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Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)

DISASSEMBLY AND ASSEMBLY

13, Grip

Grips must be carefully removed to prevent damaging the heating elements.

Heat grip with a heat gun.

Apply tape to handlebar near the grip to protect paint.

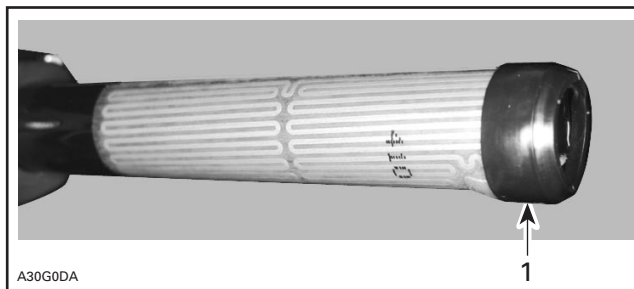
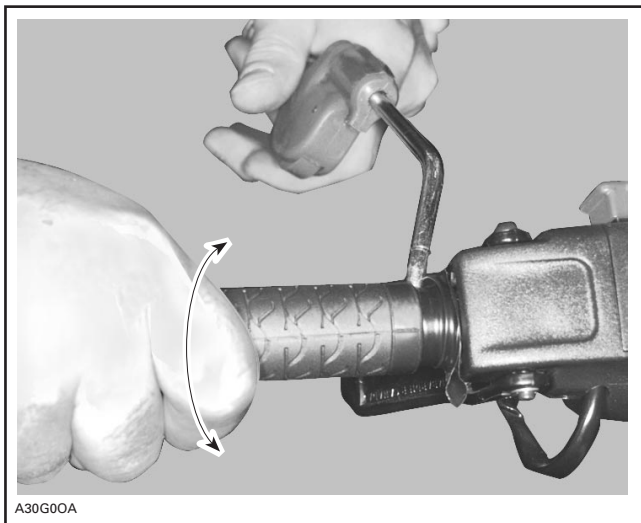
Inject compressed air into the handlebar and twist grip as pulling it out.

Continue cutting along the gap and remove the grip.

If required, slowly peel heating element no. 15 from handlebar and remove it.

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

Prior to install grips, position heating element protector no. 14.



1. Heating element protector

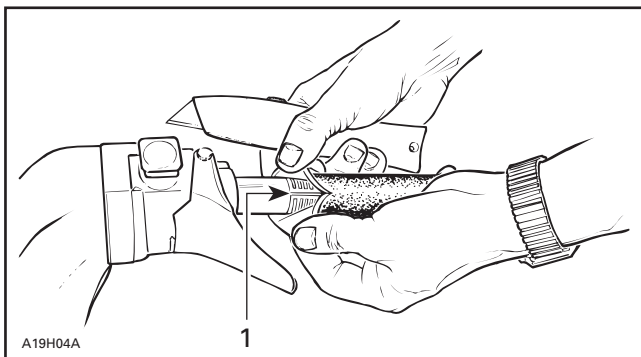
⚠ WARNING

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

The grips might be unremovable as explained above, in this case, carefully proceed as follows to prevent damaging the heating elements.

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

Heat the grip with a heater gun or a spot light to ease installation. Insert new grip with compressed air.



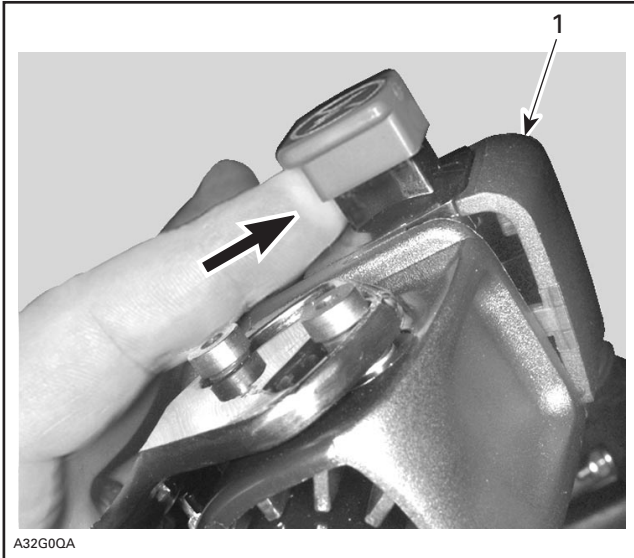
TYPICAL

TYPICAL

1. Gap in the heating element opposite the wires

16, Cut-Out Switch

Push on switch to remove plastic cover.



