

# ARO™ INSTALL KIT



P/N 9928509

## APPLICATION

Installation instructions are for all ARO TSS and ARO TFS installation kits to be mounted on the Timbersled ARO chassis installations. The Timbersled ARO is designed to fit a variety of makes and models of bikes. For specific details on your bikes install kit visit [Timbersled.com](http://Timbersled.com) or scan the QR code if using a mobile device. If viewing on a PC click [HERE](#)



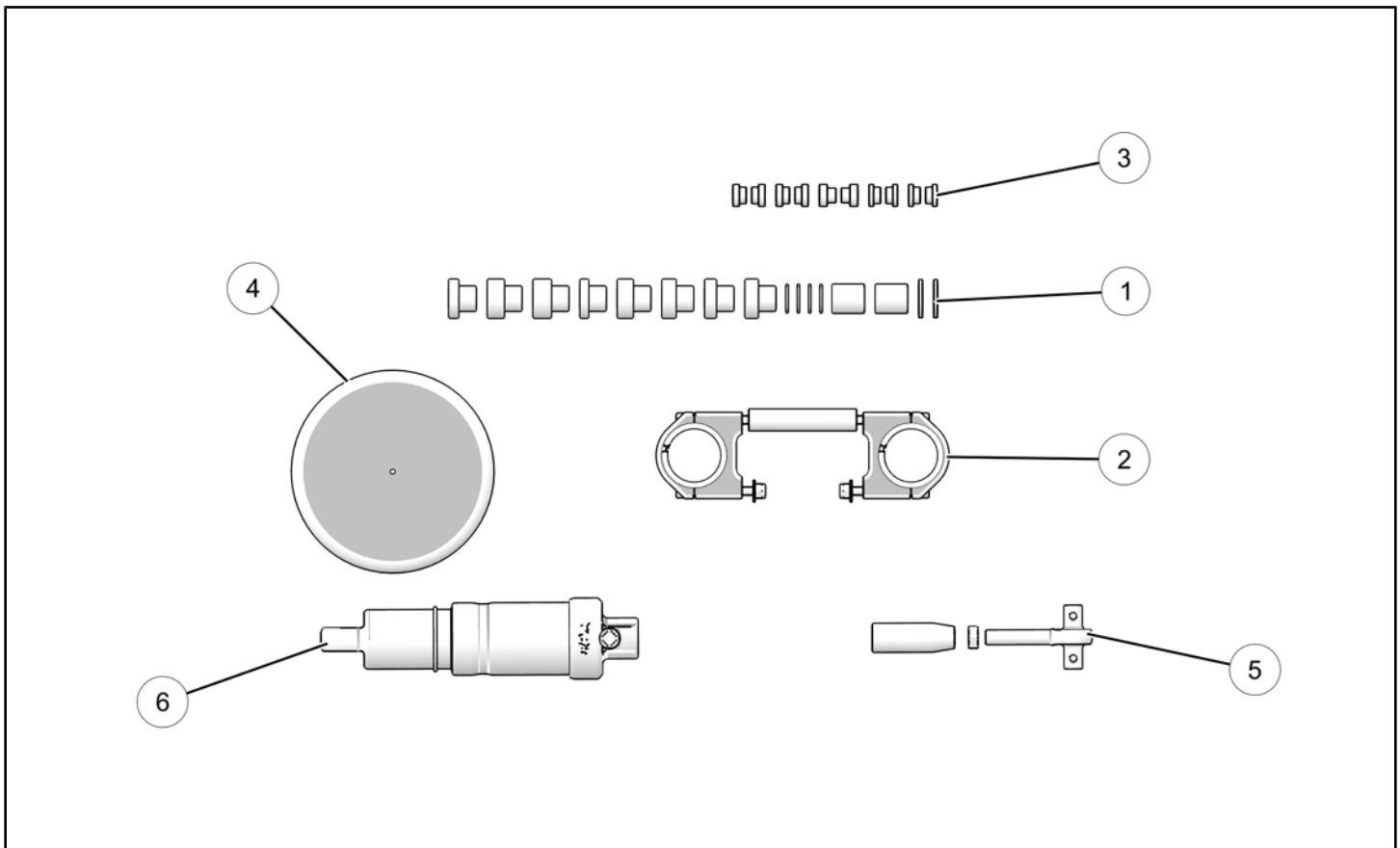
## BEFORE YOU BEGIN

Read these instructions and check to be sure all parts and tools are accounted for. Please retain these installation instructions for future reference and parts ordering information.

## KIT CONTENTS

The ARO chassis can be installed using either the ARO TSS (Timbersled Suspension Strut) Install Kit or the ARO TFS (Timbersled Fixed Strut) Install Kit. Refer to the images below for a general overview of what is included in the install kits. Your specific kit may vary slightly depending on make and model.

