

SECTION 7 ATTACHMENTS

7-1 GENERAL.

7-1.1 This section describes the installation of the following attachments which are available for the Cub Cadet Series 2000 Tractors.

1. 38 and 42 inch Mulching Attachments — Models 190-314 and 190-315.
2. 42" Snow Blade — Model 190-302.
3. 40" Snow Thrower — Model 190-303.
4. 28" Rotary Tiller — Model 190-304.

7-2 38 and 42 INCH MULCHING ATTACHMENTS (Models 190-314 and 190-315).

7-2.1 **General.** The 190-314 Mulching Kit is designed for usage on the 38" mower deck of Tractor Models 2130 and 2135. The 190-315 is designed for the 42" deck of the Tractor Models 2140 and 2145.

7-2.1.1 Before beginning installation of the mulching attachment, refer to Figure 7-1 to confirm that all parts are included.

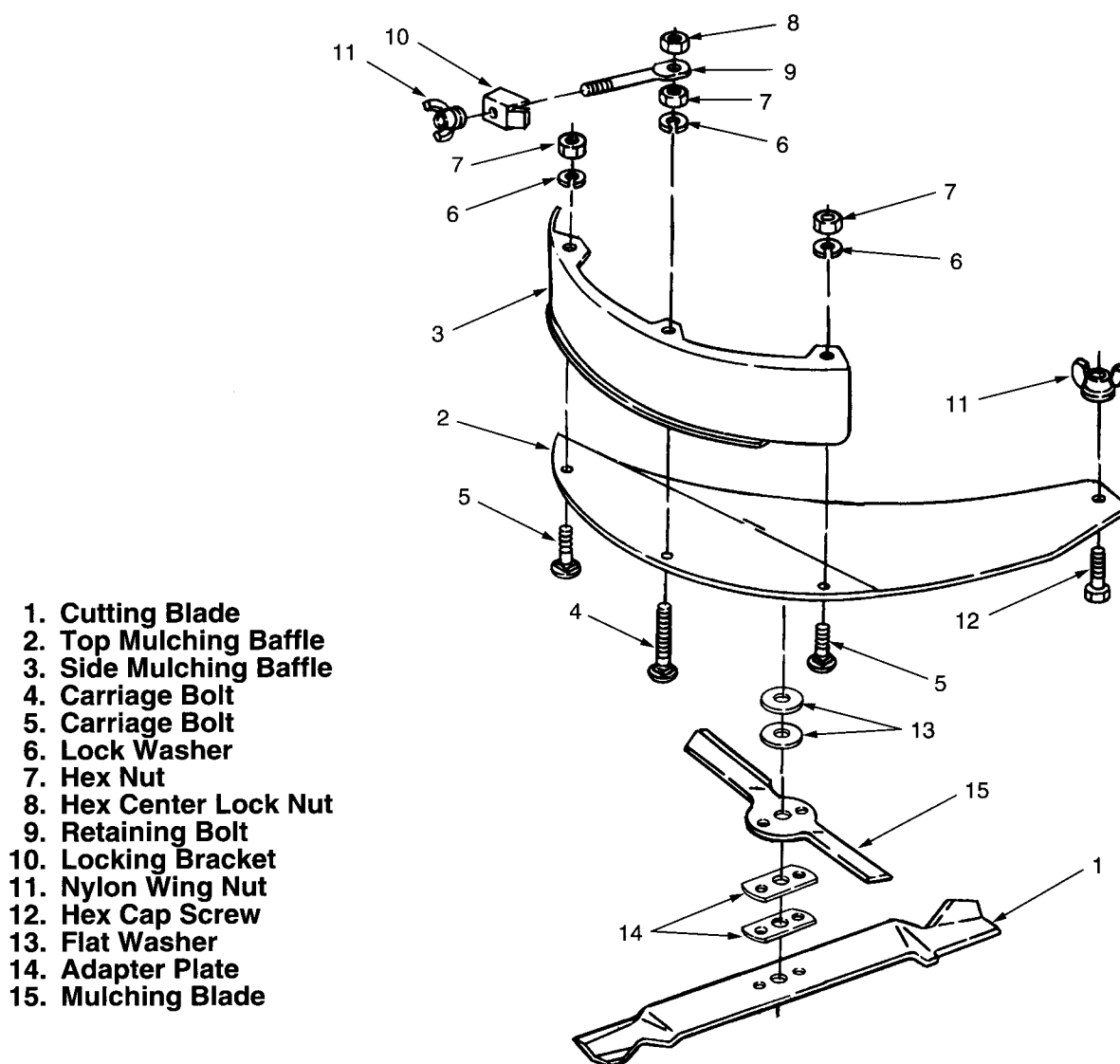


Figure 7-1. Mulching Kit Components.

7-2.2 Deck Removal From Tractor.



WARNING

Stop the tractor engine, disengage the PTO, place all controls in neutral and engage the brake lock before performing deck removal.



WARNING

When handling the mower deck, be careful not to cut yourself on the sharp blades.



CAUTION

Place the tractor on a firm and level surface before beginning deck removal.



WARNING

Do not remove the deck immediately after running the unit. Both the grille and PTO clutch are hot. Let the unit cool before touching.



NOTE

Refer to the Deck Owner's Manual to remove the deck.

7-2.3 Remove Cutting Blades From Deck.



WARNING

When handling the blades, be careful not to cut yourself.

1. A block of wood may be placed between the housing and cutting edge of the blade to assist in removal of the hex nut securing the blade. Refer to Figure 7-2.
2. Remove the hex nuts, flat washers, cutting blades and spacers from the deck. See Figure 3. Put the blades and spacers aside. Save the hex nuts and flat washers to mount the mulching blade assembly.

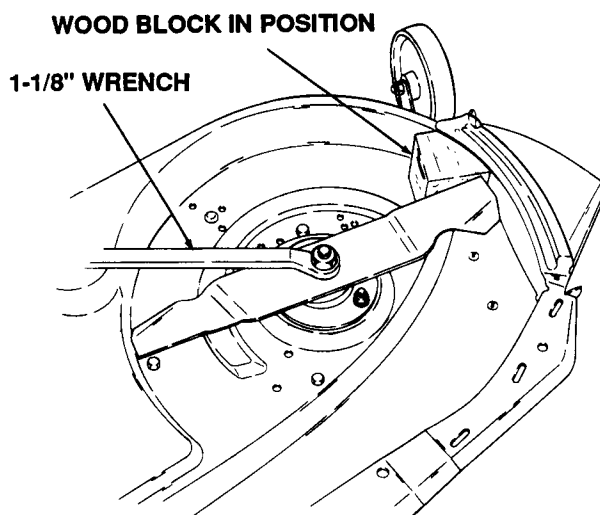


Figure 7-2. Loosen Hex Nut Securing Cutting Blade.

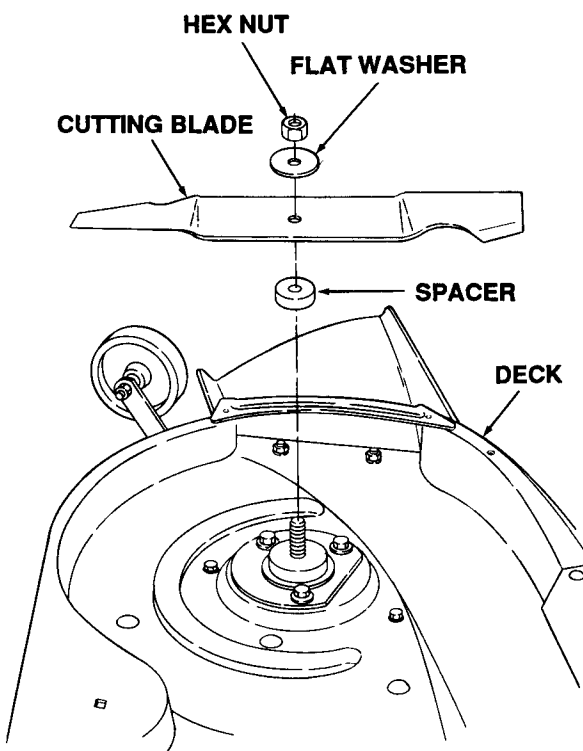
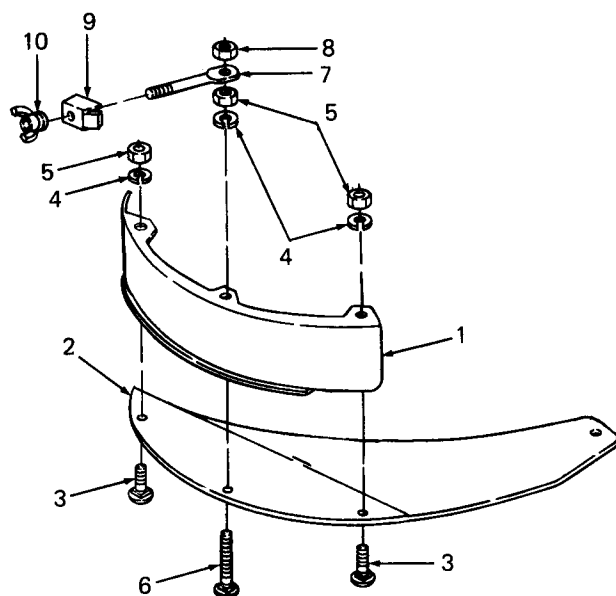


Figure 7-3. Removal Of Cutting Blade.

7-2.4 Assemble Mulching Baffle.

1. Assemble the top baffle (2, Fig. 7-4) to the side baffle (1) with the carriage bolts (3 and 6), lock washers (4) and hex nuts (5).
2. Assemble the retaining bolt (7, Fig. 7-4) to the carriage bolt (6) with the hex center lock nut (8). Tighten the center lock nut to eliminate side play, while still allowing the retaining bolt to pivot.



- | | |
|------------------|------------------------|
| 1. Side Baffle | 6. Carriage Bolt |
| 2. Top Baffle | 7. Retaining Bolt |
| 3. Carriage Bolt | 8. Hex Center Lock Nut |
| 4. Lock Washer | 9. Locking Bracket |
| 5. Hex Nut | 10. Nylon Wing Nut |

Figure 7-4. Mulching Baffle Assembly.

7-2.5 Mounting Mulching Baffle Assembly On Deck.



The cutting blades should be removed from the deck when installing the baffle assembly.



When performing the initial installation of the mulching baffle assembly, metal 1/4-20 hex nuts

may be used in place of the nylon wing nuts during the baffle seating procedure. This will prevent possible stripping of the wing nuts.



CAUTION

When installing the baffle assembly, the short flange at the bottom of the side baffle (1, Fig. 7-4) must be wedged in above the finger guard welded across the bottom of the deck discharge opening. Failure to do so could allow the baffle to fall and be struck by the spinning blades.

1. With the retaining bolt (7, Fig. 7-4) and locking bracket (9) projecting through the discharge opening, position the baffle assembly in the underside of the deck, and press the side baffle into the discharge opening as far as possible.
2. Hook the locking bracket (9) onto the edge of the deck (see Fig. 7-5) and tighten the wing nut (or hex nut, if used) until snug.

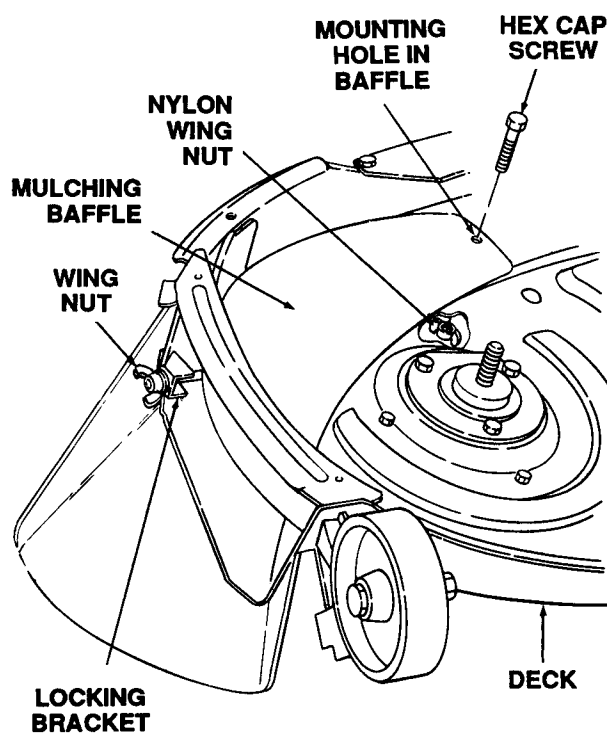


Figure 7-5. Positioning Mulching Baffle.

- Using a rubber mallet to tap the side baffle through the discharge opening (see Fig. 7-6), alternately tap the rear area of the baffle and re-tighten the wing nut (or hex nut, if used). Repeat until the baffle is completely seated, and the inner mounting hole of the baffle aligns with the hole in the deck.

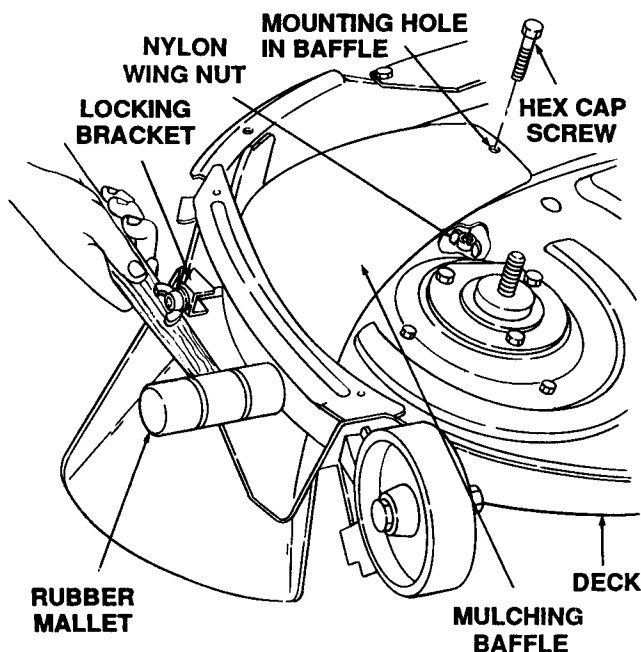


Figure 7-6. Seating the Baffle Assembly.

- Insert the hex cap screw (see Fig. 7-6) from the underside of the deck and secure with the second wing nut.

7-2.6 Installing Mulching Blades On Deck.



WARNING

Use care when handling the blades. The sharpened edges could cause cuts to the skin.



NOTE

With the blades removed, the spindle shafts can slip partially out of the spindle housings when the

deck is inverted to re-install the blades. If necessary, hold the shafts from the top of the deck when installing the blades and hardware.

