

SECTION 7 — STEERING AND BODY

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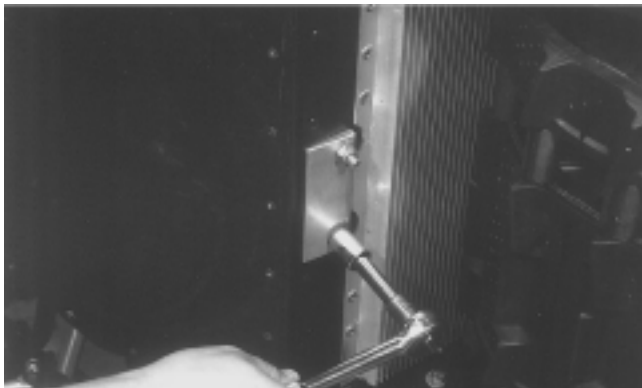
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Steering Post (AWS III)

REMOVING

1. Tip the snowmobile on its side. Remove the screws securing the skid plate.
2. Remove the two cap screws and lock nuts securing the lower steering post bracket to the front end assembly. Account for the two washers, bearing caps, bearing halves, and washers.

Fig. 7-1



AL046

3. Remove the cotter pin, cap screw, and lock nut securing the steering arm to the steering post.

Fig. 7-2

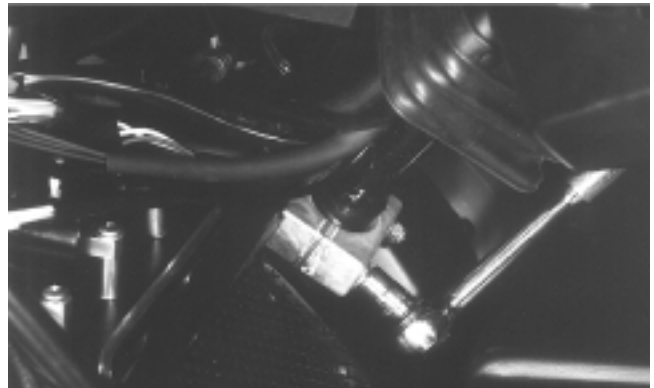


AL089

4. Tip the snowmobile upright. Remove the handlebar pad.
5. Remove the four lock nuts and cap screws securing the adjuster caps to the adjuster block; then remove the caps. Place the handlebar assembly to the side. Remove the adjuster block.
6. Remove the four machine screws securing the console.

7. Remove the two cap screws and lock nuts securing the steering post to the steering support. Account for the backing plate, two washers, bearing caps, bearing halves, and washers.

Fig. 7-3



AL090

8. Carefully slide the steering post out of the chassis. Be careful not to hook any wires or hoses.

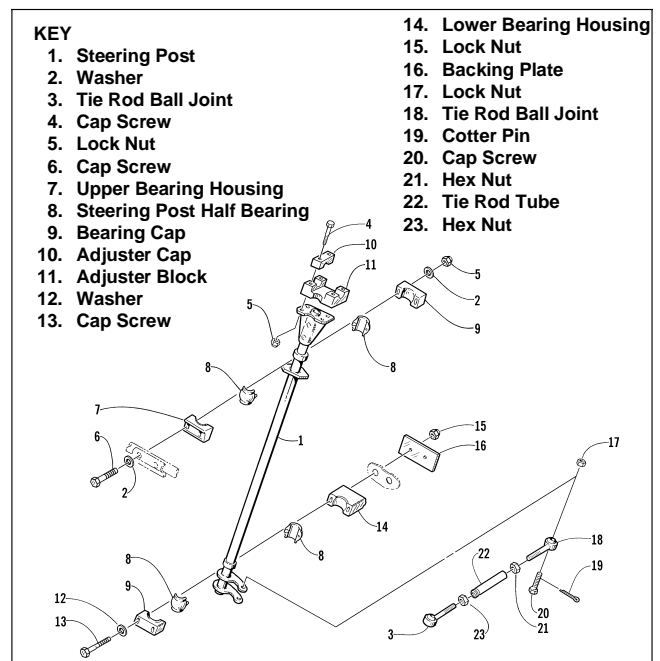
INSPECTING

NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect all welded areas for cracks or deterioration.
2. Inspect the steering post and steering-post brackets for cracks, bends, or wear.
3. Inspect the bearing halves, bearing caps, and bearing housings for cracks or wear.

INSTALLING

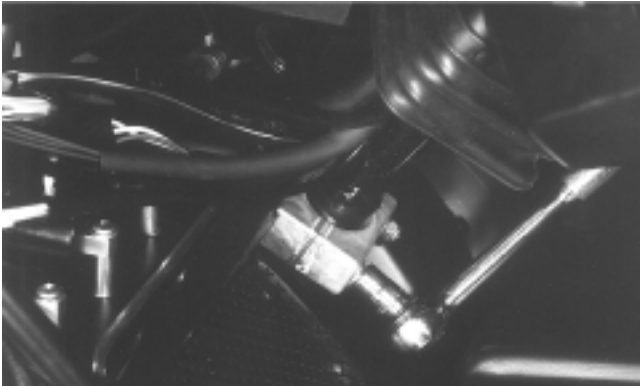
Fig. 7-4



0730-785

1. Carefully slide the steering post into position in the chassis. Be careful not to hook any wires or hoses.
2. On the upper end of the steering post, apply a light oil to the bearing halves and place into position around the steering post; then place the bearing cap between the steering support and the steering post. Place the bearing housing into position and secure with two cap screws, washers, and lock nuts. Tighten to 2.5 kg-m (18 ft-lb).

Fig. 7-5



AL090

3. Secure the console with the machine screws. Make sure all wiring connections are secure.
4. Place the adjuster block, handlebar assembly, and adjuster caps into position; then secure with four cap screws and lock nuts. Tighten lock nuts evenly to 1.4 kg-m (10 ft-lb).
5. Install the handlebar pad.
6. Tip the snowmobile on its side. On the lower end of the steering post, apply a light oil to the bearing halves and place into position around the steering post; then place the bearing cap and bearing housing into position. Install the backing plate and secure with two cap screws, washers, and lock nuts. Tighten to 2.5 kg-m (18 ft-lb).

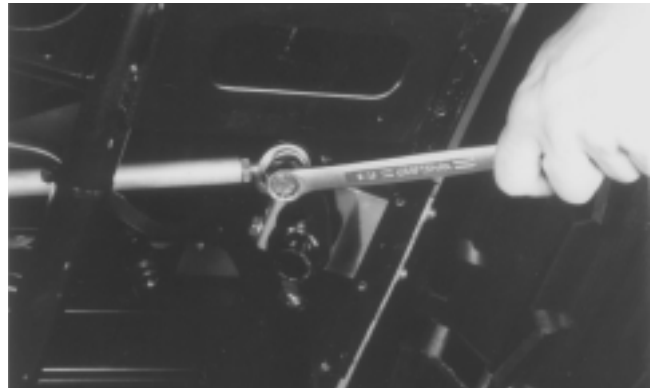
Fig. 7-6



AL046

7. Place the tie rod into position. Secure with a cap screw (coated with green Loctite #609) and lock nut. Tighten to 4.2 kg-m (30 ft-lb). Install the cotter pin and spread the pin.

Fig. 7-7



AL089

8. Install the skid plate. Secure with screws.

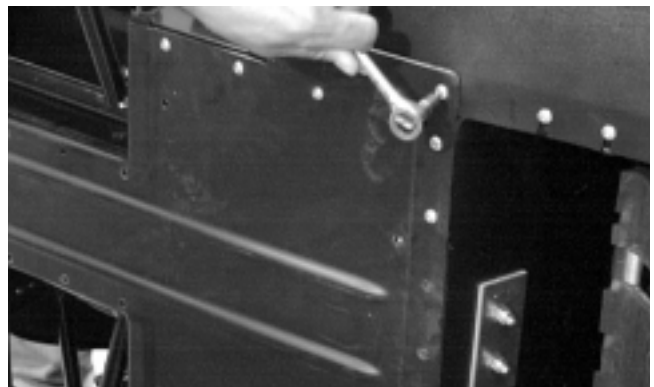
■ **NOTE:** Turn the handlebar to the full-left and full-right to ensure free movement.

Steering Post (AWS V)

REMOVING

1. Tip the snowmobile on its side. Remove the screws securing the skid plate.

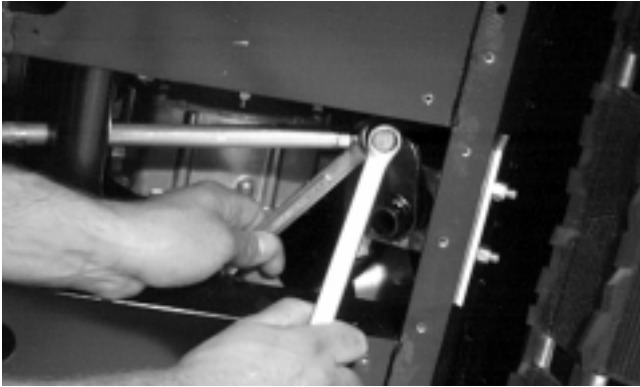
Fig. 7-8



AL144D

2. Remove the cotter pin, cap screw, and lock nut securing the tie rod to the steering post.

Fig. 7-9



AL146D

3. Remove the two cap screws and lock nuts securing the lower steering post bracket to the front end assembly. Account for the backing plate, two washers, bearing caps, bearing halves, and washers.

Fig. 7-10



AL145D

4. Tip the snowmobile upright. Remove the handlebar pad.

Fig. 7-11



AL136D

5. Remove the four lock nuts and cap screws securing the adjuster caps to the adjuster block; then remove the caps. Place the handlebar assembly to the side. Remove the adjuster block.

Fig. 7-12



AL147D

6. Remove the Phillips-head screws securing the console to the gas tank.

Fig. 7-13



AL142D

7. Remove the two cap screws and lock nuts securing the steering post to the steering support. Account for the two washers, bearing caps, bearing halves, washers, and backing plate.

Fig. 7-14



AL090

8. Remove the sheet metal screws securing the recoil starter rope cup.

Fig. 7-15



AL149D

9. Remove the cap screws securing the recoil starter rope wire form. Account for the lock nut.

Fig. 7-16



AL150D

10. Remove the cap screws securing the steering support to the footrest (both sides).

Fig. 7-17



AL151D

11. Remove the cap screws securing the oil reservoir to the steering support. Account for the lock nut and a flat washer.

Fig. 7-18



AL152D

12. Remove the cap screws securing the air-intake silencer to the steering support. Account for the washers, lock washers, and spacers.

Fig. 7-19



AL153D

13. Move the air-intake silencer forward.

Fig. 7-20



AL154D

14. Carefully slide the steering post out of the chassis. Be careful not to hook any wires or hoses.

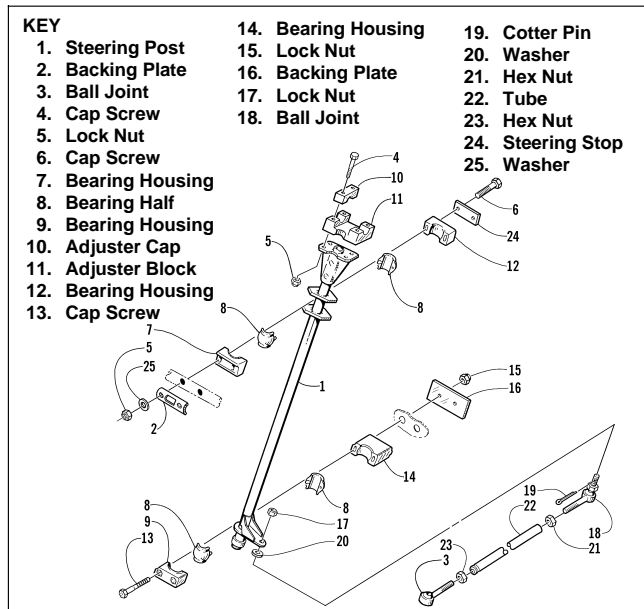
INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect all welded areas for cracks or deterioration.
2. Inspect the steering post and steering-post brackets for cracks, bends, or wear.
3. Inspect the bearing halves, bearing caps, and bearing housings for cracks or wear.

INSTALLING

Fig. 7-21



0734-129

1. Carefully slide the steering post into position in the chassis. Be careful not to hook any wires or hoses.
2. Secure the air-intake silencer to the steering support with the washers, lock washers, spacers, and cap screws.

Fig. 7-22



AL153D

3. Secure the oil reservoir to the steering support with the washer and lock nut.

Fig. 7-23



AL152D

4. Secure the steering support to the footrest (both sides) with the cap screws.

Fig. 7-24



AL151D

5. Secure the recoil starter rope wire form with the cap screws and lock nut.

Fig. 7-25



AL150D

6. Secure the recoil starter rope cup with the sheet metal screws.

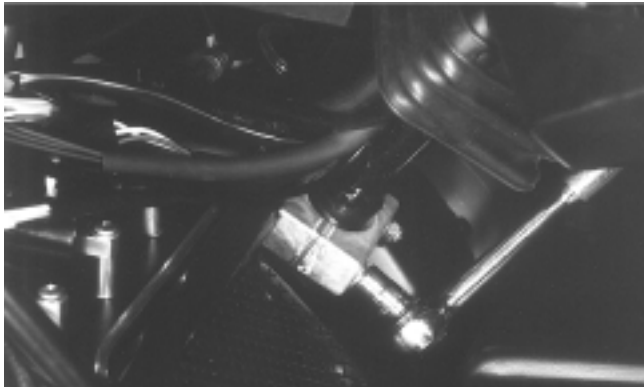
Fig. 7-26



AL149D

7. On the upper end of the steering post, apply a light oil to the bearing halves and place into position around the steering post; then place the bearing cap between the steering support and the steering post. Place the bearing housing into position and secure with the backing plate, two cap screws, washers, and lock nuts. Tighten to 2.5 kg-m (18 ft-lb).

Fig. 7-27



AL09D

8. Secure the console with the Phillips-head screws.

Fig. 7-28



AL142D

9. Place the adjuster block, handlebar assembly, and adjuster caps into position; then secure with four cap screws and lock nuts. Tighten lock nuts evenly to 1.4 kg-m (10 ft-lb).

