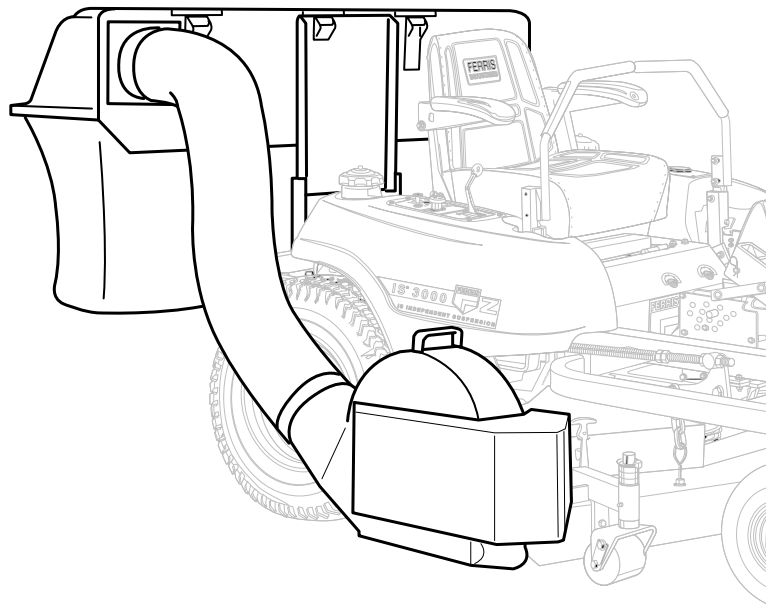




OPERATOR'S MANUAL

with Blower Setup Instructions



FAST-Vac

Double & Triple Bag Grass Collection Systems

Double Bag Collection System for:

Ferris 1000Z Series - 48" & 52" Mowers
Derby Colt ZT2148 & ZT2352 - 48" & 52" Mowers

Triple Bag Collection System for:

Ferris IS3000Z Series - 61" Mower
Derby Stallion ZT2561 - 61" Mower

Ferris Industries
5375 North Main Street
Munnsville, NY 13409
800-933-6175

22860

Rev. 9/2001
TP 100-7040-01-AT-FD

FERRIS LIMITED WARRANTY

IMPORTANT

This warranty shall apply ONLY if the warranty registration form has been completed and returned to Ferris Industries, Inc. within 20 days from the date of delivery.

Ferris Industries, Inc. (Ferris) warrants, in accordance with the provisions below, to the original purchaser for the period of twenty-four (24) months from the date of delivery of a Ferris mower that the mower is free from defects in material or workmanship. Ferris' obligation under this warranty is to repair or replace, at Ferris' election, without charge and at the place of business of a dealer authorized to handle Ferris mowers, any part or parts of the machine which, in the judgment of Ferris, prove to be defective.

THIS WARRANTY AND FERRIS' OBLIGATION HEREUNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE, and all other obligations or liabilities of Ferris for incidental and consequential damages resulting from the design, manufacture, sale or use of the machine. No person is authorized to make any warranty or assume for Ferris any liability not strictly in accordance with this warranty.

This warranty shall not apply to any mower part which, in the judgment of Ferris, has been altered or tampered with in any way or has been subjected to misuse, neglect or accident, or has had the serial numbers altered, effaced or removed. This warranty does not apply to component parts not manufactured by Ferris (motors, batteries, tires, belts) except to the extent of their individual manufacturer's guarantees.

Ferris Industries, Inc. is continually striving to improve its products, and therefore reserves the right to make improvements or change when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.



Ferris Industries
5375 North Main Street
Munnsville, NY 13409
800-933-6175

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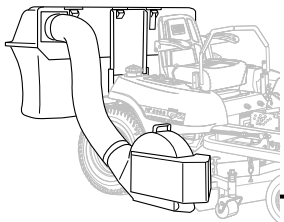


Table of Contents

SAFETY RULES & INFORMATION

General Warnings2
 Safety Decals.....2

GENERAL OPERATING INSTRUCTIONS

Mowing with the Double / Triple Catcher3
 After Operation3
 Storing the Grass Catcher3
 Mowing Without the Blower3

INITIAL INSTALLATION & ASSEMBLY 48" & 52" DOUBLE BAG COLLECTION SYSTEM BLOWER MOUNT & DRIVE GROUP

Remove Discharge Chute.....4
 Release Mower Drive Belt Tension.....4
 Remove Guard & Spindle Pulley4
 Install Spindle Pulley.....5
 Install Guard5
 Mower Deck Preparation5
 Blower Preparation7
 Install Blower & Belt Guard.....9

INITIAL INSTALLATION & ASSEMBLY 61" TRIPLE BAG COLLECTION SYSTEM BLOWER MOUNT & DRIVE GROUP

Remove Discharge Chute.....10
 Release Mower Drive Belt Tension.....10
 Remove Guard & Spindle Pulley10
 Install Spindle Pulley.....11
 Install Guard & Blower Mount.....11
 Blower Preparation12
 Install Blower & Belt Guard.....15

OPERATING WITHOUT BLOWER

Reattaching Discharge Chute.....16

REFERENCE INFORMATION:


Torque Specification ChartInside Back Cover

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

PRODUCT REFERENCE DATA	
Model Description Name	
Unit MODEL Number	Unit SERIAL Number
Dealer Name	Date Purchased

Safety Rules & Information



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.

GENERAL WARNINGS

- Know the mower controls, safety rules and how to stop quickly. **READ AND UNDERSTAND THE MOWER OPERATOR'S MANUAL.**
- **READ AND OBEY ALL SAFETY DECALS.**
- Wear appropriate ear, eye and breathing protection.
- Only allow responsible adults, who are familiar with the instructions, to operate the unit.
- Disengage the electric clutch (PTO). Shut off the engine and wait for all moving parts to stop before attaching, adjusting, or disconnecting any part of the collection system.
- Check the collection system to make sure it is bolted tightly to the rider.
- **DO NOT** operate the mower without either the entire grass catcher or the deflector in place.
- Turn off the PTO switch to disengage the blades when not mowing.
- **DO NOT** mow in reverse. Always look down and behind before and while travelling in reverse.
- **DO NOT** turn sharply when travelling alongside a building or any object. Slow down before turning.
- **DO NOT** carry passengers on the rider.
- When blower assembly is removed from the mower deck, the deflector must be properly installed.
- If the mower stalls or the turbo blower chute plugs:
 1. Disengage the electric clutch (PTO);
 2. Stop the engine and remove the key;
 3. Set the parking brake, and wait for all moving parts to stop.
 4. Remove the foreign object or clear the chute with a piece of wood before restarting the engine. **NEVER PLACE HANDS INTO BLOWER HOUSING TO CLEAR JAMMED OBJECT. BLOWER MAY ROTATE WHEN OBJECT IS REMOVED.**
- For added rider stability and to prevent tipping or loss of control:
 - a. Use reduced speed on uneven ground and when turning corners.
 - b. Reduce loads on hillsides. It is recommended that the collection system be kept only half full when negotiating any slopes. Start mowing on slopes when the collection system is empty.
 - c. Mow up and down the face of slopes; never across the face of any slope.
- When operating on slopes, use front counterweights. **Never operate on slopes greater than 17.6% (10°).**

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 rider and mower 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 rider and mower.

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.

Read and obey all operation and warning decals.





BEFORE OPERATION

Clear the lawn of all sticks, stones, wire and other debris which may be caught or thrown by the mower blades.

Check grass condition. If wet, wait until later in the day. If grass is wet, the grass catcher is likely to become plugged.

For efficient bagging, air circulation under the mower deck, through the chute and into the bag is very important.

For this reason, BEFORE YOU BEGIN MOWING you should make certain the underside of the mower and the underside of the catcher lid are free from grass and debris.