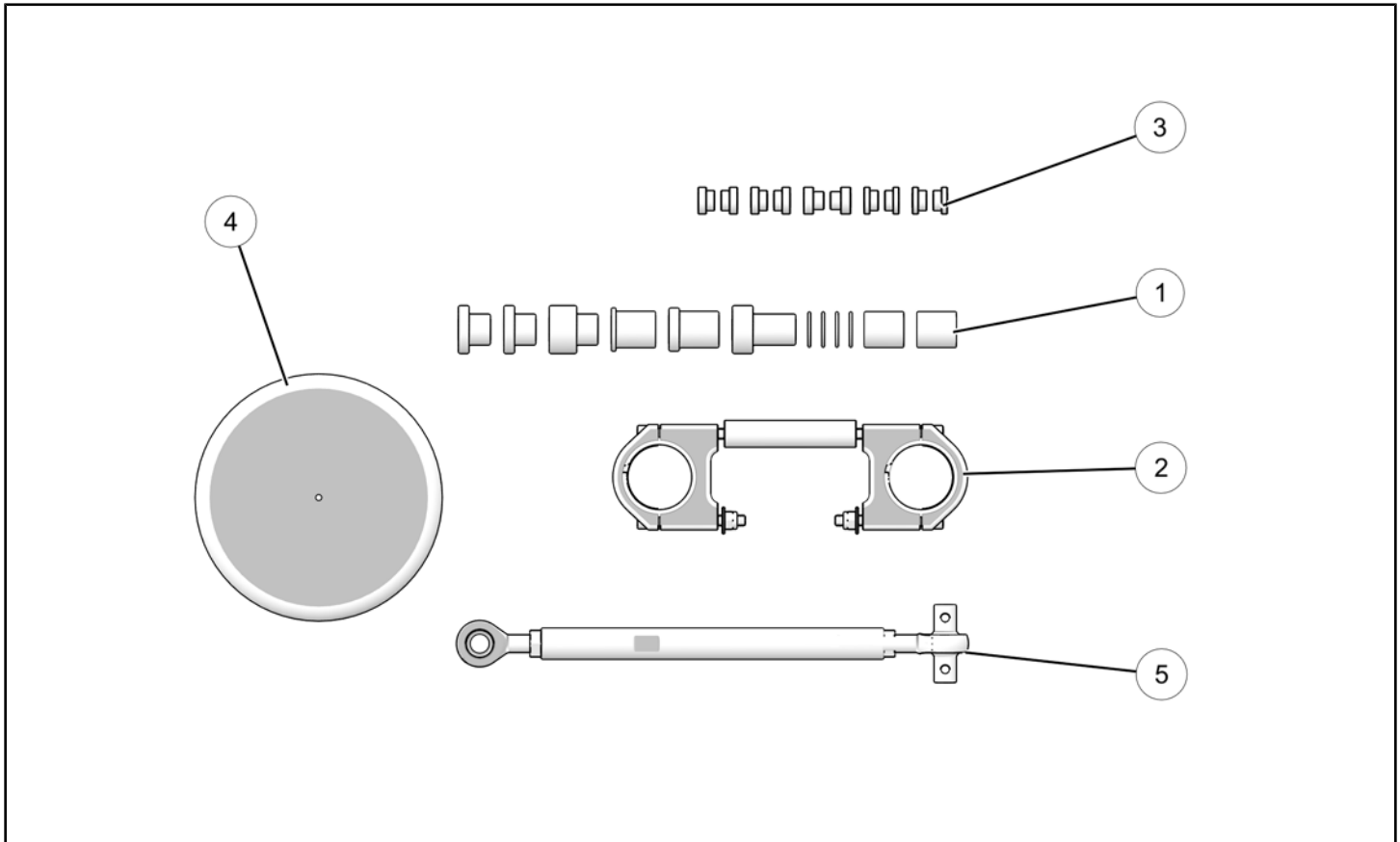
TSS Kit Shown Below



| REF | QTY | PART DESCRIPTION       | PART NUMBER |
|-----|-----|------------------------|-------------|
| 1   | 1   | Spacer Pack            | -           |
| 2   | 1   | Fork Clamp             | -           |
| 3   | 1   | Strut Rod Reducer Pack | -           |

| REF | QTY | PART DESCRIPTION | PART NUMBER |
|-----|-----|------------------|-------------|
| 4   | 1   | Pre Filter FS    | -           |
| 5   | 1   | Strut Rod TSS    | -           |
| 6   | 1   | TSS Shock Body   | -           |
|     | 1   | Instructions     | 9928509     |

TFS Kit Shown Below



| REF | QTY | PART DESCRIPTION          | PART NUMBER |
|-----|-----|---------------------------|-------------|
| 1   | 1   | Spacer Pack               | -           |
| 2   | 1   | Fork Clamp                | -           |
| 3   | 1   | Strut Rod Reducer Pack    | -           |
| 4   | 1   | Pre Filter                | -           |
| 5   | 1   | Strut - Solid, Adjustable | -           |
|     | 1   | Instructions              | 9928509     |

## TOOLS REQUIRED

- Safety Glasses
- Hammer, Soft Face
- Hex Key Set, Metric
- Pliers, Slip Joint
- Screwdriver, Standard
- Tin Snips, Straight Cut
- Socket Set, Hex Bit, Metric
- Socket Set, Metric
- Wrench Set, Metric
- Vehicle Lift/Support Equipment
- Model Specific Timbersled ARO Fitment Table
- Torque Wrench

## IMPORTANT

Your ARO™ Install Kit is exclusively designed for your vehicle. Please read the installation instructions thoroughly before beginning. Installation is easier if the vehicle is clean and free of debris. For your safety, and to ensure a satisfactory installation, perform all installation steps correctly in the sequence shown.

## ASSEMBLY TIME

Approximately 1.5–3 hours

### NOTE

Additional time may vary depending your specific make and model of bike.

## INSTALLATION INSTRUCTIONS

The instructions listed are universal for all bikes using the Timbersled ARO snowbike kit. The process in the instructions may vary slightly between makes and models. Refer to your host bike's owner's manual for specific references and assembly/disassembly procedures.

You will also need a copy of the Timbersled ARO Fitment Table for your specific bike model. The Timbersled ARO Fitment Table can be found and printed at [Timbersled.com](http://Timbersled.com) or by contacting your local Timbersled dealer.

## MOTORCYCLE REAR DISASSEMBLY



1. Place bike on a stand or suitable support where both wheels are off the ground. Secure properly to prevent bike from tipping when wheels are removed.

### NOTE

An adjustable stand is helpful for reassembly.

2. Remove the seat, side panels, frame guards, and exhaust silencer. Retain these parts for later re-installation.

3. Remove the air filter, roost guard, chain, upper and lower chain rollers and chain guides from bike frame. These parts will not be needed while the Timbersled kit is installed on the bike.

### NOTE

Do not start or operate motorcycle while air filter is removed. Timbersled recommends plugging your air intake with a clean lint-free towel while air filter is removed to prevent any debris from entering the motorcycle's air intake system.

