

# INSTALLATION INSTRUCTIONS Polaris Ranger Plow Mounting Kit

WARN Part Number: 71330
Application: Polaris Ranger 2002 and newer

Your safety, and the safety of others, is very important. To help you make informed decisions about safety, we have provided installation and operating instructions and other information on labels and in this guide. This information alerts you to potential hazards that could hurt you or others. It is not possible to warn you about all potential hazards associated with this product, you must use your own good judgment.

CARELESS INSTALLATION AND OPERATION CAN RESULT IN SERIOUS INJURY OR EQUIPMENT
DAMAGE. READ AND UNDERSTAND ALL SAFETY PRECAUTIONS AND OPERATING INSTRUCTIONS
BEFORE INSTALLING AND OPERATING THIS PRODUCT.
This guide identifies potential hazards and has important safety messages that help you and others avoid personal

This guide identifies potential hazards and has important safety messages that help you and others avoid personal injury or death. **WARNING** and **CAUTION** are signal words that identify the level of hazard. These signal words mean:

<u>A WARNING</u> signals a hazard that *could* cause serious injury or death, if you do not follow recommendations. <u>ACAUTION</u> signals a hazard that *may* cause minor to moderate injury, if you do not follow recommendations.

This guide uses **NOTICE** to call attention to important mechanical information, and **Note**: to emphasize general information worthy of special attention.

#### **A WARNING INJURY HAZARD** Failure to observe these instructions could lead to severe injury or death. Always Read the Plow Operator's Manual, the Winch Operator's Manual and all warning labels before operating. Always use extreme caution when drilling on any vehicle. Make sure that all fuel lines, brake lines, electrical wires, and other objects are not punctured or damaged when/if drilling on the vehicle. Thoroughly inspect the area to be drilled (on both sides of material) prior to drilling, and relocate any objects that may be damaged. Failure to inspect the area to be drilled may result in vehicle damage, electrical shock, fire or personal injury. Always wear safety glasses when installing this kit. A drilling operation will cause flying metal chips. Flying chips can cause eye iniury. $\Box$ Always use extreme caution when cutting and trimming during fitting. Always remove jewelry and wear eye protection. Never lean over battery while making connections. $\Box$ Never route electrical cables: Across any sharp edges. 0 Through or near moving parts. 0 Near parts that become hot. Always insulate and protect all exposed wiring and electrical terminals. Always install terminal boots as directed in installation instructions. Always use appropriate and adequate care in lifting components into place. Always insure components will remain secure during installation and operation. Always tighten all nuts and bolts securely, per the installation instructions. Always operate the vehicle at a walking speed with the blade installed. Never exceed 5 mph (8 km/h), even with blade up. Always plow cautiously, impact with hidden or stationary object may cause the vehicle to stop suddenly or go out of control. Never operate the vehicle on slopes greater than 10 degrees with the plow installed. Never stand or ride on the plow. Always stay clear of moving parts and joints. Always keep others away when operating or adjusting plow. Always perform regular inspections and maintenance on the plow mechanism, fasteners, cable and related hardware. Always replace all worn or damaged parts before operating. **Never** operate this WARN product with damaged or missing parts. Always drive slowly over bumpy and rough terrain. Driving at speeds that cause the plow to bounce while in the up position can cause the winch to back-drive, causing the plow to work its way down. This may result in the plow impacting a stationary object and cause damage to the vehicle and operator injury or death. Always drive at speeds such that the plow does not bounce and be aware of the plow position while driving at all times. Always be aware that the purpose of the j-bolt is to break the connection between the plow and the winch, to prevent serious damage to the ATV if the plow is raised too high. The plow blade will drop suddenly if the j-bolt breaks, so always be sure there are no bystanders when you raise and lower the plow. Never raise the top of the plow above the headlights of the ATV, as it may damage the vehicle and plow. Always replace a deformed or broken j-bolt with the spare j-bolt included in the kit.

## NOTE:

- ☐ Plow system is not intended for commercial use or applications
- Plow system may be incompatible with other accessories

# **Before You Begin**

This kit also requires a Plow Blade kit, Utility Vehicle Plow Base kit, and a WARN winch mounted in the factory location for raising and lowering the plow. Please contact your nearest dealer for part numbers. Please note that the plow blade may be installed to the plow base prior to installing the plow mount. *The plow support, in this kit, cannot be installed to the plow base prior to installing the plow mount.* 

Right hand and left hand nomenclature throughout this document is with reference to side viewed from the operators position.

