Form No. 3327–680

TORO®

Bagger

100 Series Z Master

Model No. 78490—Serial No. 220000001 and Up

Operator’s Manual

Contents

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.

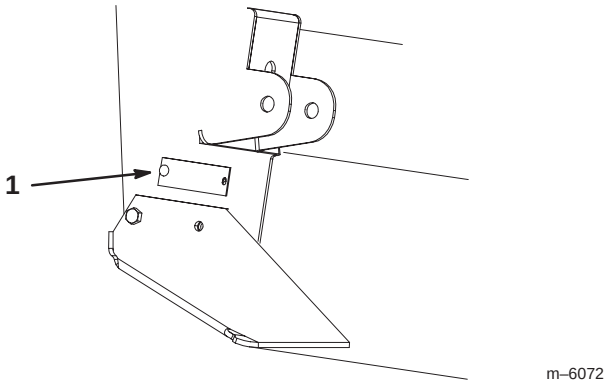

Figure 1

1. Location of the model and serial numbers

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

Model No. _____

Serial No. _____

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.

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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, set the parking brake, 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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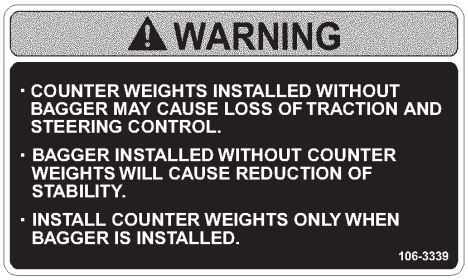

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Setup

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
Template	1	Drilling holes into the clutch
Bolt, 7/16 x 5–1/2 in.—Kawasaki® engines only	1	Installing the clutch and drive pulley assembly
Bolt, 7/16 x 4–3/4 in.—Kohler® engines only	1	
Drive pulley assembly	1	
Clutch spacer	1	
Bolt, #6 x1/2 in.	1	
Bagger mounting bracket—left	1	Installing bagger mounting brackets
Bagger mounting bracket—right	1	
Bolt, 1/4 x 3/4 in.	2	
Bolt, 3/8 x 1 in.	4	
Carriage bolt, 3/8 x 7/8 in.	4	
Bolt, 5/16 x 3/4 in.	4	
Bolt, 5/16 x 1 in.	4	
Flange nut, 1/4 in.	2	
Flange nut, 5/16 in.	8	
Flange nut, 3/8 in.	4	
Locknut, 3/8 in.	4	
Flat washer, 3/8 in.	4	
Flat washer, 5/16 in.	8	
Bagger	1	Installing the bagger
Clevis pin	2	
Hairpin cotter	2	

Description	Qty.	Use
Tensioner pulley and arm with hardware	1	Installing the bagger tensioner pulley and bagger belt
Spring	1	
Bagger belt	1	
Weight—left	1	Installing the weights
Weight—right	1	
Weight bracket—left	2	
Weight bracket—right	2	
Support plate	1	
Bolt, 3/8 x 6 in.	4	
Bolt, 5/16 x 1 in.	2	
Nut, 3/8 in.	8	
Lock washer, 3/8 in.	8	
Flat washer, 3/8 in.	16	
Bolt, 3/8 x 4–1/4 in.	4	
Bolt, 3/8 x 3/4 in.	2	
Self tapping bolt, 3/8 x 5/8 in.	1	

Drilling Holes for the Clutch

Use the metal template, included with the bagger, to locate the clutch holes.

