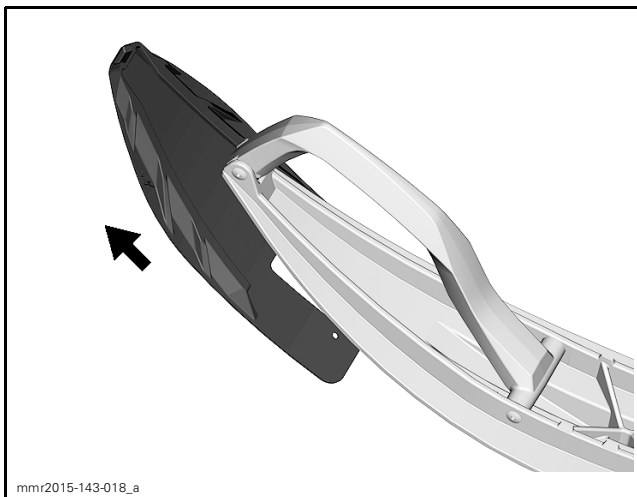
In snow conditions with more than 41 cm (16 in) of fresh powder, the wider tip configuration is desirable, as it increases flotation and will bring the nose of the snowmobile up.

### Ski Flotation Extension Removal

1. Remove nuts and screws securing the extension to ski.



2. Slide the extension off the ski.



### Ski Flotation Extension Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Install extension nuts towards up and tighten to specification.

TIGHTENING TORQUE	
Extension nuts	3 N•m (27 lbf•in)

## SKI LEG

To replace a ski leg, refer to *FRONT SUSPENSION* subsection.

## HANDLEBAR GRIP

**NOTE:** To verify or replace heating elements, refer to *LIGHTS, GAUGE AND ACCESSORIES* subsection.

### Handlebar Grip Removal

Remove grips by pulling while using compressed air, which will inflate or loosen the fit between the grip and handlebar.



### Handlebar Grip Installation

Insert the handlebar grip on handlebar while blowing compressed air to inflate or loosen the fit between grip and handlebar.

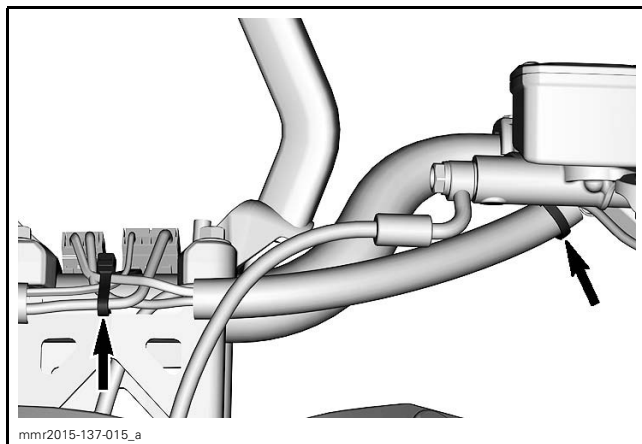
## MULTIFUNCTION SWITCH

### Multifunction Switch Removal

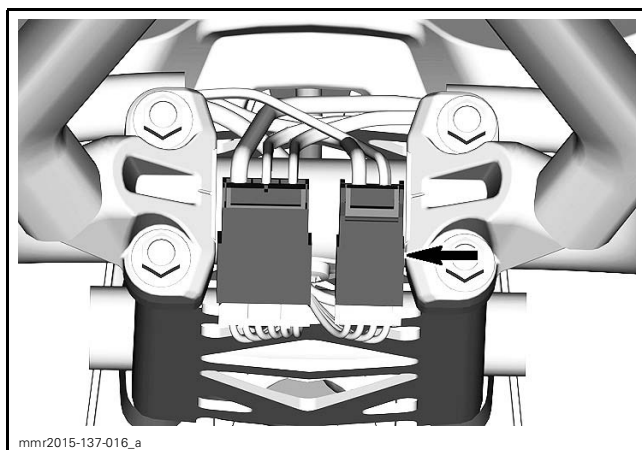
1. Remove steering cover.
2. Cut locking tie securing multifunction switch harness.

## Section 07 CHASSIS

### Subsection 03 (STEERING SYSTEM)



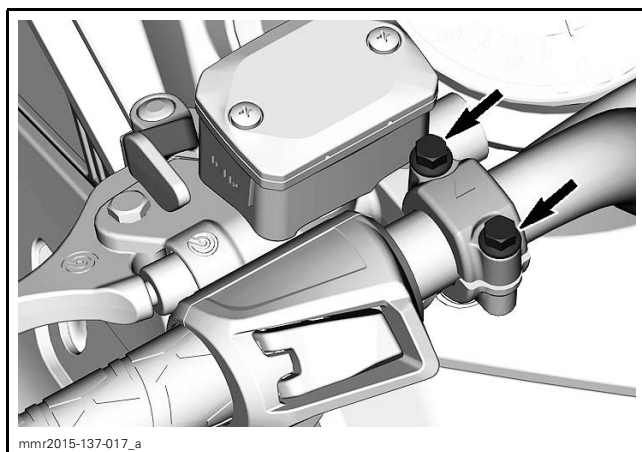
3. Disconnect *LH* connector (4-pin).