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# I. Tools Required

• Sockets: 3/8", 7/16", 1/2", 9/16", 3/4"

• Wrenches: 17mm, 3/8", 7/16", 1/2", 9/16", 11/16",

3/4"

• Allen wrench: 1/8"

Screwdrivers

Ratchet

Small hammer

· Grease or lubricant

· Electrical tape

• Drill

• 1/2" drill bit

# **II. Torque Specifications**

Please use the recommended torque specifications when assembling this product unless otherwise specified in the instructions.

#6 diameter screw:

3 ft-lbs (4 N-m)

#10 diameter bolt and nuts:

4 ft-lbs (5.5 N-m)

7 ft-lbs (9.5 N-m)

5/16" diameter bolt and nuts:

12 ft-lbs (16.5 N-m)

3/8" diameter bolt and nuts:

20 ft-lbs (27 N-m)

7/16" diameter bolt and nuts:

30 ft-lbs (41 N-m)

## **III. Parts List**

Part #	<u>Qty</u>	<u>Description</u>
72163 72164 72174 72176 72668 72455 70459 72167 72168 72474 72123 72056	1 1 1 1 1 1 4 1 1 2 2	Right outer plow mount Left outer plow mount Right inner plow mount Left inner plow mount Cross brace Plow support Links Right stand Left stand Retaining plate Latch bracket Latch
63345 63241 70567	2 2 2	#10 dia x 5/8" long bolt #10 nylon lock nut Detent pin with lanyard
1320 2514 6725	4 4 4	1/4" flat washer 1/4" dia x 1-1/2" long bolt 1/4" dia nylon lock nut
1324 2002 61262	4 4 2	5/16" flat washer 5/16" nylon lock nut 5/16" dia x 1 1/2" wide x 2 1/4" long U-bolt
1827 6960 6779 61822	2 4 10 4	3/8" dia x 1" long bolt 3/8" dia x 1-1/4" long bolt 3/8" dia nylon lock nut 3/8' dia x 1 3/4" long bolt
1824 7676 710123 70566 29060 67622 68716 72685	4 8 4 6 6 4	7/16" dia x 1 1/4" long bolt 7/16" flat washer 7/16" dia nylon lock nut 1/2" dia x 3" long bolt 1/2" dia nylon lock nut 5/8" outer dia x 3/4" long bronze spacer 1" outer dia x 1-5/8" long spacer 1/4" inner dia x 1/4" long spacer

## IV. Installation

#### IV. A. Plow mount installation

 Prior to installing the plow mount the vehicle must be prepped. If not already done so, install a WARN winch kit.



Figure 1 Polaris Ranger with WARN winch kit.

2. Begin by locating the four plow mount brackets in the kit and assemble. The inner and outer pieces inter lock together. See Figure 2 and 3.



Figure 2 Left side mounting brackets.

3. Insert the four 5/8" dia x 3/4" long bronze spacers between the flanges of the mounting brackets with the 3/8" dia x 1/3/4" long carriage bolts and terminate with 3/8" lock nuts. See Figure 3.



Figure 3 Install bolts and bronze spacers to bracket

4. If the plow mounting kit is being installed on an 02-04 Polaris Ranger, the bumper skid pan will need to have a hole pattern drilled in it. If the ranger is an 05 and newer skip to step 7. See Figure 4 and 5.

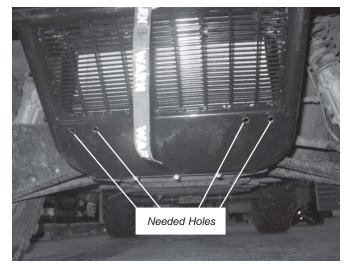


Figure 4 Holes to be drilled in bumper

5. It is easiest to remove the front bumper for laying out and drilling the hole pattern. Loosely install the left and right mounting bracket assemblies using the 5/16" U-bolts, flat washers, and lock nuts. Place the cross brace along the backside of the bumper and bolt to mounting bracket assemblies using 3/8" x 1" bolts and lock nuts. See Figure 5.

