



**Assembly
&
Installation Instructions**
FOR
28 SERIES SNOWPLOW
PIVOT ASSEMBLY AND FLOAT LIMITER 99103000

FOR SERIAL NUMBERS

28D100000

TO

28D100770



1. THINK SAFETY, ALWAYS WEAR SAFETY GLASSES WHEN PERFORMING THE OPERATIONS PRESCRIBED IN THESE INSTRUCTIONS
2. READ ALL INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING INSTALLATION
3. BEFORE BEGINNING WORK MAKE SURE TO SET PARKING BRAKE AND CHOCK WHEELS

ASSEMBLY TOOLS NEEDED

Sockets	7/16" – 1-1/8"
Wrenches	7/16" – 1-1/8"
Torque Wrench	
Large Cold Chisel	
2-1/2 lb. Hammer	
1/2" Punch	

MOUNTING INSTRUCTIONS

Removing Old Pivot Frame:

1. Move the vehicle with plow attached to a flat, clear safe work area. Extend both wing cylinders to put the plow in the scoop position, lower the plow to the ground, set the vehicle park brake, turn off the vehicle ignition and remove the key from the ignition switch.

NOTE: The following procedures can be accomplished with the plow removed from the vehicle. Be sure that the Main Frame is properly supported on a flat, clear safe work area before beginning.

NOTE: If plow has been removed from vehicle begin installation with step #2 . If plow has not been removed from vehicle begin instalation with step #4.

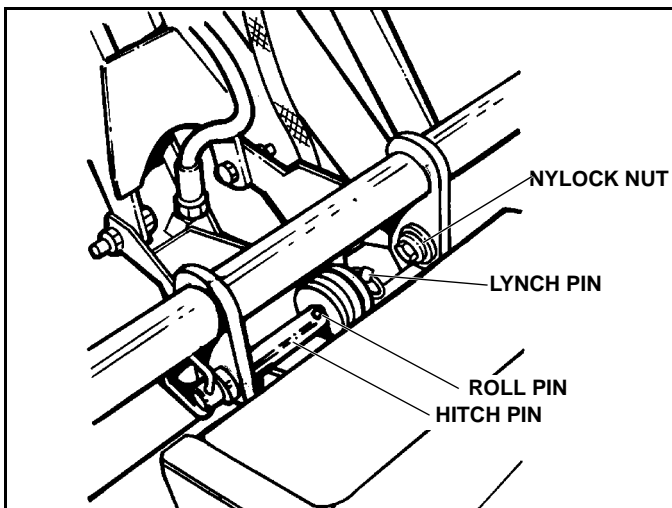


Figure 1-1

2. Remove the Lynch Pin and Roll Pin securing the Hitch Pin in the Lift Bar. Remove Hitch Pin.

3. Remove Nylock Nut and Capscrew retaining Light Bar to Lift Bar. Roll Light Bar Assembly out of the way. (See Figure 1-4)

4. Remove the 5/16" Capscrews and the two 1/2" Capscrews which retain the center deflector and remove the center deflector.

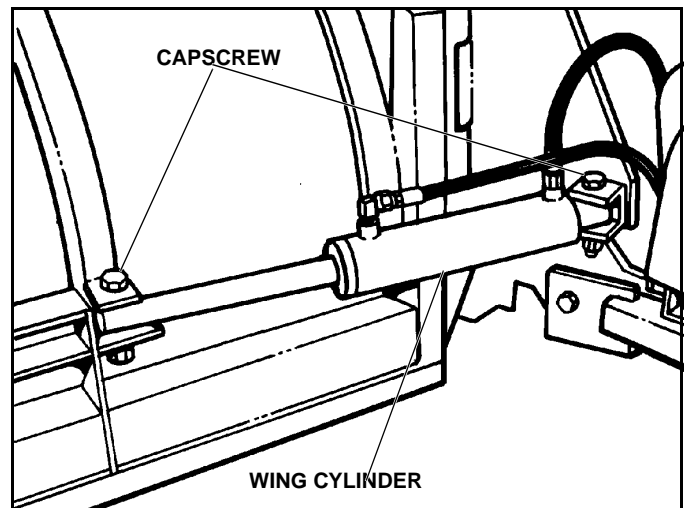


Figure 1-2

5. Remove the Capscrews and nuts securing the wing cylinders to the wings and the center blade assembly. Remove the cylinders, place each cylinder along side the main frame and secure to the sides of the main frame with wire or strapping to prevent damage to the cylinders or hoses during the following operations.



WARNING

Be sure to secure the wings in the scoop position.
FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

6. Swing the blades to the forward "Scoop" position and secure.

NOTE: A Nylon tie down hooked from the Disk Shoe Mount, around the front of the blades, to the opposing Disk Show Mount can be used to secure the blades in this position.