1. Remove the clutch strap for the clutch (Fig. 2).

2. Unplug the clutch connector (Fig. 2).

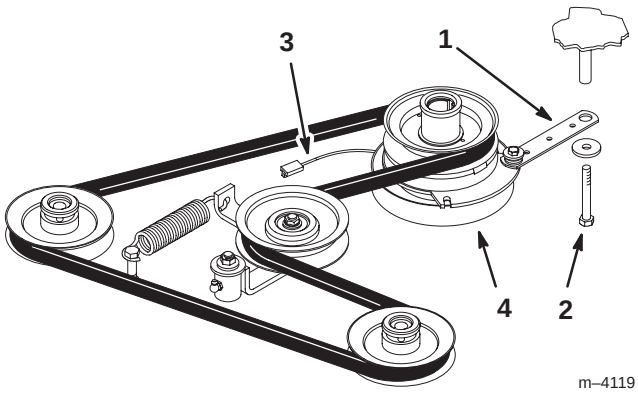

Figure 2

1. Clutch strap
2. Bolt
3. Clutch connector
4. Clutch

3. Remove the existing deck belt from the clutch.

4. Remove the existing clutch from the machine (Fig. 3). Discard the bolt that was installed in the clutch.

5. Remove the existing drive spacer from the clutch (Fig. 3).

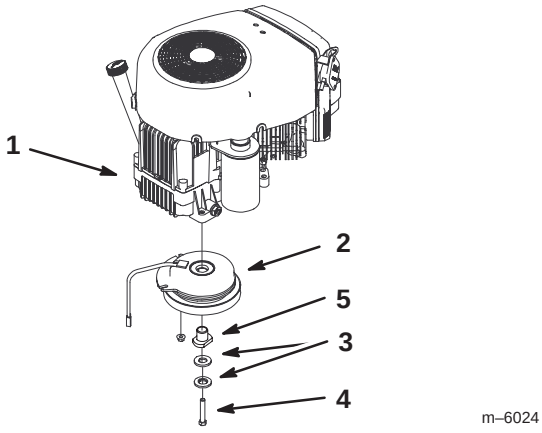

Figure 3

1. Engine
2. Clutch
3. Curved washers
4. Clutch bolt—discard
5. Drive spacer

6. Position the template into the clutch pulley so the outside diameter is flush with the inside of the clutch flange (Fig. 4).

Note: Before drilling holes, place a piece of metal between the clutch and pulley. This will prevent drilling into the clutch.

7. Using the template, drill one 1/8 in. pilot hole into the pulley (Fig. 4).

8. Install the screw (#6 x 1/2 in.) into the 1/8 in. hole (Fig. 4). This will hold the template in place while drilling the other two holes.

9. Using the template, drill the remaining two 1/8 in. pilot holes into the pulley (Fig. 4).

10. Remove the template and the screw (#6 x 1/2 in.) and discard (Fig. 4).

11. Drill 3 holes, 3/8 in. diameter, into the 1/8 in. pilot holes. (Fig. 4).

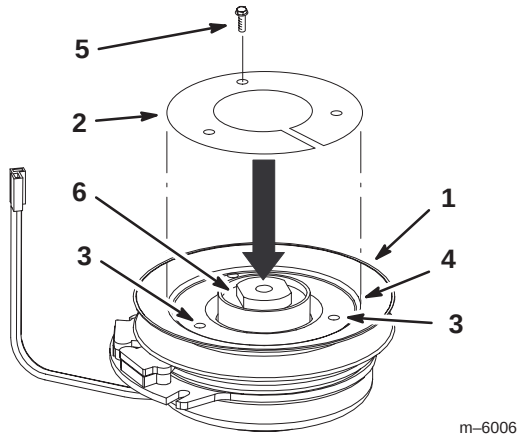

Figure 4

1. Clutch pulley
2. Template
3. Hole to drill
4. Clutch flange
5. Screw, #6 x 1/2 in.
6. Drive spacer

Installing the Clutch and Drive Pulley Assembly

Note: Apply anti–seize compound to crank shaft before installing the clutch and drive pulley assembly.

1. Install the new pulley spacer into the clutch (Fig. 5).

2. Install the drive pulley assembly into the three holes drilled into the clutch pulley (Fig. 5).

3. Install the drive spacer into the drive pulley assembly (Fig. 5).

Note: There are two different size bolts for installing the clutch. The size is determined by the type of engine on the machine.

4. If the machine has a Kawasaki® engine, then install the clutch with a bolt, 7/16 x 5–1/2 in., and 2 existing curved washers (Fig. 5).

5. If the machine has a Kohler® engine, then install the clutch with a bolt, 7/16 x 4–3/4 in., and 2 existing curved washers (Fig. 5).