- Assemble the blades and hardware on the spindle shafts as follows (see Fig. 7-7):

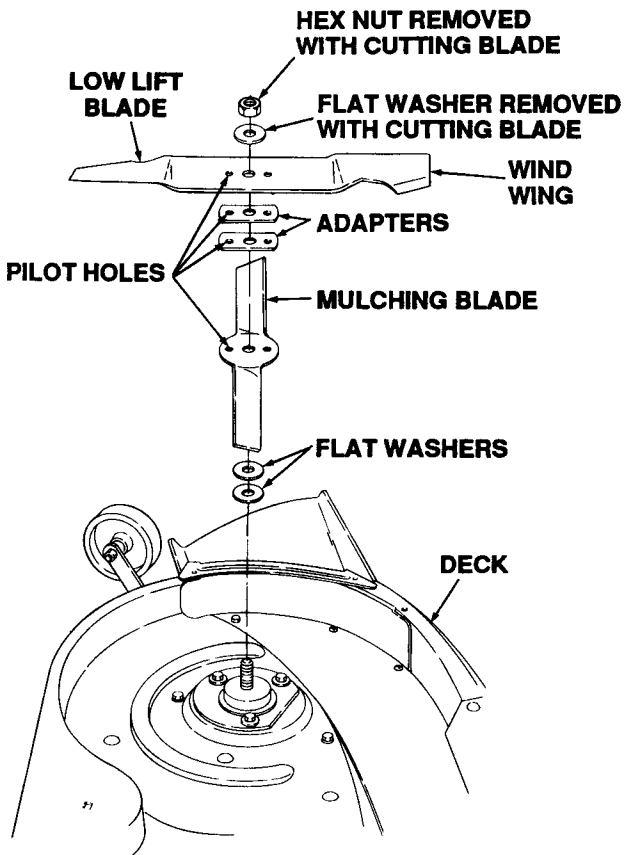


Figure 7-7. Installing Blades and Hardware.

- Slide the two flat washers (13, Fig. 7-1) onto each spindle shaft.
- Install the mulching blades (15, Fig. 7-1), making certain the sharpened edge is forward in relation to the blade rotation (sharpened edges pitch upward toward underside of deck).
- Install the two plate adapters (14, Fig. 7-1).
- Making sure the lift wings point toward the deck housing, install the cutting blades (1) and loosely secure with the flat washers and hex nuts removed earlier.



WARNING

NEVER USE THE PILOT HOLES OF THE MULCHING BLADES, ADAPTERS, AND CUTTING BLADES TO BOLT THEM TOGETHER. THEY ARE ONLY TO BE USED TO ALIGN THE BLADES AT 90° TO EACH OTHER, AND TO HOLD IN THAT POSITION AS THE HEX NUTS ARE TIGHTENED.

- Align the pilot holes of the blades and adapters (the blades should be at 90° to each other) and insert a phillips screwdriver, drift punch, or similar type instrument through the pilot holes (see Fig. 7-8).

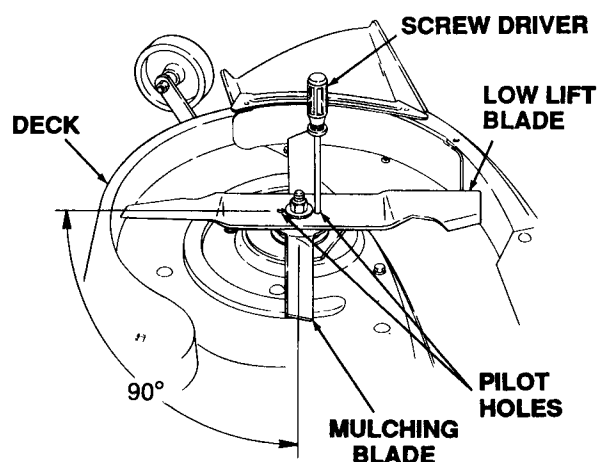


Figure 7-8. Using Pilot Holes To Align Blades.



NOTE

To prevent the spindle shaft from turning when tightening the hex nut, use a 1-1/4 inch wrench to hold the hex shaped hub of the V-pulley.

- Tighten the hex nuts to 90 to 110 ft-lbs.
- Install the mower deck on the tractor per the instructions in the Owner's Manual.
- If the blades strike a foreign object, remove the deck and inspect all blades for damage. If necessary, reposition the blades as described above.

7-3 42 INCH SPRING TRIP BLADE (Model 190-302).

- General.** The 42 inch Spring Trip Blade, Model 190-302, is designed for use on all of the Cub Cadet Series 2000 Tractors. The blade may be used for moving snow, terracing, or for light to medium grading.



WARNING

Whenever the blade assembly is installed on the front of the tractor, the Model 190-307 rear weight kit, with a minimum of two suitcase weights, must be installed on the rear of the tractor. The weight kit counterbalances the weight of the blade and provides stability to the tractor.

- Before beginning installation of the spring trip blade, refer to Figure 7-9 to confirm that all parts are present, and to familiarize yourself with the components.

7-3.2 Tractor Preparation.



WARNING

Stop the tractor engine, disengage the PTO, place all controls in neutral and engage the brake lock before performing any preparation procedures.



WARNING

The exhaust system and surrounding areas are HOT. To avoid personal injury, allow the tractor to cool before beginning any blade installation procedures.



CAUTION

Place the tractor on a firm and level surface before beginning installation procedures.



NOTE

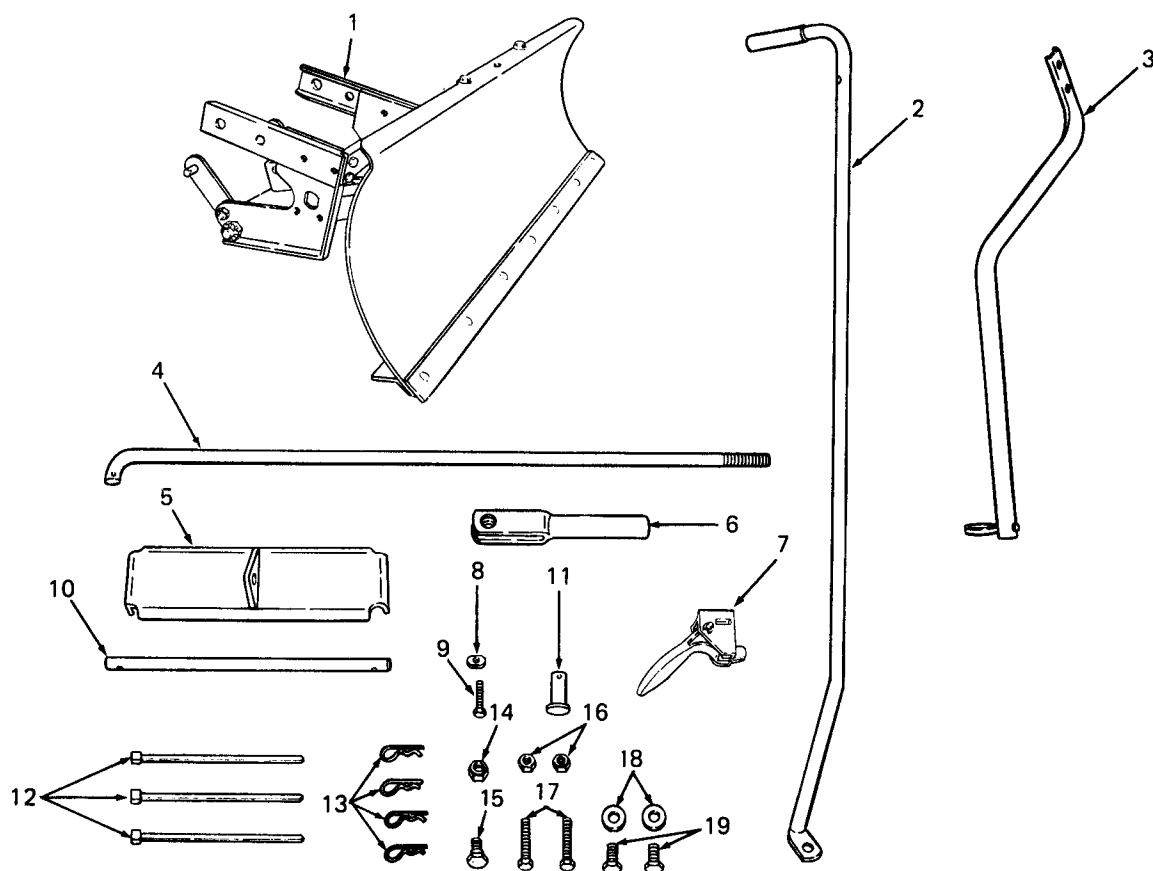
Remove the mower deck and front lift rod assembly, or any other attachment from the tractor.

1. Place the tractor lift handle in the No. 2 height position
2. Remove the front bumper from the frame (see Fig. 7-10) by removing the hex wash. tapp screw from each side. Store the screws and bumper for later reassembly.
3. Install an internal cotter pin (13, Fig. 7-9) in the hole at one end of the rod (10).



CAUTION

When installing the lift bracket (5, Fig. 7-9), the tractor lift links must be positioned **within** the slots at each side of the lift bracket, with the center lift rod tab of the bracket positioned as shown in Figure 7-11.



1. Dozer Blade Assembly
(with pivot cable attached)
2. Blade Pivot Handle
3. Handle Support Tube
4. Lift Rod
5. Lift Bracket
6. Adjustment Clevis
7. Trigger Assembly
8. Flat Weld Nut
9. Truss Screw

10. Rod
11. Clevis Pin
12. Tie Strap
13. Internal Cotter Pin
14. Flanged Lock Nut
15. Shoulder Screw
16. Hex Flange Top Lock Nut
17. Hex Screw
18. Bell Washer
19. Hex Screw

Figure 7-9. 42 Inch Spring Trip Blade Components (Model 190-302).

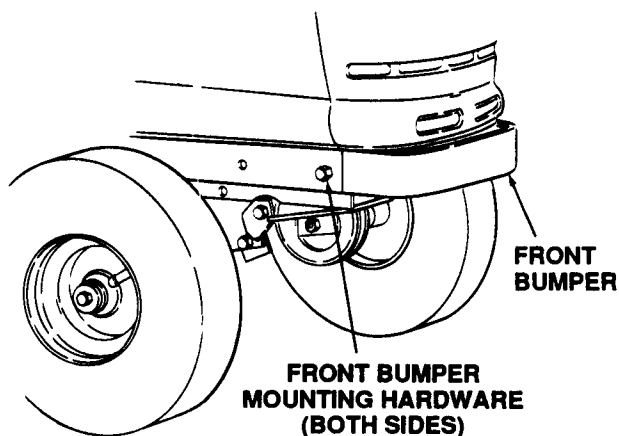


Figure 7-10. Removing Front Bumper.

4. Install the lift bracket (5) onto the tractor lift links, align the holes, and insert the rod (10) through the lift bracket and lift links. Install an internal cotter pin (13) in the other end of the rod (see Fig. 7-11).

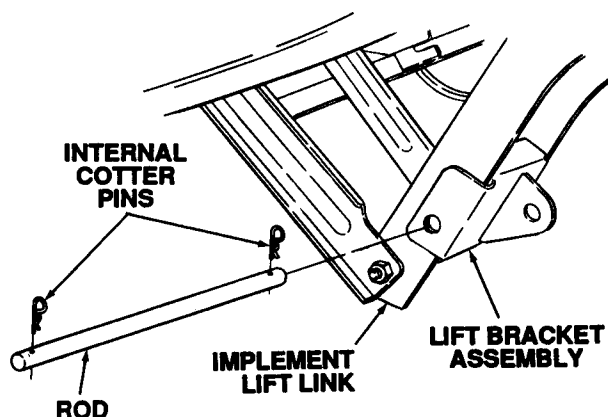


Figure 7-11. installing the Lift Bracket.

7-3.3 Blade Assembly Preparation.



Although the blade assembly has been partially assembled at the factory, the pivot latch components and the contact surfaces between the pivot plate and A-frame should be checked for proper

lubrication. If necessary, apply a liberal amount of a good grade grease to the contact surfaces and apply spray lube to the latch components.

1. Assemble the handle support tube (3, Fig. 7-9) to the LH blade hitch assembly using the hex screws (17) and hex nuts (16) See Fig. 7-12.

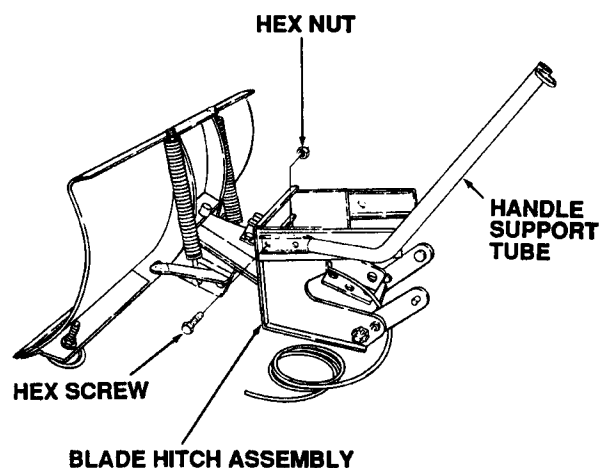


Figure 7-12. Attaching Handle Support Tube.

2. Slide the blade pivot handle (2, Fig. 7-9) through the eyelet of the handle support tube (3). Attach to the blade angle arm of the pivot plate with the shoulder screw (15) and flanged lock nut (14). See Fig. 7-13.

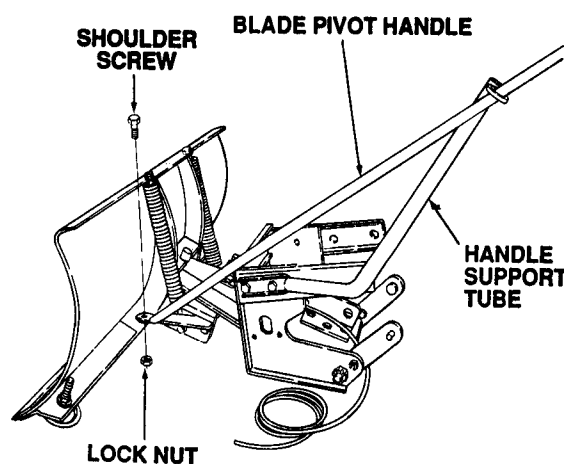


Figure 7-13. Installing Blade Pivot Handle.



CAUTION

When feeding the pivot release cable up through the eyelet of the handle support tube (3), route the cable as shown in Figure 7-14. Make certain the cable has a smooth even bend and is not kinked.

3. Feed the pivot release cable up through the eyelet to the top of the pivot handle (2).

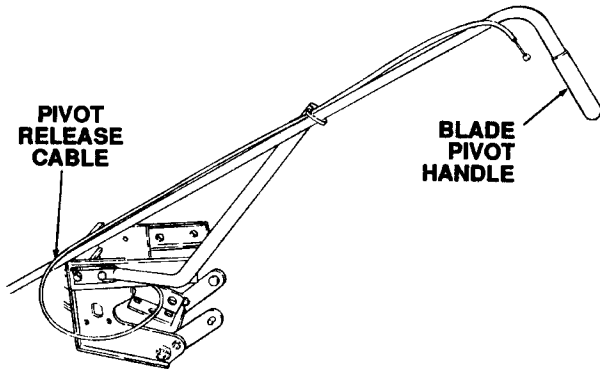


Figure 7-14. Routing Pivot Release Cable.