Fig. 7-29



AL147D

10. Secure the handlebar pad.

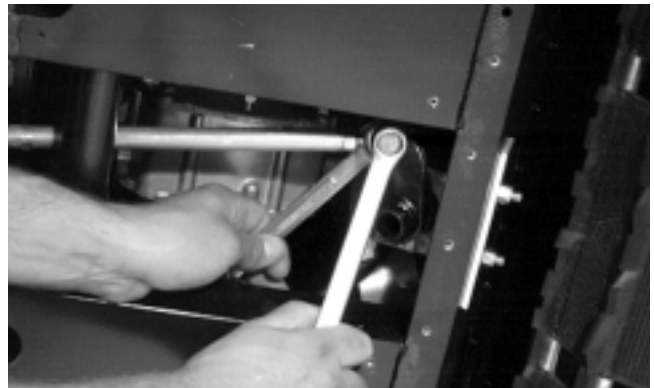
Fig. 7-30



AL136D

11. Tip the snowmobile on its side; then place the tie rod into position. Secure with a cap screw (coated with green Loctite #609) and lock nut. Tighten to 4.2 kg-m (30 ft-lb). Install the cotter pin and spread the pin.

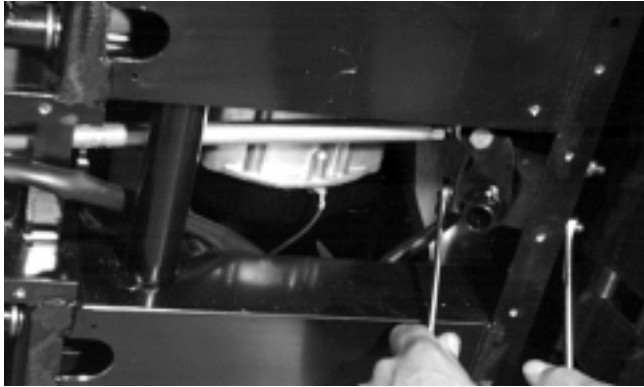
Fig. 7-31



AL146D

12. On the lower end of the steering post, apply a light oil to the bearing halves and place into position around the steering post; then place the bearing cap and bearing housing into position. Install the backing plate and secure with two cap screws, washers, and lock nuts. Tighten to 2.5 kg-m (18 ft-lb).

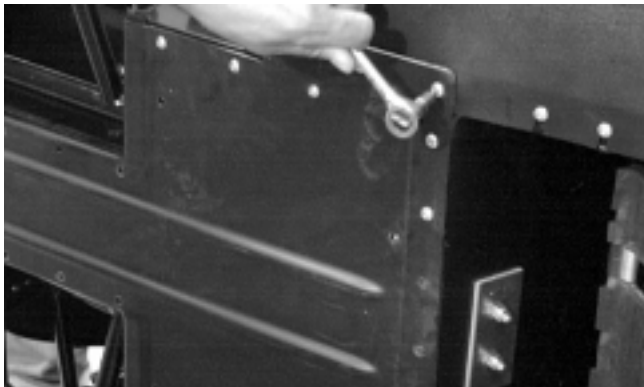
Fig. 7-32



AL145D

13. Install the skid plate. Secure with screws.

Fig. 7-33



AL144D

■ **NOTE:** Turn the handlebar to the full-left and full-right to ensure free movement.

Ski (Plastic)

REMOVING

1. Place the front of the snowmobile on a support stand.
2. Remove the cotter pin; then remove the slotted nut and cap screw securing the ski assembly to the spindle. Remove the ski. Account for the rubber damper and washers.

Fig. 7-34



AL095D

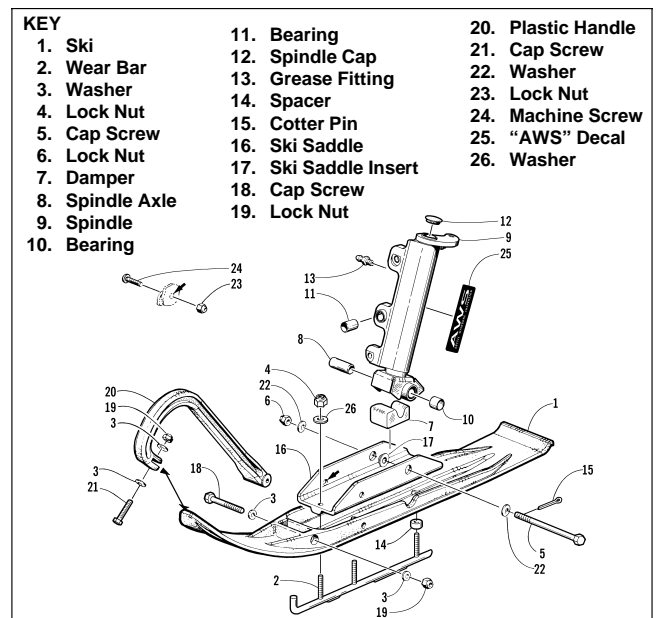
INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the ski for cracks or deterioration.
2. Inspect the ski for abnormal bends or cracks.
3. Inspect the wear bar for wear.
4. Inspect all hardware and the spindle bushings for wear and damage.
5. Inspect the rubber damper for damage or wear.

INSTALLING

Fig. 7-35



0735-113

1. Position the ski over the saddle.

2. Apply a low-temperature grease to the non-threaded portion of the cap screw; then slide the cap screw (with washer as required) through the ski and saddle accounting for the rubber damper.

■ **NOTE:** Install the cap screw so the lock nut will be located to the inside of the ski.

3. Apply red Loctite #271 to the threads of the cap screw; then tighten the lock nut (with washer as required) to 6.2 kg-m (45 ft-lb).
4. Place the cotter pin into the ski cap screw and spread the pin.

Ski (Steel)

REMOVING

1. Place the front of the snowmobile on a safety stand.
2. Remove the cotter pin; then remove the slotted nut and cap screw securing the ski assembly to the spindle. Remove the ski. Account for the rubber damper.

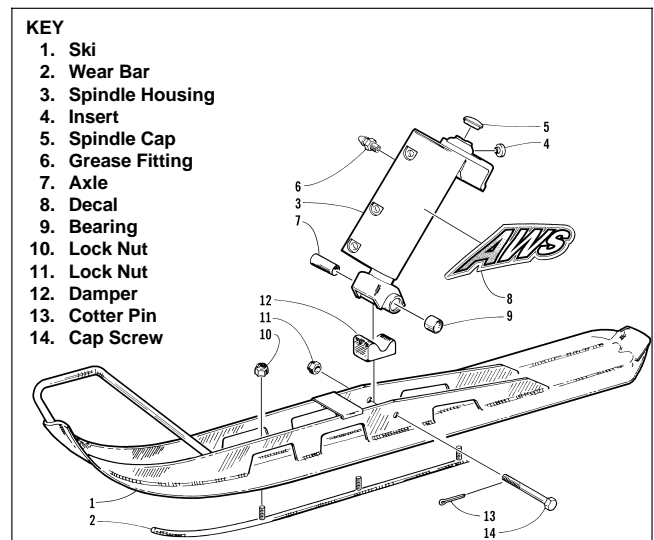
INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the welded areas for cracks or deterioration.
2. Inspect the ski for abnormal bends or cracks.
3. Inspect the wear bar for wear.
4. Inspect the rubber damper for damage or wear.
5. Inspect all hardware and the spindle bushings for wear and damage.

INSTALLING

Fig. 7-36



0734-088

1. Place the ski and rubber damper up into position on the spindle.

■ **NOTE:** Gently tap each rear corner of the spindle inward just enough to squeeze the rubber damper to hold it in position. The high end of the rubber damper should be positioned forward.

2. Align the hole in each ski with the hole in each spindle; then apply low-temperature grease to the non-threaded area of each cap screw and slide the cap screw through the ski and spindle assembly. Be sure to position the cap screw so the slotted nut will be on the inside of the ski.
3. Set the snowmobile on the floor; then secure the cap screw (coated with red Loctite #271) with a washer (as required) and slotted nut. Tighten to 6.2 kg-m (45 ft-lb).
4. Place a cotter pin through the slotted nut and cap screw; then spread the cotter pin.

Drag Link

REMOVING

1. Remove the expansion chamber if necessary.
2. On one side, remove the lock nut securing the tie rod to the spindle. Account for an O-ring and washer.

■ **NOTE:** Note whether the tie rod is installed on the top side or on the bottom side of the spindle arm for installing purposes.

Fig. 7-37



AL108

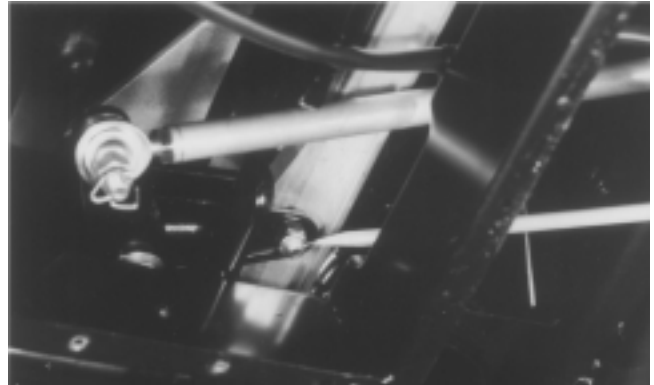
Fig. 7-38



AL655D

3. On the side from which the tie rod was removed, remove the self-tapping screws securing the steering boot to the front end.
4. Remove the cap screws and lock nuts securing the steering and idler arms to the drag link. Account for any axles and washers.

Fig. 7-39



AL092

5. Turn the ski to gain access to the lock nut and cap screw securing the tie rod to the drag link on the opposite side from which the steering boot was removed; then remove the cap screw and lock nut. Account for washers.
6. Slide the drag link backward and twist upward to free the drag link of the two steering idler arms.
7. Slide the drag link out of the front end.

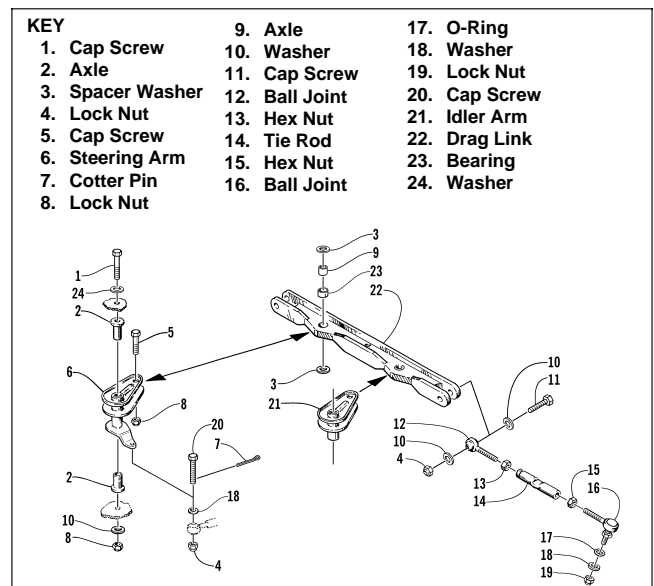
INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the entire drag link (especially in the areas where the ball joints attach) for any signs of cracks, wear, or damage.
2. Inspect the bearings, inserts, and axles for wear or damage.

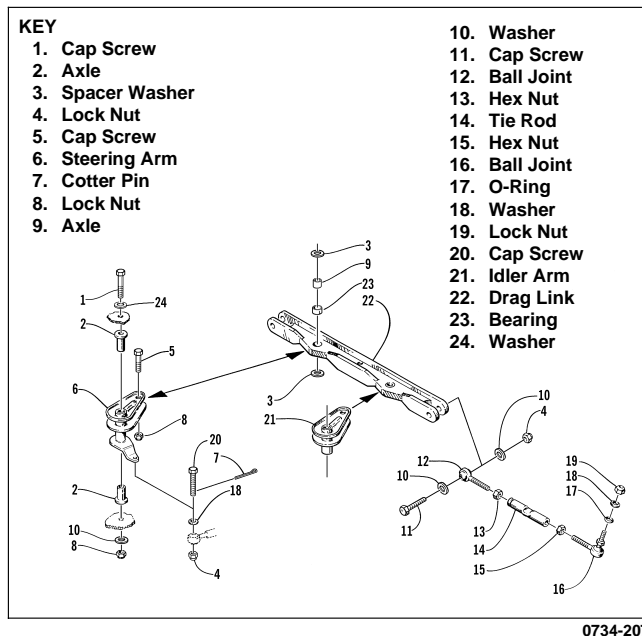
INSTALLING

Fig. 7-40



0735-191

Fig. 7-41



1. Slide the drag link into position on the front end.
2. Opposite the end from which the steering boot was removed, secure the tie rod to the drag link with a cap screw, two washers, and a lock nut (threads coated with green Loctite #609). Tighten to 2.8 kg-m (20 ft-lb).
3. Apply a light coat of grease to the two drag link axles; then slide them into position in the drag link.
4. Place a washer on each side of the drag link axles; then position the axles into the steering arms. Secure the steering and idler arms to the drag link with two cap screws (coated with green Loctite #609) and lock nuts. Tighten to 4.2 kg-m (30 ft-lb).

Fig. 7-42



5. Place the remaining tie rod into position on the drag link. Secure with a cap screw (coated with green Loctite #609), two washers, and a lock nut. Tighten to 2.8 kg-m (20 ft-lb).

6. Place the steering boot into position on the front end. Secure with self-tapping screws.
7. Install the tie rod (threaded area coated with green Loctite #609) on the spindle arm as noted during removing. Secure with an O-ring, washer, and nut. Tighten to 3.5 kg-m (25 ft-lb).

Fig. 7-43



Fig. 7-44



NOTE: Check all drag link and ball joint fasteners to ensure they are tight. Turn the handlebars full-left and full-right several times to ensure free movement.

8. Install and secure the expansion chamber (if removed).
9. Check and adjust ski alignment (see Ski Alignment in this section).

Front Tie Rods

REMOVING AND DISASSEMBLING

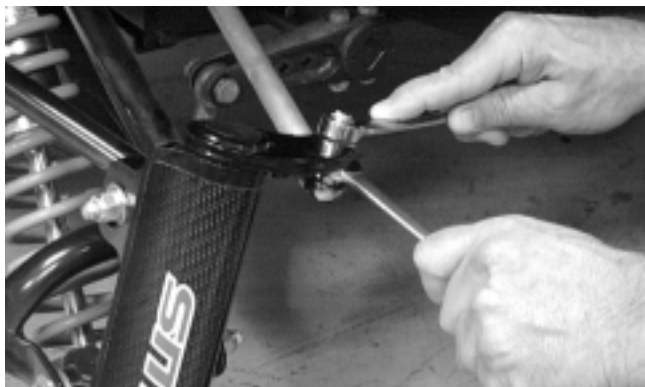
1. Remove the lock nut securing the tie rod to the spindle. Account for a washer and O-ring.