4. Remove the foot-brake master cylinder and lever from the bike frame.
5. Remove the upper shock bolt from frame and retain for later installation.
6. Remove the suspension linkage bolt from the frame if your bike has one. This will not be used with the Timbersled kit.
7. Remove the swing arm pivot bolt. You will re-use this with your Timbersled kit installation later.
8. Remove the shock, tire, brake, and swing arm assembly from the bike as a complete assembly. These parts will not be needed while the Timbersled kit is installed on the bike.

### NOTE

It is recommended to cable tie all bushings, spacers, etc. to their corresponding parts at all pivoting points to prevent losing any parts during storage.

9. Remove the complete front brake system keeping the entire system intact. There is no need to disconnect the brake line from the master cylinder or brake caliper.

First remove the front caliper from the motorcycle's lower front fork tube. Next remove the front brake lever and master cylinder from the motorcycle's handle bars and remove the entire front brake system as a single unit.

## FRAME BUSHING AND SUB-FRAME REDUCER INSTALLATION

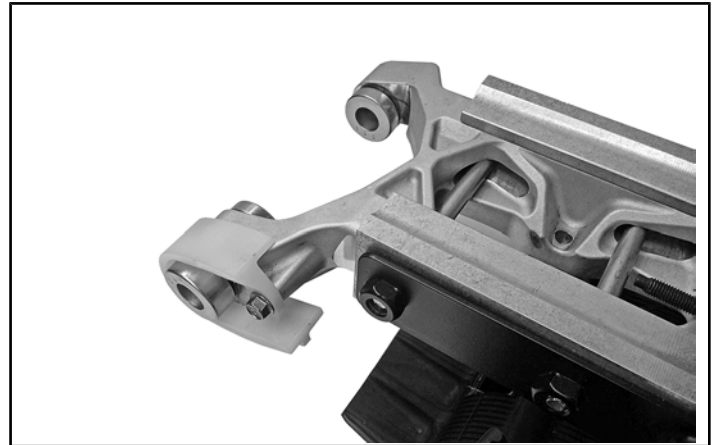
There are two different types of ARO install kits available. The TSS (Timbersled Suspension Strut) install kit and the TFS (Timbersled Fixed Strut) install kit. Installation procedures for the sub-frame bushings and reducers are universal for either kit.

### NOTE

Your ARO pivot forging sub-frame comes with the pivot bushings pre-installed. All install kit spacer packs come with gray sub-frame pivot bushings. For the ARO installation process these bushings are not needed.



1. Install the sub-frame reducers into their proper location in the pivot forging. To do this, first place an O-ring (B) on each of the sub-frame reducers (A) used. Put a coating of grease on the inside of the bushing and the outside of the spacer/reducer and install them into the frame. They should slip in without interference



### NOTE

To locate the sub-frame reducer positioning for your specific bike, **refer to the Timbersled ARO Fitment Sheets**. Fitment sheets can be found and printed at **Timbersled.com** or by contacting your local Timbersled Dealer. Each of the sub-frame spacers/reducers will have a part number stamped on the end that will be its reference number on the fitment sheet to show their location.

## REAR TRACK ASSEMBLY INSTALLATION

1. Insert the rear track assembly into the bike between the engine and the frame. It may be a snug fit due to the O-rings holding the spacers out. It should squeeze in as you firmly push the assembly into place. Visually make sure everything looks correct and is aligned properly.



### NOTE

It may be helpful to gently squeeze the reducers with an adjustable pliers or clamp in the frame eyelets prior to installation to ensure proper seating of the O-rings.

2. Install the previously removed swing arm pivot bolt and nut.

### TORQUE

Torque swing arm pivot bolt to OEM manufacturers specifications.

3. Next you will need to install either the TSS shock strut or the fixed strut rod depending on which installation kit you have. Your install kit comes with all strut rod reducers necessary to install all of the Timbersled full sized chassis to your motorcycle. The ARO chassis only requires installation of the upper strut rod reducers. Install the upper strut rod reducers into the upper shock body ball joint for the TSS kit or into the upper ball joint of the strut rod for the TFS kit. The lower rod ends on the ARO strut rods utilize a trunnion ball-joint that bolts directly to the forged pivot frame using two M8 x 1.25" bolts **A** included with your Timbersled ARO unit. These bolts will be located in a zip-loc bag with your owner's manual and drive chain. Their is no need for lower strut rod reducers.



### NOTE

The side in which your strut rod reducers will be located will depend on their proper alignment into the bikes shock bracket. For further reference, **refer to the Timbersled ARO Fitment Sheet** for specific locations.

4. Install the TSS or TFS onto the bike and rear track assembly.



**a. TSS Models:**

For TSS installation, first ensure that the TSS shock is correctly oriented with the shock body toward the top and air valve cap towards the bottom facing the rear of the bike as shown. Now place the lower trunnion ball end ⑤ of the TSS into the strut cradle in the rear pivot forging frame ⑥. Rotate the trunnion cross-shaft so the threaded bolt holes line up with the bolt holes in the pivot forging. Insert both M8 x 1.25" bolts and torque to the specifications listed below.

**TORQUE**

30Nm (22 Ft. Lbs)

- b. Next, place the shock body end into the bike frames shock mounting bracket ③ and install the original bolt and nut and torque to specifications listed below

