



RADIUS ROD BUSHING SET

These are designed to allow your front suspension to operate much more freely than the factory units, with less maintenance. "STICKSION" could be a key word here. The front end will perform better and give you an overall better quality ride if it is not sticking or binding.

The bushings are made of Delrin with stainless steel inner bushes. It is not necessary to lubricate them.

It is recommended that you do one side at a time if you are not familiar with the front suspension.

Remove the pivot bolts from the outboard ends of the radius rods. (Note: the top bolt that holds the steering stop is longer than the bottom one.) Remove the old bushings from the ends of the radius rods and clean out the holes for the new ones.

On the older style bushing, 1993 and older, slide in the new delrin bushing, then insert the stainless center bush. You are ready for assembly. NOTE: These bushings are slightly oversize to make up for wear. It may be necessary to ream them slightly if the stainless center bushes are tight.

The new style with the flanges, 1994 and up, also require the holes to be cleaned out. In addition, check the welded areas around the ends of the radius rods and the trailing arms for rough welds or weld splatter. You want to remove anything that will keep the flanged bushings from setting flush or may damage the flange on the outer side as it rotates. Also look in the center of the hole on the radius rod to make sure there is no weld burn through. The bushings will not work properly or last as long if they do not go into round holes.

Press a flanged bushing into each side of the radius rod end, insert the stainless inner bush -- you're ready for assembly.

Position the bottom rod first, install the bolt and nut, then do the top, remembering the steering stop.

When tightening the nuts, make sure that the ears on the trailing arms are pulled up tight against the ends of the stainless bushing. The stainless bushings are not supposed to turn. The Delrin part moves around the stainless piece.

As with any other front end component change, check your camber setting and the toe out.

Double check everything for tightness. After several hundred miles of riding, it is a good idea to check all of the nuts and bolt originally removed.

TRAILING ARM BUSHINGS (Rear)

With all the attention paid nowadays to suspension travel and steering - this little piece has been overlooked.

Today's wear bars with large carbides and wide ski stances really increase the side loading of the stock rubber bushing with it's metal sleeve. In most instances, the metal insert is twisted sideways and is up against the metal of the trailing arm.

This piece is designed to eliminate this problem and give much smoother operation of the trailing arms. This bushing can be used two different ways. In a wide ski center setup, install the bushing from the inside out using the bolts and washers provided in the kit. This will offset the inside of the arm outward 3/8" to compensate for the side front end.

It is a good idea to use locktight on the bolt so there is less chance of it loosening. Make sure that the new bolts are used, these are much stronger than the factory ones and are less susceptible to bending. Make sure to use a new washer on both sides of the Delrin bushing.

In a standard width front end, install the bushing from the outside of the arm, again using the bolts and washers provided.

It is a good idea to check the alignment of the spindles after changing the bushings, the alignment will probably change slightly because of the more precise bushings.

Kit contains:

- 1) Black or purple Delrin bushings (2)
- 2) Metal inner bushings (2)
- 3) New longer grade 8 bolts (2)
- 4) New hardened washers (4)
- 5) Installation Instructions

SKI SPINDLE BUSHING KIT INSTALLATION

This small kit can really change the way your sled handles. It is important to check the front end settings to gain the maximum benefit from these bushings.