1. Plastic cover

1, Steering Column

Remove steering pad, remove master cylinder from handlebar and put it aside. Remove circlip retaining throttle cable to throttle housing. Unplug all connector housings of handlebar switches. Remove handlebar ass'y.

Remove the air intake silencer.

Unbolt console.

Detach the short tie rod **no. 8** (engine has to be removed) from the steering column. Note that a hardened flat washer **no. 7** goes on each side of steering column lever.

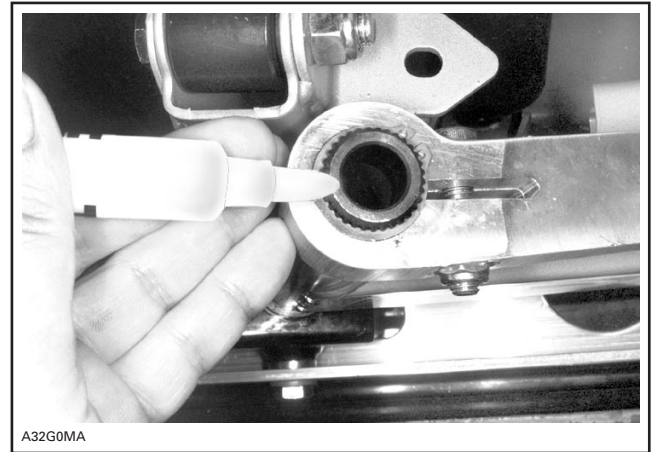


Remove carriage bolts **no. 6**.

Remove carriage bolts **no. 5** from steering support then, pull steering column from top.

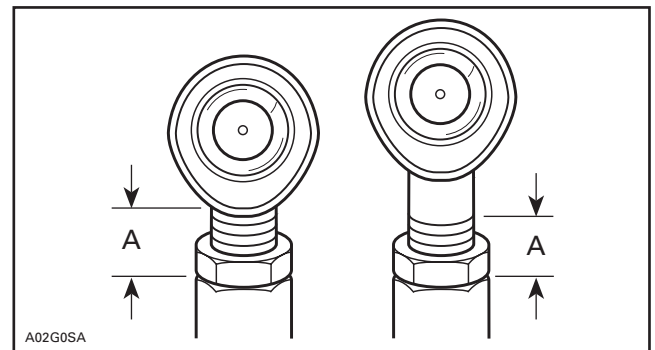
12, Steering Arm

To maintain correct steering geometry for reassembling, scribe mark the steering arm and ski leg before disassembly.



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).



TYPICAL

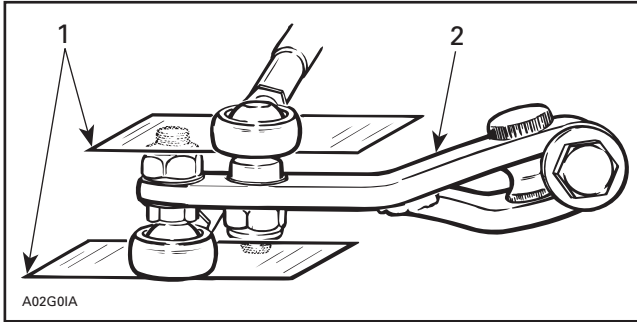
A. 20 mm (25/32 in) max.

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.