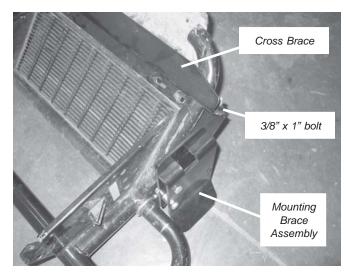


Figure 5 Install bracket and cross brace

 Remove the plow support from the kit and place on the ground. The plow support will be used to ensure the mounts are square prior to drilling the holes in the bumper. Install the bumper assembly over the plow support. See Figure 6, 7 and 8.

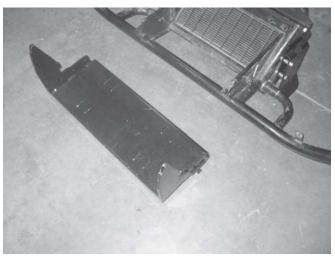


Figure 6 Plow support and bumper layout

 With the assembly sitting on the plow support and the mounting bracket sitting square to the flanges on the plow support the bumper can be marked and drilled for the 7/16" hardware. Four holes will need to be drilled.



Figure 7 Bumper assembly sitting on support

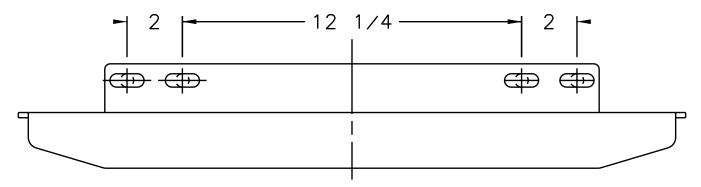


Figure 8 Hole location dimensions

 If not already done so, install the cross brace to the back side of the front bumper. Install the two inner 7/16" x 1 1/4" bolts, washers and lock nuts. Do not tighten at this point. Washers go on both bolt and nut sides. See Figure 9.

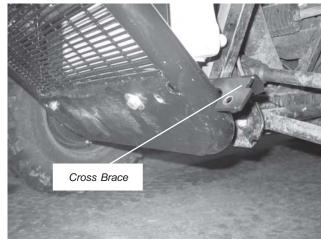


Figure 9 Location of cross brace.

If not already done so, loosely install the left and right mounting bracket assemblies using the 5/16" x 1 1/2" U-bolt, flat washers and lock nuts. Loosely install the lower 7/16" x 1 1/4" bolts, washers and lock nuts. See Figure 10.

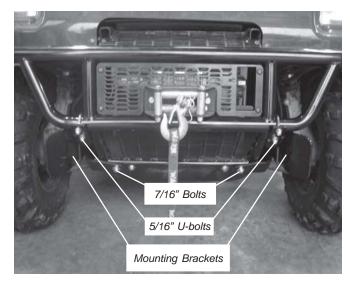


Figure 10 Installation of mounts.

- 9. With the support inserted into the mounting brackets, use two screw drivers, one on each side, to position the mounting brackets centered on the plow support flanges. See Figure 11 and 12. With the brackets centered to the support and square to the vehicle and screw drivers in place, tighten down all mounting hardware in the following order:
- 7/16" hardware, mounting bracket to cross brace
- 5/16" dia x 1 1/2" wide x 2 1/4" long U-bolt, mounting bracket to bumper tube
- 3/8" dia x 1" long bolts, mounting bracket to cross brace

Screw drivers used for alignment and plow support can now be removed.



Figure 11 Positioning screwdrivers for alignment

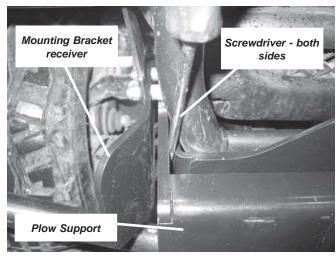
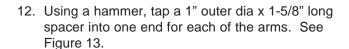


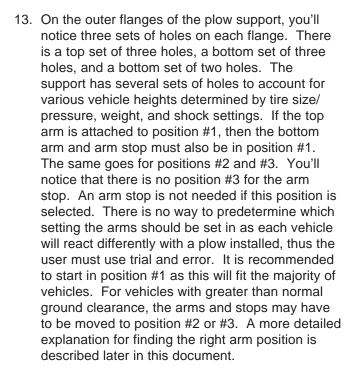
Figure 12 Mounting bracket alignment with screwdriver

#### IV. B. Plow support installation

 If not already done so, assemble the plow base and blade per the instructions found with the plow blade.

