

## CHAPTER NINE

### REAR SUSPENSION AND TRACK

Ski-Doo snowmobiles are equipped with either a bogie or slide rail rear suspension.

Elan models are equipped with 3 sets of bogie wheels, a 4-wheel set in the front and 3-wheel sets in the center and rear. All other models use 4-wheel sets in the front, center, and rear locations.

Three basic types of slide suspensions are utilized: a ground leveler, high performance, and torque reaction. See **Table 1** for model application.

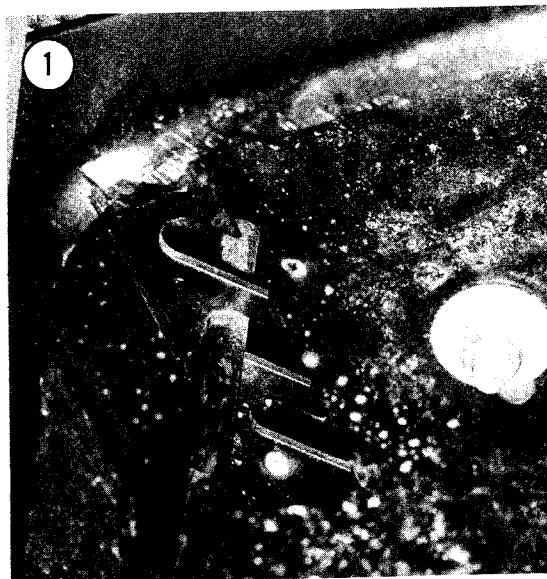
**Table 1** SLIDE SUSPENSION MODEL APPLICATION

Model	Suspension
Olympique 1970-1974 T'NT F/C 1970-1973 Elan 294 SS 1974 Elan 300 SS 1975	Ground leveller
T'NT F/A 1973-1974	High performance
All other models	Torque reaction

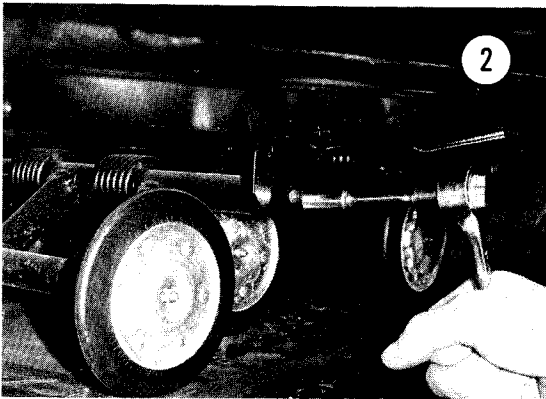
This chapter includes removal and installation procedures for bogie and slide suspensions, track, rear axle and drive axle. Refer to Chapter Two for suspension and track adjustments and Chapter Three for *Track Wear Analysis*.

#### BOGIE WHEEL SUSPENSION

1. Raise rear of snowmobile off ground and block up securely.
2. Using link plate spring lever or locally fabricated equivalent, unhook link plate springs to release track tension (**Figure 1**).



3. Start with center bogie wheel set and remove bolts and lockwashers securing cross shaft to frame (**Figure 2**).



NOTE: When removing second bolt from cross shaft, wedge a screwdriver blade between shaft and support to prevent cross shaft from turning.

Remove bogie wheel set.

4. Remove front and rear bogie wheel sets.

NOTE: Springs on bogie wheel assemblies may vary depending on installation location. Mark the location of each bogie wheel set to make sure each set is installed in the proper location.

5. Refer bogie wheel assembly repair to an authorized dealer.

6. Installation is the reverse of these steps. Keep the following points in mind:

- a. On bogie wheel sets with single springs, position wheel set with wider wheel support to front of snowmobile.
- b. Grease each bogie wheel until new grease appears then wipe off excess.
- c. On models with 3-position anchor for link plate spring, locate spring in middle position (Figure 1).
- d. Perform *Track Tension Adjustment* as outlined in Chapter Two.