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

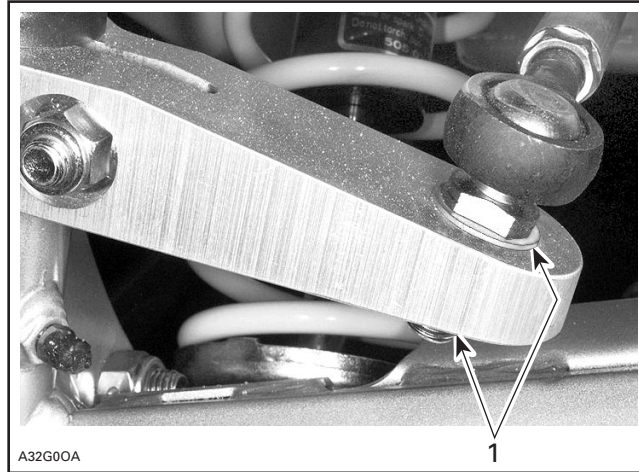
Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)



TYPICAL

1. Parallel with steering arm
2. Steering arm



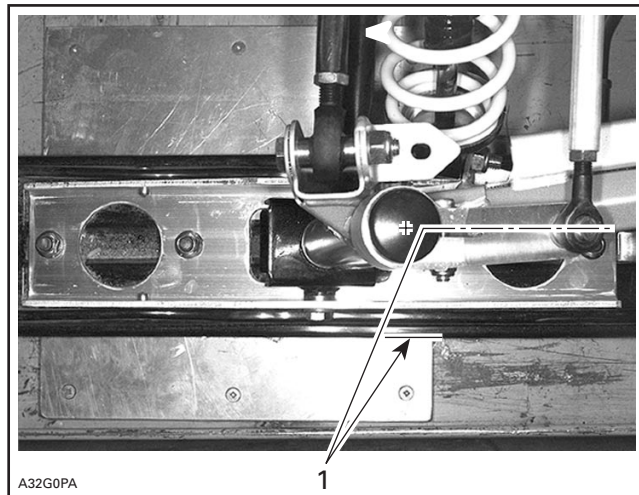
TYPICAL

1. Hardened washers

12, Steering Arm

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

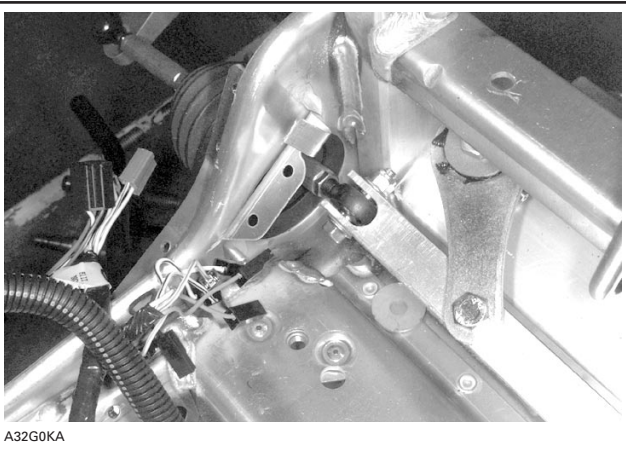
Steering arm axis (from plastic cap center to ball center of ball joint) must run parallel to ski.



TYPICAL

1. Parallel

Tighten the steering arm pinch bolt and nut to the torque specified in the exploded view.



TIE ROD BALL JOINT PARALLEL TO SWIVEL BAR BEFORE TIGHTENING

⚠ 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 arm.

INSPECTION

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

12, Steering Arm

Make sure steering arm and ski leg splines interlock.

⚠ WARNING

Any parts having worn splines have to be replaced with new ones.

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

15, Heating Grip Element

Refer to TESTING PROCEDURE 06-06.

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

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

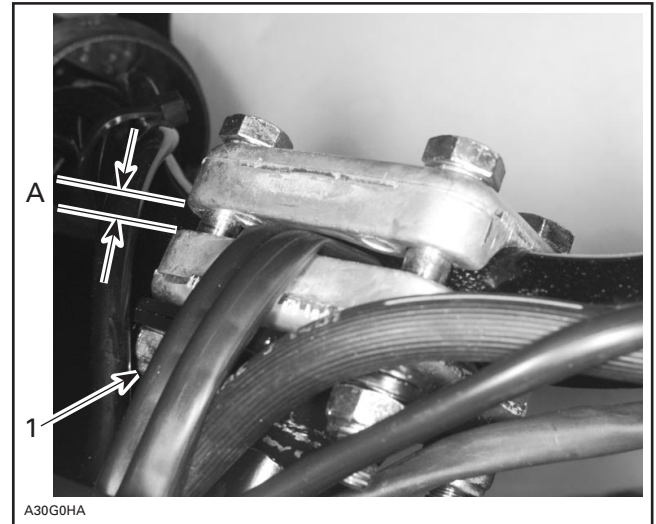
HANDLEBAR ADJUSTMENT

Loosen all 4 nuts no. 4 retaining steering clamps no. 2.

