

Owner's Manual

45" SNOW THROWER ATTACHMENT

Model Number
451

NOTE

The following kits are required to assemble the snow thrower to the tractor:

- All Standard Garden Tractors with Manual Lift require Manual Lift Bracket and Helper Spring Kit, Model 190-528.
- All Super Garden Tractors require Carriage Bracket Extension Kit, Model 190-529.

Important:
Read Safety Rules and Instructions Carefully

Thank you for purchasing an American-built product

CUB CADET CORPORATION • P.O. BOX 368023 • CLEVELAND, OHIO 44136-9723

LIMITED WARRANTY

**TWO-YEAR RESIDENTIAL
ONE-YEAR COMMERCIAL**

Proper maintenance of your Cub Cadet equipment is the owner's responsibility. Follow the instructions in your owner's manual for correct lubricants and maintenance schedule. Your Cub Cadet dealer carries a complete line of quality lubricants and filters for your equipment's engine, transmission, chassis and attachments.

RIDING MOWERS, LAWN TRACTORS, GARDEN TRACTORS, CUB CADET ATTACHMENTS AND HOME MAINTENANCE PRODUCTS

This limited warranty for residential users, covers any defect in materials or workmanship in your Cub Cadet equipment for two years from the date of purchase for the first user purchaser.

We will replace or repair any part or parts without charge through your authorized Cub Cadet dealer.

Batteries have a one-year prorated limited warranty with 100% replacement during the first three months.

V-belts for either the traction drive or any attachments are covered for one year only.

Cub Cadet equipment used commercially is warranted for one year only.

(Commercial use is defined as either having hired operators or used for income producing purpose.)

ITEMS NOT COVERED

The warranty does not cover routine maintenance items such as lubricants, filters (oil, fuel, air and hydraulic), cleaning, tune-ups, brake and/or clutch inspection, adjustments made as part of normal maintenance, blade sharpening, set-up, abuse, accidents and normal wear. It does not cover incidental costs such as transporting your equipment to and from the dealer, telephone charges or renting a product temporarily to replace a warranted product.

There is no other express warranty.

HOW TO OBTAIN SERVICE

Contact your authorized Cub Cadet servicing dealer who sold you your Cub Cadet equipment. If this dealer is not available, see the Consumer Yellow Pages under "lawn mowers" for the name of a dealer near you.

If you need further assistance in finding an authorized Cub Cadet servicing dealer, contact:

**Cub Cadet Corporation
Post Office Box 368023
Cleveland, Ohio 44136**

HOW DOES STATE LAW APPLY?

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



To reduce the potential for any injury, comply with the following safety instructions. Failure to comply with the instructions may result in personal injury.

SAFE OPERATION PRACTICES FOR SNOW THROWERS

TRAINING

1. Read this owner's manual carefully. Be thoroughly familiar with the controls and proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Never allow children to operate equipment. Never allow adults to operate equipment without proper instructions.
3. No one should operate the unit while intoxicated or while taking medication that impairs the senses or reactions.
4. Keep the area of operation clear of all persons, especially small children and pets.
5. Exercise caution to avoid slipping or falling, especially when operating in reverse.

PREPARATION

1. Thoroughly inspect the area where the equipment is to be used and remove all door mats, sleds, boards, wires and other foreign objects.
2. Disengage all clutches and shift into neutral before starting engine.
3. Do not operate equipment without wearing adequate winter outer garments. Wear footwear which will improve footing on slippery surfaces.
4. Check the fuel before starting the engine. Gasoline is an extremely flammable fuel. Do not fill the fuel tank indoors while the engine is running or while the engine is still hot. Replace gasoline cap securely and wipe off any spilled gasoline before starting the engine as it may cause a fire or explosion.
5. Use a grounded three wire plug-in for all units with electric drive motors or electric starting motors.
6. Never attempt to make any adjustments while engine is running (except where specifically recommended by manufacturer).
7. Let engine and machine adjust to outdoor temperature before starting to clear snow.
8. Always wear safety glasses or eye shields during operation or while performing an adjustment or

repair to protect eyes from foreign objects that may be thrown from the machine in any direction.

OPERATION

1. Do not put hands or feet near rotating parts. Keep clear of discharge opening at all times.
2. Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic. Do not carry passengers.
3. After striking a foreign object, stop the engine, remove wire from spark plug and thoroughly inspect the snow thrower for any damage. Repair the damage before restarting and operating the snow thrower.
4. If the snow thrower should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
5. Stop engine whenever you leave the operating position, before unclogging the collector/impeller housing or discharge guide and making any repairs, adjustments or inspections.
6. Take all possible precautions when leaving the unit unattended. Disengage the collector/impeller, shift into neutral, stop the engine and remove the key.
7. When cleaning, repairing or inspecting, make certain collector/impeller and all moving parts have stopped. Disconnect spark plug wire and keep away from plug to prevent accidental starting.
8. Do not run engine indoors except when starting engine and transporting snow thrower in or out of building. Open doors. Exhaust fumes are dangerous.
9. Do not clear snow across the face of slopes. Exercise extreme caution when changing direction on slopes. Do not attempt to clear steep slopes.
10. Never operate snow thrower without guards, plates or other safety protection devices in place.

11. Never operate snow thrower near glass enclosure, automobiles, window wells, drop off, etc., without proper adjustments of snow thrower discharge angle. Keep children and pets away.
12. Do not overload machine capacity by attempting to clear snow at too fast a rate.
13. Never operate the machine at high transport speeds on slippery surfaces. Look behind and use care when backing.
14. Never direct discharge at bystanders or allow anyone in front of unit.
15. Disengage power to collector/impeller when transporting or not in use.
16. Use only attachments and accessories approved by the manufacturer of snow thrower (such as wheel weights, counterweights, cabs, etc.).

17. Never operate the snow thrower without good visibility or light. Always be sure of your footing and keep a firm hold on the handles. Walk, never run.

MAINTENANCE AND STORAGE

1. Check shear bolts, mounting bolts, etc., at frequent intervals for proper tightness to be sure equipment is in safe working condition.
2. Never store the machine with fuel in the fuel tank inside a building where ignition sources are present, such as hot water and space heaters, clothes dryers and the like. Allow engine to cool before storing in any enclosure.
3. Always refer to owner's manual instructions for important details if snow thrower is to be stored for an extended period.
4. Run machine a few minutes after throwing snow to prevent freeze up of collector/impeller.

CONTENTS

Section		Page
	Warranty	2
	Safe Operations	3
	To The Owner	5
I	Introduction	6
II	Preparation	9
III	Installation	13
IV	Controls and Operation	20
V	Maintenance	22

TO THE OWNER

Contained in this manual are instructions for the installation of the *Cub Cadet* 45" Snow Thrower, Model Number 451. This kit is designed for installation on *Cub Cadet* Garden Tractors.

Standard Garden Tractors with manual lifts also require use of Manual Lift Bracket and Helper Spring Kit, Model 190-528. Super Garden Tractors require use of Carriage Bracket Extension Kit, Model 190-529. Instructions for installation of these kits are contained in this manual.

Follow these instructions when installing this equipment on your tractor. Pay attention to all "CAUTION" and "WARNING" information. Retain this manual for future reference.



WARNING

Use rear weights on tractor when snow thrower is attached.



NOTE

LEFT and RIGHT indicate the left and right sides of the tractor when facing forward in the driver's seat. Reference to FRONT indicates grille end of the tractor; to REAR the draw bar end.

SECTION I. INTRODUCTION

Section I helps you become familiar with the components of the 45" Snow Thrower Kit, Model 451, Manual Lift Bracket and Helper Spring Kit, Model 528, and Carriage Bracket Extension Kit, Model 529.

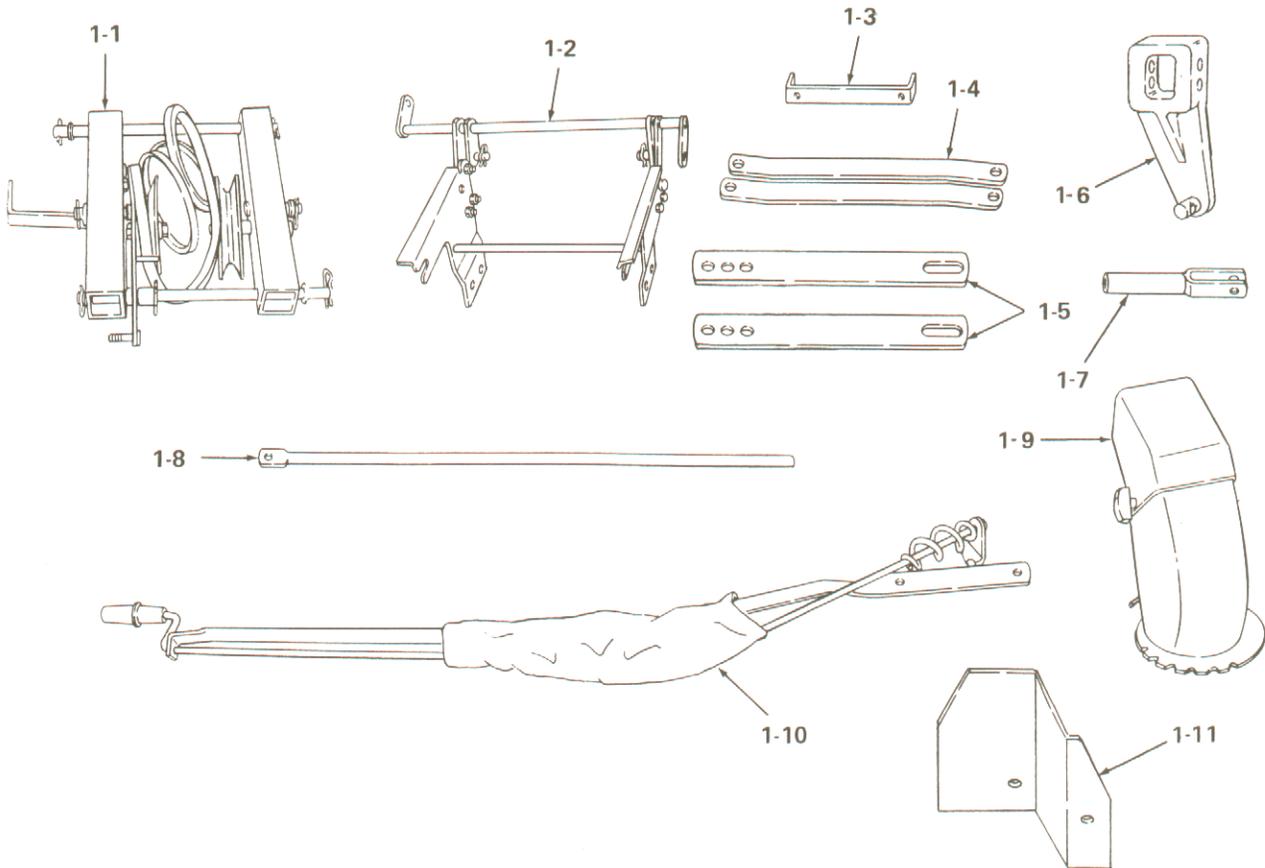
Before you begin to install this equipment, remove all parts from the boxes, using care not to mix parts from different kits. Refer to Figures 1, 2, 3 and 4 to confirm that all parts are present and to acquaint yourself with parts nomenclature.

