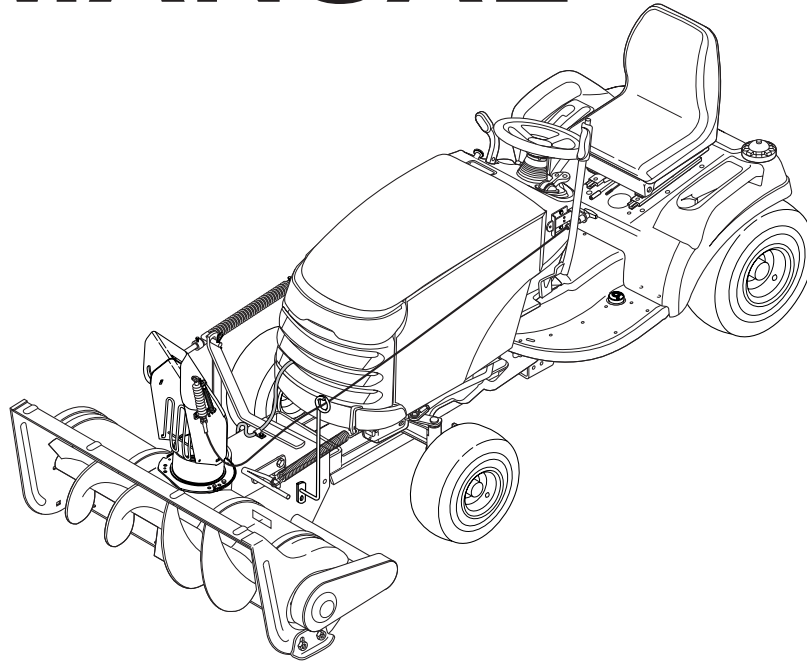


ATTACHMENT OPERATOR'S MANUAL



42" Single-Stage Snowthrower & 46" Single-Stage Snowthrower

42" Snowthrower Attachment

Mfg. No.	Description
1694144	42" Single-Stage Snowthrower
1694295	42" Single-Stage Snowthrower

46" Snowthrower Attachment

Mfg. No.	Description
1694150	46" Single-Stage Snowthrower
1694296	46" Single-Stage Snowthrower

1724186-06

1723220-06

Rev 11/2004

TP 100-2545-06-AT-SMA

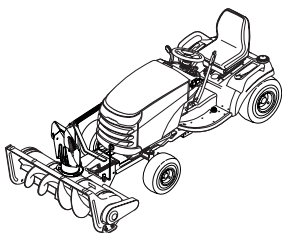


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NOTE: In these instructions, "left" and "right" are referred to as seen from the operating position.

Safety Rules & Information



This machine is capable to amputating hands and feet. Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of unit, severe personal injury or death to you, or bystanders, or damage to property or equipment. The triangle  in text signifies important cautions or warnings which must be followed.

TRAINING

1. Read, understand, and follow all instructions on the machine and in the manuals before operating this unit. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Never allow children to operate the equipment. Never allow adults to operate the equipment without proper instruction.
3. Keep the area of operation clear of all persons, particularly small children and pets.

PREPARATION

1. Thoroughly inspect the area where the equipment is to be used and remove all doormats, sleds, boards, wires, and other foreign objects.
2. Disengage all clutches and shift into neutral before starting engine (motor).
3. Do not operate the equipment without wearing adequate winter outer garments. Avoid loose fitting clothing that can get caught in moving parts. Wear footwear that will improve footing on slippery surfaces.
4. Handle fuel with care; it is highly flammable.
 - (a) Use an approved fuel container.
 - (b) Never add fuel to a running engine or hot engine.
 - (c) Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors. Replace fuel cap securely and wipe up spilled fuel.
 - (d) Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground, away from your vehicle, before filling.
 - (e) When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such on a trailer with a portable container, rather than from a gasoline dispenser nozzle.
 - (f) Keep nozzle in contact with the rim of the fuel tank or container opening at all times, until refueling is complete. Do not use a nozzle lock-open device.
 - (g) Replace gasoline cap securely and wipe up spilled fuel.
 - (h) If fuel is spilled on clothing, change clothing immediately.
5. Adjust the collector housing height to clear gravel or crushed rock surfaces.
6. Never attempt to make any adjustments while the engine (motor) is running (except when specifically recommended by the manufacturer).
7. Let engine (motor) and machine adjust to outdoor temperatures before starting to clear snow.
8. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair to protect eye from foreign objects that may be thrown from the machine.

OPERATION

1. Do not put hands or feet near or under rotating parts. Keep clear of the 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 (motor), remove the wire from the spark plug, disconnect the cord on electric motors, thoroughly inspect the snowthrower for any damage, and repair the damage before restarting and operating the snowthrower.
4. If the unit should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning of trouble.
5. Stop the engine (motor) whenever you leave the operating position, before unclogging the collector/impeller housing or discharge guide, and when making any repairs, adjustments, or inspections.
6. When leaving the machine unattended, disengage the power take-off (PTO), lower the attachment, set the parking brake, stop the engine, and remove the key.
7. When cleaning, repairing, or inspecting make certain the collector/impeller and all moving parts have stopped. Disconnect the spark plug wire and keep the wire away from the plug to prevent accidental starting. Do not run the engine indoors except for starting the engine or for transporting the snowthrower in or out of the building. Open the outside doors; exhaust fumes are dangerous.
8. Exercise extreme caution when operating on slopes. Do not attempt to clear steep slopes.
9. Never operate the snowthrower without proper guards plates, or other safety protective devices in place and working.
10. Never direct the discharge toward people or areas where property damage can occur. Keep children and others away.
11. Do not overload the machine capacity by attempting to clear snow at too fast a rate.
12. Never operate the machine at high transport speeds on slippery surfaces. Look behind and use care when operating in reverse.
13. Disengage power to the collector/impeller when snowthrower is transported or not in use.
14. Use only attachments and accessories approved by the manufacturer of the snowthrower (such as wheel weights, counterweights, or cabs).
15. Never operate the snowthrower without good visibility or light. Always be sure of your footing, and keep a firm hold on the handles. Walk, never run.
16. Never touch a hot engine or muffler.
17. Never operate the snowthrower near glass enclosures, automobiles, window wells, drop-offs, and the like without proper adjustment of the discharge angle.
18. Never direct discharge at bystanders or allow anyone in front of the unit.
19. Never leave a running unit unattended. Always disengage the auger and traction controls, stop engine, and remove keys.

20. Do not operate the unit while under the influence of alcohol or drugs.
21. Keep in mind the operator is responsible for accidents occurring to other people or property.
22. Data indicates that operators, age 60 years and above, are involved in a large percentage of power equipment-related injuries. These operators should evaluate their ability to operate the unit safely enough to protect themselves and others from injury.
23. DO NOT wear long scarves or loose clothing that could become entangled in moving parts.
24. Snow can hide obstacles. Make sure to remove all obstacles from the area to be cleared.
8. Always follow the engine manual instructions for storage preparations before storing the unit for both short and long term periods.
9. Always follow the engine manual instructions for proper start-up procedures when returning the unit to service.
10. Maintain or replace safety and instruction labels as necessary.
11. Keep nuts and bolts tight and keep equipment in good condition.
12. Never tamper with safety devices. Check their proper operation regularly and make necessary repairs if they are not functioning properly.
13. Components are subject to wear, damage, and deterioration. Frequently check components and replace with manufacturer's recommended parts, when necessary.
14. Check control operation frequently. Adjust and service as required.
15. Use only factory authorized replacement parts when making repairs.
16. Always comply with factory specifications on all settings and adjustments.
17. Only authorized service locations should be utilized for major service and repair requirements.
18. Never attempt to make major repairs on this unit unless you have been properly trained. Improper service procedures can result in hazardous operation, equipment damage and voiding of manufacturer's warranty.
19. Check shear bolts and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.

CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the unit and the operating activity. Never assume that children will remain where you last saw them.

1. Keep children out of the area and under the watchful care of another responsible adult.
2. Be alert and turn unit off if children enter the area.
3. Never allow children to operate the unit.
4. Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

CLEARING A CLOGGED DISCHARGE CHUTE

Hand contact with the rotating impeller inside the discharge chute is the most common cause of injury associated with snowthrowers. Never use your hand to clean out the discharge chute.

To clear the chute:

1. SHUT OFF THE ENGINE.
2. Wait 10 seconds to be sure the impeller blades have stopped rotating.
3. Always use a clean out tool, not your hands.

SERVICE, MAINTENANCE, AND STORAGE

1. Check shear bolts and other bolts at frequent intervals for proper tightness to be sure the 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, or clothes dryers. Allow the engine to cool before storing in any enclosure.
3. Always refer to the operator's manual for important details if the snowthrower is to be stored for an extended period.
4. Maintain or replace safety and instruction labels as necessary.
5. Run the machine a few minutes after throwing snow to prevent freeze-up of the collector/impeller.
6. If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
7. Always observe safe refueling and fuel handling practices when refueling the unit after transportation or storage.

EMISSIONS

1. Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.
2. If available, look for the relevant Emissions Durability Period and Air Index information on the engine emissions label.

Safety Decals

SAFETY DECALS

This unit has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing.

Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operate this equipment safely and effectively, we have placed several safety labels on the unit to remind you of this important information while you are operating your unit.

All DANGER, WARNING, CAUTION and instructional messages on your unit should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. The information is for your safety and it is important! The safety decals below are on your unit.

If any of these decals are lost or damaged, replace them at once. See your local dealer for replacements.

These labels are easily applied and will act as a constant visual reminder to you, and others who may use the equipment, to follow the safety instructions necessary for safe, effective operation.



Part No. 1716532
Auger Danger Decal



Part No. 1722674
Discharge Chute Danger Decal



Part No. 1716531
Main Operation Warning Decal



Part No. 1716540
Rear Wheel Weights Required



Part No. 1716536
Spring Under Tension

Required Accessories

It is required that tire chains and two rear wheel weights or Quick Tach Weights are used.

Never operate on slopes greater than 17.6% (10°).

Recommended Accessories

A rear-mounted weight box can also be added for additional traction. The maximum weight added to the tractor should not exceed 35 lbs. per wheel, plus 100 additional pounds in the rear weight box.

For operation on slopes greater than 15% (8.5°), Quick Tach Weights, tire chains, and wheel weights are recommended. **Never operate on slopes greater than 17.6% (10°).**

Required Accessories

A Lift Lever Kit is required for some of the models covered by this manual, and must be installed as part of hitch installation.



TRACTOR CONTROLS

Before you begin operating the tractor and attachment, make certain you have:

- **Read and understood the instructions in the tractor Operator's Manual.**
- **Become thoroughly familiar with all of the tractor controls and their operation, including how to safely and properly start and stop the unit.**
- **Practice driving in an open area, without the attachment, to become accustomed to the unit.**

DANGER

Do not clean out discharge chute with hands. Contact with moving parts inside chute will cause serious injury. Use a clean out tool. Use the following procedure to remove objects or clear the chute:

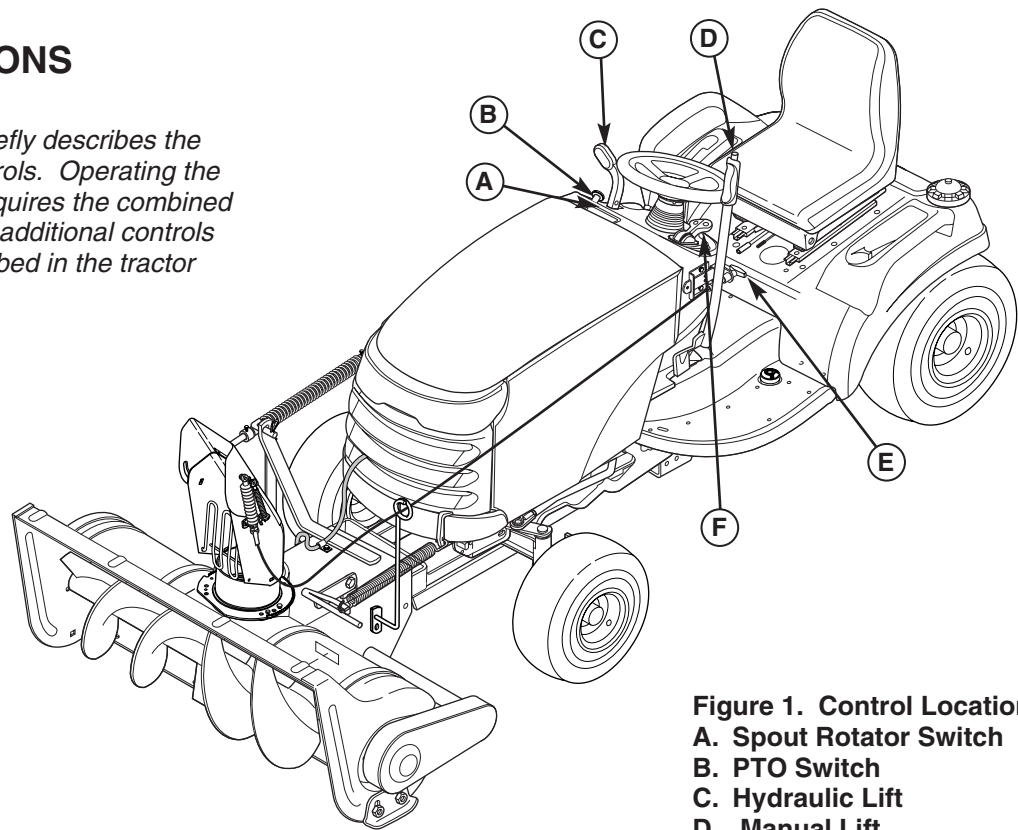
1. Stop the engine. Remove the key
2. Wait 10 seconds to be sure the auger/impeller blades have stopped rotating.
3. Always use a clean-out tool. **DO NOT** use your hands.