6. Torque the clutch bolt to **55 ft.–lb. (75 N•m)** (Fig. 5).

7. Install the existing deck belt onto the clutch.

8. Install the clutch strap (Fig. 2).

9. Plug in the clutch connector (Fig. 2).

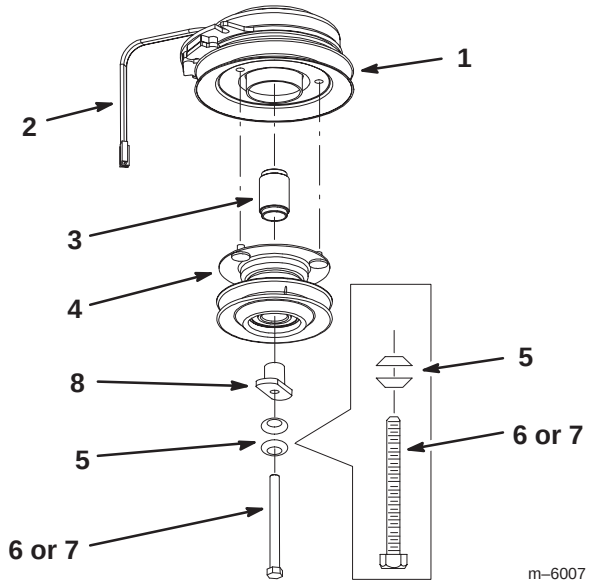

Figure 5

1. Clutch
2. Clutch connector
3. Pulley spacer
4. Drive pulley assembly
5. Curved washers
6. Bolt, 7/16 x 5–1/2 in. for Kawasaki engines
7. Bolt, 7/16 x 4–3/4 in. for Kohler engines
8. Drive spacer

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.

Drilling Holes for the Bagger Mounting Brackets

1. Remove the rear heat shield (Fig. 6). Discard the top bolts and nuts.

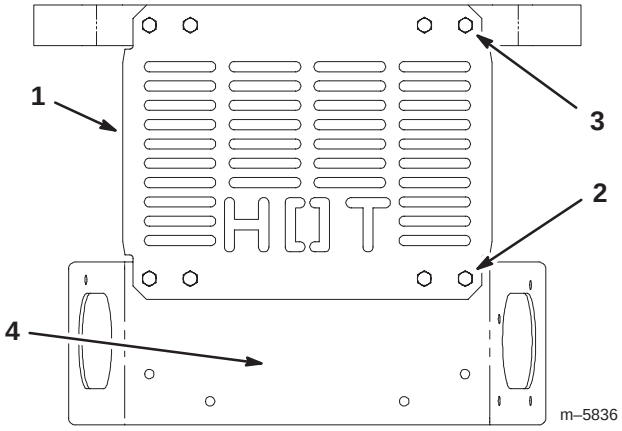

Figure 6

1. Rear heat shield
2. Bolts—remove and save
3. Top bolts—remove and discard
4. Rear bumper

2. For the right–hand bagger mounting bracket, position the bagger mounting bracket inside the hydraulic tank, hydraulic hoses, and under the engine guard strap.

3. For the left–hand bagger mounting bracket, position the bagger mounting bracket inside the exhaust guard and under the engine guard strap.

4. If present, remove the existing bolt (1/4 in.), holding electrical relays to the left or right–hand side of frame. Discard the nut and bolt.

Note: The relays will be installed during final installation of the bagger mounting brackets.

5. Using the existing 1/4 in. hole in the side frame, loosely install the bagger mounting bracket to the side frame (Fig. 7). Use 1 bolt (1/4 x 3/4 in.) and 1 flange nut (1/4 in.) (Fig. 7).

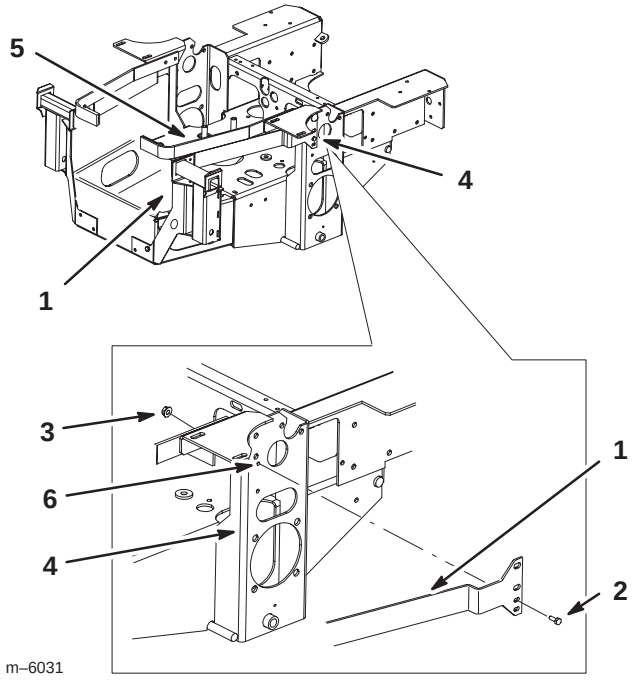

Figure 7

1. Bagger mounting bracket—right–hand shown
2. Bolt, 1/4 x 3/4 in.
3. Flange nut, 1/4 in.
4. Side frame
5. Engine guard strap
6. Existing 1/4 in. hole

6. Loosely, install the bagger mounting bracket to the bottom rear bumper with 2 bolts (5/16 x 3/4 in.), 4 flat washers (5/16 in.), and 2 flange nuts (5/16 in.) (Fig. 8).