Adjust the steering handlebar to the desired position.

Lock the handlebar in place by tightening the 4 nuts as specified in the illustrations.

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 to 25 N•m (18 lbf•ft)

A. Equal gap all around

⚠ 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.

STEERING ADJUSTMENT (skis)

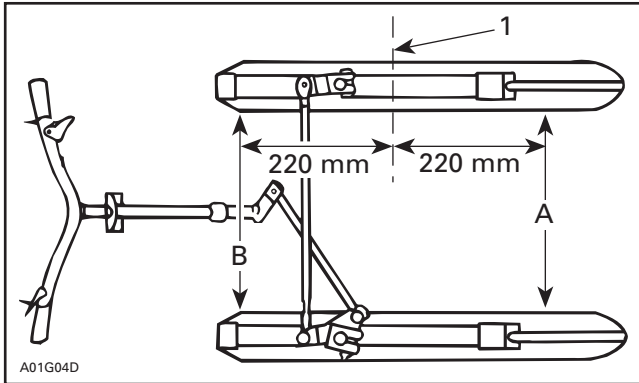
Definitions

TOE-OUT:

A difference measured between the front edge of the skis "A" and rear edge "B" as viewed from the top. It is adjustable. For all ZX series models, toe-out is measured at 220 mm (8-21/32 in) from ski pivot bolt axis.

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Subsection 02 (STEERING SYSTEM)



TYPICAL

1. Ski pivot bolt axis

CAMBER:

A specific inward or outward tilt angle of ski leg compared to a vertical line when viewing the vehicle from front.

Adjustments

Adjustments should be performed following this sequence:

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

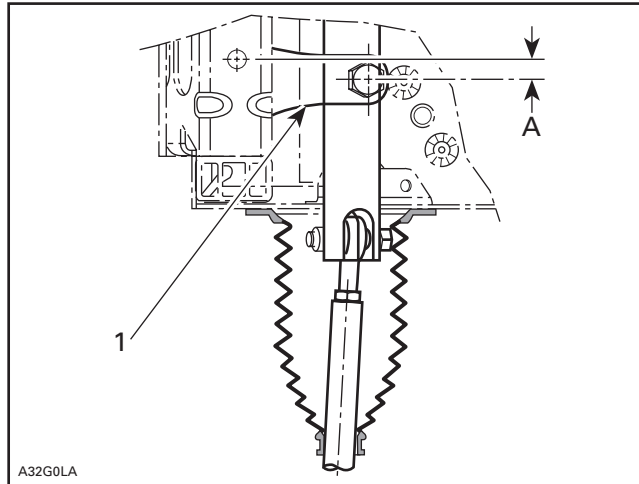
PIVOT ARM CENTERING

⚠ WARNING

Do not attempt to adjust straight ahead ski position by turning the ball joint on tie rod no. 8.

8,17,18, Tie Rod and Ball Joint

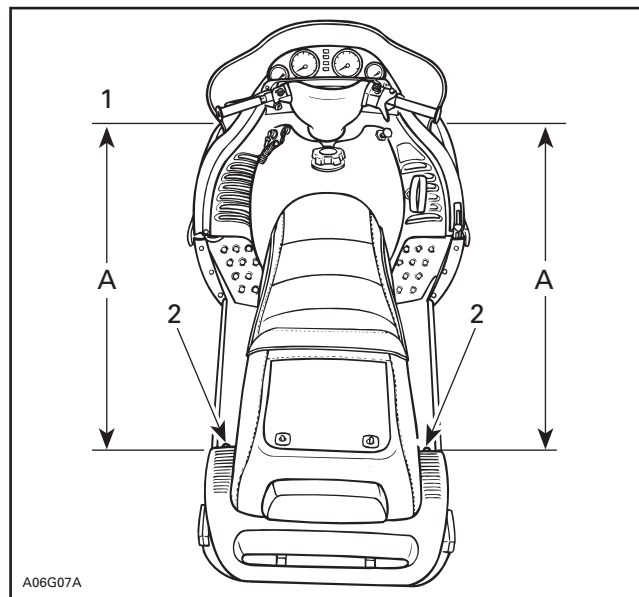
Turn handlebar until bolt center of left side swivel arm is 11 mm (.443 in) from chassis hole center.



