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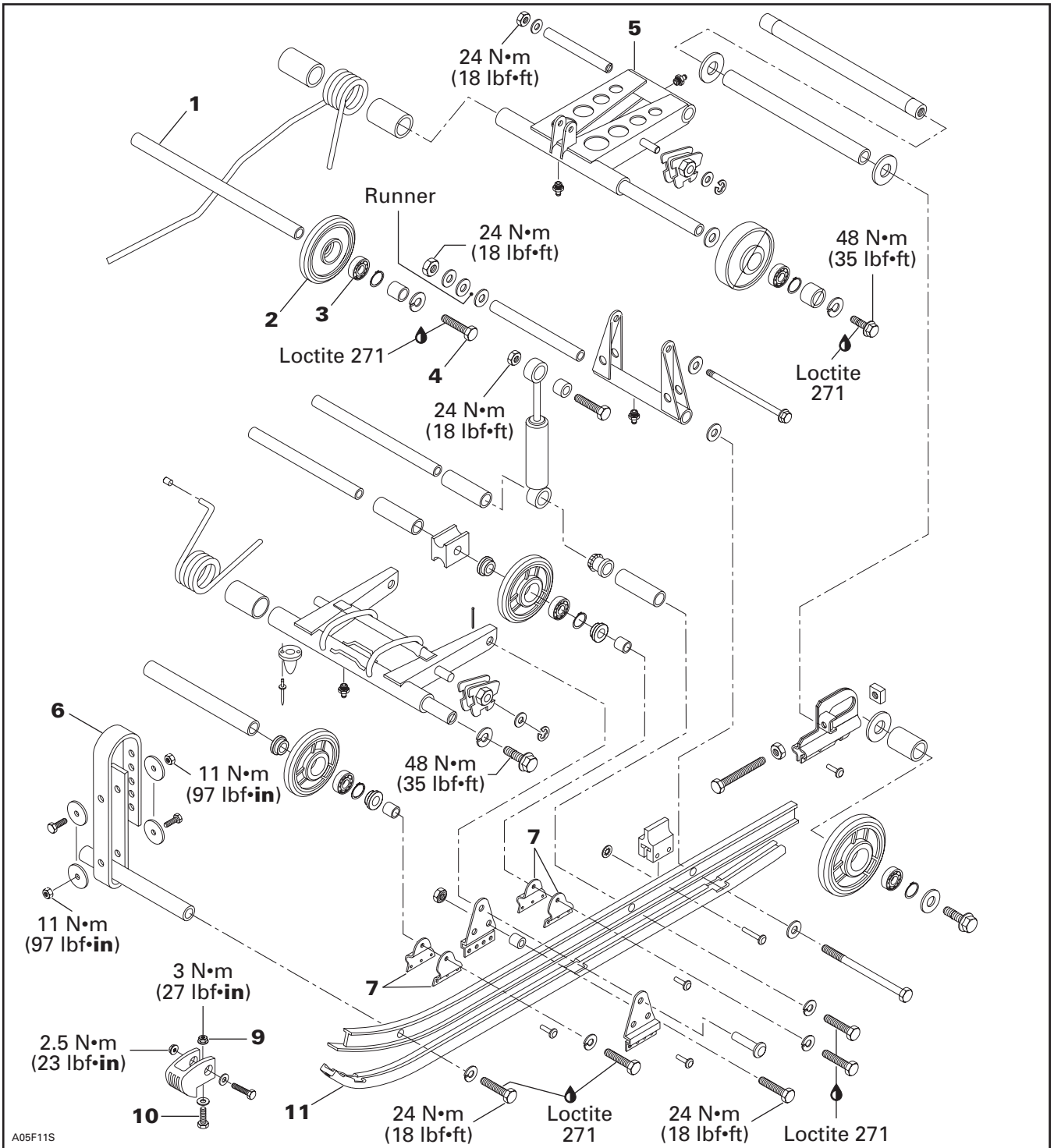
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TORQUE REACTION SUSPENSION

Tundra R



Section 07 REAR SUSPENSION

Subsection 02 (TORQUE REACTION SUSPENSION)

COMPONENT REMOVAL

Lift rear of vehicle and support it off the ground.

5, Rear Arm

Release track tension.

Release spring tension. Unfasten shock from rear arm. Remove 3 screws retaining rear arm.

SUSPENSION ASS'Y REMOVAL

Release track tension.

NOTE: To prevent cross shaft from turning when unscrewing screws assembled with threadlocker, proceed as follows:

- Loosen one screw then retighten.
- Remove the other screw.
- Remove the first one.

1,2,3,4, Cross Shaft, Idler Wheel, Spacer and Screw

Remove idler wheel ass'y.

Suspension Ass'y

Lift rear of vehicle and support it off the ground.

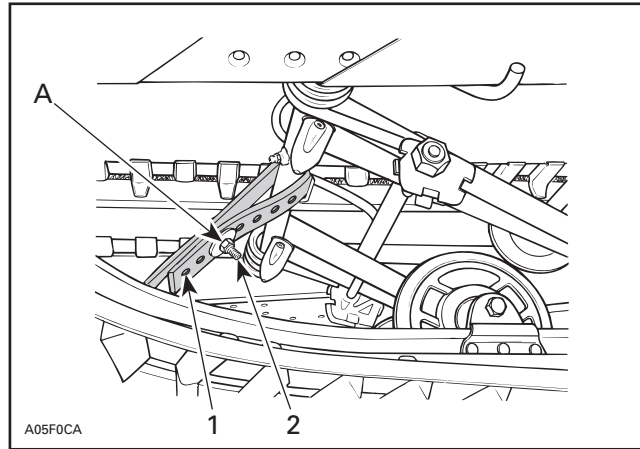
Unscrew 4 screws retaining front arm and rear arm to frame.

Remove suspension.

DISASSEMBLY AND ASSEMBLY

6, Stopper Strap

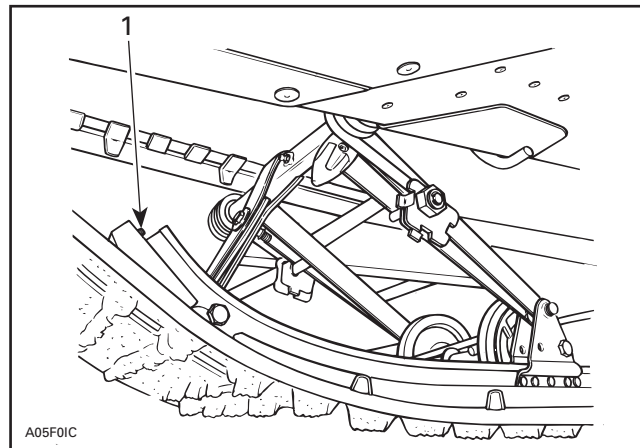
When assembling make sure it is attached through the 3rd hole from the end. Torque nut to 11 N•m (97 lbf•in).



1. 1st hole
2. 3rd hole
- A. 11 N•m (97 lbf•in)

9,10,12, Nut, Slotted Screw and Slider Shoe

To replace a worn shoe, remove the front screw and stop nut, then slide the shoe rearward out of the runner.



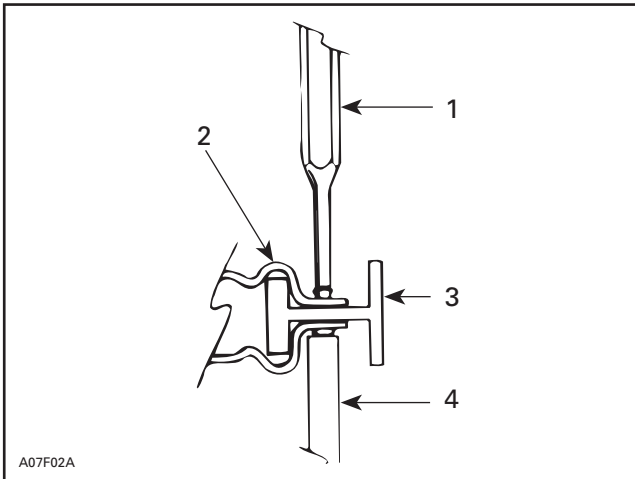
1. Front screw and nut

CAUTION: Slider shoes must always be replaced in pairs.

7,8, Support and Front Arm Support

To remove rivets securing the supports, cut rivet heads off using a cold chisel.

At assembly, position the rivet head toward the outside of the assembly. Support the rivet head against a metal block, as shown, and use a flat head punch to secure the rivet in place.



- 1. Flat head punch
- 2. Support
- 3. Runner
- 4. Metal block

NOTE: Rivets can be substituted with 3/16 in x 3/4 in long screws and flanged elastic stop nuts. Always position screw head outside the assembly.