WARNING

Use extreme care when using oxy-acetylene torch.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

NOTE: It is recommended that a thermal blanket or shield be used to protect the hydraulic hoses and the Power Pack to prevent damage from sparks and hot metal.

IMPORTANT: Make sure that the area around the eye bolts is clear of oil and any flammable debris.

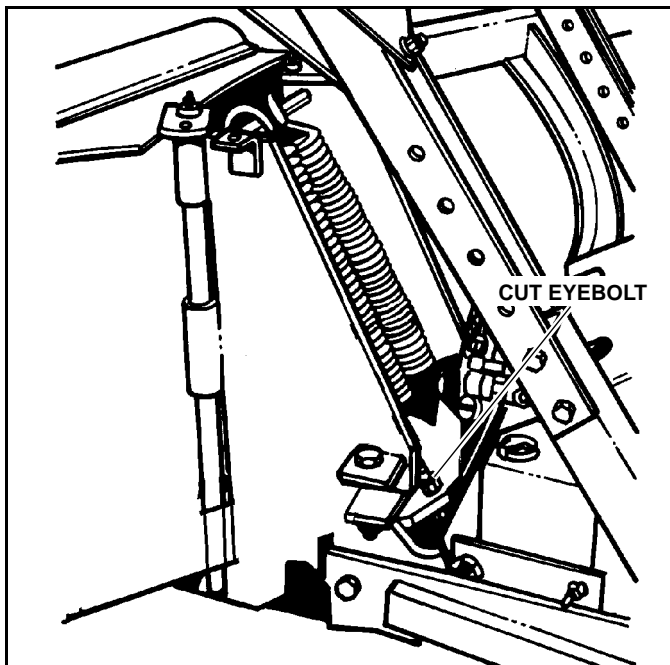


Figure 1-3

7. Use an oxy-acetylene cutting torch to cut the two (2) Eyebolts securing the Trip Springs to the Pivot Section (this does not require a clean cut because the remaining portion of the Eyebolts can be discarded with the Pivot Section.)

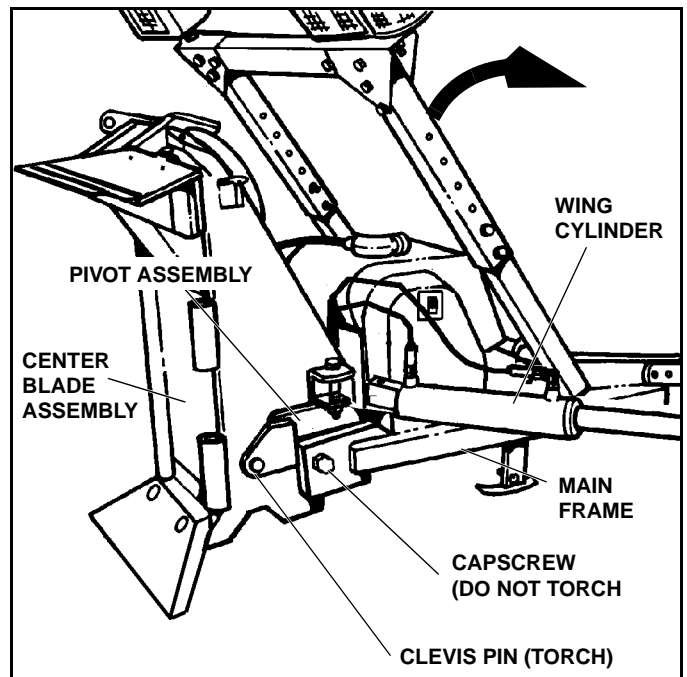


Figure 1-4

8. Using the cutting torch, taking care to aim the flame away from the Pivot Tubes, cut off the heads of the two Clevis Pins which attach the Center Blade Assembly to the Pivot Assembly. Use a hammer and punch to drive the remaining portion of each Clevis Pin inward to separate the center blade assembly from the Pivot Assembly.



WARNING

The Center Blade Assembly and Wings are heavy! Use care when moving to avoid off balance conditions and Pinch Points between Center Blade Assembly and Main Frame or Pivot Assembly.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

9. Move the Wings, with attached Center Blade Assembly, far enough away from the Main Frame to provide easy access to the fasteners securing the Pivot Assembly to the Main Frame.

IMPORTANT: DO NOT use a cutting torch to remove the hardware in the next step. The heat from the cutting torch could damage the mounting plates on the main frame.