Make sure that there is a snug fit between mower deck, blower housing, tubes, and grass catcher cover.

MOWING WITH THE DOUBLE / TRIPLE CATCHER

Always operate with throttle at full speed when mowing.

Grass should be cut often, and not too short. If grass is too long or lush it may be necessary to keep ground speed to a minimum or to cut only half the width of the mower to prevent clogging. If grass is long, operate with mower in high cutting position for first pass, cutting again in a lower position on a second pass.

Do not open the cover with mower engaged.

If a large amount of cut grass is spilling out from under deck, the tube may be plugged or the bags may be full—discontinue mowing, stop the rider, disengage the PTO and then empty the catcher or clear the tube.

⚠ WARNING

ALWAYS shut off the tractor, disengage the PTO, and allow all moving parts to stop BEFORE disconnecting or clearing tube, or emptying catcher.

Before leaving the operator's position for any reason, engage the parking brake, disengage the PTO, stop the engine and remove the key.

To reduce fire hazard, keep the engine, rider and mower free of grass, leaves and excess grease. Do not stop or park rider over dry leaves, grass or combustible materials.

AFTER OPERATION

Remove any debris from the the screen on the underside of the lid. *Note: The lid screen can be partially removed for easier cleaning and should be cleaned regularly.*

The blower housing and tube should be removed for cleaning.

Inspect the grass bags for wear or damage. Make sure that there is a snug fit between mower deck, blower housing, tubes, and grass catcher cover.

STORING THE GRASS CATCHER

Clean the grass catcher thoroughly using a mild detergent (other products may damage the tube). Remove any debris from the the screen on the underside of the lid. The screen can be partially removed for easier cleaning.

If paint has been scratched on metal parts, touch up with paint, or apply a thin film of oil to prevent corrosion.

Store in a dry area. Hang the catcher and catcher bags to dry thoroughly before storing for a long period of time. Always store away from moisture.

MOWING WITHOUT THE BLOWER

For operation without the blower, the deflector must be properly installed in the down position and retained by the spring latch (Derby models only).

To remove the blower, reverse the installation steps.

Initial Installation & Assembly

Setup



48" & 52" DOUBLE-BAG COLLECTION SYSTEM BLOWER MOUNT & DRIVE GROUP

Remove Discharge Chute

1. Park machine on a flat, level surface and apply the parking brake.
2. Remove the discharge chute and save. Save springs and spacer (Derby Colt only).

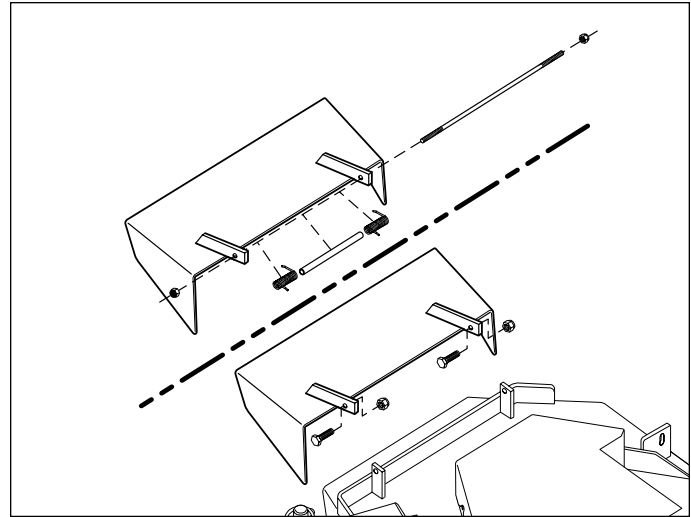


Figure 1. Chute Removal

Release Mower Drive Belt Tension

1. Raise the floor pan and loosen the spring compression nut (A, Figure 2) to release the belt tension.

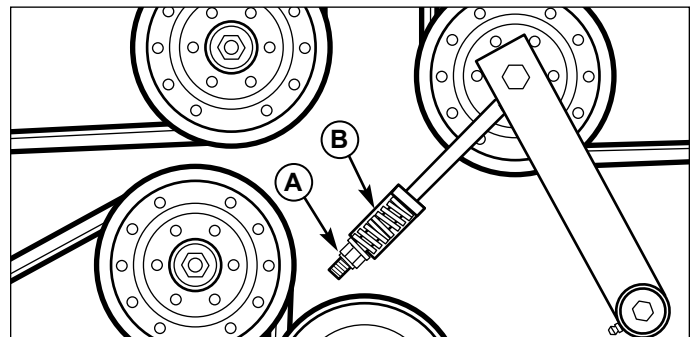


Figure 2. PTO Mower Drive Belt

- A. Spring Compression Nut
- B. Idler Spring

Remove Guard & Spindle Pulley

1. Remove the right-hand belt guard (A, Figure 3) and save.
2. Remove the mower deck drive belt from the right-hand spindle pulley.
3. Remove the right-hand spindle pulley (D), 5/8" nylon lock nut (B), 5/8" washer (C) and 1/4" key (E). Use a block of wood to keep the blade from spinning while removing the 5/8" nut.

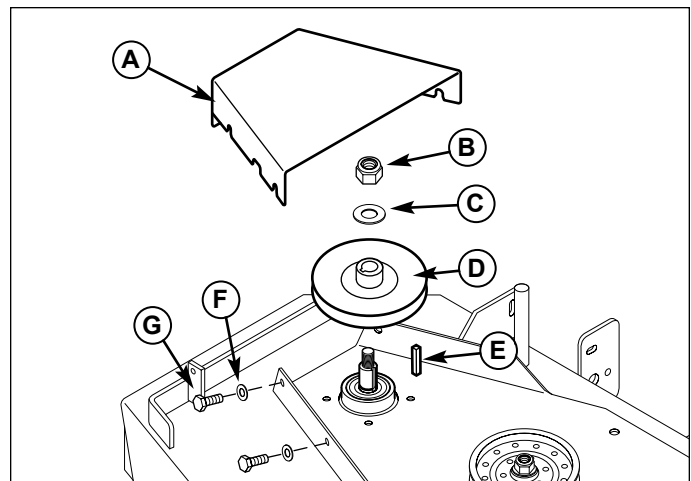


Figure 3. Belt Guard & Pulley Removal

- A. Guard
- B. 5/8" Nylon Lock Nut
- C. 5/8" Washer
- D. Spindle Pulley
- E. Key
- F. 5/16" Washer (3)
- G. 5/16" x 3/4" Bolt (3)

48" & 52" Blower Mount & Drive Installation

Install Spindle Pulley

1. Apply an anti-seize compound to the spindle shaft. Install the new, double spindle pulley (C, Figure 4) on the shaft with the smaller pulley facing up with the 5/8" nylon lock nut (A), 5/8" washer (B) and 1/4" key (D) and tighten to 85-95 ft./lbs. Use a block of wood to keep the blade from spinning while installing and tightening the 5/8" nut.
2. Reinstall the mower deck drive belt on the new spindle pulley. Tighten the spring compression nut (A, Figure 2) until the idler spring (B, Figure 2) is 1-1/2" long. Be sure the measure the spring only.

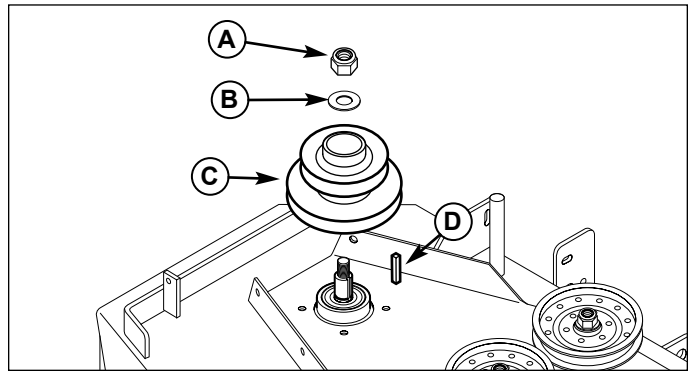


Figure 4. Install Spindle Pulley

- | | |
|------------------------|-------------------|
| A. 5/8" Nylon Lock Nut | C. Spindle Pulley |
| B. 5/8" Washer | D. Key |

Install Guard

1. Install the new deck guard (B, Figure 5) and secure with the 5/16-18 x 3/4" bolts (C) and 5/16" washers (D) previously removed.
2. Install the 5/16" body clips (A) over the holes in the guard with the threaded side pointing down.