Features & Controls



CONTROL FUNCTIONS

The information below briefly describes the function of individual controls. Operating the tractor and attachment requires the combined use of these controls and additional controls whose operation is described in the tractor Operator's Manual.



Please take a moment and familiarize yourself with the name, location, and function of these controls so that you will better understand the safety and operating instructions provided in this manual.

Figure 1. Control Locations

- A. Spout Rotator Switch**
- B. PTO Switch**
- C. Hydraulic Lift**
- D. Manual Lift**
- E. Deflector Control**
- F. Throttle Control**

A. Electric Spout Rotator Switch

Controls the electric spout rotator.

B. PTO Switch

Engages and disengages the PTO to start and stop the snowthrower.

C. Hydraulic Attachment Lift Lever

NOTE: The hydraulic lift will only work with the engine running and the parking brake disengaged.

The attachment lift lever raises and lowers the attachment. To RAISE the attachment, pull the lever back. To LOWER the attachment, move the lever forward.

D. Manual Attachment Lift Lever

The attachment lift lever raises and lowers the attachment. To RAISE an attachment, depress the release button on top of the lever and pull back. To LOWER an attachment, depress the release button and move the lever forward. When lowering the attachment, be sure to push the lever fully forward into the locked position.

E. Deflector Control

The deflector control changes the angle of the snowthrower discharge deflector. Twist the handle to unlock it, and pull/push it to change the angle.

F. Throttle Control

Always operate at FULL throttle.



WARNING

If auger does not start and stop when engaging/disengaging electric clutch, see your authorized dealer. Under no circumstances should you attempt to defeat the safety system.

Checks Before Starting

IMPORTANT NOTE: Refer to Tractor Operator's Manual for important information concerning safely storing your tractor.

1. Refer to the Maintenance & Adjustments sections of this manual and perform any needed service. Also, refer to the tractor Operator's Manual and perform any required service.
2. Remove any objects from the work area which might be caught in, or thrown by, the auger.
3. Before starting the engine, clear the auger of any ice particles which may cause damage to auger.
4. Adjust the deflector and skid shoes to desired height. See Skid Shoe Adjustment and Deflector Adjustment.
5. Make sure all hardware is present and secure.

Engine & Ground Speed Selection

Always run the engine at full throttle.

Normally, a slow ground speed is best for throwing snow. The deeper or heavier the snow, the slower the recommended ground speed.

Starting & Stopping

1. Start the tractor engine. Set engine throttle at 1/2 speed.
2. Lower the snowthrower.
3. Engage the electric clutch switch. Snowthrower auger should rotate. Disengage the electric clutch switch. Snowthrower auger should stop.
4. Adjust the throttle to full speed. Select the proper ground speed.
5. To stop tractor movement, depress the clutch/brake pedal. To stop the snowthrower, disengage the electric clutch. Before leaving the seat, disengage the electric clutch, set the parking brake, stop the engine, remove the key, and wait for all moving parts to stop.

WARNING

Perform the Safety System Interlock test found in your tractor Operator's Manual. If tractor does not pass the test, do not operate the tractor. See your authorized dealer. Under no circumstances should you attempt to defeat the safety system.

Use caution when clearing a snow covered area. Snow can cover objects such as curbs, drop-offs, and other obstacles. Be familiar with the area you are clearing.

To prevent an explosion or fire, never store the tractor with fuel in the tank inside a building where an ignition source is present.



IMPORTANT NOTE

Always raise the snowthrower before turning or backing up to prevent damage to the unit.

DANGER

OPERATING ON SLOPES CAN BE DANGEROUS

Never operate on slopes greater than 17.6% (10°) which is a rise of 3-1/2 feet (106cm) vertically in 10 feet (607cm) horizontally.

Operate the unit at a slow ground speed when driving onto slope. Avoid using brakes to control ground speed.

When operating on slopes that are greater than 15 % (8.5°) but less than 17.6%, use additional wheel weights or counterweights.

In addition to counterweights, use extra caution when operating on slopes. Drive UP and DOWN the slope, never across the face, use caution when changing directions and DO NOT START OR STOP ON SLOPE.

For additional traction, tire chains and a weight box can be added. Maximum weight added to tractor should not exceed 35 lbs. per wheel and 100 additional lbs. in weight box.

Transporting

1. Disengage the electric clutch and then raise the snowthrower.
2. Adjust ground speed according to surface conditions.
3. Select a low ground speed when transporting on a slippery surface.

General Operating Instructions

Snow Removal Suggestions

- Determine the best snow removal pattern before beginning.
- Wind direction is an important factor to consider. Rotate the spout to discharge snow downwind.
- Plan the pattern so that you avoid throwing snow on cleared areas and on yourself as you are operating.
- When land contour permits, it is best to travel in the longest direction to minimize turning.
- In very deep or heavy snow, it may be necessary to make the first pass with snowthrower partially raised, backing up every few feet and lowering the snowthrower to clear the snow left on the surface. Also, it may be necessary to slice off less than the full width of the auger or reduce ground speed.
- If snow stops flowing freely from the spout, back away until the snowthrower clears itself.

DANGER

If the auger stalls or the chute plugs, DISENGAGE THE ELECTRIC CLUTCH, STOP THE ENGINE AND REMOVE THE KEY. SET THE PARKING BRAKE. WAIT FOR MOVING PARTS TO STOP. Remove the foreign object or clear the spout with a piece of wood before restarting the engine. Never place hands into auger housing or spout to clear jammed object. Auger may rotate when object is removed.

Daily Storage

1. Run the snowthrower a few minutes after blowing snow to prevent freeze-up of auger.
2. Allow tractor engine to cool before storing in any enclosure.

Off-Season Storage

1. Remove snowthrower from the tractor.
2. Use water pressure or a brush to thoroughly clean the housing.
3. Paint, or lightly coat with oil, any area where paint has been worn or chipped away.
4. Lubricate the snowthrower.
5. Store the snowthrower and hitch in a dry place.



⚠ WARNING

To avoid serious injury, perform maintenance on the unit only when the engine is stopped, parking brake is set and all moving parts have stopped. Always remove the ignition key before beginning maintenance or adjustments to prevent accidental starting of the engine.

Schedule For Normal Care

Care Required	Schedule
Clean snow and ice from snowthrower.	After each use.
Lubricate snowthrower.	Every 10 hours or at least once a year.
Inspect, adjust and lubricate drive chain.	Once a year or more often under frequent use.

General Lubrication

Lubricate the snowthrower as shown in Figure 2. Where an oil can is shown use 30 weight oil. Where a grease gun is shown, use lithium grease.

Lubricate Discharge Chute

Lubricate the ring gear at the base of the discharge chute with lithium grease. Lubricate the deflector hinge, extension linkage, and cable with oil (see Figure 2).

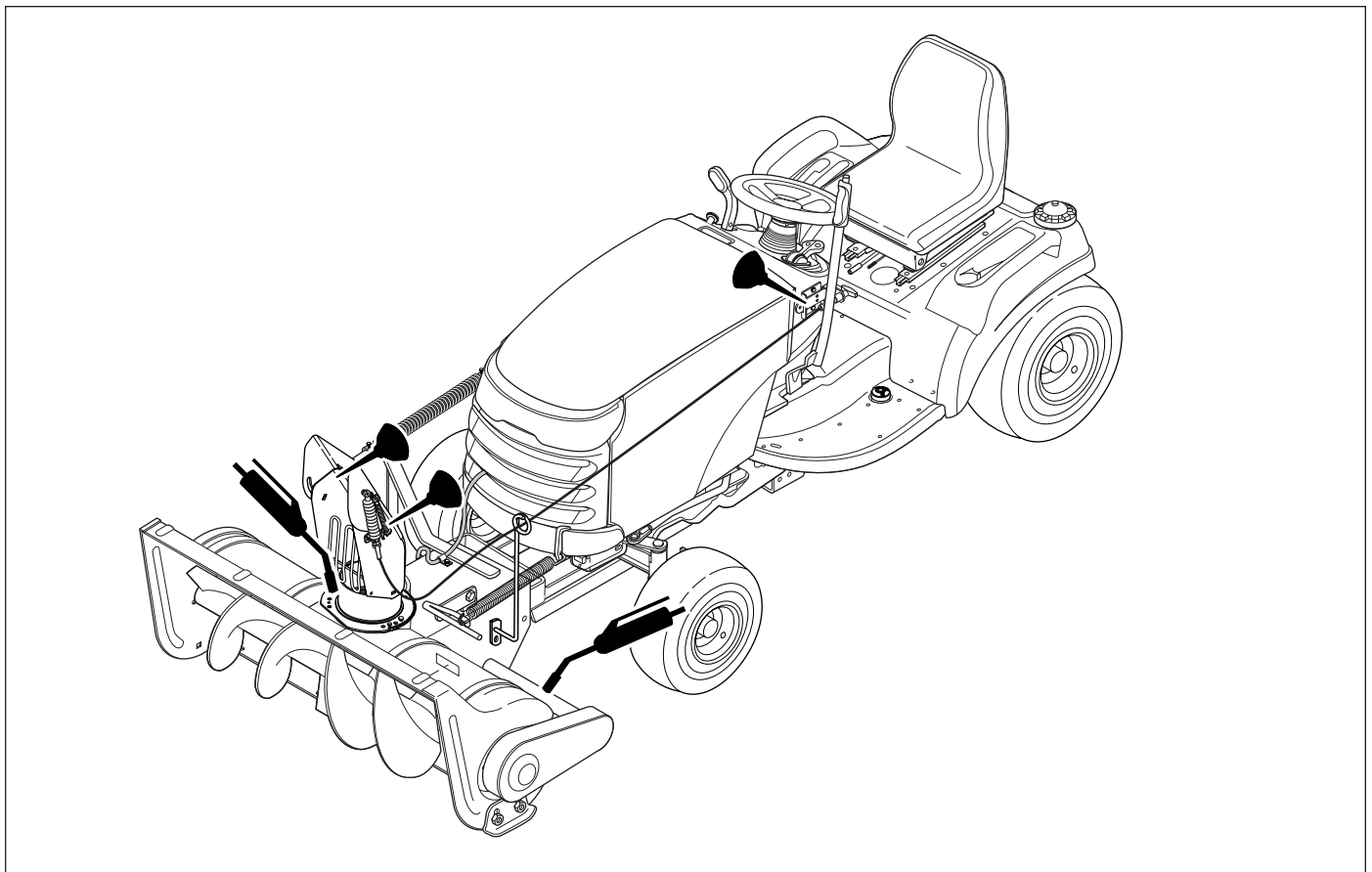


Figure 2. Lubrication Points

Maintenance

Inspect, Adjust, & Lubricate Drive Chain

See Figure 3.

1. Remove the two flange nuts (A) and chain guard (B).
2. Check the chain. Replace chain if worn or damaged.
3. There should be no slack in the chain, and the sprockets (D and E) should be aligned. The drive shaft (H) should be parallel with the auger housing. If adjustment is required proceed with steps 4 - 7.
4. Loosen the adjustment nuts (F).
5. Pull rearward on the drive shaft (H) until all slack is removed from chain. With drive shaft housing parallel with auger housing, and sprockets aligned, retighten the adjustment nuts (F). Torque to 40-50 ft. lbs.
6. Spread a coat of grease on the chain, working the grease into the links.
7. Reinstall the chain guard (B) and two nuts (A).