➔ NOTE

Throughout the manual, parts in Figures 1 through 4 will be identified by their name, and will then frequently be followed by specific information contained in parenthesis (figure number - callout number). This information will enable the reader to quickly refer to the part in Figures 1 through 4.

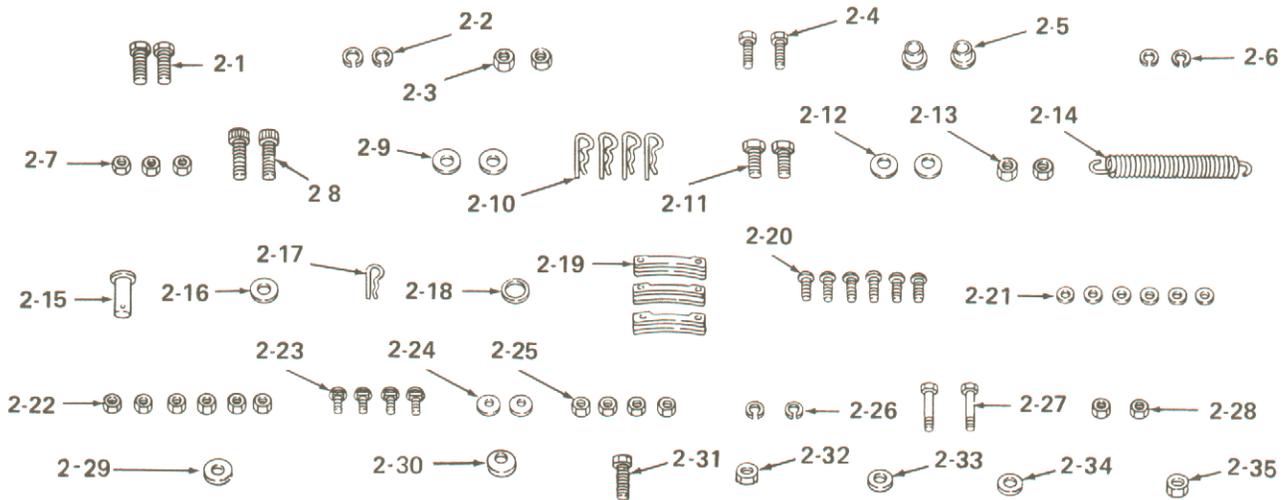
➔ NOTE

Some component parts may have been assembled at the factory. If so, skip step(s) showing assembly of these parts and proceed to next step.



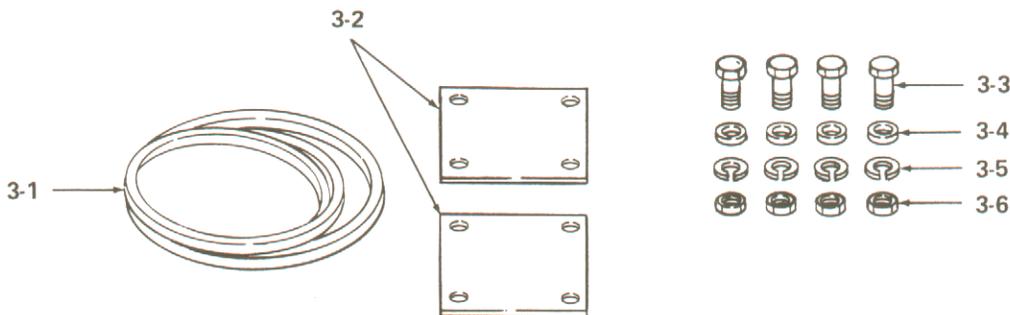
REF. NO.	DESCRIPTION	QTY	REF. NO.	DESCRIPTION	QTY
1-1	Pivot Tubing Assembly	1	1-7	Clevis Yoke	1
1-2	Undercarriage	1	1-8	Lift Handle Rod	1
1-3	Pivot Bracket	1	1-9	Chute Assembly	1
1-4	Pivot Link	2	1-10	Chute Crank with Support Tubing	1
1-5	Lift Link	2	1-11	Exhaust Deflector	1
1-6	Hydraulic Lift Bracket	1			

Figure 1



REF. NO.	DESCRIPTION	QTY	REF. NO.	DESCRIPTION	QTY
2-1	Hex Bolt, 1/2-20 x 1-1/4" Lg	2	2-19	Chute Flange Keeper	3
2-2	Lock Washer, 1/2" ID	2	2-20	Truss Machine Screw, 1/4-2 x 3/4" Lg	6
2-3	Hex Jam Nut, 1/2-20	2	2-21	Flat Washer, 1/4" ID	6
2-4	Hex Bolt, 3/8-24 x 1-1/4" Lg	2	2-22	Hex Lock Nut, 1/4-20	6
2-5	Shoulder Spacer	2	2-23	Carriage Bolt, 5/16-18 x 3/4" Lg	4
2-6	Lock Washer, 3/8" ID	2	2-24	Bell Washer, 5/16 ID	2
2-7	Hex Lock Nut, 3/8-24	3	2-25	Hex Nut, 5/16-18	4
2-8	Socket Head Screw, 5/16-18 x 1.5" Lg	2	2-26	Lock Washer, 5/16" ID	2
2-9	Flat Washer	2	2-27	Shear Bolt, 5/16-18 x 1.75" Lg	2
2-10	Hairpin Clip	4	2-28	Hex Lock Nut, 5/16-18	2
2-11	Hex Bolt, 1/2-13 x 1-1/4" Lg GR5	2	2-29	Flat Washer, 5/16 ID x 1.25" OD	1
2-12	Bell Washer	2	2-30	Bell Washer, 5/16" ID	1
2-13	Hex Nut, 1/2-13 GR5	2	2-31	Hex Bolt, 3/8-16 x 1-1/4" Lg	1
2-14	Spring	1	2-32	Hex Jam Nut, 3/8-16	1
2-15	Clevis Pin	1	2-33	Flat Washer, 3/8 ID x .870 OD	1
2-16	Flat Washer	1	2-34	Bell Washer, 3/8 ID	1
2-17	Hairpin Clip	1	2-35	Hex Nut, 3/8-16	1
2-18	Flat Washer	1			

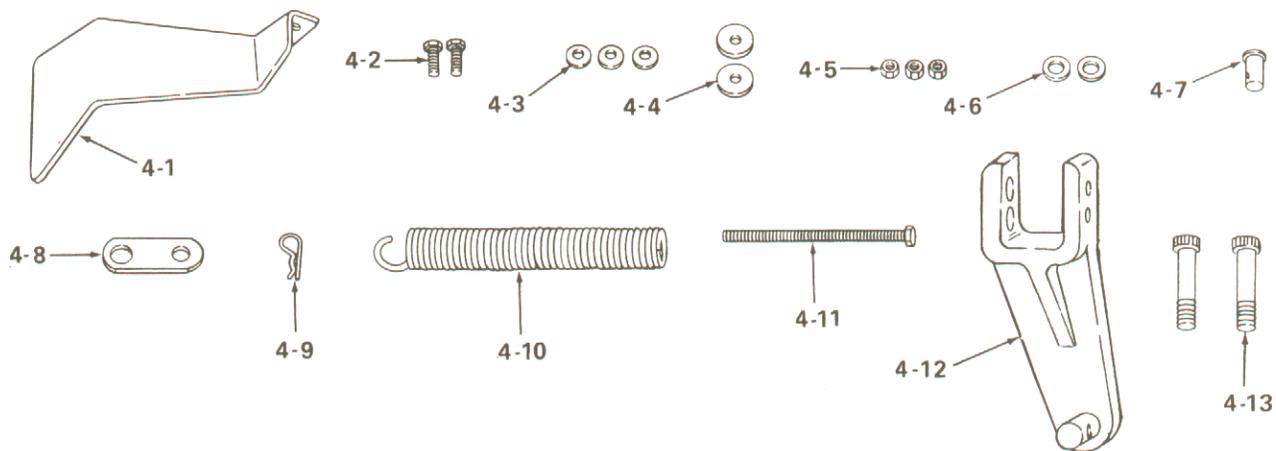
Figure 2



CARRIAGE BRACKET EXTENSION KIT 529

REF. NO.	DESCRIPTION	QTY	REF. NO.	DESCRIPTION	QTY
3-1	V-Belt, 91" Lg	1	3-4	Spacer, .635 ID	4
3-2	Carriage Bracket Extension	2	3-5	Lock Washer, 5/8" ID	4
3-3	Hex Bolt, 5/8-18 x 1.31" Lg	4	3-6	Hex Jam Nut, 5/8-18	4

Figure 3



MANUAL LIFT BRACKET AND HELPER SPRING KIT 528

REF. NO.	DESCRIPTION	QTY	REF. NO.	DESCRIPTION	QTY
4-1	Helper Spring Bracket	1	4-8	Link, 1.5 x 2.25"	1
4-2	Hex Bolt, 3/8-16 x 1" Lg	2	4-9	Hairpin Clip	1
4-3	Bell Washer, 3/8" ID	3	4-10	Extension Spring	1
4-4	Flat Washer, .406 ID x 1.25"	2	4-11	Hex Bolt Assembly	1
4-5	Hex Nut, 3/8-16	3	4-12	Manual Lift Bracket	1
4-6	Flat Washer, 5/8" ID	2	4-13	Socket Head Screw, 5/16-18 x 1.75 Lg	2
4-7	Clevis Pin	1			

Figure 4

SECTION II. PREPARATION

Section II describes the preparation which must be performed before the 45" Snow Thrower can be installed on the tractor. The Owner's Manual, which came with your tractor, may be useful if you have any questions during preparation.