4. Remove multifunction wire terminals from *LH* connector. Refer to *CONNECTORS INFORMATION* subsection.

**NOTICE** Take note of exact positioning of multifunction wire before removing it from the connector.

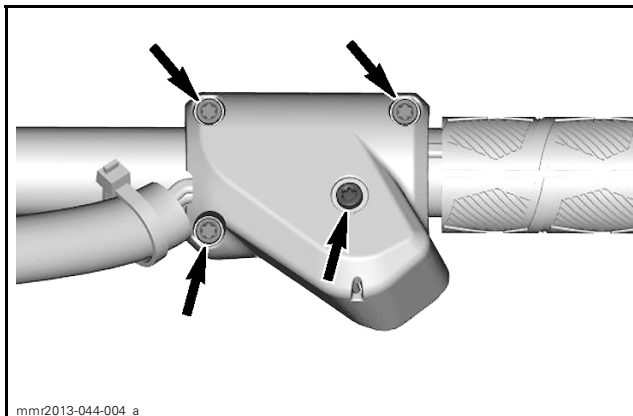
5. Unscrew master cylinder from handlebar.



6. Remove master cylinder.

**NOTICE** Do not let master cylinder hang by the hose and do not stretch or twist the hose.

7. Remove multifunction switch screws.



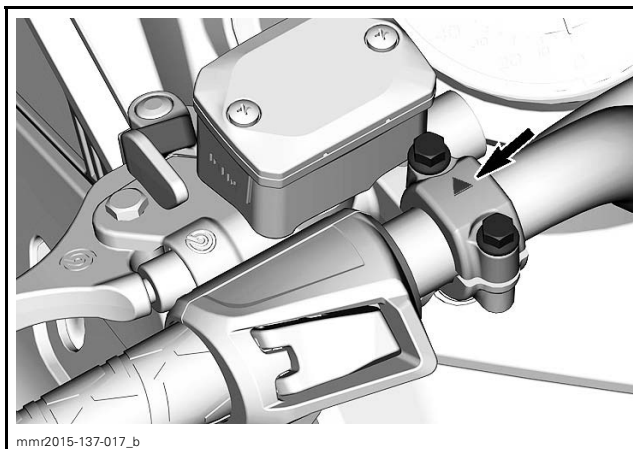
8. Remove multifunction switch and its wire from vehicle.

### Multifunction Switch Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Place the master cylinder on the handlebar.

Install master cylinder retaining clamp with its arrow pointing toward the front of vehicle.



Install master cylinder clamp screws and tighten loosely.

With the handlebar in the straight ahead position, place the reservoir parallel to the ground.

Tighten master cylinder clamp screws to specification.



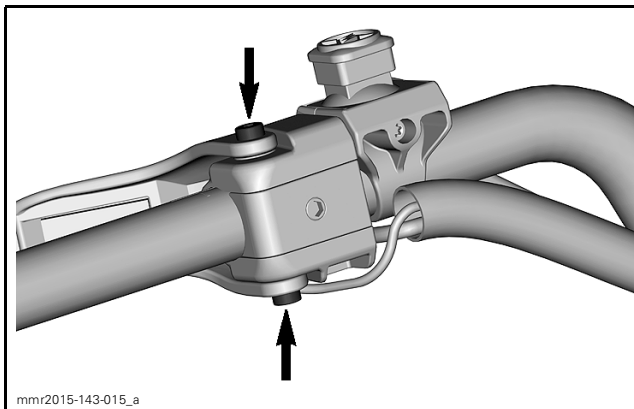
TIGHTENING TORQUE	
Master cylinder clamp screws	10 N•m (89 lbf•in)

