



# **Bagger**

## **200 Series Z Master**

**Model No. 78491—Serial No. 220000001 and Up**

**Operator's Manual**

# Contents

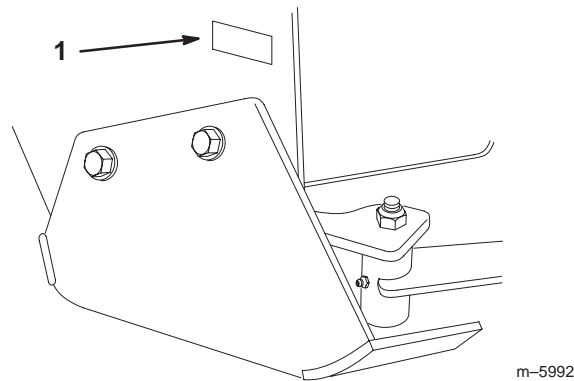
	Page
Introduction .....	2
Safety .....	3
Safety and Instruction Decals .....	3
Setup .....	4
Loose Parts .....	4
Removing the Drive Wheels .....	5
Installing the Bagger Mounting Bracket and the Side Brackets .....	5
Installing the Bagger Mounting Bracket onto an Air Cooled Machine .....	5
Installing the Bagger Mounting Bracket onto a Liquid Cooled Machine .....	6
Installing the Side Brackets to the Machine .....	7
Tightening all Mounting Bolts .....	8
Drilling Holes for the Drive Pulley Assembly .....	8
Installing the Drive Pulley Assembly .....	9
Installing the Bagger .....	10
Installing the Bagger Tensioner Pulley and Belt .....	11
Adjusting the Bagger Belt .....	12
Adjusting the PTO Drive Belt .....	12
Installing the Weights .....	13
Installing the Boot and Discharge Tubes .....	14
Checking the Tire Pressure .....	15
Operation .....	15
Opening the Bagger .....	15
Holding the Bagger Door Open .....	16
Clearing Obstructions From the Bagger System .....	16
Removing the Discharge Tubes .....	16
Removing the Bagger .....	17
Replacing the Grass Deflector Spring .....	17
Operating and Bagging Tips .....	18
Maintenance .....	19
Recommended Maintenance Schedule .....	19
Cleaning the Screens .....	19
Cleaning the Bagger .....	19
Checking the Bagger Belt .....	19
Greasing the Idler Arm .....	19
Inspecting the Bagger .....	19
Inspecting the Mower Blades and Baffles .....	20
Storage .....	20
Troubleshooting .....	20

## Introduction

Read this manual carefully to learn how to operate and maintain your product properly. The information in this manual can help you and others avoid injury and product

damage. Although Toro designs and produces safe products, you are responsible for operating the product properly and safely.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. Figure 1 illustrates the location of the model and serial numbers on the product.



**Figure 1**

1. Location of the model and serial numbers

Write the product model and serial numbers in the space below:

<b>Model No.</b> _____
<b>Serial No.</b> _____

This manual identifies potential hazards and has special safety messages that help you and others avoid personal injury and even death. **Danger**, **Warning**, and **Caution** are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

**Danger** signals an extreme hazard that *will* cause serious injury or death if you do not follow the recommended precautions.

**Warning** signals a hazard that *may* cause serious injury or death if you do not follow the recommended precautions.

**Caution** signals a hazard that may cause minor or moderate injury if you do not follow the recommended precautions.

This manual uses two other words to highlight information. **Important** calls attention to special mechanical information and **Note**: emphasizes general information worthy of special attention.

# Safety

The following list contains safety information specific to Toro products and other safety information you must know.

- Become familiar with the safe operation of the equipment, with the operator controls, and safety signs.
- Use extra care with grass catchers or other attachments. These can change the operating characteristics and the stability of the machine.
- Follow the manufacturer's recommendations for adding or removing wheel weights or counterweights to improve stability.
- Do not use a grass catcher on steep slopes. A heavy grass catcher could cause loss of control or overturn the machine.
- Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. Turf conditions can affect the machine's stability. Use extreme caution while operating near drop-offs.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed, directions or turning.
- The grass catcher can obstruct the view to the rear. Use extra care when operating in reverse.
- Use care when loading or unloading the machine into a trailer or truck
- Never operate with the discharge deflector raised, removed or altered, unless using a grass catcher or mulching baffles.
- Keep hands and feet away from moving parts. Do not make adjustments with the engine running.
- Stop on level ground, disengage drives, chock or block wheels, shut off engine before leaving the operator's position for any reason including emptying the grass catcher or unclogging the chute.
- If you remove the grass catcher, be sure to install any discharge deflector or guard that might have been removed to install the grass catcher. Do not operate the mower without either the entire grass catcher or the grass deflector in place.
- Stop the engine before removing the grass catcher or unclogging the chute.
- Do not leave grass in grass catcher for extended periods of time.
- Grass catcher components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check components and replace with manufacturer's recommended parts, when necessary.

## Safety and Instruction Decals



Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



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# Setup

**Note:** Determine the left and right sides of the machine from the normal operating position.

## Loose Parts

**Note:** Use the chart below to verify all parts have been shipped.

Description	Qty.	Use
Bagger mounting bracket	1	Installing bagger mounting bracket and the side brackets
Side bracket—right	1	
Side bracket—left	1	
Long frame spacer—only two are needed for air cooled machines	4	
Short frame spacer	2	
Bolt, 3/8 x 1-1/2 in.	4	
Bolt, 3/8 x 1-1/4 in.	2	
Flange Nut, 3/8 in.	14	
Stiffener bracket	2	
Bolts, 3/8 x 3/4 in.	8	
Air cooled frame spacer	1	Installing bagger mounting bracket to the machine
Bolt, 3/8 x 1-3/4 in.	2	
Bolt, 3/8 x 1-1/4 in.	2	
Flange Nut, 3/8 in.	4	
Bolt, 3/8 x 1 in.	6	Installing the side brackets
Flange Nut, 3/8 in.	6	
Curved washer	6	
Pulley assembly	1	Installing the pulley drive assembly
Bolt, 1/2 x 1-1/4 in.	4	
Lock nut, 1/2 in.	4	
Washer, 1/2 in.	4	
Template	1	
Bagger	1	Installing the bagger
Clevis pin	2	
Hairpin cotter	2	
Bagger tensioner pulley	1	Installing the bagger tensioner pulley
Bolt, 3/8 x 2 in.	1	
Lock Nut, 3/8 in.	1	
Washer, 3/8 in.	1	
Bagger belt	1	Installing the bagger belt

Description	Qty.	Use
Caster weight	2	Installing the caster weights
U-bolt	2	
Nut, 1/2 in.	4	
Lock washer, 1/2 in.	4	
Plate	2	
Top weight	6	Installing the top weights
Bolt, 1/2 x 3 in.— for two top weights	2	
Bolt, 1/2 x 4 in.— for three top weights	2	

## Removing the Drive Wheels

**Danger**

**Mechanical or hydraulic jacks may fail to support machine and cause a serious injury.**

- Use jack stands when supporting machine.
- Do not use hydraulic jacks.

1. Loosen the drive wheel lugs or nuts.
2. Raise the rear of the machine and support with jack stands.
3. Remove the drive wheels.

## Installing the Bagger Mounting Bracket and the Side Brackets

If you have a **liquid cooled machine**, go to page 6 for Installing the Bagger Mounting Bracket onto a Liquid Cooled Machine.

If you have an **air cooled machine**, use instructions below for Installing the Bagger Mounting Bracket onto a Air Cooled Machine.

## Installing the Bagger Mounting Bracket onto an Air Cooled Machine

**Important** Do not tighten any bolts until both side brackets and bagger mounting bracket are fit loose on the machine.

Refer to Tightening the Mounting Bolts, on page 8, for the correct procedure to tighten the bolts.

### Installing the Bagger Mounting Bracket to the Side Brackets (Air Cooled)

**Important** When installing the bagger bracket for an air cooled machine, use only 2 long frame spacers; 1 per each side (Fig. 2).

1. Install the side brackets to the bagger mounting bracket (Fig. 2).
2. In the top two holes, install 2 bolts (3/8 x 1-1/2 in.), 2 flange nuts (3/8 in.) one long frame spacer, and one short frame spacer (Fig. 2).