4. Install the trigger assembly (7, Fig. 7-9) onto the pivot release cable. Refer to Figure 7-15 and proceed as follows:

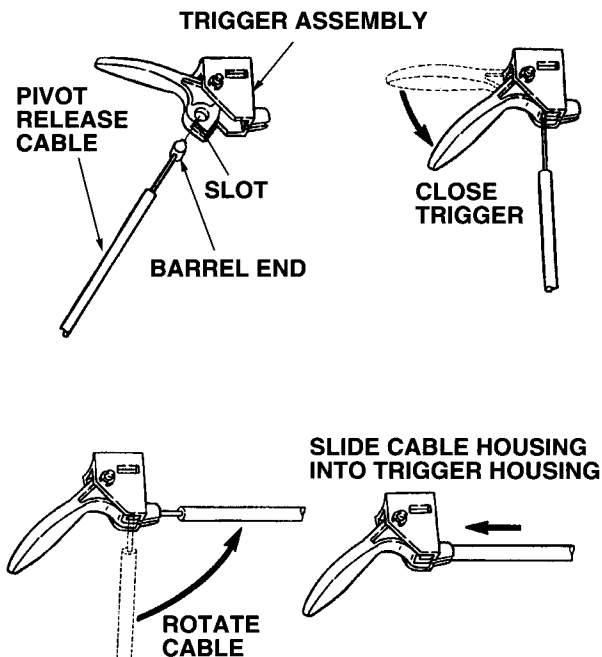


Figure 7-15. Attaching Trigger to Cable.

- a. Place the trigger assembly onto the end of the release cable by sliding the barrel end of the cable into the slot of the trigger.
 - b. Close the trigger as shown.
 - c. Rotate the cable into the slot of the trigger assembly housing.
 - d. Slide the cable housing into the receptacle of the trigger housing.
5. Slide the flat weld nut (8, Fig. 7-9) into the trigger housing. See Figure 7-16.

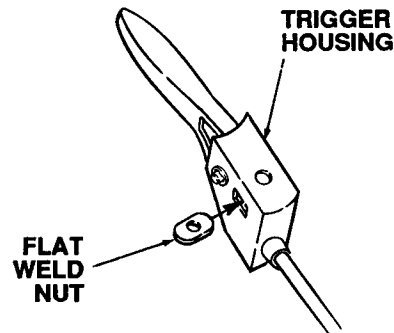


Figure 7-16. Inserting Flat Weld Nut.

6. While holding the flat weld nut (8) in position, place the trigger assembly (7) under the blade pivot handle (2) and fasten with the truss screw (9). See Figure 7-17.

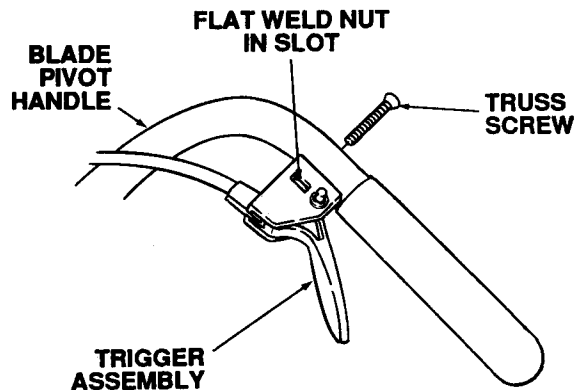


Figure 7-17. Installing Trigger Assembly.

7. Secure the blade release cable to the pivot handle with the three tie straps (12, Fig. 7-9) as shown in Figure 7-18. Cut excess from tie strap ends.

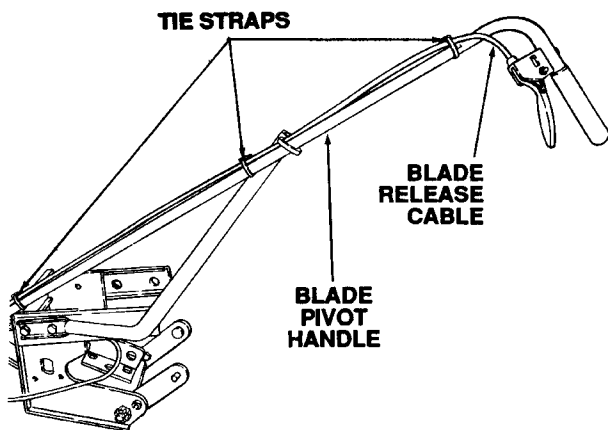


Figure 7-18. Installing Tie Straps.

8. Screw the adjustment clevis (6, Fig. 7-9) onto the threaded end of the lift rod (4).

➡ NOTE

When attaching the lift rod assembly to the blade's A-frame assembly, the rod must be inserted from left to right as shown in Figure 7-19.

9. Install the lift rod (4) in the front lift bracket of the A-frame assembly and secure with an internal cotter pin (13). See Figure 7-19.

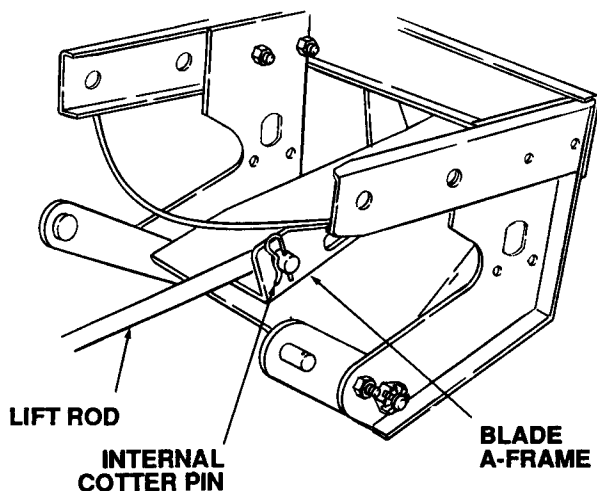


Figure 7-19. Attaching Lift Rod To A-frame.

10. Loosen BUT DO NOT REMOVE the four screws that fasten the front support plate to the LH and RH hitch plates. See Figure 7-20.

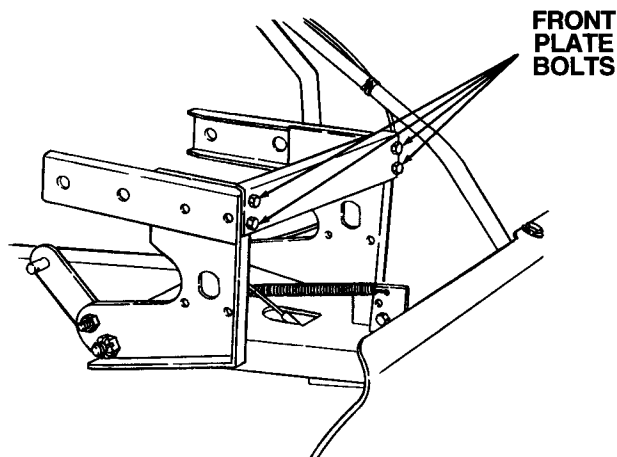


Figure 7-20. Loosen Front Support Plate.

7-3.4 Blade Installation.

1. Position the blade assembly directly in front of the tractor with the LH and RH hitch plate channel brackets aligned with the channels of the tractor frame.

➡ NOTE

To ease insertion into the tractor frame channels, apply a light coating of grease to the channel brackets of the blade hitch assembly.

2. Pushing evenly on both sides as indicated in Figure 7-21, slide the blade hitch assembly into the tractor frame channels.

➡ NOTE

The blade hitch assembly is fully inserted when the pins of the hitch assembly mounting arms are locked in the quick attach latch on each side of the tractor frame. See Figure 7-21.

3. Using one hex screw (19) and bell washer (18) per side, secure the blade hitch assembly to the tractor frame channels as shown in Figure 7-21.
4. Tighten the four screws in the front support plate which were loosened during the blade preparation procedures.

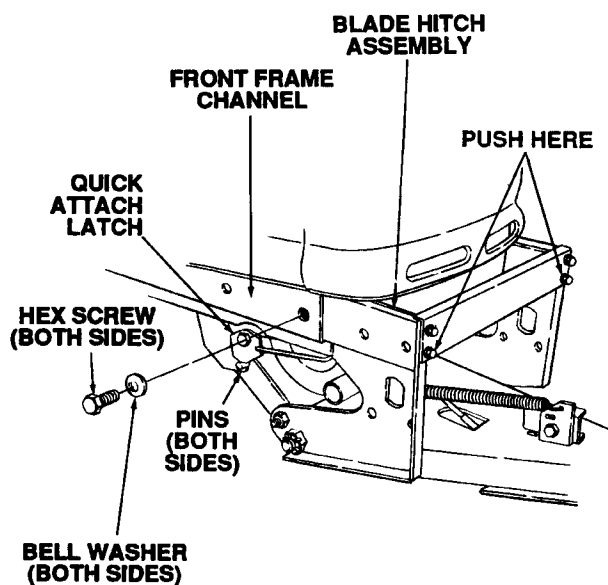


Figure 7-21. Installing Hitch Assembly.

NOTE

Make certain the tractor's implement lift handle is in the No. 2 height position.

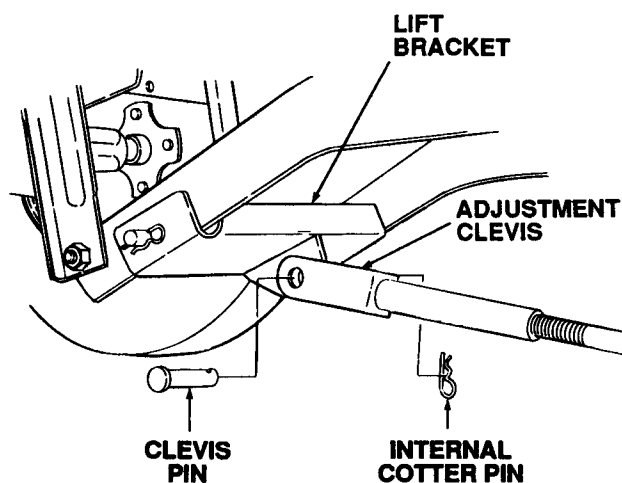


Figure 7-22. Attaching Adjustment Rod to Lift Bracket.

5. Turn the adjustment clevis on the lift rod to align with the hole in the lift bracket tab, then insert the clevis pin (11) and secure with an internal cotter pin (13). See Figure 7-22.

7-3.5 Blade Adjustments.

1. Adjust the skid shoes (refer to Fig. 7-23) to the appropriate position for the job being performed as follows:
 - Loosen the hex nuts on each shoe.
 - Turn the skid shoes to the desired position.
 - Tighten the hex nuts.
2. If the wear bar (see Fig. 7-23) becomes worn, reverse or replace the bar as follows:
 - Remove the seven carriage bolts, lock washers, and hex nuts fastening the wear bar to the blade.
 - Reverse or replace the wear bar and attach with the carriage bolts, lock washers and hex nuts.
3. Maintain the proper trip spring tension (see Fig. 7-23) as follows:
 - There should be a 1/4 inch gap between the top of the spring and the upper lip of the blade.
 - Tighten or loosen the hex cap screws on top of the blade to obtain the proper gap.

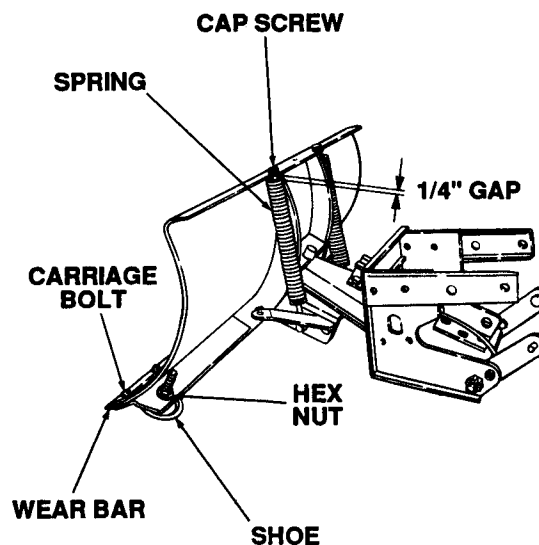


Figure 7-23. Adjusting the Blade.

7-4 40 INCH SNOW THROWER ATTACHMENT (Model 190-303).

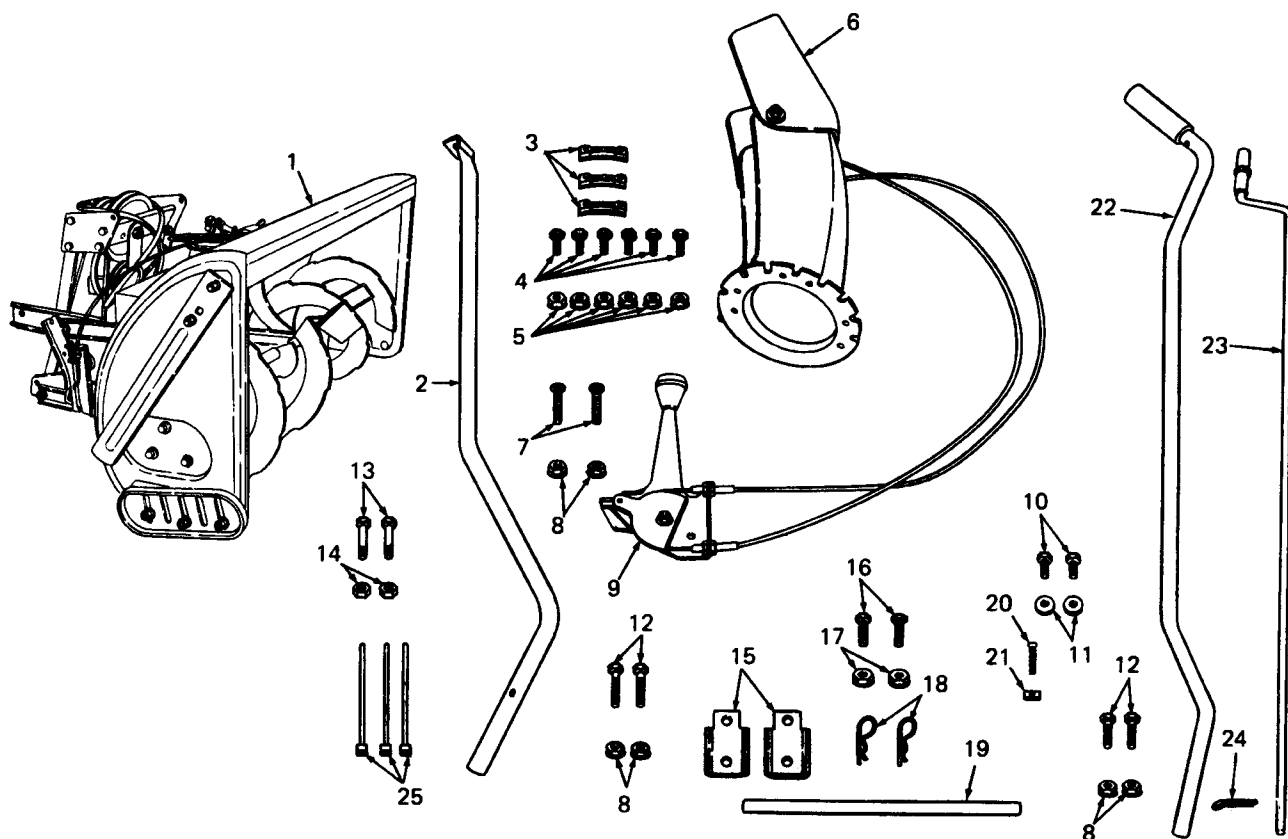
7-4.1 **General.** The 40-inch Snow Thrower, Model 190-303, is designed for use on all of the Cub Cadet Series 2000 Tractors. It is intended to be used for snow removal purposes only.