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

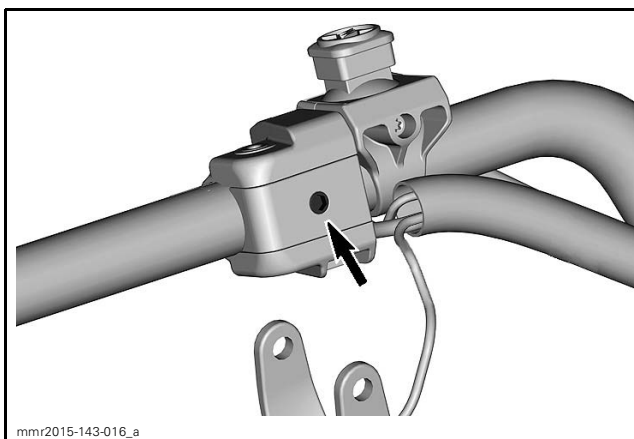
## THROTTLE LEVER HOUSING

### Throttle Lever Housing Removal

1. Proceed with RH *HANDLEBAR GRIP REMOVAL*, see procedure in this subsection.
2. Proceed with RH *HEATER ELEMENT REMOVAL*, see procedure in *LIGHTS, GAUGE AND ACCESSORIES* subsection.
3. Disconnect throttle cable from throttle lever.
4. Remove both throttle lever pivot screws.



5. Remove throttle lever housing retaining screw.



6. Slide throttle lever housing outwards to remove it from handlebar.

### Throttle Lever Housing Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten throttle lever retaining screws to specification.

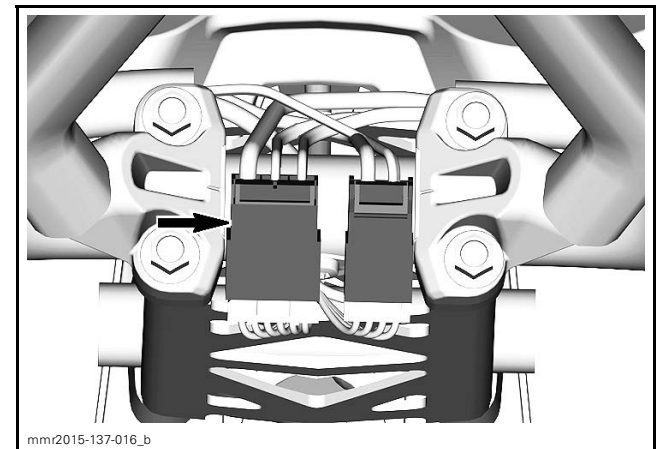
TIGHTENING TORQUE	
Throttle lever retaining screws	1.5 N•m (13 lbf•in)

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

## THROTTLE LEVER

### Throttle Lever Removal

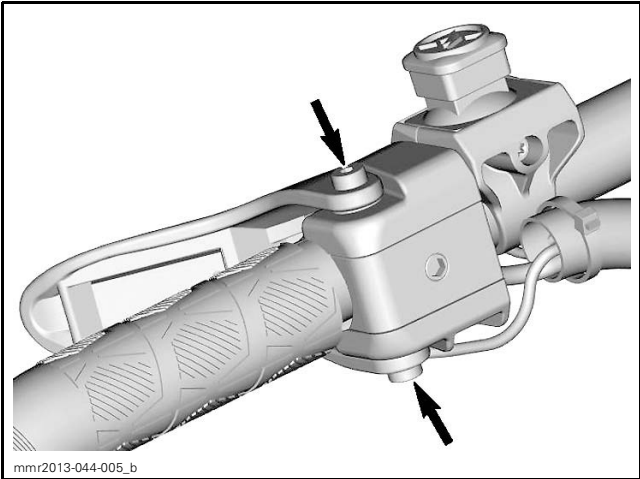
1. Remove steering cover from handlebar.
2. Disconnect RH steering connector (6-pin).



3. Remove throttle lever heater wire terminals from RH connector. Refer to *CONNECTOR INFORMATION* subsection.

**NOTICE** Take note of exact positioning of throttle lever heater before removing it from the connector.

4. Disconnect throttle cable from throttle lever.
5. Remove throttle lever retaining screws.



6. Remove throttle lever and heater wires.

### Throttle Lever Installation

The installation is the reverse of the removal procedure. However, pay attention to the following. Tighten throttle lever retaining screws to specification.

TIGHTENING TORQUE	
Throttle lever retaining screws	1.5 N•m (13 lbf•in)

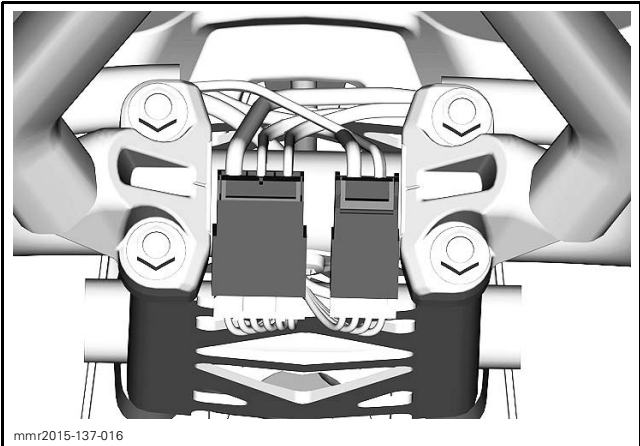
Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