**Note:** Make sure the long frame spacers are installed as shown in figure 2.

3. In the bottom hole, install a bolt (3/8 x 1-1/4 in.) and a flange nut (3/8 in.) (Fig. 2).
4. Install a bracket stiffener to the side bracket and bagger mounting bracket. Use 4 bolts (3/8 x 3/4 in.) and 4 flange nuts (3/8 in.) (Fig. 2).

5. Repeat the previous steps for the opposite side (Fig. 2).

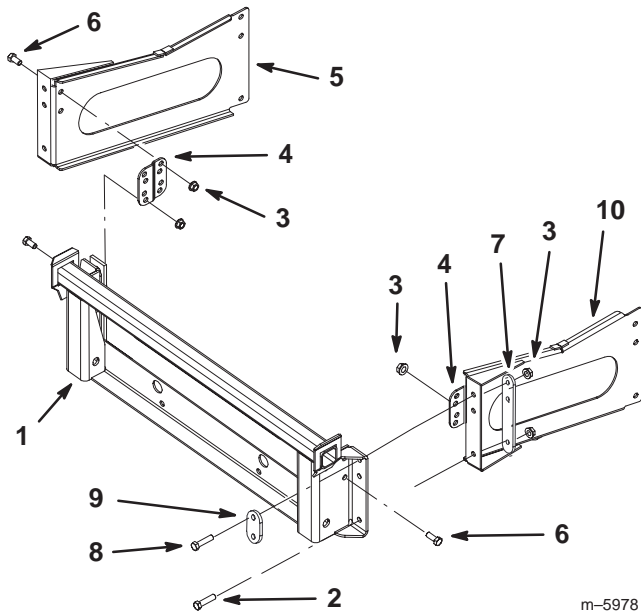


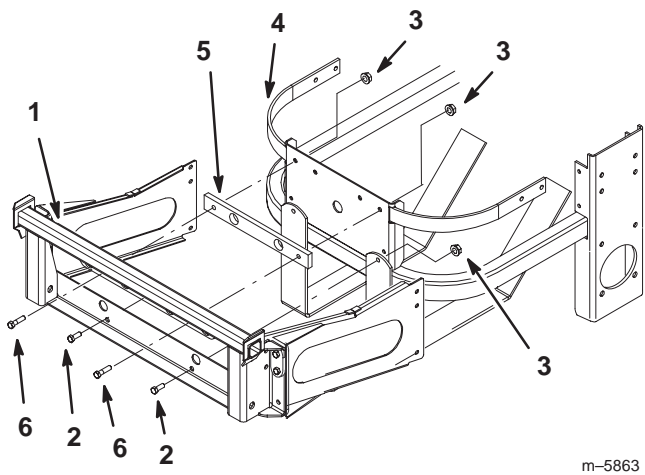
Figure 2

- |                            |                          |
|----------------------------|--------------------------|
| 1. Bagger mounting bracket | 6. Bolt, 3/8 x 3/4 in.   |
| 2. Bolt, 3/8 x 1-1/4 in.   | 7. Long frame spacer     |
| 3. Flange nut, 3/8 in.     | 8. Bolt, 3/8 x 1-1/2 in. |
| 4. Bracket stiffener       | 9. Short frame spacer    |
| 5. Left side bracket       | 10. Right side bracket   |

### Installing the Bagger Mounting Bracket onto an Air Cooled Machine

**Important** When installing the bagger onto an air cooled machine, use the air cooled spacer (Fig. 3).

1. Install the bagger mounting bracket to the rear frame of the machine (Fig. 3).
2. In the top two holes, install 2 bolts (3/8 x 1-3/4 in.), 2 flange nuts (3/8 in.) and the air cooled frame spacer (Fig. 3).
3. In the bottom two holes, install 2 bolts (3/8 x 1-1/4 in.) and 2 flange nuts (3/8 in.) (Fig. 3).



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Figure 3

- |                            |                            |
|----------------------------|----------------------------|
| 1. Bagger mounting bracket | 4. Bumper                  |
| 2. Bolt, 3/8 x 1-1/4 in.   | 5. Air cooled frame spacer |
| 3. Flange nut, 3/8 in.     | 6. Bolt, 3/8 x 1-3/4 in.   |

### Installing the Bagger Mounting Bracket onto a Liquid Cooled Machine

**Important** Do not tighten any bolts until both side brackets and bagger mounting bracket are fit loose on the machine.

Refer to Tightening the Mounting Bolts, on page 8, for the correct procedure to tighten the bolts.

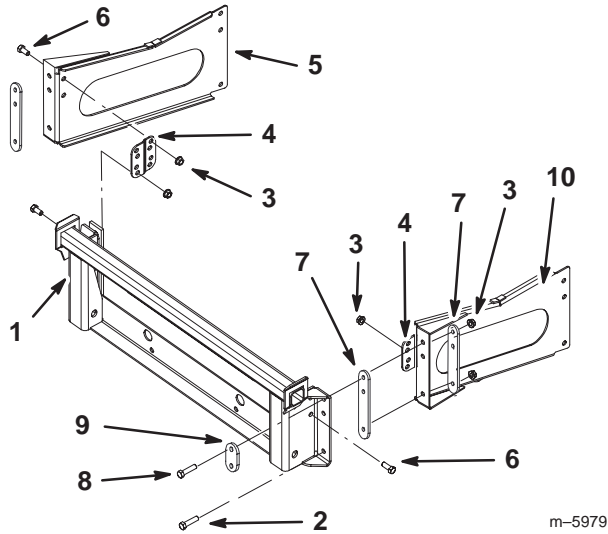
### Installing the Bagger Mounting Bracket to the Side Brackets (Liquid Cooled)

**Important** When installing the bagger onto a liquid cooled machine, the rear bumper plate must be removed. Use 4 long frame spacers for this installation, 2 per each side (Fig. 4).

1. Install the side brackets to the bagger mounting bracket (Fig. 4).
2. In the top two holes, install 2 bolts (3/8 x 1-1/2 in.), 2 flange nuts (3/8 in.), 2 long frame spacers, and one short frame spacer (Fig. 4).

**Note:** Make sure the long frame spacers are installed as shown in figure 4.

3. In the bottom hole, install a bolt (3/8 x 1-1/4 in.) and a flange nut (3/8 in.) (Fig. 4).
4. Install a bracket stiffener to the side bracket and bagger mounting bracket. Use 4 bolts (3/8 x 3/4 in.) and 4 flange nuts (3/8 in.) (Fig. 4).
5. Repeat the previous steps for the opposite side (Fig. 4).

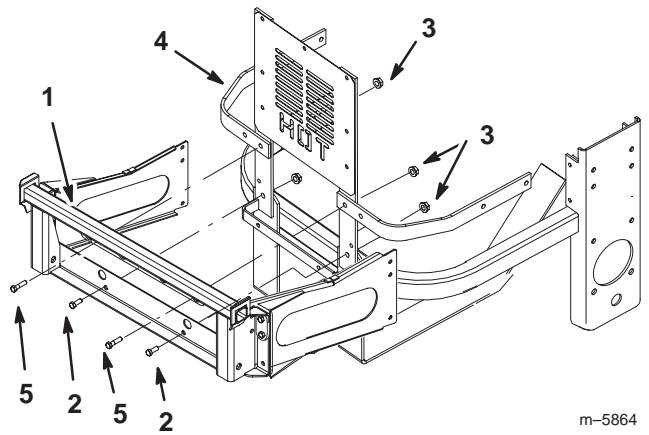


**Figure 4**

- |                            |                          |
|----------------------------|--------------------------|
| 1. Bagger mounting bracket | 6. Bolt, 3/8 x 3/4 in.   |
| 2. Bolt, 3/8 x 1-1/4 in.   | 7. Long frame spacer     |
| 3. Flange nut, 3/8 in.     | 8. Bolt, 3/8 x 1-1/2 in. |
| 4. Bracket stiffener       | 9. Short frame spacer    |
| 5. Left side bracket       | 10. Right side bracket   |

## Installing the Bagger Mounting Bracket onto a Liquid Cooled Machine

1. Install the bagger mounting bracket to the rear frame of the machine (Fig. 5).
2. In the top two holes, install 2 bolts (3/8 x 1-3/4 in.) and 2 flange nuts (3/8 in.) (Fig. 5).
3. In the bottom two holes, install 2 bolts (3/8 x 1-1/4 in.) and 2 flange nuts (3/8 in.) (Fig. 5).