1. Left side pivot arm
A. 11 mm (.443 in)

Check that handlebar is horizontal by measuring from the extremities of the grips to the rearmost 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

Remove engine.

Section 08 STEERING/FRONT SUSPENSION

Subsection 02 (STEERING SYSTEM)

Loosen the jam nuts on tie rod no. 8 (LH threads on steering column end) and turn tie rod accordingly. Retighten the jam nuts to 18 N•m (159 lbf•in).

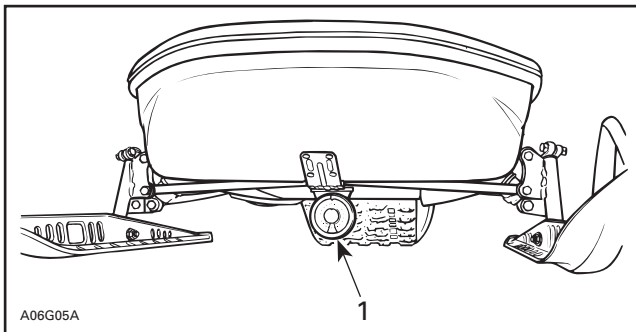
⚠ WARNING

Never lengthen this tie rod so that threaded portion of ball joint exceeds 20 mm (25/32 in).

CAMBER

NOTE: Identical adjustments are required on both sides of the vehicle.

- Make sure the vehicle is leveled by placing an angle finder under the main frame member as shown on the following illustration.
- Vehicle skis must be off the ground.

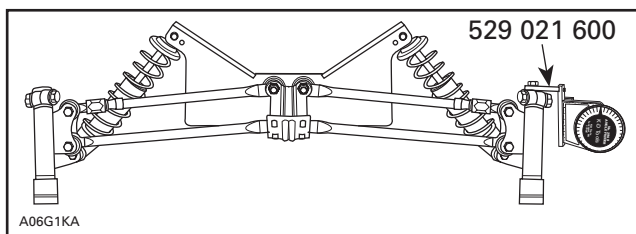


TYPICAL

1. Angle finder

Using special tool (P/N 529 021 600) mounted to the ski leg, position the angle finder on the tool as shown in the following illustration. An alternate location for the angle finder if the special tool is not available is the outside of the ski leg housing.

CAUTION: Angle finder must sit square against swing arm. Positioning angle finder against weld bead or decal may result in false reading.



TYPICAL — CAMBER ADJUSTMENT SET-UP

Adjusting

- Loosen lock nut on both upper control arms.
- Unbolt both upper control arms at ski leg housing. Turn tie rod half turn at a time to obtain the specified value when skis are not touching ground. Bolt upper control arms.

MODEL	CAMBER ± 1.0°
MX Z 500/600/700	- 1
Formula Z 600/700	- 2
Summit 600/700 Grand Touring 600 Formula DLX 600/700	Not Adjustable

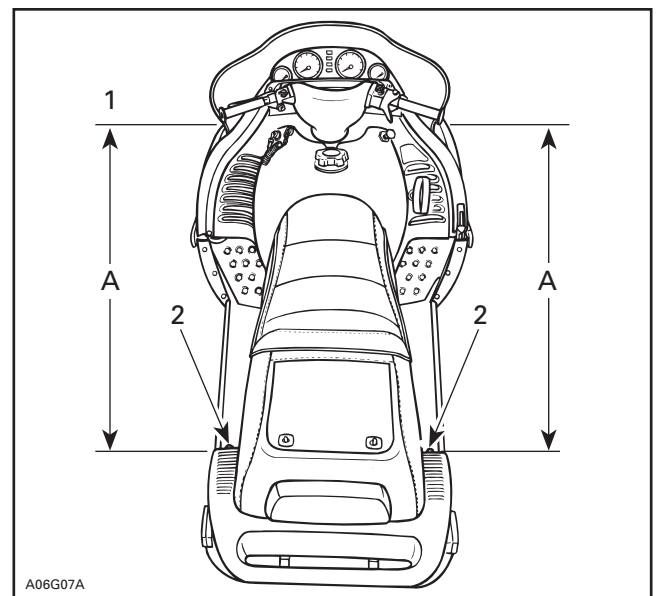
NOTE: Because of a negative camber, skis will lean toward center of vehicle.