INSPECTION

6, Stopper Strap

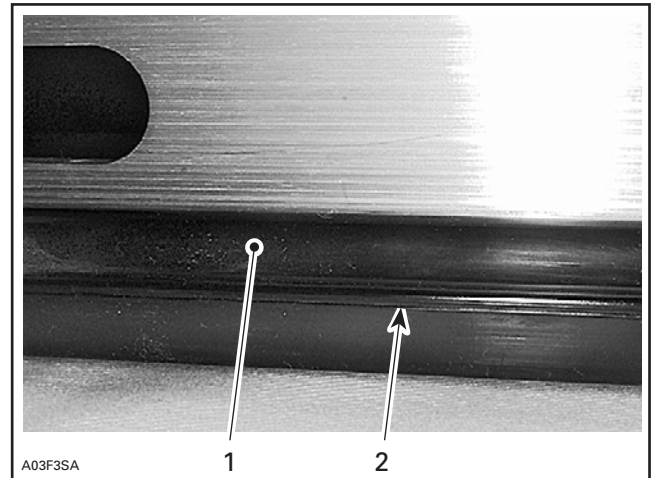
Inspect strap for wear or cracks, bolt and nut for tightness. If loose, inspect hole for deformation. Replace as required.

Shock Absorber

Refer to SUSPENSION AND SKI SYSTEM for shock inspection.

11, Slider Shoe

Molding line is the wear limit indicator.



TYPICAL

- 1. Slider shoe
- 2. Molding line (wear limit indicator)

Replace slider shoes when wear limit is reached.

CAUTION: Slider shoes must always be replaced in pairs.

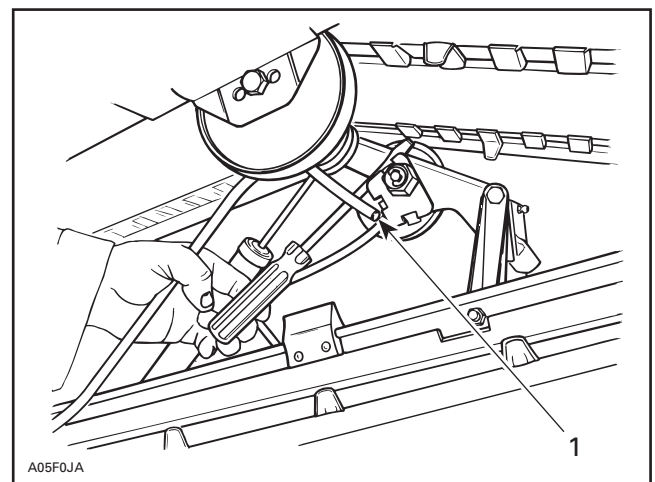
SUSPENSION ASS'Y INSTALLATION

Release rear spring tension then install assembled suspension into track with front portion first.

Insert rear portion of suspension into track.

Bolt suspension to tunnel.

Pry rear spring end onto cam.



- 1. Spring end

Adjust track tension/alignment. Refer to TRACK.

Section 07 REAR SUSPENSION

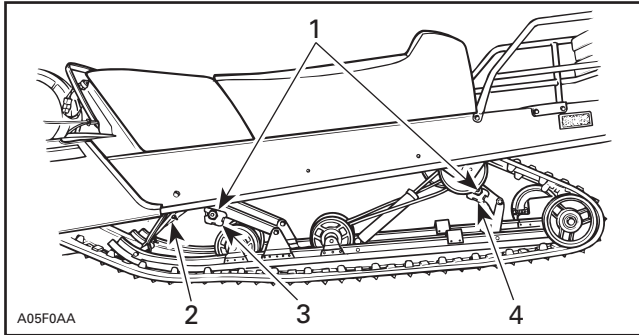
Subsection 02 (TORQUE REACTION SUSPENSION)

RIDE ADJUSTMENT

The front portion of rear suspension is adjustable for surface condition and steering effects.

The stopper strap is adjustable for vehicle weight transfer control.

The rear portion of rear suspension is adjustable for driver's weight.



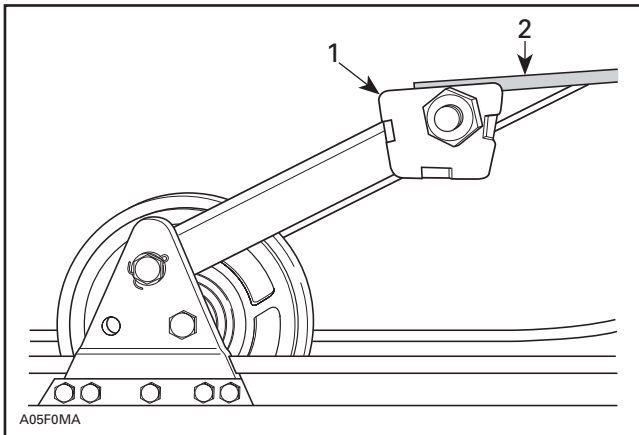
1. Driver's weight
2. Stopper strap for weight transfer
3. Steering effect/surface condition
4. Adjustment cams

Choice of suspension adjustments depends on carrying load, driver's weight, personal preference, riding speed and field condition.

Slight suspension bottoming occurring under the worst riding conditions indicates a good choice of spring preload.

To adjust rear suspension adjustment cams, use special key supplied in vehicle tool box.

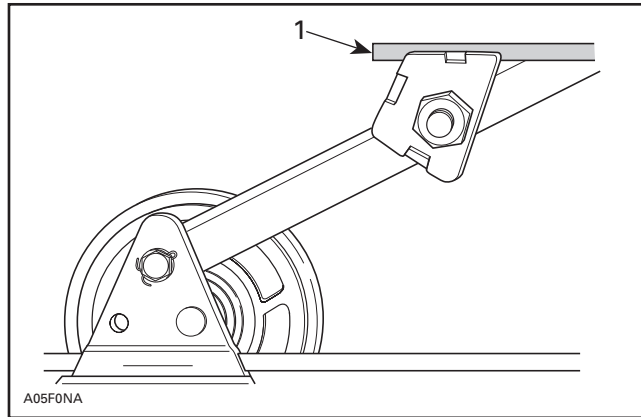
Turning adjustment cam moves edges of cam supporting spring rod. The softest adjustment is reached when the supporting edge of cam is the closest to hexagonal portion of cam.



SOFTEST ADJUSTMENT

1. Supporting edge closest to hexagonal
2. Spring

The stiffest adjustment is reached when the supporting edge of cam is the farthest to hexagonal portion of cam.

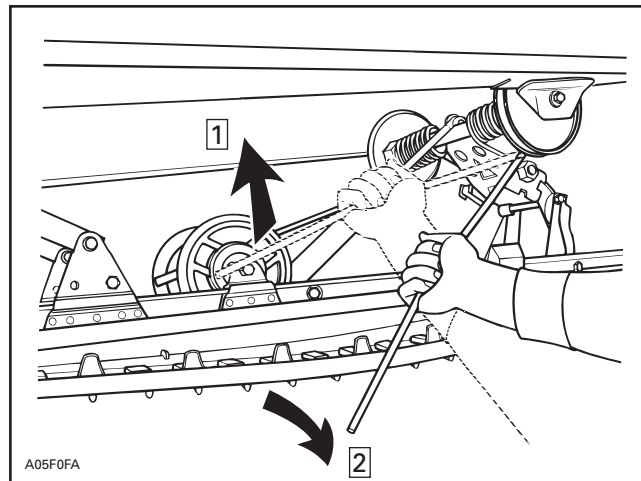


STIFFEST ADJUSTMENT

1. Supporting edge farthest to hexagonal

NOTE: To quickly change rear cam position without using any tool:

- Lay vehicle on its side.
- Unhook rear spring by hand from lower idler wheel.



- Turn adjustment cam by hand to the desired position.
- Reinstall spring on its support making sure that it sits in the groove of support.

Stopper Strap

The function of the stopper strap is to control the transfer of vehicle weight during acceleration and to control track lead angle.

The longer the belt, the more the weight will be transferred to the track to provide a better traction. The shorter the belt, the lesser the weight transferred to the track, thus maintaining a more positive steering.