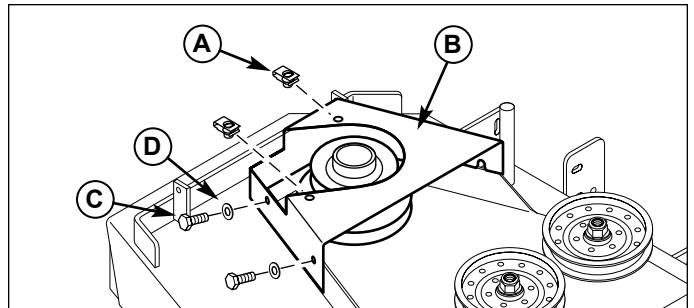


Figure 5. Install Guard

- | | |
|------------------------|--------------------------|
| A. 5/16" Body Clip (2) | C. 5/16" x 3/4" Bolt (3) |
| B. Guard | D. 5.16" Washer (3) |

Mower Deck Preparation

1. Install the blower mount plate onto the chute mount tabs, with the blower mount tabs towards the rear. Secure with the retaining pin.

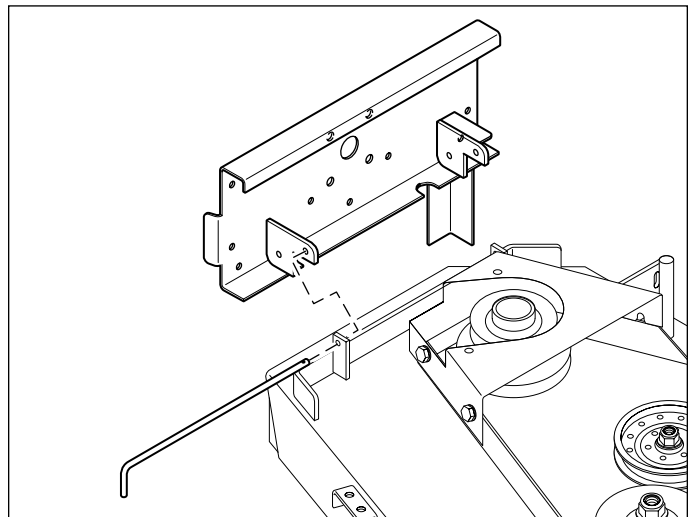


Figure 6. Install Blower Mount

48" & 52" Blower Mount & Drive Installation

2. While holding the mount plate vertical and against the chute mount tabs, place the spacers on the mower deck in the recesses of the mount plate. Make sure they are at the bottom of the recess (see Figure 7). Mark their location with a paint pen or prick punch.
3. Remove the spacers and blower mount plate.
4. Drill 5/16" holes where the spacer location was marked.

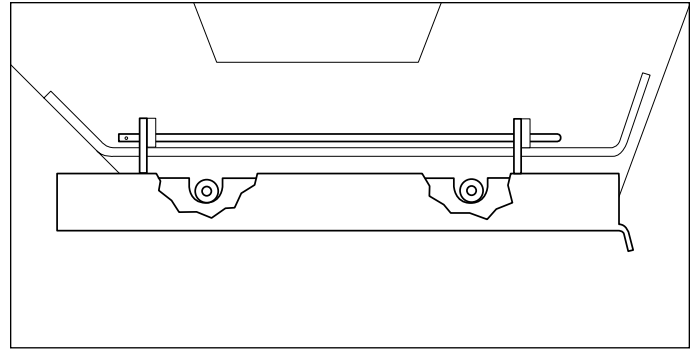


Figure 7. Spacer Location

5. Install the spacers (C, Figure 8) and mount bar (B) on the mower deck and secure with the 5/16-18 x 1-1/4" bolts (D) and 5/16-18 nylon lock nuts (A).

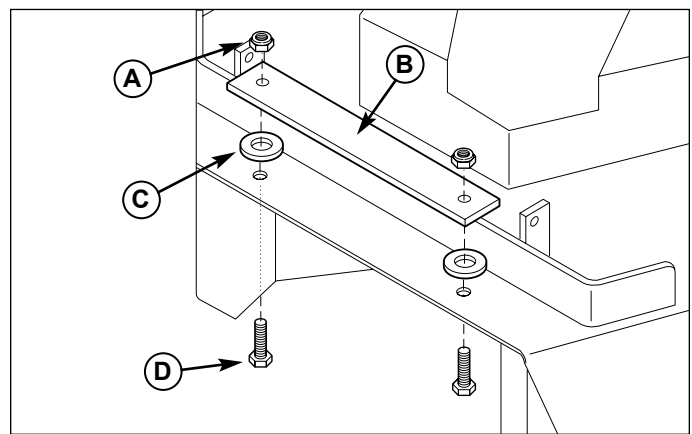


Figure 8. Install Quick Connect Bar

- | | |
|-----------------------------|----------------------------|
| A. 5/16" Nylon Lock Nut (2) | C. Spacer (2) |
| B. Quick Connect Bar | D. 5/16" x 1-1/4" Bolt (2) |

48" & 52" Blower Mount & Drive Installation

Blower Preparation

1. Remove the belt guard (A, Figure 9) and hardware (B & C) from the blower housing and set aside.

NOTE: Record the model and serial number of the blower on the warranty registration card and in the space provided on Page 1. The serial tag is located on the outside face of the blower housing.

2. Fasten the idler arm assembly (G) to the blower housing with 5/16-18 x 1-3/4" bolt (D), 5/16" fender washer (E), pivot spacer (F) and 5/16-18 serrated flange nut (H). Tighten securely.

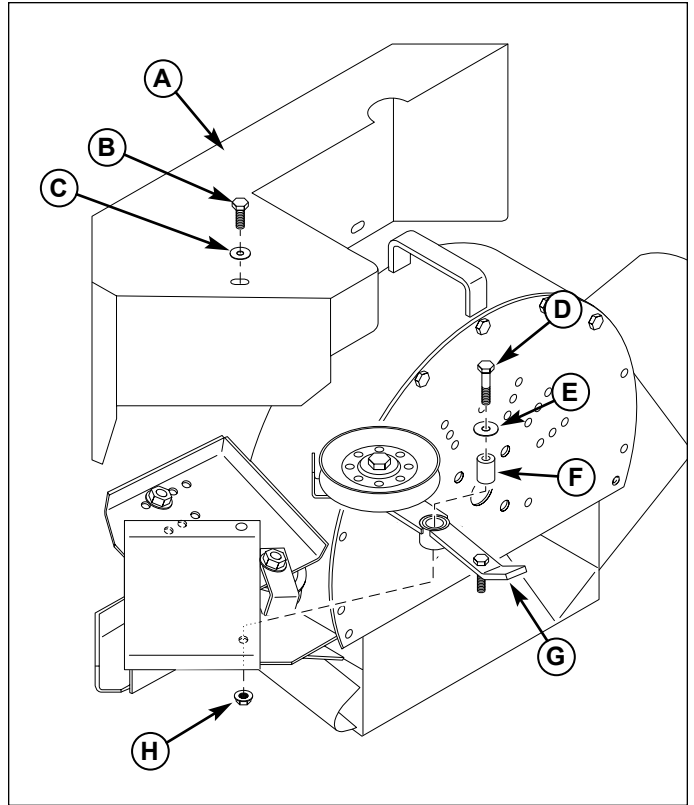


Figure 9. Idler Arm Installation

- | | |
|--------------------------|------------------------|
| A. Belt Guard | E. 5/16" Fender Washer |
| B. 5/16-18 x 1" Bolt | F. Pivot Spacer |
| C. 5/16" Washer | G. Idler Arm Assembly |
| D. 5/16-18 x 1-3/4" Bolt | H. 5/16-18 Flange Nut |

3. Remove the two 7/16" bolts and hex nuts from the inside bearing. Remove the bearing from the blower housing and discard the two hex nuts.
4. Install the blower mount plate (A, Figure 10) onto the back plate of the blower. Install the 5/16-18 x 3/4" self-tapping bolts (B), but do not tighten until all screws have been started. Tighten securely.
5. Install three 5/16-18 x 3/4" bolts (D) near the bearing. Install the two 5/16-18 x 1" bolts (C) in the two remaining holes. Note the direction of the bolts, this is critical. Secure with the 5/16-18 nylon lock nuts (E) as shown.