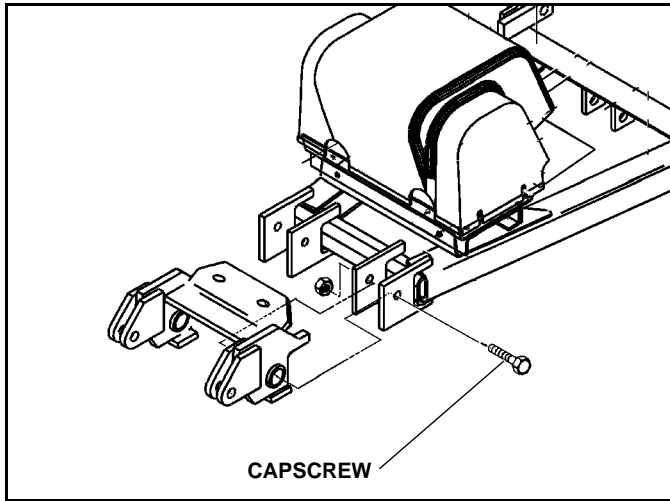


Figure 1-5

10. Remove the two (2) 5/8" Capscrews which secure the pivot assembly to the main frame.

11. Remove and discard the Pivot Assembly.

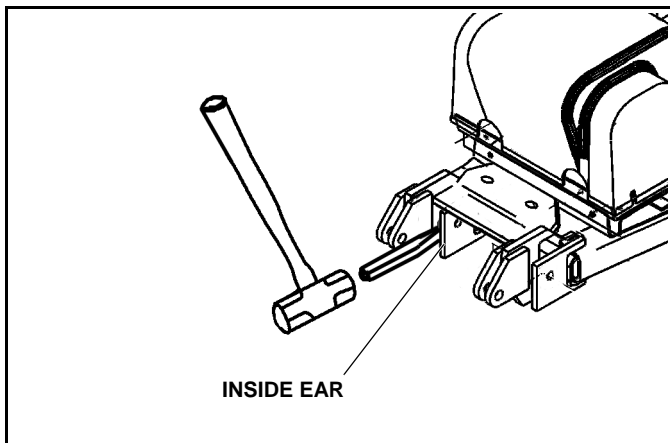


Figure 1-6

NOTE: It may be necessary to use a large cold chisel between the pivot assembly and the inside ear of the main frame to provide sufficient clearance to remove the pivot assembly. DO NOT spread any more than necessary to clear the pivots assembly.

12. Remove the Pump Cover taking care not to pull off the wires connected to the Jackstand Switch.

13. Unfasten the hose clamps holding the wing cylinder hoses to the front of the pump support plate.

Installing New Pivot Frame

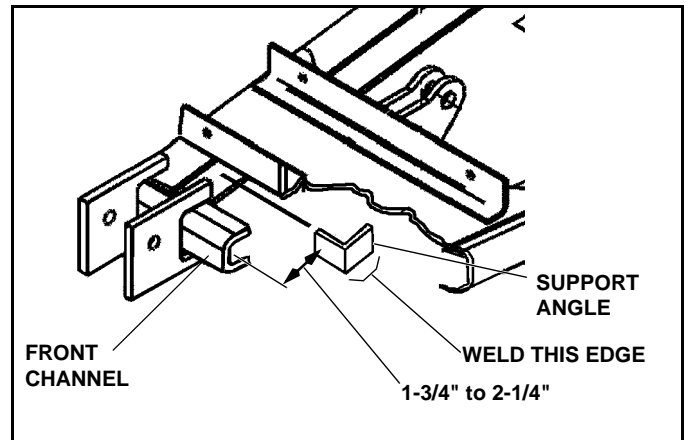


Figure 2-1

1. Place one (1) Support Angle (#6) in each Main Frame side channel located 1-3/4" to 2-1/4" away from the front channel, as shown in Figure 2-1.

IMPORTANT: Before welding, move the wing cylinder hoses out of the way and protect the hoses from weld splatter and excessive heat from welding.

2. Weld the inner leg of each Support Angle to the lower leg of each side channel as shown in Figure 2-1.

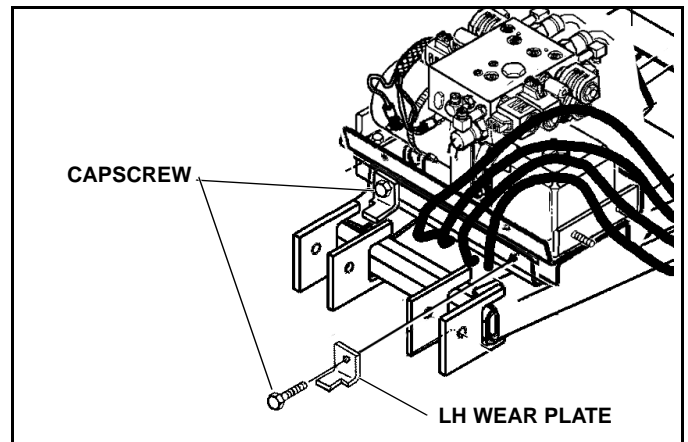


Figure 2-2

3. Remove the two (2) 3/8" Capscrews securing the front of the pump support plate to the top plate of the Main Frame.

NOTE: If there are two short angles welded to the top of the Front Main Frame, from a previous Float Limiter Kit, they may either be left in place or removed at the discretion of the mechanic.