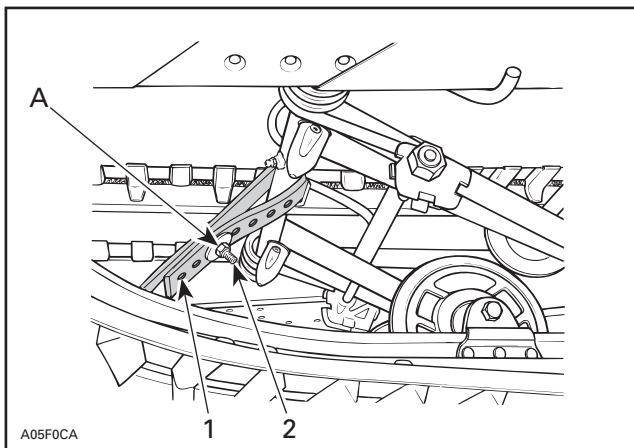
The longer the belt, the greater will be the track lead angle. A shorter belt will reduce track lead angle which may help when negotiating a particular snow condition.

Adjusting holes on the stopper strap allow to adjust it according to driver's requirements, field and/or snow conditions.

CAUTION: Whenever stopper strap length is changed, track tension must be readjusted to prevent any possibility of operating vehicle with a too loose or too tight track tension.

For normal use, locate bolt through 3rd hole from strap end.

⚠ WARNING
Always torque the nut to 11 N•m (97 lbf•in). Replace strap if worn or torn.



- 1. 1st hole
- 2. 3rd hole
- A. 11 N•m (97 lbf•in)

NOTE: When towing a load, it is suggested to adjust stopper strap to its shortest length, soften front springs of rear suspension and stiffen rear springs. These adjustment will improve steering ability.

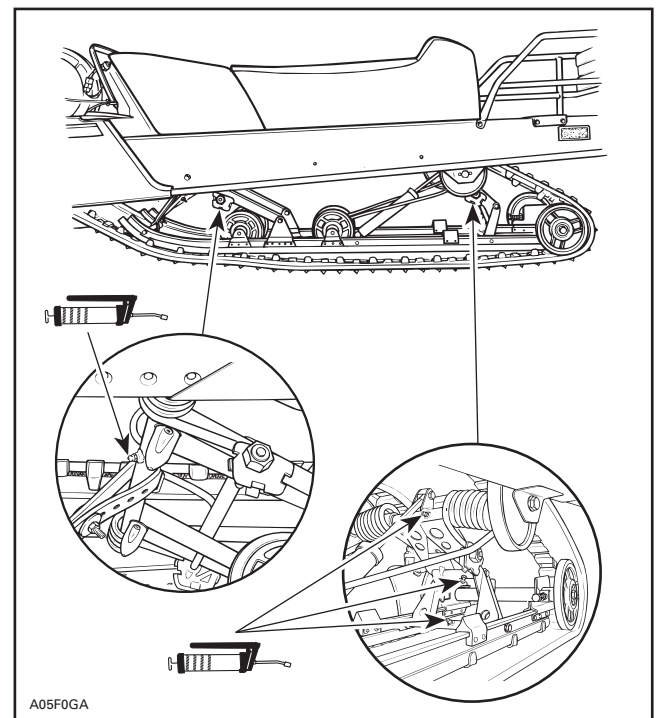
Deep Snow Operation

When operating the vehicle in deep snow, it may be necessary to change position of adjustment cams, stopper strap and/or driver's riding position, to change the angle at which the track rides on the snow. Operator's familiarity with the various adjustments as well as snow conditions will dictate the most efficient combination.

LUBRICATION

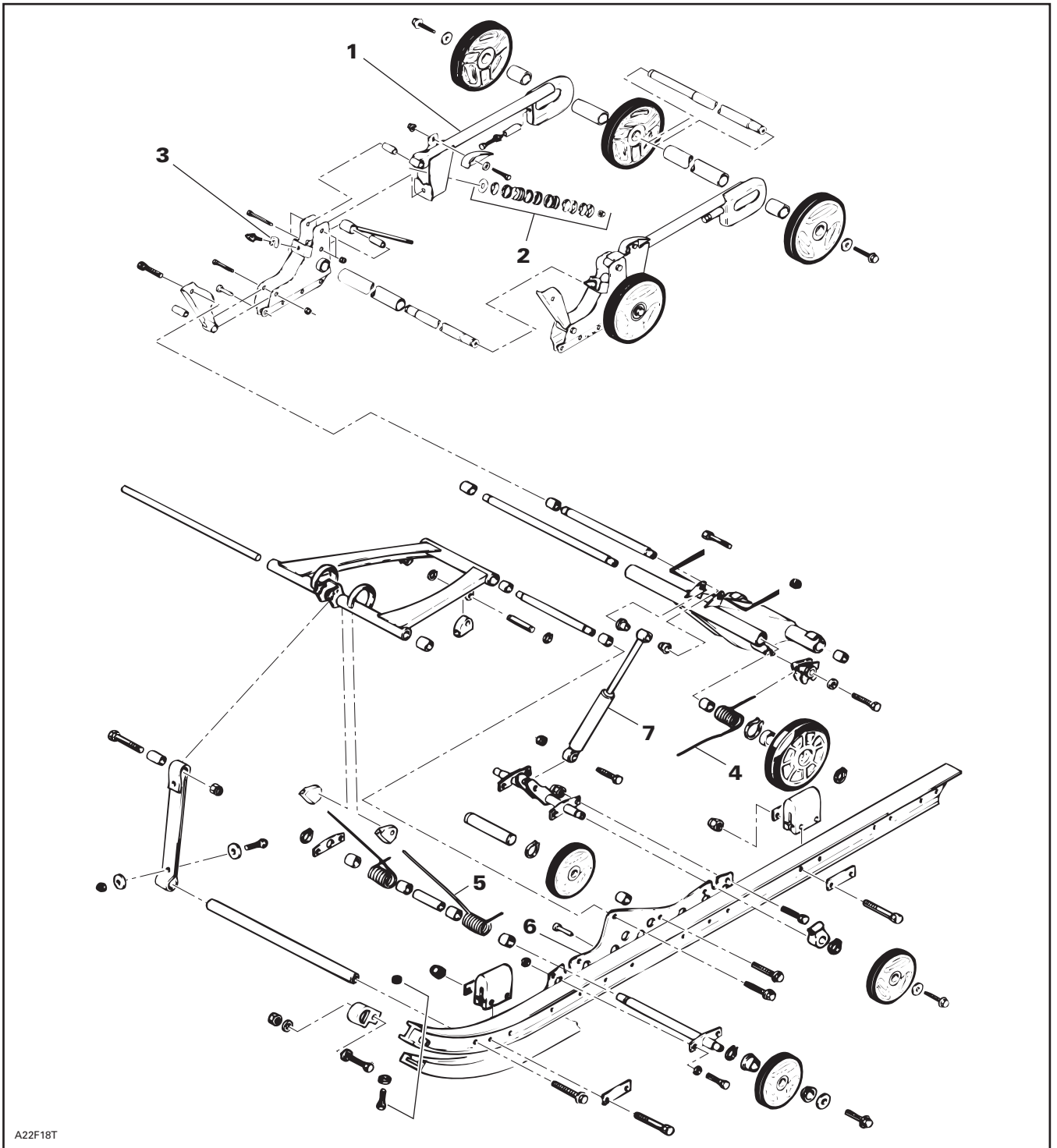
Lubricate front and rear arms at grease fittings using synthetic grease (P/N 413 711 500).

NOTE: There are 4 grease fittings.



SKANDIC WT SUSPENSION

Skandic LT/WT/SWT/WT LC



A22F18T

TYPICAL

Section 07 REAR SUSPENSION

Subsection 03 (SKANDIC WT SUSPENSION)

REMOVAL

Release track tension.

Lift rear of vehicle and support it off the ground.

Unbolt front arm then rear arm.

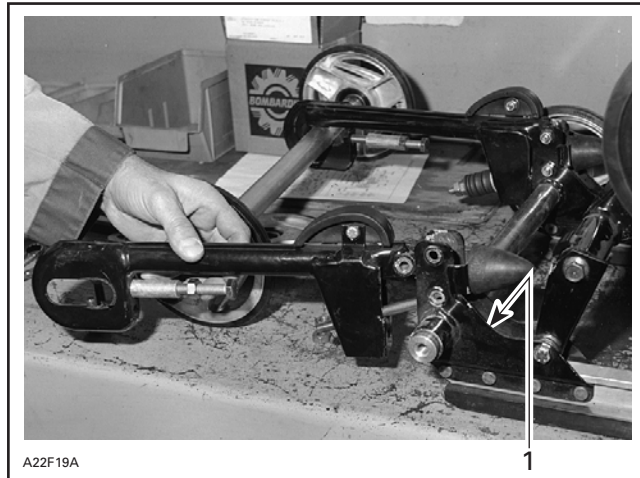
Self-Locking Screws

CAUTION: These self-locking screws must always be replaced by new ones everytime they are removed.