■ **NOTE:** Note whether the tie rod is installed on the top side or on the bottom side of the spindle arm for installing purposes.

Fig. 7-45



Fig. 7-46



2. Remove the self-tapping screws or rivets securing the steering boot and retainer to the front end.
3. Turn the handlebar in the appropriate direction; then remove the cap screw and lock nut securing the steering arm to the drag link. Account for washers.
4. Loosen the jam nut securing each ball joint to the tie rod; then remove the ball joints from the tie rod. Slide the rod from the steering boot. Remove the jam nuts from the ball joints.

CLEANING AND INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the ball joints and tie rods for damaged threads or wear.
2. Inspect the ball joints and tie rods for cracks or unusual bends.
3. Wash the ball joints in parts-cleaning solvent. Dry with compressed air. Inspect the ball joint pivot area for wear. Apply a low-temperature grease to the ball joints.

⚠ WARNING

Always wear safety glasses when using compressed air.

ASSEMBLING AND INSTALLING

1. Slide the tie rod through the steering boot and retainer; then install the jam nuts on the ball joints and thread the ball joints onto the tie rod.

■ **NOTE:** Each jam nut and ball joint is either a right-hand or left-hand thread; therefore, each can only be installed on one end of the tie rod. The right-hand thread is the inside ball joint and jam nut.

2. Secure the tie rod to the ball joint on the forked end of the drag link with a cap screw, washers, and lock nut. Tighten to 2.8 kg-m (20 ft-lb).
3. Secure the steering arm to the drag link with a cap screw, lock nut, and washers. Tighten to 4.2 kg-m (30 ft-lb).
4. Position an O-ring and washer on the ball joint assembly (threads coated with green Loctite #609). Install the ball joint on the spindle arm as noted in removing; then secure with a lock nut. Tighten to 3.5 kg-m (25 ft-lb).

Fig. 7-47



AL108

Fig. 7-48



5. Place the steering boot and retainer into position and secure with self-tapping screws or rivets.
6. Adjust ski alignment (see Ski Alignment in this section).
7. Apply blue Loctite #242 to the jam nut threaded area and tighten the jam nuts against the tie rod to 1.7-2.1 kg-m (12-15 ft-lb).

⚠ WARNING

Neglecting to lock the jam nuts against the tie rod may cause loss of snowmobile control and possible personal injury.

Spindle

REMOVING

1. Position the front of the snowmobile up on a safety stand.
2. Remove the ski.
3. Remove the lock nut and cap screw securing the shock absorber to the spindle. Account for all mounting hardware.

Fig. 7-49



4. Remove the lock nut securing the tie-rod ball joint to the spindle (account for the washer and the O-ring); then remove the ball joint from the spindle.

■ **NOTE:** Note whether the tie rod is installed on the top side or on the bottom side of the spindle arm for installing purposes.

Fig. 7-50



Fig. 7-51



5. Remove the two cap screws and lock nuts securing the spindle to the suspension arms. Account for all mounting hardware.

Fig. 7-52



Fig. 7-53



AL160D

6. Inspect the tie-rod ball joint in place. If damage, wear, or unusual bends are noted, loosen the jam nut; then remove the ball joint from the tie rod.

INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the spindle for excessive wear, cracks, bends, or imperfections.
2. Inspect all welds for cracking.
3. Inspect the suspension arm bushings and axle area for wear.
4. Secure the spindle in a vise. Rotate the spindle clockwise and counterclockwise. The movement should be smooth and free. If the spindle movement is rough or binding, grease the spindle with a good low-temperature grease. Rotate the spindle. If the movement remains rough, replace the spindle.

■ **NOTE:** When greasing the spindle, use enough grease so that it can be seen coming out at both the top and bottom of the spindle.

5. Inspect the spindle axle and bearings for wear, damage, or loose fit. Replace the bearings as a set.

■ **NOTE:** Replacing the ski bolt bushings is difficult. The existing bushings will be damaged during removal. Be careful, however, not to damage the spindle when removing the bearing. Press the new bushings into the spindle.

INSTALLING

1. Place the upper and lower suspension arm ends with bushings in position into the spindle. Secure with cap screws and lock nuts. Tighten to 4.2 kg-m (30 ft-lb).

2. Place the steering tie-rod ball joint into position (threads coated with green Loctite #609) on the spindle arm as noted during removing (with washer and O-ring) and secure with a lock nut. Tighten to 3.5 kg-m (25 ft-lb).

Fig. 7-54



AL108

Fig. 7-55



AL655D

3. Install the ski.
4. Align the lower shock eyelet with the mounting hole in the spindle; then secure with the cap screw, optional washers, and lock nut. Tighten to 3.2 kg-m (23 ft-lb).
5. Remove the safety stand from beneath the front end.

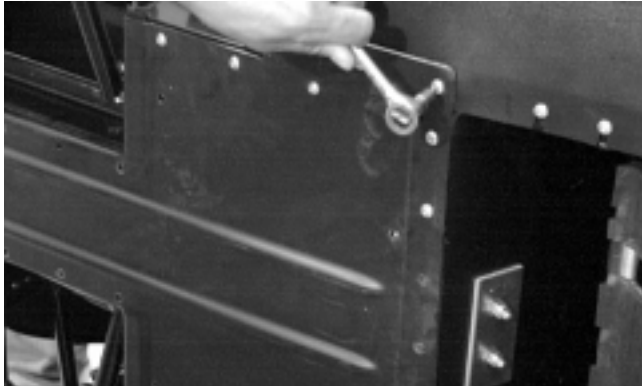
Steering Tie Rod

REMOVING

1. Remove the screws securing the skid plate; then remove the skid plate.

■ **NOTE:** The front machine screw on some models is secured with a washer and lock nut.

Fig. 7-56



AL144D

2. Remove the cotter pins, cap screws, and slotted nuts securing the steering tie rod to the steering post and steering arm; then remove the tie-rod assembly.

Fig. 7-57



AL089

3. Loosen the jam nuts securing the ball joints to the steering tie rod; then remove the ball joints.

INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the ball joints for damaged threads or wear.
2. Inspect the tie rod for damage, unusual bends, or wear.

INSTALLING

1. Position the handlebar in the straight-ahead position; then position the skis straight ahead.
2. Thread the jam nuts onto the ball joints; then equally thread the ball joints onto the steering tie rod.

■ **NOTE:** There must be an approximate equal number of threads exposed on each ball joint.

3. Place the tie-rod assembly into position; then rotate the steering tie rod until the holes in the ball joints align with the holes in the steering post and steering arm.
4. Ensure correct handlebar/ski alignment (adjust steering tie rod as necessary); then apply blue Loctite #242 to the jam nut threaded area and tighten to 1.7-2.1 kg-m (12-15 ft-lb).
5. Secure the tie-rod assembly with the two cap screws (coated with green Loctite #609), washers, and slotted nuts. Tighten to 4.2 kg-m (30 ft-lb); then install the cotter pins and spread the cotter pins.

Fig. 7-58



AL089

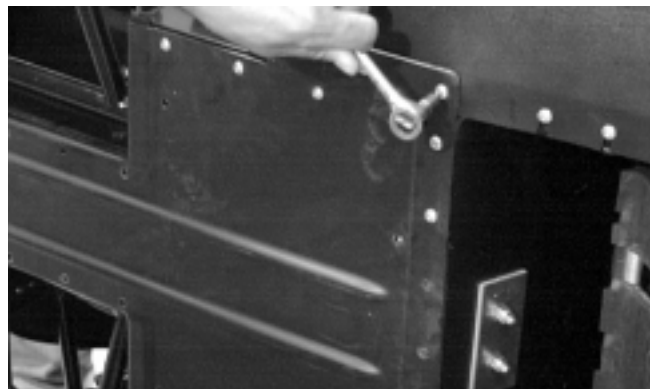
⚠ WARNING

Neglecting to lock the jam nuts against the tie rod may cause loss of snowmobile control and possible personal injury.

6. Install the skid plate; then secure with screws.

■ **NOTE:** The front machine screw on some models is secured with a washer and lock nut.

Fig. 7-59



AL144D

Ski Alignment

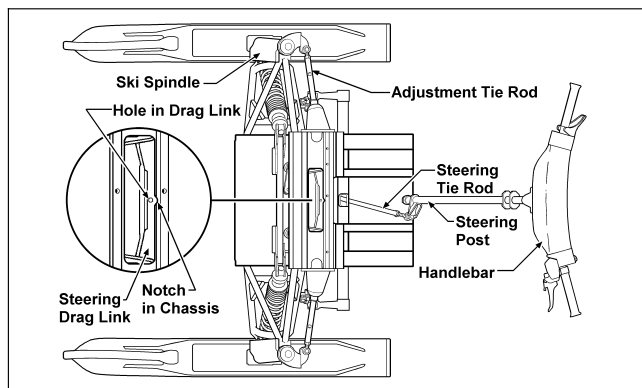
CHECKING

Toe-Out Range
1.6 - 6.4 mm (1/16 - 1/4 in.)

■ **NOTE:** Track tension and alignment must be properly adjusted prior to checking or adjusting ski alignment. Ski alignment must be performed on a flat, level surface. Ski toe-out must fall within the range of 1.6 - 6.4 mm (1/16 - 1/4 in.).

1. Raise the front end of snowmobile just high enough to keep the skis from contacting the floor; then tighten the ski mounting cap screws to 3.6 kg-m (26 ft-lb).
2. Turn the handlebar to the straight-ahead position until the hole in the middle of the drag link is aligned with the notch (half-moon shaped) in the chassis. Visually inspect the handlebar for being centered and in the straight-ahead position.

Fig. 7-60



0734-407

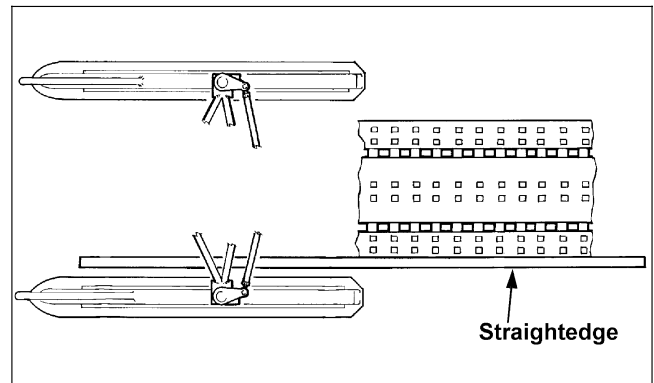
■ **NOTE:** If the handlebar is not in the straight-ahead position when the hole in the middle of the drag link aligns with the notch in the chassis, the steering tie rod must be adjusted. When handlebar alignment is correct, apply blue Loctite #242 to the jam nut threaded area and tighten to 1.7-2.1 kg-m (12-15 ft-lb). Tighten both jam nuts against the steering tie rod.

3. With the drag link centered and handlebar in the straight-ahead position, secure the handlebar to prevent the drag link and handlebar alignment from becoming disturbed during the remainder of the alignment procedure.

■ **NOTE:** Track tension and alignment must be properly adjusted prior to placing the straightedge against the outside edge of the track.

4. Place a long straightedge against the outside edge of the track so it lies near the inside edge of the left-side ski.

Fig. 7-61

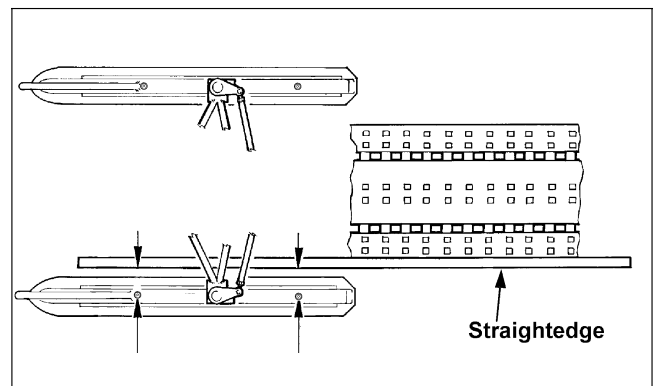


729-887B

■ **NOTE:** The straightedge should be long enough to extend from the back of the track to the front of the ski.

5. Measure the distance from the straightedge to the left-side ski wear bar bolts in two places: approximately 18-20 cm (7-8 in.) in front of the spindle and 18-20 cm (7-8 in.) behind the spindle. Record the measurements taken for the left side.

Fig. 7-62



0729-887A

6. Place the straightedge against the outside edge of the track so it lies near the inside edge of the right-side ski.
7. Measure the distance from the straightedge to the right-side ski wear bar bolts in two places: 18-20 cm (7-8 in.) in front of the spindle and 18-20 cm (7-8 in.) behind the spindle. Record the measurements taken for the right side.

⚠ WARNING

The measurement from the front and rear wear bar bolts to the straightedge can be equal (ski parallel to the track), but the front measurement must never be less (ski toed-in) or poor handling will be experienced. The front wear bar bolt measurement to the straightedge must not exceed the measurement from the rear wear bar bolt to the straightedge (ski toed-out) by more than 3.9 mm (5/32 in.).

8. If ski alignment is not as specified, adjust the alignment of the ski(s) not parallel to the straightedge.

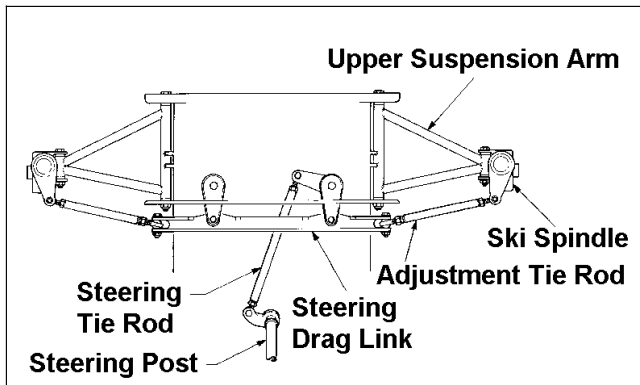
ADJUSTING

■ **NOTE:** The following procedure can be used to adjust the alignment of either ski.

1. Unlock the appropriate adjustment tie rod(s) by loosening the jam nuts.

■ **NOTE:** The outside jam nuts are left-hand thread. Care should be taken to rotate them in the proper direction.