- If they are removed care must be taken not to cut into the Main Frame tubes and any remaining weld or roughness in the area must be ground flush with the top of the Main Frame. Re-paint repaired area prior to installing the two wear plates. Continue with step #4.

- If existing angles are left, DO NOT install Wear Plates provided with this Kit. Be sure to check clearance between upright leg of angle and new pivot frame. Modify angle as required. Skip step #4.

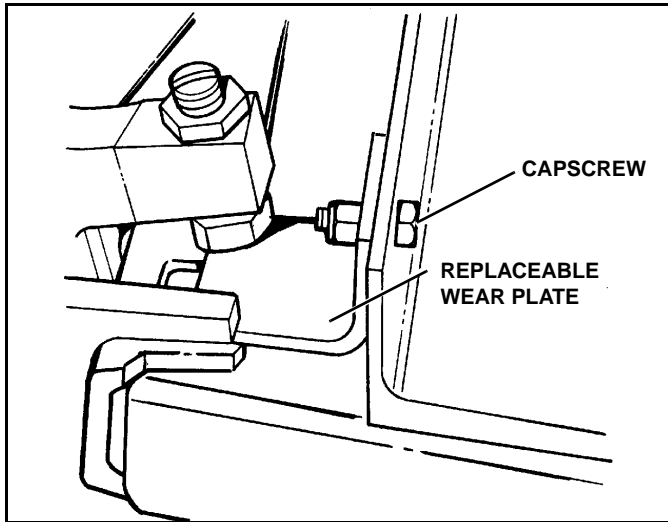


Figure 2-3

4. Install the right hand Wear Plate (#9) and left hand Wear Plate (#10) using the two (2) 3/8" Capscrews previously removed in step #3.

5. Re-install the Wing Cylinder hose clamps and the Pump Cover.

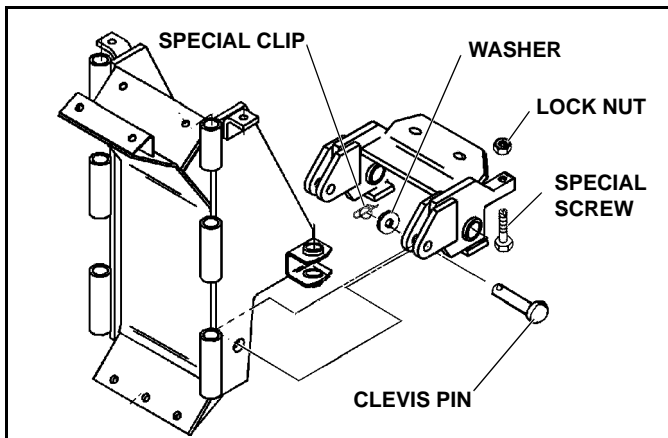


Figure 2-4

6. Install two Special Screws (#7) into the new Pivot Assembly (#96103000) with the screw head on the underside of the threaded block. Run the screw fully into the threaded block. Final screw adjustment will be made later. Install one Hex Jam Nut (#8) loosely on the ends of the two Special Screws.

7. Attach the new Pivot Assembly to the Center Section with two (2) new Clevis Pins (#11), two (2) Flat Washers, and two (2) Special Clips (#97100099) provided.

NOTE: The Clevis Pins must be installed with the head of the Clevis Pin to the outside of the Main Frame.

8. Check to make sure that the Trip Spring is installed as illustrated with open end of top loop facing vehicle. (See Figure 2-5)

9. Attach the Trip Springs to the Pivot Section using two (2) new Eyebolts (#14), four (4) new Plain Washers (#16), and four (4) Hex Nuts (#15) provided.

NOTE: Springs are properly adjusted when two or more coils allow a 0.010" feeler gauge to just pass between the separated coils. (A 3 x 5 post card is approximately the same thickness.)



- Do not overtighten springs. If more than 0.015" (1/64") gap appears between coil with plow at rest damage could occur to equipment during plowing.

- Spring must be installed with open end of top loop facing vehicle. Bottom loop position will vary.