NOTE: To prevent axle from turning when unscrewing self-locking screws, proceed as follows:

- Remove one self-locking screw then install a 10 mm shorter non-self-locking one in place. Torque as specified in exploded view.
- Remove the opposite self-locking screw.
- Remove the temporary installed non-self-locking screw.
- If it doesn't work, heat bolt head to melt thread-locker.

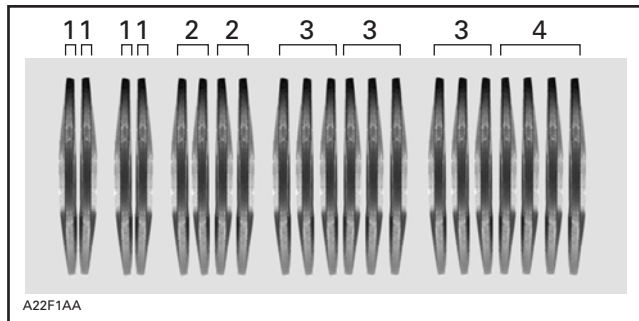
Remove suspension assembly.



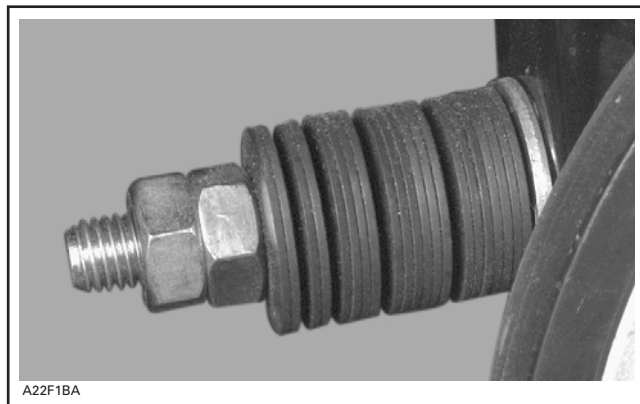
1. Support

2, Conical Washer

At installation, position conical washers as shown.



WASHER QUANTITY AND MOUNTING POSITION



Tighten nut 3/4 turn after contacting washers for better deep snow performance. Maximum pre-load is 3 turns after nut touching washers. This last adjustment is for trail riding with or without a load and for pulling a load.

DISASSEMBLY AND ASSEMBLY

1, Extension

Remove nuts and conical washers from the eye bolt adjuster. Remove bolt retaining eye bolt adjuster to support.

Remove rear idler wheel on appropriate side.

Remove idler wheel from support.

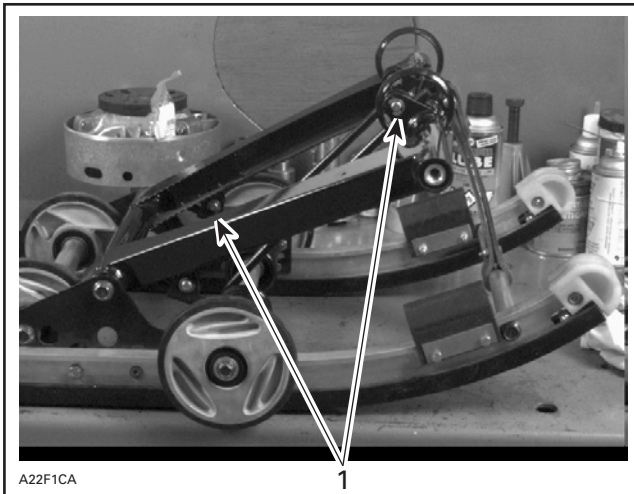
Unbolt extension from its support.

4, Rear Spring

Remove top idler wheels.
Unscrew one end of shock.
Remove spring.

5, Front Spring

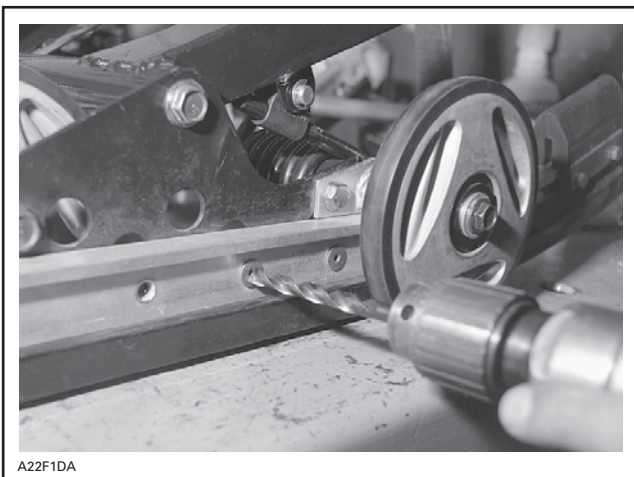
Remove circlips retaining spring support to top and bottom of front arm.
Holding spring end, remove lock pin of top spring support then bottom support lock pin.
Unbolt front idler wheel axle.
Remove idler wheel on side where axle retaining plate is not welded.
Remove springs.



1. Circlips

6, Support Plate

Drill rivets to remove support plate. Use a 8 mm (21/64 in) drill bit.



Rivets can be substituted by M8 x 20 bolts and nuts.

3, Horse-Shoe Washer

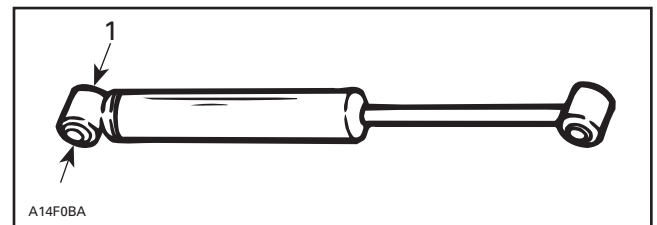
For deep snow riding, do not install washer.
For trail riding with passenger and/or weight, install 1 washer under each rubber stoppers.
For trail riding with heavy load and/or pulling a load, use 2 washers under each rubber stoppers.

7, Shock

Install shock with its rod upward.

SHOCK ABSORBER SERVICING

Secure the shock body end in a vise.



TYPICAL

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 then check that it moves smoothly and with uniform resistance.

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

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

Renew if any fault is present.

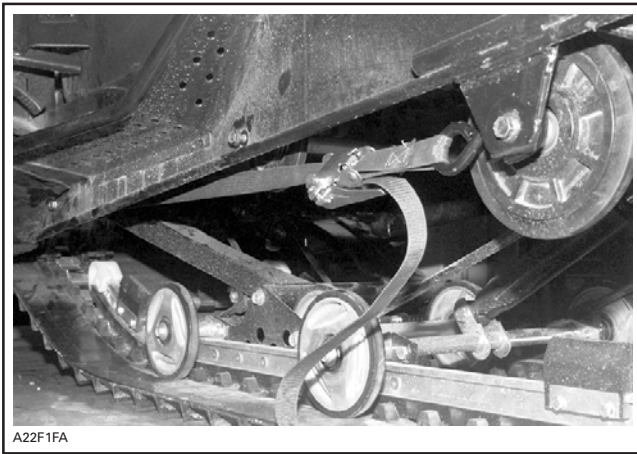
Section 07 REAR SUSPENSION

Subsection 03 (SKANDIC WT SUSPENSION)

INSTALLATION

Threaded holes must be cleaned before a self-locking screw is installed. Use a metal brush or a screwtap to clean the hole properly then use a solvent (Methyl-Chloride), let act during 30 minutes and wipe off. The solvent utilization is to ensure the adhesive works properly.

Use a tie-down between front arm and spring axle to ease installation of front arm screws.