**Figure 5**

- |                            |                          |
|----------------------------|--------------------------|
| 1. Bagger mounting bracket | 4. Bumper                |
| 2. Bolt, 3/8 x 1-1/4 in.   | 5. Bolt, 3/8 x 1-3/4 in. |
| 3. Flange nut, 3/8 in.     |                          |

## Installing the Side Brackets to the Machine

The following instructions are for both air cooled and liquid cooled.

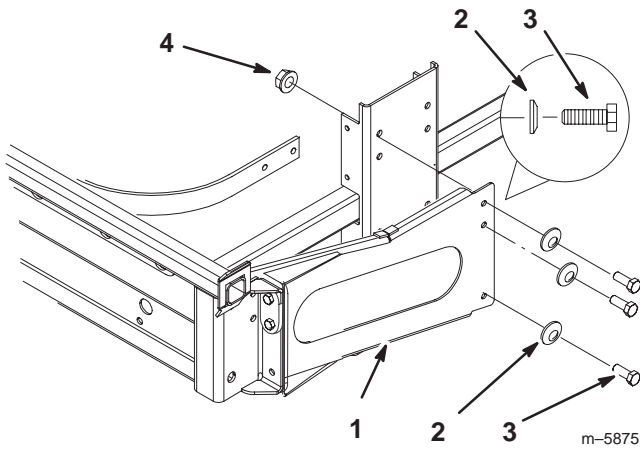
**Important** Do not tighten any bolts until both side brackets and bagger mounting bracket are fit loose on the machine.

Refer to Tightening the Mounting Bolts, on page 8, for the correct procedure to tighten the bolts.

**Note:** Hydraulic lines may need to be adjusted when installing the side brackets onto the machine. This will allow for fastener clearance.

1. Install the side plates to the side of the mower using 6 bolts (3/8 x 1 in.), 6 curved washers (3/8 in.), and 6 flange nuts (3/8 in.) (Fig. 6).

**Note:** Make sure the curved washers are installed as shown in figure 6.



**Figure 6**

- |                           |                        |
|---------------------------|------------------------|
| 1. Side bracket           | 3. Bolt, 3/8 x 1 in.   |
| 2. Curved washer, 3/8 in. | 4. Flange nut, 3/8 in. |

## Tightening all Mounting Bolts

The following steps are the correct sequence to tighten the side brackets and the bagger mounting bracket.

All 3/8 in. mounting bolts need to be torqued to **35 ft.-lb. (48 N•m)**.

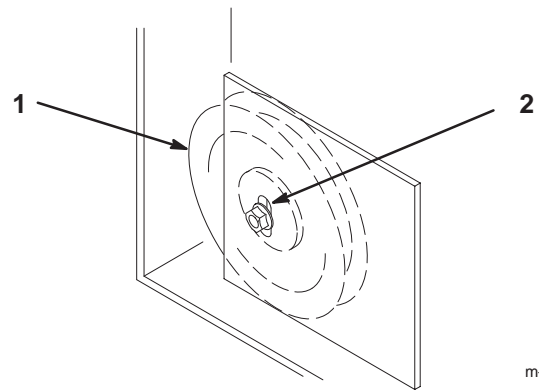
1. Tighten the bagger mounting bracket to the rear frame first (Figures 3 or 5).
2. Tighten the bagger mounting bracket to the side brackets (Figures 3 or 5).
3. Tighten the bracket stiffeners to both the side plates and the bagger mounting bracket (Figures 2 or 4).
4. Tighten the side brackets to the side of the mower (Fig. 6).
5. Install the drive wheels.
6. Lower the machine onto the drive wheels.

## Drilling Holes for the Drive Pulley Assembly

Use the metal template, included with the bagger, to locate the drive pulley assembly holes.

1. Remove the existing right idler pulley on rear of traction unit (Fig. 7). This pulley is used for the PTO drive belt.

**Note:** Save the idler pulley. Replace if the bagger and drive pulley assembly are removed.

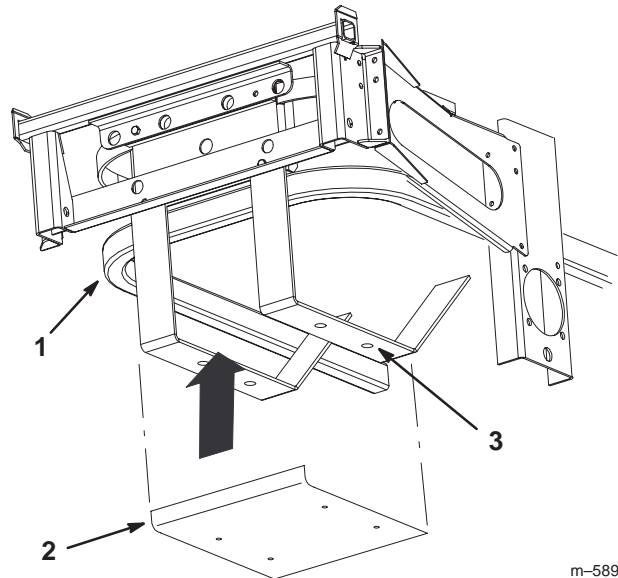


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**Figure 7**

1. Rear idler pulley—remove
2. Adjustment slot

2. Place a wooden block under the spring loaded idler, to hold it above the rear frame (Fig. 19). This will prevent the pulley from interfering with the template.
3. Position the template under the rear frame so the sides are flush with the frame and is fully against the back of the frame (Figures 8 and 9).

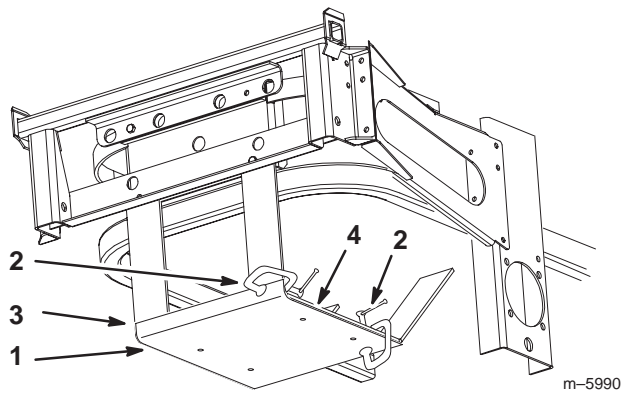


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**Figure 8**

1. Rear frame
2. Template
3. Drill 17/32 in. holes here

4. Clamp the template in place. Using the template, drill four 1/8 in. pilot holes into the rear frame (Figures 8 and 9).



**Figure 9**

- |             |                                |
|-------------|--------------------------------|
| 1. Template | 3. Tight against back of frame |
| 2. Clamp    | 4. Flush to side of frame      |

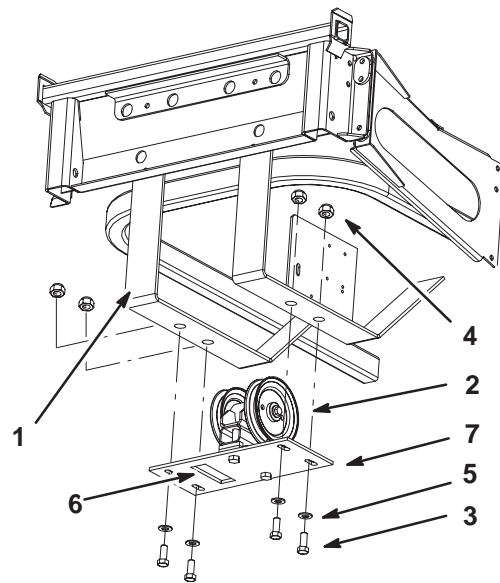
- Remove the template.
- Drill 4 holes, 3/8 in. diameter, into the 1/8 in. pilot holes. (Fig. 8).
- Drill 4 holes, 17/32 in. diameter, into the 3/8 in. pilot holes. (Fig. 8).

## Installing the Drive Pulley Assembly

- Install the PTO drive belt onto the drive pulley assembly (Figures 11 and 20).

**Note:** Make sure the cut-out in the pulley plate is on the left-hand side of the machine (Fig. 10). This cut-out allows room for the PTO spring loaded idler pulley.