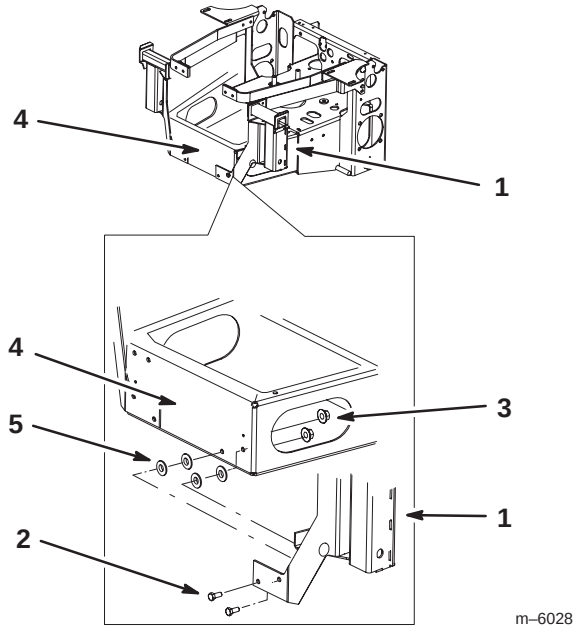

Figure 8

1. Bagger mounting bracket
2. Bolt, 5/16 x 3/4 in.
3. Flange nut, 5/16 in.
4. Bumper
5. Flat washers, 5/16 in.

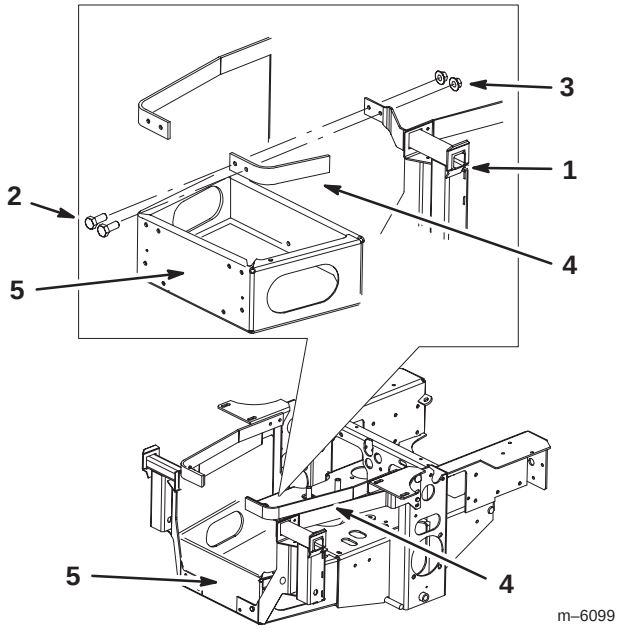

Figure 9

1. Bagger mounting bracket
2. Bolt, 5/16 x 1 in.
3. Flange nut, 5/16 in.
4. Engine guard strap
5. Bumper

7. Loosely, install the bagger mounting bracket to the engine guard strap with 2 bolts (5/16 x 1 in.) and 2 flange nuts (5/16 in.) (Fig. 9).

8. Tighten all the bolts and nuts. Start with the 1/4 in. bolt, then the 5/16 in. rear bumper bolts, and then the engine guard strap bolts.

