

# ASSEMBLY BOOK



## SUSPENSION

Part number: EXPX-104, EXP-144, EXP-151

**Model Year 2004**

Revision: NEW      Date: September 2003

Made in Canada

by



# ASSEMBLY BOOK

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Note: Keep this installation manual in a safe location for future reference.

## **Important information to read before installation:**

### **Installation:**

- Verify that your suspension adaptor kit is compatible with your sled's model. (Refer to table 1, page 4)
- Ensure that the suspension is generally inspected before installation.
- Read and follow the instructions and steps for installation.
- It's your responsibility to torque the bolts well as recommended in the instructions.
- In the first 50 miles, the suspension will seem stiff. We recommend that you fine tune your setup after your first 50 miles. (Refer to the adjustment chart, page 17)
- Setup after the first 500 miles, inspect all bolts and nut and re-torque if necessary.

### **Responsibility:**

A & D Boivin Design Inc. is not responsible, in any case, for problems such as; broken parts, damage to the sled or accidents due to an improper installation or use. The owner (or dealer if applicable) is responsible for the EXPERT X's installation. The owner must drive safely, follow the rules and trail regulations and respect local laws.

### **Ride smart:**

Riding responsibly and safely is always more fun! Use common sense and courtesy, observe applicable local laws, respect the rights of other enthusiasts, always keep a safe distance from others and always wear the appropriate protective clothing and apparel. Carefully read and pay particular attention to your Assembly Book and to the safety labeling on your suspension. Remember, if you're going to drink, please don't drive.

### **Warranty:**

- The EXPERT X is guaranteed for 90 days (one riding season) against all manufacturing fault or defect.
- Any broken parts must be returned to AD Boivin design Inc. for replacement.
- The EXPERT X shall be installed in accordance with the assembly book provided.
- In the case of a part failure due to a faulty installation or improper use as judged by the manufacturer, the warranty is void and no broken parts will be replaced.

### **Design property:**

The EXPERT X is the intellectual property of AD Boivin design Inc.. Any copy or reproduction of this product (or the use of the principle) is subject to legal action from the designer. This product is patent pending.

# TABLE 1

(ADAPTORS ) EXPERT "X"

			ref. no.# (from exploded view of Expert"X")	#26	#27		
			Quantity per package (per suspension)	4	4		
				fl. washer	lock wash.	up	
MANUFACTURER	MODEL	YEAR	Inside tunnel width (inches)	P/N (part number)	Pa		
Polaris	all models (15" track)	up to 2003	16 3/8"	EXP-00X	38098096001	37,060,100,001	0000
Ski-doo	REV (15" track)	2003+					
"	REV Summit (16" track)	2003.5+	16 3/4"	EXP-04X	38098096001	37,060,100,001	0000
"	DSA and ADSA	93-2003	16 3/8"	EXP-00X	38098096001	37,060,100,001	0000
"	PRS	1989-94	17 1/2"	EXP-01X	38098096001	37,060,100,001	0000
Arctic Cat	All models (15" track)	1991-2003	16 13/16"	EXP-02X	38098096001	37,060,100,001	0000
Yamaha	V-Max 4 750/800	1992-97	17 1/2"	EXP-01X	38098096001	37,060,100,001	0000
"	V-Max 500(XT,XTC)	1995-97	17 1/2"	EXP-01X	38098096001	37,060,100,001	0000
"	V-Max 600(XT,XTC)	1995-97	17 1/2"	EXP-01X	38098096001	37,060,100,001	0000
"	Phazer	up to 1997	15 13/16"	EXP-03X	38098096001	37,060,100,001	411+
"	Exciter	up to 1993	15 13/16"	EXP-03X	38098096001	37,060,100,001	411+
"	SX/SXR/SRX 600	1997-2002	16 9/16"	EXP-04X	38098096001	37,060,100,001	0000
"	SX/SXR/SRX 700	1997-2002	16 9/16"	EXP-04X	38098096001	37,060,100,001	0000
"	Any L/C model	1998-99	16 9/16"	EXP-04X	38098096001	37,060,100,001	0000
"	RX-1	2003+	16 9/16"	EXP-04X	38098096001	37,060,100,001	0000
						014-00X	0000
						014-01X	0000
						014-02X	0000
						014-03X	411+
						014-04X	0000
						008-00X	0000
						008-01X	0000
						008-02X	0000
						008-03X	0000
						008-04X	0000