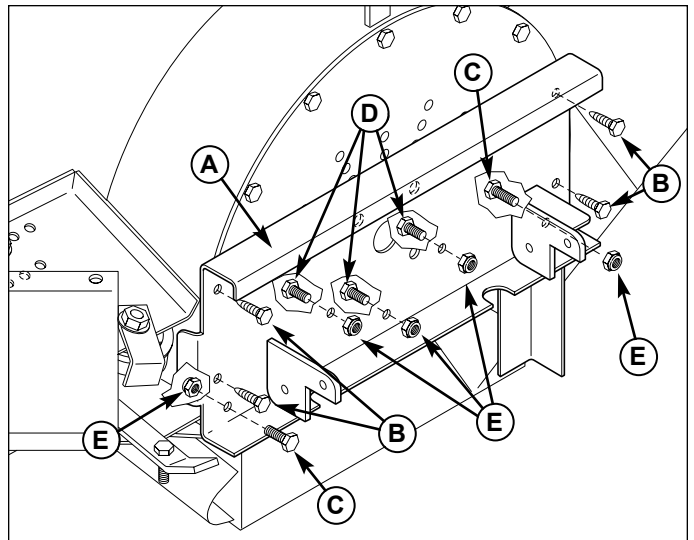


Figure 10. Install Blower Mount Plate

- | | |
|-----------------------------|-----------------------------|
| A. Blower Mount Plate | D. 5/16" x 3/4" Bolt (3) |
| B. 5/16" Self-Tap. Bolt (4) | E. 5/16" Nylon Lock Nut (5) |
| C. 5/16" x 1" Bolt (2) | |

48" & 52" Blower Mount & Drive Installation

6. Install the bearing (B, Figure 11) on the shaft with the grease fitting pointing towards the discharge of the blower. Secure with the 7/16-14 x 1-1/2" bolts (A) and 7/16-14 nylon lock nuts (C) as shown. Tighten the setscrew in the collar of the bearing.
7. Install the spring (G) on the bolt of the idler arm and secure with a 5/16-18 nylon lock nut (H). Only tighten the nut until the threads come through the nylon. Do not clamp spring.
8. Hook the spring on the eyebolt (F). Install the eyebolt and 1/4" washer (E) on the blower mount plate and secure with the nylon nut (D) as shown. The nylon nut (D) must be fully tightened so the eyebolt is drawn up tight against the mount. The eyebolt must be vertical.

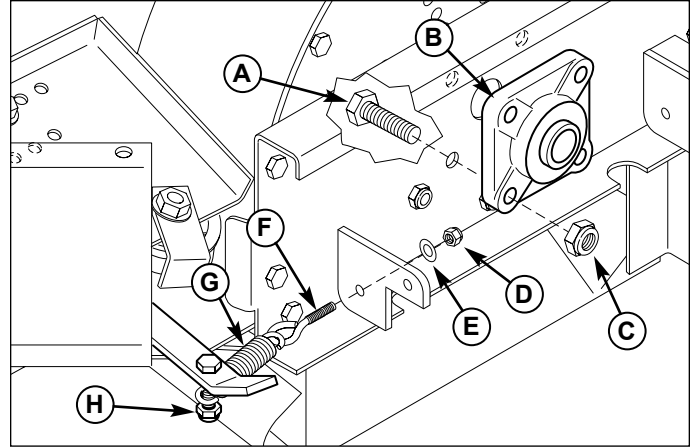


Figure 11. Install Bearing & Eyebolt

- | | |
|--------------------------------|---------------------------|
| A. 7/16" x 1-1/2" Capscrew (4) | E. 1/4" Washer |
| B. Bearing | F. 1/4" x 1" Eyebolt |
| C. 7/16" Nylon Lock Nut (4) | G. Spring |
| D. 1/4-20 Nylon Lock Nut | H. 5/16-18 Nylon Lock Nut |

9. Install the blower pulley and key with the hub facing INWARD towards the bearing, and hold against the bearing. Tighten set screws.
10. Install one 3/8-16 flange nut on the 3/8-16 x 6" bolt and tighten against the end of the threads (see Figure 12). Install drive belt on the drive pulley and install the 3/8-16 x 6" bolt. Leave enough space between the belt and bolt so it will not interfere. Secure the bolt with a 3/8" serrated flange nut.

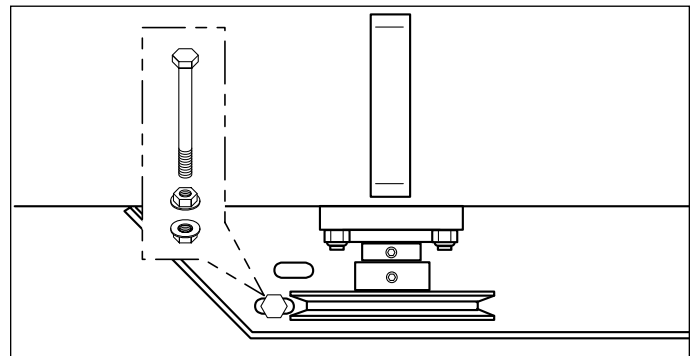


Figure 12. Install Blower Pulley & Guide Bolt

11. Loosen the idler pulleys and install the belt under the belt keeps. Make sure the groove of the belt is properly seated in the v-pulleys (see Figure 13, the gray section is the flat side of the belt). Reposition the belt keeps so they will not interfere with the drive belt and tighten the idler pulleys.

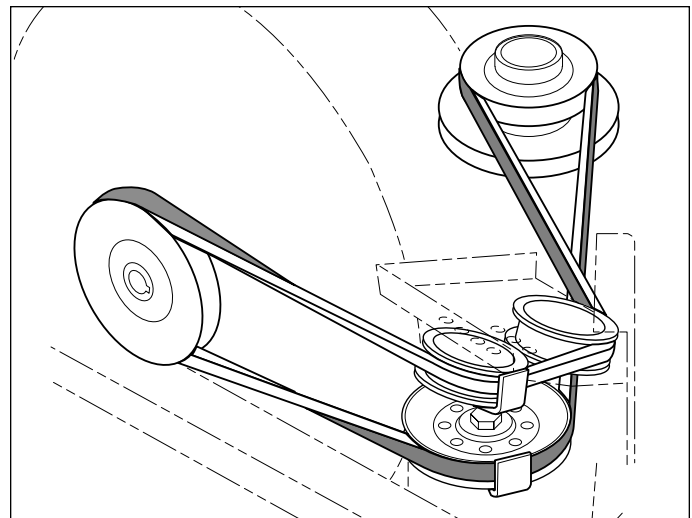


Figure 13. Belt Routing

48" & 52" Blower Mount & Drive Installation

Install Blower & Belt Guard

1. Install the blower onto the chute mount tabs with the blower mount tabs towards the rear. Secure with the retainer pin and hair pin. Make sure the handle of the retaining pin is pointing down.
2. Pull the idler arm lever against the spring to install the drive belt on the spindle pulley. The tension idler should be approximately 3/4" - 1" away from the blower housing when belt is installed. If not, remove the drive belt and reposition the top idler pulley in the outside row of holes until the measurement is achieved.
3. Install the blower belt shield and secure with the 5/16" x 1" bolts and 5/16" washers.
4. Install the guard cover and secure with the plastic knobs.