Fig. 7-63



0729-883

2. Adjust ski alignment by rotating the adjustment tie rod.
3. When ski alignment is correct, apply blue Loctite #242 to the jam nut threaded area and tighten to 1.7-2.1 kg-m (12-15 ft-lb). Tighten both jam nuts against the tie rod.

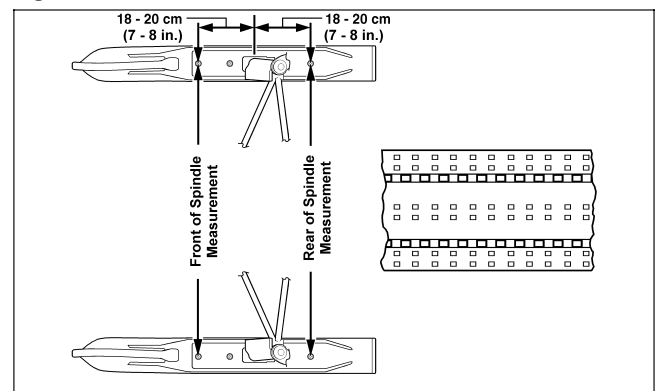
⚠ WARNING

Neglecting to lock the tie rod by tightening the jam nuts may cause loss of snowmobile control and possible personal injury.

VERIFYING

1. With the drag link centered and handlebar in the straight-ahead position, verify ski alignment by measuring across from the outside edge of the left-side wear bar bolts to the outside edge of the right-side wear bar bolts (without using the straightedge) in two places: approximately 18-20 cm (7-8 in.) in front of the spindle and 18-20 cm (7-8 in.) behind the spindle.
2. The measurement from in front of the spindle to the outer edge of the wear bar bolts (without using the straightedge) must not exceed the rear measurement by more than 1.6 - 6.4 mm (1/16 - 1/4 in.) toe-out.

Fig. 7-64



0734-408

⚠ WARNING

The measurement taken in front of the spindle must never be less than the measurement taken behind the spindle or poor handling will be experienced. Neglecting to lock the tie rod by tightening the jam nuts may cause loss of snowmobile control and possible personal injury.

Front Suspension Arms

REMOVING

1. Remove the expansion chamber if necessary.
2. Position the front of the snowmobile up onto a safety stand.
3. Remove the lock nuts and cap screws securing the shock absorber; then remove the shock absorber. Account for all mounting hardware.

Fig. 7-65



AL156D

4. Remove the cap screws and lock nuts securing the spindle to the front suspension arms. Account for all mounting hardware.

Fig. 7-66



AL159D

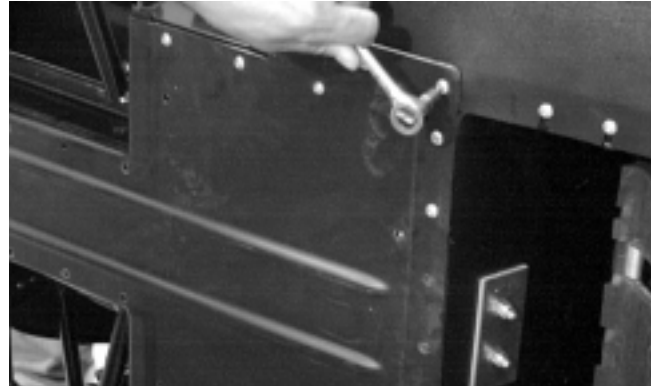
Fig. 7-67



AL160D

5. On models with a sway bar, remove the cap screw and lock nut securing the sway bar link to the front suspension arm.
6. Remove the screws and lock nut securing the skid plate; then remove the skid plate.

Fig. 7-68



AL144D

7. If applicable, remove the self-tapping screws securing the steering boot to the front end.
8. Remove the cap screws and lock nuts securing the suspension arms to the front end; then remove the arms.

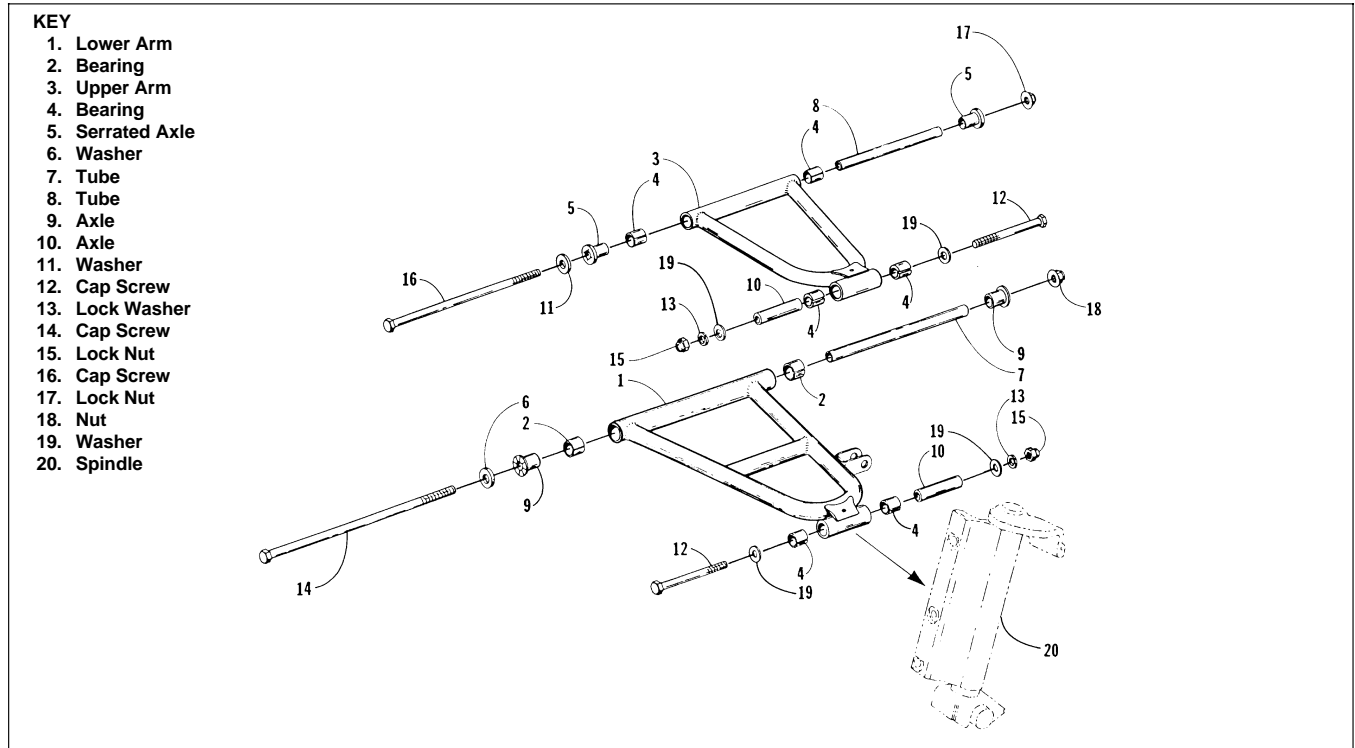
INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the arm welded areas for cracks or any signs of deterioration.
2. Inspect the bearings and axles for wear or damage.
3. Inspect the arm tubing for signs of twisting or bending.

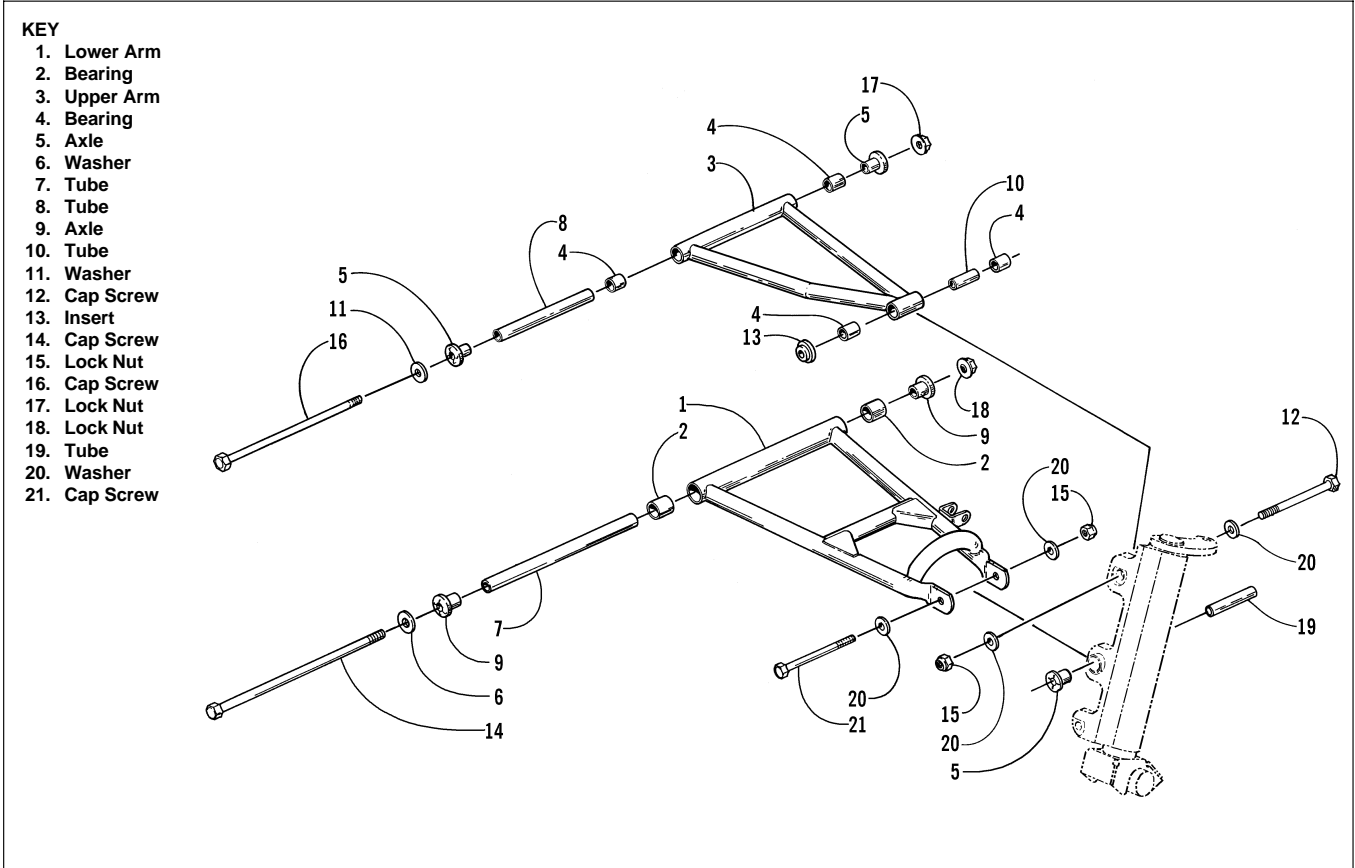
INSTALLING

Fig. 7-69



733-341A

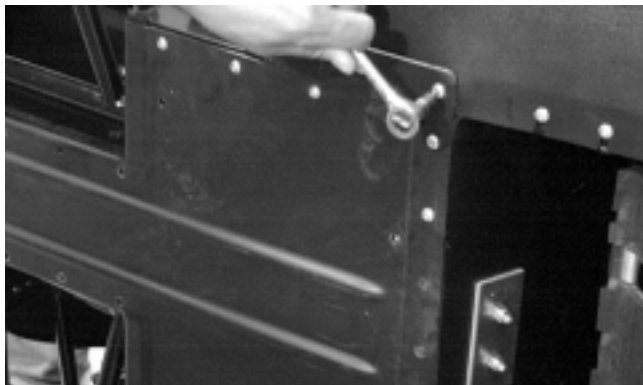
Fig. 7-70



0735-030

1. Place the suspension arms into position on the front end and secure with the cap screws and lock nuts. Tighten the upper arm cap screw and lock nut to 4.6 kg-m (33 ft-lb). Tighten the lower arm cap screw and lock nut to 7.6 kg-m (55 ft-lb).
2. If applicable, place the steering boot into position on the front end. Secure with the self-tapping screws.
3. Install the skid plate and secure with the screws, washer, and lock nut.

Fig. 7-71



AL144D

4. If applicable, place the sway bar link into position on the suspension arm and secure with cap screw and lock nut.
5. Accounting for mounting hardware, install the spindle onto the suspension arm with the cap screws and lock washers.

Fig. 7-72



AL160D

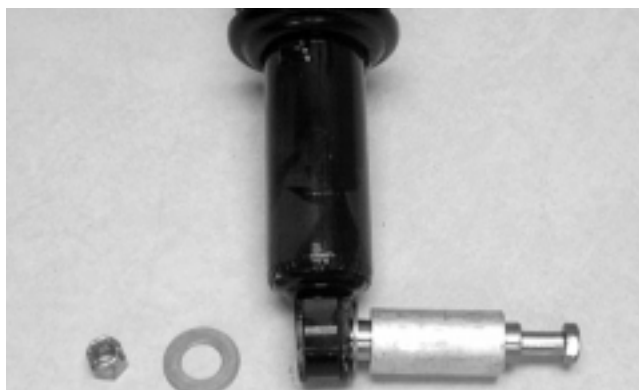
Fig. 7-73



AL159D

6. Place the shock absorber into position and secure to the front end and spindle with two cap screws, washers, axles, spacers, sleeves, and lock nuts. Tighten to 3.9 kg-m (28 ft-lb).

Fig. 7-74



AL157D

Fig. 7-75



AL156D

7. Install and secure the expansion chamber if removed.

Front Suspension (Ski) Shock Absorber

REMOVING

1. Position the front of the snowmobile up onto a safety stand taking all pressure off the skis.
2. Remove the cap screws securing the shock absorber to the front end assembly and spindle; then remove the shock absorber. Account for all mounting hardware.

Fig. 7-76



AL156D

■ **NOTE:** Note the number of threads exposed between the spring adjuster and shock housing for installing purposes.

3. Using the Shock Spring Removal Tool (p/n 0644-057), remove the spring from the shock body by compressing the spring; then remove the spring retainer from the top of the spring. Inspect the shock absorber by quickly compressing and extending the shock plunger while firmly holding the shock body. Resistance must be felt in both directions.

CLEANING AND INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the shock absorber seal area for signs of excessive oil leakage.
2. Inspect the shock absorber mounting eyelet, bushings, and sleeve for wear or damage.
3. Inspect the threaded shock sleeve for damage or wear. Clean the sleeve and apply a light coat of grease to the threads before installing.