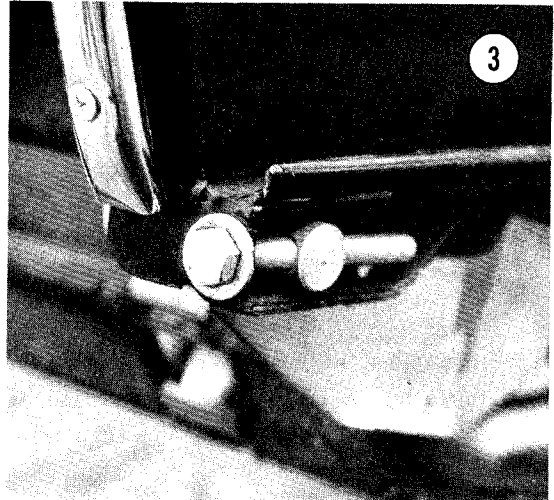
**SLIDE SUSPENSION**

Refer to **Table 1** for slide suspension model application.

**Ground Leveller Suspension Removal/Installation**

1. Raise rear of snowmobile off ground and block up securely.

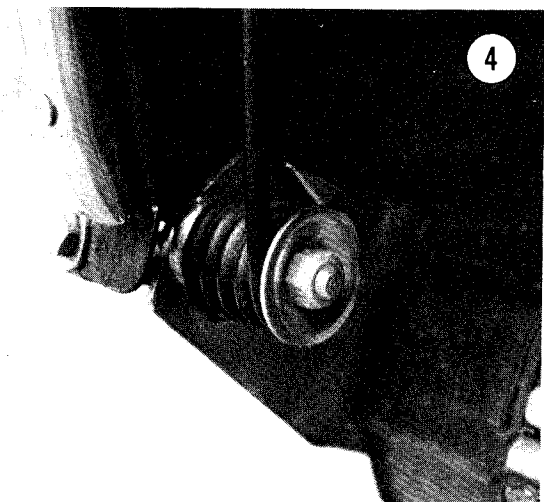
2. Loosen spring adjuster bolt and track tension adjuster bolt to loosen track tension (Figure 3).



3. On 1970 models remove capscrews securing reinforcing cross shaft and remove cross shaft.

4. Use link plate spring lever or locally fabricated equivalent and unhook link plate springs (Figure 1).

5. Remove bolt securing link plate to frame (Figure 4).



6. On 1970 models, remove capscrews and washers securing 4 cross shafts to frame. It may be necessary to hold one end of cross shaft with Vise Grip pliers to remove capscrew from other end.

7. On other models remove 6 bolts securing side members to frame (Figure 5). Remove suspension.

8. Refer required suspension component repair to an authorized dealer.

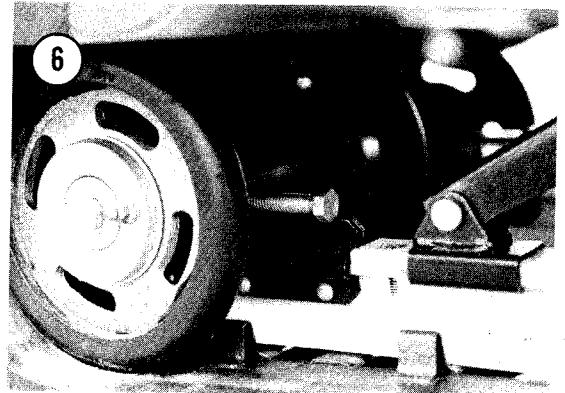
9. Installation is the reverse of these steps. Keep the following points in mind:

- a. To ease suspension installation, apply downward pressure on front cross support and collapse suspension. Tie front cross support to front runner tube with wire to keep suspension collapsed.
- b. Grease front runner tube wheels and rear cross support wheels with low-temperature grease. Wipe off excess.
- c. Perform *Track Tension Adjustment* as outlined in Chapter Two.