WARNING

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



NOTE

Some components may have been assembled at the factory. If so, skip step(s) showing assembly of these parts and proceed to next step.



NOTE

Step 1 applies only to Super Garden Tractors. For Standard Garden Tractors, skip step 1 and proceed directly to step 2.

1. FOR SUPER GARDEN TRACTORS ONLY, install carriage bracket extension kit, model 529, as follows:
 - a. Install new V-belt (3-1) on idler bracket by removing hex nut and washers which secure idler pulley to idler bracket. Refer to Figure 5. Slide pulley off and remove V-belt. Reassemble using V-belt (3-1).

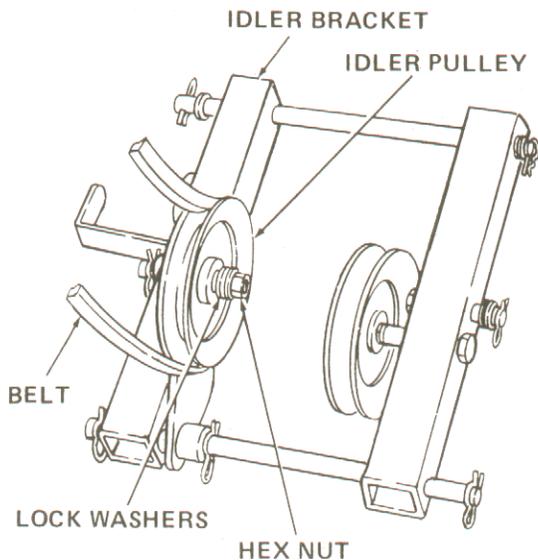


Figure 5

- b. Attach carriage bracket extensions (3-2) on undercarriage with bend toward inside as shown in Figure 6. Secure with hex bolts (3-3), spacers (3-4), lock washers (3-5) and hex jam nuts (3-6).

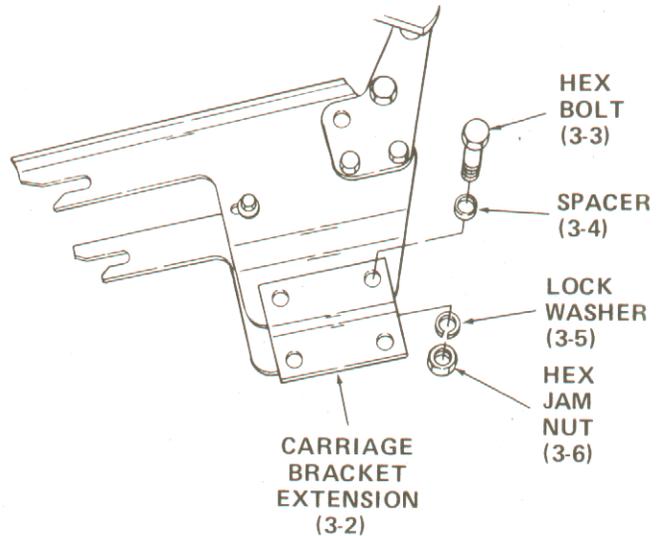


Figure 6

2. Mount pivot bracket (1-3) to bottom of blower fan housing on snow thrower as follows. Refer to Figure 7.
 - a. Tip snow thrower up so it rests on spiral housing.
 - b. Secure pivot bracket to bottom of blower fan housing with hex bolts (2-1), lock washers (2-2) and hex jam nuts (2-3). Heads of bolts are to bottom of housing. Use center holes as shown in Figure 7.

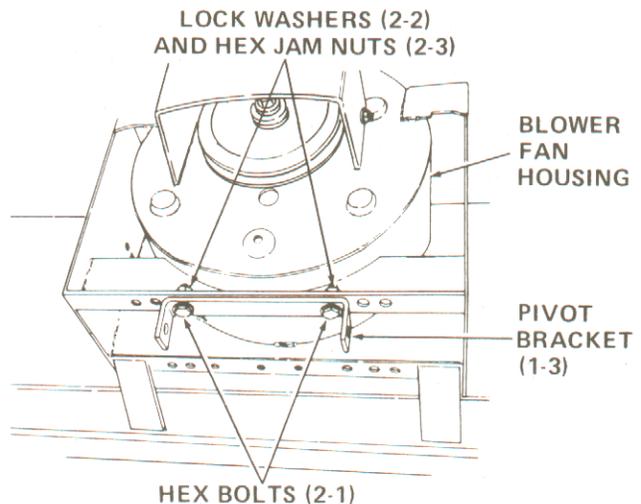


Figure 7

3. Attach pivot links (1-4) to sides of blower fan housing as follows:
 - a. Pivot links are to be secured to holes identified in Figure 8.

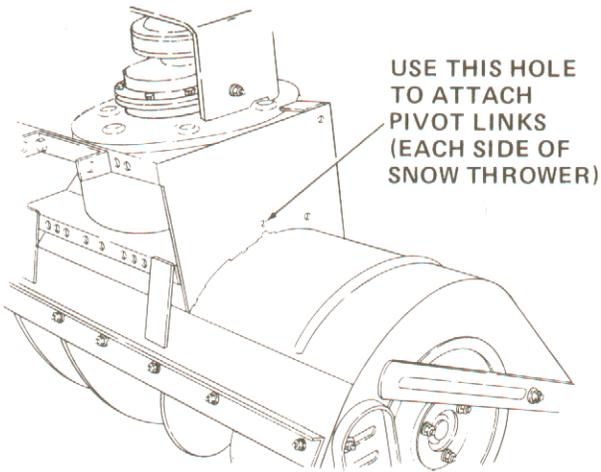


Figure 8

- b. Position pivot link over hole identified in step 3a, with bend toward inside, and insert hex bolt (2-4). Refer to Figure 9. Place shoulder spacer (2-5) on bolt with shoulder on spacer through pivot link. Secure with lock washer (2-6) and hex lock nut (2-7).

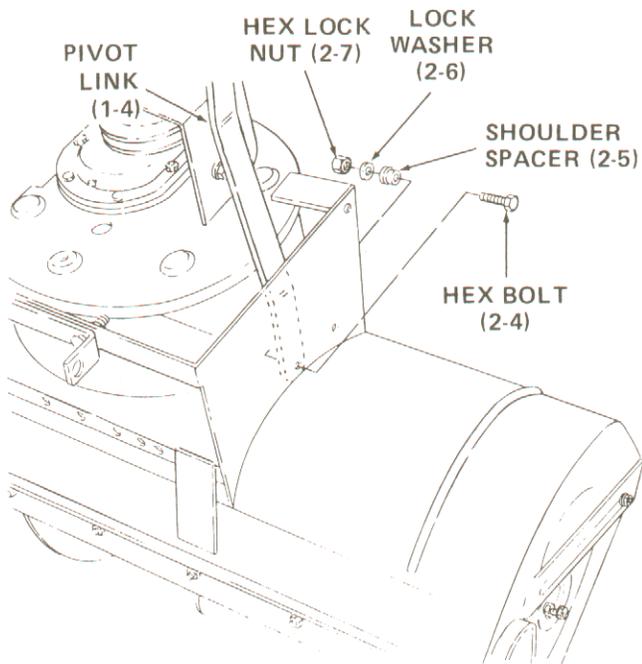


Figure 9

4. Install pivot tubing assembly (1-1) onto pivot bracket as follows. Refer to Figure 10.
 - a. Remove rod on front of pivot tubing assembly by removing one hairpin clip and flat washers.
 - b. Place pivot tubing assembly over pivot bracket as shown in Figure 10. Belted pulley should be on RIGHT side.
 - c. Secure pivot tubing assembly to pivot bracket with rod. Secure rod with flat washers and hairpin clip.

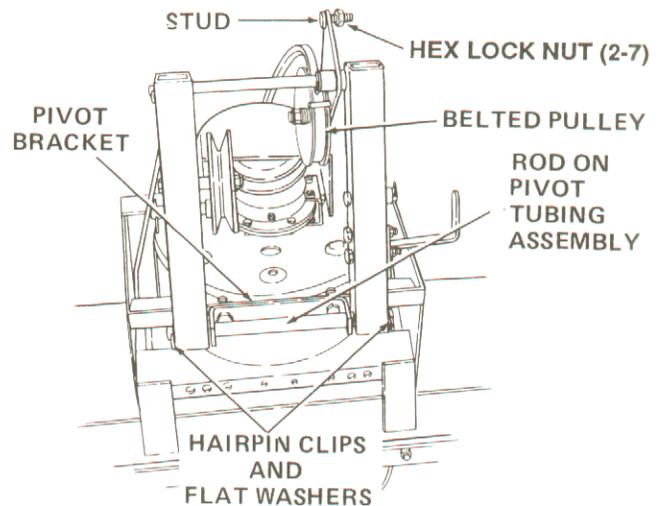


Figure 10

5. Loosely install one hex lock nut (2-7) on stud on idler bracket. Do not tighten. Refer to Figure 10.
6. Attach undercarriage (1-2) to pivot tubing assembly as follows.
 - a. Tip snow thrower back down.
 - b. Remove rod from pivot tubing assembly by first removing hairpin clips and flat washers from rod.

NOTE

For Super Garden Tractors only, skip step 6c and proceed to step 6d.

- c. FOR STANDARD GARDEN TRACTORS ONLY, slide undercarriage over ends of square tubing and align holes in square tubing with bottom rear holes in undercarriage. Refer to Figure 11.