INSTALLING

1. Using the shock spring tool, place the spring on the shock absorber and secure with the retainer.
2. Adjust the retainer nut (spring adjuster) until the specified amount of threads are exposed between the spring adjuster and the shock housing (noted in removing) as an initial setting.
3. Install the bushings, sleeves, and spacers into each shock end; then place the shock absorber into position. Install both cap screws from the front. Tighten the lock nuts to 3.9 kg-m (28 ft-lb).

Fig. 7-77



AL156D

Sway Bar

REMOVING

1. Remove the lock nuts and cap screws securing the sway bar arm to the links and remove.
2. Remove the lock nuts and cap screws securing the sway bar arms to the sway bar; then remove the arms. Pull the sway bar out and account for two bearings.

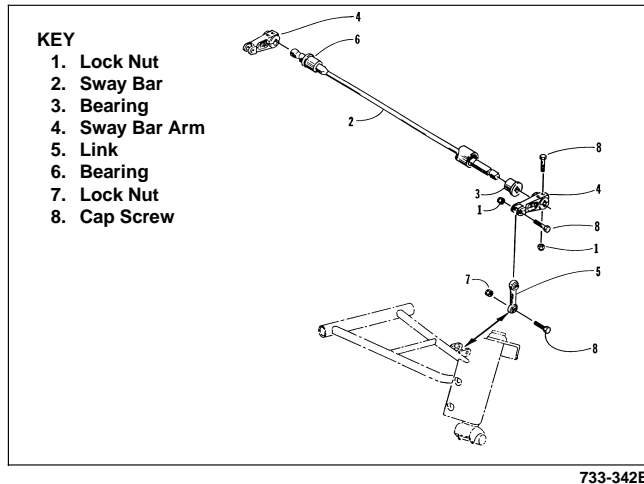
INSPECTING

■ **NOTE:** Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the sway bar for any signs of twisting, fatigue, or wear.
2. Inspect the sway bar arms for cracks or damage.
3. Inspect the links, bushings, bushing retainers, and hardware for damage or wear.

INSTALLING

Fig. 7-78



1. Place the sway bar into position; then install a bearing on each end of the sway bar.
2. Slide the sway bar arms onto the sway bar until the holes in the arms align with the notches in the sway bar. Install the cap screws and lock nuts. Tighten to 1.8 kg-m (13 ft-lb).

■ **NOTE:** Make sure the arms are positioned on the same flat on both ends of the sway bar.

3. Place the links into position on the sway bar arms; then secure with cap screws and lock nuts. Tighten to 3.2 kg-m (23 ft-lb).

Console (EFI Models)

■ **NOTE:** Determine which style console is being removed and installed and refer to the appropriate illustration for component details; then remove and install accordingly.

Fig. 7-79

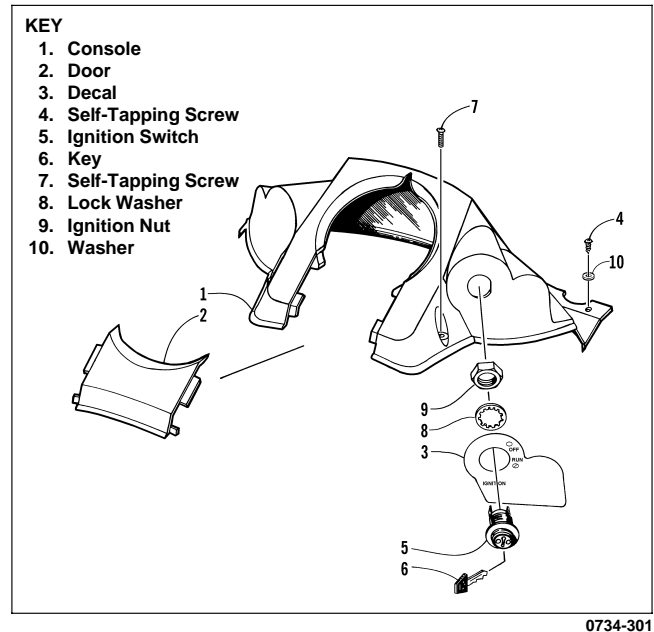


Fig. 7-80

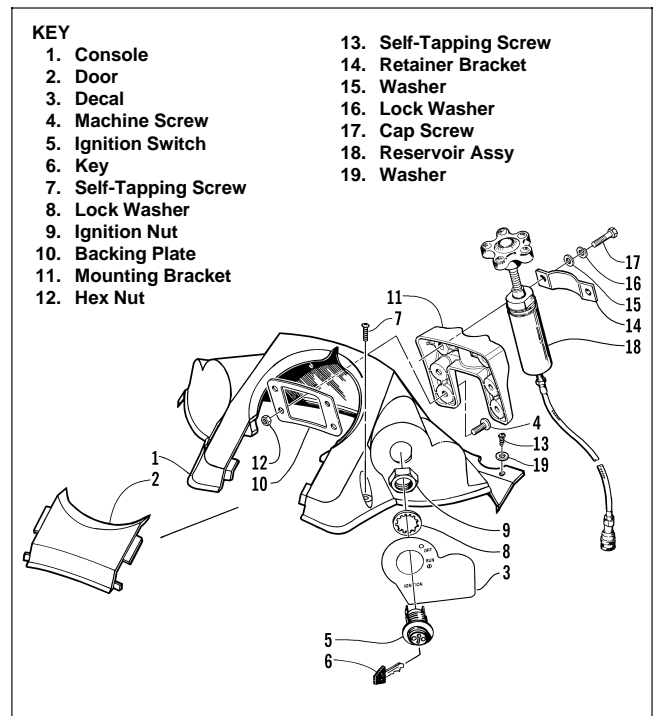
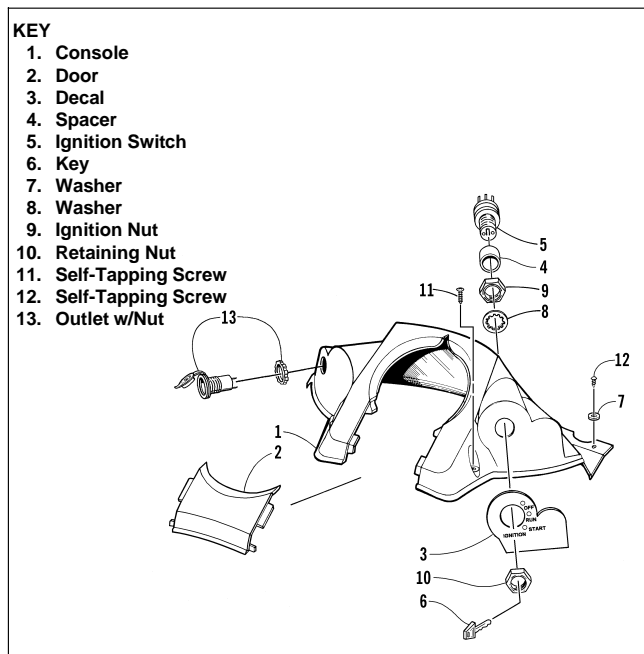


Fig. 7-81



0735-111

REMOVING

1. Remove the self-tapping screws securing the console; then raise the console.

■ **NOTE:** If applicable, remove the cap screws and washers securing the remote adjuster clamp to the console; then lay the adjuster on the air-intake silencer.

2. Disconnect the wiring harness from the ignition switch.

3. Remove the console.

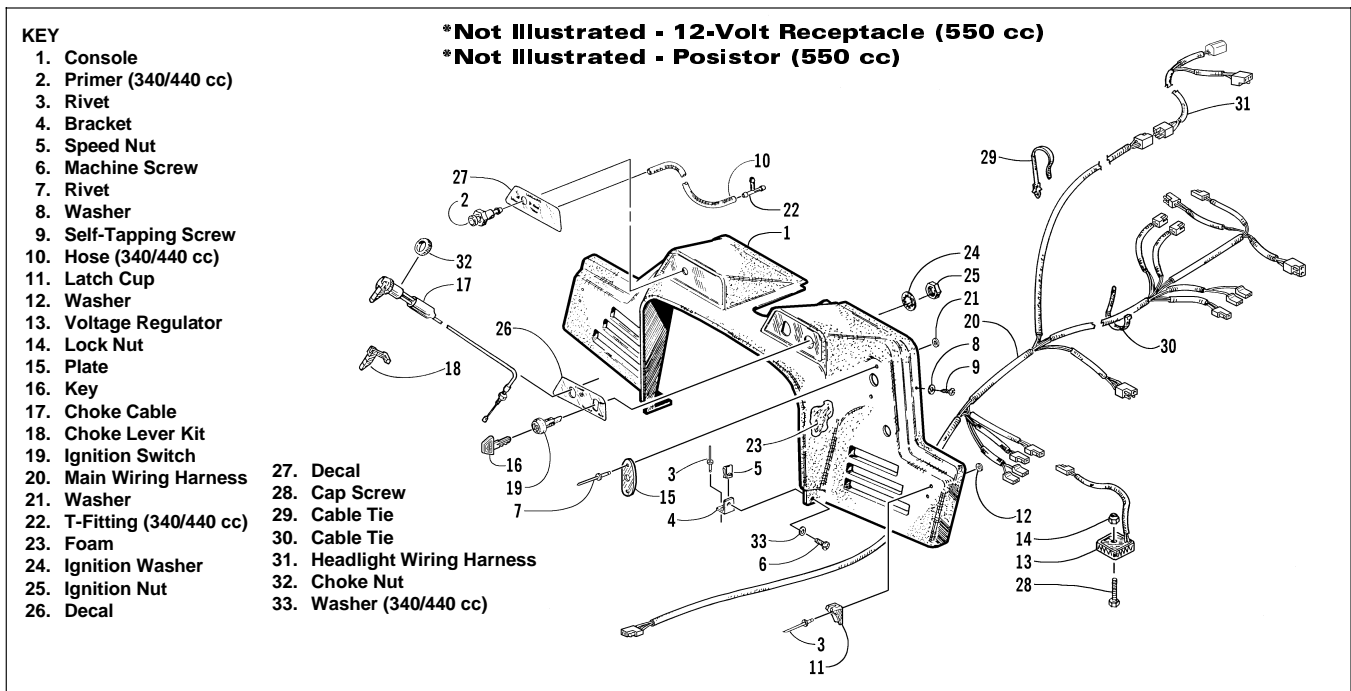
INSTALLING

1. Place the console into position.
2. Connect the wiring harness to the ignition switch.
3. Secure the console with the self-tapping screws.

■ **NOTE:** If applicable, place the remote adjuster and clamp into position on the console; then secure with the cap screws and washers. Tighten securely.

Console (Carbureted Models - Style A)

Fig. 7-82



0734-590

REMOVING

1. Pull the recoil starter rope outward; then tie a slip-knot in the recoil rope near the case. Slowly allow the rope to retract to the knot.
2. Untie the knot in the end of the recoil starter rope; then remove the handle from the rope. Account for the cap.
3. Remove the cotter pin and pin securing the shift lever to the shift pivot; then pull the shift lever out of the console.
4. Remove the four screws securing the steering post cover; then remove the steering post cover.

Fig. 7-83



AF906D

5. Remove the screws securing the console; then raise the console.
6. Disconnect the wiring harness from the ignition switch. Remove the knurled nut securing the choke assembly to the console; then slide the choke cable out of the console.
7. If applicable, remove the primer; then remove the console.

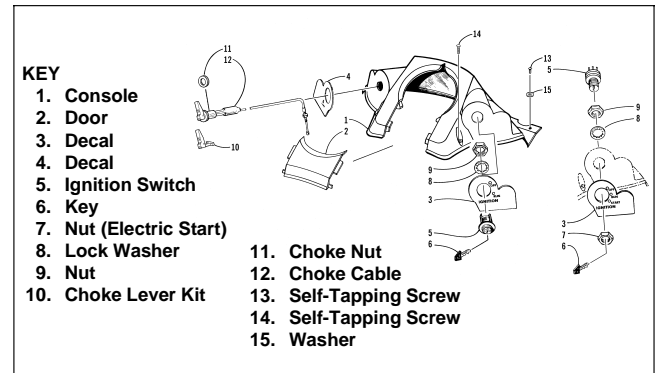
INSTALLING

1. Place the console into position; then (if applicable) install the primer.
2. Connect the wiring harness to the ignition switch. Secure the choke assembly to the console with the knurled nut.
3. Secure the console with screws.
4. Secure the steering post cover with four screws.
5. Slide the shift lever into the hole in the console; then secure the shift lever to the shift pivot with the pin and cotter pin.
6. Thread the recoil starter rope through the console and handle. Tie a knot at the end of the recoil rope. Seat the cap. Remove the slip-knot and allow the rope to retract.

Console (Carbureted Models - Style B)

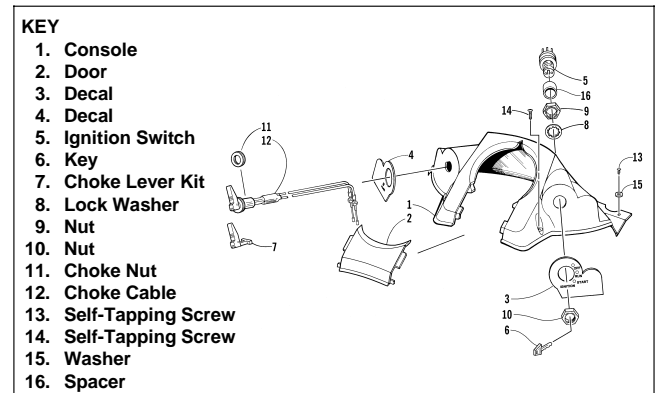
■ **NOTE:** Determine which type of console is being removed and installed and refer to the appropriate illustration for component details; then remove and install accordingly.