9. Using the bagger mounting bracket as a template, mark the 4 hole locations in the center of the slots (Fig. 10).

10. Remove the bagger mounting bracket (Fig. 10).

11. Drill 4 pilot holes, 1/8 in. diameter, at the marked locations. (Fig. 10).

12. Drill 2 holes, **13/32 in.** diameter, into the side frame through the 1/8 in. pilot holes. (Fig. 10).

13. Drill 2 holes, **13/32 in.** diameter, into the side of the rear bumper through the 1/8 in. pilot holes. (Fig. 10).

14. Repeat steps for the opposite side.

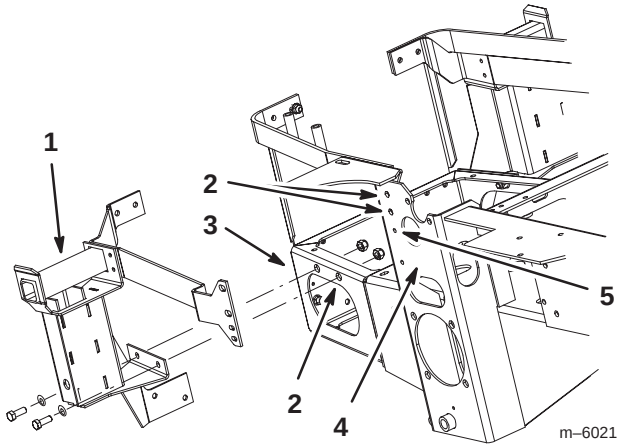

Figure 10

1. Bagger mounting bracket
2. Drill 13/32 in. hole
3. Rear bumper
4. Side frame
5. Existing 1/4 in. hole

Installing the Bagger Mounting Brackets

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

Refer to Tightening the Mounting Bolts, on page 10, for the correct procedure to tighten the bolts.

1. Install the bagger mounting bracket to the rear bumper and side frame of the machine.

Note: Make sure to attach electrical relays, if needed.

2. Using the existing 1/4 in. hole in the side frame, loosely install the bagger mounting bracket to the side frame with 1 bolt (1/4 x 3/4 in.) and 1 flange nut (1/4 in.) (Fig. 11).

3. Using the two holes drilled in the side frame, loosely install the bagger mounting bracket to the side frame with 2 carriage bolts (3/8 x 7/8 in.) and 2 flange nuts (3/8 in.) (Fig. 11).

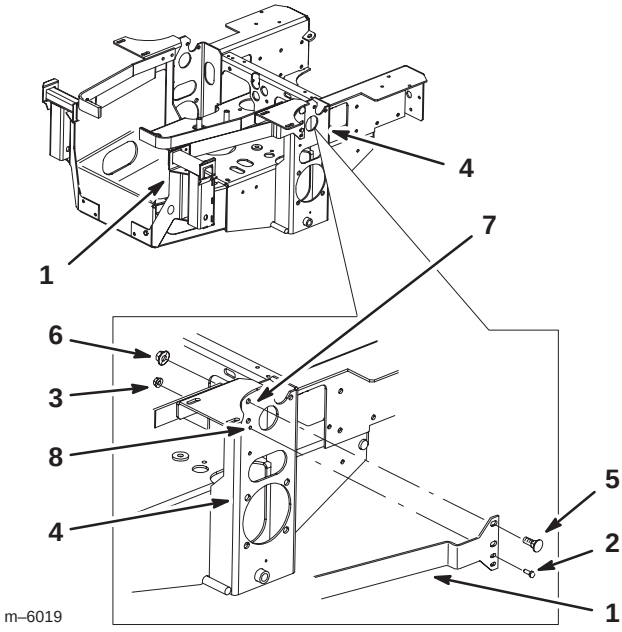

Figure 11

1. Bagger mounting bracket—right–hand shown
2. Bolt, 1/4 x 3/4 in.
3. Flange nut, 1/4 in.
4. Side frame
5. Carriage bolt, 3/8 x 7/8 in.
6. Flange nut, 3/8 in.
7. Drilled holes
8. Existing 1/4 in. hole

4. Install the bagger mounting bracket to the rear bumper side with 2 bolts (3/8 x 1 in.), 2 flat washers (3/8 in.), and 2 locknuts (3/8 in.) (Fig. 12).

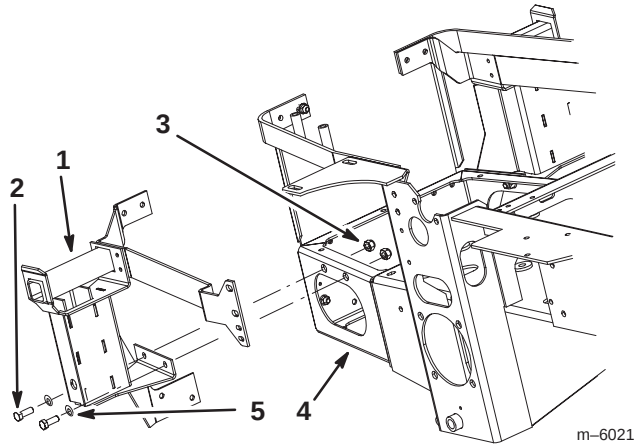

Figure 12

1. Bagger mounting bracket—right–hand shown
2. Bolt, 3/8 x 1 in.
3. Locknut, 3/8 in.
4. Rear bumper side
5. Flat washer, 3/8 in.