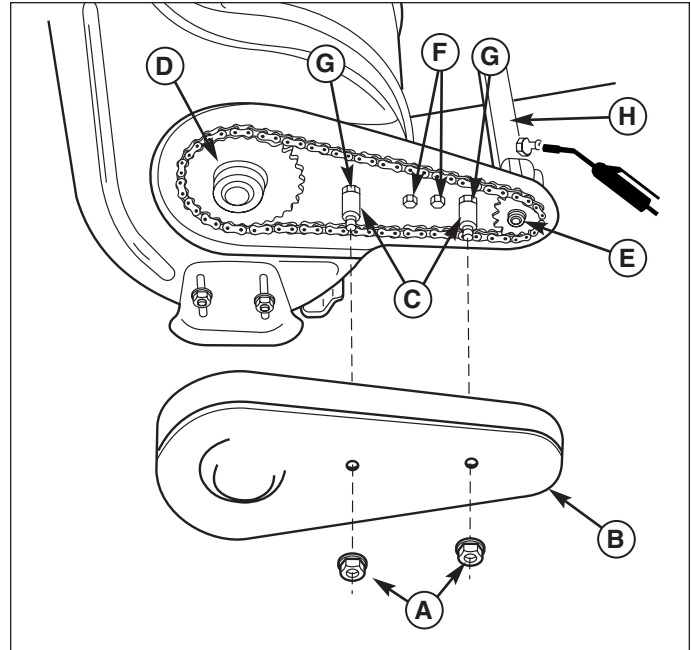


Figure 3. Drive Chain Lubrication & Adjustment

- | | |
|-------------------|--------------------|
| A. Flange Nuts | F. Adjustment Nuts |
| B. Chain Guard | G. Nuts |
| C. Spacers | H. Drive Shaft |
| D. Auger Sprocket | |
| E. Drive Sprocket | |

Lubricate Auger Bearings

See Figure 4.

Lubricate the grease fittings on both sides of the auger.

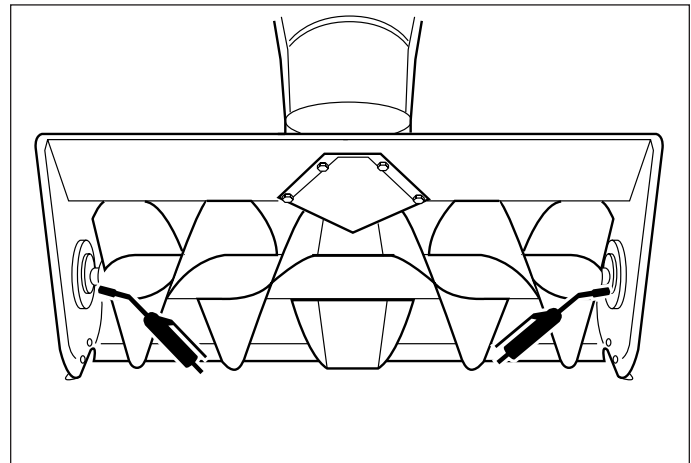


Figure 4. Auger Bearing Lubrication



Troubleshooting, Adjustments, & Service

TROUBLESHOOTING

While normal care and regular maintenance will extend the life of your equipment, prolonged or constant use may eventually require that service be performed to allow it to continue operating properly.

The troubleshooting guide below lists the most common problems, their causes and remedies.

See the information on the following pages for instructions on how to perform most of these minor adjustments and service repairs yourself. If you prefer, all of these procedures can be performed for you by your local authorized dealer.

WARNING

To avoid serious injury, perform maintenance on the tractor or mower only when the engine is stopped and the parking brake engaged.

Always remove the ignition key, disconnect the spark plug wire and fasten it away from the plug before beginning the maintenance, to prevent accidental starting of the engine.

PROBLEM	CAUSE/SOLUTION
1 Snowthrower auger does not rotate.	<ul style="list-style-type: none"> A. Electric clutch not engaged. Engage electric clutch. B. Foreign material is blocking auger. STOP engine. Remove key. Unplug auger with piece of wood. Read WARNING on page 5. C. Drive chain broken. Replace parts as required.
2 Auger does not stop when electric clutch is disengaged.	<ul style="list-style-type: none"> A. Electric clutch brake not operating properly. See your dealer.
3 Auger rotates, but snow is not thrown far enough.	<ul style="list-style-type: none"> A. Engine RPM too slow. Set throttle to FULL. B. Ground speed too fast. Use slow ground speed. C. Snowthrower discharge chute clogged. STOP engine. Remove key. Unplug discharge chute.
4 Scraper bar does not clean down to hard surface.	<ul style="list-style-type: none"> A. Skid shoes not properly adjusted. Adjust skid shoes. B. Lift height out of adjustment. See ADJUSTMENTS section.
5 Snowthrower picks up and throws stones on gravel drive.	<ul style="list-style-type: none"> A. Skid shoes not properly adjusted for ground surface. Adjust skid shoes. B. Too much downward pressure on snowthrower. Raise snowthrower slightly. C. Downward pressure out of adjustment. See ADJUSTMENT section.
6 Tractor does not have sufficient traction.	<ul style="list-style-type: none"> A. Tractor too light at rear wheels. Use Quick Tach weights, wheel weights, and tire chains.
7 Tractor not stable on sloping surfaces.	<ul style="list-style-type: none"> A. Ground speed too fast. Reduce speed. B. Tractor not properly weighted. See Recommended Accessories, page 1. C. Slope grade too steep. See Safety Section.

Troubleshooting, Adjustments, & Service

Drive Chain Adjustment

See Inspect, Adjust & Lubricate Drive Chain in the MAINTENANCE Section.

Skid Shoe Adjustment

On smooth surfaces such as concrete or asphalt, the scraper bar should scrape the surface. On surfaces such as gravel, the scraper bar should be set high enough so that it will not pick up debris.

1. Loosen the nuts securing the skid shoes (see Figure 5).
2. Raise or lower the scraper bar to the desired height. Use wood blocks to hold the snowthrower in position.
3. Set the skid shoes so that they are in contact with the ground and tighten the skid shoe nuts.

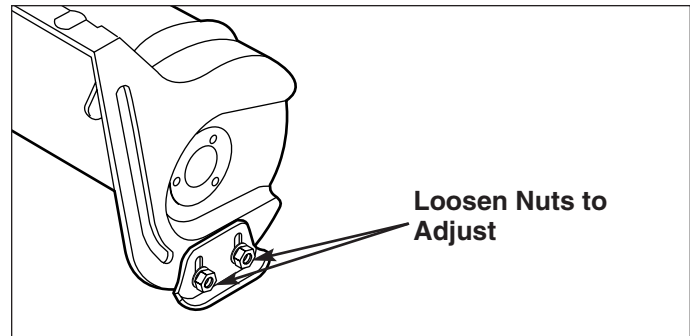


Figure 5. Adjusting Skid Shoes

Electric Chute Rotator Gear

1. Remove the plastic cover (B, Figure 6) and loosen the three taptite screws (A) securing the electric spout rotator motor.
2. Adjust the motor so that it meshes with the discharge chute ring gear and tighten the adjustment screws (A).

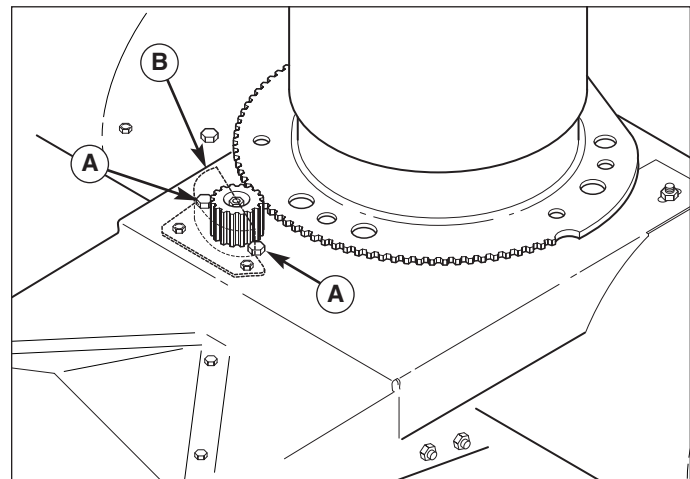


Figure 6. Discharge Chute Motor Gear Adjustment
A. Adjustment Screws B. Plastic Cover

Lift Rod Adjustment

In the fully raised position the attachment should be 4"-5" off the ground. In the fully lowered position, the lift rod should compress the spring creating downward pressure on the blade.

NOTE: Always adjust the lift height before and after adjusting the downward pressure.

LIFT HEIGHT ADJUSTMENT

1. Fully raise the attachment lift. The snowthrower should be approximately 4"-5" off the ground. If not, go to step 2.
2. Lower the snowthrower and adjust the front set collar (A, Figure 7) to achieve the correct lift height.

DOWNWARD PRESSURE ADJUSTMENT

1. Place the lift in the fully raised position.
2. Release the rear set collar (C, Figure 7).
3. Slide the set collar (C) forward until it is slightly compressing the spring. Tighten the set collar screw. Do not over-compress the lift rod spring.

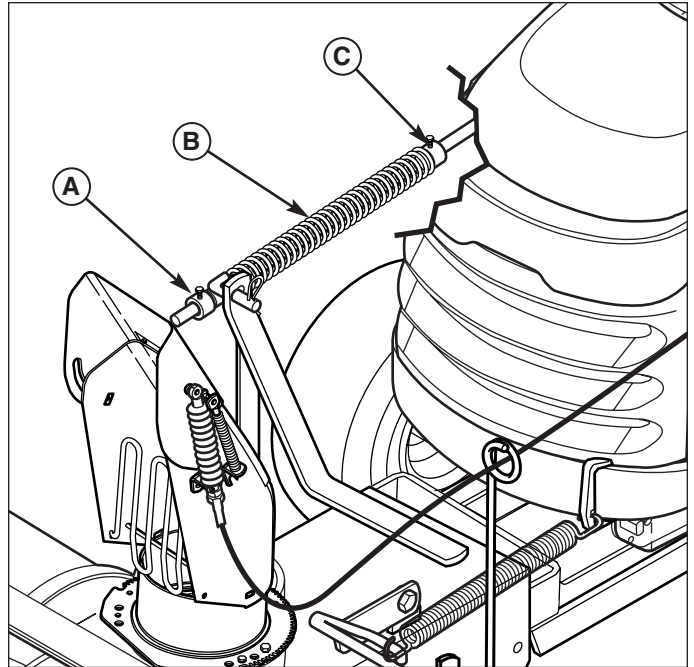


Figure 7. Adjusting Lift Rod

- A. Front Set Collar**
- B. Spring**
- C. Rear Set Collar**



IMPORTANT NOTE

DO NOT OVER-COMPRESS THE SPRING. In addition to providing downward pressure, the spring is an elastic medium that absorbs shocks caused by bumps and cracks in ground surfaces. Over-compressing the spring defeats this and may cause damage to the unit.

Troubleshooting, Adjustments, & Service

Belt Tension Adjustment

See Figure 8.

1. With the snowthrower drive belt installed, trunnion (A) should be between marks (G) on spring tension bracket (B) for correct belt tension.
2. Turn belt tension handle (C) to move trunnion forward or rearward until it is between marks.
3. If trunnion cannot be placed between marks, loosen capscrew (D) and reposition idler pulley (E) as necessary. The pivot bracket (F) should be perpendicular to the hitch. Retighten capscrew (D) and repeat step 2.

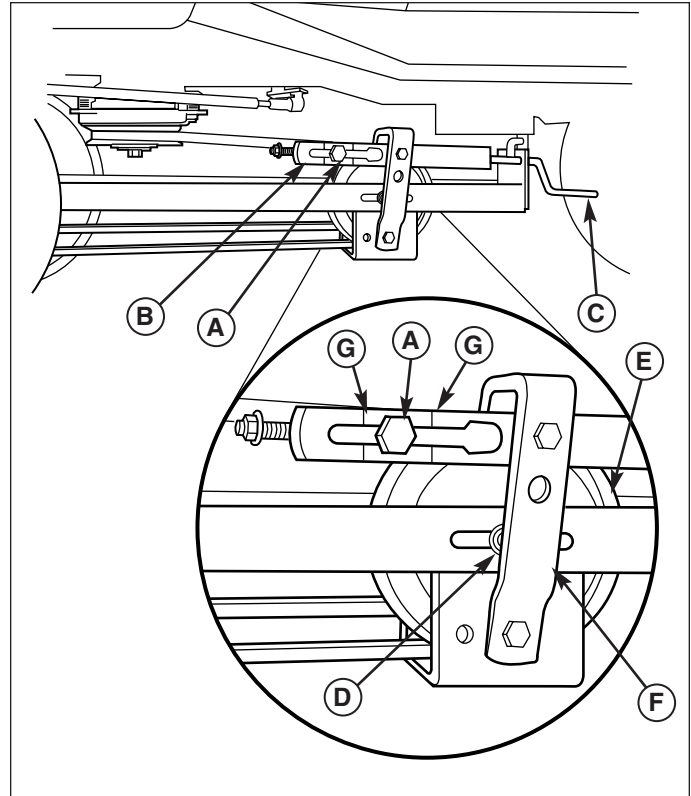


Figure 8. Adjusting Belt Tension

- | | |
|----------------------------------|-------------------------|
| A. Trunnion | E. Idler Pulley |
| B. Spring Tension Bracket | F. Pivot Bracket |
| C. Handle | G. Tension Marks |
| D. Capscrew | |

Belt Replacement

1. Loosen the drive belt by turning the handle (C, Figure 8).
2. Remove the belt from the pulley (D, Figure 9) inside the snowthrower and remove the snowthrower from the tractor.
3. Loosen the lockwashers and nuts securing two belt stops on idler pulleys (A and E, Figure 4).
4. Install new belt as shown.
5. Retighten belt stops and adjust the belt tension.