Fig. 7-84



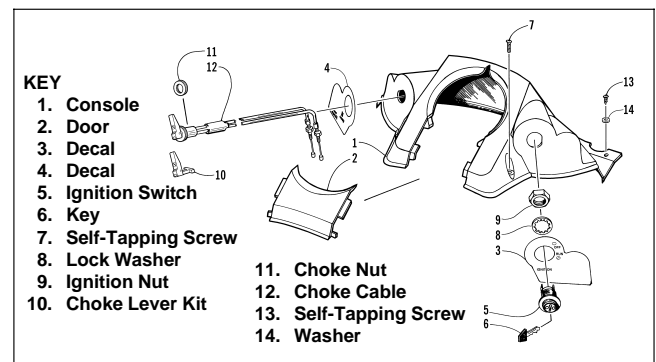
0735-003

Fig. 7-85



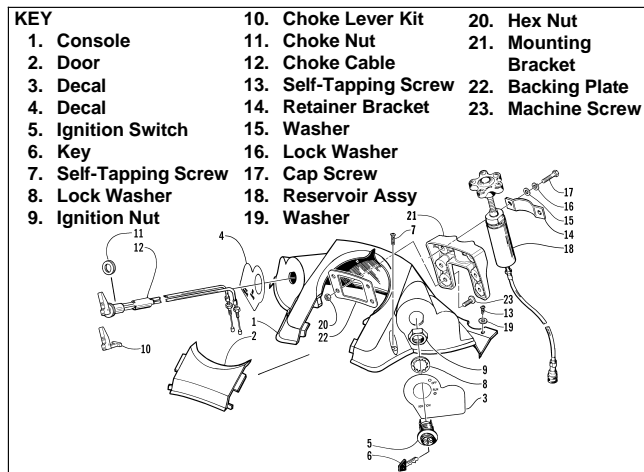
0735-021

Fig. 7-86



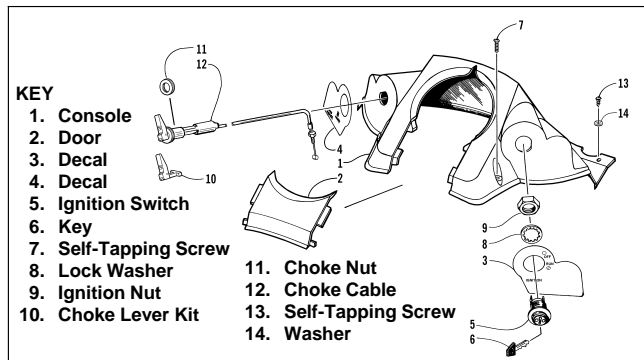
0733-357

Fig. 7-87



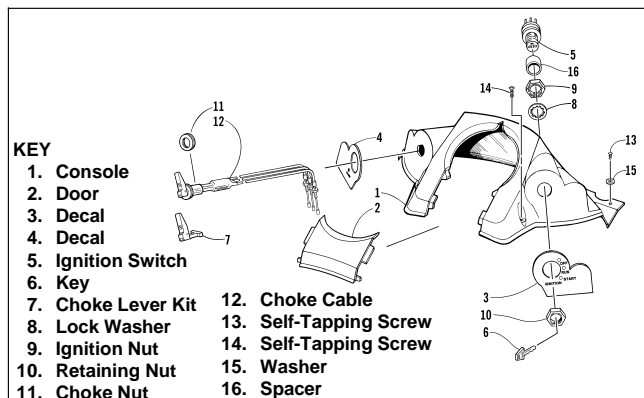
0734-194

Fig. 7-88



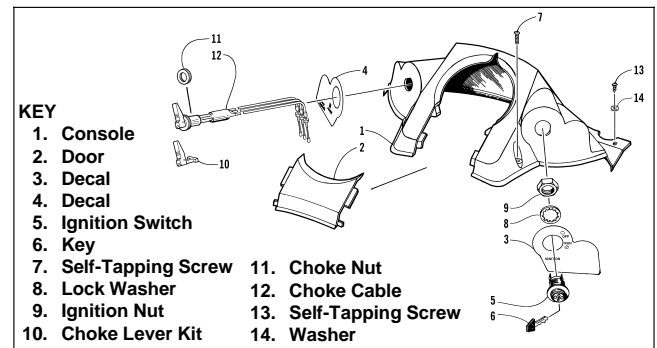
0734-242

Fig. 7-89



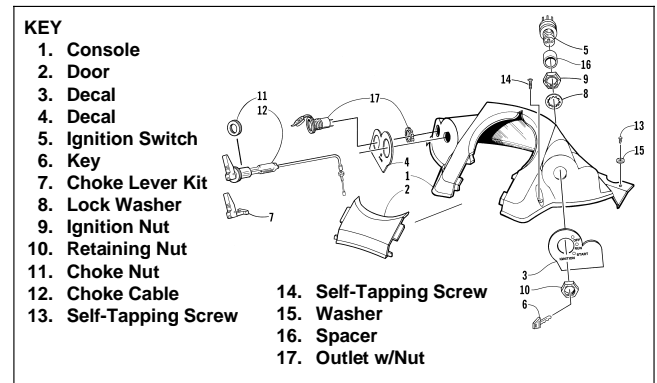
0735-155

Fig. 7-90



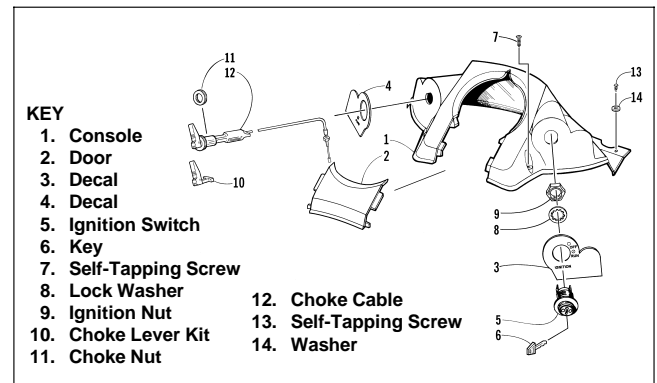
0734-288

Fig. 7-91



0735-283

Fig. 7-92



0734-562

REMOVING

1. Remove the self-tapping screws securing the console; then raise the console.

■ **NOTE:** If applicable, remove the cap screws and washers securing the remote adjuster clamp to the console; then lay the adjuster on the air-intake silencer.

2. Disconnect the wiring harness from the ignition switch and the outlet (if applicable). Remove the choke nut securing the choke assembly to the console; then slide the choke cable out of the console.

3. Remove the console.

INSTALLING

1. Place the console into position.
2. Connect the wiring harness to the ignition switch and the outlet (if applicable). Secure the choke assembly to the console with the choke nut.
3. Secure the console with the self-tapping screws.

■ **NOTE:** If applicable, place the remote adjuster and clamp into position on the console; then secure with the cap screws and washers. Tighten securely.

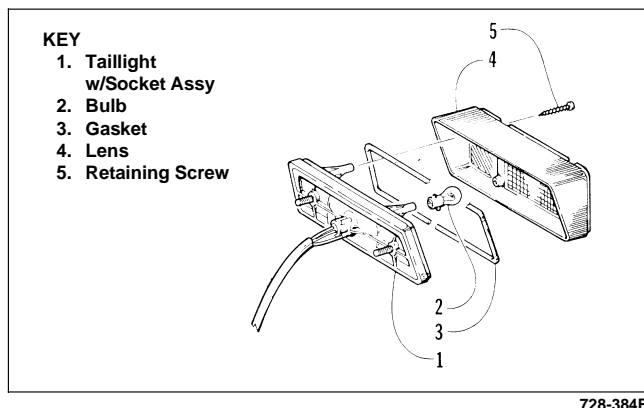
Taillight Housing

REMOVING

1. Remove the four screws securing the taillight lens to the housing. Account for a gasket.
2. Remove the four machine screws securing the backing plate to the taillight housing.
3. Remove the two screws, lock washers, and washers securing the seat base to the tunnel. Lift the seat from the tunnel. Disconnect the taillight wiring harness.
4. Remove the two lock nuts and washers securing the taillight housing to the rear of the seat base. Pull the housing free of the base.

INSTALLING

Fig. 7-93



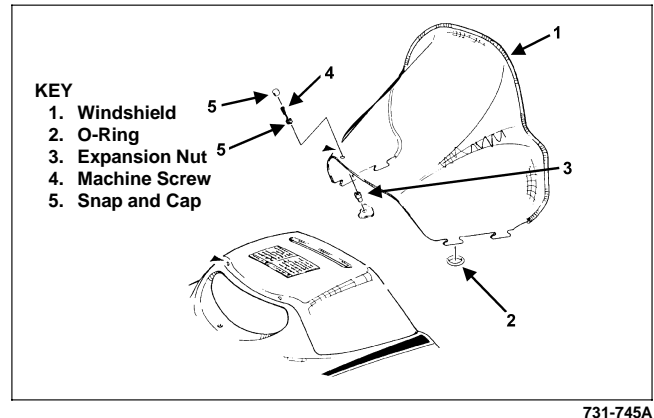
1. Connect the wiring harness and place the seat into position. Secure with two screws, lock nuts, and washers.
2. Place the taillight housing into position and secure to the seat base with two lock nuts and washers. Tighten securely.

3. Install the taillight bulb, gasket, and lens. Secure lens with four screws.
4. Secure the backing plate to the taillight housing with the existing machine screws.

Windshield

REMOVING

Fig. 7-94



1. Remove the O-rings securing windshield to the hood.
2. Remove the caps covering the screws; then remove the screws w/snaps.
3. Remove the windshield.

INSTALLING

1. Place the windshield into position and install the O-rings.
2. Secure the windshield to the hood with screws w/snaps. Install the caps.

Backrest/Rack/Taillight Assembly

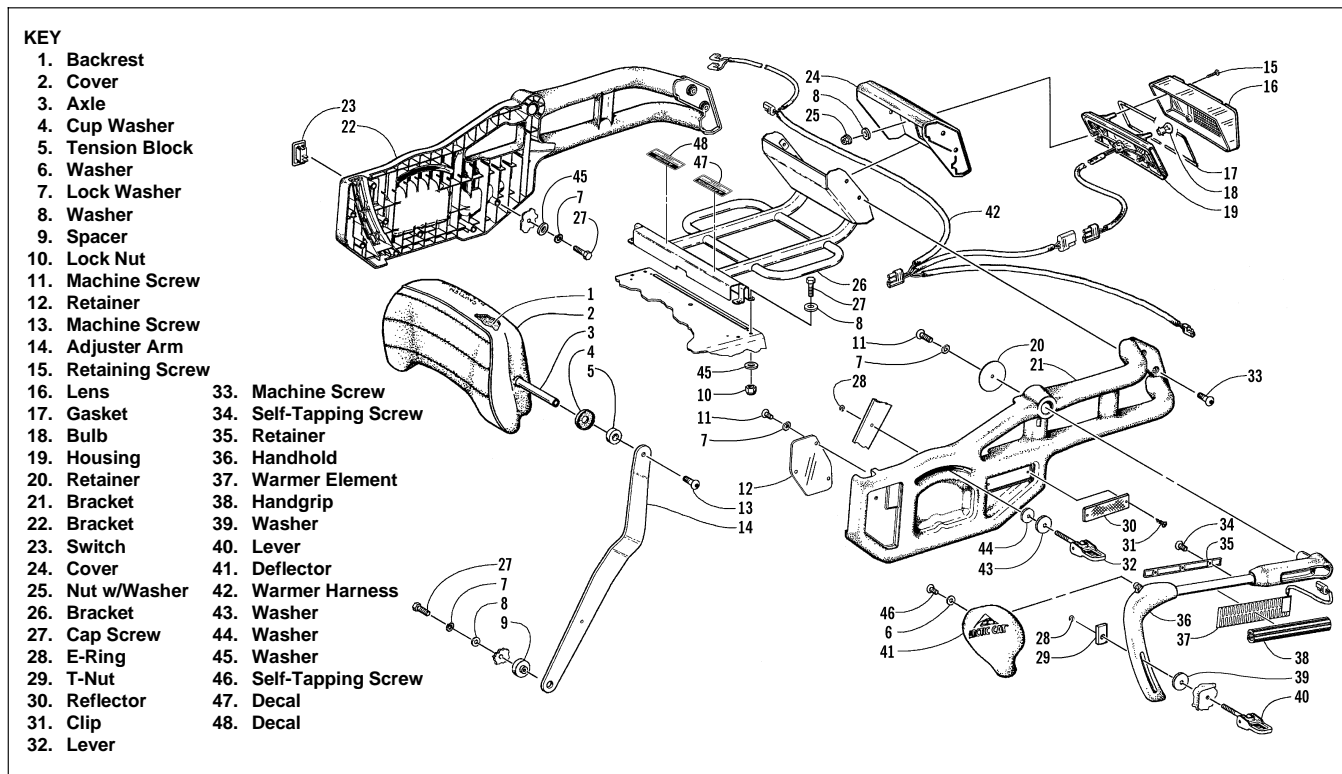
REMOVING

1. Remove the cap screws, washers, and cap nuts securing the rack to the backrest.
2. In turn on each side, remove the two cap screws (inside the tunnel) securing the backrest assembly to the tunnel. Account for the washers.
3. Disconnect the passenger handwarmer wiring harness.