11. Take the plow arms, and generously grease the inside of the bushing on both ends. Tap one end of the arm over the bearing rods of the plow base. See Figure 13. It is normal for powdercoating to be removed during the process. Rotate the arm back and forth until it moves freely around the bearing rod. Add more grease if necessary.





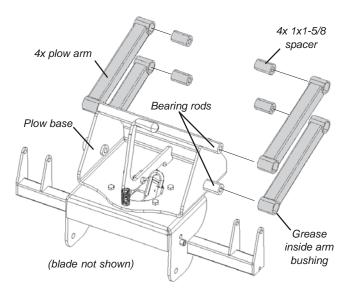


Figure 13 Install plow arms onto plow base

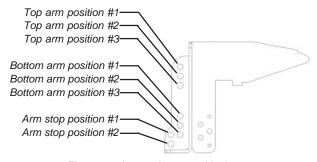
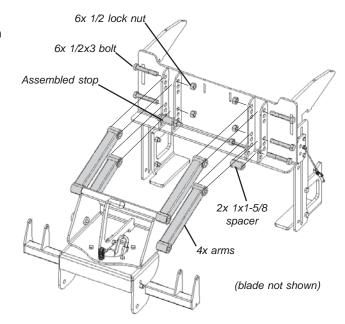


Figure 14 Arm and stop positioning

## **A** WARNING

Do NOT mix and match position settings for the arms and arm stops. Doing so will cause the plow to act erratically and possibly damage the plow during operation. Additionally, failure to place the arm stops in the proper position, or failure to use them when instructed to, can cause the plow to eject vehicle occupants when hitting a stationary object leading to severe injury or even death.

14. Insert a 1" outer dia x 1-5/8" long spacer in arm stop position #1 between one set of outside flanges. Slide a 1/2" dia x 3" long bolt through arm stop position #1 of the outside flange, through the spacer, and out the other side of the flange. See Figure 15. Terminate the bolt with a 1/2" dia nylon lock nut.

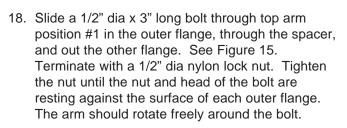


15. Place the end of each bottom arm between the outside flanges and align them to bottom arm position #1. See Figure 14. Rotate the top arms up and out of the way if they interfere with the installation.

Figure 15 Install plow arms and stops onto support

16. Slide a 1/2" dia x 3" long bolt through bottom arm position #1 in the outer flange, through the spacer, and out the other flange. See Figure 15. Terminate with a 1/2" dia nylon lock nut. Tighten the nut until the nut and head of the bolt are resting against the surface of each outer flange. The arm should rotate freely around the bolt.

17. Place the end of each top arm between the outside flanges and align them to top arm position #1. See Figure 14.



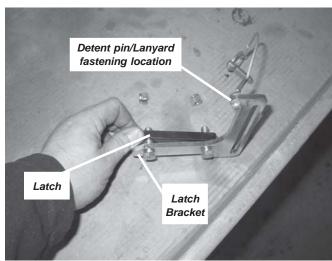


Figure 16 Latch assembly left hand side.

19. Next, attach the detent pin and lanyard to the outer plate with a #10 dia x 5/8" long bolt and terminate with a #10 nylon lock nut. See Figure 16

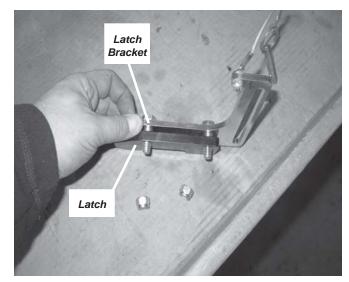


Figure 17 Latch assembly right hand side.

20. Attach one of the latches to a latch bracket. Use two 3/8" dia x 1-1/4" long bolt and 3/8" nylon nuts. See Figure 16 and 17 for part orientation for right hand and left hand latch assemblies.