## HANDLEBAR

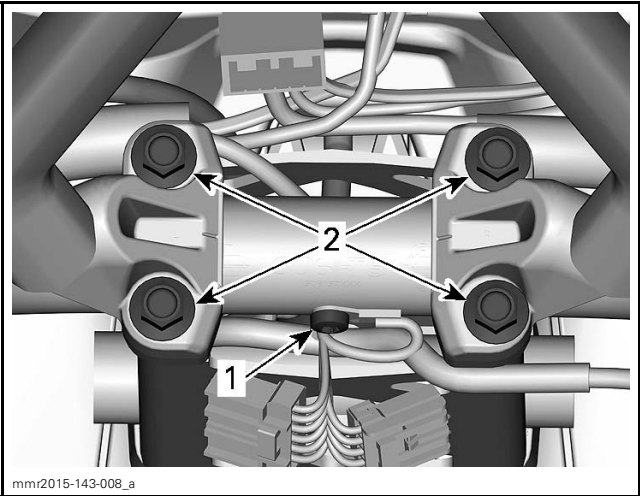
### Handlebar Removal

**NOTE:** If the handlebar must be changed, remove all components (handlebar grip, throttle lever housing, etc.) before removing it from vehicle.

1. Remove steering cover.
2. Unplug both *RH* and *LH* connectors.



3. Remove handlebar ground screw.
4. Remove handlebar retaining clamp screws.



1. Ground screw
2. Handlebar clamp screws

5. Remove handlebar from handlebar extension.

### Handlebar Inspection

1. Inspect the handlebar for:
  - Damages
  - Cracks
  - Bending.
2. Replace if any of these problems is detected.

 **WARNING**  
Do not try to repair a defective handlebar.

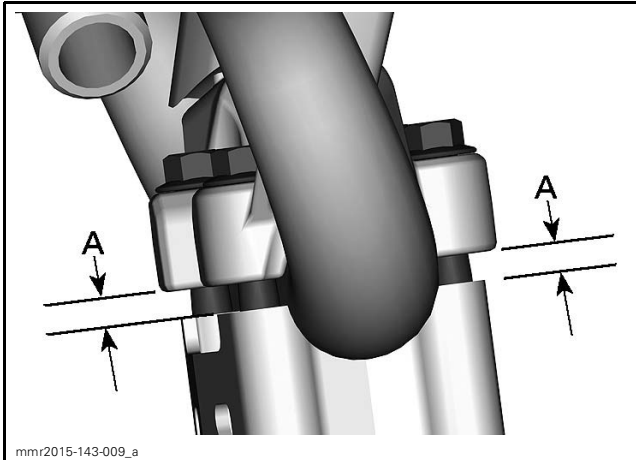
3. Check handlebar clamps for cracks or distortion, replace if necessary.

### Handlebar Installation

The installation is the reverse of the removal procedure. However, pay attention to the following. Tighten handlebar clamps screws to specification.

TIGHTENING TORQUE	
Clamp screws	25 N•m (18 lbf•ft)

Ensure handlebar clamps are parallel with handlebar extension.



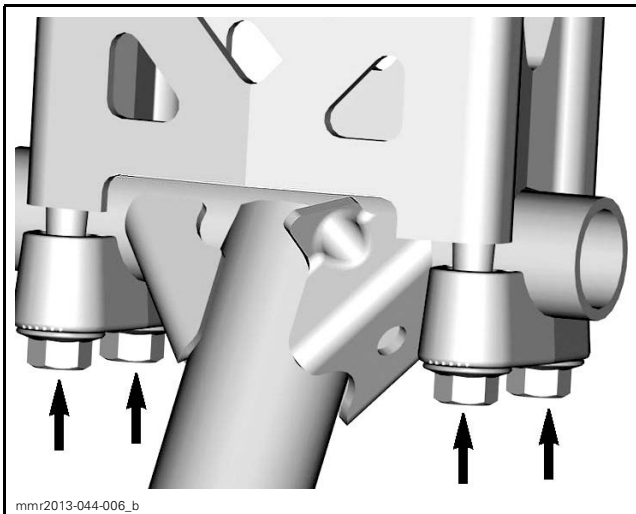
A. Must be equal on each side

Turn handlebar completely from side to side making sure it does not exert unwanted tension on handlebar wires.

## HANDLEBAR EXTENSION

### Handlebar Extension Removal

1. Proceed with *HANDLEBAR REMOVAL*, see procedure in this subsection.
2. Remove screws retaining the extension to steering column.