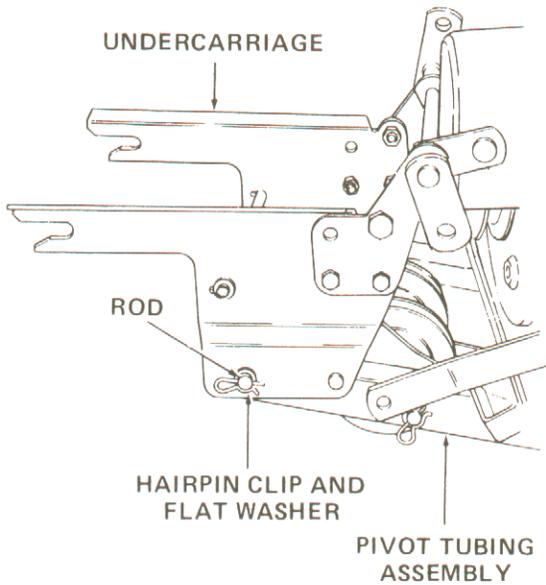


Figure 11

NOTE

For Standard Garden Tractors only, skip step 6d and proceed to step 6e.

- d. FOR SUPER GARDEN TRACTORS ONLY, slide undercarriage over ends of square tubing and align holes in square tubing with bottom rear holes in carriage bracket extensions. Refer to Figure 12.
- e. Slide rod through undercarriage and square tubing and secure with flat washers and hairpin clips.

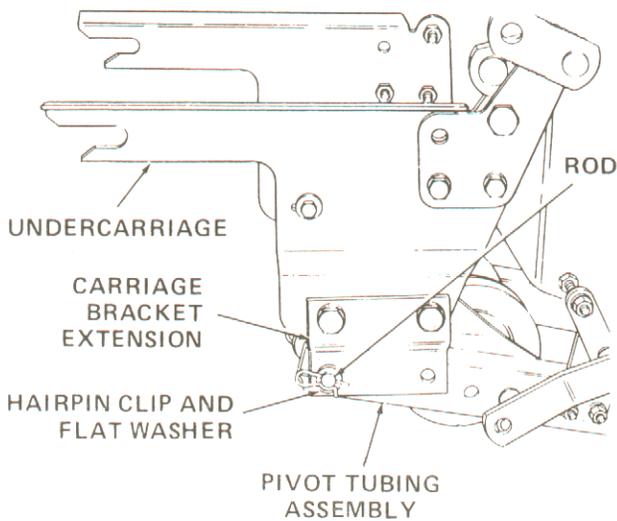


Figure 12

- 7. Install lift links (1-5) as follows:



CAUTION

Be sure to use the proper lift link mounting hole for your tractor. The Super Garden Tractors use the lower hole. The Standard Garden Tractors use the middle hole. Refer to Figure 13.

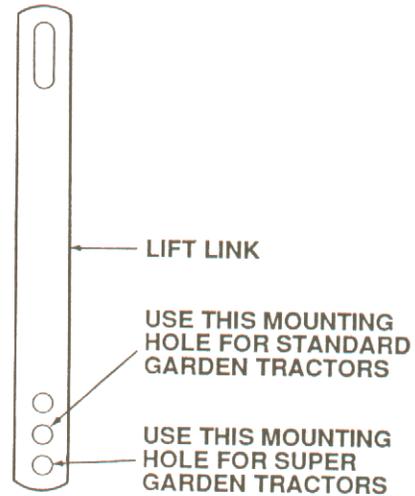
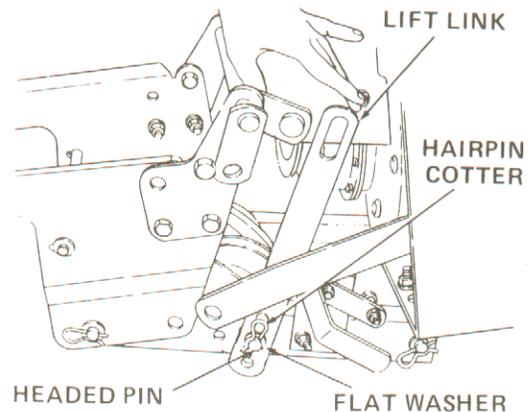


Figure 13

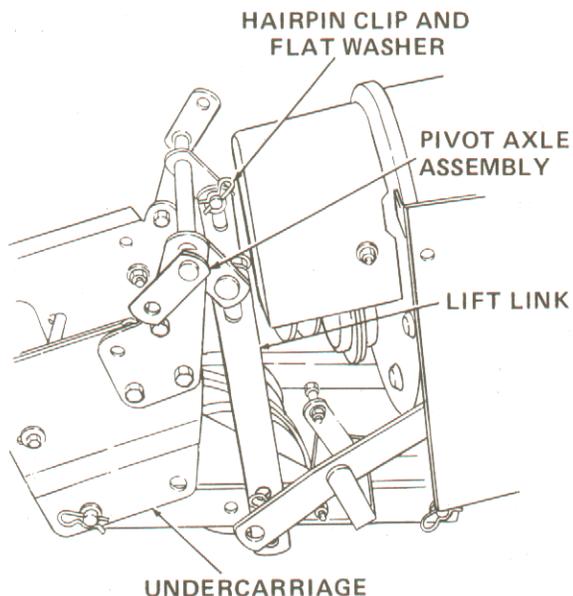
- a. Remove hairpin cotter and flat washer from headed pin on pivot tubing assembly. Refer to Figure 14.
- b. Install end of lift link with round holes onto headed pin and secure with flat washer and hairpin cotter removed in step 7a. Refer to Figure 14.



NOTE: STANDARD GARDEN TRACTOR SHOWN

Figure 14

- c. Attach slotted end of lift link to pivot axle assembly and secure with flat washer (2-9) and hairpin clip (2-10). Refer to Figure 15.



NOTE: STANDARD GARDEN TRACTOR SHOWN

Figure 15

8. Remove belt cover from back of fan blower housing by removing two hex nuts and flat washers. Refer to Figure 16.

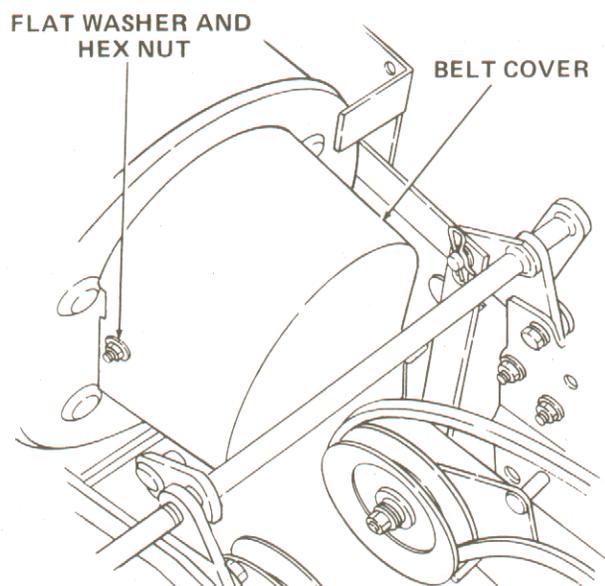


Figure 16

9. Route belt over gear case pulley on snow thrower attachment. Refer to Figure 17.

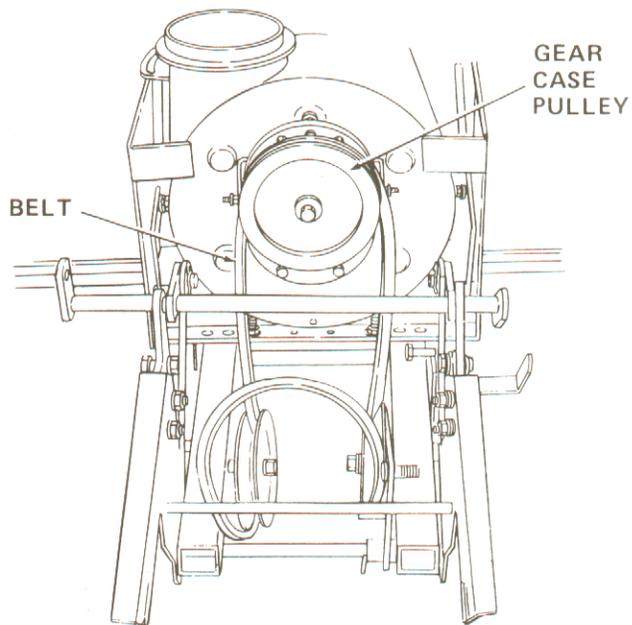


Figure 17

10. FOR SUPER GARDEN TRACTORS ONLY, cut 3-1/2 inches off left end of pivot axle assembly with a hacksaw as shown in Figure 18. Removal of this part of the pivot axle assembly prevents interference with chute crank.

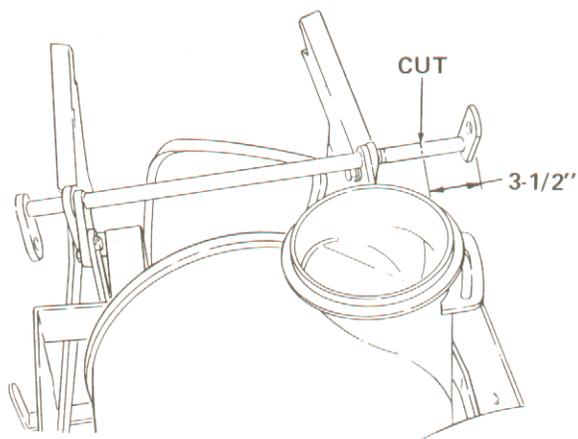
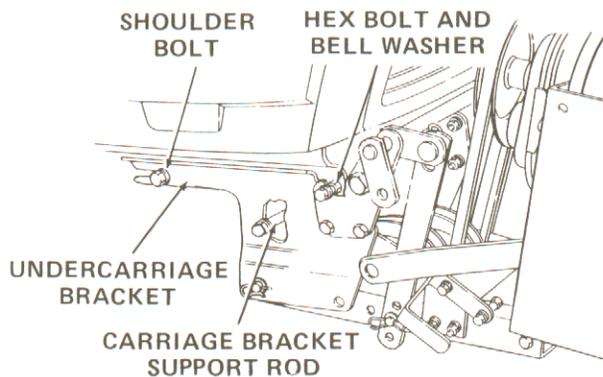


Figure 18

SECTION III. INSTALLATION

Section III explains how to install the snow thrower, which has been prepared according to Section II, onto the tractor. Most of the information in Section III applies to all tractors. However, installation procedures which apply only to a manual lift tractor, a standard frame tractor or a super frame tractor are clearly noted in the instructions.