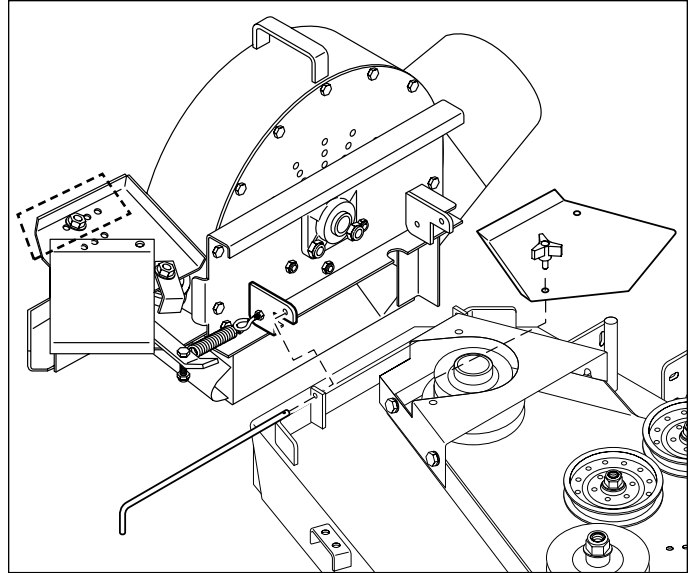


Figure 14. Install Blower & Belt Guard

Initial Installation & Assembly

Setup



61" TRIPLE-BAG COLLECTION SYSTEM

BLOWER MOUNT & DRIVE GROUP

Remove Discharge Chute

1. Park machine on a flat, level surface and apply the parking brake.
2. Remove the discharge chute and save. Save springs and spacer (Derby Stallion only).

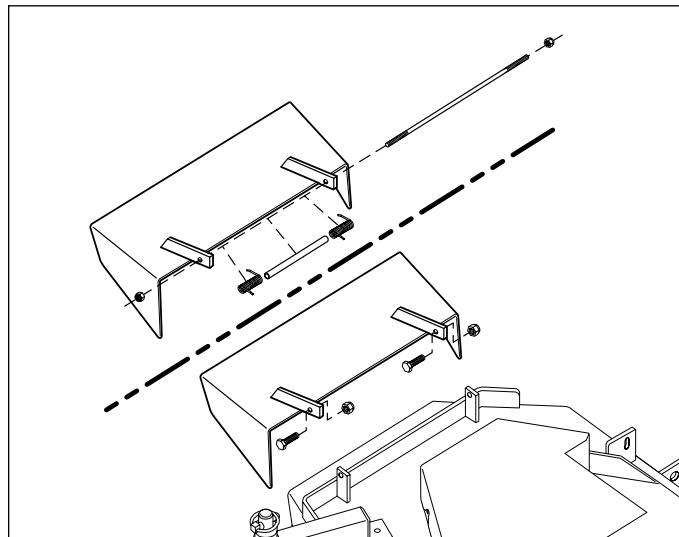


Figure 19. Chute Removal

Release Mower Drive Belt Tension

1. Raise the floor pan and loosen the spring compression nut (A, Figure 20) to release the belt tension.

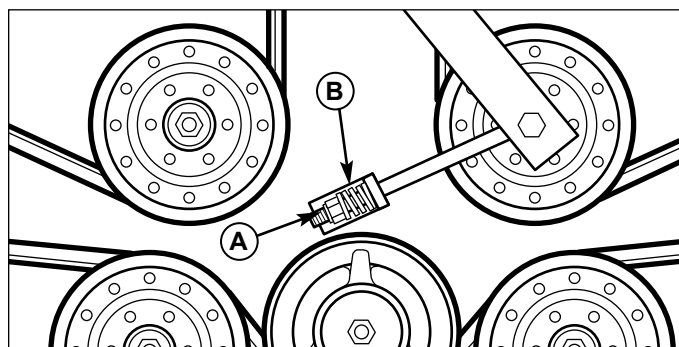


Figure 20. PTO Mower Drive Belt

- A. Spring Compression Nut
- B. Idler Spring

Remove Guard & Spindle Pulley

1. Remove the right-hand belt guard (A, Figure 21) and save. Remove and discard the two front 5/16-18 x 1" bolts (G), 5/16" washers (F) and 5/16" body clips.
2. Remove the mower deck drive belt from the right-hand spindle pulley.
3. Remove the right-hand spindle pulley (D), 5/8" nylon lock nut (B), 5/8" washer (C) and 1/4" key (E). Use a block of wood to keep the blade from spinning while removing the 5/8" nut.

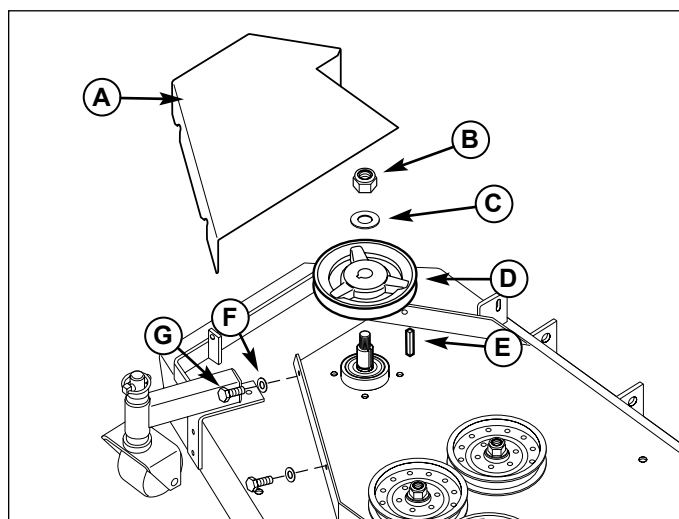


Figure 21. Belt Guard & Pulley Removal

- A. Guard
- B. 5/8" Nylon Lock Nut
- C. 5/8" Washer
- D. Spindle Pulley
- E. Key
- F. 5/16" Washer (3)
- G. 5/16-18 x 1" Bolt (3)

61" Blower Mount & Drive Installation

Install Spindle Pulley

1. Apply an anti-seize compound to the spindle shaft. Install the new, double spindle pulley (C, Figure 22) on the shaft with the smaller pulley facing up with the 5/8" nylon lock nut (A), 5/8" washer (B) and 1/4" key (D) and tighten to 85-95 ft./lbs. Use a block of wood to keep the blade from spinning while installing and tightening the 5/8" nut.
2. Reinstall the mower deck drive belt on the new spindle pulley. Tighten the spring compression nut (A, Figure 20) until the idler spring (B, Figure 20) is 1-1/2" long. Be sure the measure the spring only.