### High Performance Suspension Removal/Installation

1. Raise rear of snowmobile off ground and block up securely.

2. Loosen adjuster bolts on inner side of rear idler wheels to release track tension (Figure 6).



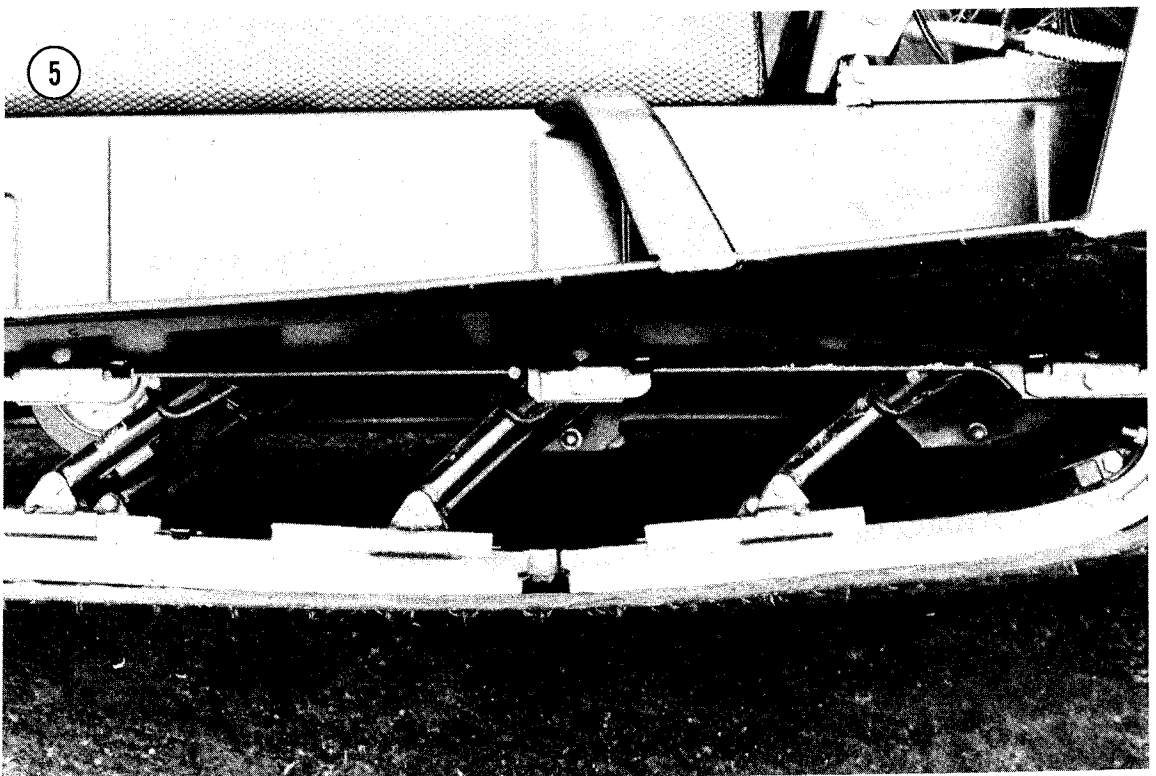
3. Loosen nuts on spring adjuster bolts to release front and rear spring tension.

4. Remove upper idler wheel assembly and withdraw suspension assembly.

5. Refer required suspension component repair to an authorized dealer.

6. Installation is the reverse of these steps. Keep the following points in mind:

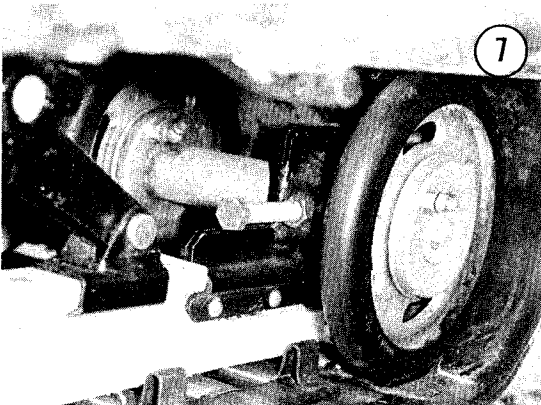
- a. Ensure that cups are positioned over front and rear cross shaft end before locating arms in frame.