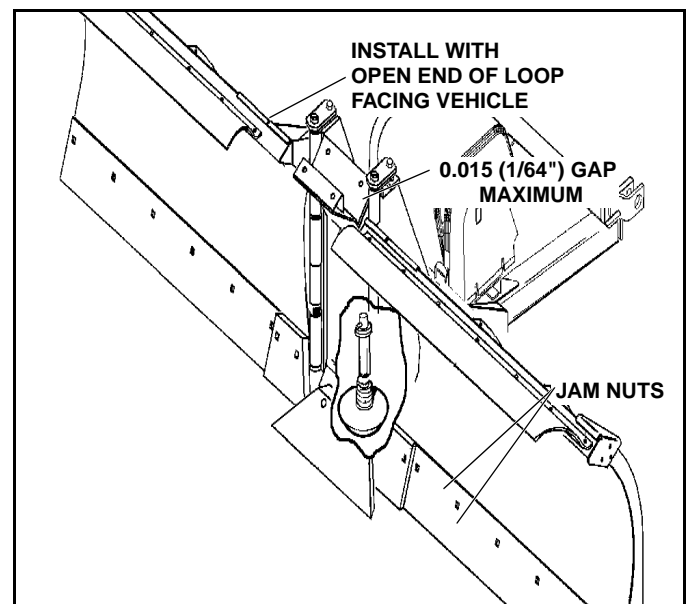


Figure 2-5

10. Make sure the two upper nuts are loose and rotate the lower nuts to shorten or lengthen the eye bolts until the Trip Springs are correctly adjusted.

11. Turn the upper nuts down until they contact the plate and, while holding the two upper nuts, re-tighten the two lower nuts. Re-check the spring adjustment.

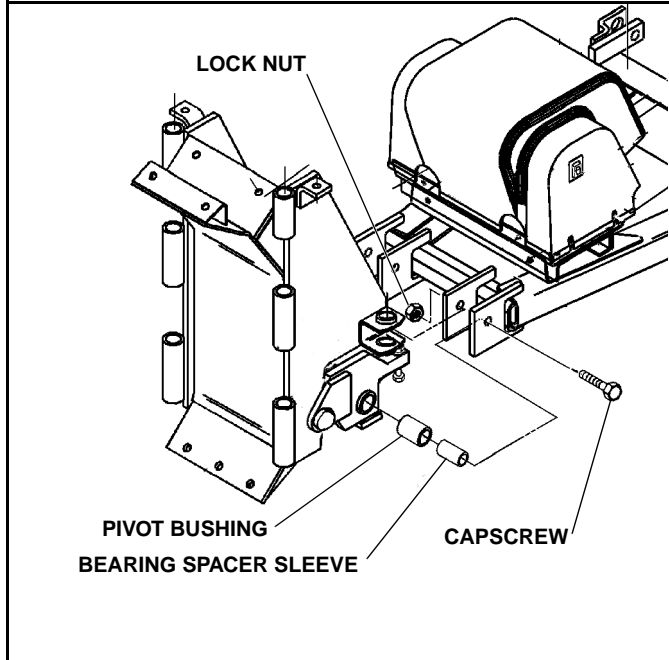


Figure 2-6

12. Insert one Bearing Spacer Sleeve (#96102957) into each of the two Pivot Bushings in the Pivot Assembly. Then move the assembled Pivot Assembly, Center Blade assembly, and Wings into position at the front of the Main Frame so that the Pivot Assembly can be bolted to the Main Frame.

NOTE: Use one of the Bearing Spacer Sleeve to check for adequate clearance between the ears of the Main Frame before assembly. If Bearing Spacer Sleeve is tight, use hammer to bend the INSIDE plates to the center of the Main Frame. DO NOT bend any further than necessary to provide clearance to install the Bearing Spacer Sleeve.



WARNING

The Center Blade Assembly and Wings are heavy! Use care when moving to avoid off balance conditions and Pinch Points between Center Blade Assembly and Main Frame or Pivot Assembly.

DO NOT use fingers in holes or bushings to check for alignment. Shifting parts could seriously damage fingers.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

13. Line up the holes in the Attaching Plates of the Main Frame with the Bearing Spacer Sleeves in the Pivot Assembly. Install two 5/8" x 4-1/2" Capscrews (#4) from the outside of the main frame, through the attaching Plates on the Main Frame and through the Spacer Sleeves and Pivot Assembly. Secure with two (2) 5/8" Nylock Nuts (#5) provided and tighten finger tight. DO NOT over tighten.

NOTE: These Capscrews must be installed with the heads to the outside of the Main Frame.

14. Remove strap securing the blades in the "Scoop" position.

15. Re-Install the two Wing Cylinders using hardware remove in step #5 Make sure that the heads of the Capscrews are on the top. Secure with Nylock Nuts and torque to 30-40 lbs-ft.

16. Raise the plow and install the Transport Lock on the Lift Cylinder. (See Owners Manual.)

17. Securely block the Center Blade Assembly and the Main Frame Assembly in the raised position.



WARNING

The plow must be securely blocked in a raised position to prevent inadvertent dropping of the plow during the next operation.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

18. Torque the two (2) 5/8" Capscrews securing the Pivot Assembly to the Main Frame to 170-190 lbs-ft.

19. Remove the plow from blocking.

20. Re-install the Center Deflector using the hardware removed in step #4.

NOTE: Plow must be mounted on the vehicle that the plow will be used on for the following step. If vehicle is not available be sure to provide customer with information on how to properly set up plow.