4. Remove the backrest assembly from the tunnel.
Account for the two spacers.

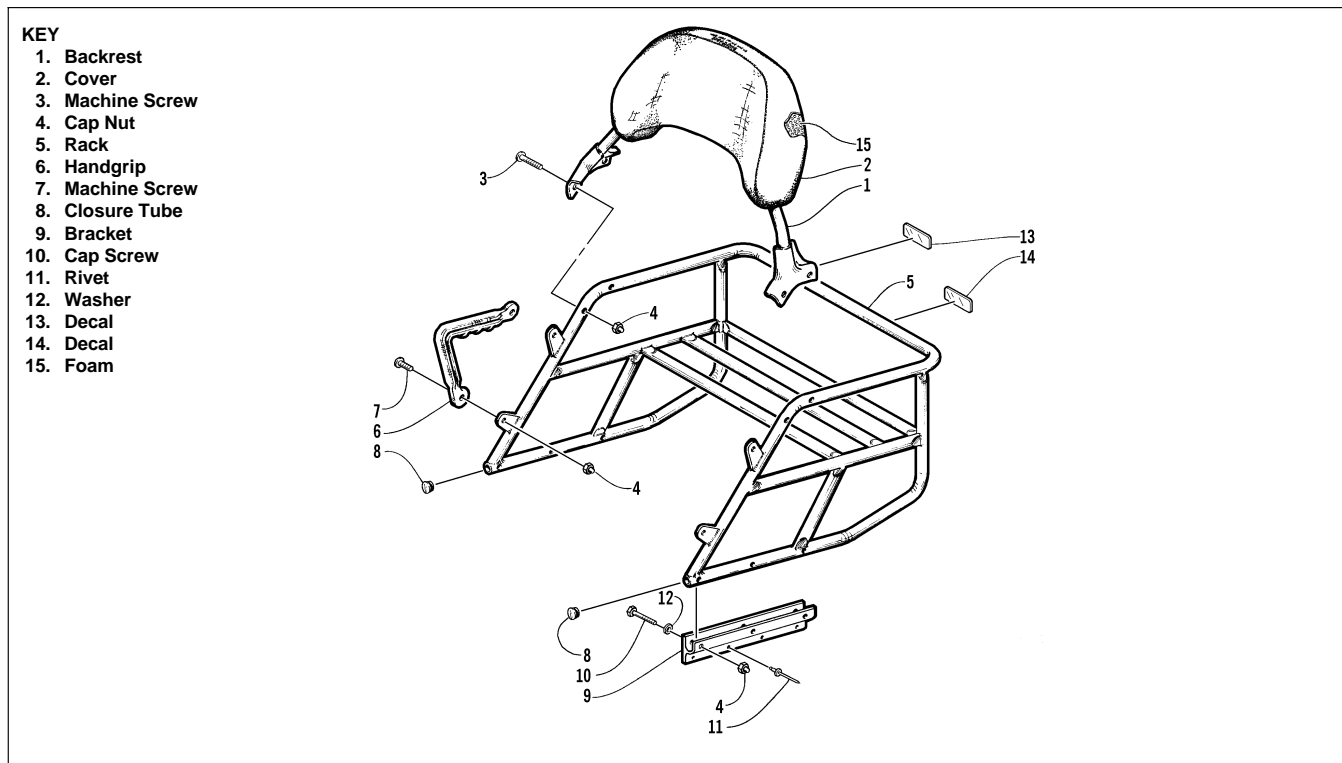
INSTALLING

Fig. 7-95



0735-101

Fig. 7-96



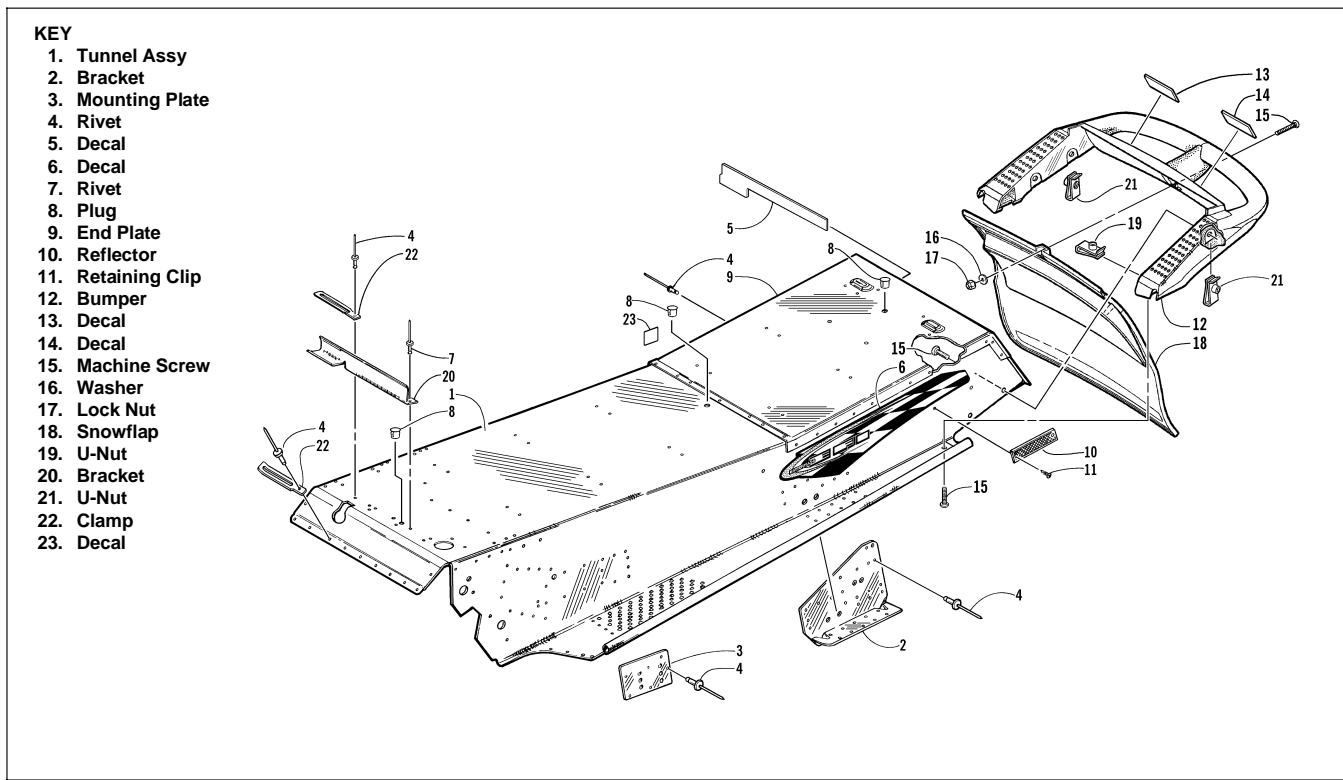
0733-368

1. Place the backrest assembly and spacers (located on the rear hole on each side) into position and align holes with tunnel mounting holes.
2. Install the cap screws with washers from the inside of the tunnel and secure with the washers and lock nuts. Tighten securely.
3. In turn on each side, install the 1/4-in. cap screw in the front hole and the 5/16-in. cap screw in the rear hole. Secure with a flat washer and lock nut. Tighten securely.
4. Connect the passenger handwarmer wiring harness.
5. Place the rack into position and secure with the cap screws, washers, and cap nuts.

Tunnel/Rear Bumper/ Snowflap

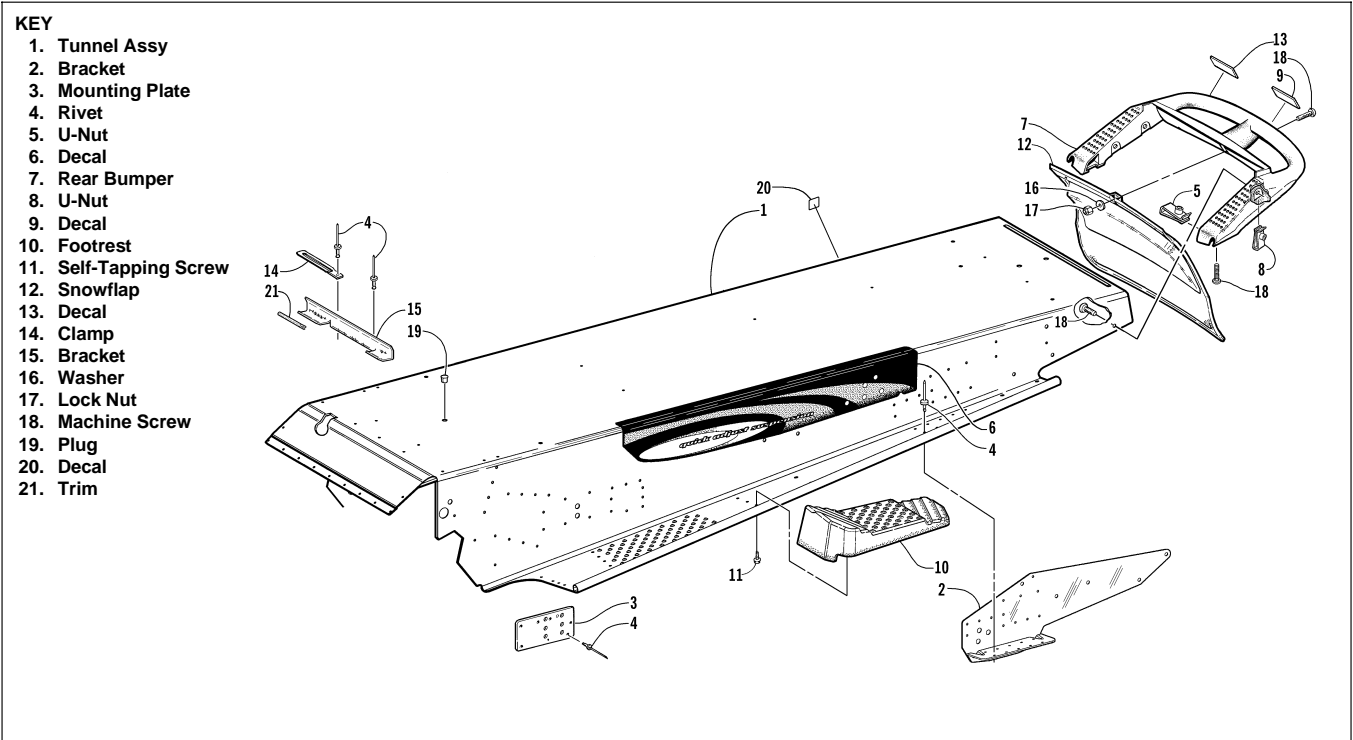
■ **NOTE:** Determine which style tunnel assembly is being disassembled and refer to the appropriate illustration for component details; then disassemble and assemble accordingly.

Fig. 7-97



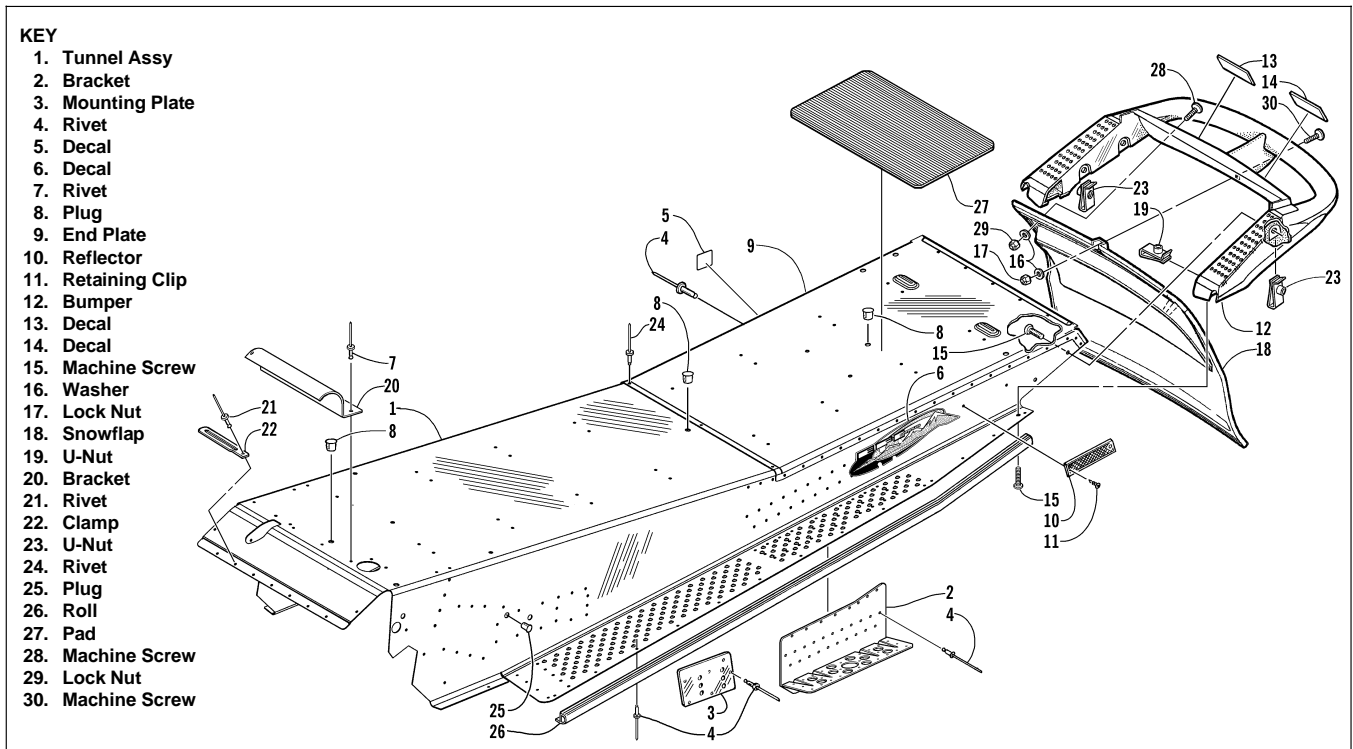
0735-344

Fig. 7-98



0735-091

Fig. 7-99

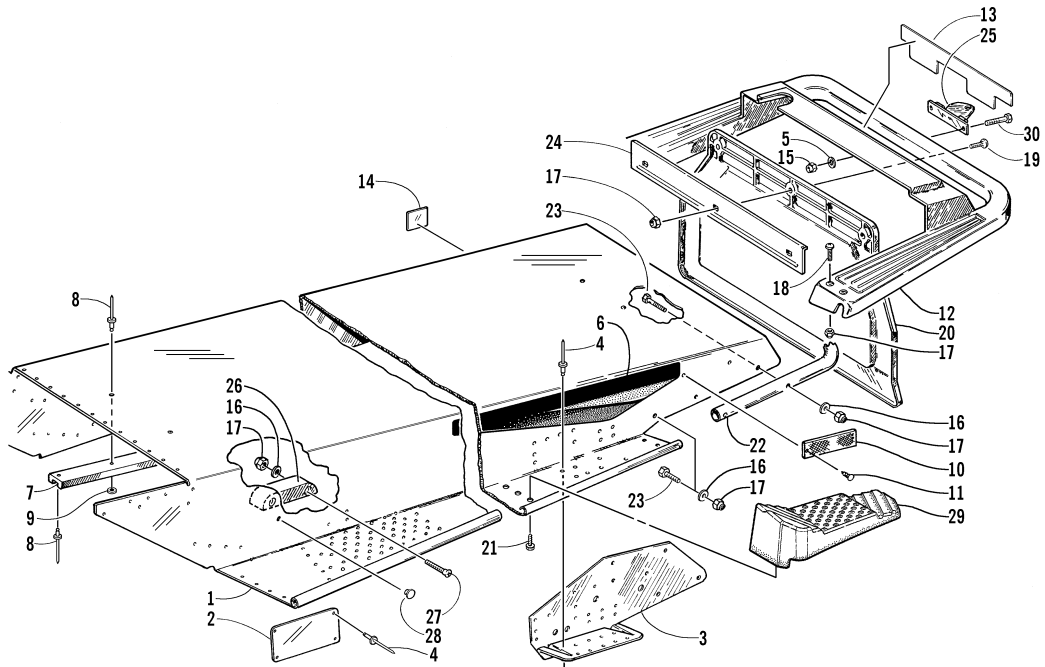


0735-217

Fig. 7-100

KEY

1. Tunnel Assy
2. Mounting Plate
3. Bracket
4. Rivet
5. Washer
6. Decal
7. Wear Strip
8. Rivet
9. Washer
10. Reflector
11. Clip
12. Bumper
13. Decal
14. Decal
15. Lock Nut
16. Washer
17. Lock Nut
18. Machine Screw
19. Machine Screw
20. Snowflap
21. Self-Tapping Screw
22. Insert
23. Cap Screw
24. Cap
25. Hitch
26. Guide
27. Cap Screw
28. Plug
29. Footrest
30. Cap Screw