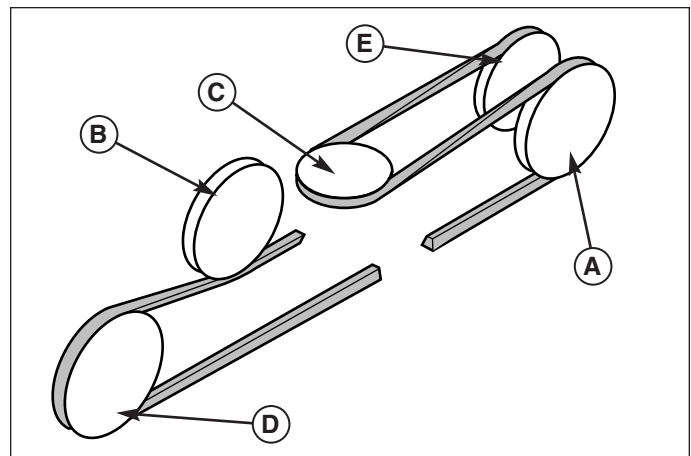
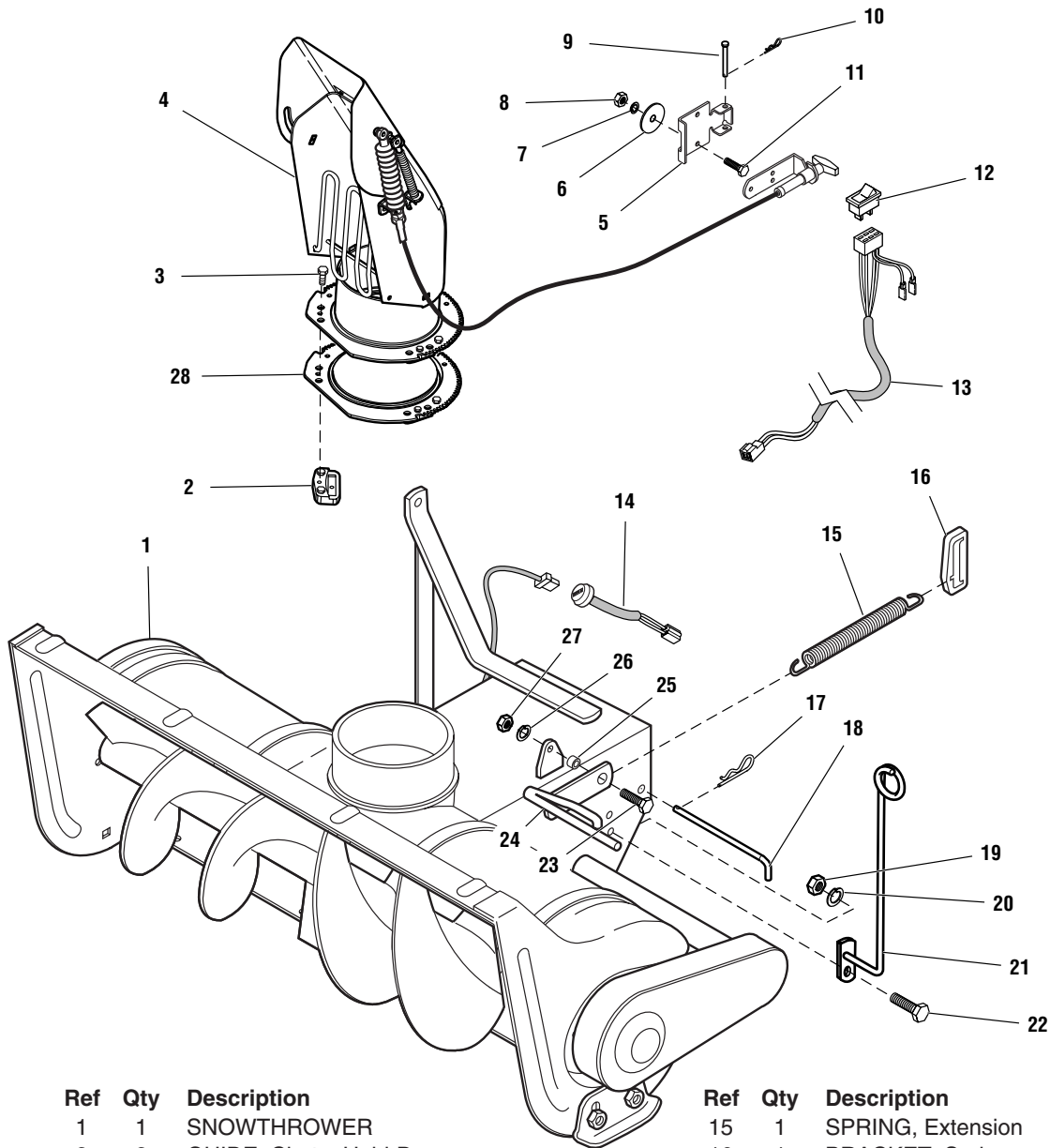


Figure 9. Belt Routing

- | |
|---|
| A. V-Pulley |
| B. Idler Pulley |
| C. Electric Clutch Pulley (V-pulley) |
| D. Snowthrower Pulley (V-pulley) |
| E. Idler Pulley |



Ref	Qty	Description
1	1	SNOWTHROWER
2	2	GUIDE, Chute, Hold-Down
3	2	SCREW, Plastite
4	1	DISCHARGE CHUTE ASSY.
5	1	MOUNTING BRACKET
6	2	WASHER, Large
7	2	LOCKWASHER, 1/4"
8	2	NUT, 1/4-20
9	1	PIN
10	1	HAIR PIN CLIP
11	2	CAPSCREW, 1/4-20 x 7/8
12	1	SWITCH
13	1	WIRE HARNESS, Switch
14	1	WIRE HARNESS, Trailer Plug

Ref	Qty	Description
15	1	SPRING, Extension
16	1	BRACKET, Spring
17	2	HAIR PIN CLIP
18	2	PIN, Clevis
19	1	NUT, 5/16-18
20	1	LOCKWASHER, 5/16
21	1	SUPPORT
22	1	CAPSCREW, 5/16-18 x 1
23	1	CAPSCREW, 3/8-16 x 1-1/4
24	1	ASSIST LEVER
25	1	SPACER
26	1	LOCKWASHER, 3/8
27	1	NUT, 3/8
28	1	RING GEAR, Reinforcement

Figure 10. Initial Setup

Initial Setup & Assembly

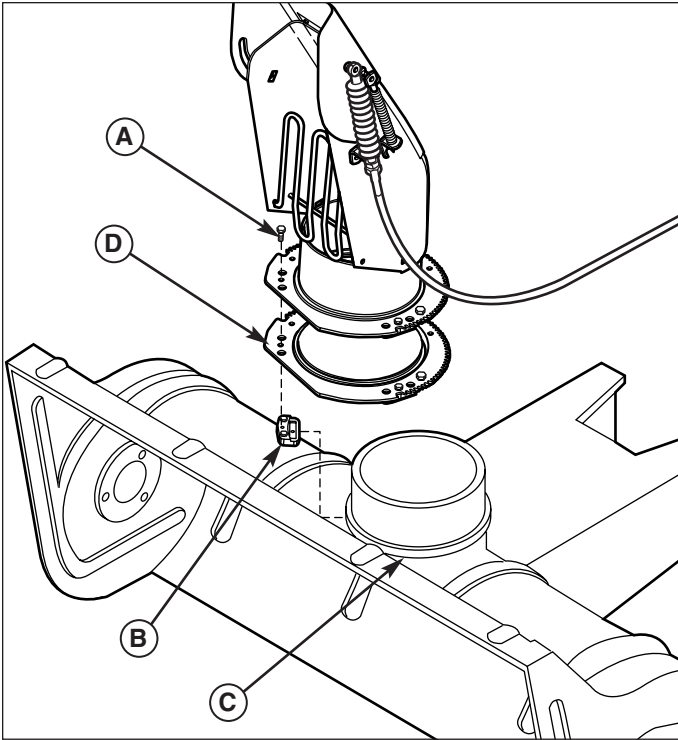


Figure 11. Assemble Discharge Chute

- A. Plastite Screw
- B. Hold-Down
- C. Chute Ring
- D. reinforcement Ring Gear

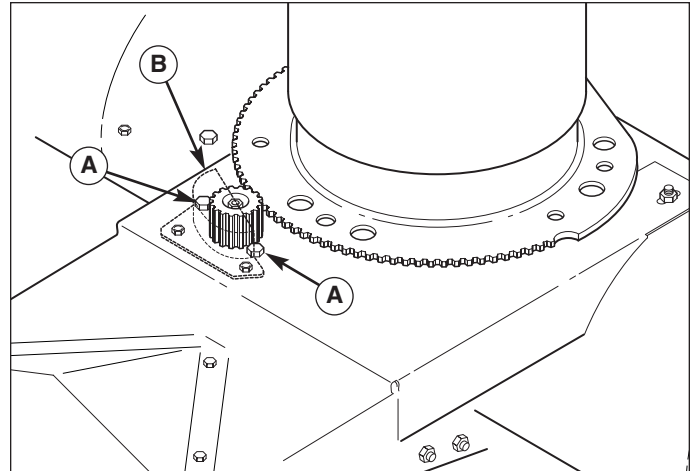


Figure 12. Discharge Chute Motor Adjustment
A. Adjustment Screws B. Plastic Cover

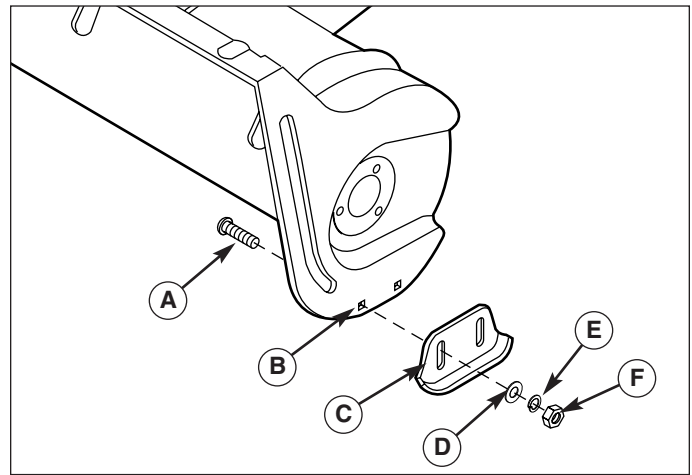


Figure 13. Skid Shoe Installation

- A. Carriage Bolt, 3/8-16 x 3/4"
- B. Snowthrower Housing
- C. Skid Shoe
- D. Washer
- E. Lockwasher
- F. Hex Nut

INITIAL SETUP & ASSEMBLY

NOTE: Some of the following setup procedures may already be completed.

Install Hitch

Install the sub-frame hitch. Refer to sub-frame hitch installation instructions. See also "Lift Variations..." on page 22 of this manual. Position the snowthrower in front of the tractor.

Assemble Discharge Chute

1. Locate the hold downs (B, Figure 11), reinforcement ring gear (D), and plastite screws (A).
2. Lubricate the base of the discharge chute and ring gear with automotive lithium grease.
3. Remove the plastic cover (B, Figure 12) and loosen the three taptite screws (A) securing the electric spout rotator motor.
4. Install the discharge chute and reinforcement ring gear (D), and secure to the chute ring (C, Figure 11) using the three hold downs (B) and plastite screws (A).
5. Adjust the motor so that it meshes with the discharge chute ring gear and tighten the adjustment screws (A, Figure 12).