Tighten lock nut on both upper control arms.

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 rearmost 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)

Adjustment is performed by adjusting length of left and right tie rods no. 11.

⚠ WARNING

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

Procedure:

- Loosen jam nuts of both tie rods **no. 11**.
- 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 20 mm (25/32 in).

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

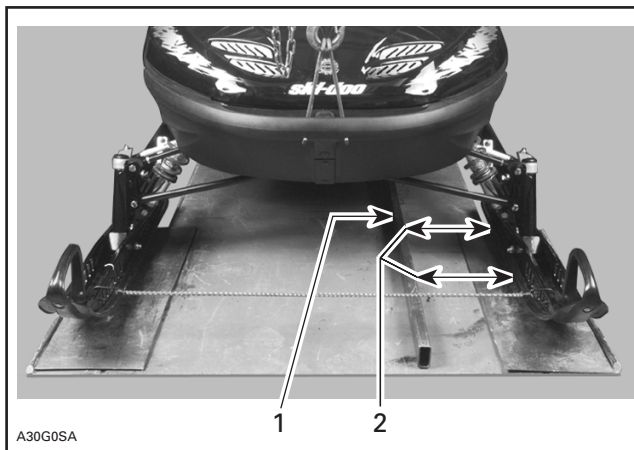
NOTE: A rubber cord must be hooked in front of skis to keep them closed.

Toe-out must be as specified when skis are in a straight-ahead position and the front of vehicle is lifted off the ground.

MODEL	TOTAL TOE-OUT + 3 mm (+ 1/8 in) - 0 mm (- 0 in)
MX Z 500/600/700 Summit 600/700	6.0 (1/4)
Formula Z 600/700 Grand Touring 600 Formula DLX 600/700	3.0 (1/8)

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. Measuring points are 220 mm (8-21/32 in) at front and rear of ski pivot axis.

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. Measure at 220 mm (8-21/32 in) from ski pivot axis

LUBRICATION

⚠ WARNING

Do not lubricate throttle cable or housing.

26, Grease Fittings

Only use synthetic grease (P/N 413 711 500).

For all others lubrication points use BOMBAR-DIER LUBE (P/N 293 600 016).

Lubricate:

- Steering column bushings.
- Long tie rod ends.
- Short tie rod ends.
- Upper arm ball joint on so equipped models.
- Grease ski legs.
- Grease LH and RH swivel arms.
- Stabilizer blocks in swing arm.

Section 08 STEERING/FRONT SUSPENSION

Subsection 03 (SUSPENSION AND SKI SYSTEM)

DISASSEMBLY

5, Shock

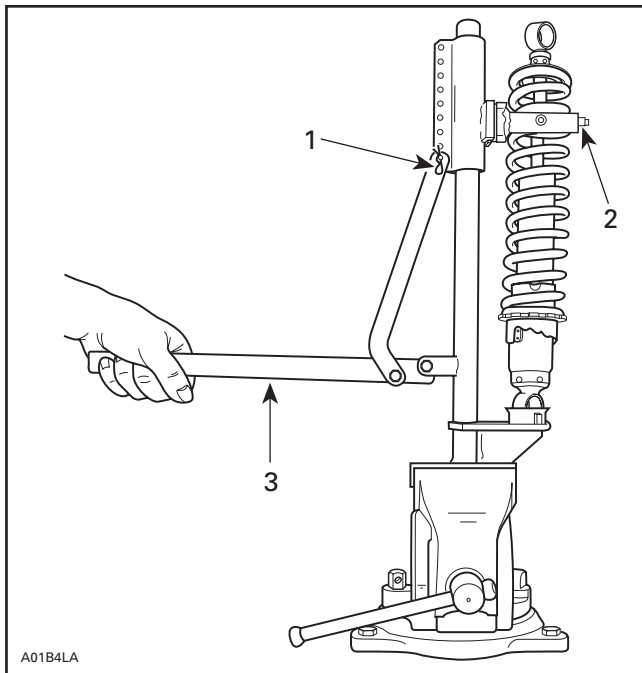
Lift front of vehicle and support it off the ground.