21. Check the Disk Shoe Adjustment by:

- Mount plow on vehicle plow will be used on
- Park vehicle on a smooth, level surface
- Lower the plow to the ground
- Move the wings forward and rearward while an assistant watches the Wing Wearstrips and the Center Wearstrips.

Wearstrips should be in contact with the ground at all times. If they are not, recheck the position of the Wing Pivot Tubes. The tubes must be vertical. If they are not vertical the Disk Shoes must be adjusted using the following procedure.

Disk Shoe Adjustment

NOTE: Plow must be mounted on the vehicle that the plow will be used on for the following step. If vehicle is not available be sure to provide customer with information on how to properly set up plow.

IMPORTANT: This Plow is equipped with three (3) Disk Shoes. Two Disk Shoes are located at the outboard end of each Wing. The third Disk Shoe is located under the Trip Springs on the Center Plow Assembly. All three Disk Shoes must be adjusted equally.

IMPORTANT: To ensure the best function of this Snow plow, it is a requirement that all three Disk Shoes be used at ALL times.

1. Drive the vehicle, with Snow Plow mounted, onto a smooth, level surface. Park the vehicle, move the Plow Wings until the Wings are straight out on each side and lower the Plow to the ground.
2. Turn ignition switch OFF and apply the emergency brake.
3. Inspect both Float Limiter Screws and be sure that the hex head of the screws are not contacting the wear plate underneath the hex head of the screw. If necessary, adjust each screw upward so that the screw head is not contacting the wear plate when the pivot tubes are vertical.

NOTE: After Disk Shoe Adjustment is completed, the Float Limiter Adjustment must be made. See Float Limiter Adjustment on page # 7

4. Place a level against the front of the Wing Pivot Tubes and pull or push the top of the Center Section until the level indicates that the Pivot Tubes are vertical (Not tipped either forward or rearward).
5. Determine whether the Center Disk Shoe or the Center Wearstrip is off the ground and measure the amount that it is off the ground. (See Figure 3-1)

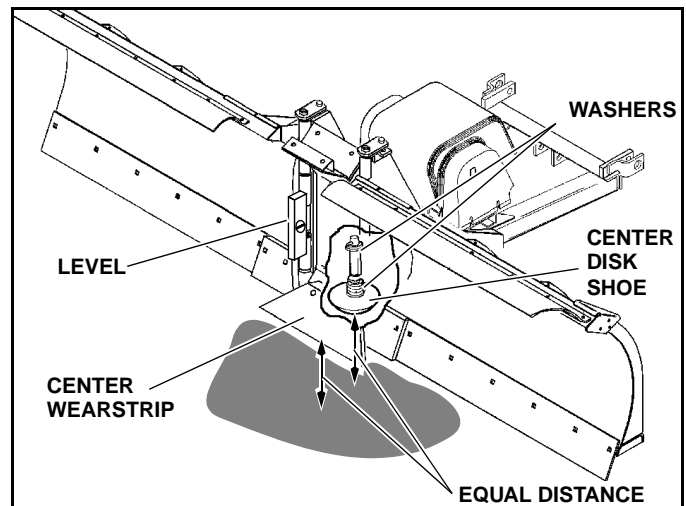


Figure 3-1

NOTE: Gap may be measured by sliding shims or washers between the ground and/or the Center Disk Shoe or the Center Wearstrip, then measuring the shim/washer stack. The Center Disk Shoe will need to be adjusted until the Disk Shoe and Center Wearstrip both contact the ground at the same time.

- If the Center Disk Shoe was off the ground - Washers must be ADDED below the Disk Shoe Mounting Tube.
- If the Center Wearstrip was off the ground - Washers must be REMOVED from below the Disk Shoe Mounting Tube.

IMPORTANT: If Washers must be added, add one Washer LESS than the amount the Disk Shoe was off the ground. If Washers must be removed, remove one Washer MORE than the amount the Wearstrip was off the ground.

6. Raise Plow and place suitable blocking under the Plow to allow at least eight inches (8") of clearance from the bottom of the Center Disk Shoe to the ground.
7. Lower Plow onto blocking.



WARNING

Keep hands and feet clear of Wings and Center Section when setting blocking and lowering Plow. Moving or falling assemblies could result in serious injury.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

8. Adjust Center Disk Shoe assembly by removing the Disk Shoe Mounting Pin and adding or subtracting Washers on the top or bottom of the Disk Shoe Mounting Bracket as required according to measurements taken in step #4.