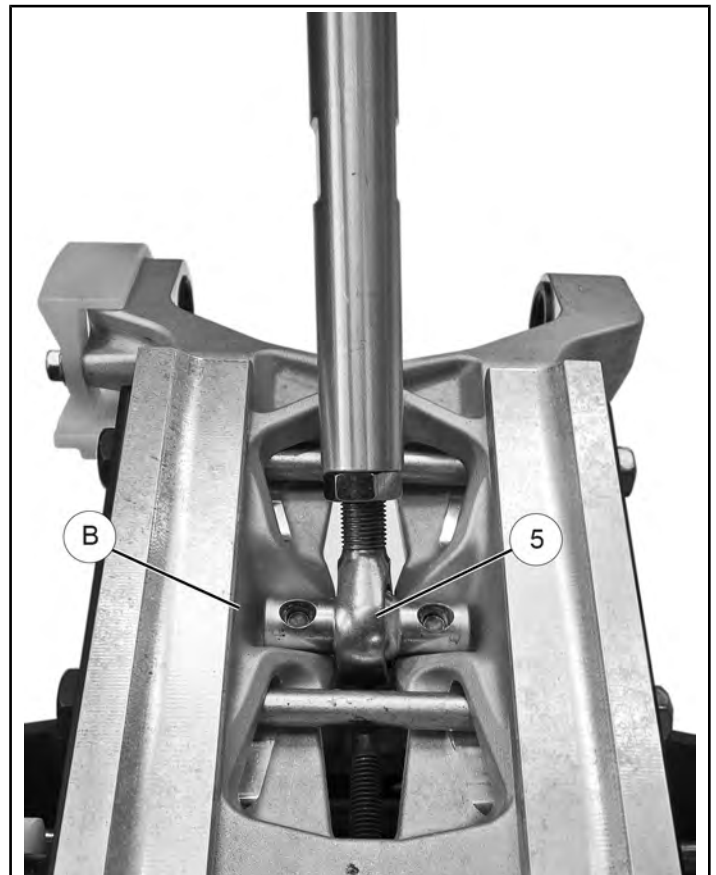
**TORQUE**

See bike manufacturers OEM torque specifications

**c. TFS Models:**

For TFS installation, first ensure that the TFS strut rod is correctly orientated with the trunnion ball-joint ⑤ indicating the lower end of the strut rod. Install the strut rod onto the bike and rear track assembly. First place the lower trunnion ball end ⑤ of the strut rod into the strut cradle in the rear pivot forging frame ⑥. Rotate the trunnion cross-shaft so the threaded bolt holes line up with the bolt holes in the pivot forging. Insert both M8 x 1.25" bolts and torque to the specifications listed below.

Next place the upper ball joint into the bike frames shock mounting bracket ③ and install the original bolt and nut. Tighten both upper and lower nuts and bolts to specification listed below.



**TORQUE**

**Lower:** 30Nm (22 Ft. Lbs)  
**Upper:** See bike manufacturers OEM torque specifications



## BRAKE SYSTEM INSTALLATION

Your Timbersled ARO brake system comes pre-blead and fully assembled, there is no need for disrupting the sealed brake system on your motorcycle or your Timbersled ARO brake system for installation.



1. Route your brake line and master cylinder through the motorcycle chassis up to the front handle bars securing with cable ties when needed..

## ⚠ WARNING

Ensure all sections of brake line are a minimum of 2" away from all hot engine and exhaust surfaces and free from all possible pinch points. Failure to comply will adversely affect the brake system and may cause damage to equipment/property or may lead to severe injury or death in an accident.

2. Install the ARO master cylinder and brake lever to the handle bars in the same location of your motorcycle's OEM front brake master cylinder and lever.

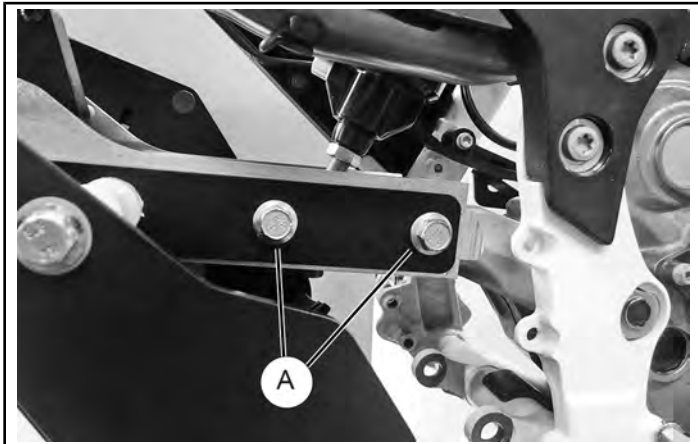
## ENGINE CHAIN INSTALLATION

On some bike models, in order to fit the wider supplied O-ring engine chain, the engine sprocket may need to be removed and turned around or require a supplied spacer be placed behind the engine sprocket to provide more clearance between the chain and engine case. See ARO fitment tables for details on your specific bike model.

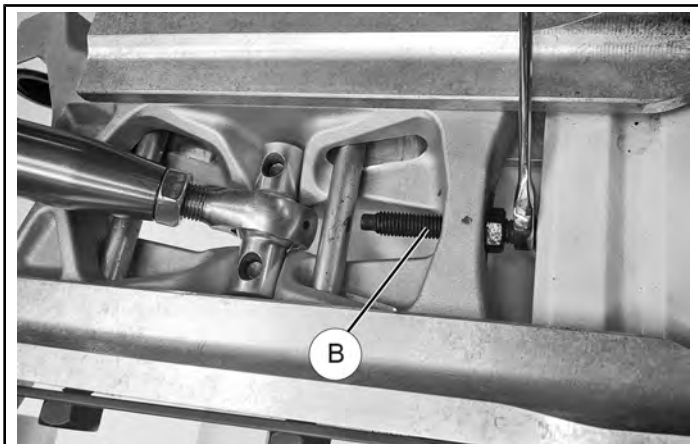
1. Install the engine chain and master link. First run the engine chain over the rear chassis chain guide slider then under and around the countershaft sprocket and the jackshaft sprocket. Next position the chain so you can wrap the two ends of the chain onto the jackshaft sprocket utilizing the sprocket teeth to hold the two ends of the chain in place. Thoroughly grease the master link pins and O-rings with the supplied grease before installing. If the chain is too tight to get the master link in:



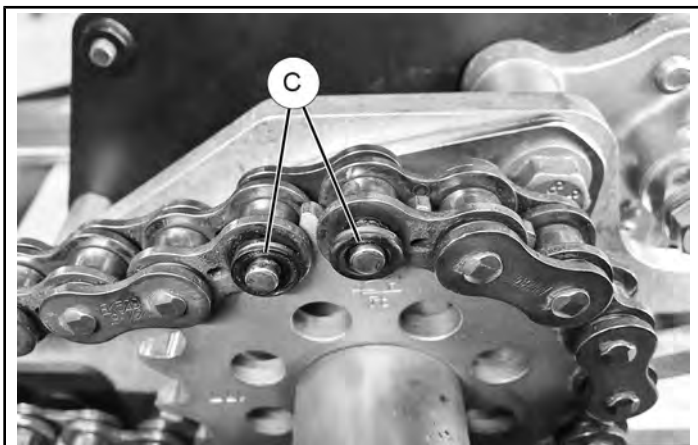
- a. First, loosen the two 15mm sub-frame pinch bolts **A** located on the right-hand side frame rail.