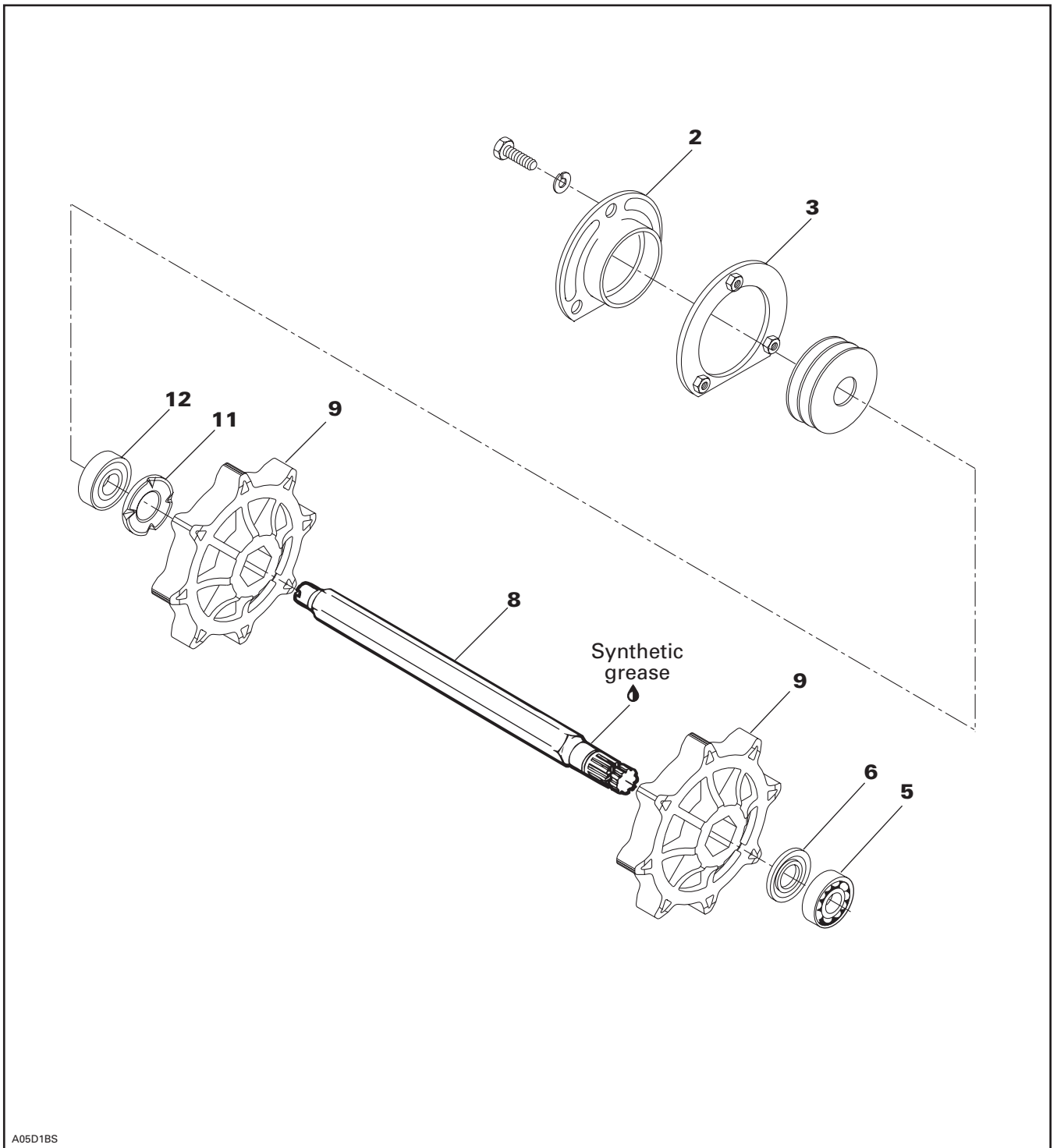


RIDE ADJUSTMENT

Refer to *Operator's Guide*.

DRIVE AXLE

Tundra R

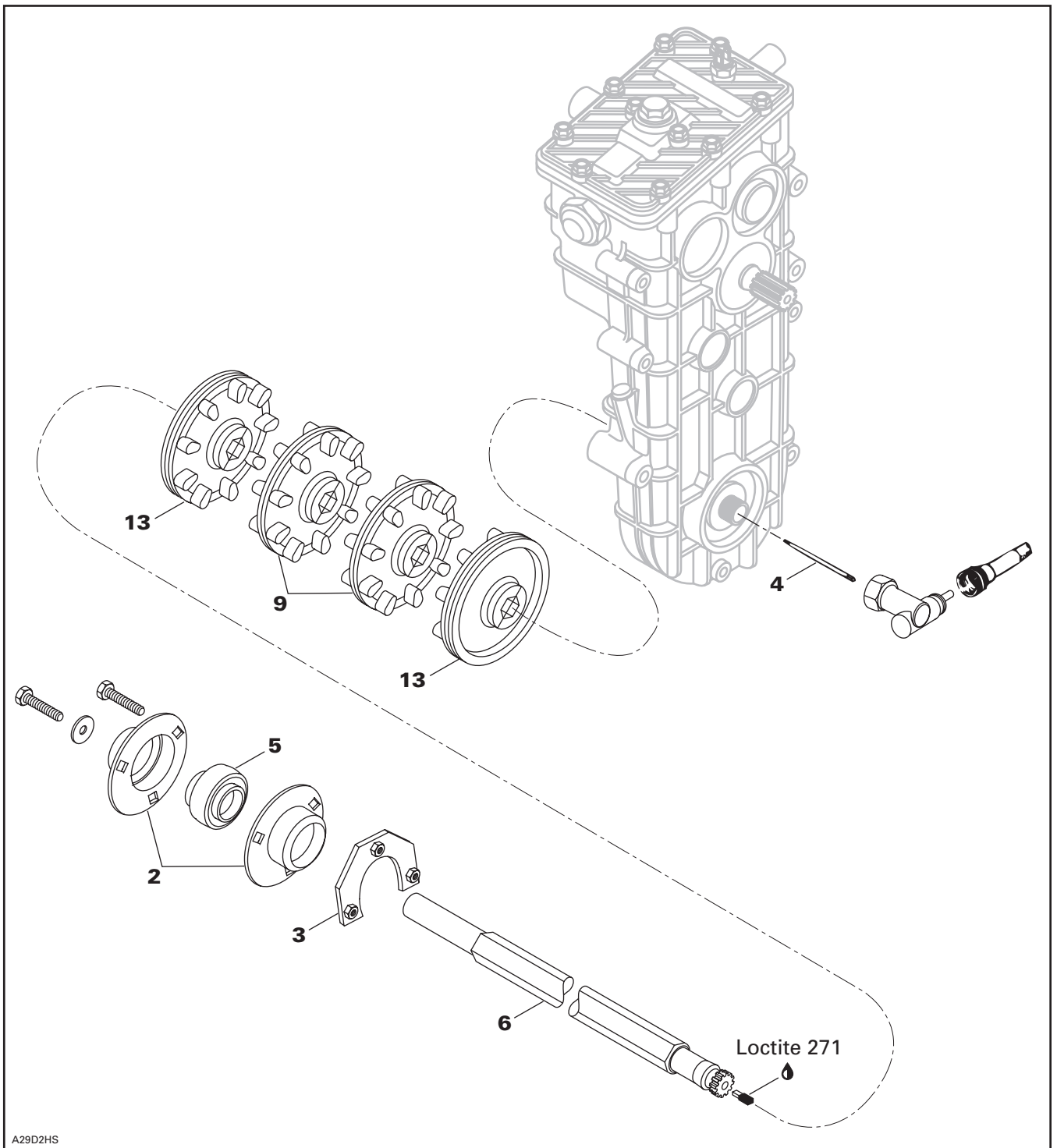


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Section 07 REAR SUSPENSION

Subsection 04 (DRIVE AXLE)

Skandic WT/SWT/WT LC



Section 07 REAR SUSPENSION

Subsection 04 (DRIVE AXLE)

REMOVAL

Tundra R and Skandic LT

Drain oil from chaincase. Release drive chain tension. Remove chaincase cover.

Raise and block rear of vehicle off the ground.

Remove suspension. Refer to SUSPENSION.

2,8, End Bearing Housing and Seal

Remove cable protector **no. 7**, and plastic bearing cover. Remove circlip **no. 14** from drive axle.

Remove chain and sprocket then circlip and bearing **no. 12** from drive axle.

Pry oil seals from chaincase and end bearing housing.

6,9,13, Drive Axle and Sprocket

Release drive axle sprocket from track and at the same time, pulling the drive axle towards the end bearing housing side.

Remove drive axle from vehicle.

Skandic WT/SWT/WT LC Only

Drain gearbox.

Remove angle drive **no. 1** and square pin **no. 4**.

Raise and block rear of vehicle off the ground.

Remove suspension. Refer to SKANDIC WT SUSPENSION.

Remove muffler. Unfasten screw from drive axle end. Loosen Allen screw on bearing race.

Remove 3 screws retaining ball bearing housing then, remove inner plate **no. 3**.

Remove drive axle.

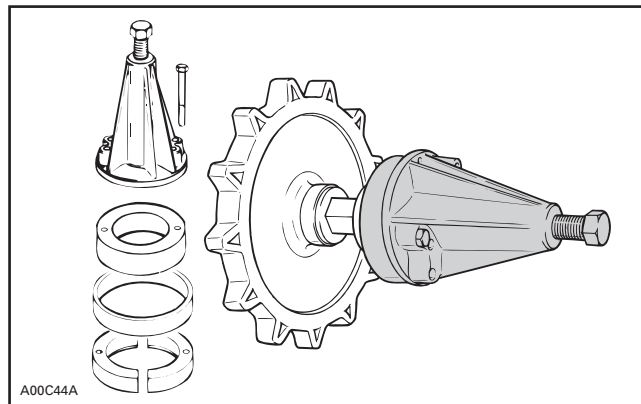
DISASSEMBLY

4, Speedometer Drive Insert

Remove speedometer drive insert.