1. Attach undercarriage to tractor frame as follows:
 - a. Loosen bolts which secure carriage bracket support rod to undercarriage. Refer to Figure 19.
 - b. Position front of tractor behind snow thrower attachment. Place lift arms to lowest position. Engage brake lock, turn off engine and remove ignition key.
 - c. Slide slotted end of undercarriage brackets over shoulder bolts on tractor. Slide rod into front quick attach on tractor. Refer to Figure 19.



NOTE: STANDARD GARDEN TRACTOR SHOWN

Figure 19

- d. Secure undercarriage brackets with hex bolts (2-11) and bell washers (2-12). Refer to Figure 19.
- e. Tighten bolts which secure carriage bracket support rod to undercarriage.



For Super Garden Tractors only, skip step 2 and proceed to step 3.

2. FOR STANDARD GARDEN TRACTORS ONLY, secure free end of pivot links (1-4) as follows:
 - a. Remove shoulder bolt, lock washer and hex nut from top holes in undercarriage. Refer to Figure 20.

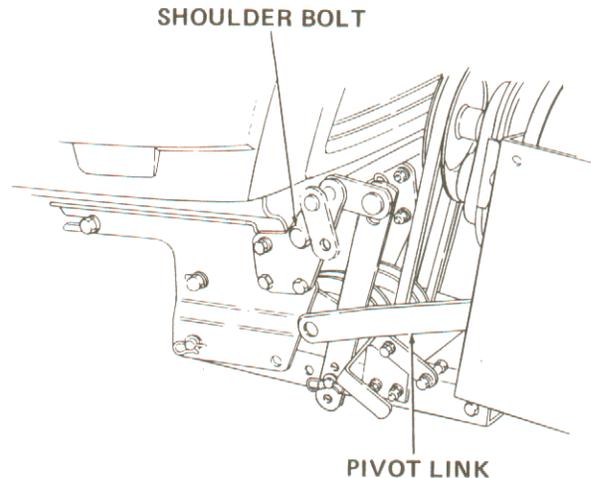


Figure 20

- b. Secure free end of each pivot link to undercarriage with shoulder bolt, lock washer and hex nut removed in step 2a. Refer to Figure 21.

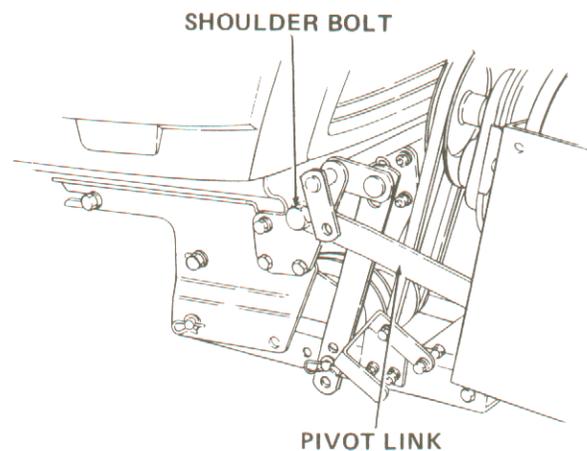


Figure 21



For Standard Tractors only, skip step 3 and proceed to step 4.

3. FOR SUPER GARDEN TRACTORS ONLY, secure free end of each pivot link as follows:
 - a. Remove shoulder bolt, lock washer and hex nut from top holes in undercarriage. Refer to Figure 22.
 - b. Remove hex bolt, lock washer and hex nut located immediately below shoulder bolt, and reinstall in position previously occupied by shoulder bolt.
 - c. Secure free end of each pivot link to remaining lower hole with shoulder bolt, lock washer and hex nut. Refer to Figure 23.

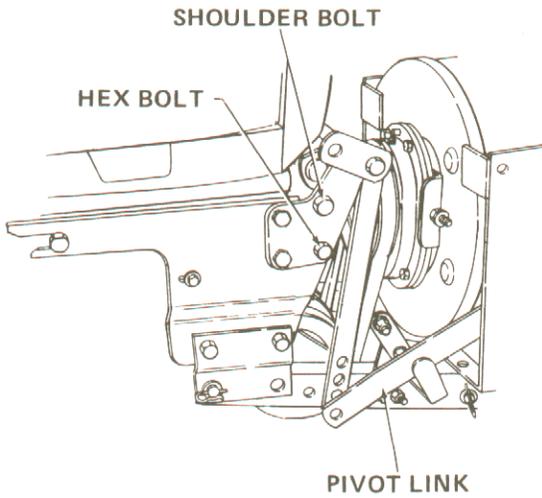


Figure 22

4. Install belt on PTO pulley as follows:



WARNING

Do not attempt to remove the grille insert or install the belt when the engine is hot.

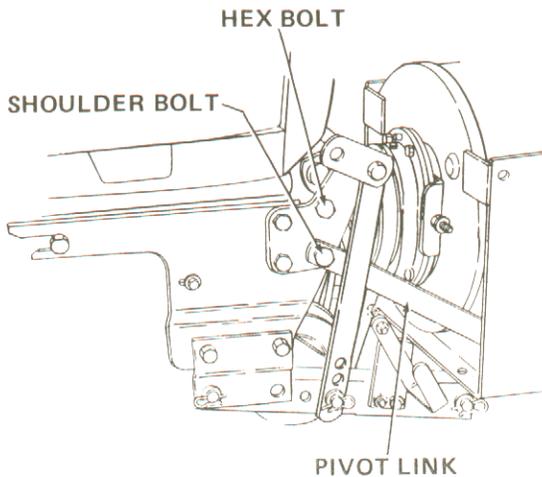


Figure 23

- a. Remove the grille insert by pushing down on top of grille insert and pull forward as shown in Figure 24. Lift grille insert up removing tabs from bottom of grille housing. Roll belt onto PTO pulley on front of tractor as shown in Figure 25.

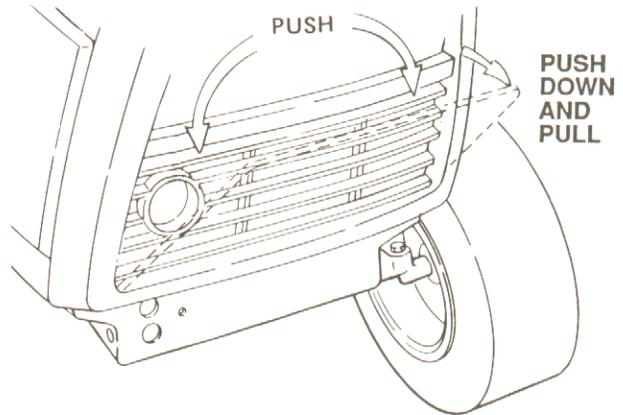


Figure 24

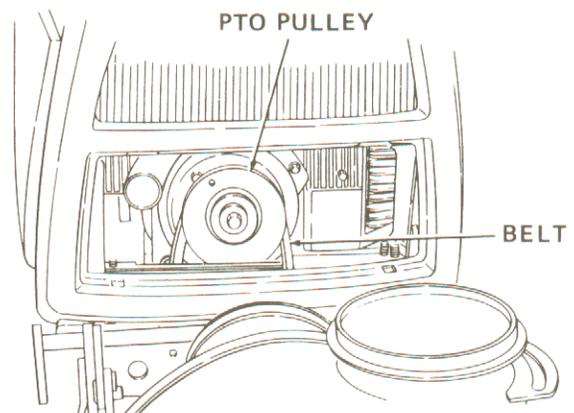


Figure 25

5. Install spring (2-14) as follows:
 - a. Attach one end of spring to hex bolt on idler bracket. Refer to Figure 26.

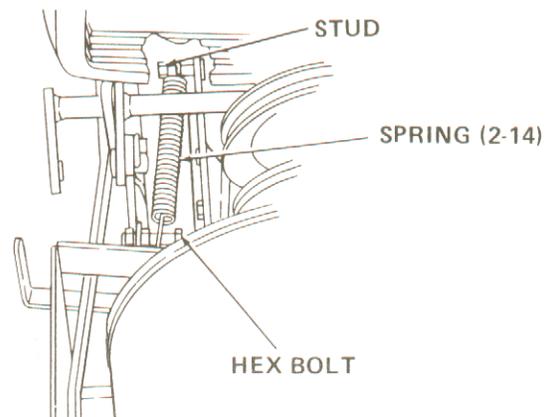


Figure 26

- b. Attach other end of spring to stud on spring bracket.
- c. Tighten belt tension by using an adjustable wrench to push bracket over center. Refer to Figure 27.

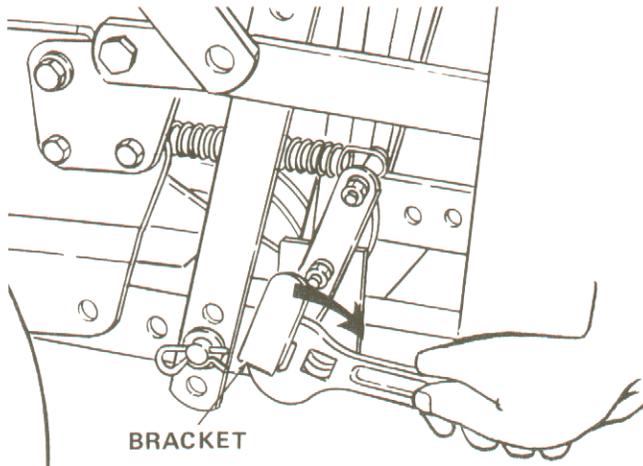


Figure 27



CAUTION

When belt cover is installed, make sure cover does not touch belt or pulley.

6. Reinstall belt cover and attach as follows:
 - a. Attach left side of belt cover to blower housing with flat washers and nut removed in Section II, step 8. One flat washer is positioned inside cover between tab on blower housing and cover, and one flat washer is positioned outside cover. Refer to Figure 28.



NOTE

When attaching right side of belt cover the exhaust deflector (1-11) must be attached to cover and blower housing.