- Install the pulley assembly under the rear frame, and loosely install 4 bolts (1/2 x 1-1/4 in.), 4 washers (1/2 in.) and 4 locknuts (1/2 in.) (Fig. 10). **Do not tighten bolts now.**



**Figure 10**

- |                          |                    |
|--------------------------|--------------------|
| 1. Rear frame            | 5. Washer, 1/2 in. |
| 2. Drive pulley assembly | 6. Cut-out         |
| 3. Bolt, 1/2 x 1-1/4 in. | 7. Pulley plate    |
| 4. Nut, 1/2 in.          |                    |

## Positioning the Drive Pulley Assembly on an Air Cooled Machine

- Push the drive pulley assembly all the way forward and then rearward a 1/4 in. (6 mm) (Fig. 10).

**Note:** The bolt head on the drive pulley assembly, should be approximately centered horizontally, in the frame slot (Fig. 11). View this from the right-hand side of the machine.

- Tighten the 4 bolts (1/2 x 1-1/4 in.), 4 washers (1/2 in.) and 4 locknuts (1/2 in.) (Fig. 10).

**Important** A final adjustment may be needed when installing the bagger belt.

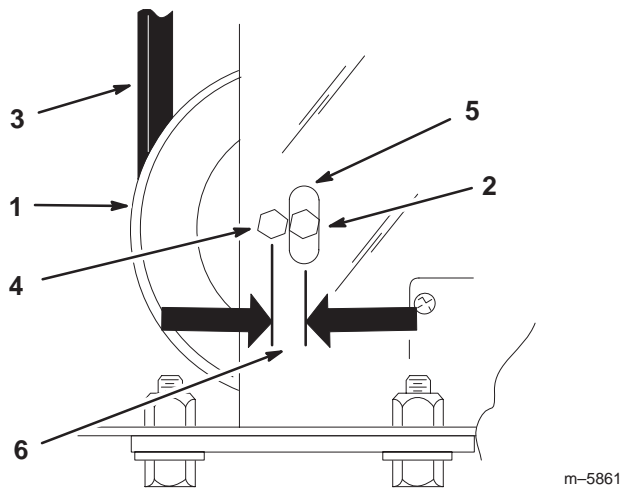
## Positioning the Drive Pulley Assembly on a Liquid Cooled Machine

- Push the drive pulley assembly all the way rearward and then forward a 1/4 in. (6 mm) (Fig. 10).

**Note:** The bolt head on the drive pulley assembly, should be approximately a 1/4 in. (6mm) rearward of the center in the frame slot (Fig. 11). View this from the right-hand side of the machine.

2. Tighten the 4 bolts (1/2 x 1-1/4 in.), 4 washers (1/2 in.) and 4 locknuts (1/2 in.) (Fig. 10).

**Important** A final adjustment may be needed when installing the bagger belt.

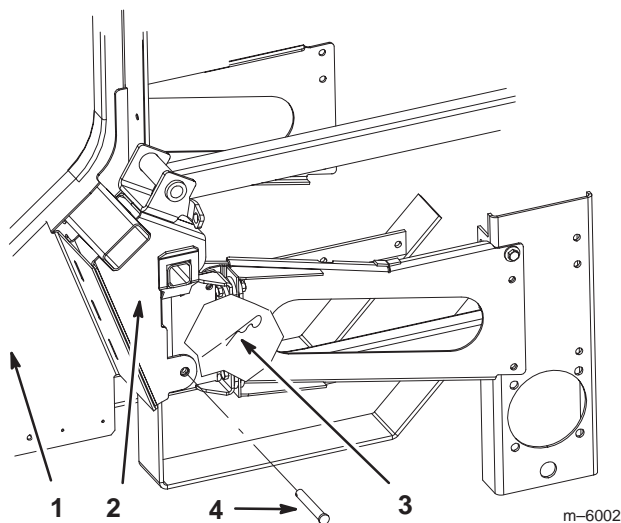


**Figure 11**

- |                                      |   |
|--------------------------------------|---|
| 1. Drive pulley assembly             | 4. Bolt head—liquid cooled machine only |
| 2. Bolt head—air cooled machine only | 5. Frame slot                           |
| 3. PTO drive belt                    | 6. 1/4 in.—liquid cooled                |

## Installing the Bagger

1. Install the bagger onto the bagger mounting bracket (Fig. 12).
2. Install clevis pins into the bagger and bagger bracket. Secure with hairpin cotters (Fig. 12).



**Figure 12**

- |                            |                   |
|----------------------------|-------------------|
| 1. Bagger                  | 3. Hairpin cotter |
| 2. Bagger mounting bracket | 4. Clevis pin     |

## Installing Bagger onto a Liquid Cooled Machine

**Note:** The following instructions are for liquid cooled machines only.

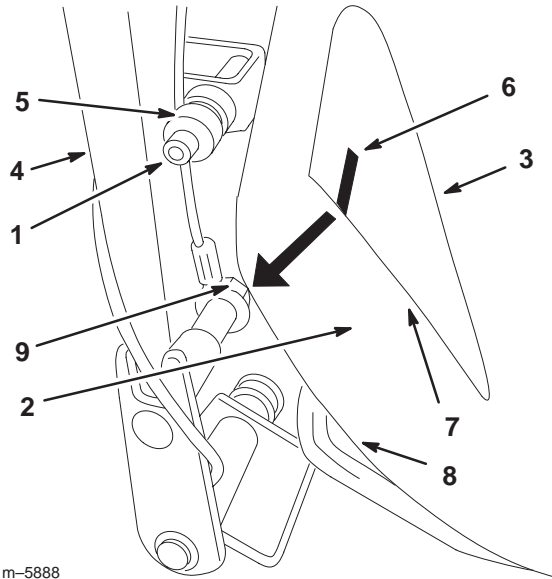
1. Loosen bolts that hold the engine shroud.
2. Move the engine shroud forward as far as possible.
3. Tighten bolts that hold the engine shroud.
4. Remove the cable guide and bolt from the frame of the bagger (Fig. 13).
5. Install the cable guide, bolt, and nut with the cable behind the cable guide (Fig. 13).

**Note:** Make sure the cable guide can rotate.

6. Locate template number 1 in the back of this manual. Cut out template number 1 as indicated on the template (Fig. 13).
7. Position the template on the right-hand side of the engine shroud (Fig. 13).
8. Line up the mark on the template where the cable bolt hits the engine shroud and the template bottom is flush with the bottom of shroud (Fig. 13).

9. Tape the template to the engine shroud. Mark the outer edge of the template. (Fig. 13).
10. Cut the engine shroud at the marked line. This will prevent damage to the engine shroud while using the bagger lever (Fig. 13).

**Note:** Make sure to follow the template outline. Do not create any sharp corners.



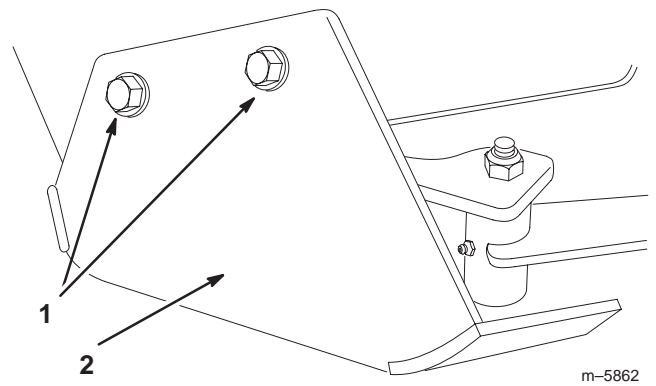
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**Figure 13**

- |                                      |                     |
|--------------------------------------|---------------------|
| 1. Cable guide, bolt, nut and washer | 5. Cable guide      |
| 2. Engine shroud                     | 6. Mark on template |
| 3. Template                          | 7. Template bottom  |
| 4. Lever                             | 8. Shroud bottom    |
|                                      | 9. Cable bolt       |

## Installing the Bagger Tensioner Pulley and Belt

1. Remove the four bolts in the skid plate (Fig. 14).
2. Remove the skid plate (Fig. 14). This will make it easier to install the bagger belt.

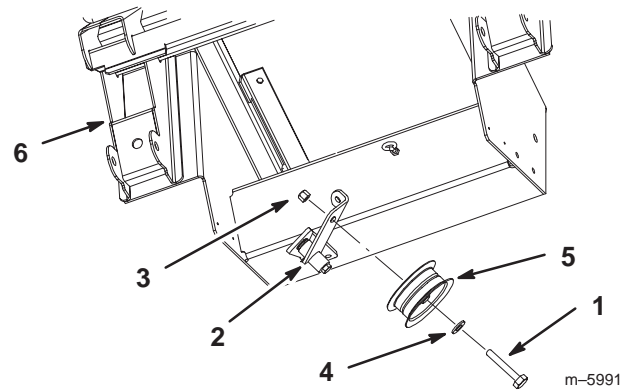


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**Figure 14**

1. Bolts
2. Skid plate

3. Install the bagger tensioner pulley onto the idler arm with a bolt (3/8 x 2 in.), washer (3/8 in.), and lock nut (3/8 in.) (Fig. 15).