7-4.1.1 Before beginning installation of the snow thrower, refer to Figure 7-24 to confirm that all parts are present, and to familiarize yourself with the components.



WARNING

Whenever the snow thrower assembly is installed on the front of the tractor, the Model 190-307 rear weight kit, with a minimum of two suitcase weights, must be installed on the rear of the tractor. The weight kit counterbalances the weight of the snow thrower and provides stability to the tractor.



- | | |
|---|--|
| 1. Snow Thrower Assembly | 14. Hex Center Lock Nut, 5/16-18 (Extra) |
| 2. Chute Crank Support Tube | 15. Frame Mounting Bracket |
| 3. Chute Flange Keeper | 16. Hex Cap Screw, 3/8-16 X 3/4 GR5 |
| 4. Hex Cap Screw, 1/4-20 X 3/4 Lg | 17. Hex Flanged Lock Nut, 3/8-16 |
| 5. Hex Flanged Lock Nut, 1/4-20 | 18. Internal Cotter Pin |
| 6. Discharge Chute | 19. Rod |
| 7. Carriage Bolt, 5/16-18 X 1.5 Lg | 20. Truss Screw, 10-24 X 1.36 Lg |
| 8. Hex Flange Top Lock Nut, 5/16-18 GR5 | 21. Flat Weld Nut |
| 9. Chute Tilt Handle Assembly | 22. Snow Thrower Lift Handle |
| 10. Hex Cap Screw, 7/16-14 X 1.0 Lg | 23. Chute Crank Rod |
| 11. Bell Washer | 24. Cotter Pin |
| 12. Hex Cap Screw, 5/16-18 X 1.5 Lg | 25. Tie Strap |
| 13. Shear Bolt (extra) | |

Figure 7-24. 40-Inch Snow Thrower Components (Model 190-303).

7-4.2 Tractor Preparation.



WARNING

Stop the tractor engine, disengage the PTO, place all controls in neutral and engage the brake lock before performing any preparation procedures.



WARNING

The exhaust system and surrounding areas are HOT. To avoid personal injury, allow the tractor to cool before beginning any snow thrower installation procedures.



CAUTION

Place the tractor on a firm and level surface before beginning installation procedures.



NOTE

Remove the mower deck and front lift rod assembly, or any other attachment from the tractor.

1. Remove the front bumper from the frame (see Fig. 7-25) by removing the hex wash. tapp screw from each side. Store the screws and bumper for later reassembly.

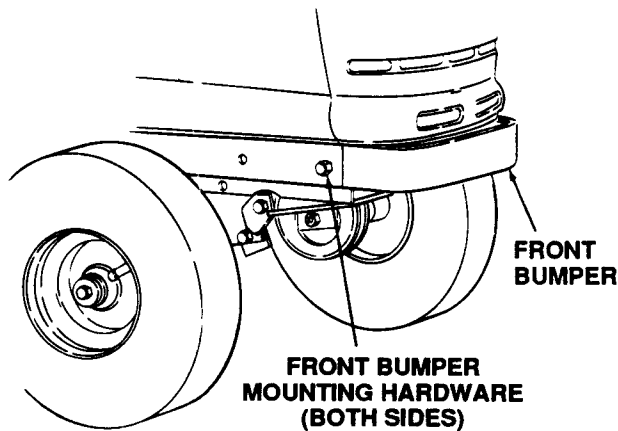


Figure 7-25. Removing Front Bumper.

2. Install the frame mounting bracket (15, Fig. 7-24) onto each side of the tractor frame. Position the brackets (see Fig. 7-26) with the flanges facing outward from the tractor frame. Secure with the hex cap screws (16) and hex flanged lock nuts (17). Insert the cap screws from inside the tractor frame.

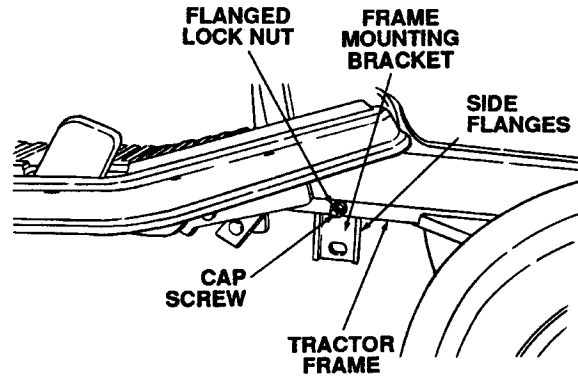


Figure 7-26. Installing Frame Mtg. Brackets

7-4.3 Snow Thrower Assembly Preparation.



WARNING

Before beginning preparation of the snow thrower assembly, select a firm and level surface which is large enough to accommodate the snow thrower attachment and tractor. Engage the tractor brake lock.

1. Grease the top and bottom surfaces of the flange on the chute opening of the blower housing. Use a multi-purpose automotive grease or equivalent.
2. Place the discharge chute (6, Fig. 7-24) over the chute opening of the blower housing, with the opening in the discharge chute (6) facing forward.
3. With their flat surface facing down, place the chute flange keepers (3, Fig. 7-24) beneath the flange of the discharge chute (6) and the flange on the chute opening of the housing (see Fig. 7-27). Insert the hex cap screws (4) up through the flange keepers and discharge chute flange as shown in Figure 7-27, and secure with the hex flanged lock nuts (5). Tighten all lock nuts until snug, then back off (loosen) 1/4 turn.

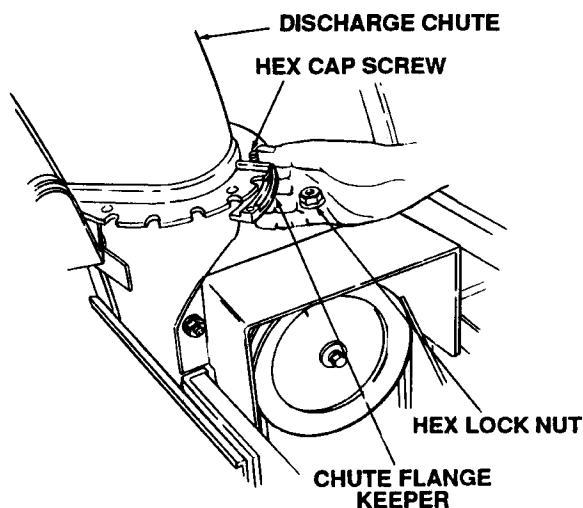


Figure 7-27. Installing Discharge Chute.

4. Install the chute crank support tube (2, Fig. 7-24) onto the frame of the snow thrower assembly (1) using the hex cap screws (12) and hex flange lock nuts (8). Refer to Figure 7-28.

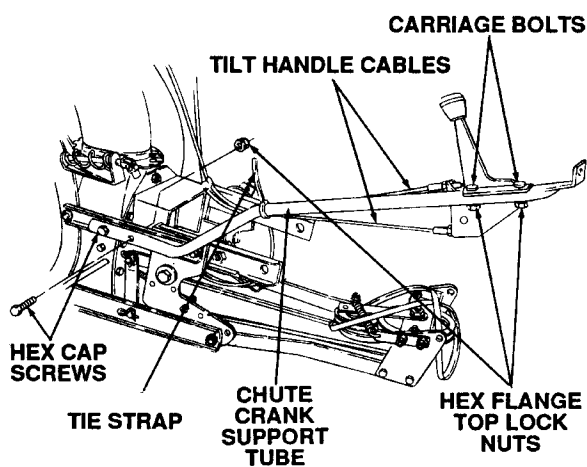


Figure 7-28. Installing Chute Crank Support Tube and Tilt Handle.

5. Install the chute tilt handle assembly (9) on the support tube (2) with the carriage bolts (7) and hex flange top lock nuts (8). See Figure 7-28.
6. Secure the cables of the chute tilt handle assembly (9) to the support tube (2) using one tie strap (25) as shown in Figure 7-28. Cut off excess on end of tie strap.

7. Insert the chute crank rod (23) through the hole in the rearward end of the support tube (2). Refer to Figure 7-29.

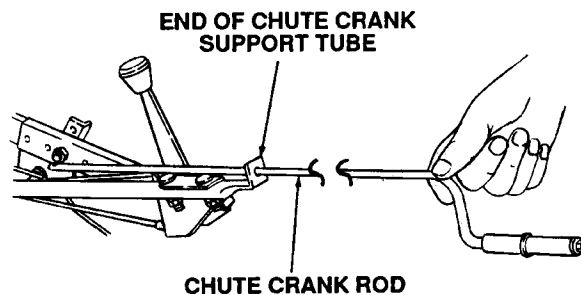


Figure 7-29. Install Chute Crank Rod.

8. Insert the forward end of the chute crank rod (23) into the universal joint, align the holes and secure with the cotter pin (24). See Figure 7-30.

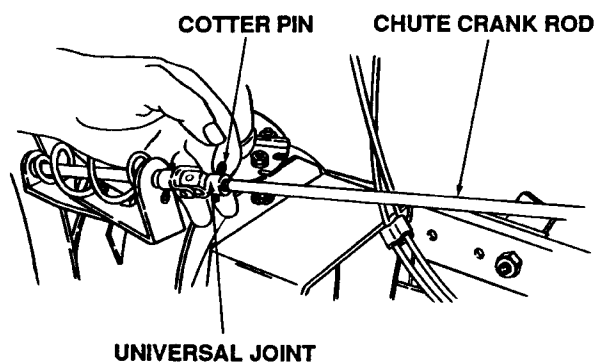


Figure 7-30. Attaching Chute Crank Rod.



Note the latch release cable and trigger assembly are preassembled and attached to the snow thrower assembly at the factory. Uncoil the cable and make certain it is out of the way before attaching the snow thrower lift handle.

9. Attach the snow thrower lift handle (22) to the lift latch bracket, located on the right side of the snow thrower undercarriage, using the two hex cap screws (12) and hex flange top lock nuts (8). See Figure 7-32.

10. Slide the flat weld nut (21, Fig. 7-24) into the trigger housing. See Figure 7-31.

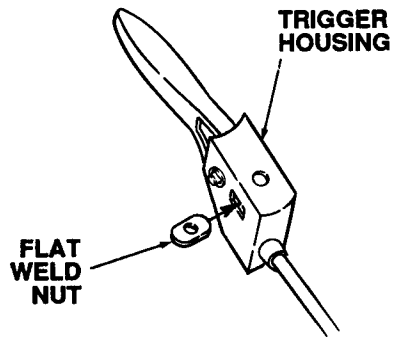


Figure 7-31. Inserting Flat Weld Nut.

11. While holding the flat weld nut (21) in position, place the trigger assembly against the lift handle (22) and fasten with the truss screw (20). See Figure 7-33.

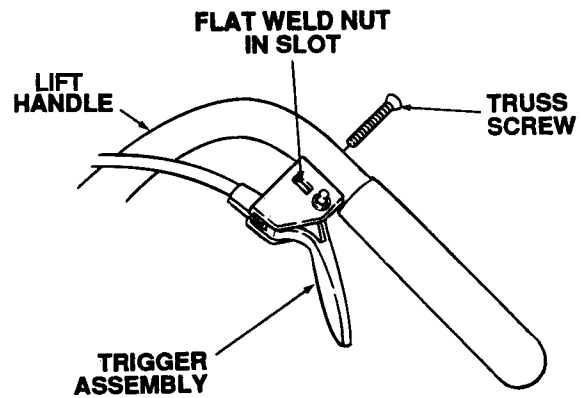


Figure 7-33. Installing Trigger Assembly.

12. Secure the latch release cable to the lift handle using two tie straps (25) as shown in Figure 7-32.
13. Cut the excess from the tie strap ends.

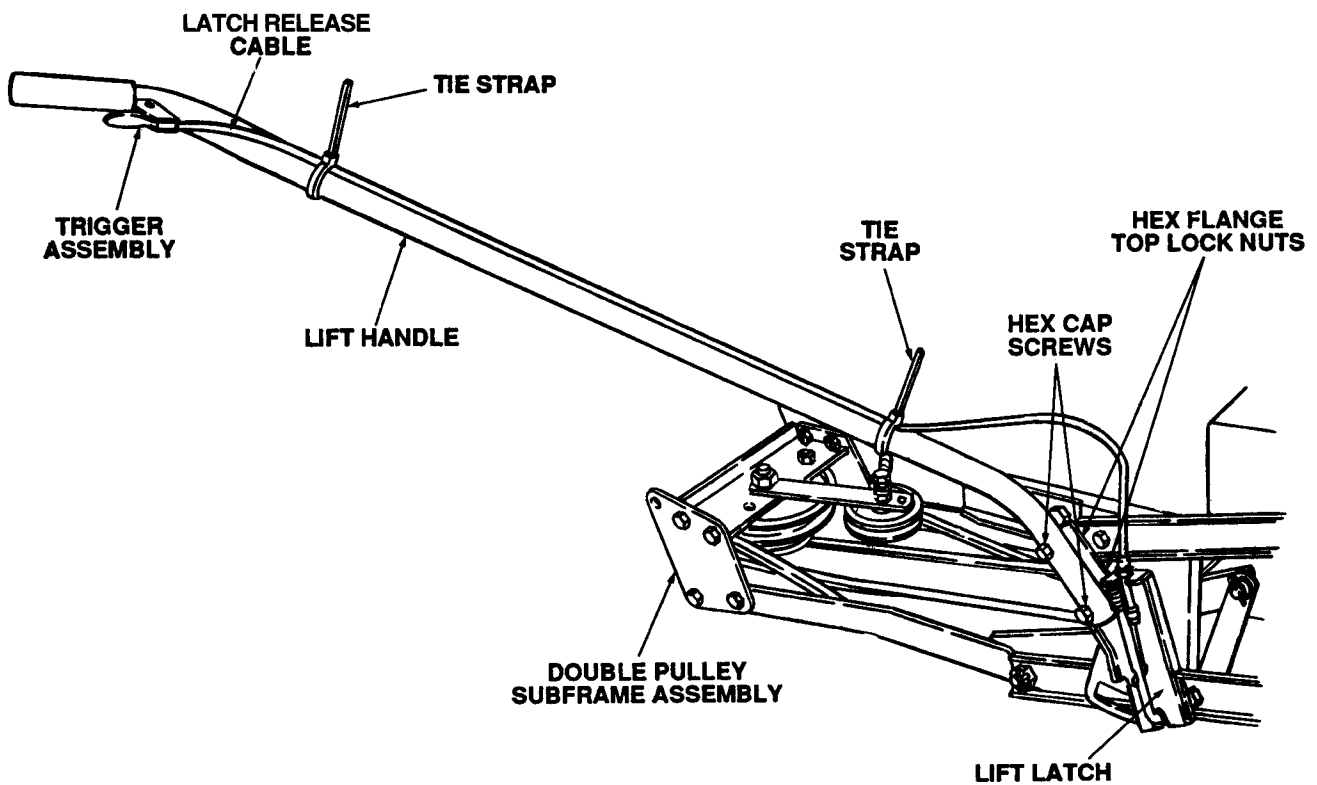


Figure 7-32. Installing Snow Thrower Lift Handle and Latch Release Cable.