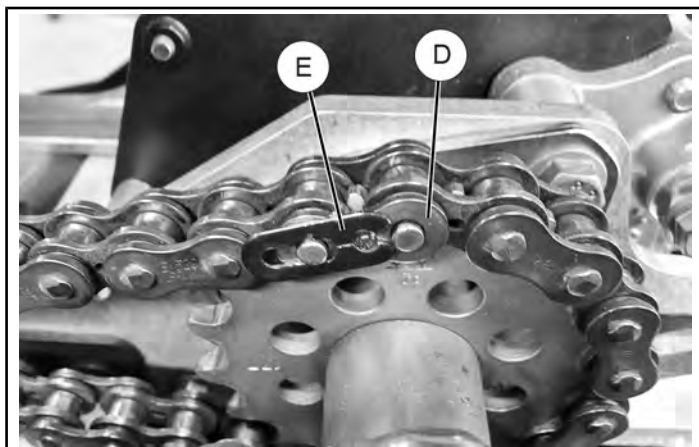
- b. Next, loosen the 13mm jam nut on the chassis's tensioner bolt. To achieve less chain tension thread the tensioner bolt **B** in a clockwise direction. This will pull the forged pivot forging into the frame rails to give you more slack in the chain making it easier to install the chain master link. To achieve more chain tension, thread the tensioner bolt out in a counter-clockwise direction.



2. Install the O-rings **C** and outer plate **D** by placing it on the pins and pressing it together with pliers.



3. Install the retaining clip **E** so that it is facing backwards of rotation.



## DRIVE CHAIN TENSION ADJUSTMENT

### 1. TFS models

- a. Position a ruler behind top chord of drive chain halfway between the counter shaft sprocket and the jack shaft sprocket. Position and steady ruler so it does not move as chain free-play is measured. Measure a total of  $\frac{1}{2}$ " to  $\frac{5}{8}$ " up and down free play on the top side of the chain. Do this by pinching the chain with your fingers and lightly pushing and pulling up and down. If the chain needs to be adjusted, loosen both 15 mm frame rail slide bolts located on the right side of the Timbersled. Next, loosen the 13 mm inner jam nut on inner frame tension adjuster bolt. Adjust tensioner bolt in or out to achieve the correct chain tension. Re-torque jam nut to below listed specification. Re-torque frame rail slide bolts to below listed specification. Adjust the bolt as needed and tighten the jam nut. Recheck again for proper adjustment.

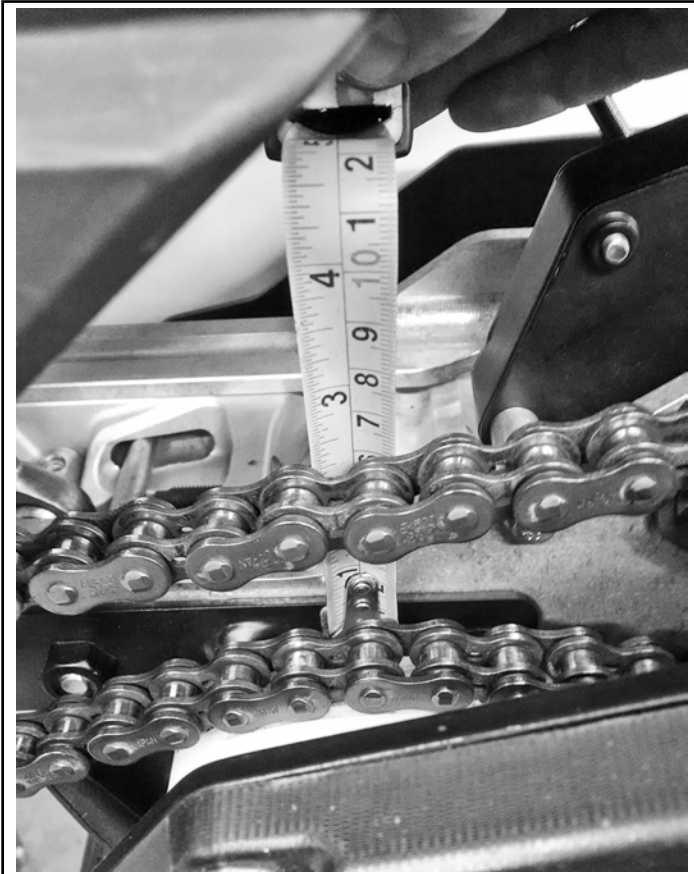
### TORQUE

**Jam Nut:** 25 Nm (18 ft/lbs)  
**Slide Bolts:** 50 Nm (37 ft/lbs)



## 2. TSS Models

- a. Adjust the chain so that it is taut to the touch (zero free play) at full extension of the TSS shock. If the chain needs to be adjusted, loosen both 15 mm frame rail slide bolts located on the right side of the Timbersled. Next, loosen the 13 mm inner jam nut on inner frame tension adjuster bolt. Adjust tensioner bolt in or out to achieve the correct chain tension. Re-torque jam nut to below listed specification. Re-torque frame rail slide bolts to below listed specification. Adjust the bolt as needed and tighten the jam nut. Recheck again for proper adjustment.



### TORQUE

**Jam Nut:** 25 Nm (18 ft/lbs)  
**Slide Bolts:** 50 Nm (37 ft/lbs)

### IMPORTANT

The chain will become looser as the TSS suspension compresses. It is extremely important that you keep the chain adjusted properly (taut) for long chain life and reliability.