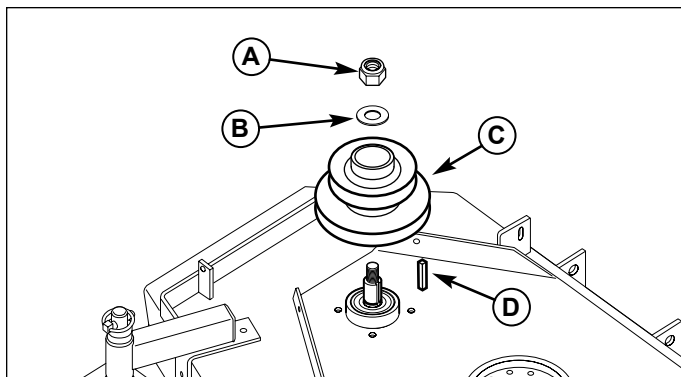


Figure 22. Install Spindle Pulley

- | | |
|------------------------|-------------------|
| A. 5/8" Nylon Lock Nut | C. Spindle Pulley |
| B. 5/8" Washer | D. Key |

Install Guard & Blower Mount

1. Loosely install the 3/8-16 x 1-1/4" bolts (D, Figure 23), 3/8" washers (E), blower mount bar (C), belt guard (A) and nut bar (F) onto the mower deck. These fasteners will be tightened in a later step.
2. Install the 5/16" body clips (B) on the belt guard. The front body clip is install from underneath the guard.

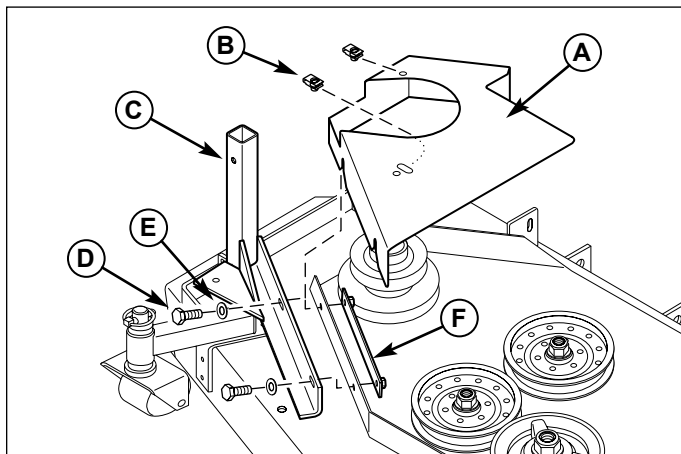


Figure 23. Install Blower Mount Bar & Belt Shield

- | | |
|---------------------|--------------------------|
| A. Belt Guard | D. 3/8-16 x 1-1/4" Bolts |
| B. 5/16" Body Clip | E. 3/8" Washer |
| C. Blower Mount Bar | F. Nut Bar |

61" Blower Mount & Drive Installation

Blower Preparation

1. Remove the belt guard (A, Figure 24) and hardware (B & C) from the blower housing and set aside.

NOTE: Record the model and serial number of the blower on the warranty registration card and in the space provided on Page 1. The serial tag is located on the outside face of the blower housing.

2. Fasten the idler arm assembly (G) to the blower housing with 5/16-18 x 1-3/4" bolt (D), 5/16" fender washer (E), pivot spacer (F) and 5/16-18 serrated flange nut (H). Tighten securely.
3. Remove the top stationary idler pulley (I) and replace in the middle hole of the inside row of holes. Tighten securely.

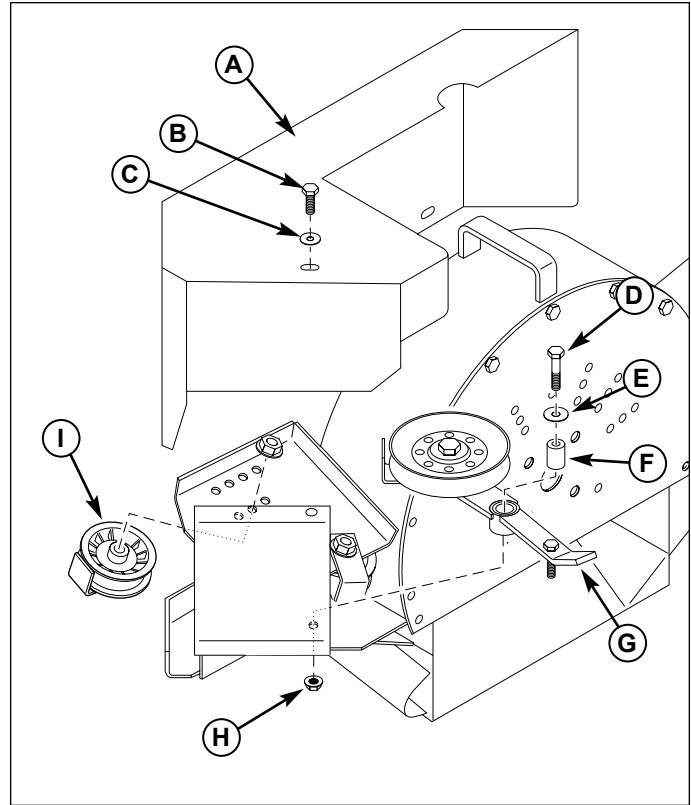


Figure 24. Idler Arm Installation

- | | |
|--------------------------|-----------------------|
| A. Belt Guard | F. Pivot Spacer |
| B. 5/16-18 x 1" Bolt | G. Idler Arm Assembly |
| C. 5/16" Washer | H. 5/16-18 Flange Nut |
| D. 5/16-18 x 1-3/4" Bolt | I. Idler Pulley |
| E. 5/16" Fender Washer | |

3. Remove the two 7/16" bolts and hex nuts from the inside bearing. Remove the bearing from the blower housing and discard the two hex nuts.
4. Install the blower mount plate (A, Figure 25) onto the back plate of the blower. Install the four 5/16-18 x 3/4" self-tapping bolts (B), but do not tighten until all screws have been started. Tighten securely.
5. Install two 5/16" x 3/4" bolts (C) near the bearing. Secure with the 5/16" nylon lock nuts (D) as shown.

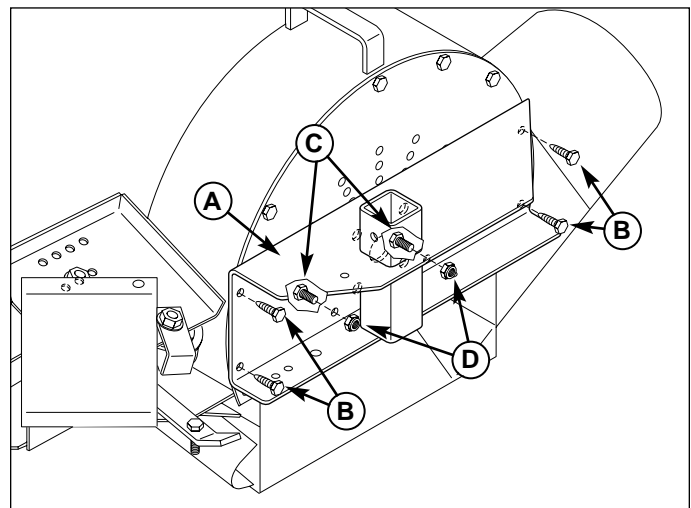


Figure 25. Install Blower Mount Plate

- | |
|--------------------------------------|
| A. Mount Plate |
| B. 5/16-18 x 3/4" Self-Tapping Bolts |
| C. 5/16-18 x 3/4" Bolts |
| D. 5/16-18 Nylon Lock Nuts |

61" Blower Mount & Drive Installation

6. Install the bearing (B, Figure 26) on the shaft with the grease fitting pointing towards the discharge of the blower. Secure with the four 7/16 x 1-1/2" bolts (A) and 7/16-14 nylon lock nuts (C) as shown. Tighten the setscrew in the collar of the bearing.
7. Install the 5/16" x 1-1/4" bolt (D), 5/16" serrated flange nut (E) as shown and tighten.
8. Install the spring (G) on the 5/16" bolt (D) on the blower mount and install the 5/16" nylon lock nut (F). Only tighten the nuts until the threads come through the nylon. Do not clamp spring.