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**Figure 15**

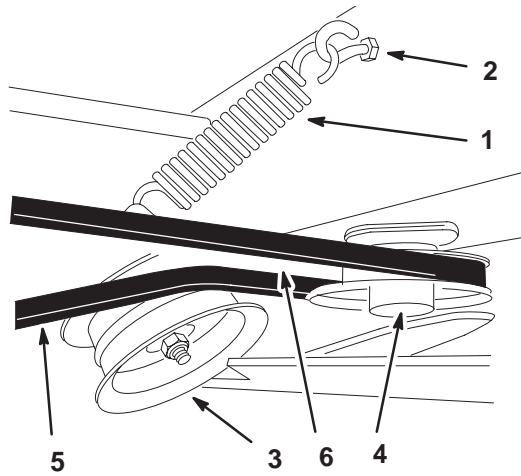
- |                      |                            |
|----------------------|----------------------------|
| 1. Bolt, 3/8 x 2 in. | 4. Washer, 3/8 in.         |
| 2. Idler arm         | 5. Bagger tensioner pulley |
| 3. Lock nut, 3/8 in. | 6. Bagger                  |

4. Install the bagger belt onto the drive pulley (Fig. 17).
5. Route the bagger belt onto the bagger pulley (Figures 16 and 17).

**Note:** There should be a 1/4 twist in the belt when it is installed onto the bagger tensioner pulley

6. Install the spring onto the idler arm (Fig. 16).
7. Install the tensioner spring onto the eyebolt attached to the bagger (Fig. 16 and 18).

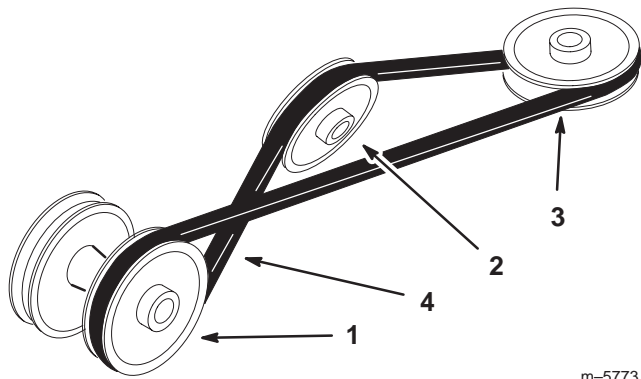
8. Adjust the bagger belt for proper tension. Refer to Adjusting the Bagger Belt on page 12.
9. Adjust the PTO drive belt. Refer to Adjusting the PTO Drive Belt on page 12.
10. Install the skid plate (Fig. 14).



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**Figure 16**

- |                            |   |
|----------------------------|---|
| 1. Tensioner spring        | 5. Belt   |
| 2. Eye bolt                | 6. Shortest space between belt strands, 1 in. $\pm$ 1/8 in. |
| 3. Bagger tensioner pulley |   |
| 4. Bagger pulley           |   |



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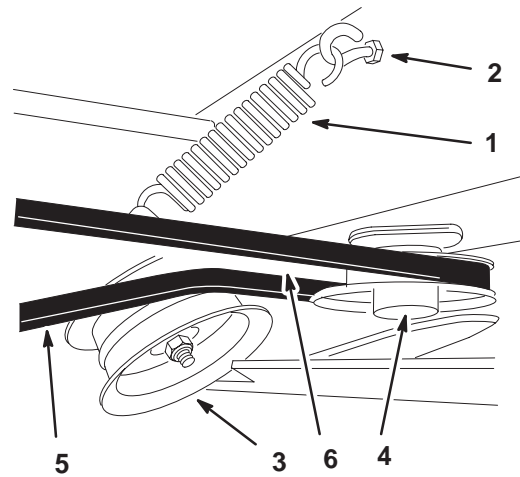
**Figure 17**

- |                            |                  |
|----------------------------|------------------|
| 1. Drive pulley            | 3. Bagger pulley |
| 2. Bagger tensioner pulley | 4. 1/4 twist     |

## Adjusting the Bagger Belt

1. Check the belt tension (Fig 18).
2. Measure the gap, at the bagger tensioner pulley, between the tight and slack side of the belt when the bagger tensioner pulley and spring are installed (Fig. 18).

3. There must be a gap of 1 in.  $\pm$  1/8 in. (26mm  $\pm$  3 mm) between the belt strands (Fig 18).
4. If the gap is not correct, remove the tensioner spring from the eyebolt and remove the tension on the PTO spring loaded idler (Fig 19).
5. Loosen the 4 mounting bolts holding the drive pulley assembly (Fig 20).
6. If the gap measurement is too small, push the pulley assembly forward slightly [1/8–3/16 in. (3–5 mm)] from the original set-up position (Fig 20).
7. If the gap measurement is too large, pull the pulley assembly rearward slightly [1/8–3/16 in. (3–5 mm)] from the original set-up position (Fig 20).
8. Tighten the 4 mounting bolts holding the drive pulley assembly to the machine frame (Fig 20).
9. Install the tensioner spring to the eyebolt and apply the tension on the PTO spring loaded idler.
10. Measure the bagger belt tension. There must be a gap of 1 in.  $\pm$  1/8 in. (26mm  $\pm$  3 mm) between the belt strands (Fig 18).
11. Repeat this procedure if a gap of 1 in.  $\pm$  1/8 in. (26mm  $\pm$  3 mm) was not achieved (Fig 18).



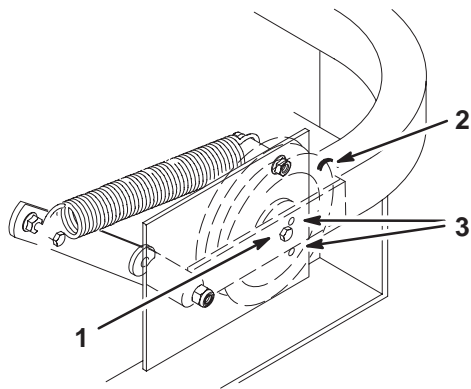
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**Figure 18**

- |                            |   |
|----------------------------|---|
| 1. Tensioner spring        | 5. Belt   |
| 2. Eye bolt                | 6. Shortest space between belt strands, 1 in. $\pm$ 1/8 in. |
| 3. Bagger tensioner pulley |   |
| 4. Bagger pulley           |   |

## Adjusting the PTO Drive Belt

1. Check the belt tension. The center bolt of spring loaded idler must be between the two alignment holes in left support plate (Fig 19).



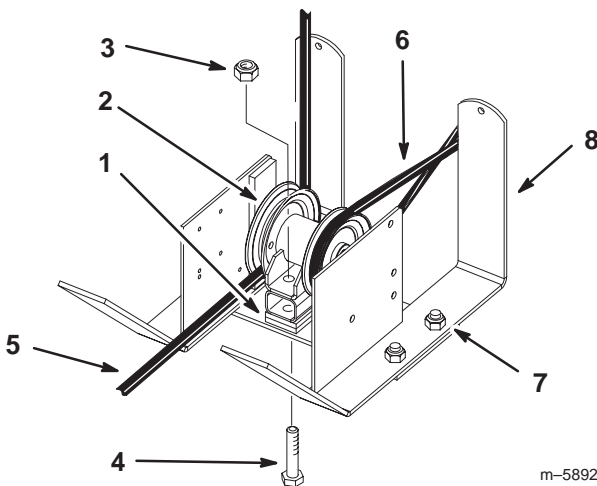
**Figure 19**

m-3744

- |                        |                   |
|------------------------|-------------------|
| 1. Center bolt         | 3. Alignment hole |
| 2. Spring loaded idler |                   |

- If adjustment is required, remove or add spacers under the drive pulley assembly (Fig. 20). Relieve belt tension by lifting up on the spring loaded idler.