## REAR ASSEMBLY

1. Install the supplied pre-filter onto the stock foam air filter.
2. Reinstall the exhaust system and frame guards if your bike has them.
3. Reinstall the side panels, seat, and required engine chain guards.

## FRONT END DISASSEMBLY

1. Remove the axle nut. Loosen the front axle pinch-clamp bolts and remove the front axle bolt.
2. Remove the wheel from the bike. The wheel will not be needed while the Timbersled Kit is installed.
3. Remove the fork guards. Retain for later use.

## SPINDLE INSTALLATION

### NOTE

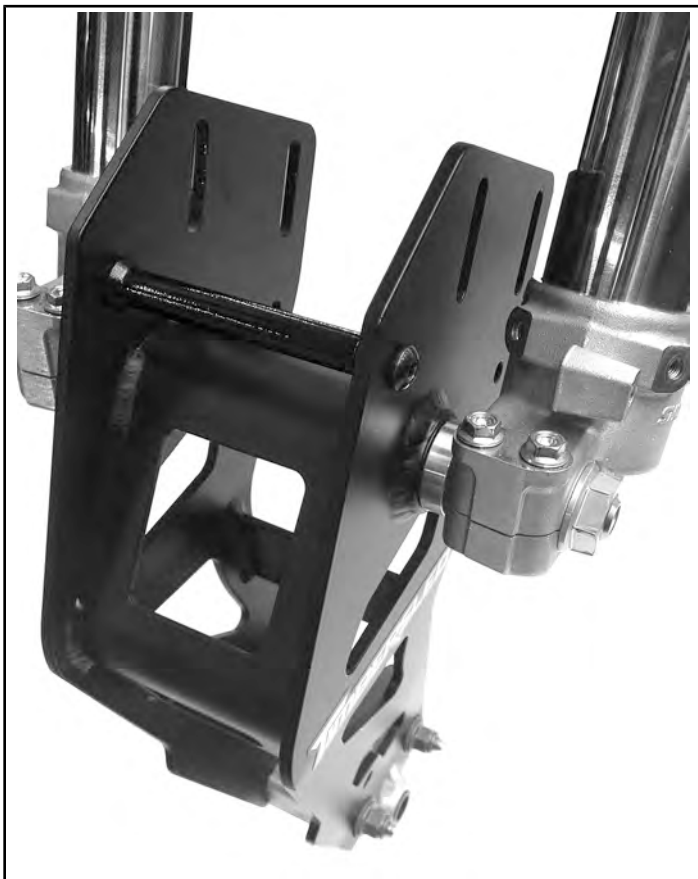
The Timbersled spindle is universal for all models of bikes.

1. Install the correct spacer/reducers for your make and model of bike into the left and right side of the spindle cross tube.

### NOTE

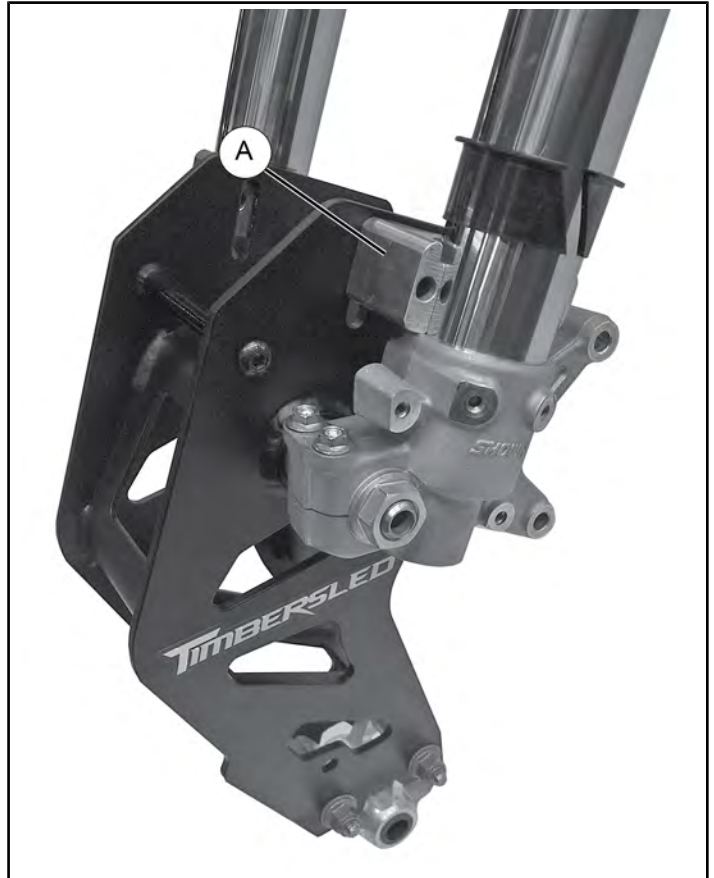
See the **Timbersled ARO Fitment Table** for your exact bike model to see the correct spacer/reducer placement. Some models have a 3-piece setup with a spacer/reducer on the left hand side with a tube style spacer that will fit into the center of the spindle and a washer style spacer on the right hand side.

2. Place spindle assembly into position with the concave side of the spindle facing towards the rear of the motorcycle. Slide in the stock front axle bolt (unless the fit kit is supplied with a Timbersled machined axle) and install the nut. **DO NOT TIGHTEN** any of the front end fasteners at this time.



3. Locate the inner fork clamps (A) and place them onto the inside face of the fork tubes in between the fork tube and the spindle with the fork seal relief groove facing up.

4. Slide both inner fork clamps (A) (less fork clamp cap) down between the spindle and fork tubes. Position them as low as possible on the fork tube.



### NOTE

Slide the brake-side clamp down on the fork tube as low as it will go first, then set the opposing side. Ensure that both left and right fork clamps are sitting at the same height.