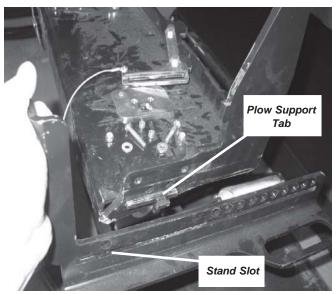


Figure 18 Install stand, right hand side shown

21. Install stand to plow support by inserting tab through slot. See Figure 18 and 19.



Figure 19 Install stand slot to plow support tab

22. Install latch assembly to top edge of stand and up against the side of plow support. See Figure 20.

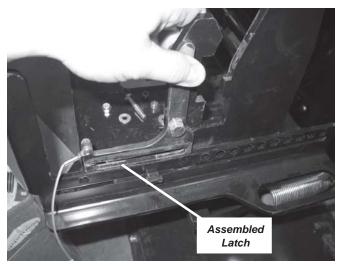


Figure 20 Install latch assembly to stand and plow support

23. Install from the inside two 1/4" dia x 1-1/2" long bolts through the plow support and latch assembly. See Figure 21.

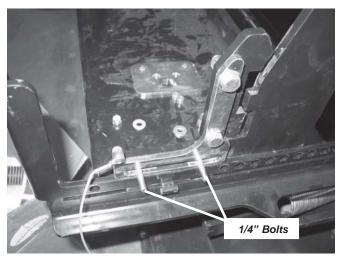


Figure 21 Install 1/4" bolts

24. Install 1/4" inner dia x 1/4" long spacers on each of the 1/4' bolts making sure that the spacers are fully engaged in the slot of the latch assembly. See Figure 22.

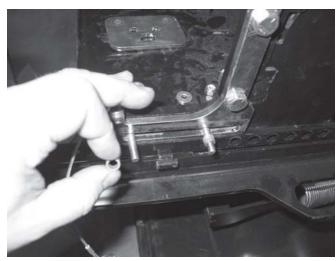


Figure 22 Install spacers on 1/4" bolts

25. Carefully push bolts back through until they are flush with the latch bracket. See Figure 23.

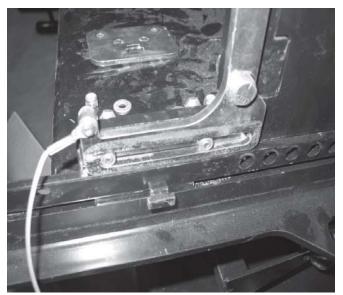


Figure 23 Push 1/4' bolts and spacer back flush

26. Install retainer plate slot over tab on plow support and push down to engage tab. Retainer plate holes should now be in alignment with 1/4" bolts. See Figure 24.

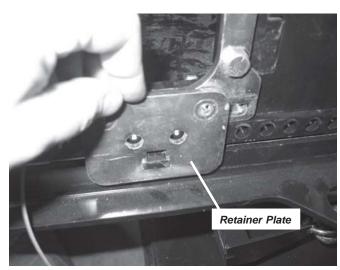


Figure 24 Install retainer plate to plow support tab and engage

27. Push bolts back through latch bracket and retainer plate. See Figure 25.



Figure 25 Push 1/4" bolts back through

- 28. Terminate the ends of the bolts with two 1/4" dia nylon lock nuts and 1/4" flat washers. See Figure 26. Tighten just snug and then loosen 1/8-1/4 turn. The stand should move freely up and down on the support. If stand does not move freely then loosen additional incremental amounts. Until latch and stand move freely. Repeat from step 19-26 for other side.
- 29. Lift the support off the ground until the bottom arms rest against the arm stop. See Figure 27.

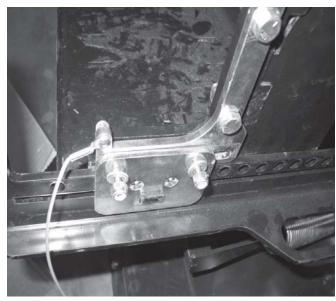


Figure 26 Install 1/4" washers and nuts

30. Place a detent pin in one of the two holes. See Figure 27. Place the other detent pin in the same hole on the opposite side.

31. If not already done, install a blade to the base following blade and base kit instructions. Be sure both plow skids are in the blade. Rock the support until both feet are flat on the ground. At this point, the feet, skids, and edge of the plow blade should all be resting flat on the ground. If not, adjust the plow skids or detent pins as needed.