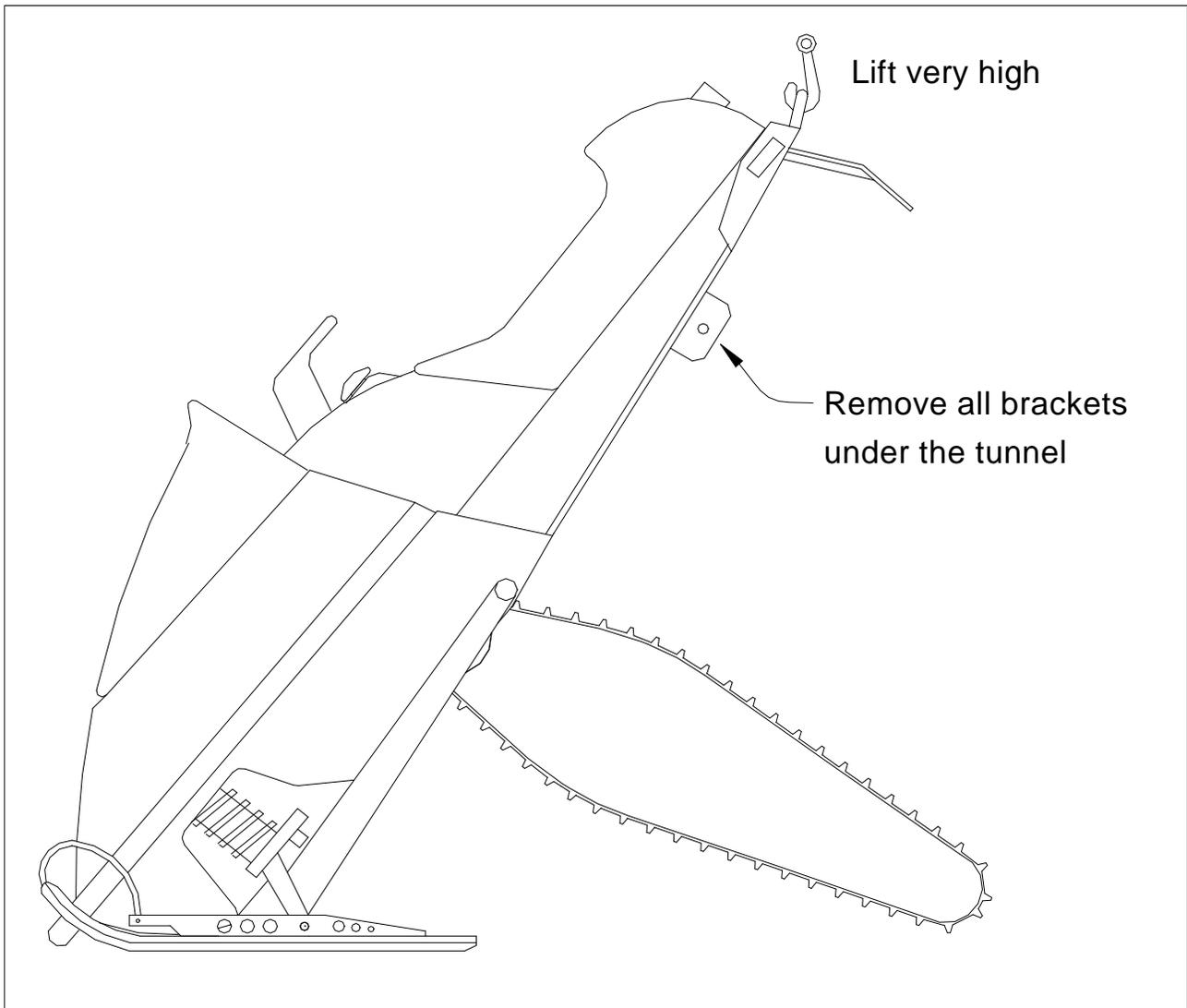
# **EXPERT X installation in 12 steps**

Do **not** skip or pass any steps.  
Follow attentively the step-by-step installation procedures.

## **STEP 1:**

Lift the rear of your sled very high off ground. Remove the original suspension on your sled and all brackets located under the tunnel as shown in the figure 1.

Figure 1



## **STEP 2:**

This suspension is universal. For installation on your sled, you must accurately take the measurement of “H” and “D” shown in picture 2 on page 7. Write the values of “H” and “D” below the table 2 in the blanks provided.

## **STEP 3:**

From table 2, find the row corresponding to the value of “D” found on your sled. Calculate and write the value of “B” in the blank provided in the same row as your value of “D”. To calculate “B”, take “H” minus the indicated value.

**IMPORTANT:** If the value “B” is **less** than 5 3/8 in. then take 5 3/8 in. as value “B”.  
If the value “B” is **greater** than 5 3/8 in. then take the value “B” calculated.  
In other words, the minimum value of “B” is 5 3/8 in.

## **STEP 4:**

From table 2, take the “Installation Value” and trace on the tunnel the position of the front holes as shown in figure 3. This operation is critical: make sure that the axis of the two front holes are parallel to the front drive axle and, consequently, the axis of the two front holes are perpendicular to the tunnel.

For the tracing of value “A”, we recommend the use of a flat bar as a spacer between the outside of the drive axle and the center trace of the front mounting hole. With this method we assume that your drive axle is perfectly perpendicular to the tunnel. The sketch of this method is in figure 3 on page 8.

For the tracing of value “B”, use (by the interior of the tunnel) a square against the top plate of the tunnel and trace value “B”.

Also, you can use a big square and verify that the axis of the two front holes are perpendicular to the tunnel.

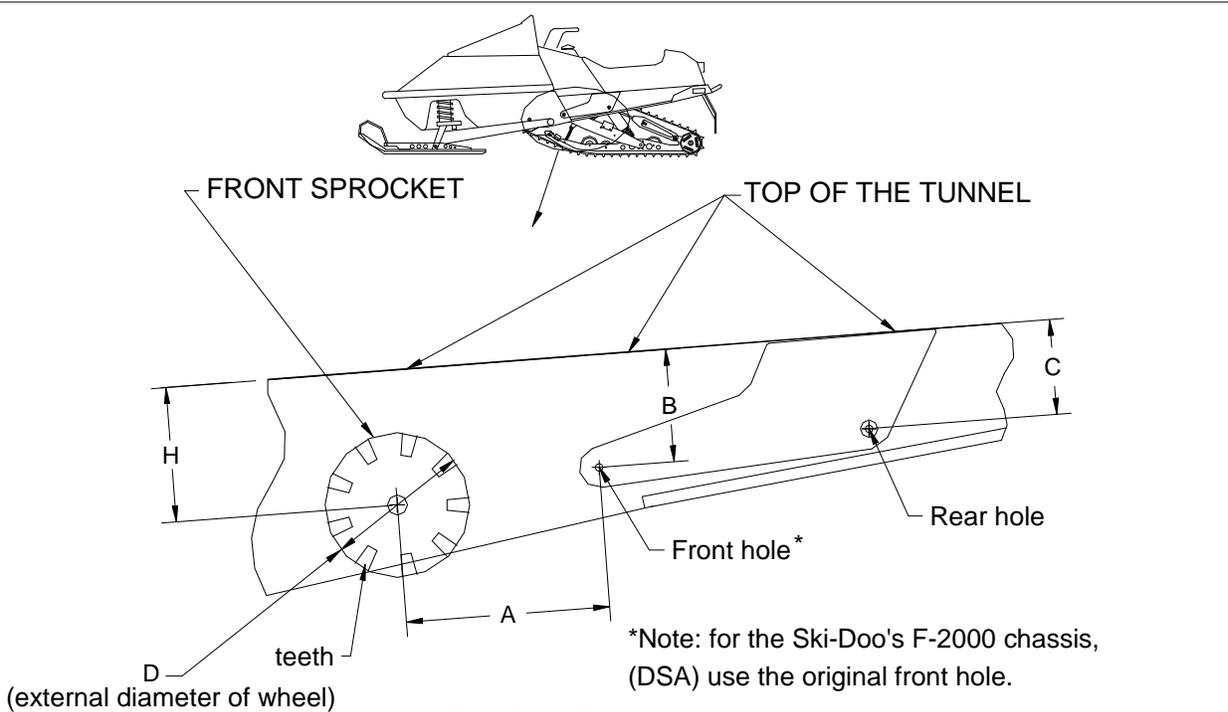
Note: For Ski-Doo\* F-2000 snowmobile chassis (DSA), use the original front hole.

## **STEP 5:**

Drill the two front holes (left and right) as shown in figure 3. (10 mm or 25/64 in. dia.).

\*Note: Ski-Doo is a registered trademark of Bombardier Inc

**Figure 2** (see figures 5A and 5B on pages 11 and 12 for RX-1 and RX-Warrior applications)



**TABLE 2**

Installation values (for 121 in. tracks only)

D = \_\_\_\_ in. ( \_\_\_\_ tooth)      H = \_\_\_\_ in.