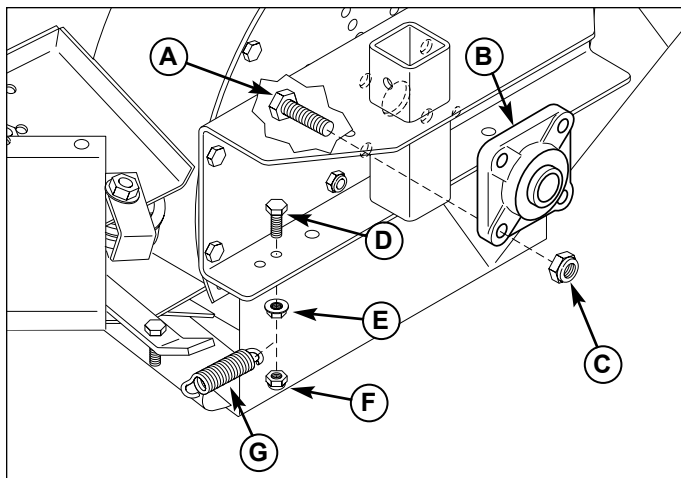


Figure 26. Install Bearing & Spring

- | | |
|---------------------------|---------------------------|
| A. 7/16-14 x 1-1/2" Bolt | E. 5/16-18 Flange Nut |
| B. Bearing | F. 5/16-18 Nylon Lock Nut |
| C. 7/16-14 Nylon Lock Nut | G. Spring |
| D. 5/16-18 x 1-1/4" Bolt | |

9. Install the deck support rail (A, Figure 27) and fasten with the 5/16-18 x 3/4" bolts (B) and 5/16-18 nylon lock nuts (D) as shown. Note the direction of the bolts, this is critical.
10. Install the spring (C) on the idler arm and secure with the 5/16" nylon lock nut (D). Only tighten the nut until the threads come through the nylon. Do not clamp spring.

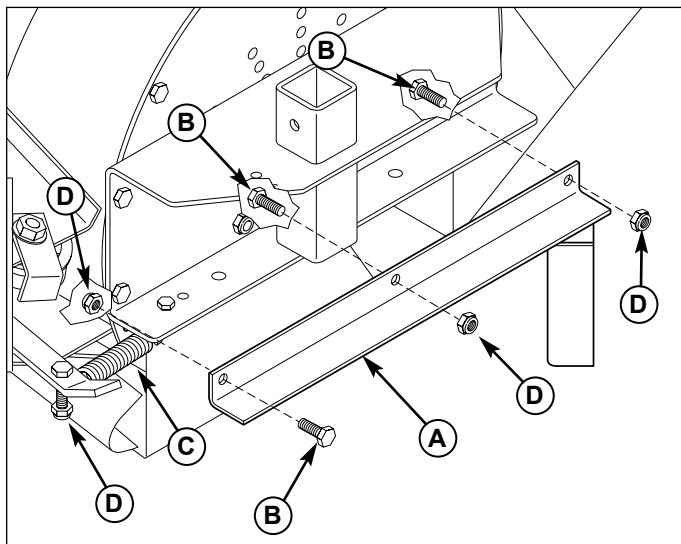


Figure 27. Install Support Rail & Spring

- | | |
|------------------------|---------------------------|
| A. Deck Support Rail | C. Spring |
| B. 5/16-18 x 3/4" Bolt | D. 5/16-18 Nylon Lock Nut |

61" Blower Mount & Drive Installation

11. Loosely install the blower brace (A, Figure 28), 3/8-16 x 1" bolts (B) and 3/8" washers (C) as shown. These fasteners will be tightened in a later step.

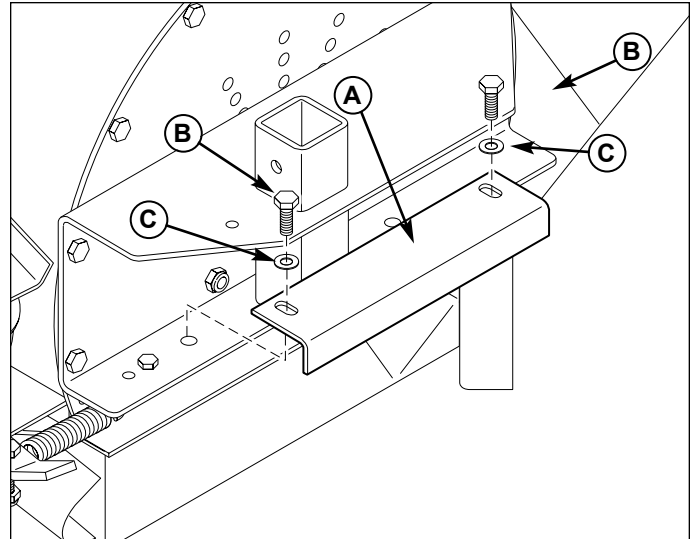


Figure 28. Install Blower Brace

- A. Blower Brace
- B. 3/8-16 x 1" Bolt
- C. 3/8" Washer

12. Install the blower pulley and key with the hub facing OUTWARD away from the bearing and hold against the bearing. Tighten set screws.

13. Install one 3/8-16 flange nut on the 3/8-16 x 6" bolt and tighten against the end of the threads (see Figure 29). Install drive belt on the drive pulley and install the 3/8-16 x 6" bolt. Leave enough space between the belt and bolt so it will not interfere. Secure the bolt with a 3/8" serrated flange nut.

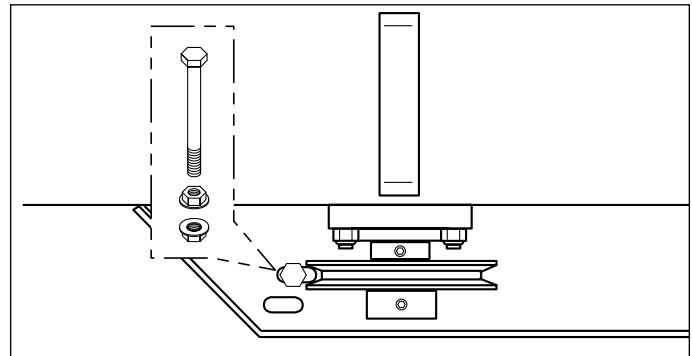


Figure 29. Install Blower Pulley & Guide Bolt

14. Loosen the idler pulleys and install the belt under the belt keeps. Make sure the groove of the belt is properly seated in the v-pulleys (see Figure 30, the gray section is the flat side of the belt). Reposition the belt keeps so they will not interfere with the drive belt and tighten the idler pulleys

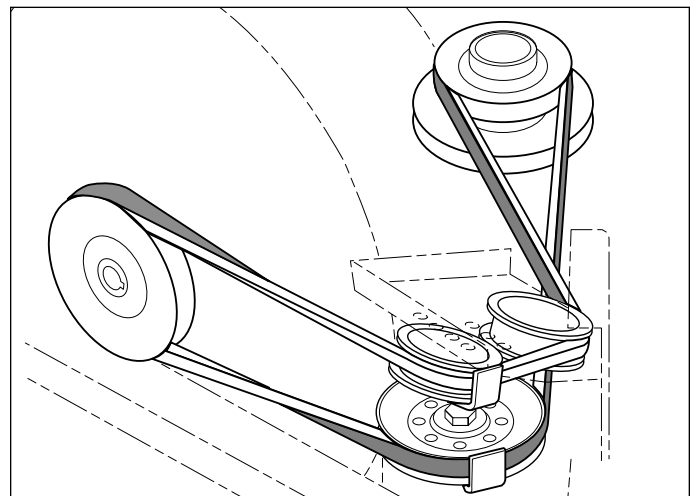


Figure 30. Belt Routing

61" Blower Mount & Drive Installation

Install Blower & Belt Guard

1. Install the blower assembly onto the mount bar (B, Figure 31). Push on the blower from the outside to obtain a tight fit between the blower housing and mower deck. Tighten the 3/8" x 1" bolts (C) that fasten the mount bar to the mower deck.
2. Drill a 3/8" hole through the mount flange of the blower mount bar and secure with a 3/8-16 x 1" bolt (E) and 3/8-16 flange nut (D).
3. Adjust the blower brace until approximately 1/8" clearance is obtained between the brace and the chute mount bar. Tighten the 3/8-16 x 1" bolts (A).