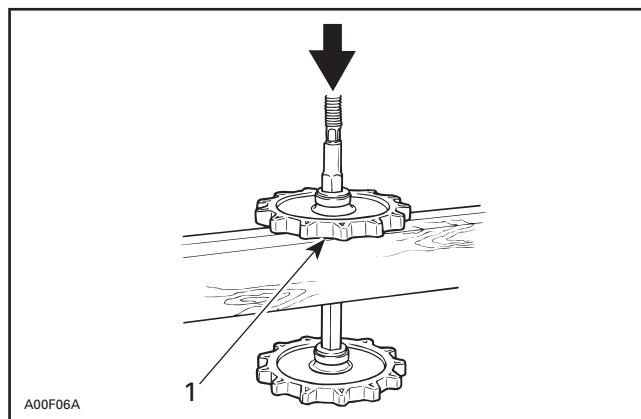
5,12, Bearing

To remove bearings, use puller assembly, ring and half rings as illustrated.



9,13, Sprocket and Half-Sprocket

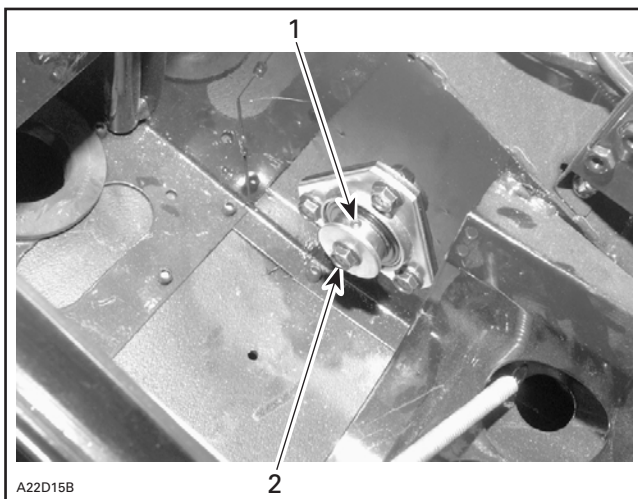
To remove press fit sprockets, use a press and a suitable support as illustrated.



TYPICAL

1. Support sprocket near hub

NOTE: Two different types of sprocket press fit can be found. Ensure to replace ring reinforced sprockets with the same type.



1. Allen screw
2. Screw

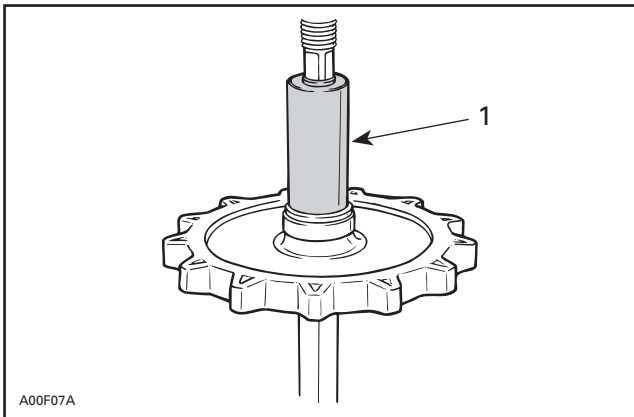
Section 07 REAR SUSPENSION

Subsection 04 (DRIVE AXLE)

ASSEMBLY

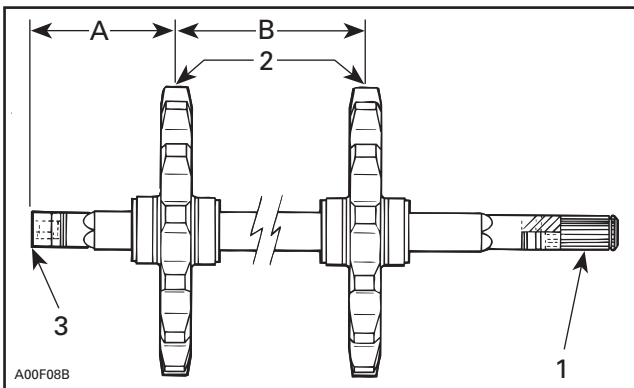
8,9,13, Drive Axle and Sprocket

To assemble press fit sprockets, use a press and a suitable pipe as illustrated. Sprockets must be assembled according to the following dimensions.



1. Pipe

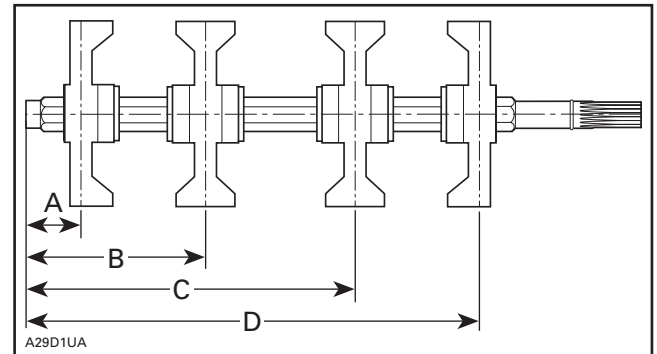
Tundra R



TYPICAL

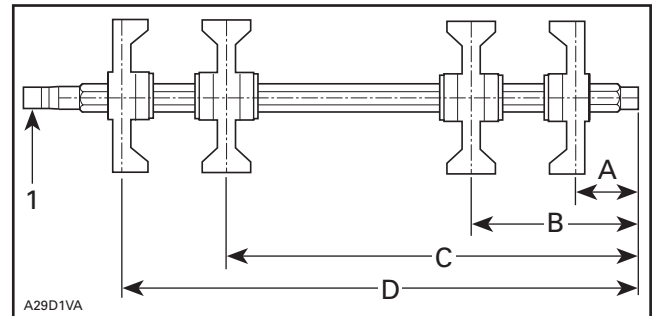
1. Chaincase side
2. Center line of sprocket
3. Drive axle end
- A. 83.0 mm (3-17/64 in)
- B. 237 mm (9-21/64 in)

Skandic LT



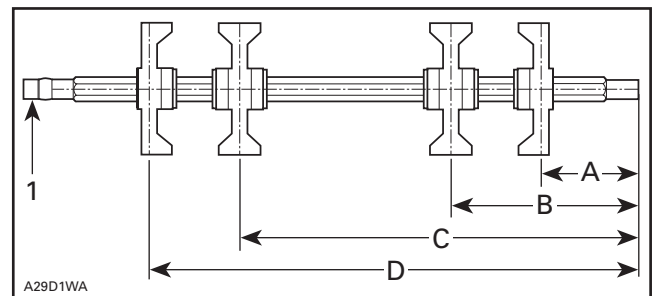
- A. 47.0 mm (1.850 in)
- B. 148.0 mm (5.827 in)
- C. 271.0 mm (10.669 in)
- D. 372.0 mm (14.646 in)

Skandic WT/WT LC



1. Gearbox side
- A. 55.0 mm (2.165 in)
- B. 157.0 mm (6.181 in)
- C. 399.0 mm (15.709 in)
- D. 501.0 mm (19.724 in)

Skandic SWT



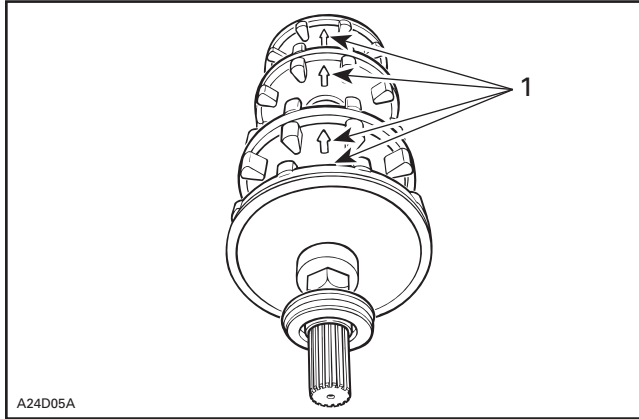
1. Gearbox side
- A. 105.0 mm (4.016 in)
- B. 207.0 mm (8.150 in)
- C. 449.0 mm (17.677 in)
- D. 551.0 mm (21.693 in)

Section 07 REAR SUSPENSION

Subsection 04 (DRIVE AXLE)

All Models

Ensure to align indexing marks of each sprocket when assembling.