D (pitch 2.52 in.)	A	B **	C	Remarks
5.250 in. (7 tooth)	11 5/8 in.	H minus 1/4 in.= _____	5 1/4 in.	2 in. paddle ONLY
5.250 in. (7 tooth)	11 5/8 in.	H minus 1/2 in.= _____	4 3/4 in.	
6.375 in. (8 tooth)	10 3/4 in.	H minus 5/8 in.= _____	4 3/4 in.	
7.125 in. (9 tooth)	10 1/4 in.	H minus 7/8 in.= _____	4 3/4 in.	
8.000 in. (10 tooth)	9 5/8 in.	H minus 1 1/4 in.= _____	4 3/4 in.	

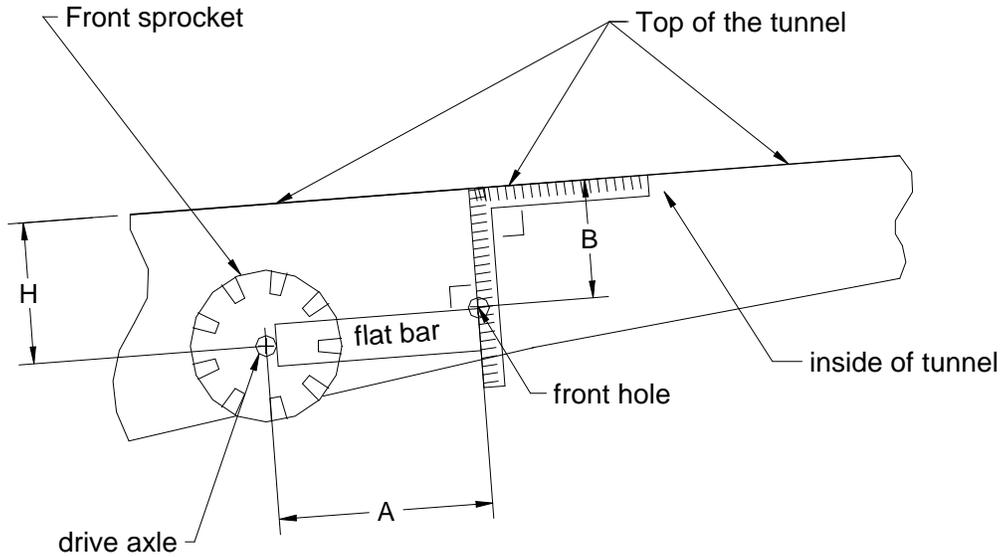
\*\* B minimum= 5 3/8 in.

Value "A" may have to be corrected for some track/rail configurations :

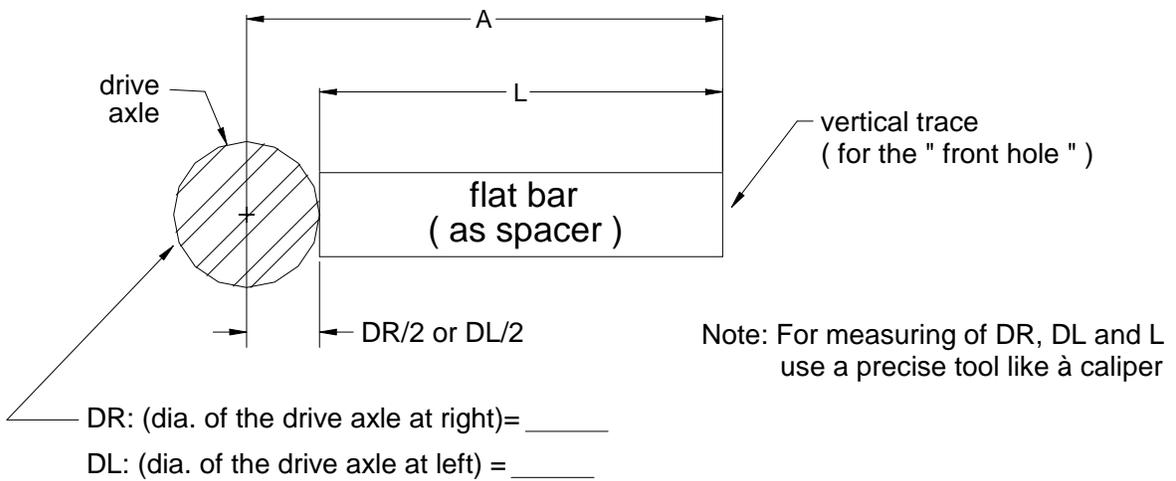
TRACK LENGTH	Rail Length Options	Setback	A (corrected)
136"	EXP-LT (136)	N/A	A (no setback required)
141"	EXP-LT (136)	2 1/2 in.	A + 2 1/2"
144"	EXP-LT (136)	4 in.	A + 4"
144"	EXP-LT (144)	N/A	A (no setback required)
151"	EXP-LT (144)	3 1/2 in.	A + 3 1/2"
151"	EXP-LT (151)	N/A	A (no setback required)
156"	EXP-LT (151)	2 1/2 in.	A + 2 1/2"
159"	EXP-LT (151)	4 in.	A + 4"

Figure 3

Method for tracing the position of the " Front holes "