9. After the Center Disk Shoe position is properly adjusted, place washers on the Disk Shoe Stem - above the Disk Shoe Mounting Bracket, and below the Retaining Pin - to remove all up and down movement of the Disk Shoe in the Bracket. Failure to do this will result in excessive wear of the holes in the Disk Shoe Mounting Bracket and will also result in bending the Disk Shoe Stem.

10. After the Center Disk Shoe adjustment is completed, lower the Plow to the ground. If this Disk Shoe adjustment is correct, the Center Disk Shoe and the Center Wearstrip will both be on the ground and the Wing Tubes will be vertical (Recheck the Wing Tubes with a level). If Wing Tubes are not vertical, repeat step #3 to step #9 until Wing Tubes are vertical.

NOTE: If assembling and mounting a Snow Plow for the first time, the adjustment of the Center Disk Shoe can be done with just the Center Section Mounted on the vehicle, prior to assembling the Wings onto the Center Section of the Plow.

11. With each Wing extended straight out to each side, measure the amount the Wing Shoes are off the ground, or if they are on the ground, measure the amount that the Wearstrip is off the ground (measured in front of the Disk Shoe Bracket).

12. Raise Plow and place suitable blocking under the Plow to allow at least six inches (6") of clearance from the bottom of the Wing Disk Shoes to the ground.

13. Lower Plow onto blocking.



WARNING

Keep hands and feet clear of Wings and Center Section when setting blocking and lowering Plow. Moving or falling assemblies could result in serious injury.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

14. Adjust each Disk Shoe assembly by removing Disk Shoe mounting Pin and adding or subtracting Washers on the top or bottom of the Disk Shoe Mounting Bracket as required according to measurements taken in step #11 (See Figure 3-2)

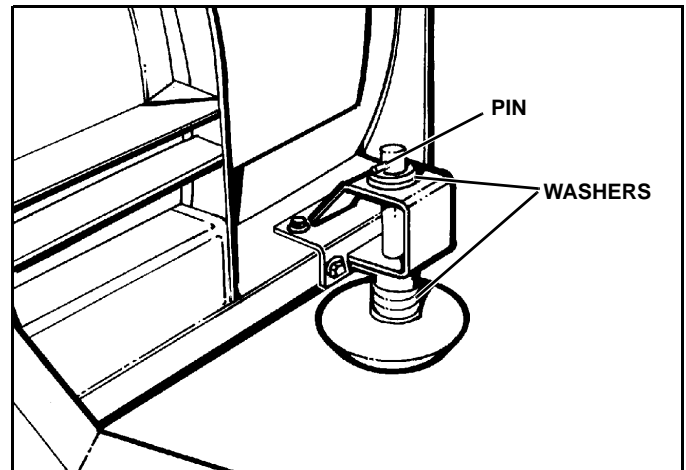


Figure 3-2

15. After the Disk Shoe position is properly adjusted, place washers on the Disk Shoe Stem - above the Disk Shoe Mounting Bracket, and below the Retaining Pin - to remove all up and down movement of the Disk Shoe in the Bracket. Failure to do this will result in excessive wear of the holes in the Disk Shoe Mounting Bracket and will also result in bending the stem of the Disk Shoe.

16. After the Wing Disk Shoe adjustment is complete, lower the Plow to the ground. If this Disk Shoe adjustment is correct, the Shoes and the Wearstrips will all be on the ground at the same time, if not, repeat step #11 to step #15.

17. Move the Wings forward and rearward, if the Wing Wearstrips and the Center Wearstrips are not on the ground at all times recheck the position of the Wing Pivot Tubes. The Tubes must be Vertical, if they are not vertical, the Center Disk Shoe will need to be adjusted.

Float Limiter Adjustment

IMPORTANT: The Disk Shoes must be properly adjusted prior to adjusting the Float Limiter. If the shoes are not properly adjusted, the Float Limiter Adjustment cannot be properly made.

1. With the vehicle and Snow Plow on a smooth, level surface move the Wings forward into the "Scoop" position and lower the Plow to the ground.