- b. Refer to Figure 29 and install flat washer (previously removed) on bolt between housing and belt cover.
- c. With bolt through belt cover install flat washer (2-29), exhaust deflector (1-11) and bell washer (2-30) on bolt. Install previously removed nut and tighten.
- d. Refer to Figure 29 and install hex bolt (2-31) through blower housing and install hex jam nut (2-32) and tighten.

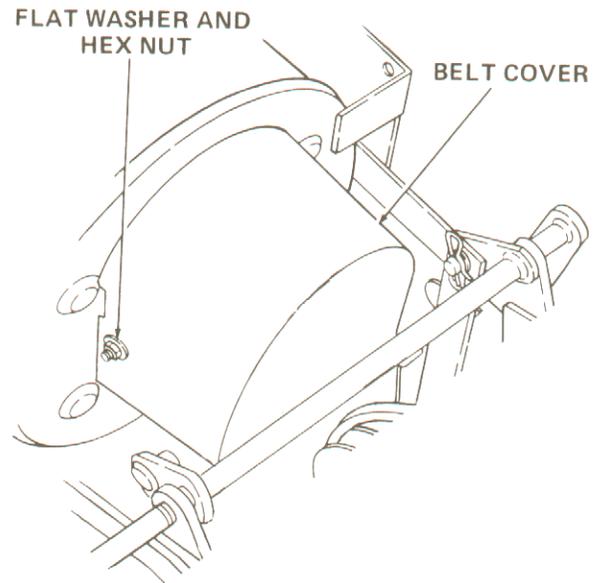


Figure 28

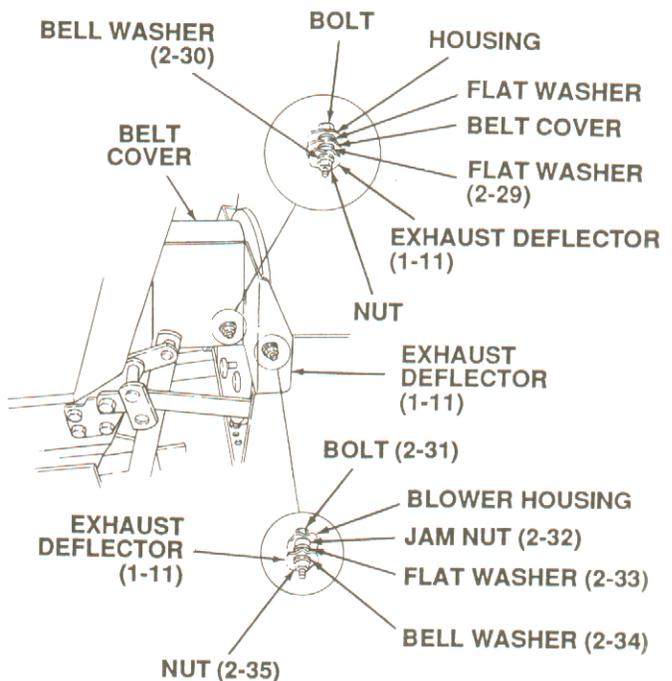


Figure 29

- e. Install flat washer (2-33), exhaust deflector (1-11), bell washer (2-34) and hex nut (2-35) on hex bolt and tighten.
7. FOR MANUAL LIFT TRACTORS, install Manual Lift Bracket and Helper Spring Kit 528 as follows:
 - a. Remove bolts and nuts attaching lift handle to lift shaft and mount manual lift bracket

(4-12) to handle with socket head screws (4-13). Refer to Figure 30.

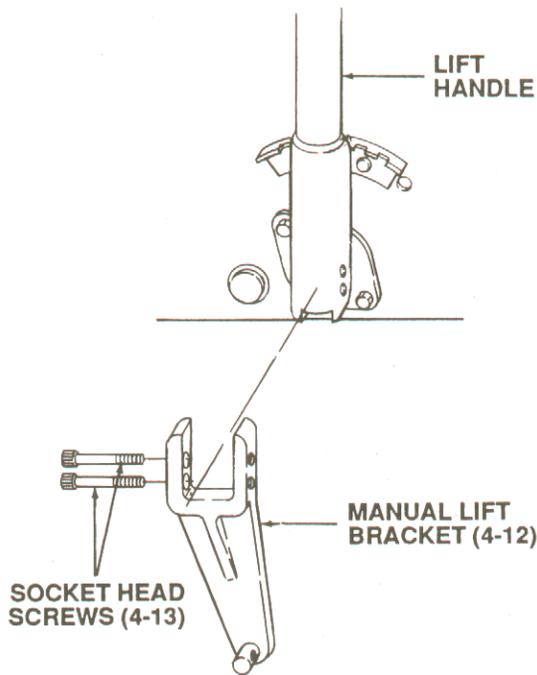


Figure 30

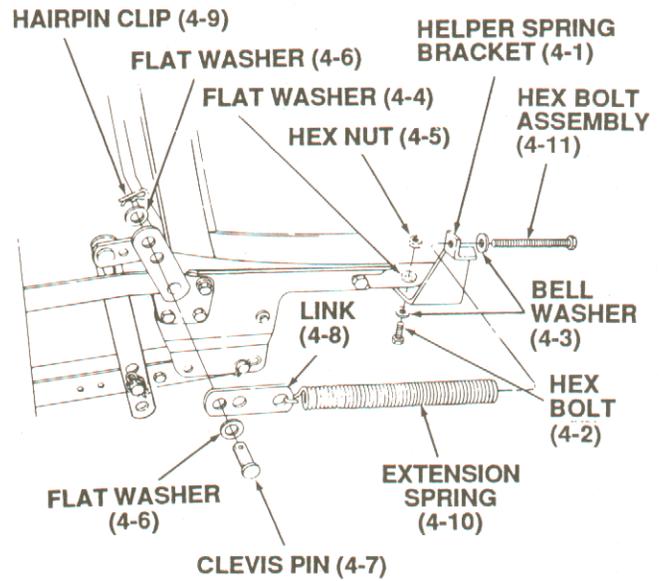


Figure 31

- b. Attach helper spring bracket (4-1) to left side of tractor frame using two hex bolts (4-2), bell washers (4-3) (cupped side against bracket), flat washers (4-4) and hex nuts (4-5). Flat washer goes between helper spring bracket and frame. Refer to Figure 31.
- c. Place one flat washer (4-6) on clevis pin (4-7). Insert clevis pin through link (4-8) and through top hole in bracket on pivot arm axle assembly. Secure with flat washer (4-6) and hairpin clip (4-9).
- d. Hook end of spring into link as shown in Figure 31. Place bell washer (4-3) onto hex bolt assembly (4-11) with crowned side of washer against head of bolt.
- e. Insert hex bolt assembly through hole in helper spring bracket (4-1). Thread bolt into insert in end of spring until bell washer compresses.

8. FOR TRACTORS WITH HYDRAULIC LIFT attach hydraulic lift bracket (1-6) as follows:

NOTE

On Standard Garden Tractor only, remove height indicator. Refer to Figure 32.

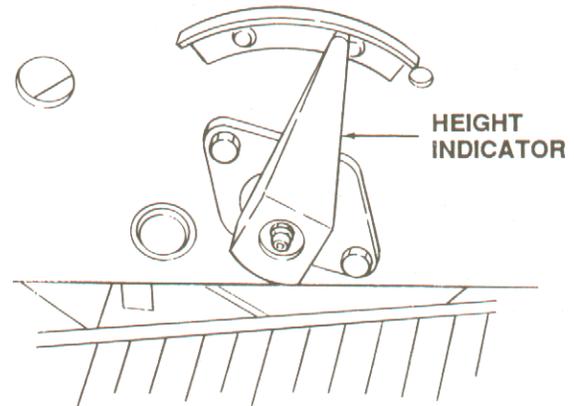


Figure 32

- a. Refer to Figure 33 and slide hydraulic lift bracket (1-6) onto lift shaft.
 - b. Attach lift bracket with two socket head screws (2-8).
9. Place two 1 inch boards under blower as shown in Figure 34 and make sure lift bracket is in lowest position.

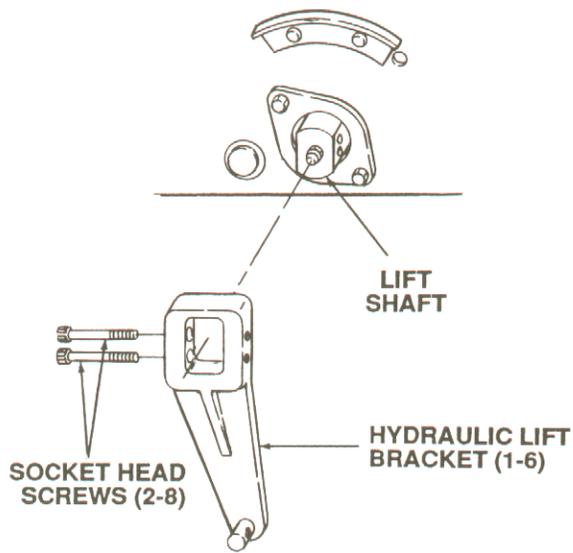


Figure 33

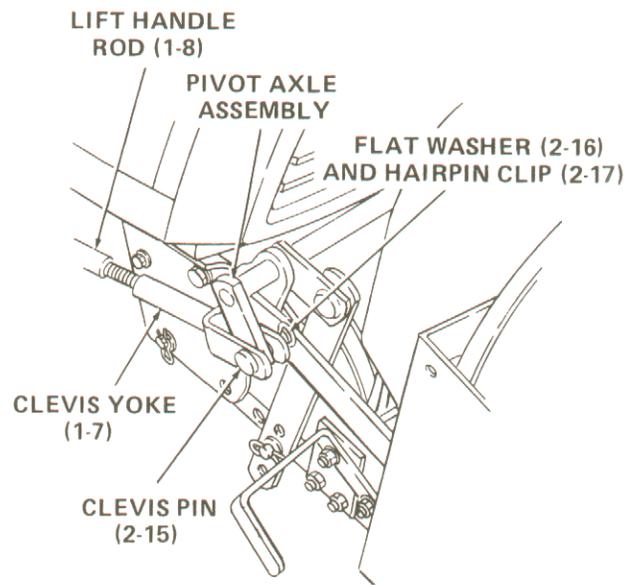


Figure 35

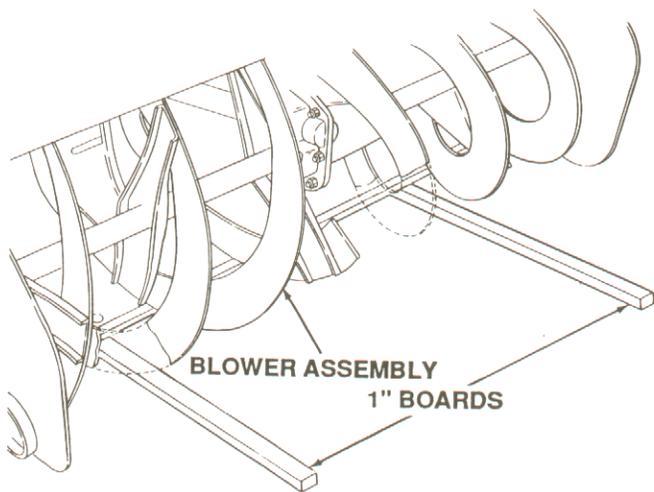


Figure 34

- b. Move pivot axle assembly so pin on pivot axle assembly is at top of slot in lift link. Refer to Figure 36.