Do this tracing inside the tunnel



use value "A"  
from table 2

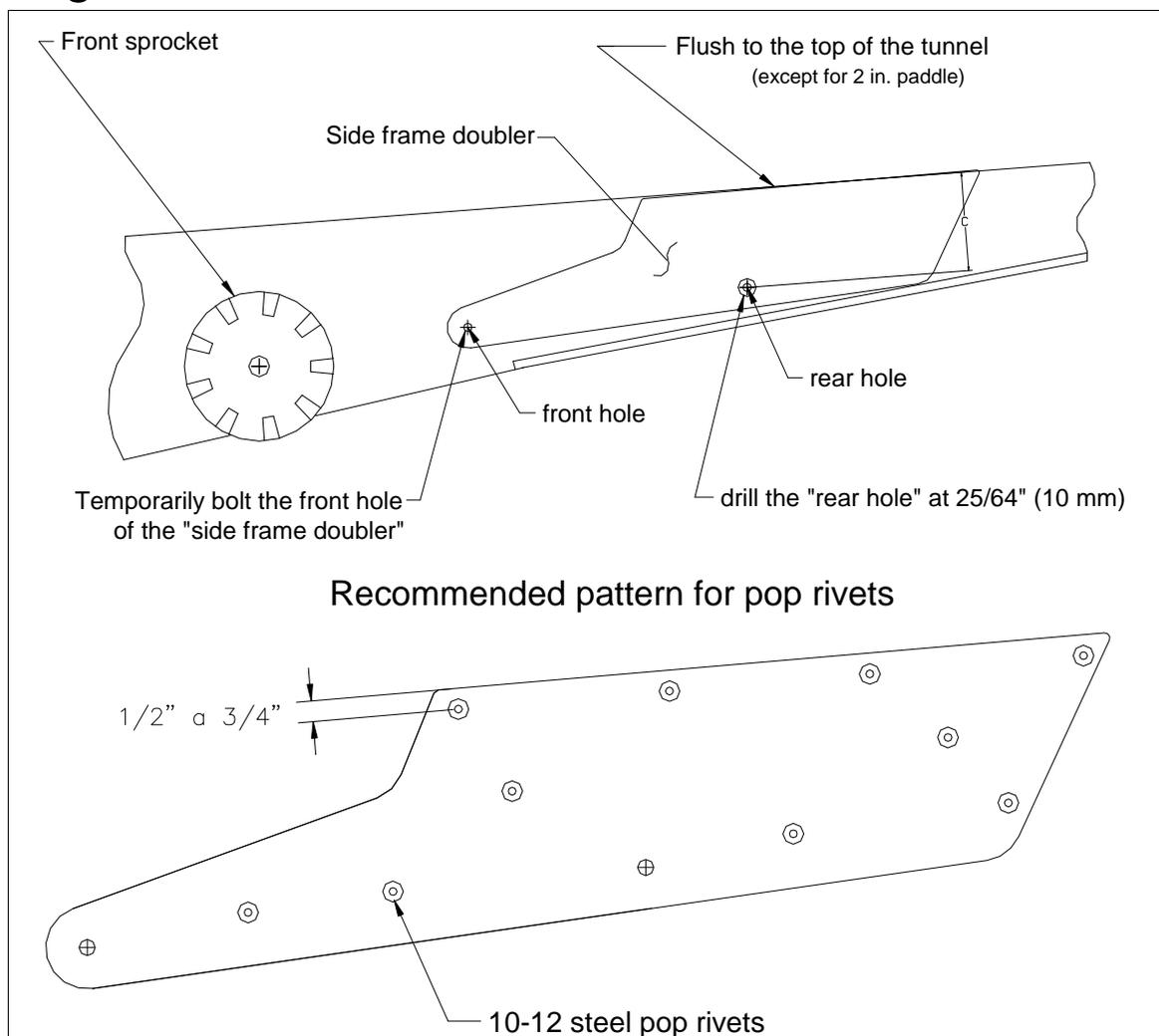
Flat bar length	
L	
left side of tunnel	right side of tunnel
A minus (DL/2) = _____	A minus (DR/2) = _____

## **STEP 6:**

Install the two "side frame doublers" by using the front hole as a reference point.

- Temporarily bolt the side frame doubler on the chassis in the front hole and place the top of the side frame doubler flush to the top of the tunnel (except for the case of 2 in. paddle tracks where  $C = 5 \frac{1}{4}$  in.)
- Use the "side frame doublers" as a template and drill the rear hole (10 mm or 25/64 in. dia.)
- Temporarily bolt the side frame doubler on the chassis with the front hole and the rear hole.
- Install a minimum of 8 steel pop rivets (for each "side frame doubler") supplied with the suspension and use the recommended pattern shown in the figure 4.