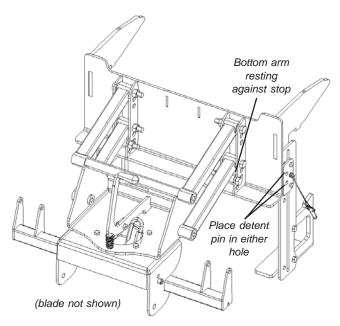


Figure 27 Assembled plow support and base

## **A** CAUTION

Use proper lifting techniques when lifting the plow support. Bend at the knees, not your waist, and lift with your legs. Lifting with poor technique can lead to back injury. The support is heavy, so assistance may be required.

#### V. Calibration

- Set up the plow support and blade on level solid ground. Operate the winch to extend hook and cable out approximately three feet. Drape extended hook and cable over bumper tube. Do not hook to vehicle bumper.
- 2. Load the vehicle and set the vehicle settings as you would during plowing.
- Drive the vehicle up to the plow support and align the receivers on the plow mount to the receivers on the plow support. See Figure 28. Stop just before the plow support receivers enter the mount receivers.
- Turn off the vehicle and set the parking brake.
   Walk around to the front to inspect for receiver alignment.
- 5. Check to see if the bottom edge of the plow support receiver is at the same approximate height as the bottom surface of the plow mount, that is they are aligned properly vertically. If they are at various heights, follow the steps below:

Bottom edge of support receiver is HIGHER than the bottom surface of the plow mount:

- Check that the tires have proper air pressure.
- If adjustable, adjust the shock settings to raise the vehicle.
- If the tire pressure is correct, and the shocks are raised to there highest setting, then lower the plow support by removing the detent pins, lowering the plow support by one notch, and reinserting the detent pins in a different location.

Bottom edge of support receiver is LOWER than the bottom surface of the plow:

- Check to make sure that the vehicle is loaded as it would during plowing and have someone sit in the driver seat.
- If the vehicle is properly loaded, then switch the arm and arm stop settings from position #1 to position #2 as described earlier in this document.

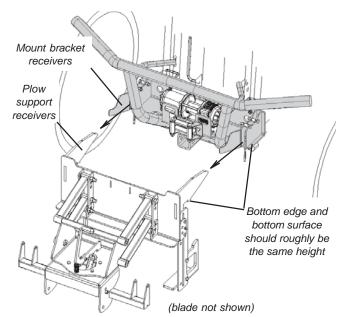


Figure 28 Align receivers and drive up to plow support

Check to see if the bottom edge of the support receiver is now higher than the bottom plow mount surface. If so, follow the steps in the section above.

- If the arms and arm stops are in position #2, and the bottom edge of the receiver is still lower than the bottom surface of the plow mount, then remove the arm stops and switch the arm settings from position #2 to position #3 as described earlier in this document. Check to see if the bottom edge of the support receiver is now higher than the bottom plow mount surface. If so, follow the steps in the section above.
- If the arms are in position #3, and the bottom edge of the support receiver is still lower than the bottom surface of the plow mount, then lower the shock settings on the vehicle until the desire height is reached.
- Once the receivers are aligned, get back in the vehicle and slowly drive the vehicle into plow support until the support fully engages into the plow mount.
- 7. Turn off the vehicle, set the parking brake, and walk over to the plow support. Check to make sure that the plow support receivers are fully engaged in the plow mount. You may have to push on the plow support or pull on the plow to get the receiver to go in as far as possible.
- 8. Pull the detent pin out in one of the legs, firmly slide and lift the stand until it locks fully into the plow mount, place the detent pin back into the bottom hole in the plow support. See Figure 30. Repeat on the other side.
- Double check that the plow is fully engaged into the system. Pull and push on the plow blade to ensure nothing on the plow mount or plow support moves. The blade should be solidly attached to the vehicle.
- 10. The calibration of the plow is now complete. Calibrate the plow every time new tires are added to the vehicle, the shock settings are changed, or weight is added/removed from the vehicle. Perform calibration at least once a season even if nothing has changed on the vehicle.