- b. Torque bolts securing front and rear arms to frame to 28-35 ft.-lb. (3.9-4.8 mkg).
- c. Torque bolts securing upper idler assembly to 28-33 ft.-lb. (3.9-4.4 mkg).
- d. Perform *Track Tension Adjustment* as outlined in Chapter Two.

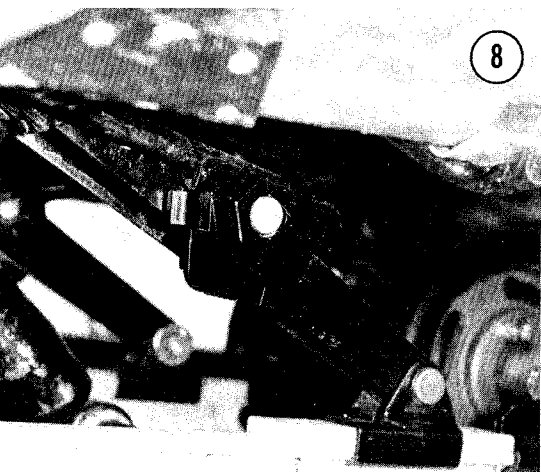
**Torque Reaction Suspension Removal/Installation**

- 1. Raise rear of snowmobile off ground and block up securely.
- 2. Loosen adjuster bolts on inner side of rear idler wheels to release track tension (Figure 7).



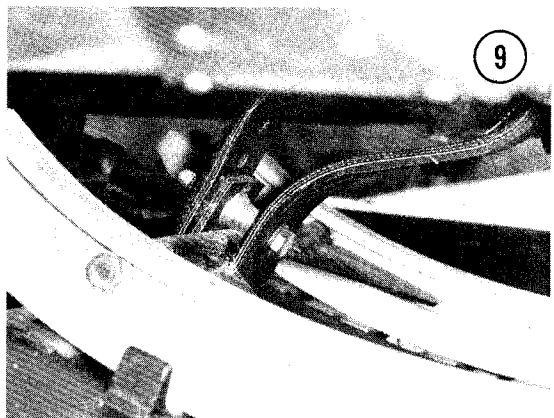
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- 3. Position adjustment cams at lowest elevation (Figure 8).

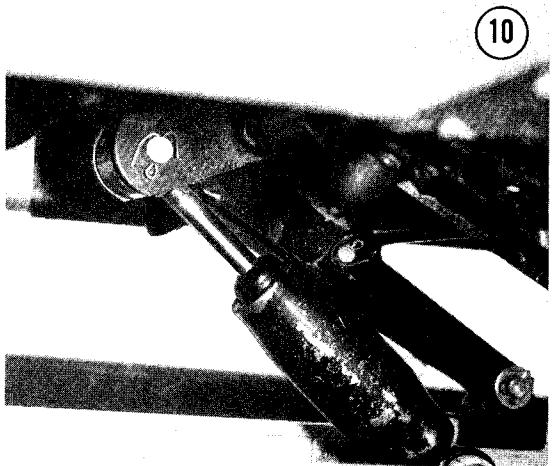


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- 4. Disconnect stopper strap (Figure 9).
- 5. Apply downward pressure on seat and detach shock absorber (Figure 10).



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- 6. Remove 4 bolts securing cross shafts and suspension to frame, and withdraw suspension.

*NOTE: To aid removal of bolts from cross shafts, wedge the blade of a screwdriver between cross shaft and suspension arm.*

- 7. Refer suspension component repair to an authorized dealer.
- 8. Installation is the reverse of these steps. Keep the following points in mind:
  - a. Torque bolts securing front and rear arms to frame to 28-35 ft.-lb. (3.9-4.8 mkg).
  - b. Lower machine to ground and press down on seat to connect shock absorber and stopper strap.