5. Install the bagger mounting bracket to the bottom rear bumper with 2 bolts (5/16 x 3/4 in.), 4 flat washers (5/16 in.), and 2 flange nuts (5/16 in.) (Fig. 13).

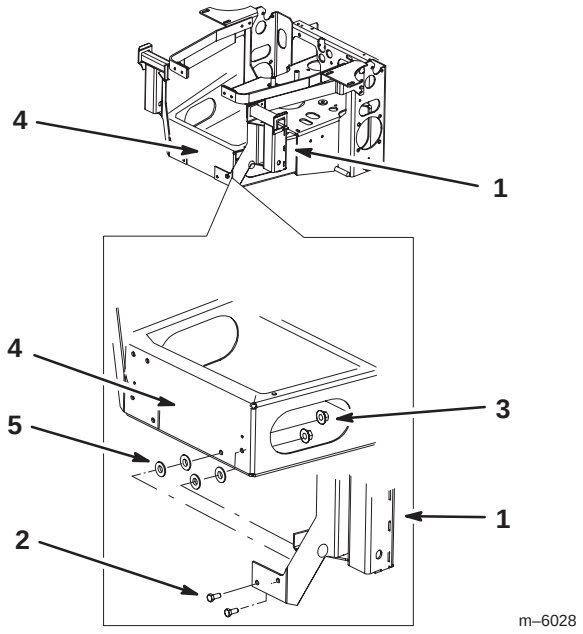

Figure 13

1. Bagger mounting bracket
2. Bolt, 5/16 x 3/4 in.
3. Flange nut, 5/16 in.
4. Bumper
5. Flat washers, 5/16 in.

6. Install the bottom of the rear heat shield to the rear bumper (Fig. 6).

7. Install the bagger mounting bracket to the rear heat shield and engine guard strap with 2 bolts (5/16 x 1 in.) and 2 flange nuts (5/16 in.) (Fig. 14).

8. Repeat for the opposite side (Fig. 14).

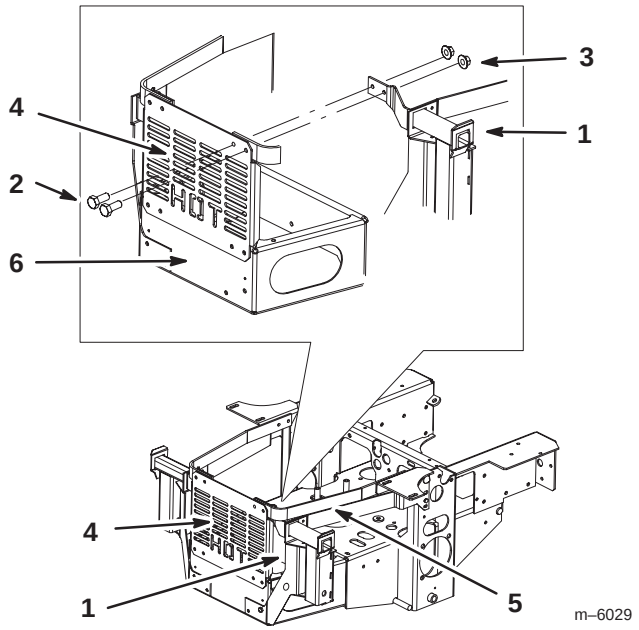

Figure 14

1. Bagger mounting bracket
2. Bolt, 5/16 x 1 in.
3. Flange nut, 5/16 in.
4. Rear heat shield
5. Engine guard strap
6. Rear bumper

Tightening all Mounting Bolts

Important Use the torque specifications in the following table when tightening the mounting bolts.

Size of mounting bolts	Torque
All 5/16 in. bolts	230 in.–lb. (26 N•m)
All 3/8 in. bolts	35 ft.–lb. (48 N•m)
All 1/4 in. bolts	100 in.–lb. (11 N•m)

The following steps are the correct sequence to tighten the the bagger mounting brackets when all fasteners are in place.