3. Remove handlebar extension from vehicle.

### Handlebar Extension Inspection

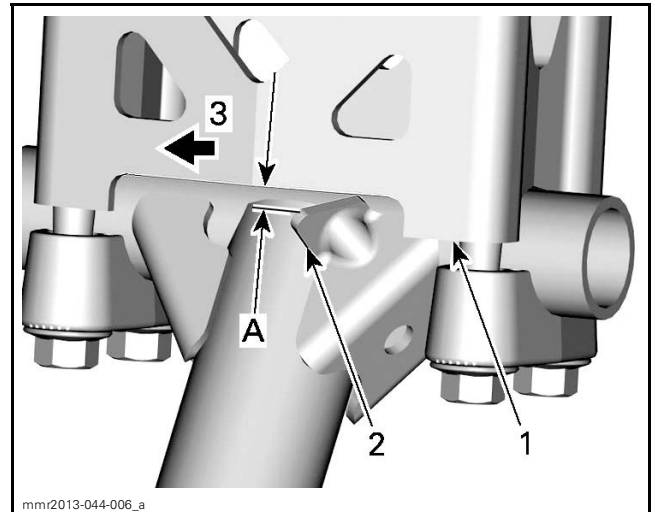
1. Check handlebar extension for:
  - Cracks
  - Bending
  - Other damages.
2. Replace if any of these problems is detected.

## ⚠ WARNING

Do not try to repair a defective handlebar extension.

### Handlebar Extension Installation

The installation is the reverse of the removal procedure. However, pay attention to the following. When installing handlebar extension, ensure to leave a gap between handlebar extension and stop block on steering column.



1. Bottom of handlebar extension
2. Steering column stop block
3. Front of vehicle

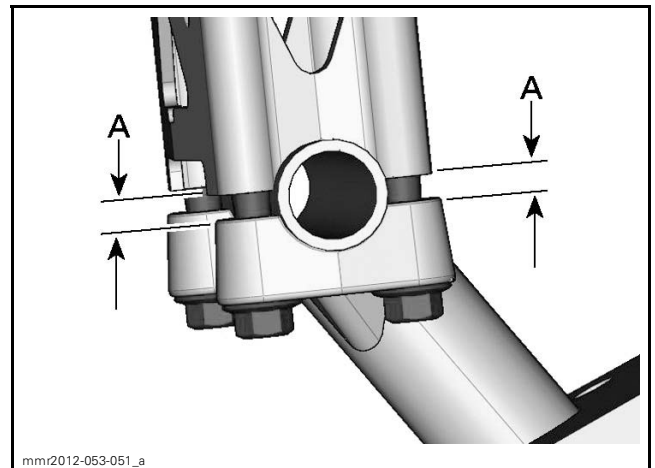
A. 1 mm (.039 in) minimum

Torque handlebar extension retaining screws to specification.

### TIGHTENING TORQUE

Clamp screws	25 N•m (18 lbf•ft)
--------------	--------------------

Ensure extension clamps are parallel with handlebar extension.



A. Must be equal on each side

**Section 07 CHASSIS**  
**Subsection 03 (STEERING SYSTEM)**

**⚠ WARNING**

Handlebar and it's components must not get in contact with anything (windshield, fuel tank cap, etc.) when steering is turned.

**TIE-RODS**

**NOTE:** The same procedure is applied on RH and LH side.

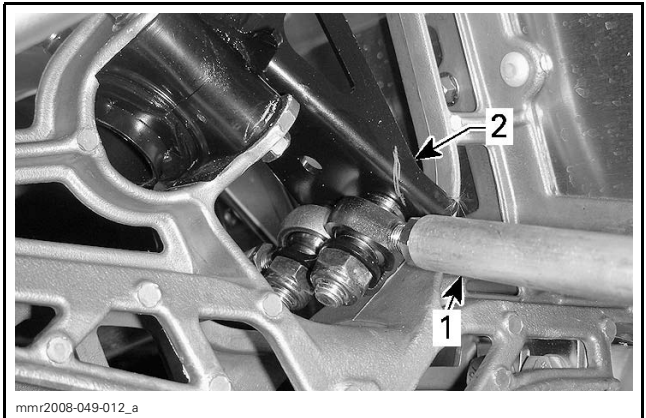
**Tie-Rod Inspection**

Check tie-rod ends for looseness. If play is excessive, replace tie-rod.