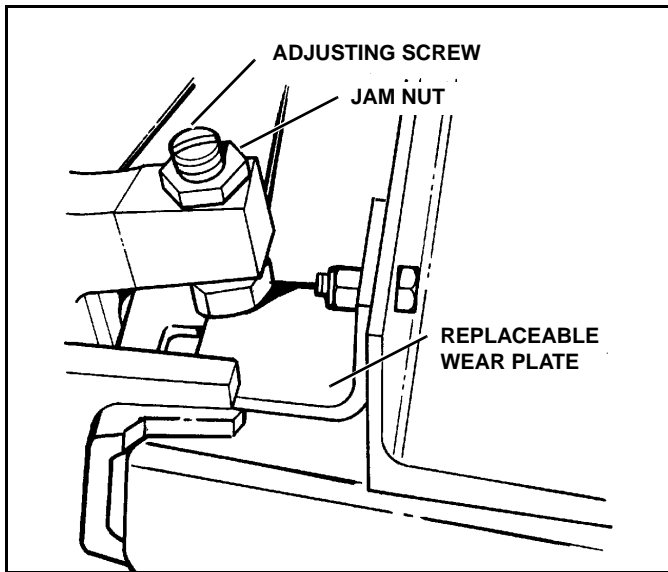


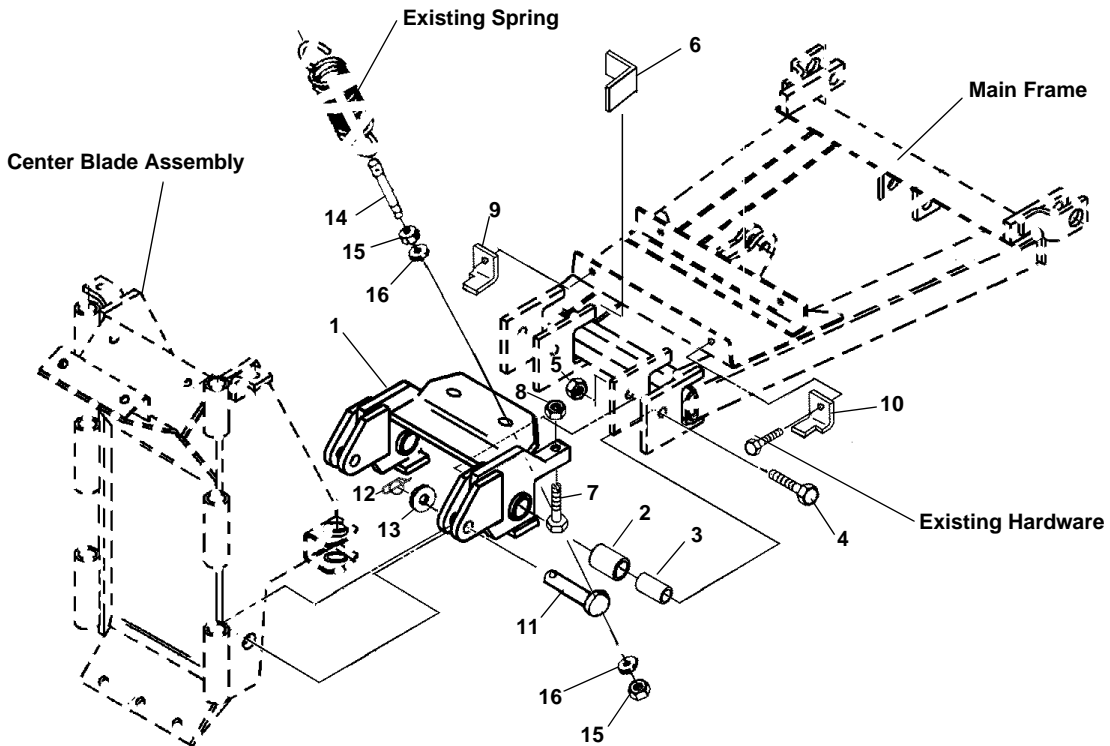
Figure 4-1

2. Loosen the 5/8" Jam Nut on the top of the float limiter Adjusting Screw.

3. Using the screwdriver slot in the top of the Float Limiter Adjusting Screw, turn the Adjusting Screw down until the hex head of the Adjusting Screw touches the surface of the replaceable Wear Plate.

4. Turn the Adjusting Screw up two turns to provide a gap between the wear plate and the head of the Adjusting Screw for proper float allowance.

5. While holding the Adjusting Screw driver slot, to prevent turning of the Adjusting Screw, tighten the 5/8" Jam Nut to lock the Adjusting Screw and prevent turning of the Adjusting Screw during operation.



ITEM	PART NO.	DESCRIPTION	QTY.
1	96103000	Pivot Assembly with Bushing	1
2	96102832	Bushing	2
3	96102958	Sleeve, Bearing Support	2
4	98009111	Capscrew, Hex Head, 5/8" -11NC x 4-1/2"	2
5	98009038	Nut, Hex, Nylock, 5/8" -11NC	2
6	96102977	Angle, Support	2
7	98100164	Screw, Special	2
8	98100157	Nut, Hex Jam, 5/8" -11NC	2
9	96102915	Plate, Wear, RH	1
10	96102916	Plate, Wear, LH	1
11	98100165	Pin, Clevis, 3/4" x 2-1/2"	2
12	98100099	Pin, Special	2
13	98009030	Washer, Plain, 3/4"	2
14	96102781	Bolt, Eye	2
15	98009078	Nut, Hex, Nylock, 5/8" -11NC	4
16	98009039	Washer, Flat 5/8"	4

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