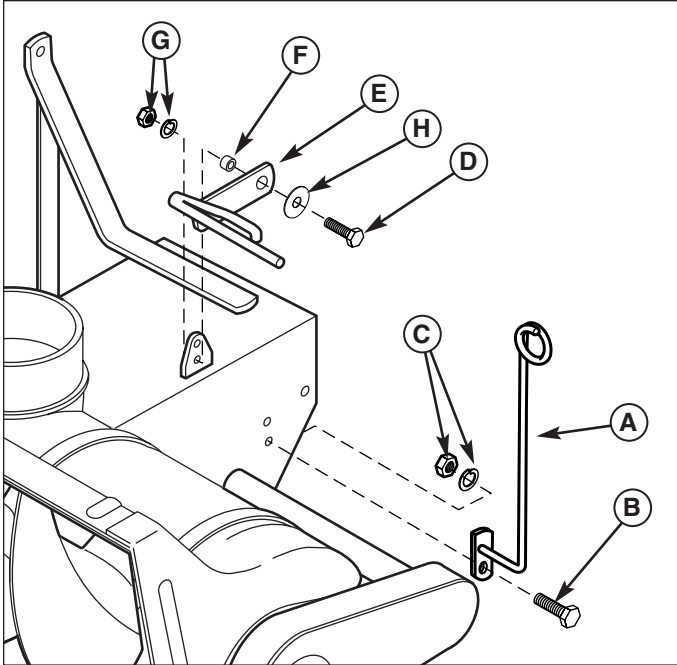


Figure 14. Deflector Control Cable Support Arm

- A. Support Arm
- B. 5/16-18 x 1 Capscrew
- C. Lockwasher & Nut
- D. 3/8-16 x 1-1/4 Capscrew
- E. Assist Lever
- F. Spacer
- G. Lockwasher & Nut
- H. Large Washer

Attach Deflector Control Cable Support Arm & Assist Lever

1. Assemble the deflector control cable support arm (A, Figure 14) to the left side of the snowthrower using one 5/16-18 x 1" capscrew (B), lockwasher, and nut (C) using the holes shown.
2. If not already done, install the lift assist lever (E) using a 3/8-16 x 1-1/4 capscrew (D), large washer (H), spacer (F), lockwasher & nut (G).

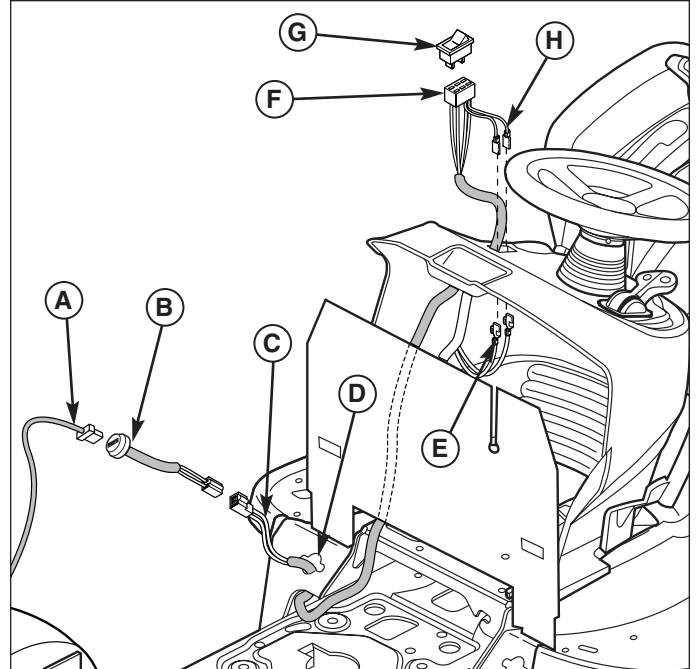


Figure 15. Install Power Port & Switch

- A. Rotator Motor Harness
- B. Trailer Plug
- C. Switch Harness Lower Plug
- D. Plug Hole (Frame)
- E. Tractor Harness Leads
- F. Switch Harness Upper Plug
- G. Switch
- H. Power Leads

Install Chute Rotator Switch and Harness

1. Remove the plug from the switch mounting hole in the right side of the dashboard.
2. Route the switch harness (C, F, Figure 15) through the frame and dashboard as shown.
3. Install the switch (G) in the dashboard and connect the upper end of the switch harness (F) to it.
4. Connect the red/yellow power lead (H) to the red/yellow tractor harness lead (E). Connect the black power lead to the black tractor harness lead.
5. Mount the trailer plug socket (B) in the frame at location (D). Connect the trailer plug lead (B) to the lower switch harness connector (C).
6. Do not connect the snowthrower wire harness (A) at this time.

Initial Setup & Assembly

Mount Remote Deflector Control

1. Using the template included in the back of this manual, drill two 9/32" holes in the dashboard to mount the remote chute control. See MOUNTING REMOTE DEFLECTOR CONTROL on page 22.
2. Mount the mounting bracket (E, Figure 16) to the dashboard. Secure with two 1/4-20 x 7/8 capscrews (A), lockwashers (C), and large flat washers (B).

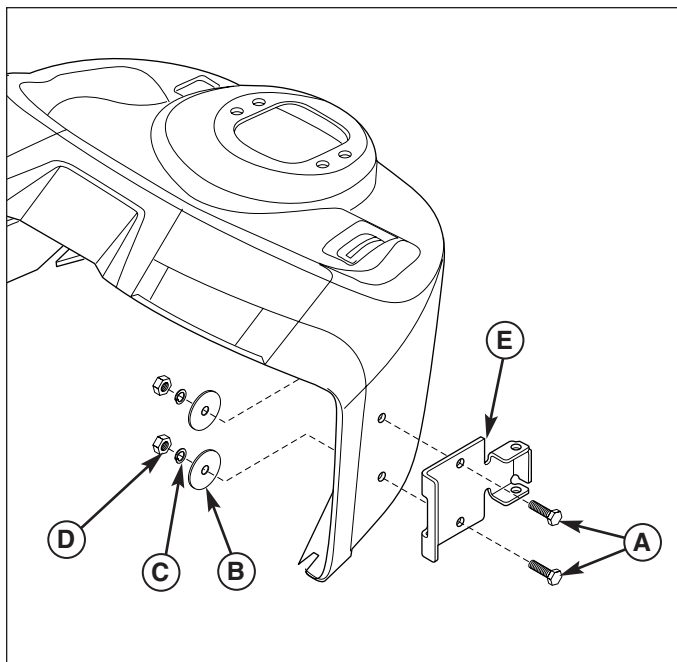


Figure 16. Mount Control Bracket - Current Models
A. 1/4-20 x 7/8 Capscrews D. 1/4-20 Nuts
B. 1/4 x 1-1/4 Flatwashers E. Mounting Bracket
C. 1/4 Lockwashers

3. Install the remote deflector control handle (B, Figure 17) in the mounting bracket (C) and secure with a clevis pin (A) and hair pin clip (D).

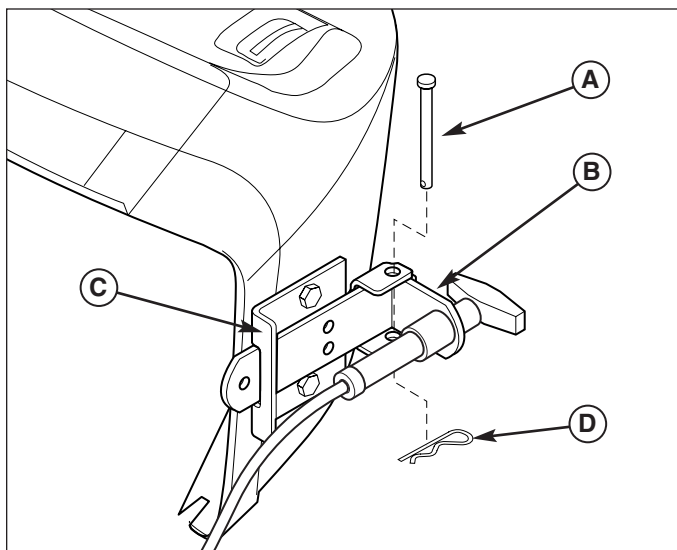


Figure 17. Install Remote Deflector Control
A. Clevis Pin
B. Deflector Control Handle
C. Mounting Bracket
D. Hair Pin Clip

Install Snowthrower

CONNECT TO HITCH

1. Position the snowthrower in front of the hitch. Insert the hitch pin (A, Figure 18) through the snowthrower and hitch on both sides of the snowthrower. Secure with a hair pin clip (B). Use the back set of hitch holes (see inset).

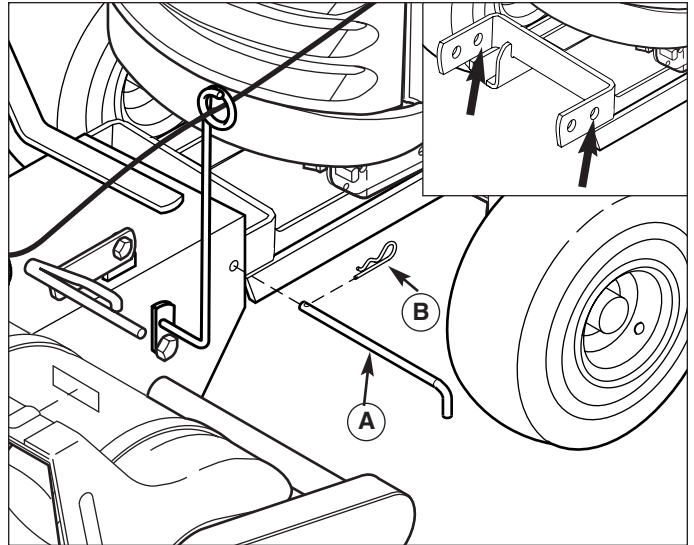


Figure 18. Install Snowthrower

- A. Hitch Pin
- B. Hair Pin Clip

INSTALL LIFT ROD

2. Attach the front of the lift rod assembly (A, Figure 19) to the lift arm (C). Secure with a hair pin clip (B).

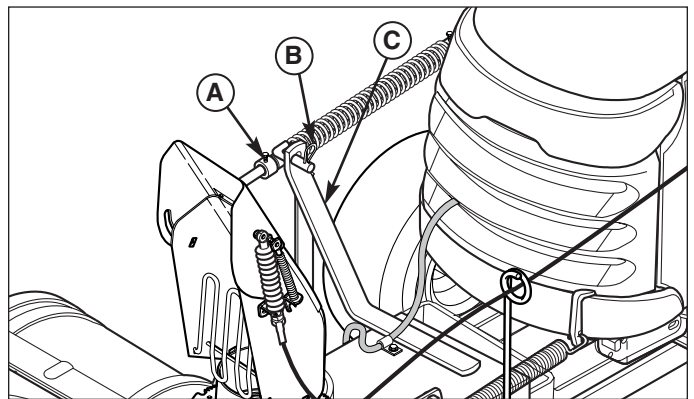


Figure 19. Lift Rod - Front

- A. Lift Rod Assembly
- B. Hair Pin Clip
- C. Lift Arm

3. Connect the rear of the lift rod assembly (A, Figure 20) to the tractor lift arm extension (C). Secure with a hair pin clip (B).

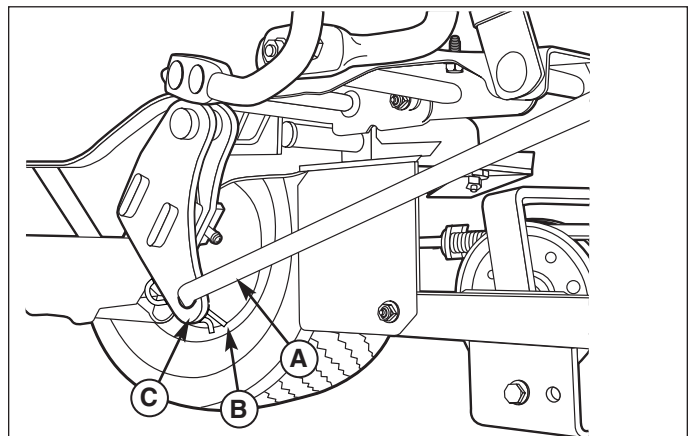


Figure 20. Lift Rod - Front

- A. Lift Rod Assembly
- B. Hair Pin Clip
- C. Lift Arm

Initial Setup & Assembly

INSTALL ASSIST SPRING

4. Lift the snowthrower up fully and support with wood blocks.
5. Assemble the lift assist spring (B, Figure 21) and spring bracket (C). Install the spring assist bracket (C) in the front bumper. Be sure the spring notch is in the lower position.
6. Rotate the assist spring lever (A) backwards. Hook the spring (A) on the lever (C) and rotate the lever forwards.