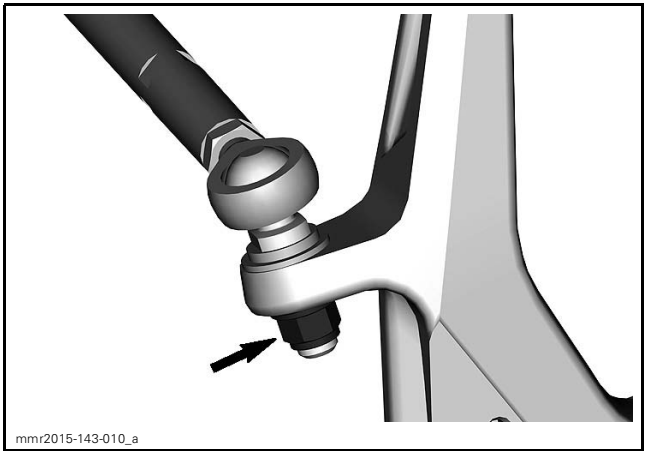
Check if the tie-rod is bent, cracked or otherwise damaged. Replace if necessary.

**Tie-Rod Removal**

1. Remove the tie-rod ends from the steering column and ski leg.



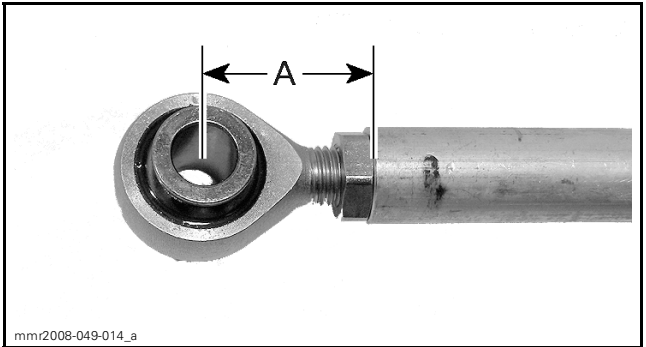
1. Tie-rod
2. Steering column



2. Remove tie-rod from vehicle.

**Tie-Rod Installation**

1. The installation is the reverse of the removal procedure. However, pay attention to the following.
2. Adjust the length of all tie-rod end to 30 mm (1.181 in) without tightening the jam nuts.

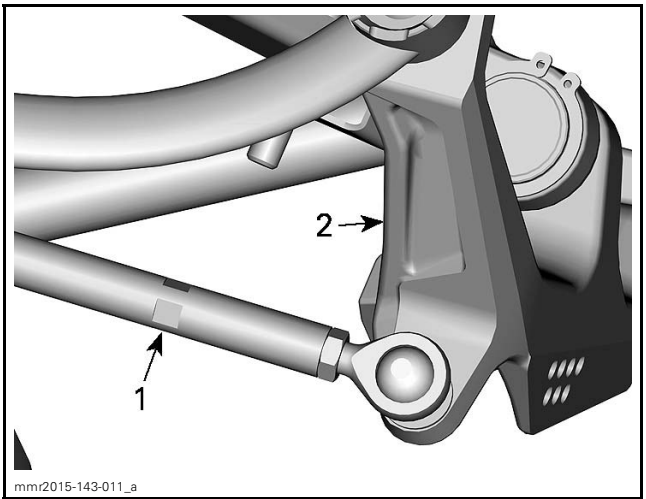


A. 30 mm (1.181 in)

**⚠ WARNING**

The maximum tie-rod end length not engaged in the tie rod must not exceed 34 mm (1.339 in).

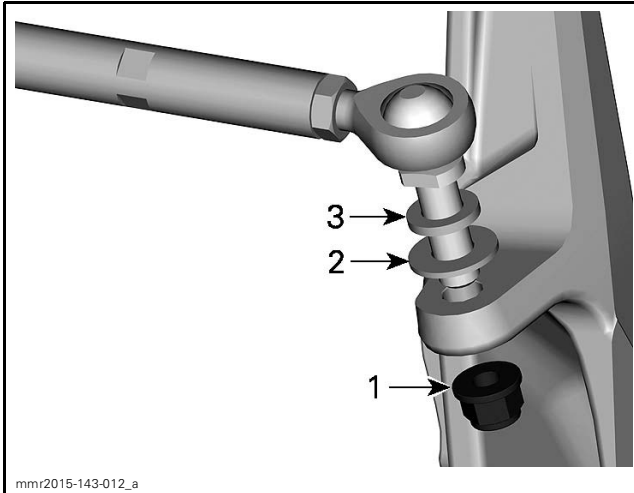
3. Install tie-rod with the groove on ski leg side.