7-4.4 Snow Thrower Installation.



WARNING

Before installing the snow thrower assembly onto the tractor, ensure the PTO switch and ignition switch are in the OFF position, the parking brake is locked, and that the exhaust system and surrounding areas have adequately cooled



NOTE

To ease insertion into the tractor frame channels, apply a light coating of grease to the channel brackets of the snow thrower hitch assembly.



NOTE

For easier installation, you can lock the pivot points of the snow thrower hitch assembly by rotating the lift handle (22) downward into its locked position.

1. Position the snow thrower assembly (1) directly in front of the tractor with the double pulley subframe assembly extending rearward between the front wheels of the tractor. See Figure 7-34.

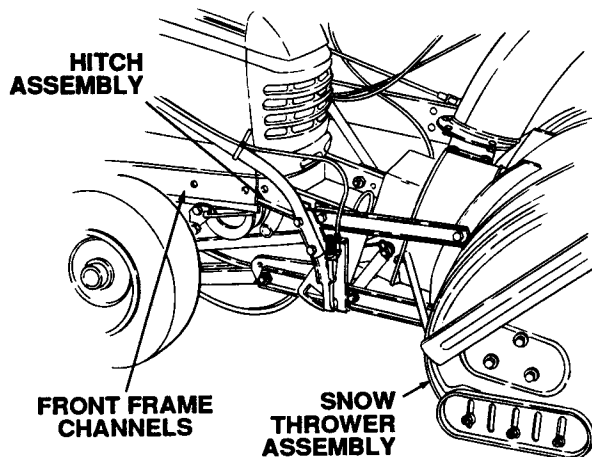


Figure 7-34. Position Snow Thrower.

2. Slide the snow thrower assembly rearward until the channel brackets of the hitch assembly engage the frame channel of the tractor. See Figure 7-34.



NOTE

To horizontally align the hitch assembly channel brackets with the tractor frame channels, tip the snow thrower auger housing slightly forward while moving the snow thrower rearward.

3. Lift the snow thrower assembly upward and move it rearward to slide the hitch channel brackets fully into the frame channels of the tractor. Secure the assembly to both sides of the tractor frame using the hex cap screws (10) and bell washers (11). See Figure 7-35.

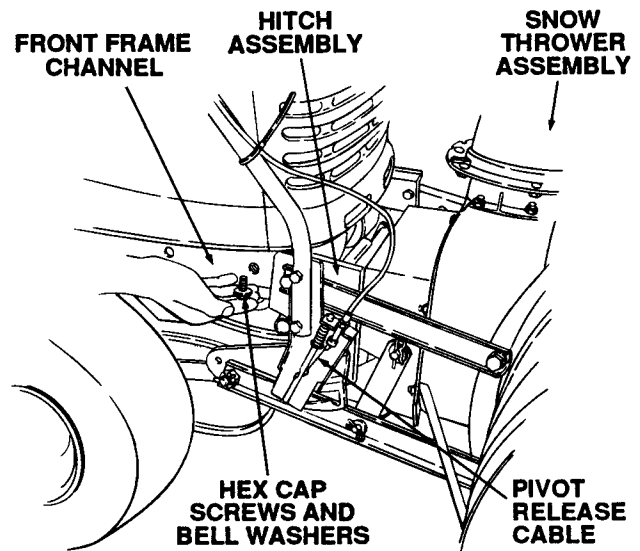


Figure 7-35. Attaching Snow Thrower to Tractor Frame.

4. Install an internal cotter pin (18) into one end of the rod (19) and lift the double pulley subframe assembly up between the frame mounting brackets (15). See Figure 7-36.

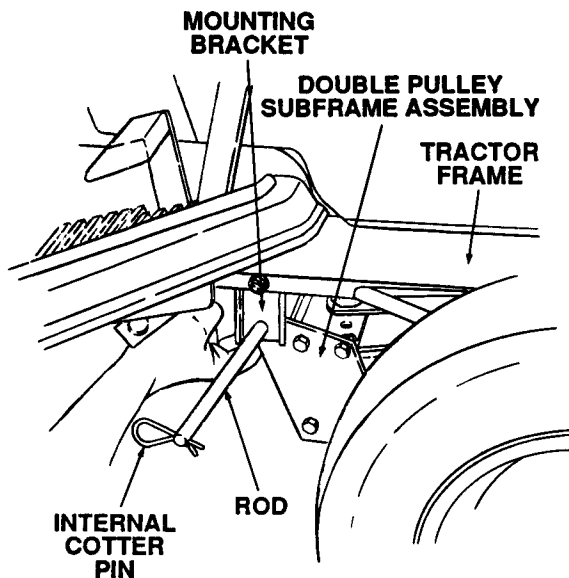


Figure 7-36. Attaching Double Pulley Subframe Assembly.

5. Slide the rod (19) through the nearest mounting bracket (15), both sides of the double pulley subframe, and the other mounting bracket (15). Install the second internal cotter pin (18) into the other end of the rod. See Figure 7-36.
6. Open the hood of the tractor and remove at least one of the side panels.
7. Route the PTO belt under the idler pulleys of the tractor and up over the PTO clutch on the front of the engine. See Figure 7-37.

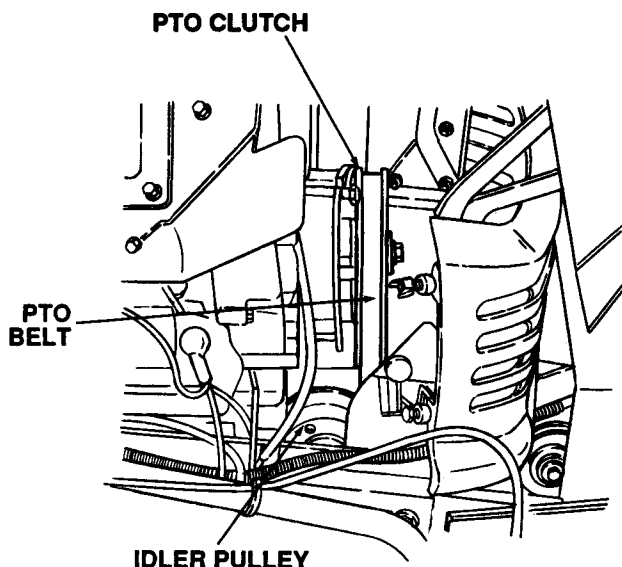


Figure 7-37. Installing PTO Belt.

8. From behind the front/right tire, pull the flat idler pulley toward you and position the PTO belt inside the flat idler pulley. Refer to Figure 7-38.

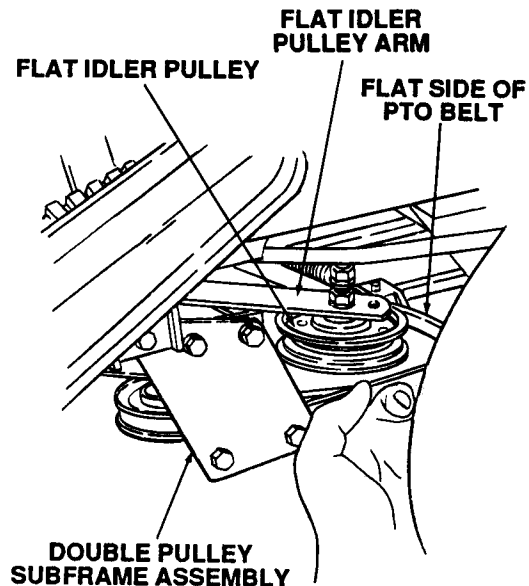


Figure 7-38. Position Flat Idler Pulley.

7-4.5 Snow Thrower Maintenance.

1. The lift latch is operated by the trigger assembly on the lift handle, through the latch release cable. If the latch cable is not functioning properly, refer to Figure 7-39 and adjust as follows:

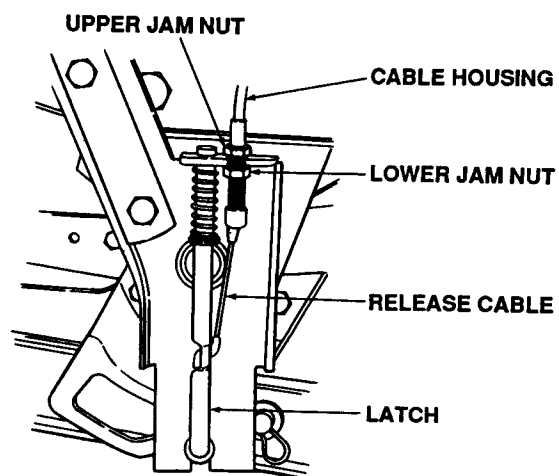


Figure 7-39. Adjusting Latch Release Cable.

- a. If the lift latch does not latch securely, loosen the upper jam nut and tighten the lower jam nut until the latch seats fully into the slot of the latch bracket.
 - b. If the lift latch still does not latch securely in the slot of the latch bracket, refer to Cub Cadet Service Bulletin CC-293 for instructions on modifying the latch bracket slot to obtain a more positive engagement.
 - c. If the latch does not release, check for slack in the release cable. Loosen the lower jam nut and tighten the upper jam nut until all slack is removed from the cable wire.
2. The shave plate and skid shoes on the bottom of the snow thrower (See Fig. 7-40) are subject to wear. If worn service as follows:
- a. Remove the hex nuts securing the skid shoes to the sides of the auger housing and reverse (right to left, etc.) the shoes.
 - b. Replace the shave plate as follows:
 - Loosen the skid shoe fasteners and remove the **rear** hex nut, bell washer, flat washer, and carriage bolt from both skid shoes.
 - Remove the hex nuts, bell washers and carriage bolts securing the shave plate to the housing and replace the shave plate.

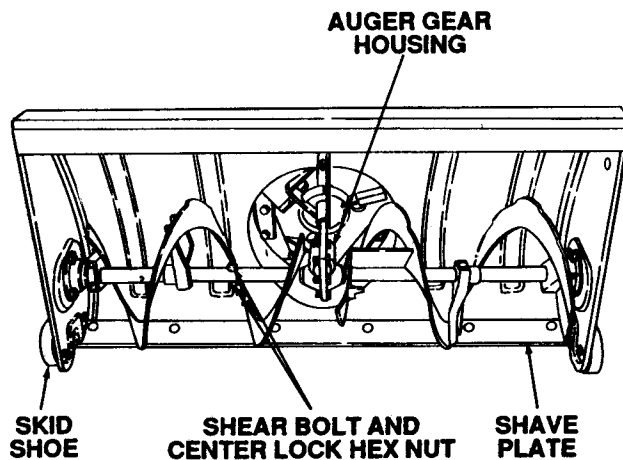


Figure 7-40. Shave Plate and Skid Shoes.

3. To protect the gear box from damage if the augers become jammed, the augers are secured to the auger shaft with shear bolts (13, Fig. 7-24) and hex center lock nuts (14). If the augers will not turn, check the shear bolts (see Fig. 7-40) and replace if necessary.

4. Replace the PTO drive belt as follows:
 - a. Remove the snow thrower assembly from the tractor.
 - b. Remove the belt guide from the double pulley subframe by removing the hex nuts and lock washers. See Figure 7-41.

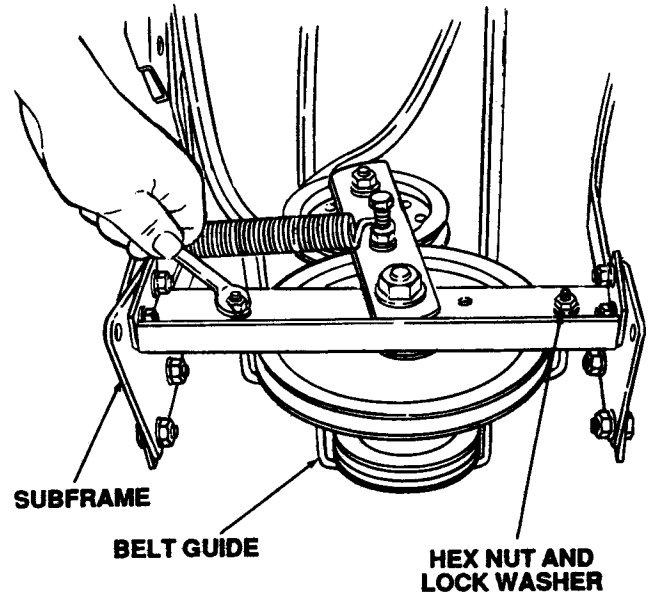


Figure 7-41. Removing Belt Guide.

- c. Pivot the subframe up. See Figure 7-42.
- d. Lift the auger drive belt off the smaller pulley. Refer to Figure 7-42.

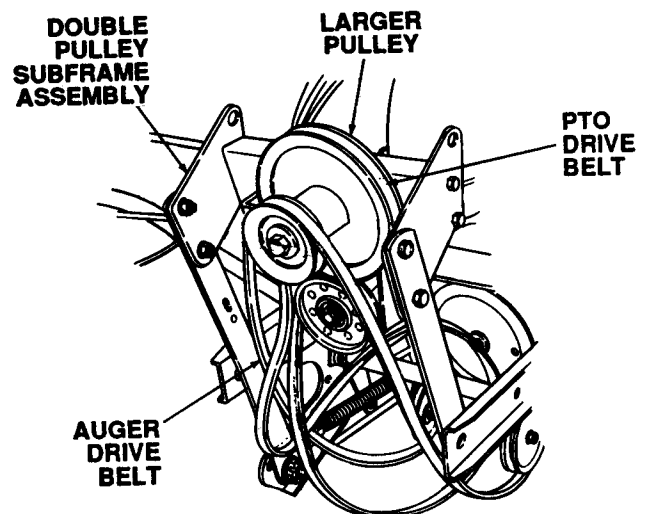


Figure 7-42. Remove PTO Drive Belt.