CAUTION

Spring under tension. Keep clear of pinch points.

7. Lower the snowthrower.

NOTE: If necessary, perform the lift rod adjustments found in the Troubleshooting, Adjustments, & Repair section.

CONNECT ELECTRICAL HARNESS

8. Route the wire harness through the bottom opening in the grille and along the frame rail to the accessory plug (B, Figure 22). Connect the chute rotator harness plug (A, Figure 22) to the tractor plug (B). Make certain it will not be caught in the front axle pivot. Secure with the wire clips provided.

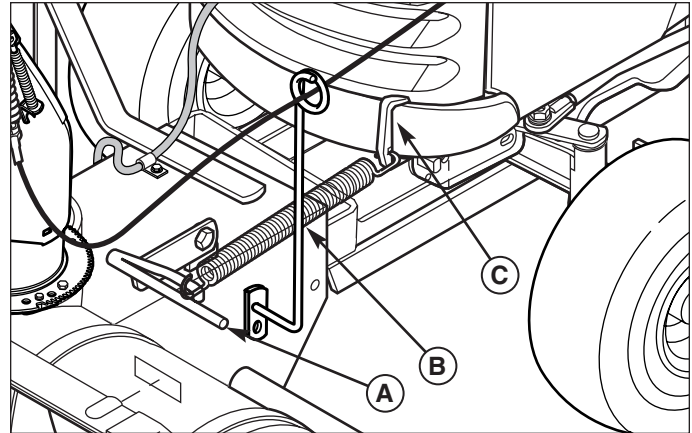


Figure 21. Lift Assist Spring
A. Assist Spring Lever **C. Spring Bracket**
B. Assist Spring

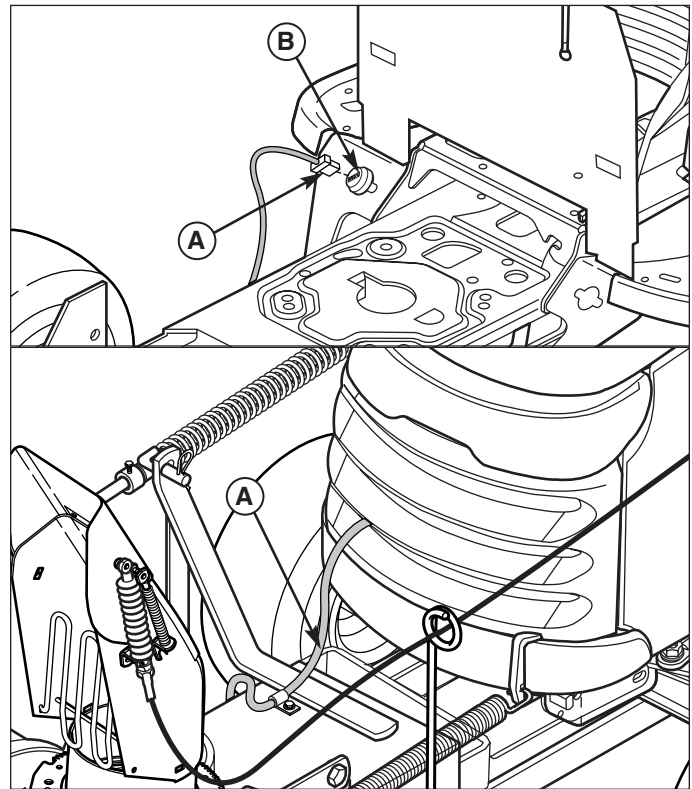


Figure 22. Rotator Motor Electrical Connection
A. Rotator Motor Harness & Plug
B. Tractor Plug

INSTALL DRIVE BELT

8. Route the drive belt as shown in Figure 23. Note that the back of the belt rides in the back-side idlers (B).
9. With the snowthrower drive belt installed, the trunnion (A, Figure 24) should be between the marks (G) on spring tension bracket (B) for correct belt tension. Turn belt tension handle (C) to move trunnion forward or rearward until between marks.

If trunnion cannot be placed between marks, loosen capscrew (D) and reposition idler pulley (E) as necessary. The pivot bracket (F) should be perpendicular to snowthrower hitch.

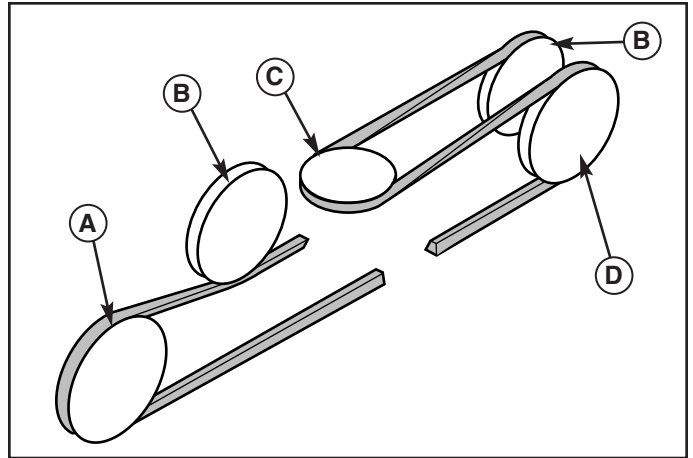


Figure 23. Belt Routing

- A. Snowthrower Pulley (V-pulley)
- B. Back-side Idler Pulley
- C. Electric Clutch Pulley (V-pulley)
- D. Idler Pulley (V-pulley)

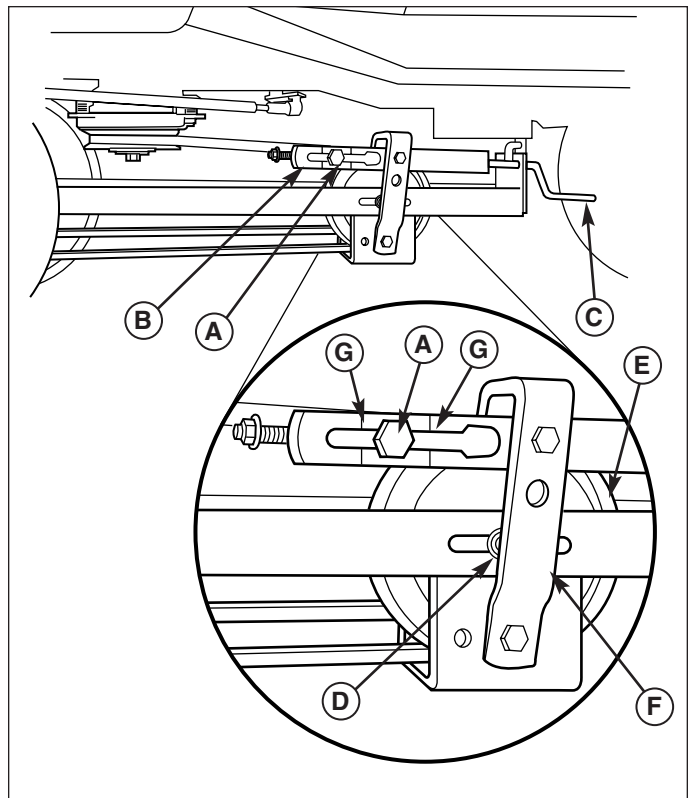


Figure 24. Adjusting Belt Tension

- A. Trunnion
- B. Spring Tension Bracket
- C. Handle
- D. Capscrew
- E. Idler Pulley
- F. Pivot Bracket
- G. Tension Marks

Removal & Normal Installation

Attach

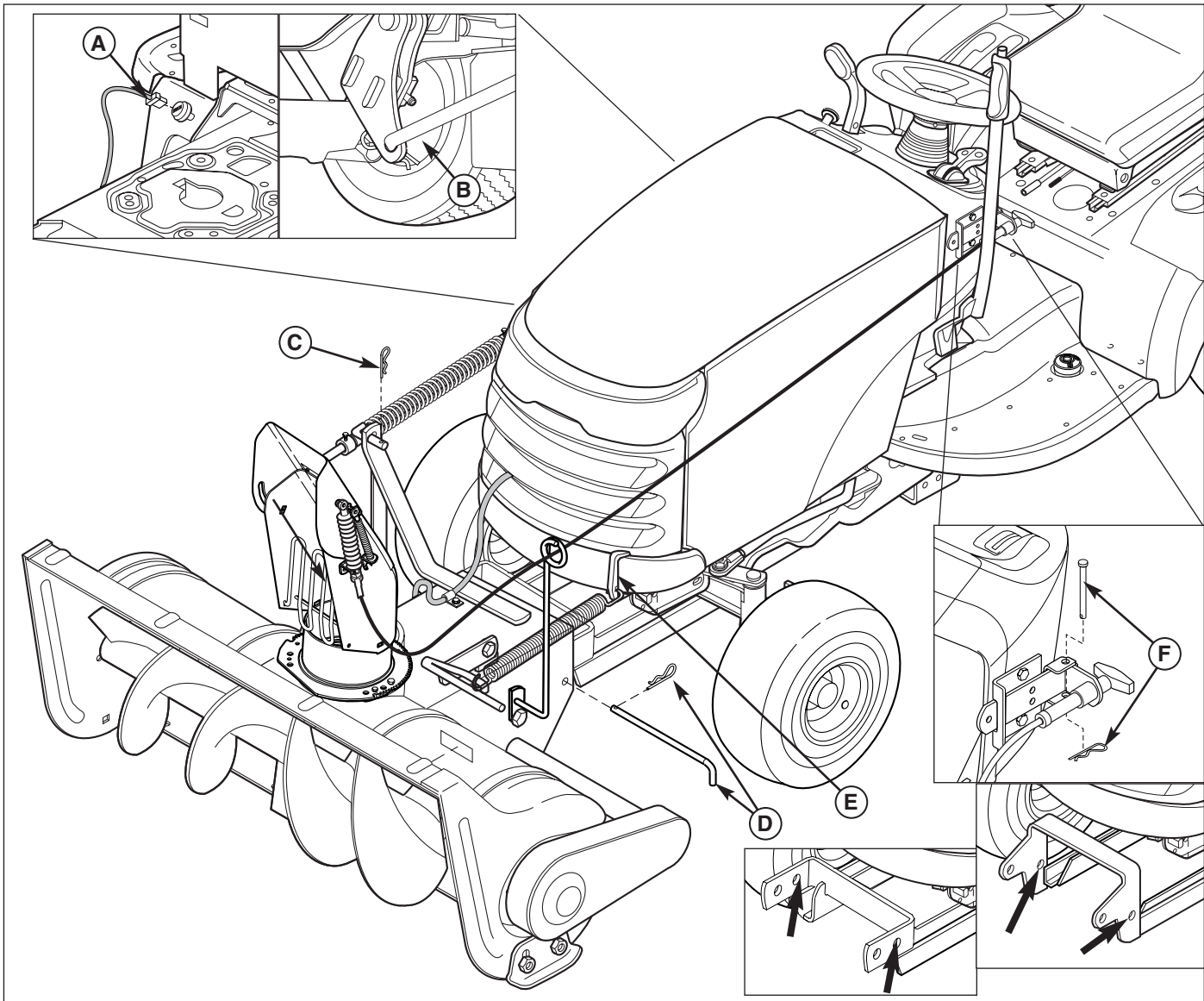


Figure 25. Dozer Removal

A. Rotator Motor Plug

B. Lift Rod

C. Hair Pin Clip

D. Hitch Pin & Clip

E. Spring Bracket

F. Clevis Pin & Clip

Removal

1. Fully raise and support the snowthrower with wood blocks.
2. Release the lift assist spring. Remove the spring and spring bracket (E, Figure 25) from the tractor.
3. Lower the snowthrower.
4. Remove the clevis pin and clip (F) from the remote deflector control and disconnect the control from the mounting bracket.
5. Disconnect the rotator motor plug (A).
6. Disconnect the rear of the lift rod (B) from the lift arm extension. Remove the hair pin clip (C) from the front of the lift rod. Remove the lift rod. Remove the lift arm extension from the tractor (see Hitch Installation Instructions).

Removing & Installing the Snowthrower

7. Use the trunnion handle (C, Figure 26) to relieve belt tension. Remove the belt from the snowthrower drive pulley (D, Figure 27).
8. Remove the hitch pin and clip (D, Figure 25) from the snowthrower and remove the snowthrower. Reinstall all pins and clips to prevent loss.