1. Tie-rod groove
2. Ski leg

4. On ski leg side, install hardened washers as shown.

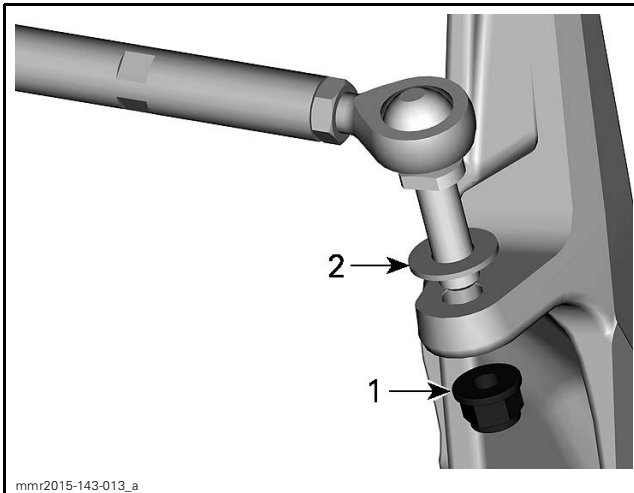
**NOTE:** When steering column is installed at the front position, install spacers against the ski legs as shown. Refer to *STEERING COLUMN* in this subsection.



**WHEN STEERING COLUMN IS INSTALLED AT THE FRONT POSITION**

1. Nut
2. Washer
3. Spacer

**NOTE:** When steering column is installed at the rear position, **remove** spacers against the ski legs as shown. Refer to *STEERING COLUMN* in this subsection.



**WHEN STEERING COLUMN IS INSTALLED AT THE REAR POSITION**

1. Washer
2. Nut

5. Install nuts retaining tie-rod ends and tighten to specification.

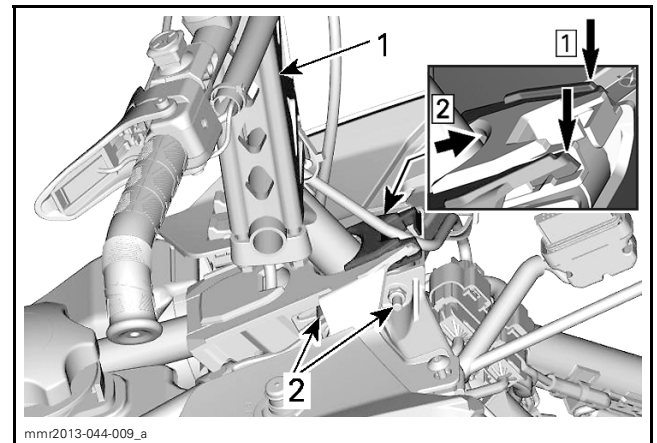
TIGHTENING TORQUE	
Tie-rod end nuts	48 N•m (35 lbf•ft)

6. Perform the steering alignment, refer to *STEERING ALIGNMENT* in this section.

## STEERING COLUMN

### Steering Column Removal

1. Refer to *BODY* subsection and remove:
  - Upper body module
  - Rear console
  - Bottom pan cover
2. Remove *HANDLEBAR EXTENSION* from steering column. See procedure in this section.
3. Remove screws securing steering column upper support.
4. Remove the console front cap.

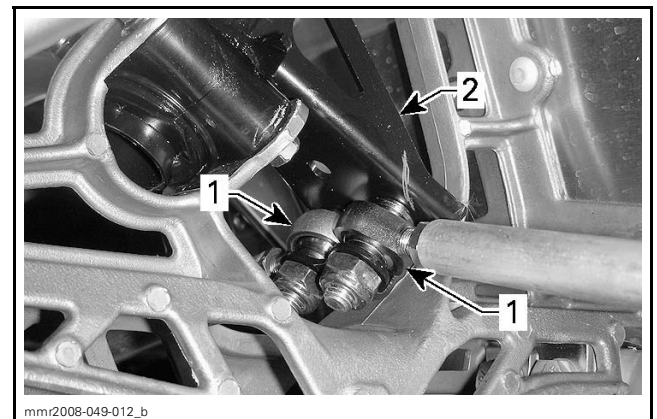


**RH SIDE SHOWN**

- Step 1: Push console support down and hold
- Step 2: Pull out console front cap