- e. Lift the PTO drive belt off the larger pulley.
 - f. Place the new PTO drive belt on the larger pulley.
 - g. Place the auger drive belt on the small pulley.
 - h. Install the belt guide using the hex nuts and lock washers. Refer to Figure 7-41.
 - i. Reinstall the snow thrower assembly on the tractor.
5. Replace the auger drive belt as follows:
- a. Remove the auger drive belt from the double pulley subframe assembly by following the steps 4a through 4d above.
 - b. Stand the snow thrower up on its auger housing. See Figure 7-43.

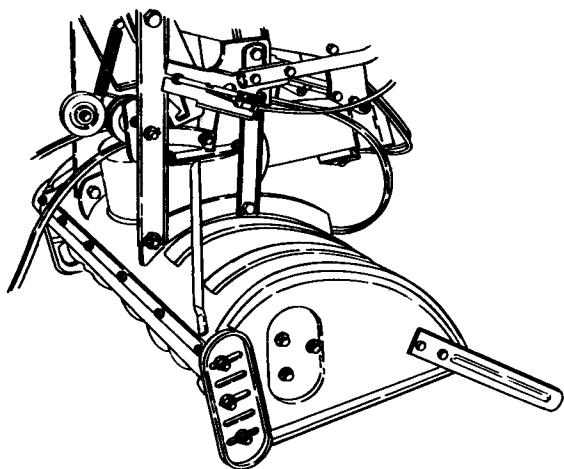


Figure 7-43. Stand Snow Thrower On Auger Housing.

- c. Remove the shoulder bolts which are used as idler pulley belt guides. See Figure 7-43.
- d. Remove the auger drive belt from both snow thrower idler pulleys and the auger drive pulley. Refer to Figure 7-43.
- e. Install the new auger drive belt on the auger drive pulley and both idler pulleys.
- f. Install the shoulder bolt belt guides.
- g. Place the auger drive belt on the smaller pulley of the double pulley assembly, then install the belt guide using the hex nuts and lock washers. Refer to Figure 7-41.

- h. Reinstall the snow thrower assembly on the tractor.

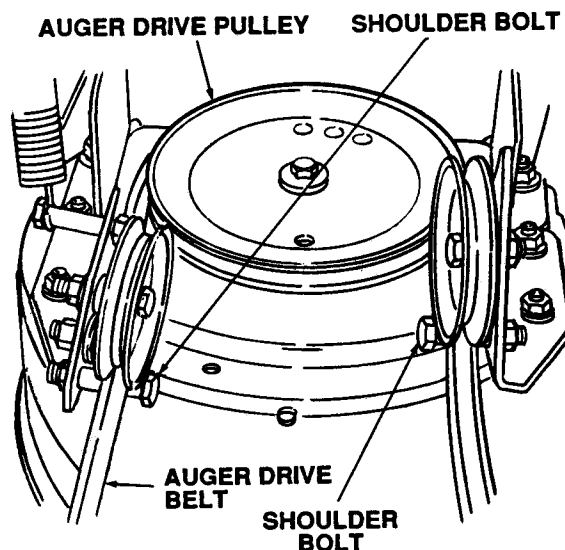


Figure 7-44. Removing Auger Belt From Snow Thrower.

7-5 28 INCH REAR MOUNTED TILLER (Model 190-304).

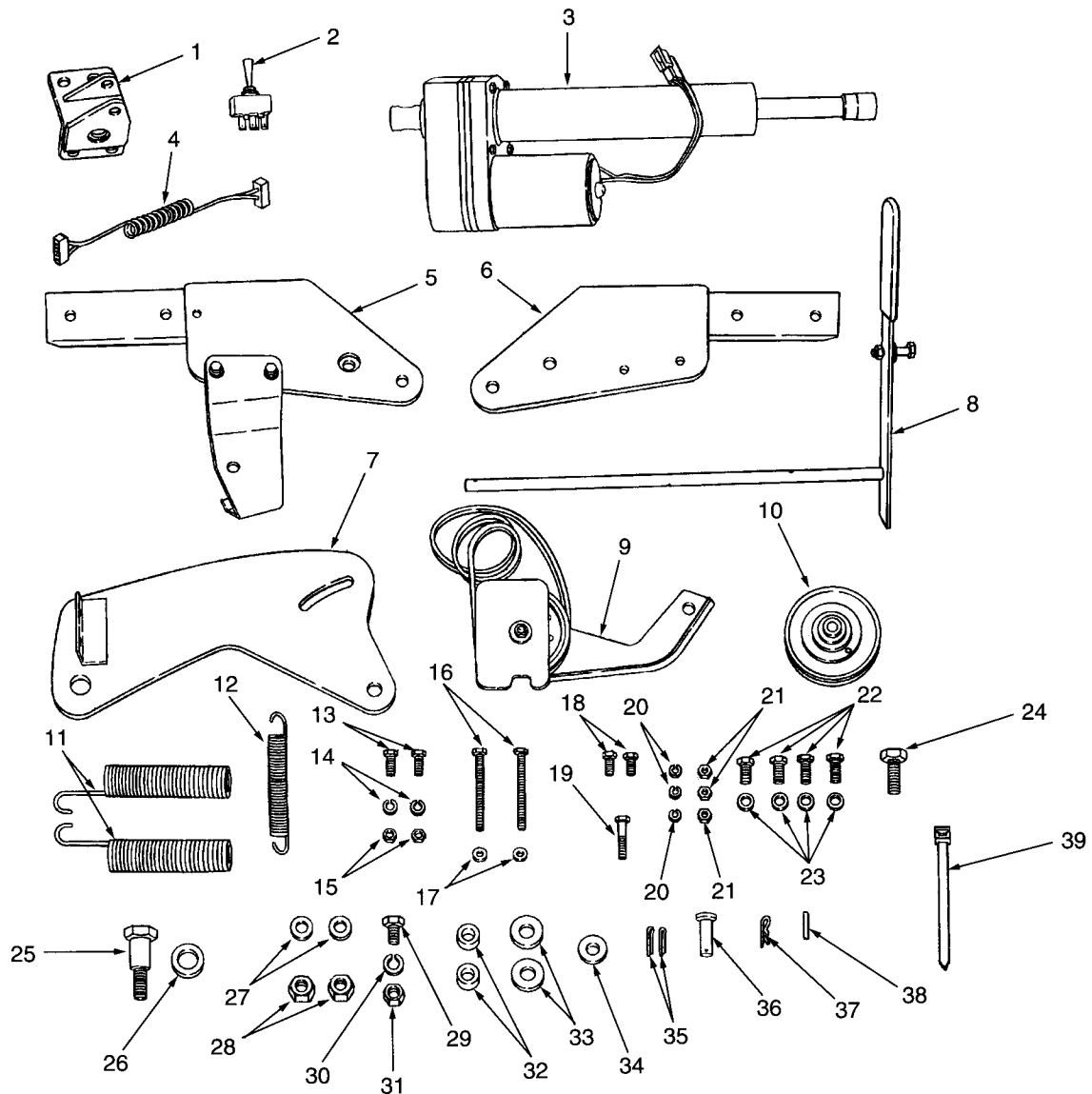
7-5.1 General. The 26-inch Rear Mounted Tiller, Model 190-304, is designed for use on Cub Cadet Series 2000 Tractor Models 2160, 2165 and 2185.

7-5.1.1 Before beginning assembly and installation of the rear mounted tiller, refer to Figure 7-45 to confirm that all parts are present, and to familiarize yourself with the component parts.



WARNING

Whenever the rear mounted tiller assembly is installed on the back of the tractor, the Model 190-307 front/rear weight kit, with a **minimum** of two suitcase weights, must be installed on the front of the tractor. The weight kit counterbalances the weight of the tiller assembly and provides stability to the tractor.



- | | |
|------------------------------------|---|
| 1. Lift Cylinder Mtg. Bracket | 21. Hex Nut, 3/8-16 |
| 2. Electric Lift Switch | 22. Hex Cap Screw, 7/16-14 X 1 |
| 3. Lift Cylinder | 23. Bell Washer, .45 X 1.0 X .62 |
| 4. Wire Harness | 24. Hex Cap Screw, 1/2-13 X 1-1/2 |
| 5. Left Channel Bracket Assy. | 25. Shoulder Bolt, 3/4 X 1.10 |
| 6. Right Channel Bracket Assy. | 26. Flat Washer, .76 ID X 1.44 OD X .06 |
| 7. Lift Arm | 27. Flat Washer, .510 ID X 1.0 OD X .12 |
| 8. Idler Shaft | 28. Hex Lock Nut, 1/2-13 |
| 9. Idler Bracket | 29. Shoulder Bolt, .62 X .30 |
| 10. Idler Pulley | 30. Lock Washer, 1/2 |
| 11. Helper Spring | 31. Hex Jam Nut, 1/2-20 |
| 12. Extension Spring | 32. Spacer, .50 ID X .88 OD X .27 |
| 13. Hex Cap Screw, 5/16-18 X 3/4 | 33. Flat Washer, 1/2 X 1-1/2 X .08 |
| 14. Lock Washer, 5/16 | 34. Flat Washer, .510 ID X 1.0 OD X .60 |
| 15. Hex Nut, 5/16-18 | 35. Cotter Pin, 1/8 X 1.0 |
| 16. Hex Cap Screw, 5/16-18 X 3-1/2 | 36. Clevis Pin, .50 X 2.0 |
| 17. Flat Washer, 5/16 | 37. Hairpin Cotter |
| 18. Hex Cap Screw, 3/8-16 X 3/4 | 38. Spring Roll Pin, 3/16 X 1-1/2 |
| 19. Hex Cap Screw, 3/8-16 X 1-1/2 | 39. Tie Strap |
| 20. Lock Washer, 3/8 | 40. Tiller Assembly (Not Shown) |

Figure 7-45. 28-Inch Rear Mounted Tiller Components (Model 190-304).

7-5.2 Tractor Preparation.



WARNING

Before performing any tractor preparations, place the PTO switch in the "OFF" position, engage the brake pedal lock, turn the ignition key to the "OFF" position and remove the key from the switch.



WARNING

The tractor must be placed on a hard, level surface during preparation.



NOTE

Two 5/16 inch mounting holes must be drilled in the tractor drawbar in order to securely fasten the lift cylinder mounting bracket to the tractor.

1. Install the lift cylinder mounting bracket (1, Fig. 7-45) on the tractor as follows:
 - a. Assemble the lift cylinder mounting bracket (1) on the right rear of the tractor frame as shown in Figure 7-46. Snugly secure the bracket with the two hex cap screws (18), lock washers (20) and hex nuts (21).

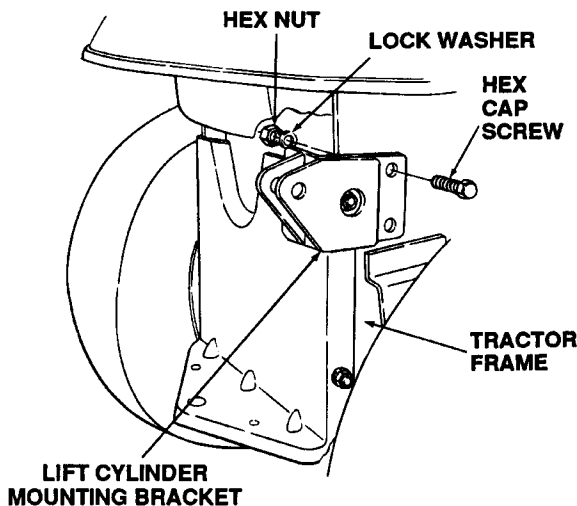


Figure 7-46. Installing Lift Cylinder Mounting Bracket.

- b. Using the two holes in the rear of the cylinder mtg. bracket (1) as a template, mark the hole locations on the tractor drawbar. See Figure 7-47.

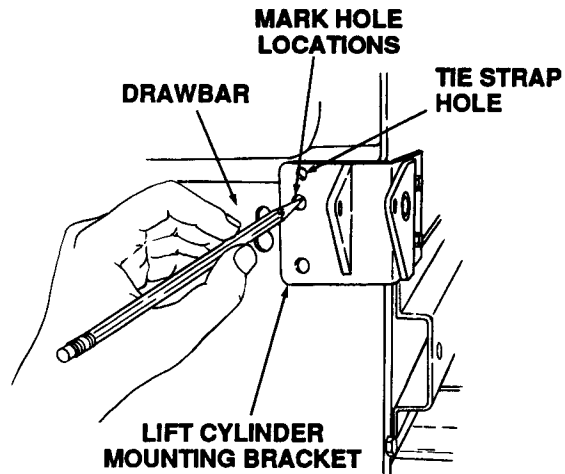


Figure 7-47. Marking Location For Holes.

- c. Once the hole locations are marked, remove the mounting bracket from the tractor frame. Drill two 5/16 inch diameter holes at the locations marked on the drawbar.



NOTE

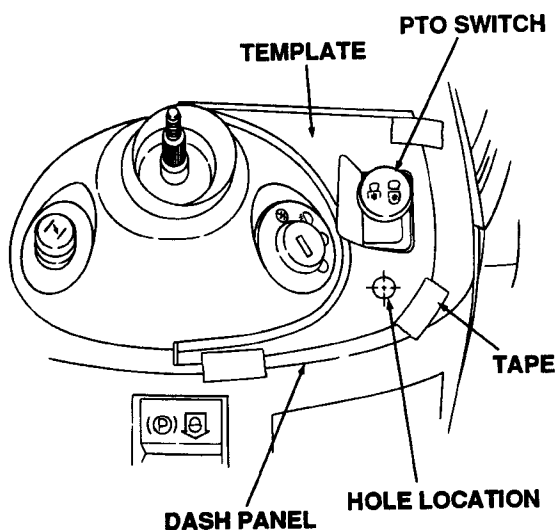
Proper centering of the holes is important. Use a center punch to make an indentation at the center of each marked hole prior to drilling the holes.

- d. Install the lift cylinder mtg. bracket (1) onto the right rear of the tractor frame as shown in Figure 7-46. Secure the bracket to the right side of the frame with the two hex cap screws (18), lock washers (20) and hex nuts (21). Secure the bracket to the drawbar with the two hex cap screws (13), lock washers (14) and hex nuts (15).

NOTE

A 1/2 inch mounting hole must be drilled in the tractor dash panel to accommodate the electric lift switch. Use the template provided in the Tiller Owner's Manual to properly position the hole.

2. Install the electric lift switch (2, Fig. 7-45) in the tractor dash panel as follows:
 - a. Position the template provided in the Owner's Manual on the tractor dash panel as shown in Figure 7-48, then mark the hole location below the PTO switch as shown.



NOTE: STEERING WHEEL IS REMOVED ONLY FOR CLARITY.

Figure 7-48. Marking Hole Location For Electric Lift Switch.

- b. Open the tractor hood and inspect the area immediately below the marked hole location. This area must be free of wiring that may be damaged when drilling the hole. Temporarily secure wires away from this area, if necessary.