**Note:** Install any unused spacers under the pulley plate with the 2 bolts (1/2 x 3-1/4 in.) in figure 20.



**Figure 20**

m-5892

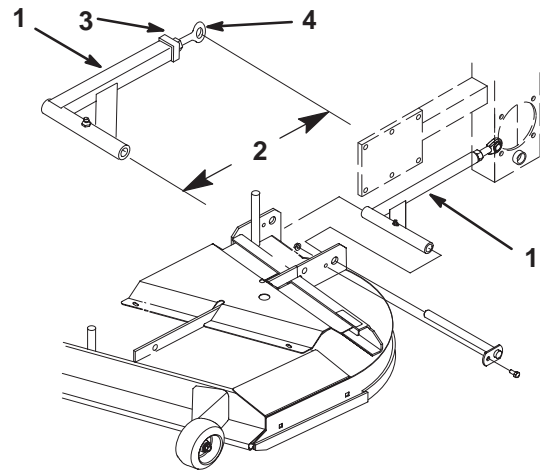
- |                          |                    |
|--------------------------|--------------------|
| 1. Spacers               | 5. PTO belt        |
| 2. Drive pulley assembly | 6. Bagger belt     |
| 3. Nut, 1/2 in.          | 7. Mounting bolts  |
| 4. Bolt, 1/2 x 3-1/4 in. | 8. Back of machine |

- Check belt tension again. The center bolt of spring loaded idler must be between the two alignment holes in left support plate (Fig. 19). Add or remove spacers, if necessary, and tighten all hardware securely.
- If removing spacers does not create enough belt tension, a small change in the length of the push arms can be made or replace the PTO belt (Fig. 21).

- To adjust push arms, loosen jam nut and rotate ball joint counterclockwise, one turn at a time. Adjust each side the same amount (Fig. 21).

**Note:** Increase belt tension by lengthening the push arms and decrease belt tension by shortening push arms.

**Important** If the push arm lengths are changed, then the mower deck must be leveled. Refer to Leveling the Mower in the machine operator's manual.



**Figure 21**

m-5973

- |                            |               |
|----------------------------|---------------|
| 1. Push arm                | 3. Jam nut    |
| 2. 15 in. (381 mm) nominal | 4. Ball joint |

## Installing the Weights

### Installing the Caster Weights



### Caution

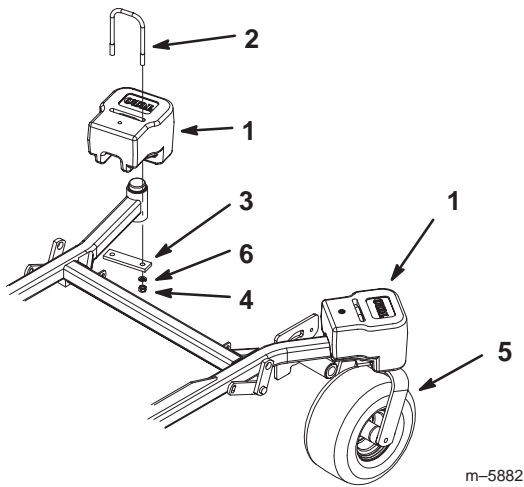


**The bagger adds a lot of weight to the rear of the machine and may cause an unstable condition which could result in a loss of control.**

- **Install the front caster weights and top weights.**

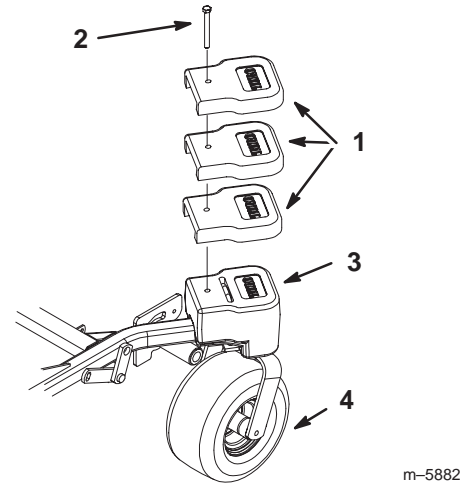
- Place caster weights on the front casters.
- Install plate, nuts (1/2 in.) and lock washer (1/2 in.) under the frame and weight (Fig. 22).
- Repeat for opposite side.

**Note:** Extra weights are needed when using certain types of machines. Refer to Installing Extra Top Weights on page 14.



**Figure 22**

- |                        |                 |
|------------------------|-----------------|
| 1. Front caster weight | 4. Nut          |
| 2. U-bolt              | 5. Front caster |
| 3. Plate               | 6. Lock washer  |



**Figure 23**

- |               |                        |
|---------------|------------------------|
| 1. Top weight | 3. Front caster weight |
| 2. Bolt       | 4. Front caster wheel  |

## Installing the Extra Top Weights

To comply with ANSI/OPEI B71.4–1999 Standard, top weights must be added to the machine. Use the chart below to determine the top weight requirements.

Top Weight Table		
Type of Machine	Total Number of Top Weights	Size of Bolt Needed
Air Cooled Machine	6 (3 for each side)	1/2 x 4 in.
Liquid Cooled Machine	4 (2 for each side)	1/2 x 3 in.

The factory ships six top weights to be installed on top of the caster weights.

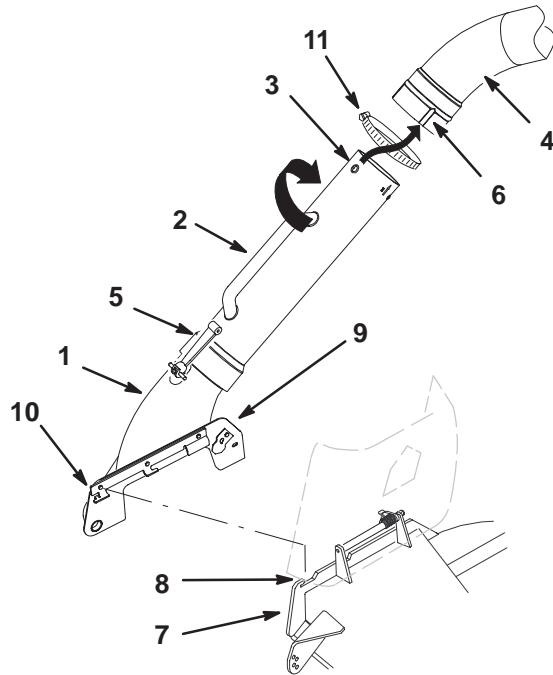
1. Determine how many top weights are needed for your machine. Refer to the top weight table.
2. If 2 top weights are needed, for each side, then install them on top of the caster weight with a bolt (1/2 x 3 in.) (Fig. 23).
3. If 3 top weights are needed, for each side, then install them on top of the caster weight with a bolt (1/2 x 4 in.) (Fig. 23).

## Installing the Boot and Discharge Tubes

**Note:** Remember to replace the **L** or the straight end of the spring when in side discharge mode. Refer to Replacing the Grass Deflector Spring on page 17.

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. To relieve the spring tension on the grass deflector, place the **L** or the straight end of the spring in front of the mounting bracket (Fig. 28).
4. Lift the grass deflector all the way back. This will eliminate interference with the boot.
5. Position the boot's front hook into the front slot on the mounting bracket (Fig. 24).
6. Place the rear hook over the rear of the mounting bracket (Fig. 24).
7. Install the upper tube into the bagger (Fig. 24).
8. Slide the clamp onto the middle tube (Fig. 24).
9. Align the knob on the middle tube with the notch in the upper tube. Slide the middle tube into the upper tube and twist the middle tube 60 degrees (Fig. 24).
10. Tighten the clamp around the upper and middle tube connection (Fig. 24).

- Slide the middle tube onto the boot and latch them together (Fig. 24).



m-5889

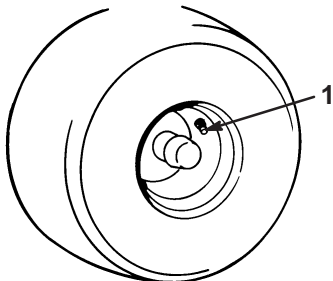
Figure 24

- |                        |                     |
|------------------------|---------------------|
| 1. Boot                | 7. Mounting bracket |
| 2. Middle tube         | 8. Front slot       |
| 3. Knob                | 9. Rear hook        |
| 4. Upper tube          | 10. Front hook      |
| 5. Latch               | 11. Clamp           |
| 6. Notch in upper tube |                     |

## Checking the Tire Pressure

Check the air pressure in the front caster wheel (Fig. 23) and rear tires (Fig. 25).