1. Handlebar extension
2. Screws of steering column upper support

5. From outside engine compartment, remove the tie-rod ends from the steering column.

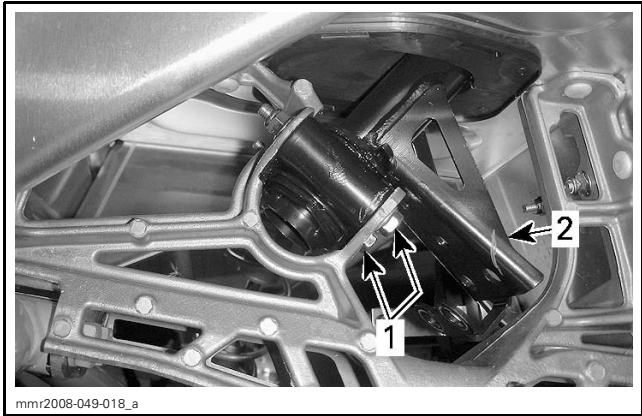


**RH SIDE SHOWN**

1. Tie-rod ends
2. Steering column

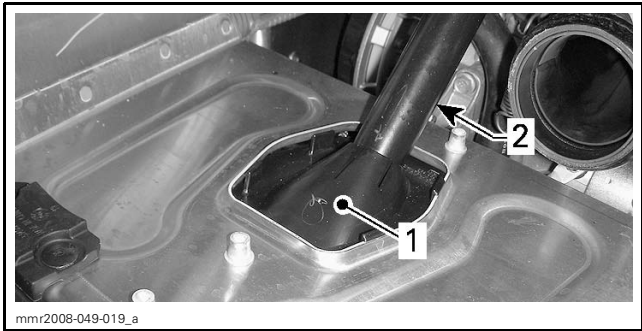
6. Remove screws securing the steering column lower support.

**Section 07 CHASSIS**  
**Subsection 03 (STEERING SYSTEM)**



**RH SIDE SHOWN**  
1. Steering column support screws  
2. Steering column

7. From inside engine compartment, remove the steering column plate.



**LH SIDE SHOWN**  
1. Steering column plate  
2. Steering column

8. Pull steering column from top.

**Steering Column Inspection**

Check if steering column is:

- Cracked
- Bent
- Twisted
- Otherwise damaged.

Replace steering column if necessary.

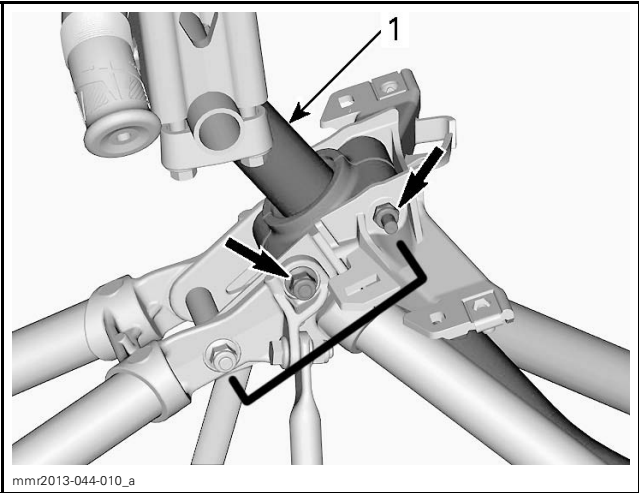
**WARNING**

Do not try to repair a defective steering column.

**Steering Column Position Adjustment**

The steering column may be installed in one of two positions as desired.

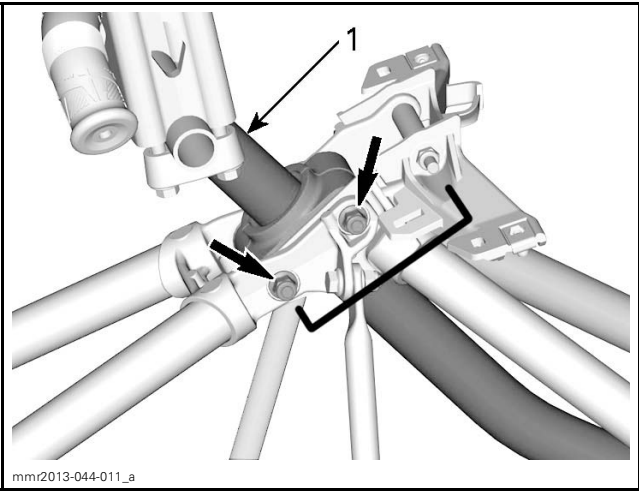
**Installation at the Front Position**



**FRONT POSITION — PARTS REMOVED FOR CLARITY**

1. Steering column
- Install the console rear cap at the front of steering column.
  - **Install** spacers against ski legs. Refer to *TIE-ROD INSTALLATION* in this subsection.

**Installation at the Rear Position**



**REAR POSITION — PARTS REMOVED FOR CLARITY**

1. Steering column
- Install the console rear cap at the rear of steering column
  - **Remove** the spacers against ski legs. Refer to *TIE-ROD INSTALLATION* in this subsection.

**Steering Column Installation**

The installation is the reverse of the removal procedure. However, pay attention to the followings.

1. Apply **SUSPENSION GREASE** (P/N 293 550 033) on vibration dampers before installing upper and lower supports.
2. Install **NEW** elastic nuts on the steering column retaining screws.

3. Tighten nuts to the specification.

TIGHTENING TORQUE	
Upper steering column support nuts	18 N•m (159 lbf•in)
Lower steering column support nuts	10 N•m (89 lbf•in)