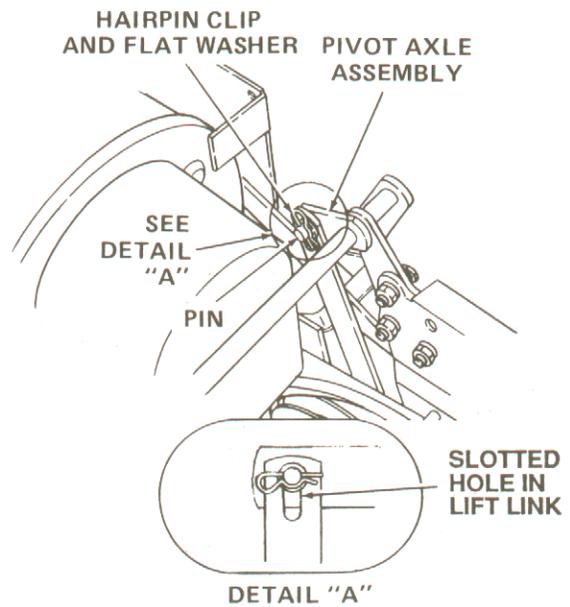


Figure 36

10. Attach clevis yoke (1-7) to threaded end of lift handle rod (1-8). Refer to Figure 35.
11. Install lift handle rod as follows:
 - a. Install clevis yoke end of lift handle rod to pivot axle assembly, and secure with clevis pin (2-15), flat washer (2-16) and hairpin clip (2-17). Refer to Figure 35.

- c. FOR MANUAL LIFT GARDEN TRACTORS, adjust lift handle rod until hole in end of rod lines up with lift bracket pin. Secure with flat washer (2-18) and hairpin clip (2-10). Refer to Figure 37.

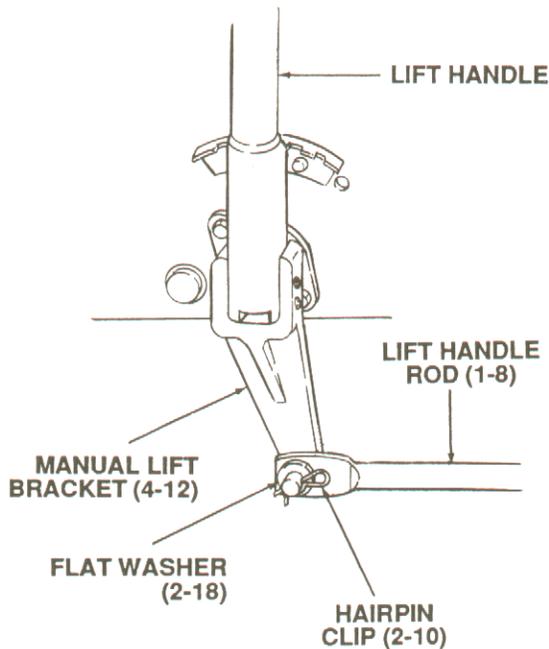


Figure 37

- d. FOR TRACTORS WITH HYDRAULIC LIFT, adjust lift handle rod until hole in end of rod lines up with pin on lift bracket. Secure with flat washer (2-18) and hairpin clip (2-10). Refer to Figure 38.

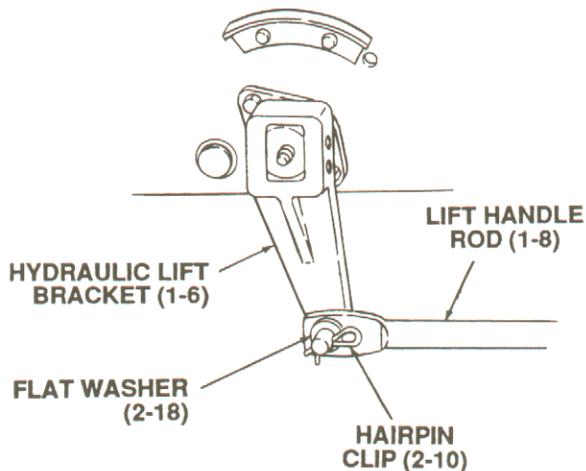


Figure 38

12. Install chute assembly (1-9) as follows. Refer to Figure 39.

- a. Lubricate chute opening on snow thrower using *Cub Cadet 251H EP grease*.

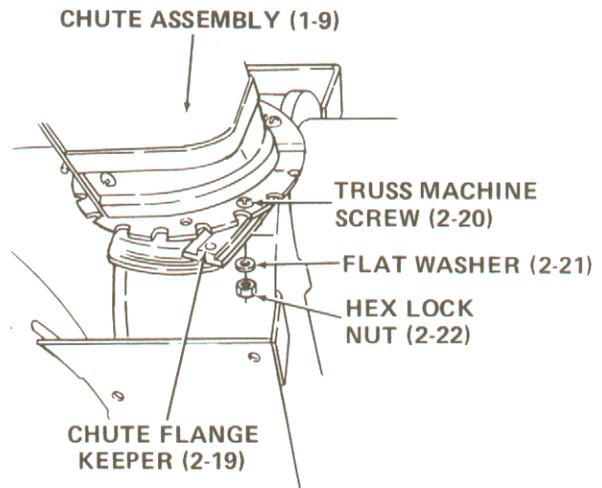


Figure 39

- b. Place chute assembly over chute opening with opening in chute assembly facing front of unit.
- c. Place chute flange keepers (2-19) beneath lip of chute assembly. Secure with truss machine screws (2-20), flat washers (2-21) and hex lock nuts (2-22).

13. Attach chute crank with support tubing (1-10) to snow thrower housing as follows:

- a. Position chute crank with support tubing as shown in Figure 40, and secure with hex bolts (2-4), lock washers (2-6) and hex lock nuts (2-7).

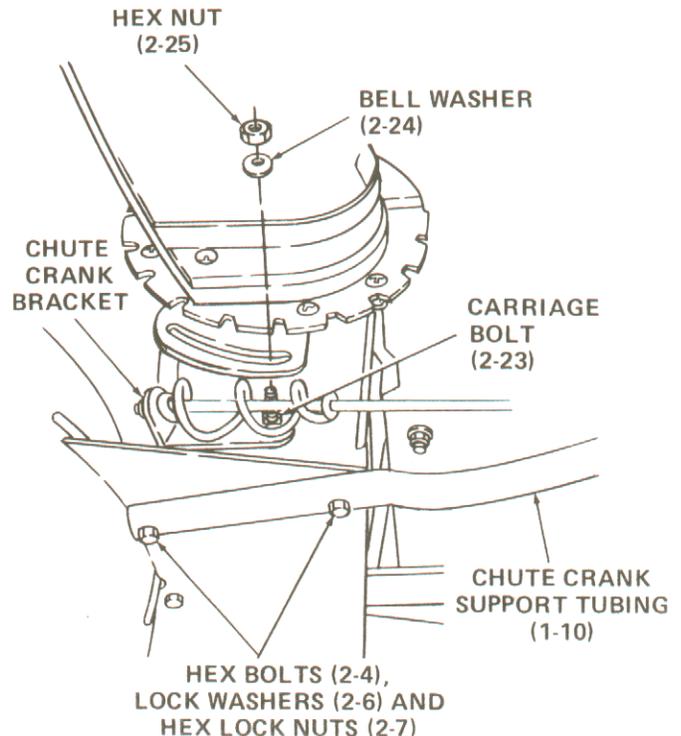


Figure 40

- b. Attach chute crank bracket to extension on left side of chute opening. Bracket goes beneath extension as shown in Figure 40. Secure with carriage bolts (2-23), bell washers (2-24) and hex nuts (2-25). Do not tighten hardware at this time.
- c. Adjust chute bracket so spiral on chute crank fully engages teeth on chute assembly. Tighten nuts on chute bracket securely.

- 14. Position drift cutters on snow thrower housing as follows. Refer to Figure 41.
 - a. Remove drift cutters from snow thrower housing by removing carriage bolts, lock washers and hex nuts.
 - b. Turn and place the drift cutters in position as shown in Figure 41. Secure with hardware removed in step 14a, carriage bolts (2-23)

(heads of carriage bolts to inside of housing), lock washers (2-26) and hex nuts (2-25).

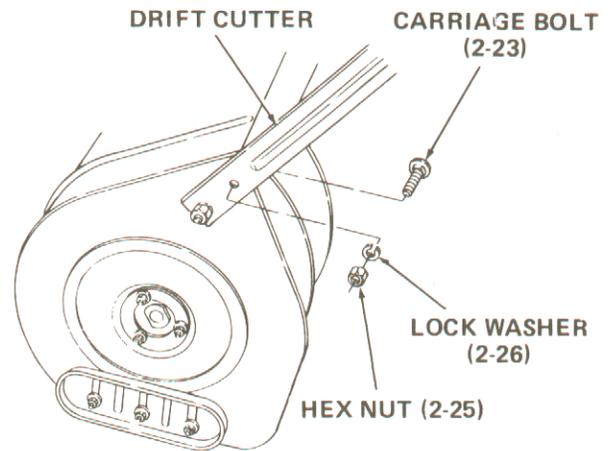


Figure 41

SECTION IV. CONTROLS AND OPERATION

Section IV describes the controls used to operate the snow thrower and the methods for safe and proper operation of this equipment. Refer to "SAFE OPERATION PRACTICES" on page 3 of this manual for additional safe operating practices.