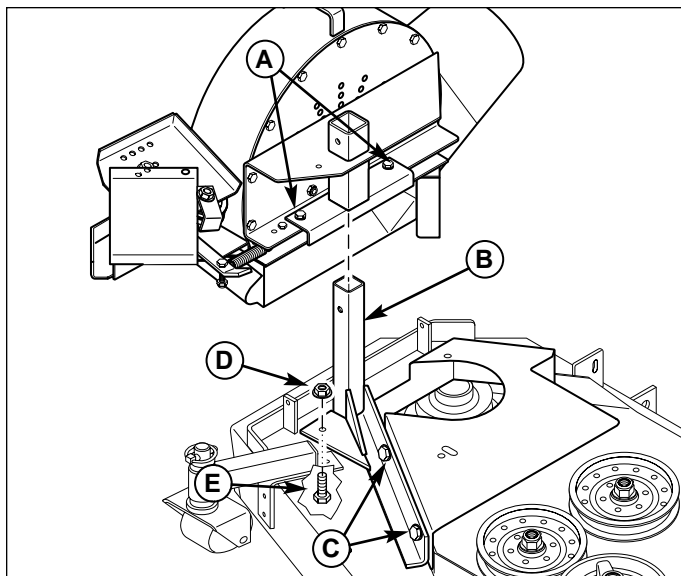


Figure 31. Install Blower

- | | |
|---------------------|----------------------|
| A. 3/8-16 x 1" Bolt | D. 3/8-16 Flange Nut |
| B. Mount Bar | E. 3/8-16 x 1" Bolt |
| C. 3/8-16 X 1" Bolt | |

4. Install the 3/8" x 4" clevis pin (A, Figure 32) and hair pin clip (C) as shown.
5. Install the plastic cap (B) in the end of the blower mount bar.
6. Pull the idler arm lever against the spring to install the drive belt on the spindle pulley. The tension idler should be approximately 3/4" - 1" away from the blower housing when belt is installed. If not, remove the drive belt and reposition the top idler pulley in the inside row of holes until the measurement is achieved.
7. Install the blower belt shield and secure with the hardware previously removed.
8. Install the deck belt shield (D) and secure with the plastic knobs (E).

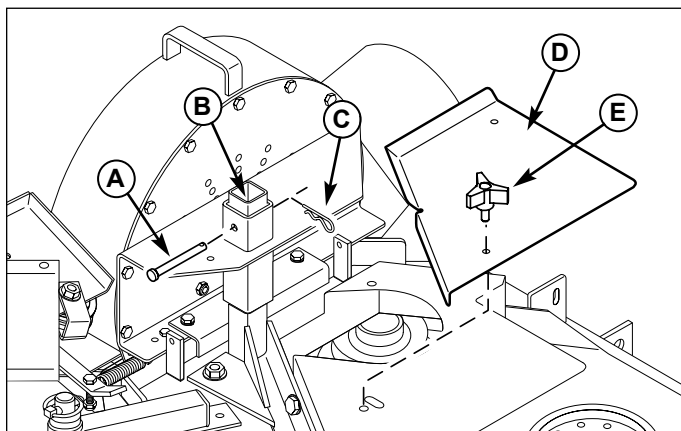


Figure 32. Install Belt Shield & Clevis Pin

- | | |
|-------------------------|-----------------|
| A. 3/8" x 4" Clevis Pin | D. Belt Shield |
| B. Plastic Cap | E. Plastic Knob |
| C. Hair Pin Clip | |

Discharge Chute Reattachment

MOWING WITHOUT THE BLOWER

For operation without the blower, the deflector must be properly installed in the down position and retained by the spring latch (Derby models only).

To remove the blower, reverse the installation steps.

Reattaching the Discharge Chute

See Figure 33. Using the retainer pin and hair pin clip, secure the discharge chute to the mower deck. Make sure the chute mount tabs are in front of the tabs on the mower deck. For the Derby mowers, you must also reinstall the torsion springs and spacer to properly retain the discharge chute.

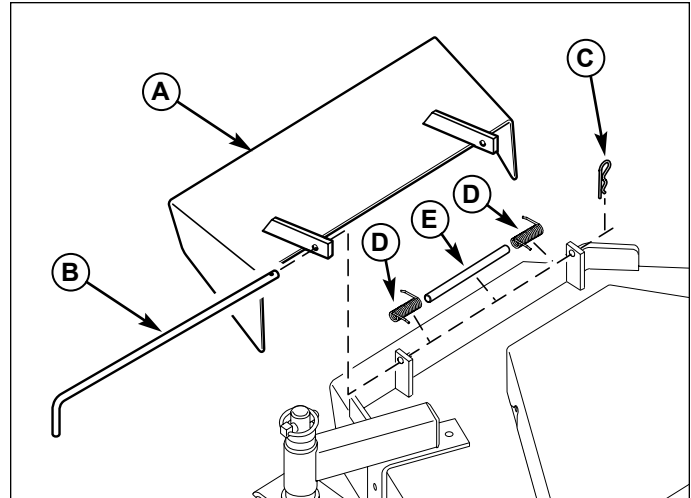


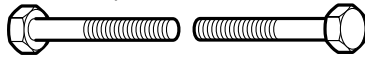
Figure 33. Discharge Chute Reattachment

- A. Discharge Chute
- B. Retainer Pin
- C. Hair Pin Clip
- D. Torsion Spring
- E. Spacer

Hardware Identification & Torque Specifications

Common Hardware Types

Hex Head Capscrew



Washer



Lockwasher

Carriage Bolt



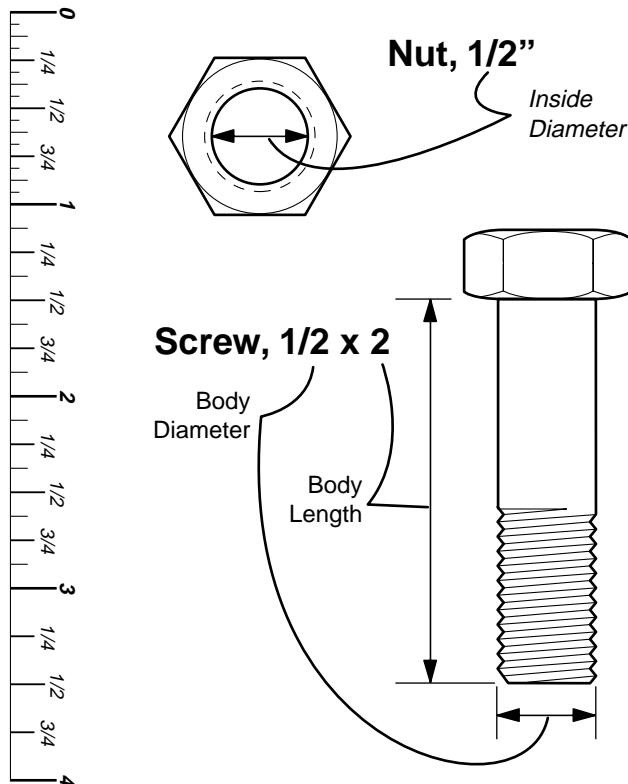
Hex Nut

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 ± 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.
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	336	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

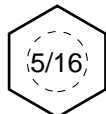
NOTES

- 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.

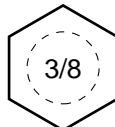
Wrench & Fastener Size Guide



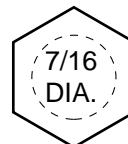
1/4" Bolt or Nut
Wrench—7/16"



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"

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