NOTE

To properly center the hole, use a small diameter drill bit to make a pilot hole at the center of the marked hole location prior to drilling the 1/2 inch hole.

- c. Drill a 1/2 inch hole in the dash panel at the marked location.
 - d. Remove the hex nut from the switch and insert the switch up through the hole from the underside of the dash panel.
 - e. Position the switch so that the flat surface on the threads of the switch is toward the right side of the tractor as shown in Figure 7-49. Secure the switch to the dash panel with the hex nut.

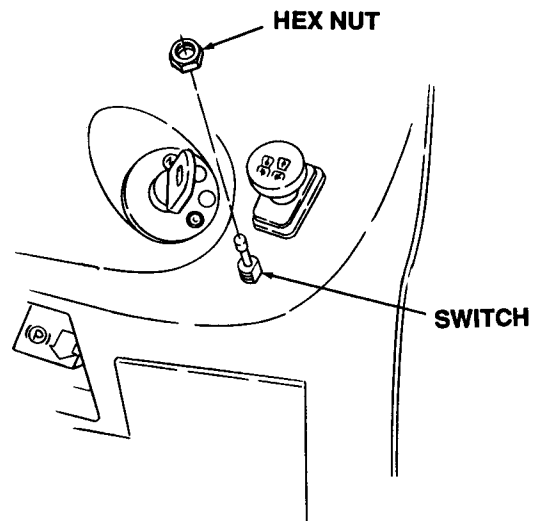


Figure 7-49. Installing Lift Switch.

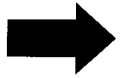
- f. Plug the matching terminal connector of the wire harness (4, Fig. 7-45) onto the spade terminals of the lift switch.
 - g. Route the wire harness (4, red and yellow wires) downward through the tractor pedestal and rearward along the right frame channel, between the frame and running board. Note the harness should be routed adjacent to the existing tractor wire harness.
 - h. Secure the rearward end of the wire harness (4) to the cylinder mounting bracket (1) with the tie strap (39).
 - i. Connect the short blue wire (with in-line fuse) of the harness (4) to the positive terminal of the battery.
 - j. Connect the short black wire of the harness to the negative terminal of the battery.

7-5.3 Tiller Assembly Preparation.



WARNING

Place the rear mounted tiller assembly on a firm and level surface during preparation.



NOTE

The installation components must be assembled on the tiller assembly prior to installation of the tiller onto the rear of the tractor.

1. Assemble the left channel bracket assembly (5, Fig. 7-45) to the left side of the tiller pivot bracket as shown in Figure 7-50. Secure the brackets together with the shoulder bolt (29), lock washer (30) and hex jam nut (31).

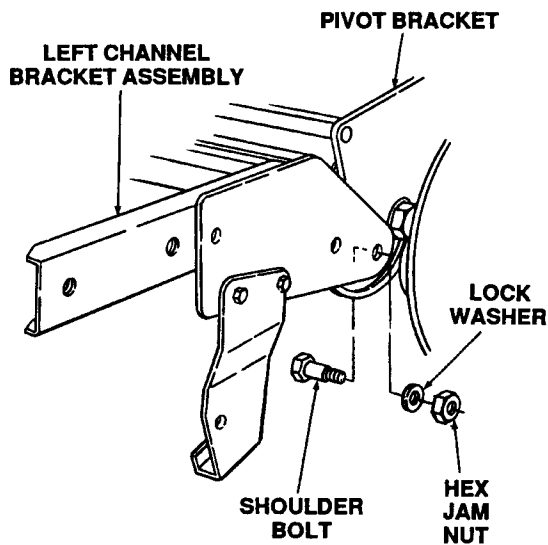


Figure 7-50. Install Left Channel Bracket Assembly.

2. In this order: slide a spacer (32, Fig. 7-45), the lift arm (7), a flat washer (33), the second spacer (32) and flat washer (33) onto the rod of the tiller pivot bracket. Refer to Figure 7-51. Install a cotter pin (35) in the hole at the end of the rod.

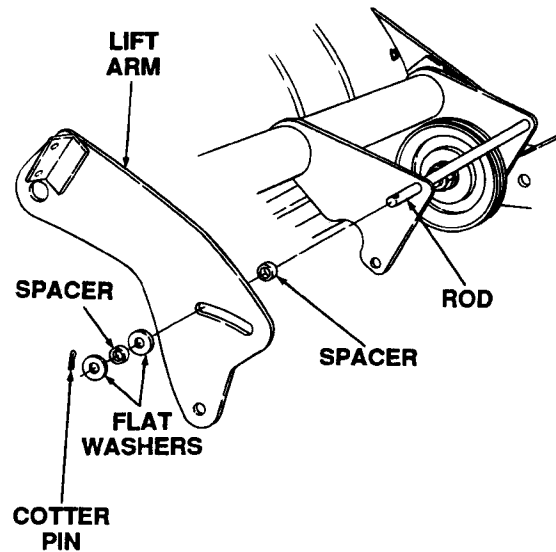


Figure 7-51. Install Lift Arm and Spacers.

3. Position the right channel bracket (6, Fig. 7-45) between the lift arm and right side of the tiller pivot bracket as shown in Figure 7-52. Align the holes and insert the hex cap screw (24) through the brackets and lift arm. Secure with the flat washer (27) and hex lock nut (28).

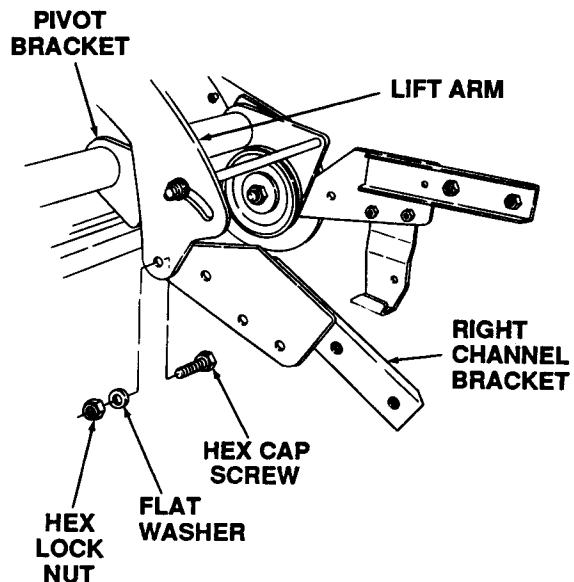


Figure 7-52. Install Right Channel Bracket.

- Referring to Figure 7-53, attach and hold the hook of each helper spring (11, Fig. 7-45) onto the tiller pivot bracket rod, one hook between each end of the spacer (see Fig. 7-51) and its adjacent flat washer. Insert the two hex cap screws (16) through the holes in the L-bracket of the lift arm, and thread into the helper springs. Tighten each bolt one or two turns only, ensuring that there is no tension on the springs.

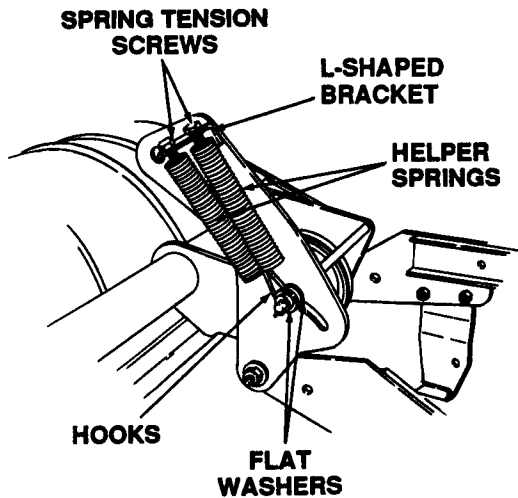


Figure 7-53. Attaching Helper Springs.

- Refer to Figure 7-54 and insert the idler shaft (8, Fig. 7-45) through the rearward hole of the left channel bracket assembly. Push the shaft approximately half the distance toward the right channel bracket. With the idler pulley facing toward the left, slide the idler bracket assembly (9) onto the idler shaft as shown in Figure 7-54.

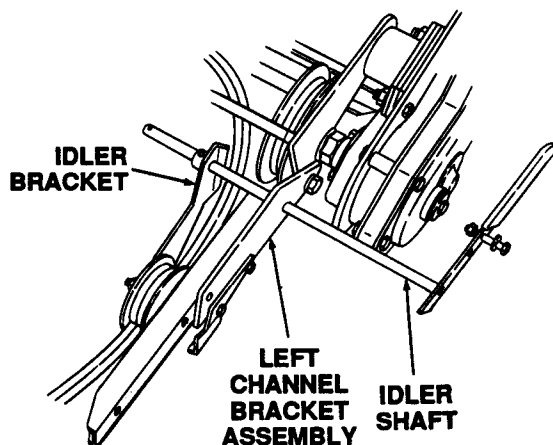


Figure 7-54. Installing Idler Shaft and Bracket.

- Push the idler shaft through the rearward hole of the right channel bracket. Slide the flat washer (34) onto the end of the idler shaft and secure with a cotter pin (35). Refer to Figure 7-55.

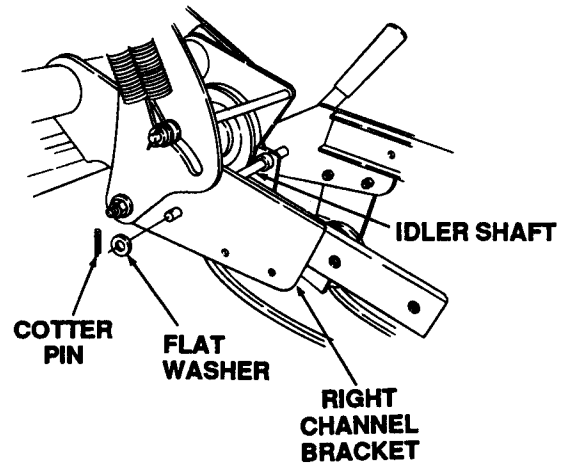


Figure 7-55. Securing Idler Shaft.

- Align the hole of the idler bracket (9) hub with the hole in the idler shaft (8). Using a block of wood to support the idler shaft, drive the spring roll pin (38) through the holes as shown in Figure 7-56.

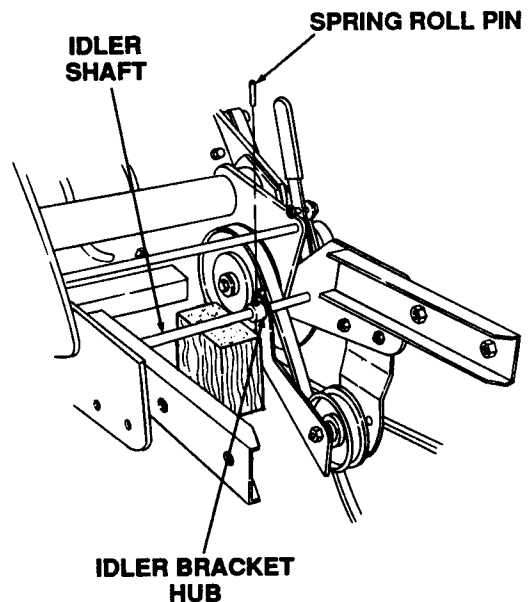


Figure 7-56. Installing Roll Pin.

NOTE

The PTO belt should be captured in the idler bracket (9) assembly with the back of the belt (flat side) against the flat idler pulley.

8. Route the PTO belt around the tiller drive pulley as shown in Figure 7-57. Make certain the V-side of the belt fully engages the pulley groove.

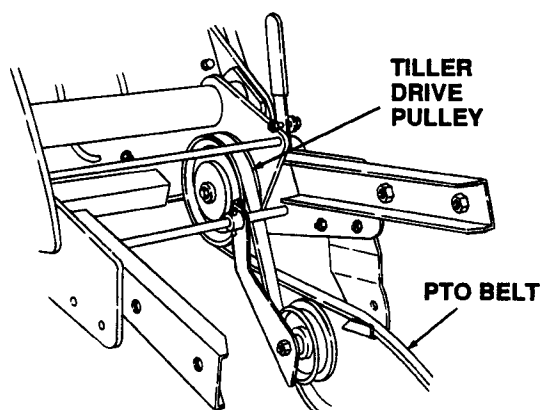


Figure 7-57. Routing the PTO Belt.

9. Place the V-side of the PTO belt in the groove of the idler V-pulley (10), then with the extended hub of the pulley toward the bracket, position the idler pulley (with the belt) on the left channel bracket assembly as shown in Figure 7-58.

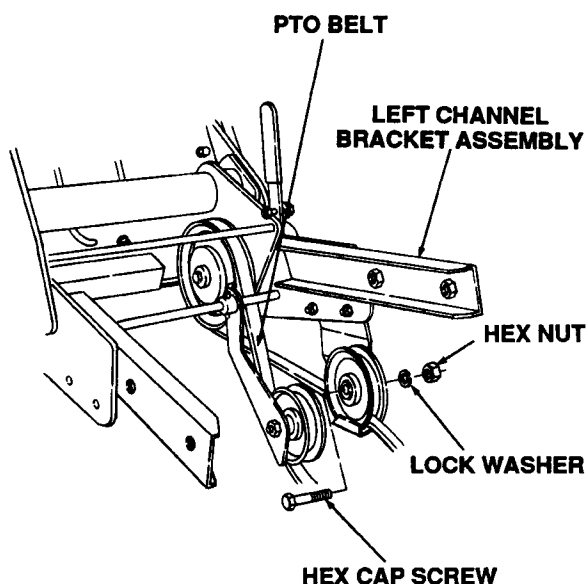


Figure 7-58. Installing V-Idler Pulley.

10. Ensure that the PTO belt is properly routed over the pulleys as shown in Figure 7-59; then secure the idler pulley (with belt) to the left channel bracket with the hex cap screw (19), lock washer (20) and hex nut (21). See Figure 7-58.

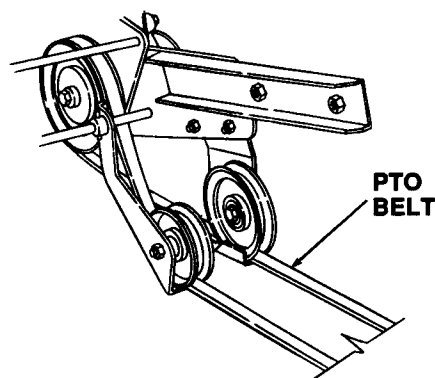


Figure 7-59. Proper PTO Belt Routing.

7-5.4 Tiller Installation.



WARNING

Before preparing for tiller installation onto the tractor, ensure the PTO switch is in the "OFF" position, the brake pedal lock is engaged, and the ignition switch is in the "OFF" position and the key is removed.



WARNING

Select a firm and level surface which is large enough to accommodate the tiller attachment and tractor.



WARNING

If the tractor has been recently run, the exhaust system and surrounding areas will be HOT. To avoid personal injury, allow the tractor to cool before installing the PTO belt.



NOTE

Apply a light coating of grease to the tiller channel brackets to ease insertion into the tractor frame channels.