1. Tighten the bagger mounting bracket to the rear bumper (Fig. 13). See torque table.

2. Tighten the bagger mounting bracket to the upper rear heat shield and engine guard strap (Fig. 14). See torque table.

3. Tighten the bagger mounting bracket to the side of the rear bumper (Fig. 12). See torque table.

4. Tighten the bagger mounting bracket to the side frame (Fig. 11). See torque table.

5. Install the drive wheels.

6. Lower the machine onto the drive wheels.

Installing the Bagger

1. Remove the four bolts in the skid plate (Fig. 16).
2. Remove the skid plate (Fig. 16). This will make it easier to install the bagger belt.
3. Install the bagger onto the bagger mounting bracket (Fig. 15).
4. Install clevis pins into the bagger and bagger mounting bracket. Secure with hairpin cotter pins (Fig. 15).

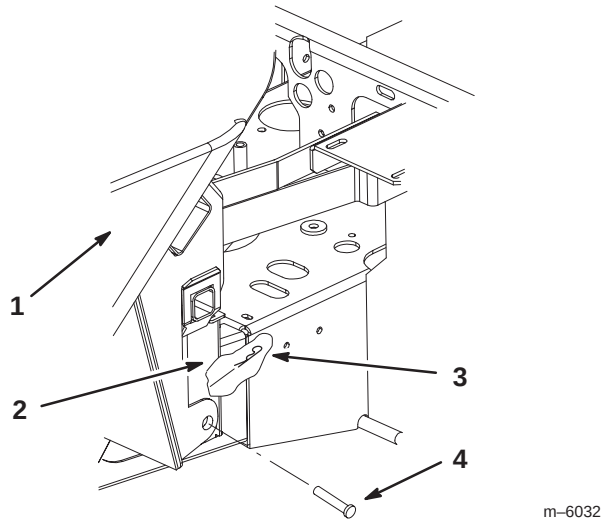

Figure 15

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

Installing the Tensioner Pulley and Belt

1. Install the bagger belt onto the clutch drive pulley (Fig. 18).
2. Route the bagger belt onto the bagger pulley (Figures 16 and 18).
3. Remove the bolt, washer, spacer, and locknut from the tensioner pulley arm (Fig. 16).

Note: Make sure the pulley is under the traction unit frame when installing the tensioner pulley arm.

4. Install the tensioner pulley arm to the bagger with the previously removed bolt, washer, spacer, and locknut (Fig. 16).

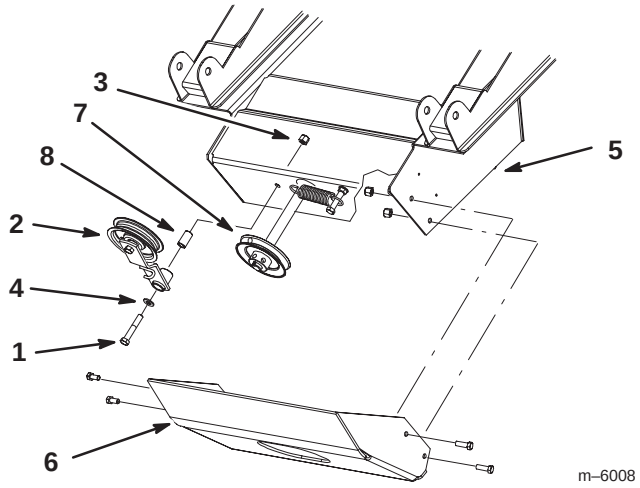

Figure 16

1. Bolt, 3/8 x 2–1/4 in.
2. Tensioner pulley and arm
3. Lock nut, 3/8 in.
4. Washer, 3/8 in.
5. Bagger
6. Skid plate
7. Bagger pulley
8. Spacer

5. Install the tensioner spring onto the bolt attached to the bagger (Fig. 18).

Note: Make sure the bolt for the spring is set at 2 in. (Fig. 17).