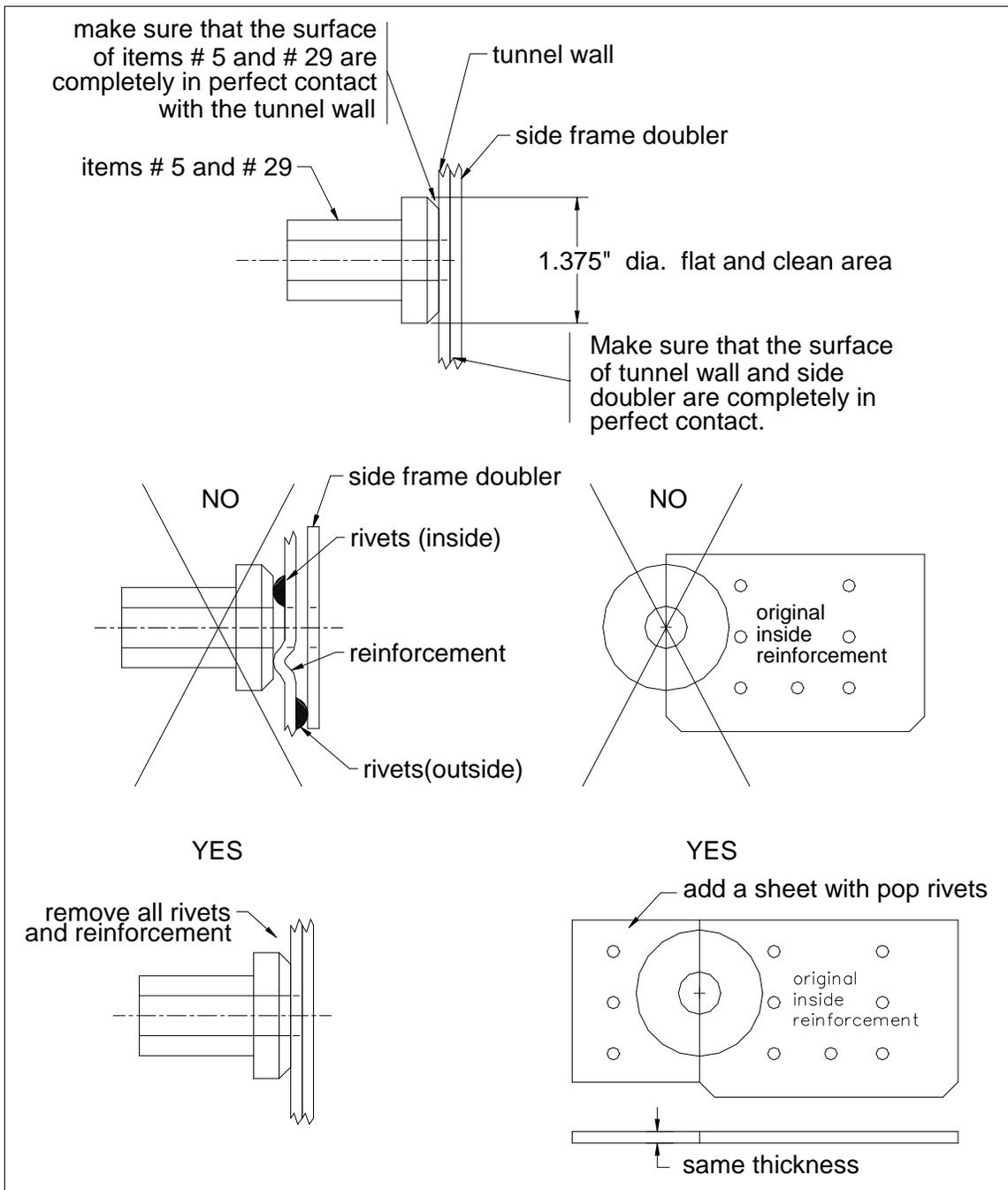
### Figure 4



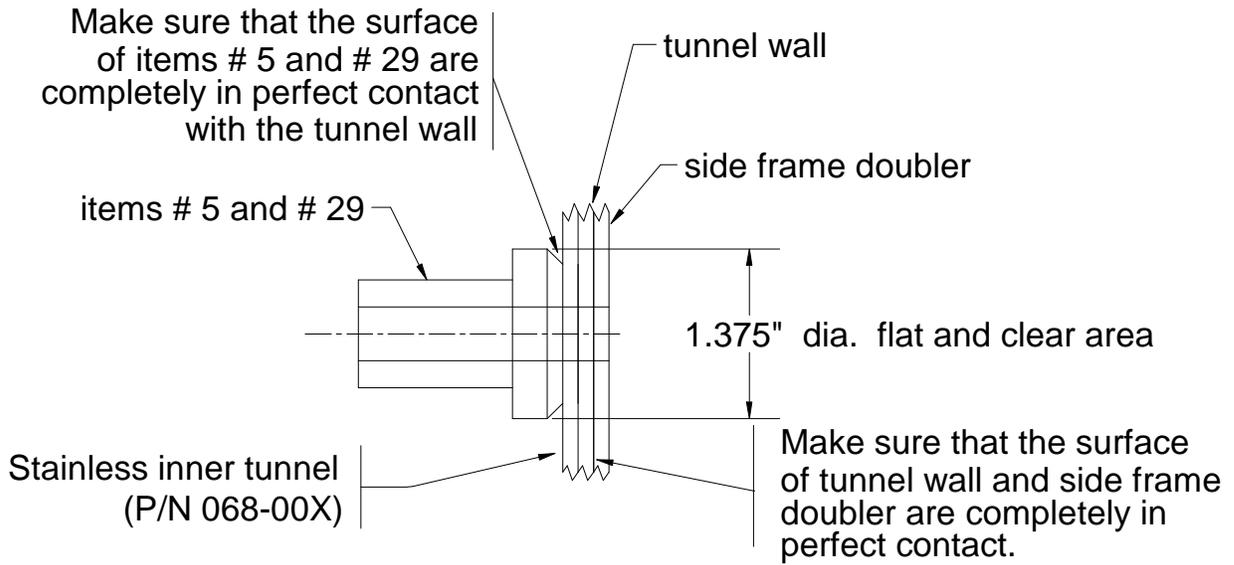
**STEP 7:**

Inspect the inside of the tunnel where the front and the rear holes are located. You must have a clean area around the hole about 1 3/8 in. diameter. If you see a rivet, reinforcement or a mismatch of reinforcement's sheet you must remove the rivets or repair this area as shown in figure 5. You must make sure that the swing arm front adaptor and the upper axle adaptor are in perfect contact (flush) with the inside of the tunnel.

**Figure 5**



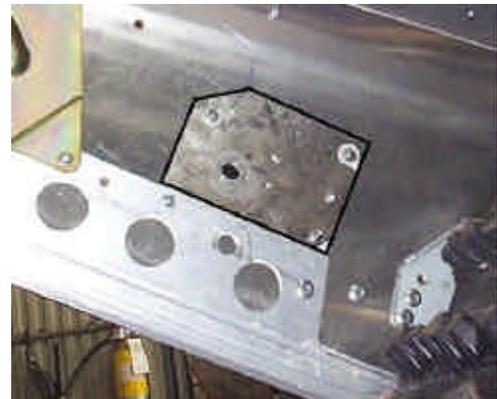
# Figure 5A



## NOTE:

We highly recommend that you install the supplied stainless steel inside reinforcement plates ( P/N 068-00x ) if there is no existing inside tunnel reinforcement at the points where the new holes are drilled.

Be sure to remove all rivets or any other obstructions that will prohibit a flush-mount between the plates and the inside of the tunnel.



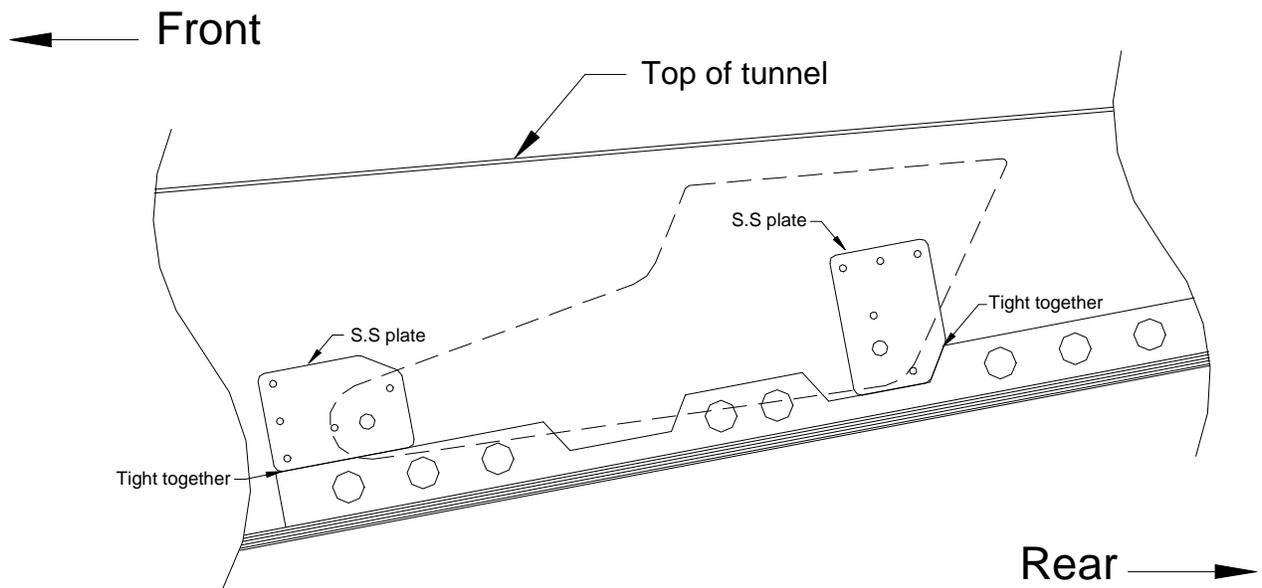
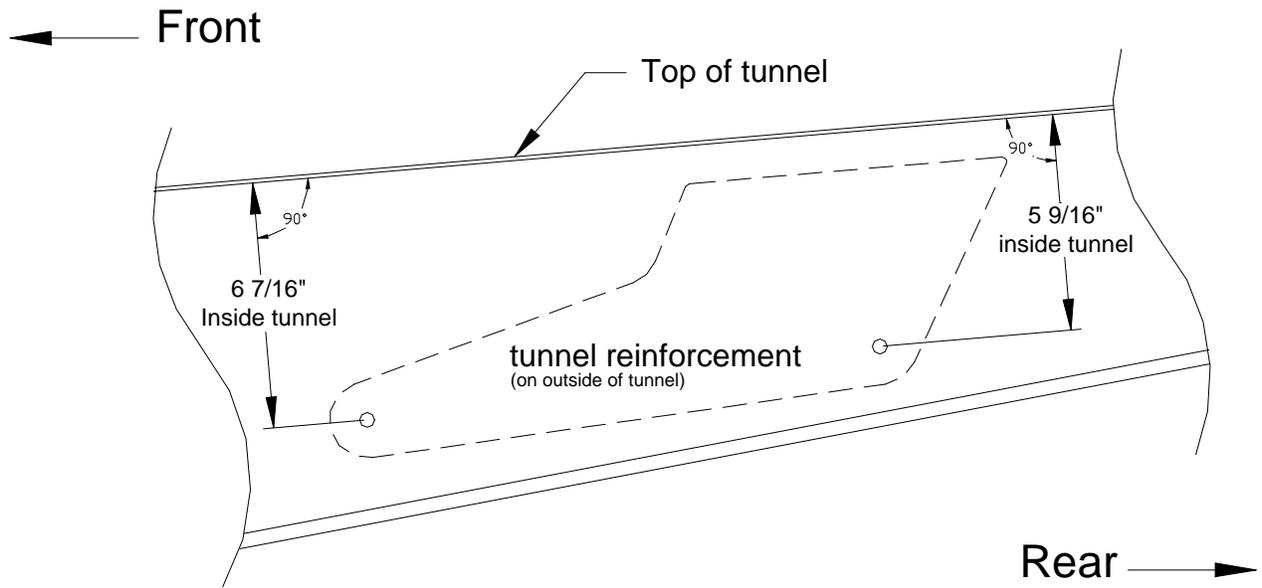
Front Mounting Points  
PTO side, RX-1 shown [Front →]