Pressure: Rear tires—20 psi (90 kPa)  
Front caster wheels—25 psi (90 kPa)



m-1872

Figure 25

- Valve stem

## Operation

**Note:** Determine the left and right sides of the machine from the normal operating position.

**Important** If the machine is on a slope, chock or block the wheels to prevent the machine from slowly rolling.



### Warning



To avoid personal injury, follow these procedures:

- Become familiar with all operating and safety instructions in the operator's manual for your mower before using this attachment.
- Never remove the bagger or bagger tubes while the engine is running.
- Always shut the engine off and wait for all moving parts to stop before clearing an obstruction from the bagging system.
- Never do maintenance or repairs while the engine is running.



### Warning



Without the grass deflector, bagger tubes or complete bagger assembly mounted in place, you and others are exposed to blade contact and thrown debris. Contact with the rotating mower blade(s) and thrown debris will cause injury or death.

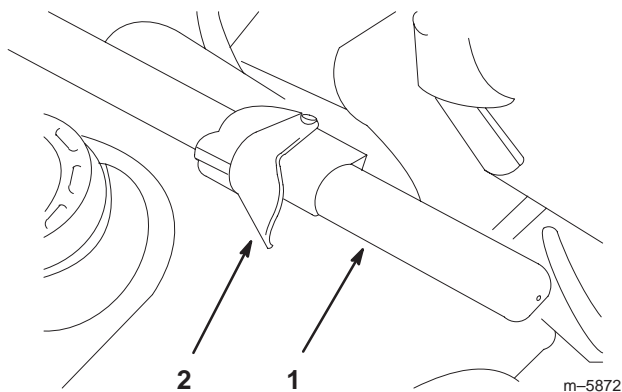
- Never remove the grass deflector from the mower because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.
- Never put your hands or feet under the mower.
- Never try to clear the discharge area or mower blades unless you move the power take off (PTO) to *off* and rotate the ignition key to *off*. Also remove the key and pull the wire off of the spark plug(s).

## Opening the Bagger

- Disengage the PTO.
- Reach back, squeeze and release the latch lever against the bagger lever (Fig. 26). This will open the latch that secures the bagger door.
- Pull down on the bagger arm to allow the grass to fall out of the bagger (Fig. 26).

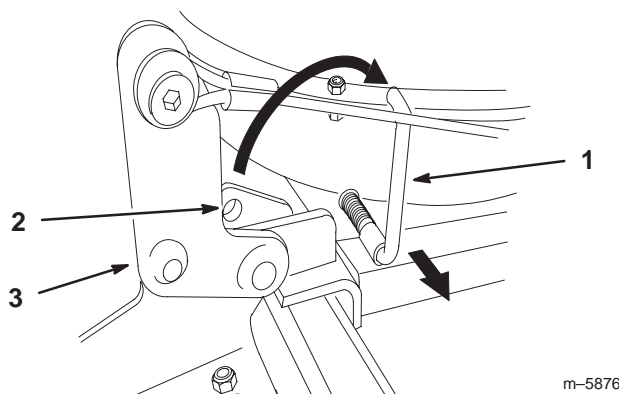
- Return the bagger arm to upright position in one quick motion. Make sure the bagger door fully engages into the latch (Fig. 26).

**Note:** Make sure the bagger latch is fully engaged before collecting grass.



**Figure 26**

- Bagger lever
- Latch lever



**Figure 27**

- Holding pin
- Hole in hinge
- Hinge

## Holding the Bagger Door Open



### Warning



**Hands, fingers and arms can get pinched between the back and front sections of the collector.**

- Keep people away from collector while emptying it.
- If working on the inside, use the holding pin to hold the collector door open.

- Disengage the PTO and set the parking brake.
- Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
- Open the bagger; refer to Opening the Bagger, page 15.
- With the bagger open, pull out the holding pin and insert into the hole in the hinge (Fig. 27).

## Clearing Obstructions From the Bagger System

- Empty the bagger.
- Disengage the PTO and set the parking brake.
- Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
- Remove the complete tube assembly from the bagger and boot.
- Remove the boot from the mower.
- Using a stick or similar object, carefully remove and clear the obstruction from the mower, upper tube, middle tube, or boot assembly.
- After you remove the obstruction, install the complete bagger system and resume operation. Refer to Installing the Discharge Tubes on page 14.

## Removing the Discharge Tubes

**Note:** Remember to replace the L end of the spring when in side discharge mode. Refer to Replacing the Grass Deflector Spring on page 17.

- Disengage the PTO and set the parking brake.
- Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
- Unlatch the middle tube from the boot and slide apart (Fig. 24).

4. Remove the tube assembly from the bagger (Fig. 24).
5. Remove the boot from the mounting bracket (Fig. 24).
6. Lower the grass deflector back into place.
7. If you are changing to side discharge mode, install the grass deflector spring. Refer to Replacing the Grass Deflector Spring on page 17.

## Removing the Bagger



### Danger



If you operate mower without the bagger installed or with the discharge tubes and boot removed, you and others may be injured by thrown debris or cut by the blade.

- Always operate the mower with either the complete bagger mounted in place or use the mower in side discharge.
1. Disengage the power take off (PTO), set the parking brake, turn the ignition key to off and remove the key.
  2. Remove the discharge tubes. Refer to removing The Discharge Tubes on page 16.
  3. Remove hairpin cotters and clevis pins from the bagger and bagger bracket (Fig. 12).
  4. Remove the skid plate (Fig. 14).
  5. Remove the bagger belt and bagger tensioner pulley (Fig. 16).
  6. Remove the bagger from the bagger mounting bracket (Fig. 12).
  7. Install the skid plate (Fig. 14).
  8. Replace the grass deflector spring. Refer to Replacing the Grass Deflector Spring on page 17.
  9. Remove **both the top weights and caster weights** (Fig. 12).

## Replacing the Grass Deflector Spring

The grass deflector spring will have either an **L** end or a straight end (Fig. 28).



### Warning

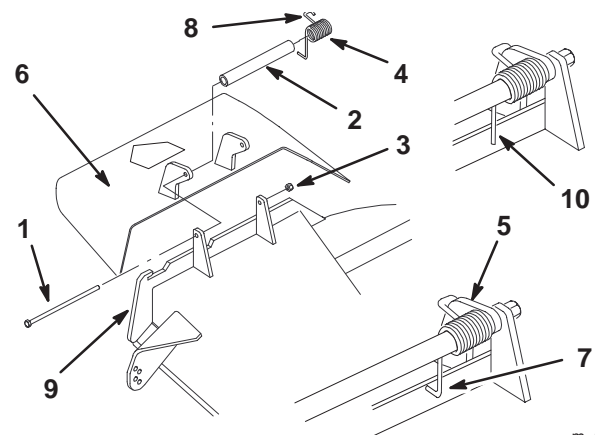


An uncovered discharge opening could allow the lawn mower to throw objects in the operator's or bystander's direction and result in serious injury. Also, contact with the blade could occur.

Never operate the lawn mower unless you install a grass deflector, a mulch plate, or discharge tubes and bagger.

1. Remove the locknut, bolt, spring and spacer holding the grass deflector to the pivot brackets (Fig. 28). This will make it easier to install the spring.
  2. Place spacer and spring onto grass deflector. Place the **L** or the straight end of spring behind the mounting bracket.
- Note:** Make sure the **L** or the straight end of spring is installed behind mounting bracket before installing the bolt as shown in figure 28.
3. Install bolt and nut. Place the **J** hook end of spring around grass deflector (Fig. 28).

**Important** The grass deflector must be lowered down into position. Lift the deflector up to test that it lowers into the full down position.



m-5995

Figure 28

1. Bolt
2. Spacer
3. Locknut
4. Spring
5. Spring installed
6. Grass Deflector
7. L end of spring, place behind mounting bracket before installing bolt
8. J hook end of spring
9. Mounting bracket
10. Straight end—possible style of spring

# Operating and Bagging Tips

## Machine Size

Remember that the machine is longer and wider with this attachment installed. By turning too sharply in confined places you may damage the attachment or other property.

## Trimming

Always trim with the left side of the mower. Do not trim with the right side of the mower because you could damage the bagging tubes.

## Cutting Height

For optimum bagging performance, set the deck height-of-cut to remove no more than 2 to 3 inches (51 to 76 mm) or 1/3 of the grass height, whichever is less. Cutting off more than this will reduce the capacity of the vacuum system.