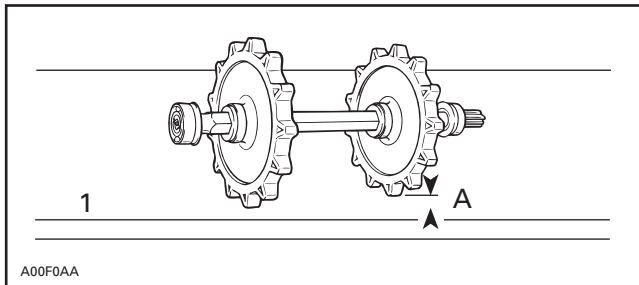


TYPICAL

1. Indexing marks aligned

The maximum desynchronization for the sprockets is 1.5 mm (1/16 in).

To check this tolerance, place axle assembly on a plane surface and measure the gap between sprocket tooth and surface.



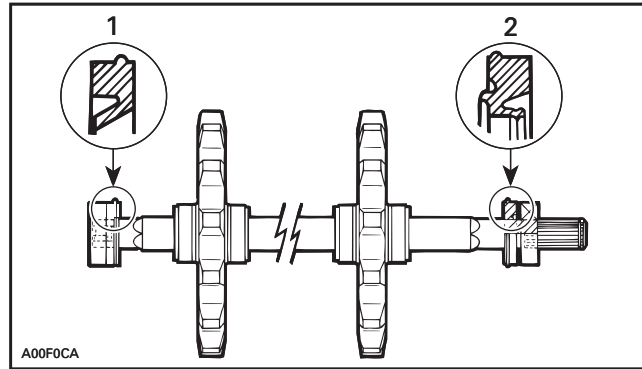
1. Plane surface

A. 1.5 mm (1/16 in) MAXIMUM

CAUTION: The same sprocket must not be pressed twice on the axle. If synchronization is found to be defective, use a new sprocket.

6,8, Drive Axle and Seal

When assembling drive axle, always position a new seal on each end of drive axle (if applicable). Locate seal lip as illustrated.



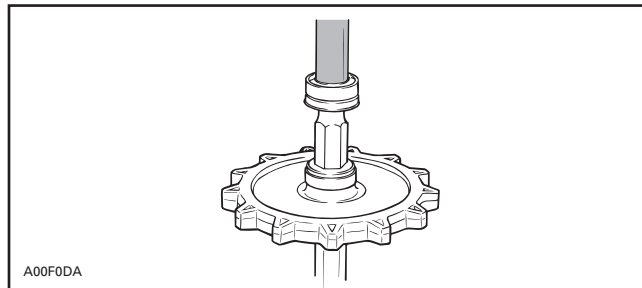
1. Grease seal type
2. Oil seal type

11, Bearing Protector

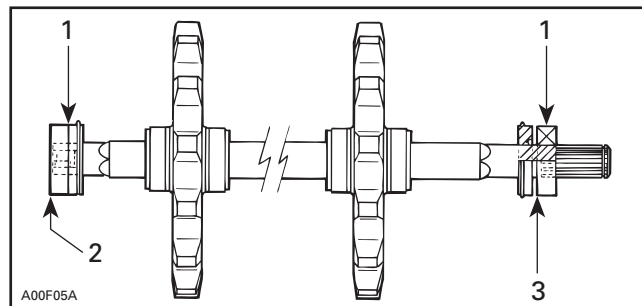
At assembly, flat side of bearing protector must be against bearing.

5,12, Bearing

Always push bearing by inner race.



The bearing on the splined side of axle must be pushed until it is seated on shaft shoulder. The end bearing housing bearing must be flush with end of drive axle. Each bearing must have its shield facing the sprocket.

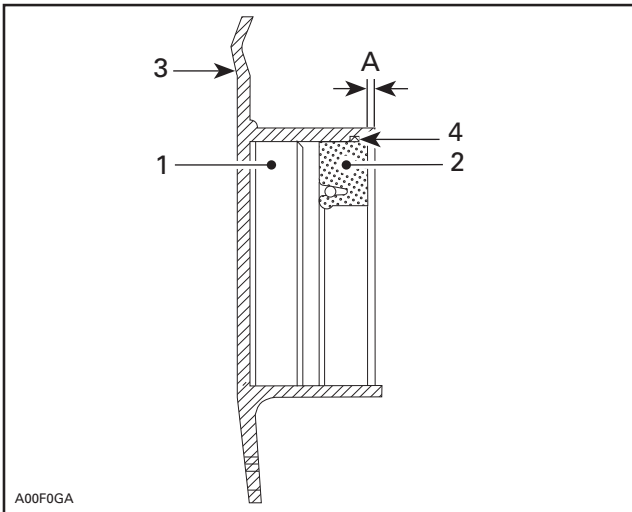


1. Bearing shield on this side
2. Flush with drive axle
3. Seated on shaft shoulder

INSTALLATION

Position drive axle assembly into location. Install end bearing housing. Install spacer (if applicable) between bearing and lower chaincase sprocket.

Install chaincase and position seals (if applicable), making sure that a gap of approximately 2 mm (1/16 in) exists between end of bearing housing and each seal.



SIDE VIEW

1. Bearing
2. Seal
3. Housing
4. Seal lip
- A. 2 mm (.080 in) approximately

3, Retainer Ring

Make sure that welded nuts are toward inside of tunnel.

Lock drive axle sprocket with a circlip.

Reinstall the chaincase cover.

Refill with chaincase oil. Refer to TECHNICAL DATA.

Install the suspension. Refer to TRACK and adjust track tension and carry out track alignment procedure.

LUBRICATION

15, Grease Fitting

Lubricate end housing bearing with synthetic grease (P/N 513 711 500).

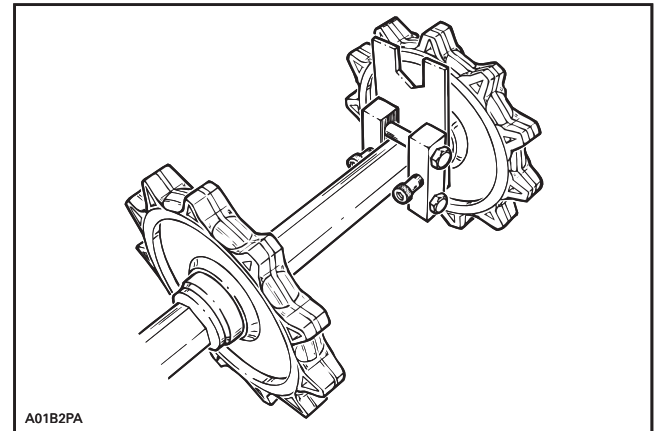
ADJUSTMENT

Sprocket/Track Alignment

CAUTION: Do not tamper with sprocket/track alignment if frame or suspension is damaged.

Sprockets might be repositioned to fit lugs without removing drive axle.

Use drive axle sprocket adjuster kit (P/N 861 725 700).



TYPICAL

TRACK

TRACK TYPE APPLICATION

Refer to TECHNICAL DATA section.

GENERAL

This section gives guidelines for track removal. Some components require more detailed disassembly procedures. In these particular cases, refer to the pertaining section in this manual.

INSPECTION

Visually inspect track for:

- cuts and abnormal wear
- broken rods
- broken or missing track cleats.

If track is damaged or rods are broken, replace track. For damaged or missing cleats, replace by new ones.

WARNING

Do not operate a snowmobile with a cut, torn or damaged track.

REMOVAL

Tundra R

Remove the following items:

- chaincase cover, sprockets, chain
- muffler
- upper center idler ass'y
- suspension
- end bearing housing
- drive axle seal
- drive axle (outwards from end bearing housing)
- track.

Skandic LT

Remove the following parts:

- speedometer cable
- muffler
- chaincase cover
- suspension
- drive axle seal
- end bearing housing
- sprockets and chain
- drive axle (toward end bearing housing)
- track.

Skandic WT/SWT/WT LC

Remove the following parts:

- rear suspension
- muffler.

Drain gearbox.

Remove drive axle then track.

INSTALLATION

All Models

Reverse the removal procedure.

NOTE: When installing the track, respect rotation direction indicated by an arrow on track thread.

Check sprocket/track alignment as described in DRIVE AXLE.

Track Tension and Alignment

Track tension and alignment are inter-related. Do not adjust one without checking the other. Track tension procedure must be carried out prior to track alignment.