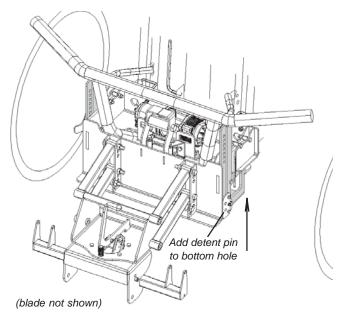


Figure 29 Lock feet into plow mount, install detent pins

## VI. Operation

#### VI. A. Attaching the plow to the vehicle

- Set up the plow support and blade on level solid ground. Operate the winch to extend hook and cable out approximately three feet. Drape extended hook and cable over bumper tube. Do not hook to vehicle bumper.
- SLOWLY drive the vehicle up to the plow support and align the receiving flanges on the plow mount to the receivers on the plow support. See Figure 28. Stop the vehicle when the support is fully engaged in the plow mount.
- 3. Turn off the vehicle, set the parking brake, and walk over to the plow support. Check to make sure that the support receivers are fully engaged into the plow mount. You may have to push on the plow support or pull on the plow to get the receivers to go in as far as possible.
- Pull the detent pin out in one of the stands, lift the stand until it locks fully into the plow mount, place the detent pin back into the bottom hole in the plow support. See Figure 30. Repeat on the other side.
- Double check that the plow is fully engaged into the system. Pull and push on the plow blade to ensure nothing on the plow mount or plow support moves. The blade should be solidly attached to the vehicle.
- 6. Attach the winch hook onto the quicklink located on the plow base. See Figure 30.
- 7. Turn the ignition switch to ON, and operate the winch to lift and lower the plow. The plow is now ready for operation and should look like Figure 31.

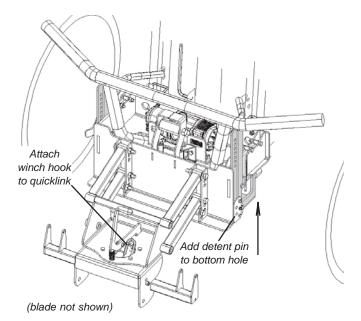


Figure 30 Attach plow to vehicle

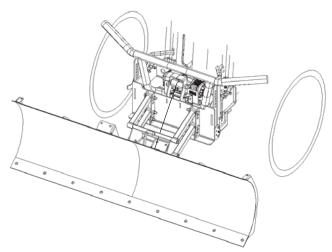


Figure 31 Plow attached to vehicle

#### VI. B. Operating the plow

- Press IN on the switch to lift the plow, press OUT on the switch to lower the plow.
- Avoid lifting the plow to the point it stalls against the vehicle. Doing so will cause excessive cable wear and may potentially damage the plow system.
- To angle the plow blade, turn off the vehicle and set the parking brake on lever ground. Walk to the front of the plow blade and pull the red handle toward the blade. Pull on the edge of the plow that you want the blade to rotate to. Release the red lever and rotate the blade until the lever locks the blade into position. If you are having trouble rotating the blade on the ground, lift the blade an inch off the ground before rotating.
- WARN tells customers not to drive vehicles above 5 mph (8 km/h) with a plow installed. Risk of vehicular damage and bodily injury increases with speed.
- NEVER operate the plow or winch with persons near the plow blade, winch, or vehicle.

#### VI. C. Removing the plow from the vehicle

- 9. Drive to an area with level solid ground. Turn off the vehicle, set the parking brake, and walk over to the plow support.
- 10. Remove the winch hook from the quicklink on the plow base. Do not hook to vehicle bumper.
- 11. Remove the detent pin for one of the stands. Drop the stand feet flush onto the ground. The latch should drop disengaging the support. If the latch does not drop, pull on the lanyard cable while lifting on the plow support. Place the detent pin back in one of the two holes on the side of the plow support retainer plate. You may have to lift a side of the support slightly to get it into a hole.
- 12. Repeat the previous step on the other side. Place the detent pin in the same location in the stand as the other side.
- 13. Walk back to the vehicle and turn it on. SLOWLY backup the vehicle in a straight line until it is clear of the plow support and blade. Plow removal is complete.