*NOTE: Stopper strap is provided with 4 adjustment holes. The second hole (from end) provides maximum traction and*

*steering efficiency for most snow conditions. Using 1st hole shifts weight toward rear of machine which increases traction but decreases steering efficiency. The 3rd or 4th hole decreases traction and increases steering efficiency and effort.*

- c. Perform *Track Tension Adjustment* as outlined in Chapter Two.

### REAR AXLE

#### Removal/Installation

1. Raise rear of snowmobile off ground and block up securely.
2. Remove locknuts and retainer washers securing link plate springs (**Figure 2**).
3. Using link plate spring lever or locally fabricated equivalent, unhook link plate springs (**Figure 1**).
4. On 1970 models equipped with reinforcing cross shaft, remove bolts securing shaft and remove shaft.
5. Remove track adjuster bolts, eye bolts, link plate springs, hardener washers, and adjuster sleeves.
6. Remove rear axle assembly.
7. Perform *Inspection*. Refer necessary repair to an authorized dealer.
8. Installation is the reverse of these steps. Keep the following points in mind:
  - a. Ensure that spring anchors on link plates are up.
  - b. On models equipped with 3-position spring anchors, hook link spring in middle position.
  - c. Perform *Track Tension Adjustment* as outlined in Chapter Two.

#### Inspection

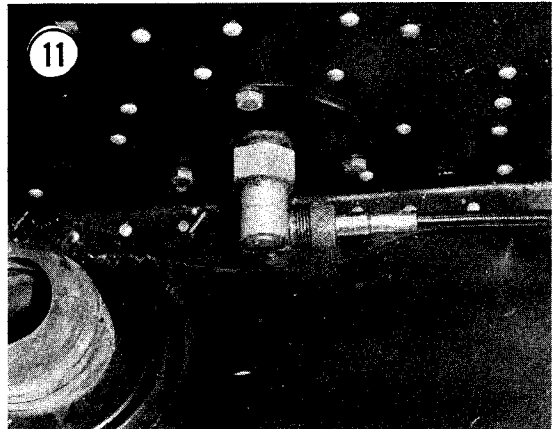
1. Examine sprockets for worn teeth, cuts, distortion, or other damage. Replace if necessary.
2. Inspect all oil seals for evidence of leaking or damage and replace if necessary.
3. Inspect bearings for freedom of movement and free play. If play is excessive or ball bearings are pitted or damaged, replace bearings.