Rear Mounting Points  
MAG side, RX-1 shown [Rear →]

Figure 5B

Note: Reference tunnel reinforcement placement for all RX-1 121" application with stock lug height.



## **STEP 8:**

For installation on your sled, leave item #27 unbolted, just as we shipped it to you. Install the two “swing arm front axle adaptors” item # 29 and two “upper axle adaptors” item # 5 on the suspension as shown in the exploded view of the Expert X on page 18.

**Install the two M10 x 30 bolts (Item #35) and washers (Item #3) securing the softness drawbar shaft (Item #73) to the rear of the skidframe. Be sure to use red Loctite 271 for both of these bolts.**

**Also, set-up the dynamic stopper springs (Item #31D & 31G) so that the forward leg is resting in the hole with the steel insert pressed into it, NOT in the slot, as it will be when you take your Expert X out of the box.**

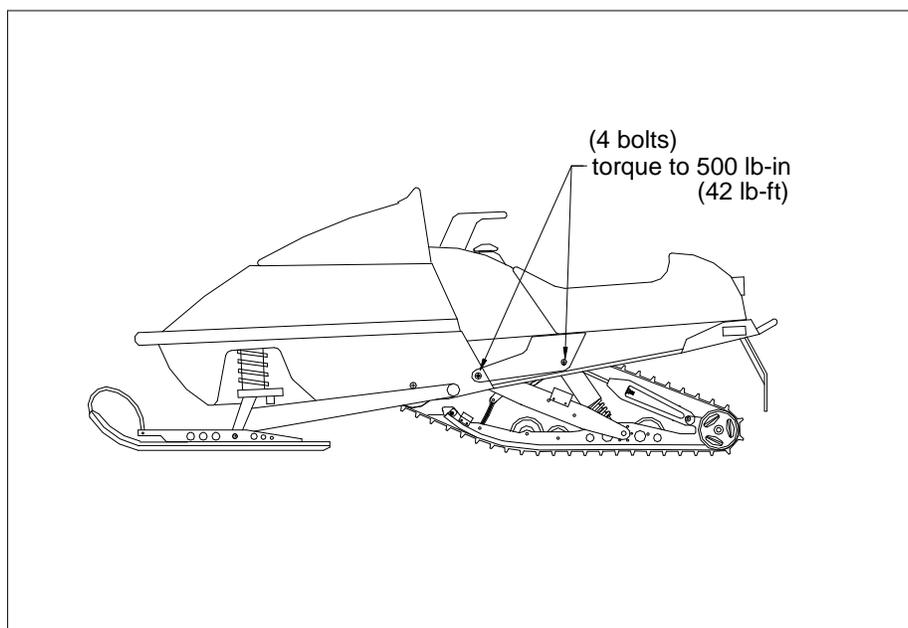
Now the suspension is ready to be installed onto your sled!

## **STEP 9:**

Lower the rear of your sled at mid-range just as the height shown in figure 1 from page 5.

- Put the suspension inside your track and first bolt the “swing arm front axle” onto the chassis.
- Lower the rear of the sled until you can install the rear mounting bolts onto the chassis.  
Torque the 4 bolts (item #1 and item #28) to 500 lb-in (42 lb-ft) as shown in figure 6.