Reduce spring preload by turning adjusting ring accordingly.

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.

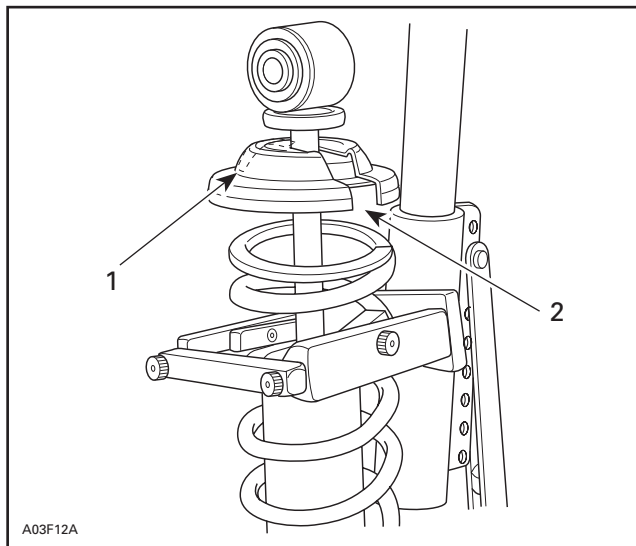
Close and lock the bar. Adjust the handle horizontal position by changing the position of the clevis pin.



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. 6** must be 180° from spring stopper **no. 5** opening.

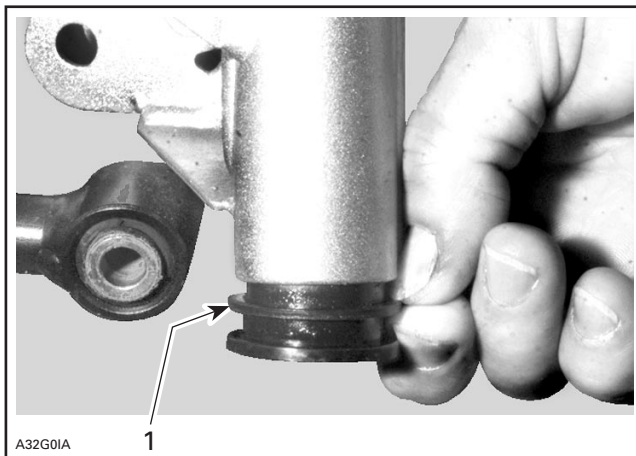


1. Cap opening
2. Spring stopper opening

1, Swing Arm

Lift front of vehicle and support it off the ground.

Remove cap **no. 4**, circlip **no. 3** then loosen steering arm bolt and pull up steering arm. Ski leg may fall off from swing arm. Note shim **no. 2** position.



1. Shim **no. 2**

Unbolt lower end of shock from swing arm.

Unbolt upper and lower arms.

Unbolt rear of swing arm from frame.

Pull swing arm off the vehicle.

INSPECTION

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

Check straightness of ski leg **no. 12** and make sure that splines are properly interlocking with steering arm. Replace as required.

Check for straightness of swing arm. Replace as required.

Check for clogged grease fittings. Clean or replace as required.

Check skis and runners **no. 10** for wear, replace as necessary.

Check condition of ski stopper **no. 9**. Replace it when deteriorated.

To check condition of shock, refer to SC-10 SUSPENSION 07-02 then look for **Shock Absorber 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 and Lower Arms

Position arms and tie rods horizontally before tightening nuts.

8, Adjustable Arm

Some Models Only

Refer to STEERING SYSTEM 08-02 for proper camber adjustment using these arms.

All Models

Proceed with toe-out adjustment, refer to STEERING SYSTEM 08-02.