5. Install the plastic split bushing (B) onto the fork tubes above the clamps with the bushing flange on the top. Slide the bushing down into the fork clamps so that bushing flange is all the way down inside the relief groove.

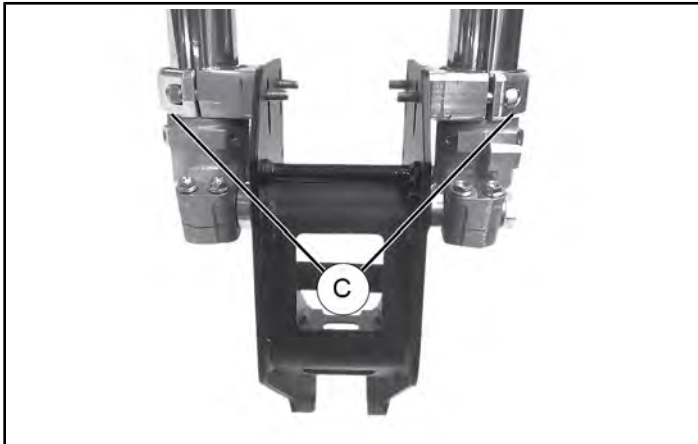


- Rotate the spindle forward and back until the fork clamp bolt holes line up with the slotted spindle holes. This will properly set the correct amount of trailing the ski will have in relation to the axle bolt.

### NOTE

To help hold the spindle in place while you work on it you can snug the axle nut and set the spindle on the ground. You can then tap the spindle back and forth to get the correct positioning.

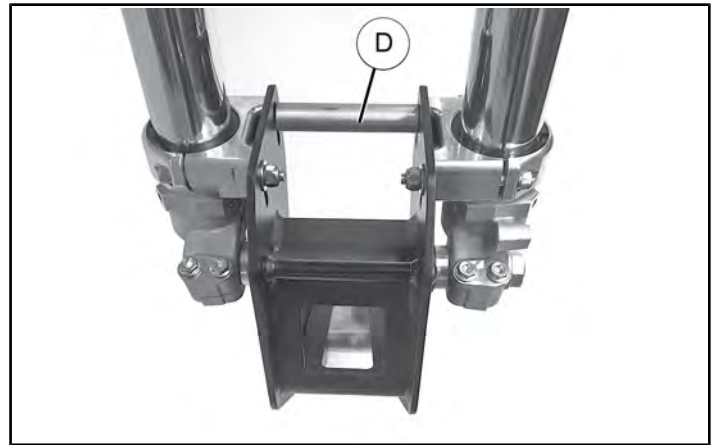
- Place the outer fork clamps © onto the lower assembly with the fork seal relief groove facing up and so that the split fork bushing flange is not pinched or crushed.



- Insert the 2.75" x 5/16" bolt in the front fork clamp bolt holes and the 3.0" x 5/16" bolt in the rear fork clamp bolt holes on both left and right fork clamps.
- On the rear fork clamp bolts, you will use the included spindle support cross shaft ① that the 3" bolts will thread into. This cross shaft will fit in-between the ears of the spindle and will provide support to the assembly. Use the provided flat washer and 5/16" lock nut on the inside of the spindle to secure the front fork clamp bolts. Torque the front and rear fork clamp bolts evenly to the specification listed below.

### TORQUE

25Nm (18 Ft. Lbs)



- If re-installing bike's stock front axle, see your bike manufacturers owner's manual for proper torque specifications. If using a front axle provided in your Timbersled Install Kit, torque the axle bolt to the specifications below.

### TORQUE

45Nm (33 Ft. Lbs)

- Tighten the lower fork tube pinch bolts to your bike manufacturers specified torque settings.
- Reinstall fork guards.

### NOTE

This step is optional as the fork guards will need to be modified if you choose to reinstall them.

13. To reinstall the fork guards, first hold the fork guard up into place and free hand draw a line where they will need to be cut to provide enough clearance between the fork clamp and the fork guard for reinstallation. Use tin snips to cut out this portion of the fork guards. Reinstall them on the bike using only the two outside screws. The inside screws will not be used due to the portion being cut away. Refer to the following three images for fork guard modification and installation.

*(Step 13 Cont'd.)*



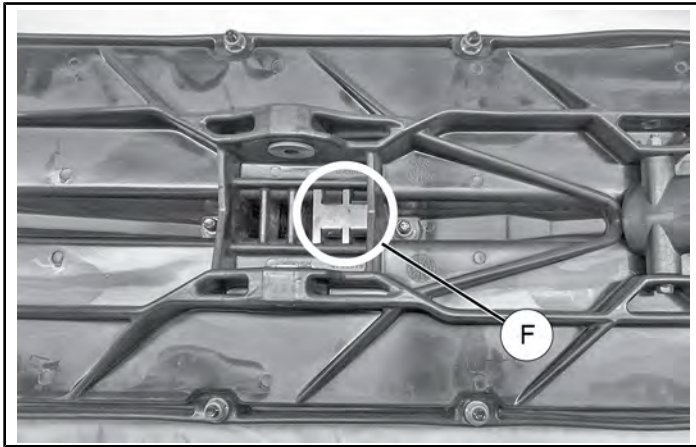


## SKI INSTALLATION

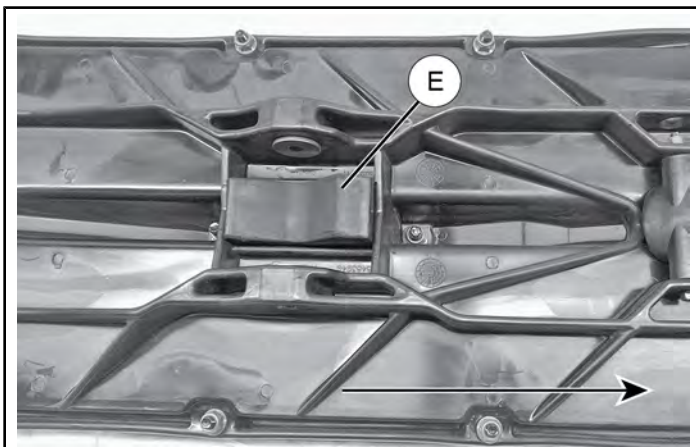
1. First, place the ski rubber support plate (D) into the center cradle of the ski. Make sure the four lower plate fingers drop fully down into the front two slots (F) in the ski cradle as indicated with the top T-shaped ears of the plate facing towards the rear of the ski.