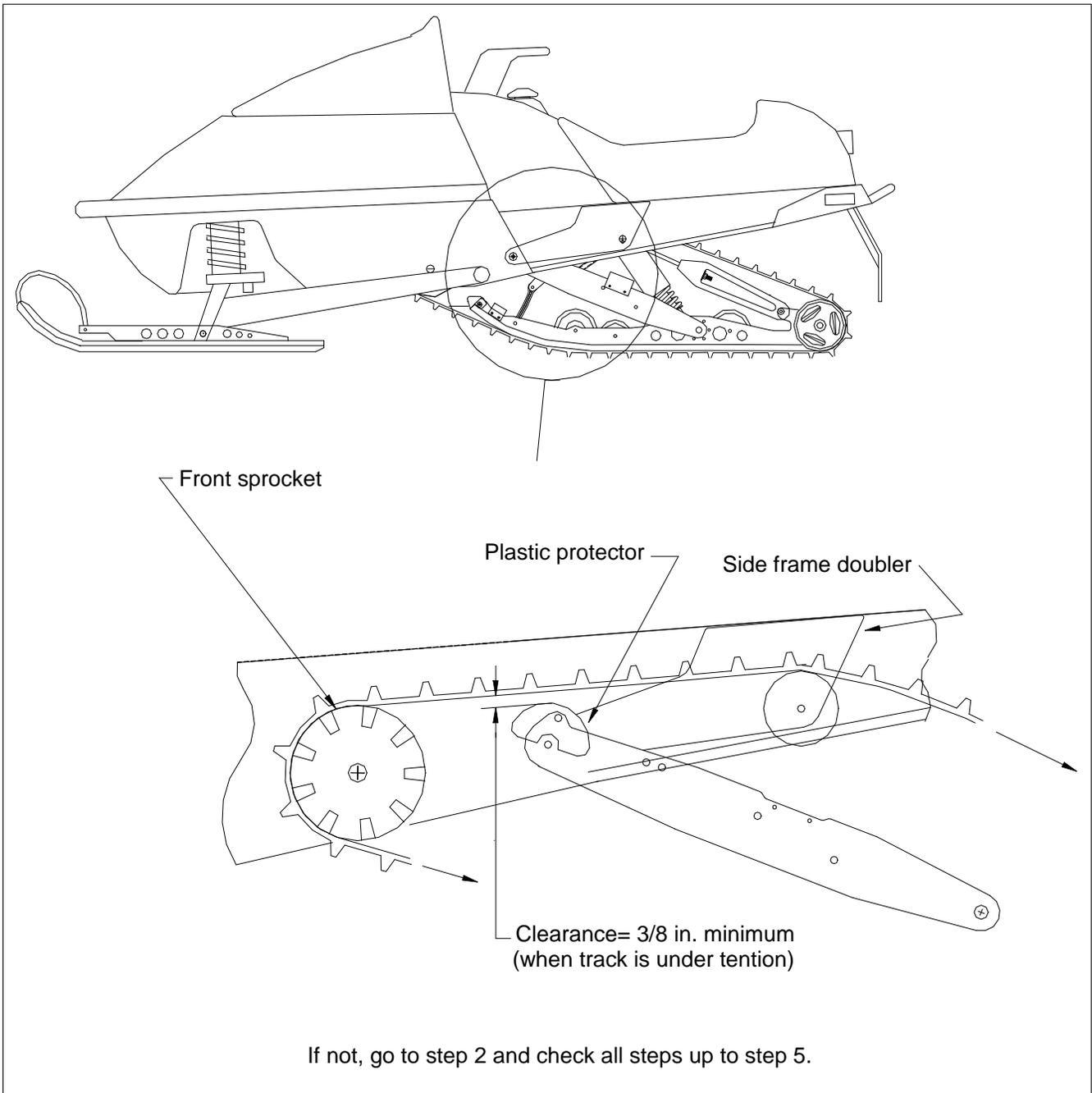
## Figure 6



**STEP 10:**

Verify the clearance between the track and the plastic protector as shown in the figure 7. The distance must be greater than  $\frac{3}{8}$  in. If not, go back to step 2 and check all measurements up to step 5. If all the data is indeed correct but your clearance is less than  $\frac{3}{8}$  in here, you must fix this problem by increasing the value of "B" and reinstall the two side frame doublers.

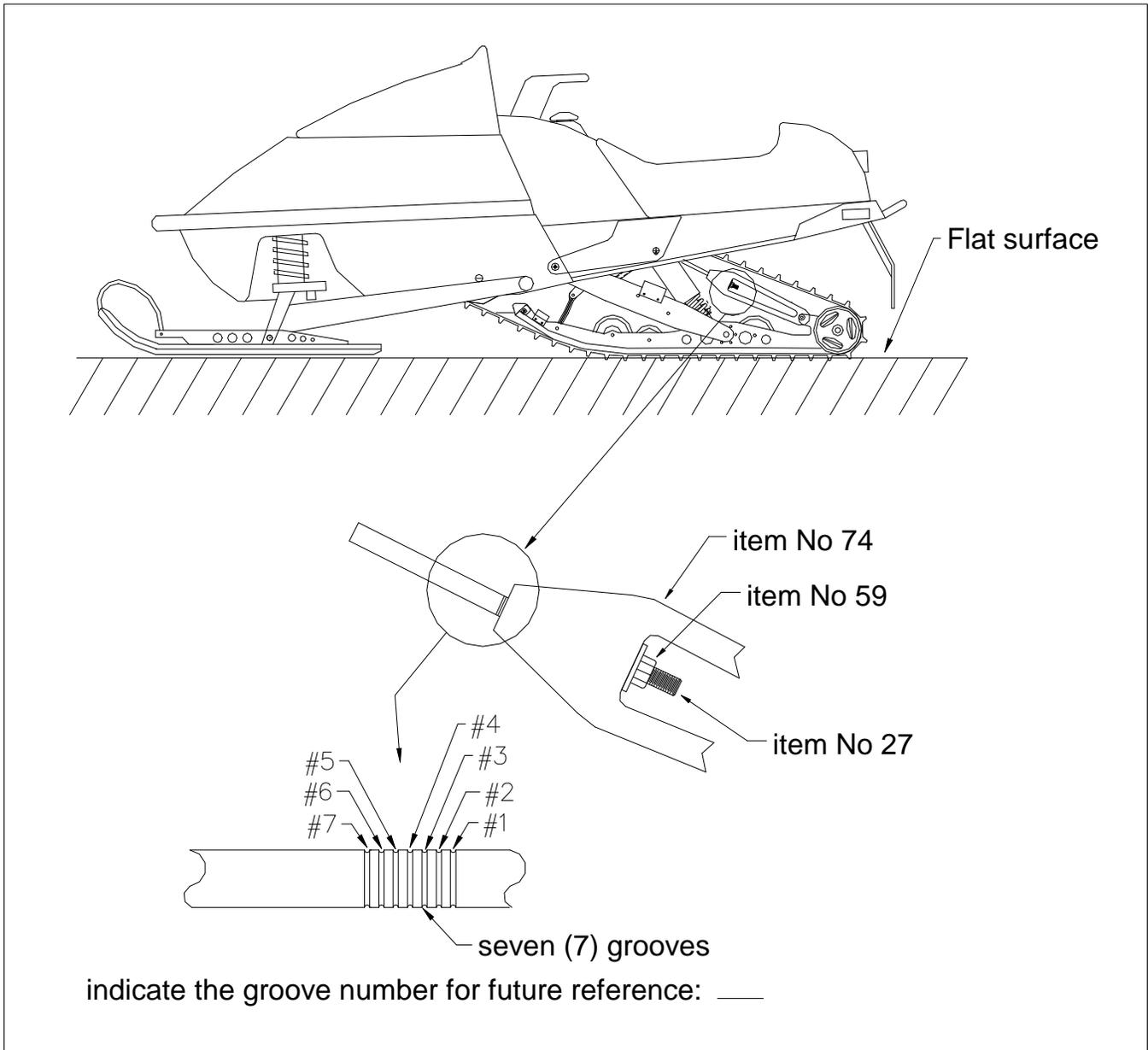
**Figure 7**



**STEP 11:**

Lower the sled to the floor (or a flat surface). As shown in figure 8, install the coupling adjustment nut (item #59) onto the softness drawbar rod (item #27). Screw on the nut until the flanged part of the nut is flush with the softness drawbar. The groove #'s are indicated as shown in figure 8 below.