Normal Installation

1. Install the sub-frame hitch (see hitch installation instructions).
2. Place the snowthrower in front of the tractor and secure to the hitch using the hitch pin and clip (D, Figure 25).
3. Route the drive belt as shown in Figure 27. Note that the back of the belt rides in the back-side idler (B).
4. With the snowthrower drive belt installed, trunnion (A, Figure 26) should be between the marks (G) on spring tension bracket (B) for correct belt tension. Turn belt tension handle (C) to move trunnion forward or rearward until between marks.
5. Connect the rear of the lift rod (B, Figure 25) to the lift arm extension. Use a hair pin clip (C) to secure the front of the lift rod to the snowthrower.
6. Connect the rotator motor plug (A). Route the harness through the bottom grille grate and along the frame rail as shown.
7. Install the remote chute deflector control to the mounting plate and secure with a clevis pin and clip (F).
8. Fully raise and support the snowthrower with wood blocks. Install the lift assist spring and bracket (E).



CAUTION

Spring under tension. Keep clear of pinch points.

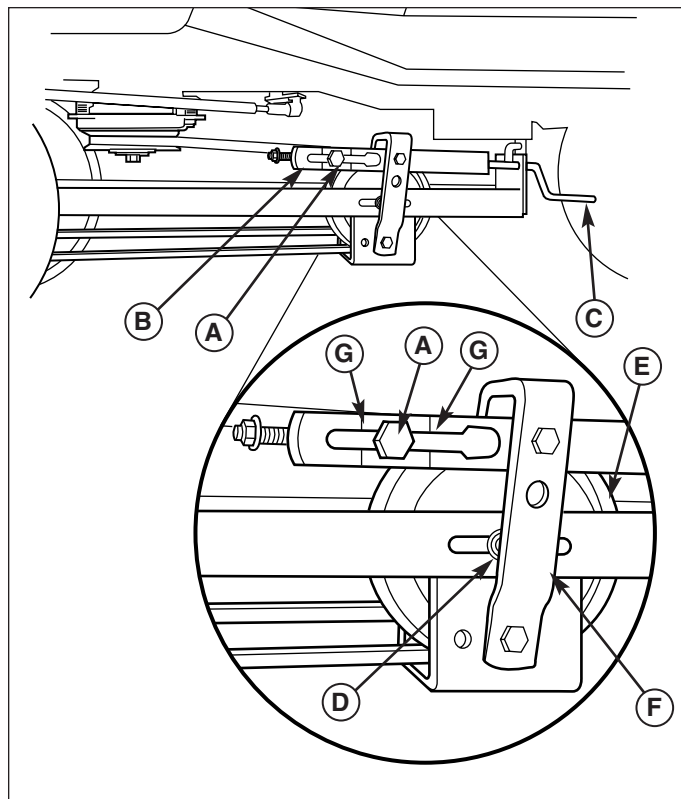


Figure 26. Adjusting Belt Tension

- | | |
|----------------------------------|-------------------------|
| A. Trunnion | E. Idler Pulley |
| B. Spring Tension Bracket | F. Pivot Bracket |
| C. Handle | G. Tension Marks |
| D. Capscrew | |

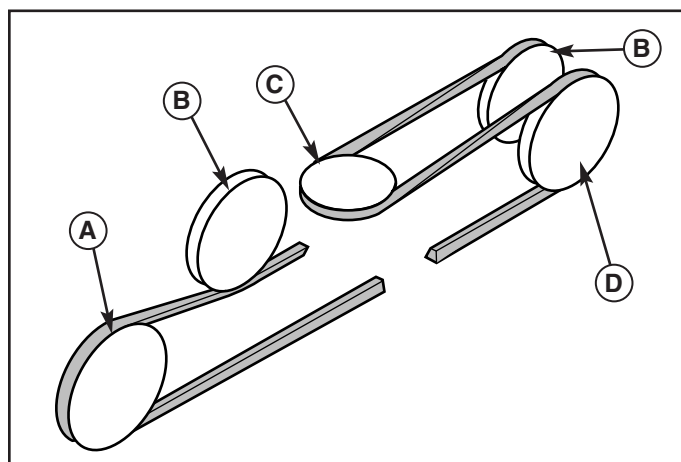


Figure 27. Belt Routing

- | |
|---|
| A. Snowthrower Pulley (V-pulley) |
| B. Back-side Idler Pulley |
| C. Electric Clutch Pulley (V-pulley) |
| D. Idler Pulley (V-pulley) |

Tractor Lift Linkage

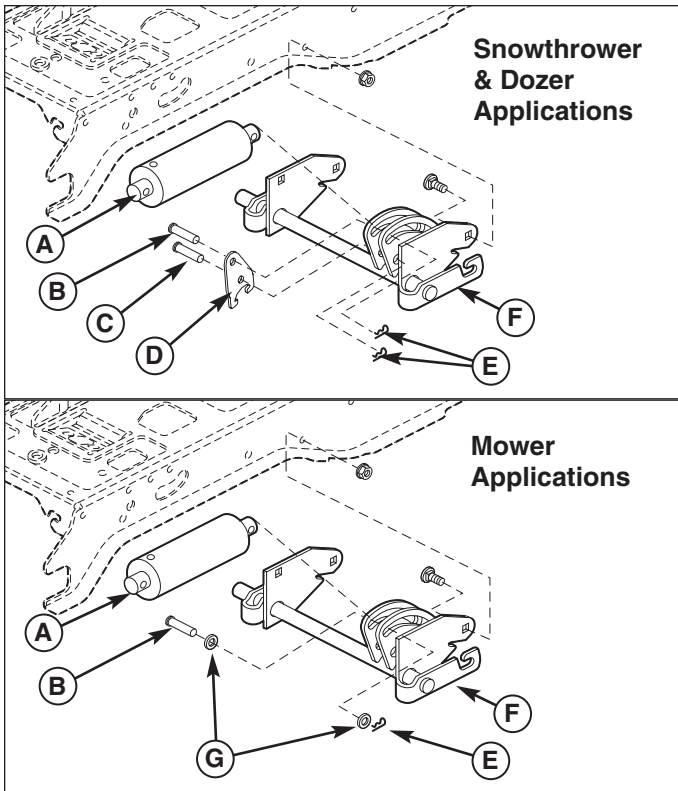


Figure 28. Lift Lock Plate - Hydraulic Lift Models

- A. Lift Cylinder
- B. Flat Head Pin (Original)
- C. Flat Head Pin (New)
- D. Lock Plate
- E. Hair Pin Clips
- F. Lift Shaft Assy.
- G. Washers

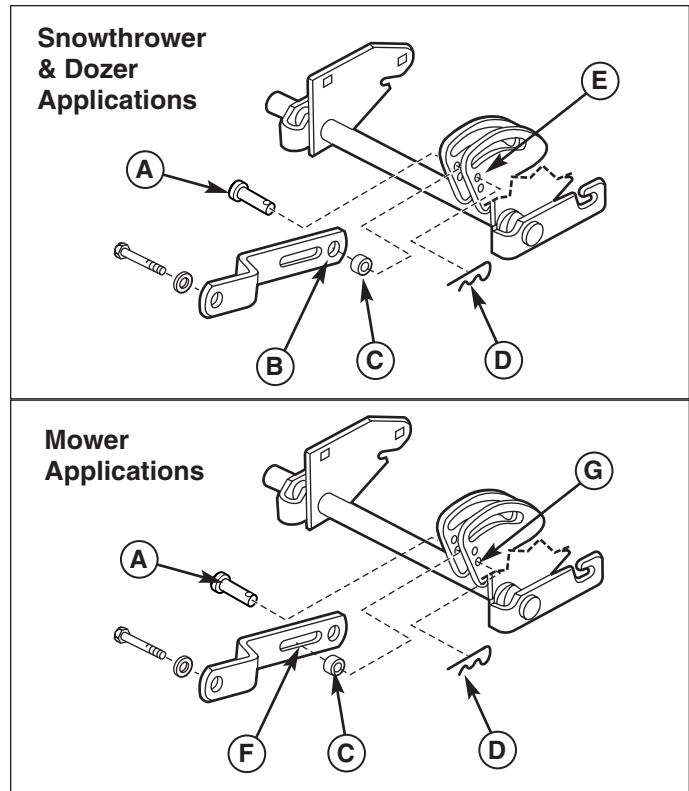


Figure 29. Lift Link - Manual Lift Models

- A. Pin
- B. Rear Hole of Lift Bar (Snowthrower Applications)
- C. Spacer
- D. Hair Pin Clip
- E. Upper Hole (Snowthrower Applications)
- F. Slot of Lift Link (Mower Applications)
- G. Lower Hole (Mower Applications)

LIFT VARIATIONS WHEN USING ATTACHMENTS

When a front-mounted attachment such as a snowthrower or dozer blade is used with the tractor, the lift mechanism must be locked to provide downward force. When the mower is reinstalled the downward pressure lock must be released so that the mower can float.

Hydraulic Lift Models

When using a snowthrower or dozer, the downward pressure lock plate (D, Figure 28) and an additional pin (C) is installed. These parts are included with the attachment. Note that the washers (G) are not used with the lock plate.

When mowing, the downward pressure lock plate (D) is removed and replaced with two washers (G). The additional pin (C) is also removed.

Fully lower the hydraulic lift. The lift assembly is spring loaded so it will need to be held in the down position to perform of the following procedures.

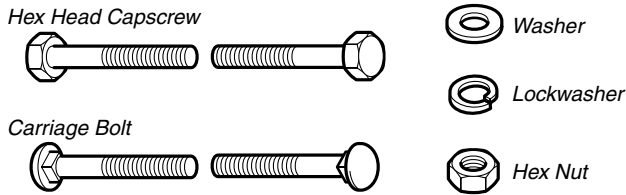
Manual Lift Models

NOTE: These instructions apply to Conquest / 1700 / 2700 Series tractors or Broadmoor / 1600 / 2600 Series tractors equipped with a lift lever kit.

The lift link is installed differently depending on what attachment is being used. Refer to Figure 29 for link installation information.

Hardware Identification & Torque Specifications

Common Hardware Types

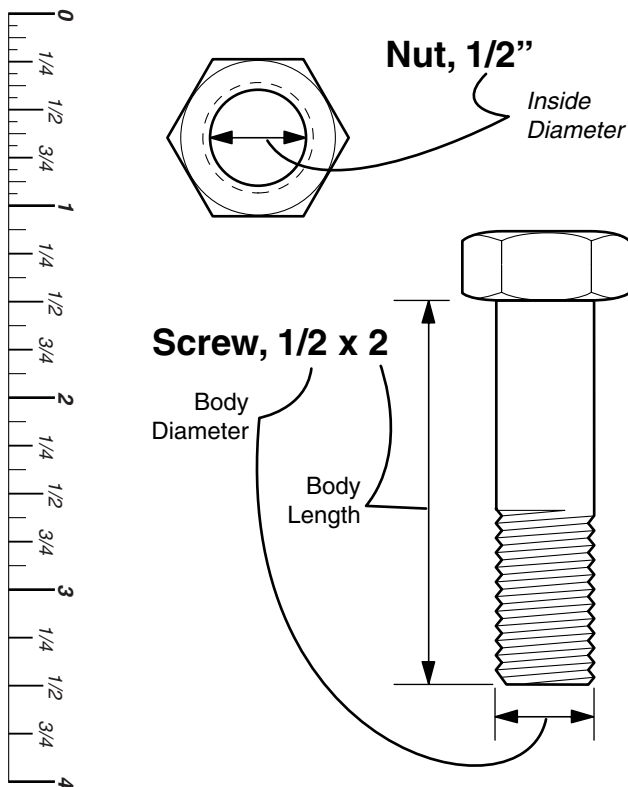


Standard Hardware Sizing

When a washer or nut is identified as **1/2"**, this is the *Nominal size*, meaning the *inside diameter* is 1/2 inch; if a second number is present it represent the *threads per inch*

When bolt or capscrew is identified as **1/2 - 16 x 2"**, this means the *Nominal size*, or *body diameter* is 1/2 inch; the second number represents the *threads per inch* (16 in this example, and the final number is the *body length* of the bolt or screw (in this example 2 inches long).

The guides and ruler furnished below are designed to help you select the appropriate hardware and tools.