### NOTE

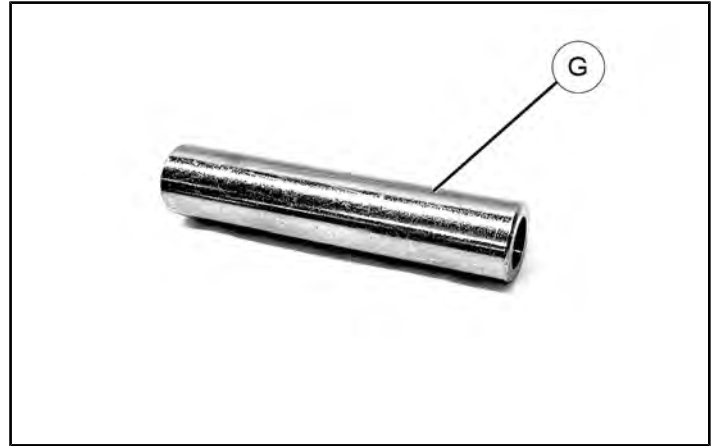
Arrows indicate forward (front) direction.



2. Next, place the ski rubber (E) into the ski cradle with the large thick portion of the ski rubber facing the front of the ski.



3. Place a coating of waterproof grease on the outer diameter of the ski collar (G). Install the ski collar into the lower ski bolt hole of the spindle block.





- Place ski, with ski rubber and ski rubber support plate installed, under the spindle. Lift up on the front of the ski to pull it up into place. Once in place, push the ski bolt through belleville washers, ski cradle ears, and spindle cradle to hold the ski in place. Make sure the concave surfaces of the belleville washers are facing in against the ski cradle ears.

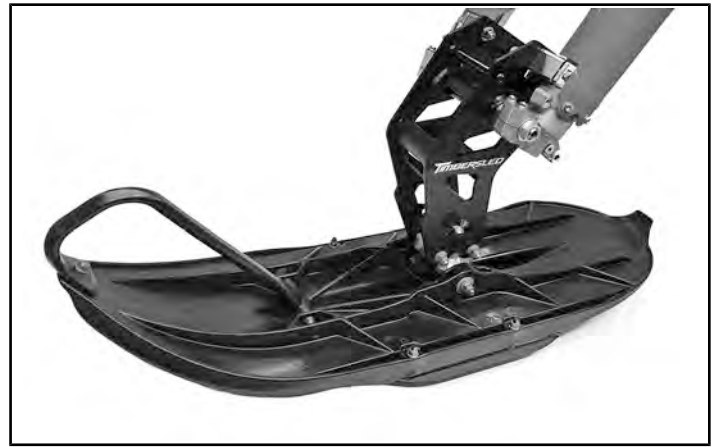
#### NOTE

It will be a tight fit between the ears of the ski bracket.

- Secure ski by installing the locking nut  $\textcircled{H}$  onto ski bolt and tighten. Torque nut  $\textcircled{H}$  to specification listed below.

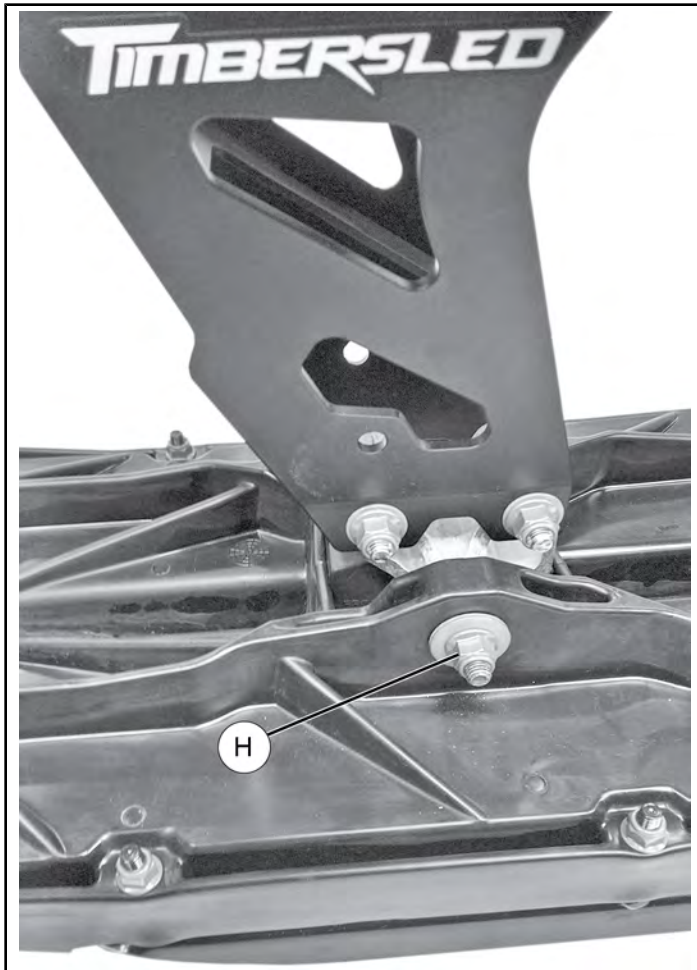
#### TORQUE

45 Nm (33 ft/lbs)



#### ⚠ WARNING

Failure to torque fasteners as directed will adversely affect the steering system and may lead to severe injury or death.



- Ensure all tools are accounted for and all steps have been completed in the correct order.

## FEEDBACK FORM

A feedback form has been created for the installer to provide any comments, questions or concerns about the installation instructions. The form is viewable on mobile devices by scanning the QR code or by clicking [HERE](#) if viewing on a PC.