**Figure 8**

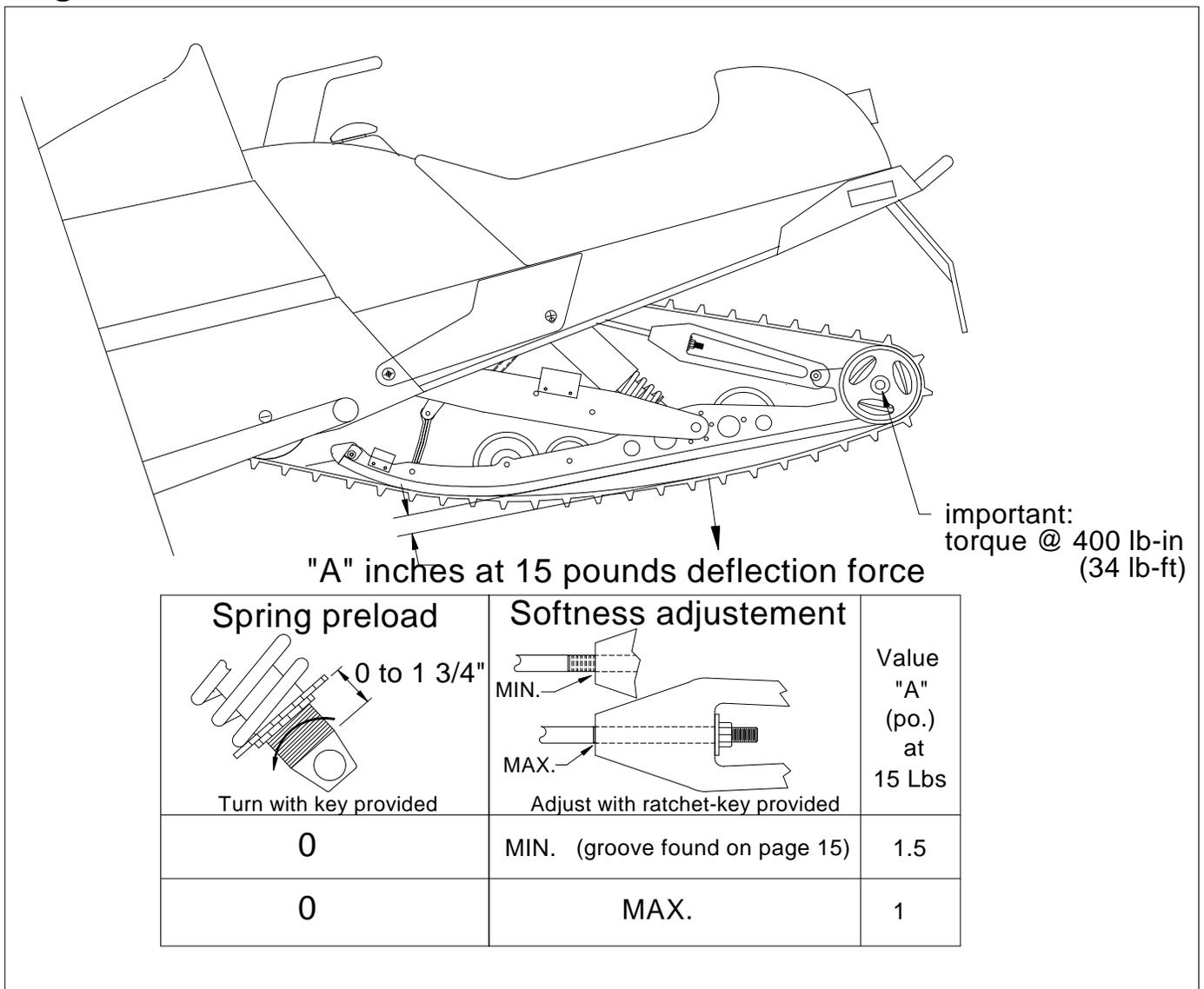


**STEP 12:**

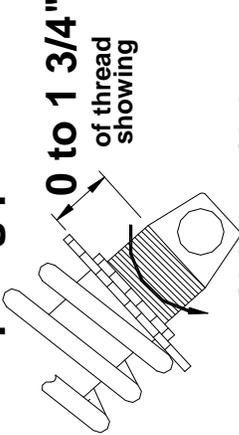
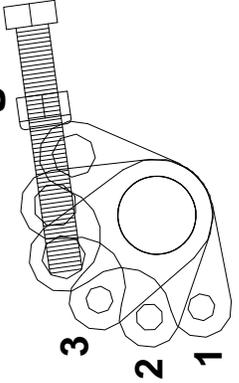
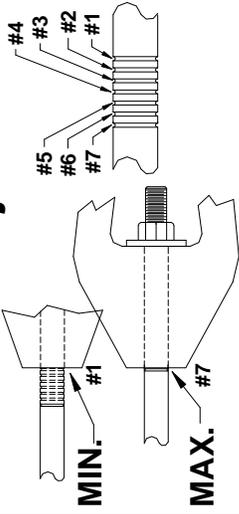
Tension the track following the specifications as shown in figure 9. For better “free wheeling” do not over-tension the track. The Expert X is specially designed to create a little tension on the track when the suspension is compressed. Tension it by trial and error, and re-tension if it slips or “ratchets” on the sprocket.

**NOTE:** The 136”, 144” and 151” versions of the Expert X will have similar track tension and deflection values, based on the 121” suspension shown below. Do not be afraid to run the Expert X extra-loose, it’s designed to work that way. A failsafe method to tensioning is to tighten the track as shown below and then slack off the tension by one-turn per side until the track begins to ratchet. The instant you hear (or suspect) ratcheting, re-tighten the track by 2-3 turns of the tensioner bolt per side.

Figure 9



# ADJUSTMENT CHART

Setup code	Spring preload  turn with key provided	Shock angle  adjust with ratchet-key provided	Softness adjustment  adjust with ratchet-key provided
AD	0	3	MIN. (groove found on page 15)
BD	0 to 1 3/4"	2	MIN. (groove found on page 15)
CD	1 3/4"	1	MIN. (groove found on page 15)
AE	0	3	MEDIUM to MAX.(#4 to #7)
BE	0 to 1 3/4"	2	MEDIUM to MAX.(#4 to #7)
CE	1 3/4"	1	MEDIUM (#4)

Note: the suspension is shipped with the "BD" setup code.

The suspension setup is function of two (2) criterias:

Your weight:

- A - 100 to 140 pounds
- B - 150 to 190 pounds
- C - 200 to 300 pounds

Your type of driving:

- D - fast driving, stability at high speed in nice trails. Stiffer.
- E - slow and medium speed in bumpy trails. Softer.

By combining the two criteria, you'll obtain the "setup code".

Ex.: You weigh 135 pounds (A) and drive med/slowly (E). Your setup code is "AE"

## Weight Transfer Adjuster