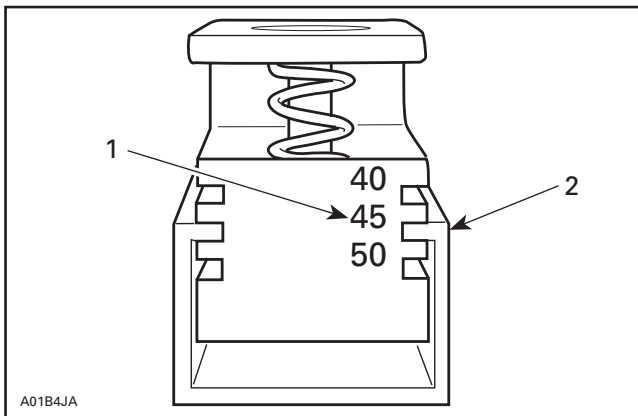
Section 07 REAR SUSPENSION

Subsection 05 (TRACK)

Tension

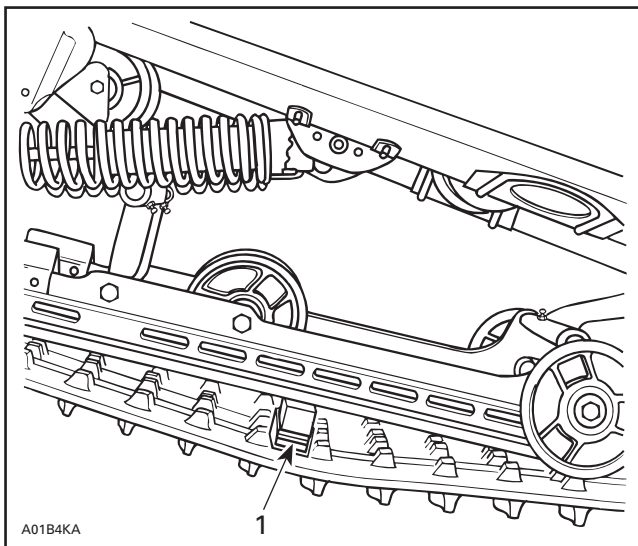
Lift the rear of vehicle and support with a mechanical stand. Allow the slide to extend normally. Check the gap halfway between front and rear idler wheels. Measure between slider shoe and bottom inside of track.

When using the track tension gauge (P/N 529 021 500), slide U-shape extrusion to proper deflection. Refer to TECHNICAL DATA.



1. Example: 45 mm
2. Extrusion

Insert preset gauge between slider shoe and track. Allow gauge to settle by forcing track up and down. Track tension is as specified when edge of gauge reaches line.



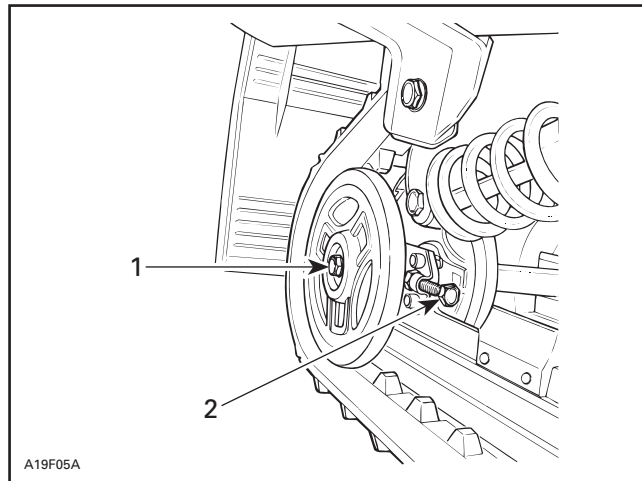
TYPICAL

1. Line

NOTE: Lightly oil track tension gauge center pin to avoid sticking.

CAUTION: Too much tension will result in power loss and excessive stress on suspension components. If too loose, the track will have a tendency to thump.

To adjust, loosen the rear idler wheel retaining screws then loosen or tighten the adjuster bolts located on the inner side of the rear idler wheels.



TYPICAL

1. Retaining screw
2. Adjuster bolt

Alignment

⚠ WARNING

Before checking track tension, ensure that the track is free of all particles which could be thrown out while it is rotating. Keep hands, tools, feet and clothing clear of track. Ensure no one is standing in close proximity to the vehicle.

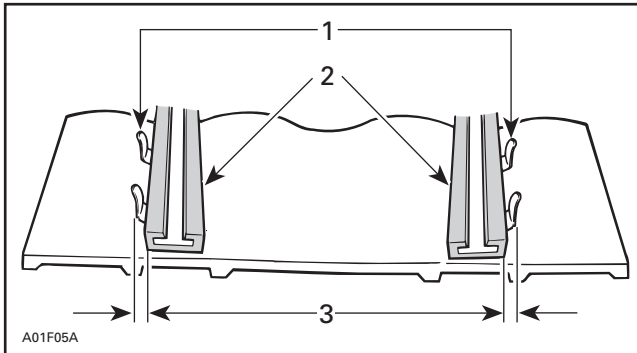
Section 07 REAR SUSPENSION

Subsection 05 (TRACK)

All Models

With rear of vehicle supported off the ground, start engine and allow the track to rotate **slowly**.

Check that the track is well centered; equal distance on both sides between edges of track guides and slider shoes.

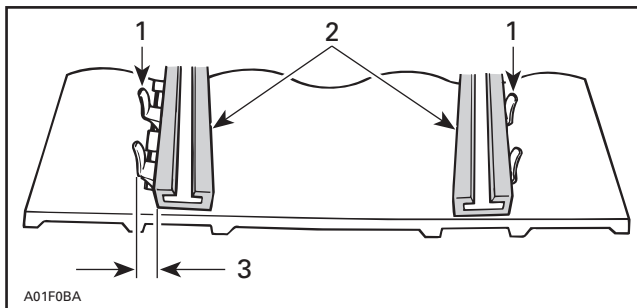


1. Guides
2. Slider shoes
3. Equal distance

⚠ WARNING

Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track.

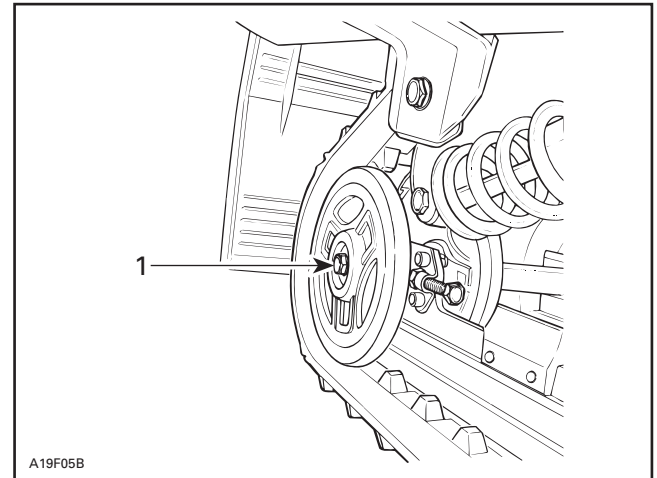
To correct, stop engine then tighten the adjuster bolt on side where guides are farthest to slide. Recheck alignment.



1. Guides
2. Slider shoes
3. Tighten on this side

NOTE: Torque retaining screw to 48 N•m (35 lbf•ft) after adjustment.

Tighten the idler wheel retaining screws.



TYPICAL

1. Retighten

Restart engine, rotate track **slowly** and recheck alignment.

Track Cleet

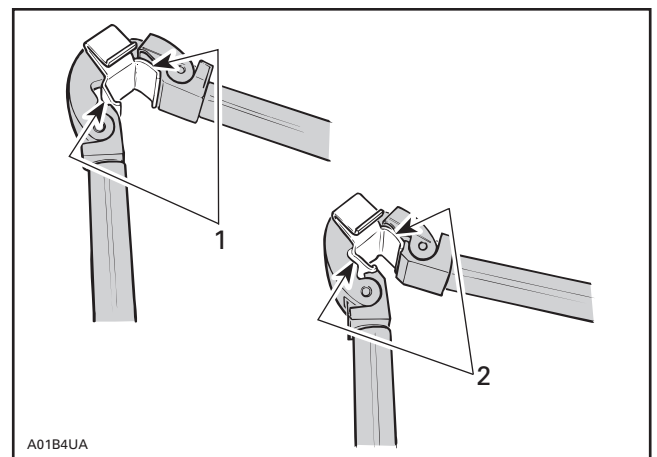
Removal

- Raise rear of vehicle off the ground and lift snow guard then rotate track to expose a cleet to be replaced.
- Using track cleet remover (P/N 529 028 700) for all models.

Installation

NOTE: Keep the same pitch between guide cleats.

- Place new cleet in position and using small track cleet installer (P/N 529 028 800) bend cleet then push tabs into rubber.



TYPICAL

1. First step
2. Second step (to push tabs into rubber)