# VII. Tips/Troubleshooting

- Avoid engaging or removing the plow from the vehicle on uneven, sloped, or soft ground. Doing so may
  misalign the receivers and make it impossible for proper engagement and disengagement. If you have no
  choice, drive the vehicle up to the plow support receivers. Turn off the vehicle and set the parking brake, then
  manually push the support into the mounting receivers. To remove the plow, turn off the vehicle and set the
  parking brake, detach the winch cable and drop the feet, then manually pull the plow support out of the
  mounting receivers.
- If you are having trouble getting a latch to engage the plow mount, it may need some simple adjustment. With the stands in the down position, push the plow support receivers into the plow mount as far as it will go. Loosen the two 3/8" dia bolts holding the latch to the latch bracket. Raise the stand up against latch engaging it into the plow mount and reinsert the detent pin into the bottom hole. Retighten the 3/8" dia bolts on the latch assembly. Remove the detent pin and slide the stand up and down to verify the problem has been fixed.
- If the plow support stand feet don't stay flat on the ground, you may need to adjust the plow skids on the blade. Check to make sure that a plow skid is located on each side of the plow blade. Next check to make sure that both skids, the edge of the plow blade, and both support feet are flat on the ground at the same time. If not, remove the skid clips so the skids float freely in the skid sleeve. Adjust the plow support until both stand feet and the edge of the plow blade are all firmly on the ground. Position the skids such that they both touch the ground and reinsert the skid clips.
- After using the plow, the winch cable may begin to tangled around the drum. To fix this, pull off the plow assembly and freespool the cable out of the winch. Once the tangled cable is pulled off the drum, switch the winch out of freespool and winch the cable neatly back around the drum. Do NOT grab the cable or winch hook, instead use the winch strap provided with your winch and follow the guidelines as described in the winching guide. Stop as the hook becomes snug with the fairlead roller.

#### VIII. Maintenance/Care

- Inspect all metal parts on the plow, plow mount, and related hardware prior to each use. Replace all parts that appears rusted or deformed.
- Inspect all nuts and bolts on the plow, plow mount, and related hardware prior to each use. Tighten all nuts and bolts that appear to be loose. Stripped, fractured, or bent bolts or nuts must be replaced.
- Check all cables prior to use. Replace cables that are worn or frayed.
- Check all moving and rotating parts. Remove debris that may inhibit the part from moving freely.

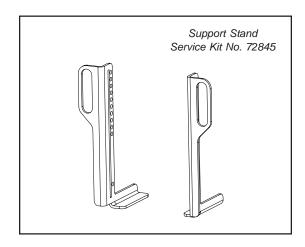
#### **AWARNING**

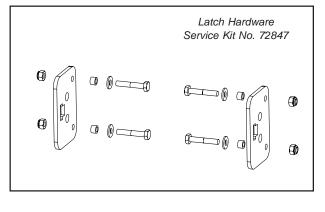
Failure to perform regular inspections and maintenance on the plow, plow mount, winch, and related hardware may result in vehicle damage and operator injury or death.

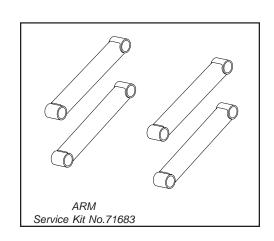
If you are having problems with your plow, please follow the steps below:

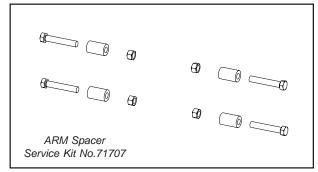
- 1. Reference the installation instructions for tips or notes.
- 2. Contact the dealer where you purchased the kit.
- 3. Call an authorized WARN Service Center from the warranty sheet included in the kit. Please have the following information available before calling; part number (listed on front of instructions), date of purchase, and make, model, and model year of ATV.
- 4. Contact WARN customer service at 1-800-543-9276 or www.warn.com. Again, please have the following information available before calling; part number (listed on front of instructions), date of purchase, and make, model, and model year of ATV.

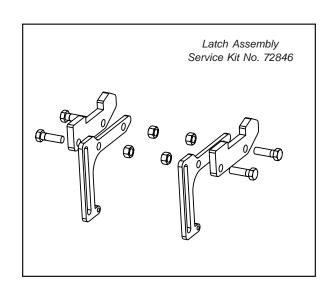
The following replacement part kits are available for purchase.

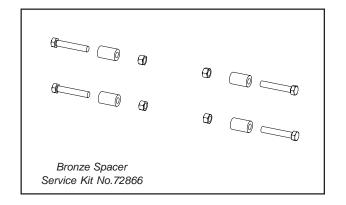


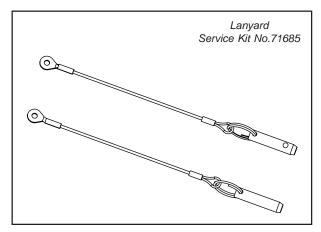












Contact your nearest WARN Dealer to order. To find a dealer nearest you, please call the WARN Dealer locator line at 1 800-910-1122