CONTROLS

The thrower controls are conveniently located at the operator's position on the tractor.

Lift Lever

The lift lever on the tractor is used to raise and lower snow thrower. To raise snow thrower, pull back on lift lever. To lower snow thrower, push lift lever forward slowly until snow thrower reaches ground level.

Discharge Chute Control Crank

The discharge chute control crank is located on the left hand side of the snow thrower. The chute crank controls the direction in which snow is thrown. The discharge radius is 180 degrees. Turn crank to the right to direct snow to the right hand side. Turn to the left to direct snow to left hand side.

Front Power Take-Off (PTO)

The front power take-off switch or switches control the snow throwing action. Engage the spirals by moving the PTO toggle switch or switches to the "Engaged" position. Move the PTO switch or switches to the "Disengaged" position to stop the snow throwing action.

OPERATION

The snow thrower is capable of handling heavy snow conditions. Become fully familiar with all aspects of both the tractor and snow thrower prior to its usage. **DO NOT** remove any guards or covers while operating tractor and thrower.



WARNING

Use rear weights on tractor when snow thrower is attached.

Before Placing Snow Thrower Into Operation

1. Check **all** nuts and bolts for correct tightness. Be sure that all parts are properly assembled.
2. Test **all** controls for smooth operation.
 - A. Discharge chute control crank
 - B. Lift lever
 - C. PTO switch or switches
3. Check the tractor and thrower to make certain both are in good operating condition.
4. Fill fuel tank out-of-doors. Avoid spilling fuel over engine. **DO NOT** fill tank while engine is running. Wipe up any spilled fuel.

Operating Speed

The spiral speed is directly related to engine speed. For maximum snow removal and discharge, maintain high engine R.P.M. (full throttle). The tractor's forward speed is controlled by selecting one of the forward speeds. It is advisable to operate the tractor at a slow ground speed for safe and efficient snow removal.

Snow Conditions

Snow removal conditions vary greatly from light fluffy snowfall to wet heavy snow. Therefore, operating instructions must be flexible to fit conditions encountered. The operator must adapt the tractor and snow thrower to depth of snow, wind direction, temperature and surface conditions.

Deep or Drifted Snow

In deep, drifted or banked snow, it will be necessary to use full throttle and a slow ground speed. Drive the spiral into the snow, stop and allow spiral to clear the snow. Repeat this method until a path is cleared. On the second pass, overlap the first enough to allow the spiral to handle the snow without repeated clutching and declutching of the tractor.

In extremely deep snow, raise thrower from the ground, drive tractor ahead in the deep snow to remove top layers first. Do not drive tractor into snow bank where snow has not been removed to ground level. Disengage tractor clutch and allow thrower to clear the snow. Reverse tractor and lower thrower to the ground. Drive tractor ahead and repeat process to remove balance of snow. Working with repeated passes into and out of drifts will eventually move even the deepest of snow piles.



CAUTION

If snow thrower becomes plugged with snow or jammed due to hitting a foreign object, disengage snow thrower immediately and stop tractor engine. Clear snow from chute if plugged before resuming operation.



NOTE

If spiral is jammed or bent from hitting a foreign object, stop tractor engine. Remove spark plug wire from spark plug and then remove foreign object from spiral. If spiral damage is noted, repeat prior to continuing operation. Then replace spark plug wire and resume operation.

Operating Tips

1. Whenever possible, discharge snow down wind.
2. **DO NOT** attempt to remove ice or packed, frozen snow.
3. Always overlap each pass slightly to assure complete snow removal.
4. A frozen or stuck spiral or chute must be broken loose or thawed with care. When attempting to loosen frozen or jammed spiral, shut off tractor engine and disconnect spark plug wire. Never attempt to clear snow thrower at any time with tractor engine running.



NOTE

When snow thrower and tractor are not in use, lower snow thrower to the ground to prevent excess weight on front tires.

Use of Tire Chains

Tire chains should always be used when extra traction is needed. They add maneuverability in handling snow removal jobs.



WARNING

When making any adjustments, turn tractor engine off.

Skid Shoe Adjustment

The skid shoes are mounted on each side of spiral housing. These determine the distance shave plate is raised above the plowing surface. When removing snow from a gravel driveway or an uneven surface, it is advisable to keep shave plate as high above the surface as possible to prevent possible damage to spiral.

On blacktop or concrete surface, keep shave plate as close to the surface as possible. Skid shoes can be adjusted so that shave plate will rest directly on the surface. Turning skid shoes around or inverting them will allow even wear on skid shoes.

Raise snow thrower off the ground and place a block at each end of shave plate. Loosen nuts securing skid shoes to spiral housing (three nuts on each side). Move skid shoes up or down to desired position and tighten nuts securely. Adjust both skid shoes to the same height to keep spiral level. See Figure 42.

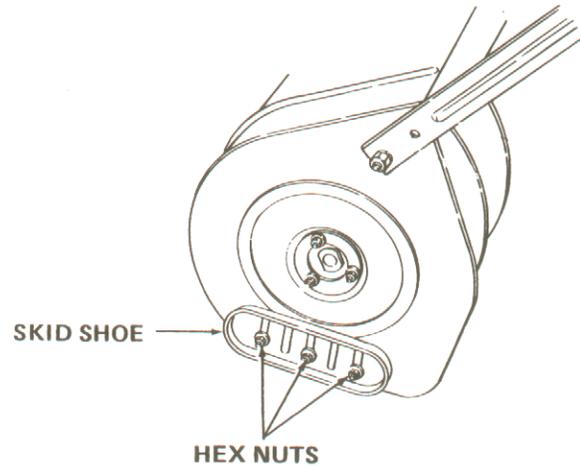


Figure 42

Chute Deflector Adjustment

The upper chute deflector mounting on the top of the chute determines the distance snow is thrown. Moving top of deflector down decreases distance of throw and raising deflector increases distance of throw. Operator must get off tractor to make this adjustment. Disengage spirals and turn engine off before making this adjustment.

To adjust, loosen hand knob on the side of chute deflector and pivot to desired position. Retighten hand knob.

SECTION V. MAINTENANCE

Section V describes maintenance procedures designed to keep your snow thrower in good operating condition.

SHAVE PLATE AND SKID SHOES

The shave plate and skid shoes on the bottom of the snow thrower are subject to wear. They should be checked periodically and replaced when necessary. Skid shoes are reversible for longer life. They may also be inverted to extend their life even further.

Replace shave plate and skid shoes before wear is excessive. Failure to do so will result in damage to the spiral housing.

AUGERS

The augers are secured to spiral shaft with two shear bolts and hex lock nuts. If you hit a foreign object or ice jam, the snow thrower is designed so that the hex bolts will shear.

If the augers will not turn, check to see if the shear bolts have sheared. Refer to Figure 43. Two replacement shear bolts (2-27) and hex lock nuts (2-28) have been provided with the snow thrower. For future use, order part number 710-0891 shear bolt and 712-0429 hex insert lock nut.

OFF-SEASON STORAGE

At the end of the snow season the following steps are recommended:

1. Remove snow thrower assembly from tractor.
2. Wash off any salt deposit which may have dried on the thrower and housing. Paint or cover exposed metal with a light coat of oil.
3. Store thrower in a dry place.

LUBRICATION

Lubricate spiral gear housing yearly with Shell Alvania Grease (part number 737-0168). Spiral gear housing capacity is 4 ounces when dry. Refer to Figure 43.

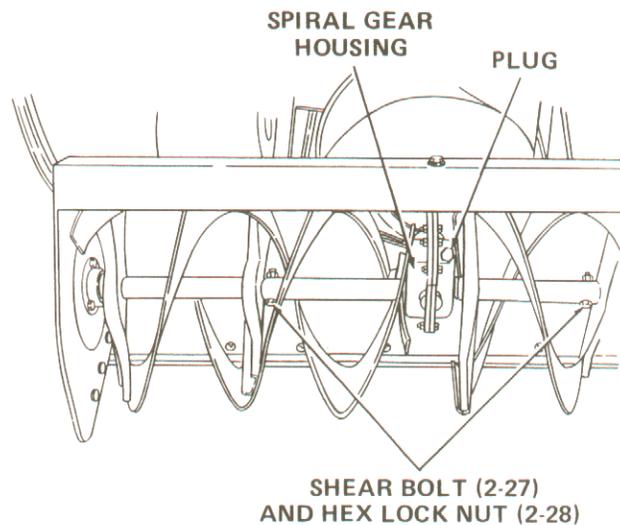


Figure 43

Lubricate blower gear housing twice each year with plastilube grease (part number 737-0133). Blower gear housing capacity is 8 ounces when dry. Refer to Figure 44.

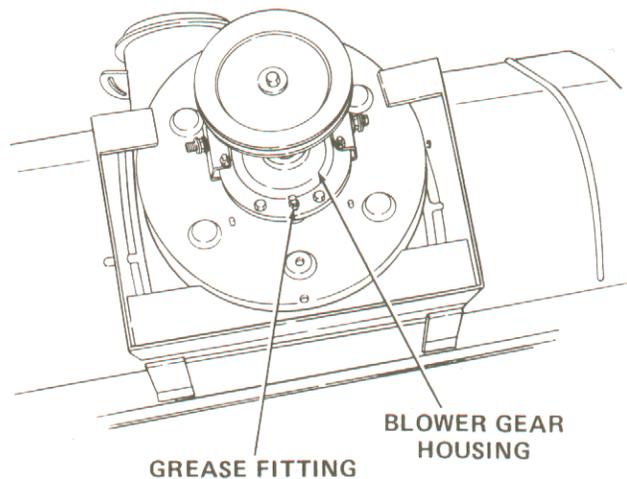


Figure 44