Torque Specification Chart

FOR STANDARD MACHINE HARDWARE (Tolerance $\pm 20\%$)

Hardware Grade	No Marks		SAE Grade 2		SAE Grade 5		SAE Grade 8	
	in/lbs ft/lbs	Nm.	in/lbs ft/lbs	Nm.	in/lbs ft/lbs	Nm.	in/lbs ft/lbs	Nm.
8-32	19	2.1	30	3.4	41	4.6		
8-36	20	2.3	31	3.5	43	4.9		
10-24	27	3.1	43	4.9	60	6.8		
10-32	31	3.5	49	5.5	68	7.7		
1/4-20	66	7.6	8	10.9	12	16.3		
1/4-28	76	8.6	10	13.6	14	19.0		
5/16-18	11	15.0	17	23.1	25	34.0		
5/16-24	12	16.3	19	25.8	27	34.0		
3/8-16	20	27.2	30	40.8	45	61.2		
3/8-24	23	31.3	35	47.6	50	68.0		
7/16-14	30	40.8	50	68.0	70	95.2		
7/16-20	35	47.6	55	74.8	80	108.8		
1/2-13	50	68.0	75	102.0	110	149.6		
1/2-20	55	74.8	90	122.4	120	163.2		
9/16-12	65	88.4	110	149.6	150	204.0		
9/16-18	75	102.0	120	163.2	170	231.2		
5/8-11	90	122.4	150	204.0	220	299.2		
5/8-18	100	136	180	244.8	240	326.4		
3/4-10	160	217.6	260	353.6	386	525.0		
3/4-16	180	244.8	300	408.0	420	571.2		
7/8-9	140	190.4	400	544.0	600	816.0		
7/8-14	155	210.8	440	598.4	660	897.6		
1-8	220	299.2	580	788.8	900	1,244.0		
1-12	240	326.4	640	870.4	1,000	1,360.0		

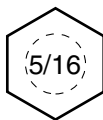
NOTES

- These torque values are to be used for all hardware excluding: locknuts, self-tapping screws, thread forming screws, sheet metal screws and socket head setscrews.
- Recommended seating torque values for locknuts:
 - for prevailing torque locknuts - use 65% of grade 5 torques.
 - for flange whizlock nuts and screws - use 135% of grade 5 torques.
- Unless otherwise noted on assembly drawings, all torque values must meet this specification.

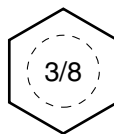
Wrench & Fastener Size Guide



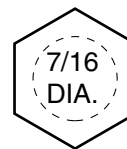
1/4" Bolt or Nut
Wrench—7/16"



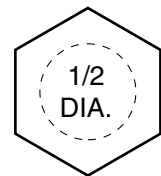
5/16" Bolt or Nut
Wrench—1/2"



3/8" Bolt or Nut
Wrench—9/16"



7/16" Bolt or Nut
Wrench (Bolt)—5/8"
Wrench (Nut)—11/16"



1/2" Bolt or Nut
Wrench—3/4"

Mounting Remote Deflector Control

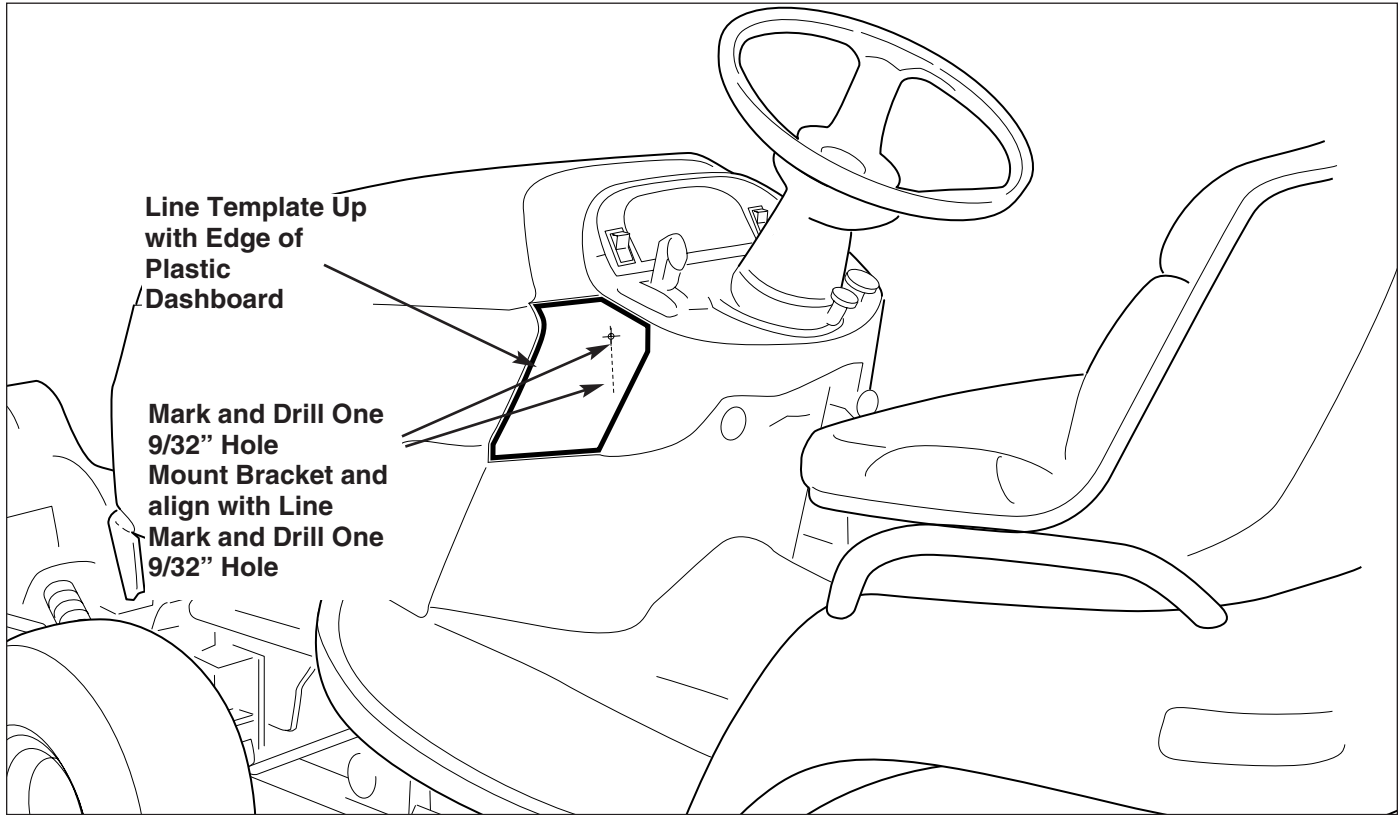


Figure 28. Template Location

MOUNTING REMOTE DEFLECTOR CONTROL

NOTE: Read through instructions before beginning.

1. Open the hood.
2. Cut out the template and place it on the lower left corner of the dashboard as shown above.
3. Mark and drill one 9/32" hole using the template to locate the holes.
4. Mount the remote deflector mounting bracket (E, Figure 29) control to the dashboard using upper hole.
5. Align center of lower hole to dashed line on template and mark. Remove the remote deflector mounting bracket (E). Drill one 9/32" hole using the marked location.
6. Mount the remote deflector mounting bracket (E) control to the dashboard. Secure using two 1/4-20 x 7/8" capscrews (A) through the bracket (E) and dashboard.
7. Secure with 1/4 x 1-1/4 flatwashers (B), lockwashers (C), and nuts (D) on the BACKSIDE of the dashboard.

DO NOT OVER-TORQUE. Over-torquing may crack the dashboard.

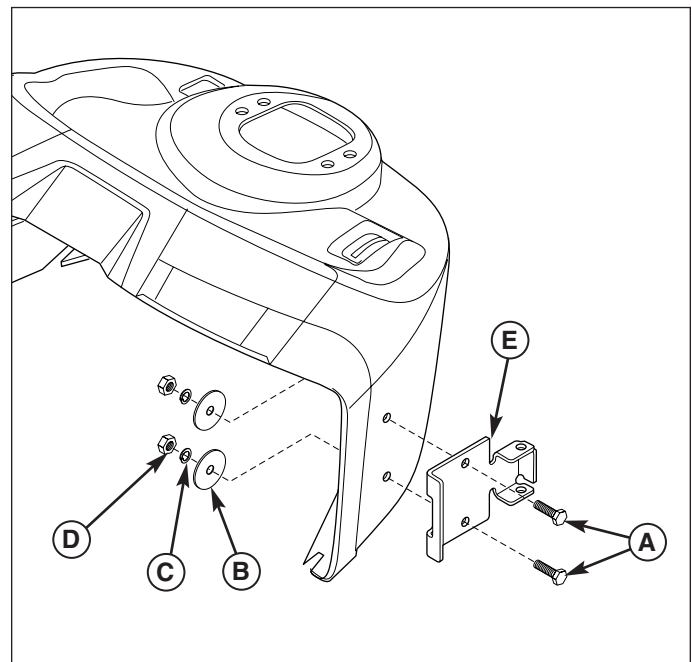
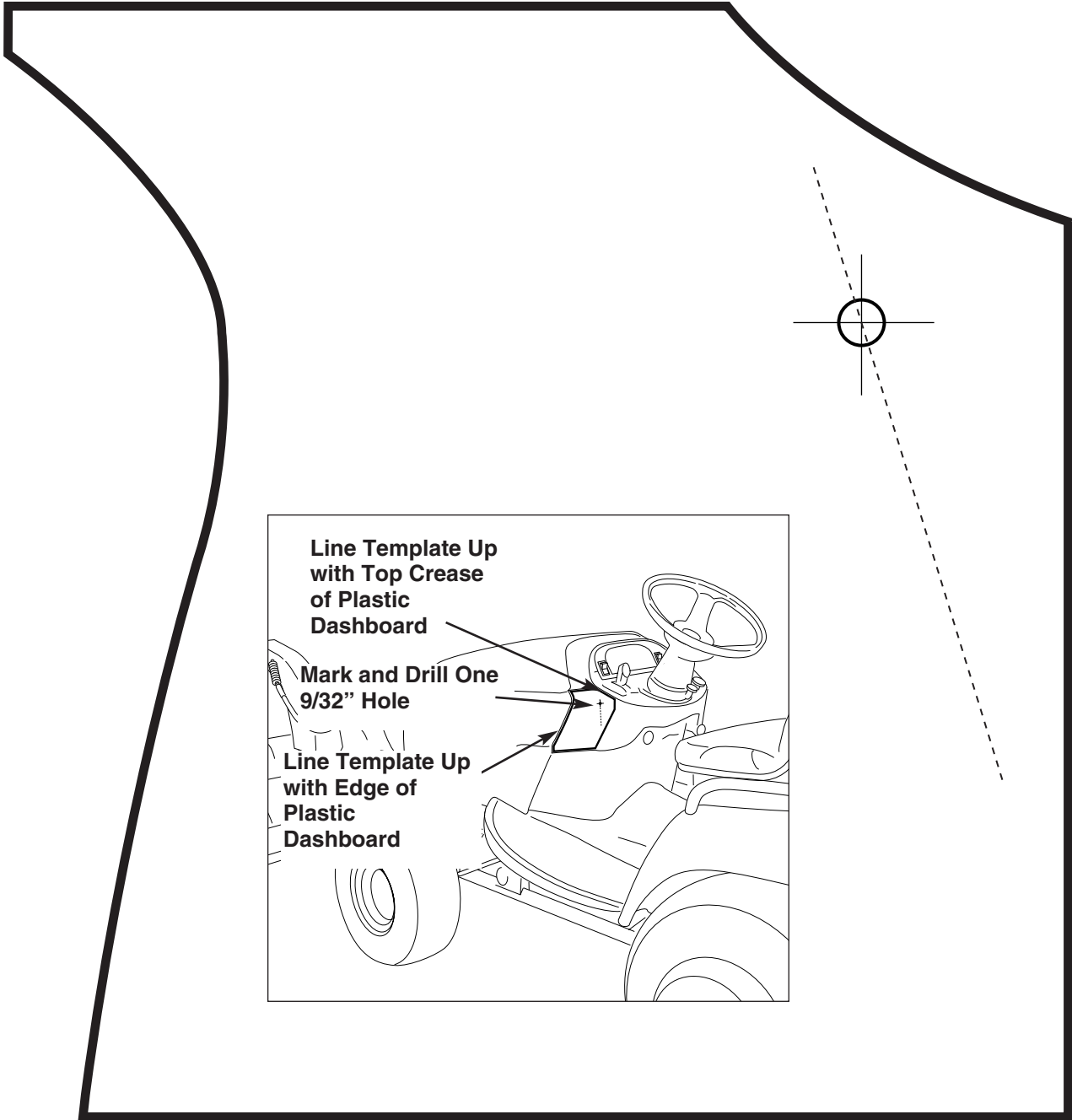


Figure 29. Mount Control Bracket - Current Models
A. 1/4-20 x 7/8 Capscrews
B. 1/4 x 1-1/4 Flatwashers
C. 1/4 Lockwashers
D. 1/4-20 Nuts
E. Mounting Bracket





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