- 1) Raise the front end of the sled, a tall jack stand works well. Pick it up high enough for the ski spindles to clear the floor.
- 2) Remove the skis. Remove the old bushings in the spindles. Carefully clean out the holes in the spindles. This is the time to check the camber setting of the spindles. Using a 5/8" bar set the radius rods to allow the bar to pass through both spindles without binding. The factory workshop manual gives a good breakdown on how to do this.
- 3) These bushings will cure any of the side to side play normally found in the ski spindle bushings from the factory, however, they will not cure loose rod ends, worn bushings in the bellcrank, or worn spindle to trailing arm bushings. These other components all have to be in excellent condition to have the steering work properly.
- 4) Insert the new bushing in the spindle hole. It is not necessary to take the spindle off the sled to install the new bushing. These are designed to have a light interference fit. The bushings can be lightly tapped in place with a small plastic mallet or a small dead blow hammer. It is possible to break the bushings from improper installation. A safer way to install would be to use a longer 3/8" bolt and 2 large washers. Put the bolt through one side, start the bushing, place a washer over the end of the bolt against the bushing, put a nut on it and tighten it to draw the bushing into place.
- 5) Note the delrin bushing is slightly longer than the width of the spindle. This has to be centered in the spindle hole. As the bushing is almost in place, loosen the nut and place some type of spacer under the washer by the bolt head. This will allow the end of the bushing to extend beyond the end of the spindle without being crushed. Center the bushing so that an even amount shows on both sides.
- 6) Slide the stainless steel inner bushing in place. If it binds, it may be necessary to ream the delrin bushing. Ream to 1/2" (.500). Most units will not require reaming as clearance is figured into the size of the bushings.
- 7) Install the skis using the new bolts and locknuts provided. Both of these are stronger than the originals. This is intentional. It is necessary to tighten up the bolts so that the sides of the skis are tight against the stainless bushing. This is important, if the sides are not tight against the bushing, abnormal wear will occur and you will lose the benefit of the new bushings. NOTE: If you have chrome moly composite skis, it will be harder to squeeze the ski side up against the bushing. This is why stronger bolts are supplied, go ahead and tighten them up.
- 8) After installing the skis, you'll want to set the toe out. The workshop manual suggests 0"-1/8" of toe out, using a bungee cord between the ski tips to hold them together. With the new bushings installed, it is no longer necessary to use the cord, the skis do not have any side to side play. We recommend setting the toe out to 1/4", much less than this will make the sled dart side to side.

- 9) Do not worry about the zerk fittings on the spindles if your sled has them, it is not necessary to grease these new bushings.
- 10) Remember to check the spindle bolts for tightness after a few hundred miles and occasionally in the future. The spindle bushings will last much longer if they're kept tight.
- 11) One more thing - - the instructions are lengthy, but it is necessary to adhere to them to get the best performance.

Parts Included:

- Delrin ski spindle bushings (2)
- Stainless steel inner bushings (2)
- Spindle bolts, grade 8 (2)
- Locke nuts (2)

TIE ROD BOOT BUSHINGS

In our quest to make front end components with less binding than the factory originals, we came up with this idea.

You may or may not realize that the tie rods cause quite a bit of side to side drag on the steering, even more in bumpy terrain. This drag will occasionally cause a boot to tear. When the boot tears open, then anything that you ride through can wind up in your engine compartment.

The purpose of these bushings is to allow the easy passage of the tie rods from side to side without any friction. They're hard enough to scrape snow and ice off the tie rods as they move.

INSTALLATION

Loosen the locknuts on the outer ends of the tie rods, then run them back up against the rod end just using your fingers. This will leave them in the same position they were in for assembly.

Remove the nuts and bolts from the tie rod to the steering arm. Then remove the tie rod end being careful not to move the inner jam nut (from above). Slide one of the boot bushings on the tie rod and position it next to the end of the rubber boot.

A mild solvent like BRAKLEEN or alcohol sprayed on the outside of the bushing will make it slide into the rubber boot easily. Do not use silicone or Armorall or one of these as they will allow the bushing to slide back out of the boot. There is a shoulder on either end of the delrin bushing to prevent it from sliding in or out too far once it is in position. (The idea of the solvent as the lubricant is that it will evaporate leaving no slippery residue.)

Once the bushings are in place, install the rod ends to their original rods, then bolt them back on to the steering arms. Tighten up the jam nuts against the rod ends. This is a good time to check your ski toe out if it hasn't been done this season.

Remember to go back and check any of the hardware removed to make sure that everything is tight.

Thank you for choosing HPE for your snowmobiling needs.