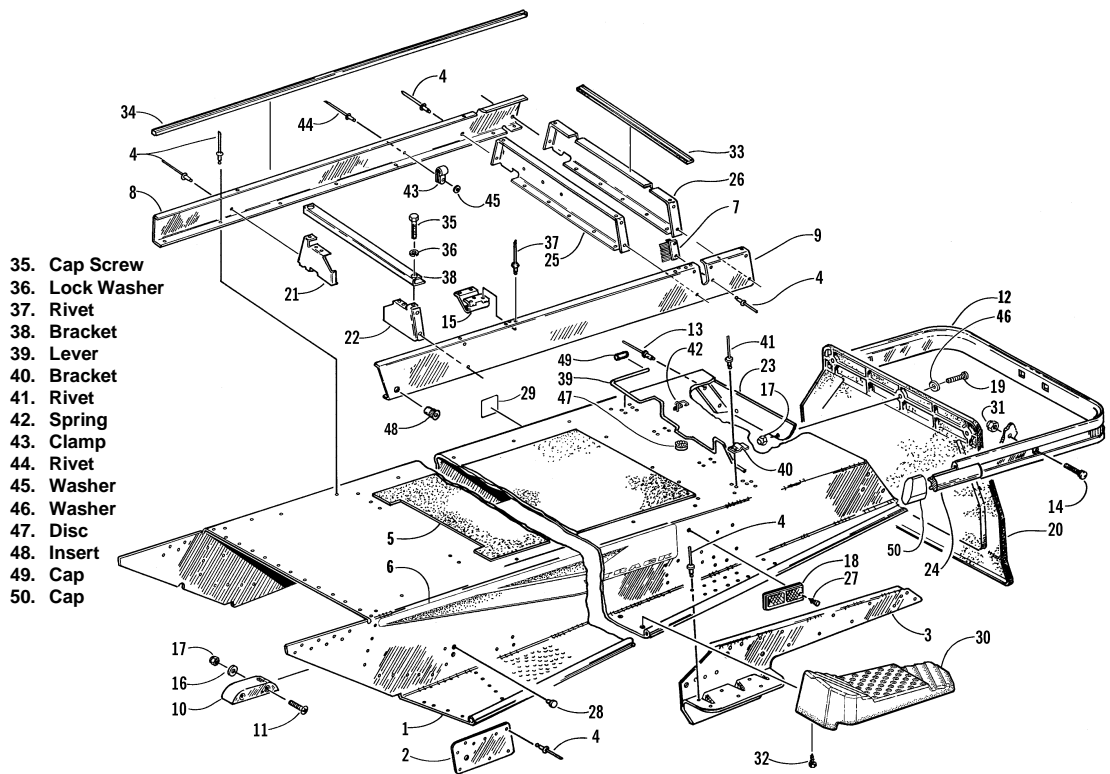


0734-916

Fig. 7-101

KEY

1. Tunnel Assy
2. Mounting Plate
3. Bracket
4. Rivet
5. Pad
6. Decal
7. Seal
8. Plate
9. Plate
10. Guide
11. Machine Screw
12. Bumper
13. Rivet
14. Carriage Bolt
15. Hinge
16. Washer
17. Lock Nut
18. Reflector
19. Machine Screw
20. Snowflap
21. Plate
22. Plate
23. Plate
24. Insert
25. Plate
26. Plate
27. Clip
28. Plug
29. Decal
30. Footrest
31. Lock Nut
32. Self-Tapping Screw
33. Self-Tapping Screw
34. Seal
35. Cap Screw
36. Lock Washer
37. Rivet
38. Bracket
39. Lever
40. Bracket
41. Rivet
42. Spring
43. Clamp
44. Rivet
45. Washer
46. Washer
47. Disc
48. Insert
49. Cap
50. Cap



0734-952

REMOVING/DISASSEMBLING

■ **NOTE:** The snowflap can be removed without removing the bumper by removing the three bumper/snowflap cap screws.

1. Remove the cap screws securing the bumper assembly to the tunnel. Account for the U-nuts and cap screws.
2. Slide the bumper/snowflap off the tunnel.
3. Remove the cap screws securing the snowflap to the bumper and separate the bumper and snowflap. Account for cap screws, washers, and lock nuts.

ASSEMBLING/INSTALLING

1. Secure the snowflap to the bumper with the cap screws, washers, and lock washers taking care to place the washers next to the underside of the snowflap. Finger-tighten the cap screws to the lock nuts; then tighten the cap screws securely.
2. Place the bumper assembly into position on the tunnel and secure with the cap screws and U-nuts. Tighten the cap screws securely.

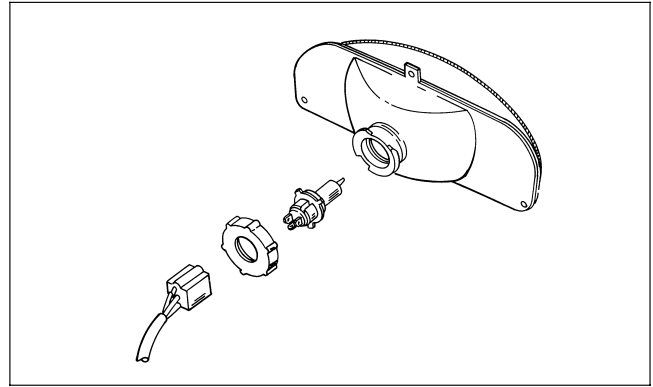
Headlight Assembly (1 Bulb Halogen)

REMOVING

■ **NOTE:** The bulb portion of the headlight is fragile. **HANDLE WITH CARE.** When replacing the headlight bulb, the bulb assembly must first be removed from the housing. Do not touch the glass portion of the bulb. If the glass is touched, it must be cleaned with a dry cloth before installing.

1. To release the retaining ring, depress the ring and rotate it counterclockwise. Slide the retaining ring down the wiring harness.
2. With the harness connector attached to the bulb, carefully withdraw the bulb from the headlight housing.
3. Grasp the bulb by the metal base and carefully remove the headlight harness from the bulb.
4. Between the top center of the headlight and hood, there is a reusable plastic push rivet. From the front using a medium-sized standard screwdriver, push the center post of the rivet back.

Fig. 7-102



0731-844

5. Remove the headlight adjustment thumb screws; then remove the headlight assembly.

■ **NOTE:** Halogen bulbs must not come in contact with hands or foreign contaminants.

INSTALLING

1. Place the headlight assembly into position. Secure with a push rivet and two adjustment thumb screws.
2. While holding bulb by the base, firmly install the bulb in the harness connector.
3. Install bulb assembly (with harness attached) into headlight housing. Make sure the bulb is firmly seated in the headlight housing.
4. Install the retaining ring onto the back of the headlight. Depress the ring and rotate it clockwise to lock in place.

Fig. 7-103



AL084D

5. Check headlight aim (see Adjusting Headlight Aim in this section).

⚠ WARNING

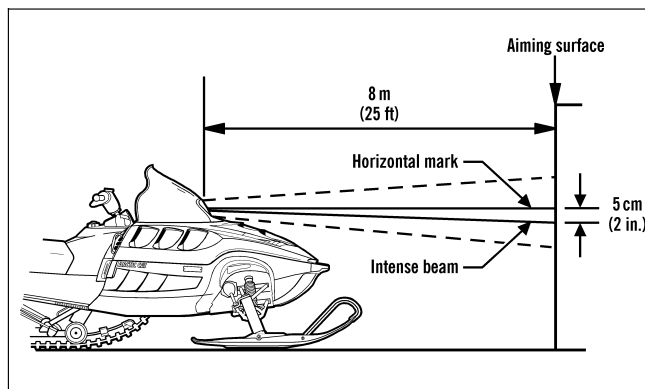
Do not operate the snowmobile unless headlight beam is adjusted properly. An incorrectly adjusted beam will not provide the operator the optimum amount of light.

Adjusting Headlight Aim (1 Bulb Halogen)

The headlight HIGH/LOW beam can be adjusted vertically and horizontally. The geometric center of the HIGH beam light zone is to be used for vertical and horizontal aiming.

1. Position the snowmobile on a level floor so the headlight is approximately 8 m (25 ft) from an aiming surface (wall or similar surface).
2. Measure the distance from the floor to the midpoint of the headlight.
3. Using the measurement obtained in step 2, make a horizontal mark on the aiming surface.
4. Make a vertical mark which intersects the horizontal mark on the aiming surface directly in front of the headlight.
5. Start the engine. Move the headlight dimmer switch to the HIGH beam position. **DO NOT USE THE LOW BEAM.**
6. Observe the headlight beam aim. Proper aim is when the most intense beam is centered on the vertical mark 5 cm (2 in.) below the horizontal mark on the aiming surface.

Fig. 7-104



0734-485

7. Rotate the adjustment thumb screws until the correct aim is obtained.

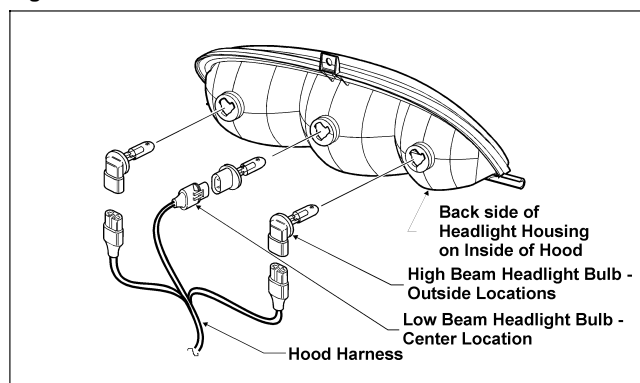
Headlight Assembly (3 Bulb Halogen)

REMOVING HEADLIGHT BULB

NOTE: The bulb portion of the headlight is fragile. **HANDLE WITH CARE.** When replacing the headlight bulb, the bulb assembly must first be removed from the housing. Do not touch the glass portion of the bulb. If the glass is touched, it must be cleaned with a dry cloth before installing.

1. Pull the wiring harness retaining clip away from the headlight bulb base and disconnect the wiring harness from the bulb.

Fig. 7-105



0733-178

2. Rotate the headlight bulb base counterclockwise and remove the bulb from the headlight housing.

INSTALLING HEADLIGHT BULB

CAUTION

Do not touch the glass portion of the bulb. If the glass portion is touched, it must be cleaned with a dry cloth before installing.

1. While holding the bulb by its base, insert the bulb into the headlight housing and rotate it clockwise until it locks into the housing.
2. Plug the wiring harness into the headlight bulb base making sure the retaining clip locks onto the base.
3. Check headlight aim (see Adjusting Headlight Aim in this section).

WARNING

Do not operate the snowmobile unless headlight beam is adjusted properly. An incorrectly adjusted beam will not provide the operator the optimum amount of light.

Adjusting Headlight Aim (3 Bulb Halogen)

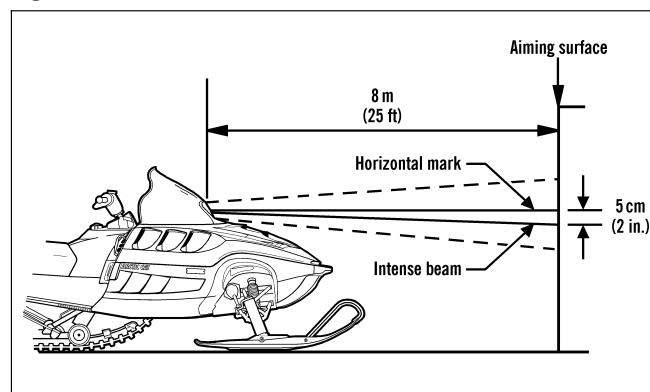
The headlight can be adjusted for vertical aim of the HIGH/LOW beam. The geometric center of HIGH beam zone is to be used for vertical aiming.

1. Position the snowmobile on a level floor so the headlight is approximately 8 m (25 ft) from an aiming surface (wall or similar surface).

■ **NOTE:** There should be an “average” operating load on the snowmobile when adjusting headlight aim.

2. Measure the distance from the floor to midpoint of the headlight.
3. Using the measurement obtained in step 2, make a horizontal mark on the aiming surface.
4. Make a vertical mark which intersects the horizontal mark on the aiming surface directly in front of the headlight.
5. Engage the brake lever lock and start the engine. Move the headlight dimmer switch to the HIGH beam position. DO NOT USE LOW BEAM.
6. Observe the headlight beam aim. Proper aim is when the most intense beam is centered on the vertical mark 5 cm (2 in.) below the horizontal mark on the aiming surface.

Fig. 7-106



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7. Adjust the headlight housing mounting screws until correct aim is obtained. Shut the engine off; then disengage the brake lever lock.

Torque Specifications

CHASSIS		TORQUE
Ski	ft-lb	45
	kg-m	6.2
Handlebar Adjuster Block	ft-lb	10
	kg-m	1.4
Steering Post Bearing Housings	ft-lb	18
	kg-m	2.5
Steering Post/Tie Rod	ft-lb	30
	kg-m	4.2
Drag Link/Tie Rods	ft-lb	20
	kg-m	2.8
Drag Link/Steering-Idler Arms	ft-lb	30
	kg-m	4.2
Spindle Arm/Tie Rod	ft-lb	25
	kg-m	3.5
Tie Rod Jam Nuts	ft-lb	12-15
	kg-m	1.7-2.1
Suspension Arms/Spindle	ft-lb	30
	kg-m	4.2
Shock Absorber/Spindle	ft-lb	28
	kg-m	3.9
Front Suspension A-Arm (upper)	ft-lb	33
	kg-m	4.6
Front Suspension A-Arm (lower)	ft-lb	55
	kg-m	7.6
Sway Bar Arm	ft-lb	13
	kg-m	1.8
Ball Joint/Sway Bar	ft-lb	23
	kg-m	3.2