1. Position the tiller assembly directly behind the tractor with the left and right channel brackets toward the rear of the tractor. Slide the PTO belt under the tractor.
2. Align both channel brackets with the rear frame channels of the tractor and carefully slide the tiller forward until the channel brackets are fully inserted into the frame channels. See Figure 7-60.
3. Align the mounting holes of the channel brackets and frame, then secure with the four hex cap screws (22) and bell washers (23). Refer to Figure 7-60.

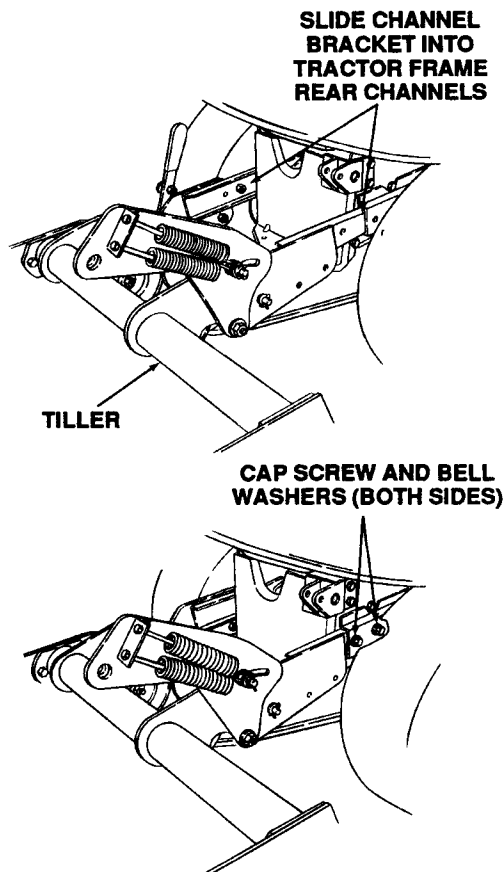


Figure 7-60. Attaching Tiller To Tractor.

4. Install the electric lift cylinder (3, Fig. 7-45) between the lift cylinder mounting bracket (1) on the right rear of the tractor and the tiller lift arm (7) as follows:
 - a. Position the motor end of the lift cylinder (3) between the mounting ears of the cylinder mounting bracket as shown in Figure 7-61.

- b. Align the holes, insert the clevis pin (36), and secure with the hairpin cotter (37) as shown in Figure 7-61.

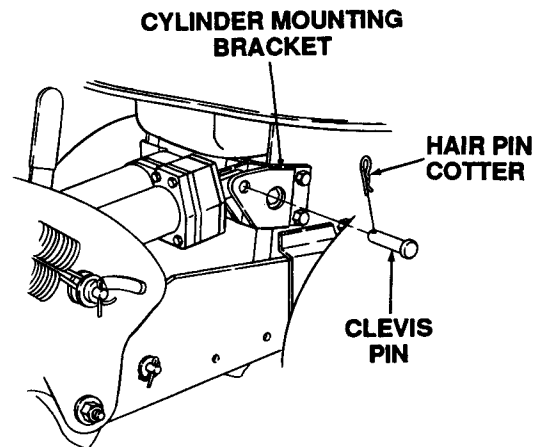


Figure 7-61. Attaching Lift Cylinder To Tractor.

- c. Position the piston end of the lift cylinder to align with the mounting hole of the tiller lift arm. See Figure 7-62. If necessary, rotate the cylinder piston counterclockwise to manually extend the piston.
- d. Slide the flat washer (26) onto the shoulder bolt (25) and insert the shoulder bolt through the lift arm and cylinder piston. Secure with the flat washer (27) and hex lock nut (28) as shown in Figure 7-62.

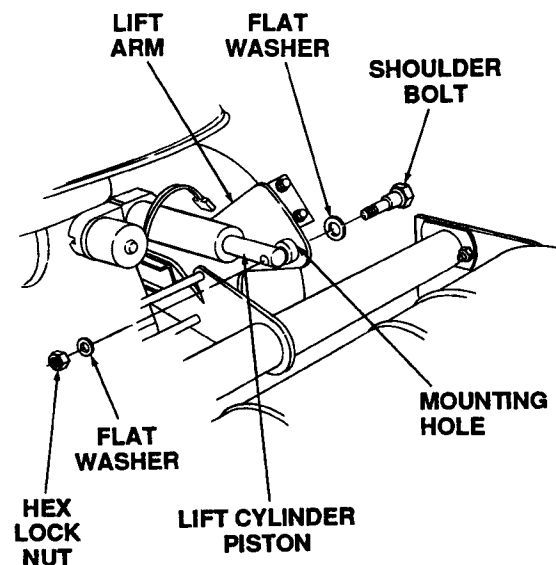


Figure 7-62. Attaching Lift Cylinder To Tiller.

5. Plug the rear connector of the tiller wire harness (4) firmly into the lift cylinder (3) electric motor connector.
6. Hook one end of the extension spring (12) onto the extended bolt of the left channel bracket. Push the idler shaft handle forward and extend the spring to hook the other end of the spring onto the extended bolt of the idler shaft handle. See Figure 7-63.

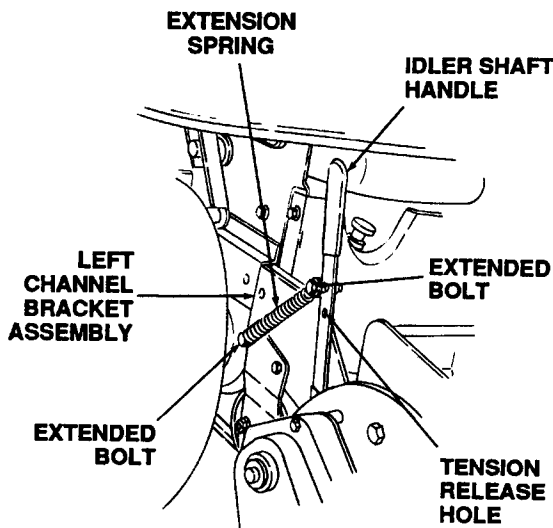


Figure 7-63. Installing Extension Spring.

7. Install the PTO belt onto the PTO clutch at the front of the engine as follows:



WARNING

The exhaust system and surrounding area may be **HOT**. To avoid personal injury, allow the engine and exhaust system to cool before proceeding with the following PTO belt installation instructions.

- a. Pull the PTO belt toward the front of the tractor.
- b. Pull the idler shaft handle rearward until its tension release hole (located below the extension spring, see Fig. 7-63), is positioned behind the rear edge of the left channel bracket.

- c. Insert a pin (or 5/16 inch bolt) through the tension release hole and slowly release the idler shaft handle so that the pin (or bolt) jams against the rear edge of the channel bracket. The pin (or bolt) should hold the handle in place with the tension released from the PTO belt.



CAUTION

Proper belt installation is important to the operation of the tiller. When the belt is correctly installed it will have a 180° twist on the right side between the tiller idler bracket and the right front idler pulley of the tractor. Refer to Figure 7-66.

- d. Install the forward end of the PTO belt on the PTO clutch by passing the belt upward inside the tractor frame. Make sure the V-side of the belt fully engages the groove of the pulley. See Figure 7-64.

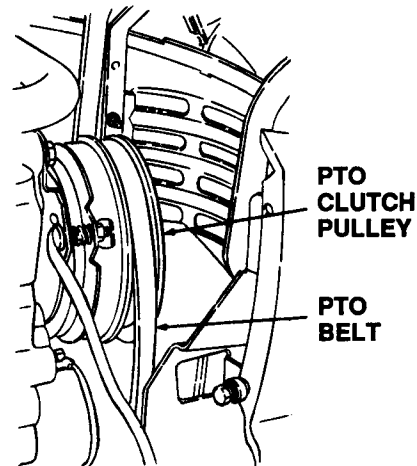


Figure 7-64. Install PTO Belt On PTO Clutch.

- e. Twist the PTO belt 1/4 turn to place the V-sides of the belt in the grooves of the two front idler pulleys of the tractor. See Figure 7-65.
- f. Referring to Figure 7-53, tighten the two spring tension hex cap screws (16) until the upper end of the helper springs (11) are against the L-bracket of the lift arm (7).

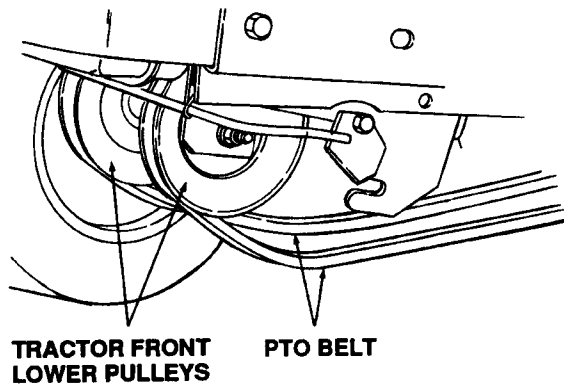


Figure 7-65. Place PTO Belt In Front Idler Pulleys

- g. Pull the idler shaft handle rearward and remove the pin (or bolt), then slowly release the handle. The extension spring (12) should apply tension to the handle and PTO belt.
- h. Referring to Figure 7-66, make certain the PTO belt is correctly installed in each pulley and that there is a 180° twist in the belt between the idler bracket pulley and the right front idler pulley of the tractor.

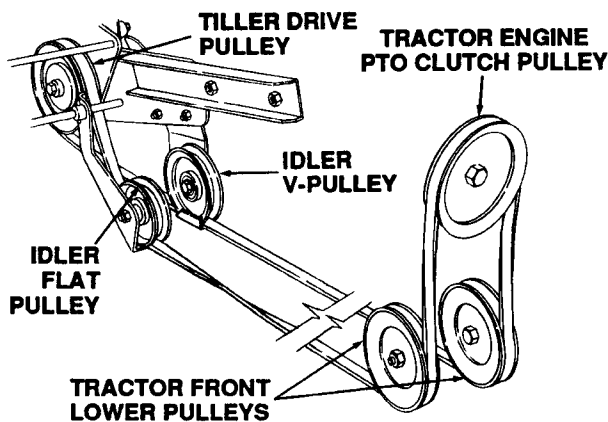


Figure 7-66. Correct PTO Belt Routing.

7-5.5 Tiller Maintenance.

1. To prevent damage or premature wear to the PTO belt, regularly check for the following:
 - Check the tiller idler pulleys and drive pulley for accumulation of dirt. Keep pulleys clean.

- Check the pulleys for stones or other foreign matter which may have been tilled up from beneath the soil.
- Check the pulleys for damage caused by striking foreign objects.

2. Replace the PTO belt as follows:



WARNING

Place the PTO switch in the "OFF" position, engage the brake pedal lock, turn the ignition key to the "OFF" position and remove the key from the switch.



WARNING

If the tractor has been recently run, the exhaust system and surrounding areas will be **HOT**. To avoid personal injury, allow the tractor to cool before removing the PTO belt.

- a. Pull the idler shaft handle rearward until its tension release hole (located below the extension spring, see Fig. 7-63), is positioned behind the rear edge of the left channel bracket.
- b. Insert a pin (or 5/16 inch bolt) through the tension release hole and slowly release the idler shaft handle so that the pin (or bolt) jams against the rear edge of the channel bracket. The pin (or bolt) should hold the handle in place with the tension released from the PTO belt.
- c. Remove the belt from the PTO clutch on the front of the engine and pull the belt downward through the inside of the tractor frame.
- d. Pull the idler shaft handle rearward, remove the pin (or bolt) from the handle and slowly release the handle.
- e. Remove the V-idler pulley and belt from the left channel bracket.
- f. Remove the fasteners securing the belt guard plate and flat idler pulley to the idler bracket (9) and remove the belt.
- g. Place the back side (flat side) of the new belt against the flat idler pulley and reinstall the belt, flat idler pulley and belt guard plate onto the idler bracket (9).

- h. Route the belt around the tiller drive pulley as shown in Figure 7-57. Make certain the V-side of the belt fully engages the pulley groove.
 - i. Place the V-side of the PTO belt in the groove of the idler V-pulley (10), then with the extended hub of the pulley toward the bracket, position the idler pulley (with the belt) on the left channel bracket assembly as shown in Figure 7-58.
 - j. Ensure that the PTO belt is properly routed over the pulleys as shown in Figure 7-59; then secure the idler pulley (with belt) to the left channel bracket with the hex cap screw (19), lock washer (20) and hex nut (21). See Figure 7-58.
 - k. Following the instructions in step 7 of paragraph 7-5.4, reinstall the belt onto the PTO clutch.
3. The chain case is lubricated and sealed at the factory and should not require checking or changing. If the chain case is disassembled, replace the grease with 20 ounces of plastilube type "O" grease (part number 737-0133, 14 ounce container).
 4. At least once a season, remove the bearing cup on the right hand side of the tiller housing. See Figure 7-67. Clean and refill the cup with 2 ounces of plastilube type "O" grease (part number 737-0133).

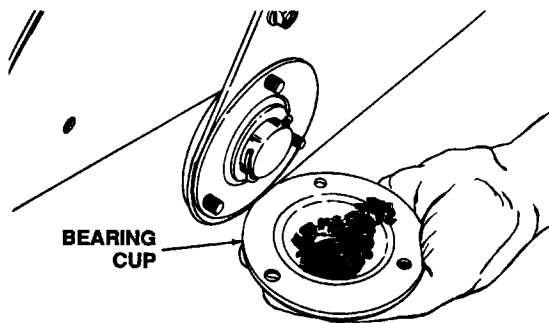


Figure 7-67. Lubricating Right Bearing Cup.

5. The tines are subject to wear and periodically require replacement. When replacing the tines, it is recommended that the individual tines be replaced one at a time in order to retain the correct orientation pattern. When replacing tines, note the following.
 - Left hand tines (part number 742-0243) are stamped with an "L" and right hand tines (part number 742-0244) are stamped with an "R".
 - Left hand tines mount on the left sides of the two outer tine carriers and on the right sides of the three inner tine carriers. The blade edges extend to the right and face rearward as the tine shaft rotates rearward from the top.
 - Right hand tines mount on the right sides of the two outer tine carriers and on the left sides of the three inner tine carriers. The blade edges extend to the left and face rearward as the tine shaft rotates rearward from the top.
 - The sharpened edges of all tine blades must face in the direction of rotation, which is rearward from the top. Refer to Figure 7-68.

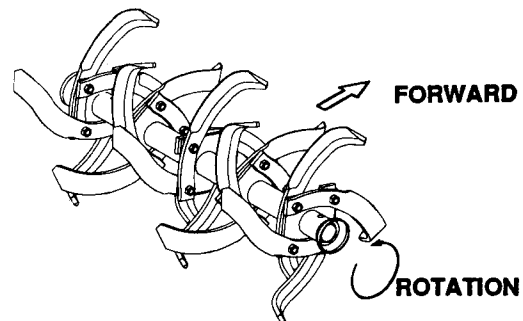


Figure 7-68. Tiller Tines.