## Cutting Frequency



Cut the grass often, especially when it grows rapidly. You will have to cut your grass twice if it gets excessively long (refer to Bagging Long Grass, page 18).

## Cutting Technique

For best lawn appearance, be sure to slightly overlap the mower into the previously cut area. This helps reduce the load on the engine and reduces the chance of plugging the boot and tube.

## Bagging Speed

The bagging system may plug if you drive too fast and the engine speed gets too slow. On hills it may be necessary to slow the machine's ground speed. Mow down hill whenever possible.

 **Caution** 

**As the bagger fills, extra weight is added to the back of the machine. If you stop and start suddenly on hills, you may lose steering control or the machine may tip.**

- **Do not start or stop suddenly when going uphill or downhill. Avoid uphill starts.**
- **If you do stop the machine when going uphill, disengage the PTO. Then back down the hill using a slow speed.**
- **Do not change speeds or stop on slopes.**

## Bagging Long Grass



Excessively long grass is heavy and may not be propelled completely into the bagger. If this happens, the tube and boot may plug. To avoid plugging the bagging system, mow the grass at a high height-of-cut, then lower the mower to your normal cutting height and repeat the bagging process.

## Bagging Wet Grass

If possible, always try to cut grass when it is dry.

## Signs of Plugging

As you are bagging, a small amount of grass clippings normally blow out the front of the mower. An excessive amount of clipping blow-out indicates that the bagger is full or the boot is plugged.

 **Warning** 

**Without the grass deflector, bagger tubes or complete bagger assembly mounted in place, you and others are exposed to blade contact and thrown debris. Contact with the rotating mower blade(s) and thrown debris will cause injury or death.**

- **Never remove the grass deflector from the mower because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.**
- **Never put your hands or feet under the mower.**
- **Never try to clear the discharge area or mower blades unless you move the power take off (PTO) to *off* and rotate the ignition key to *off*. Also remove the key and pull the wire off of the spark plug(s).**

## Fan Vacuum

The bagging system operates by vacuum created by a rotating fan mounted in the top of the hopper. If the vacuum action is reduced, bagging performance will diminish. Refer to Troubleshooting on page 20 for causes of reduced performance.

## Curb Climbing and Loading

Always lift the deck to the highest position when loading the machine on trailers or ascending/descending a curb. Leaving the mower in a lower position can cause damage to mower baffles while loading and going over a curb. If a

curb is higher than 6 inches (152 mm), cross it at a sharp angle with the deck fully raised. **Use extreme caution when loading onto a trailer.**

# Maintenance

**Important** If the machine is on a slope, chock or block the wheels to prevent the machine from slowly rolling.

**Note:** Determine the left and right side of the machine from the normal operating position.

## Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure
Each Use	<ul style="list-style-type: none"> <li>Screens—clean</li> </ul>
8 Hours	<ul style="list-style-type: none"> <li>Bagger—clean</li> </ul>
First 10 Hours	<ul style="list-style-type: none"> <li>Bagger—inspect</li> <li>Bagger—check belt tension</li> </ul>
40 Hours	<ul style="list-style-type: none"> <li>Bagger idler arm—grease</li> </ul>
100 Hours	<ul style="list-style-type: none"> <li>Bagger—inspect</li> </ul>
Storage Service	<ul style="list-style-type: none"> <li>Belts—check for wear/cracks</li> <li>Bagger—check</li> <li>Bagger—clean</li> </ul>

### Cleaning the Screens

The screens need to be cleaned before each use. In wet grass they will need to be cleaned more often.

1. Disengage the power take off (PTO), set the parking brake, turn the ignition key to off and remove the key.
2. Open the bagger and hold the bagger door open. Refer to Holding the Bagger Door Open on page 16.
3. Clean the debris from the screens.
4. Close the bagger door.

### Cleaning the Bagger

The bagger needs to be cleaned after every 8 hours.

1. Wash the inside and outside of the bagger, upper tube, lower tube, boot assembly and the underside of the mower. Use a mild automotive detergent to remove dirt.
2. Make sure you remove matted grass from all parts.
3. After washing all parts, let them dry thoroughly.

### Checking the Bagger Belt

The bagger belt tension needs to be checked after the first 10 hours.

1. Check the belt tension. Refer to Adjusting the Bagger Belt on page 12.

### Greasing the Idler Arm

Grease the bagger belt idler arm every 40 hours.

### Inspecting the Bagger

Inspect the bagger attachment after the first ten hours of operation, and 100 hours thereafter.

1. Disengage the power take off (PTO), set the parking brake, turn the ignition key to off and remove the key.
2. Check the upper tube, lower tube, and the boot assembly. Replace these parts if they are cracked or broken.
3. Check the bagger, bagger frame, and screens. Replace any parts that are cracked or broken.
4. Tighten all nuts bolts and screws.

## Inspecting the Mower Blades and Baffles

1. Inspect the mower blades and baffles regularly and whenever a blade strikes a foreign object.
2. If blades or baffles are badly worn or damaged, install new blades or baffles. Refer to your mower operator's manual for complete blade maintenance.
2. Inspect the bagger attachment for damage. Refer to Inspecting the Bagger Attachment on page 19.
3. Make sure the bagger is empty and thoroughly dry.
4. Check the belt for wear or cracks.
5. Store the machine in a clean, dry place, out of direct sunlight. If you must store the machine outside, cover it with a weatherproof cover. This protects the plastic parts and extends the life of the machine.

## Storage

1. Clean the bagger attachment. Refer to Cleaning the Bagger Attachment on page 19.

## Troubleshooting

Problem	Possible Causes	Corrective Action
Abnormal vibration.	<ol style="list-style-type: none"> <li>1. Cutting blade(s) is/are bent or unbalanced.</li> <li>2. Blade mounting bolt is loose.</li> <li>3. Loose bagger pulley or pulley assembly.</li> <li>4. Bagger belt is worn or damaged.</li> <li>5. Bagger impeller is out of balance.</li> <li>6. Blade interferes with mower baffles.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install new cutting blade(s).</li> <li>2. Tighten blade mounting bolt.</li> <li>3. Tighten the appropriate pulley.</li> <li>4. Replace the bagger belt.</li> <li>5. Contact Authorized Service Dealer.</li> <li>6. Do not use machine. Replace bent blades and/or baffles.</li> </ol>
Reduced bagging performance.	<ol style="list-style-type: none"> <li>1. Low engine speed.</li> <li>2. Plugged fan screen.</li> <li>3. Loose bagger belt.</li> <li>4. Broken seal between hopper and rear door.</li> <li>5. A plugged boot.</li> <li>6. Improper seal around the upper tube going into the hopper.</li> <li>7. Full hopper.</li> </ol>	<ol style="list-style-type: none"> <li>1. Always operate the bagger at full throttle.</li> <li>2. Remove debris, leaves or grass clippings from the fan screen.</li> <li>3. Tighten the bagger belt.</li> <li>4. Ensure the rear door is latched.</li> <li>5. Locate and remove plugged debris.</li> <li>6. Ensure that there is a good seal at hopper.</li> <li>7. Empty hopper.</li> </ol>

Problem	Possible Causes	Corrective Action
Boot and tubes plug too frequently.	<ol style="list-style-type: none"> <li>1. Hopper is too full.</li> <li>2. Low engine speed.</li> <li>3. Grass is too wet.</li> <li>4. Grass is too long.</li> <li>5. Plugged fan screen.</li> <li>6. Ground speed is too fast.</li> </ol>	<ol style="list-style-type: none"> <li>1. Dump more frequently.</li> <li>2. Always operate the bagger at full throttle.</li> <li>3. Cut grass when dry.</li> <li>4. Cut no more than 2–3 inches or 1/3 of the grass height, whichever is less.</li> <li>5. Remove debris, leaves or grass clippings from the fan screen.</li> <li>6. Drive slower at full throttle.</li> </ol>
Debris blowout.	<ol style="list-style-type: none"> <li>1. Hopper is too full.</li> <li>2. Ground speed is too fast.</li> <li>3. Center baffle not installed.</li> <li>4. Mower is not leveled.</li> </ol>	<ol style="list-style-type: none"> <li>1. Dump more frequently.</li> <li>2. Drive slower at full throttle.</li> <li>3. Install the center baffle when bagging leaves.</li> <li>4. See the mower operator's manual for leveling the mower.</li> </ol>



**Do Not** cut out to sharp point. Cut with a radius as shown.

## Template No. 1

Use this for liquid cooled engines only.

## Scale