4. Inspect other components including threaded parts, for damage, distortion, or excessive wear. Replace as necessary.

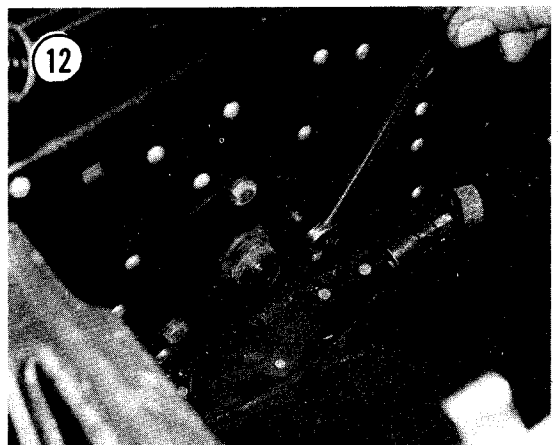
### DRIVE AXLE

#### Removal/Installation

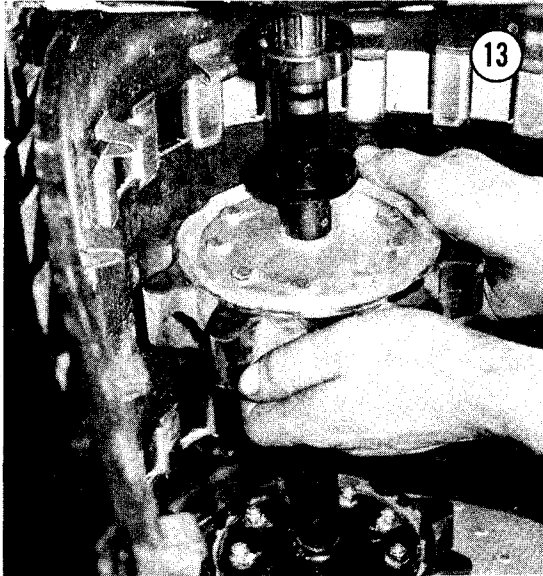
1. Remove rear suspension.
2. Remove chaincase as outlined in Chapter Seven.
3. On electric start models, remove battery cover, battery and battery platform (except Elan models).
4. On models equipped with speedometer, remove angle drive unit and coupling cable (**Figure 11**).



5. Tip snowmobile on its side and remove 3 capscrews securing end bearing housing (**Figure 12**) to frame. It may be necessary to pry housing from frame with 2 large screwdrivers.



6. Disengage sprocket teeth from track, pull drive axle towards end bearing side of frame and remove drive axle assembly (**Figure 13**). Do not lose spacer or shim (if so equipped) located between bearing and lower chaincase sprocket.

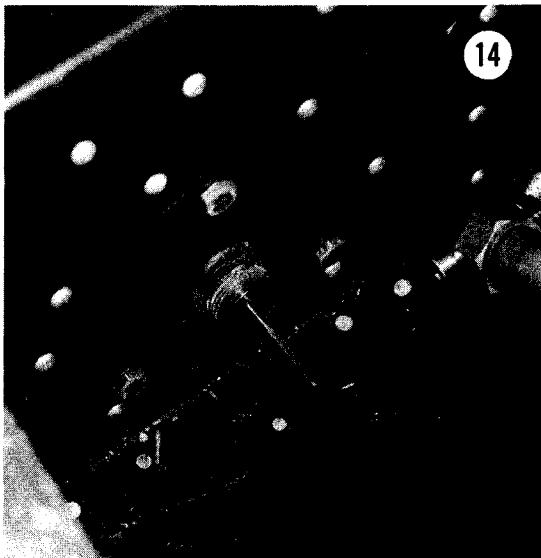


- b. Install chaincase as outlined in Chapter Seven.
- c. Perform *Track Tension Adjustment* as outlined in Chapter Two.

7. Perform *Inspection*. Refer necessary repairs to an authorized dealer.

8. Installation is the reverse of these steps. Keep the following points in mind:

- a. On speedometer equipped models, if *new* drive axle is installed, insert speedometer drive into axle flush with axle end (**Figure 14**).



**Inspection**

1. Examine sprockets for worn teeth, cuts, distortion, or other damage. Replace if necessary.
2. Inspect all oil seals for evidence of leaking or damage and replace if necessary.
3. Inspect bearings for freedom of movement and free play. If play is excessive or ball bearings are pitted or damaged, replace bearings.
4. Inspect splines for cracks or twisting and excessive wear. If splines are damaged, axle must be replaced.
5. Inspect other components, including threaded parts, for damage, distortion, or excessive wear. Replace as necessary.

**TRACK**

**Removal/Installation**

1. Raise rear of snowmobile off ground and block up securely.
2. Remove rear suspension.
3. Remove rear axle.
4. Remove drive axle and withdraw track from machine.
5. Perform *Inspection*. Refer to *Track Wear Analysis* in Chapter Three.
6. Installation is the reverse of these steps. Keep the following points in mind:
  - a. Ensure that right angle of track rib is toward front of machine.
  - b. Perform *Track Tension Adjustment* as outlined in Chapter Two.

**Inspection**

If abnormal wear or damage is evident, refer to *Track Wear Analysis* in Chapter Three.

1. Inspect track for cuts and abnormal wear.
2. Examine track rods. Replace track if excessive damage is evident and rods are broken.
3. Inspect track for missing or damaged inserts. Have an authorized dealer replace track inserts if necessary.