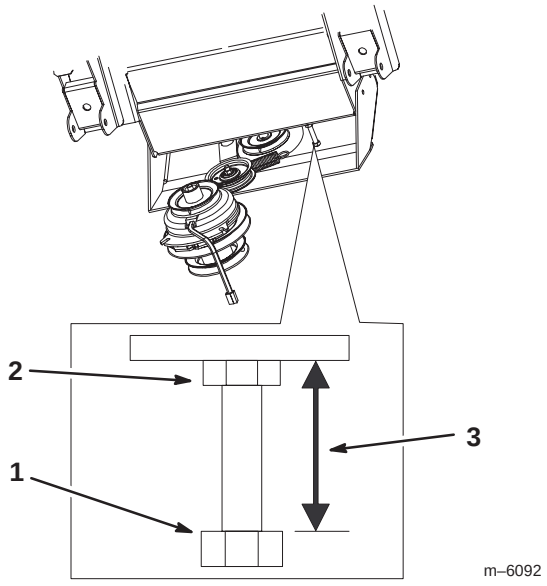

Figure 17

1. Bolt for spring
2. Jam nut
3. 2 in.

6. Install the spring onto the tensioner pulley arm hook (Fig. 18).

7. Install the skid plate (Fig. 16).

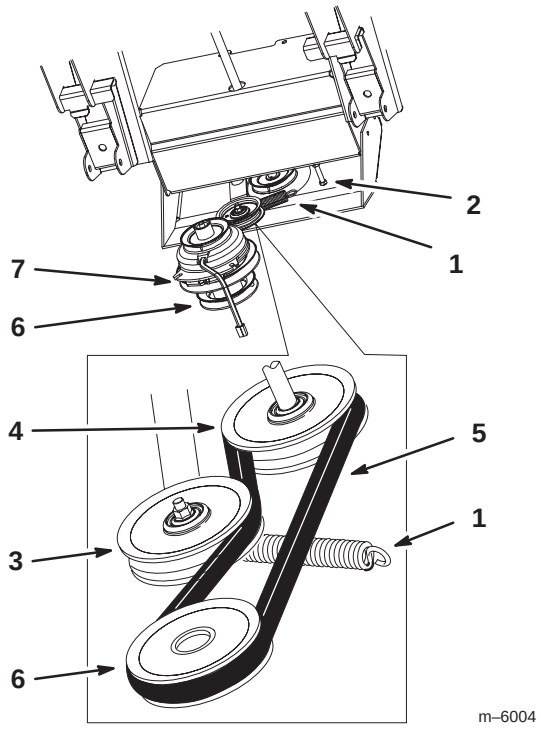

Figure 18

1. Tensioner spring
2. Bolt for spring
3. Bagger tensioner pulley
4. Bagger pulley
5. Bagger belt
6. Clutch drive pulley
7. Clutch

Installing the Weights

Note: There are left hand and right hand weights and weight brackets (Fig. 20).

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 weights.**

1. Remove the two outside bolts that connect the front floorpan to the carrier frame (Fig. 19). Save this hardware.
2. Remove the 4 bolts and washers that hold the front floorpan to the front frame (Fig. 19). Save this hardware.

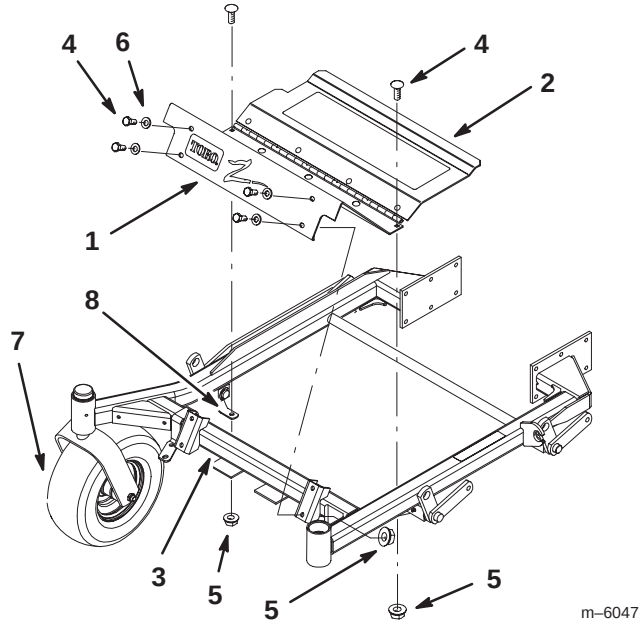

Figure 19

1. Front floorpan
2. Footrest
3. Front frame
4. Bolt
5. Nut
6. Washer
7. Front caster wheel
8. Carrier frame

3. With the two holes towards the front, place the left and right–hand weight brackets onto the front frame (Fig. 20).
4. In the weight bracket rear holes, install the weights with 4 bolts (3/8 x 6 in.), 8 flat washers (3/8 in.), 4 lock washers (3/8 in.), and 4 nuts (3/8 in.) (Fig. 20).

Note: Only the two inside weight brackets use the center holes for installing the weights.

5. In the weight bracket center holes, install 2 bolts (3/8 x 3/4 in.) into the weights (Fig. 20).

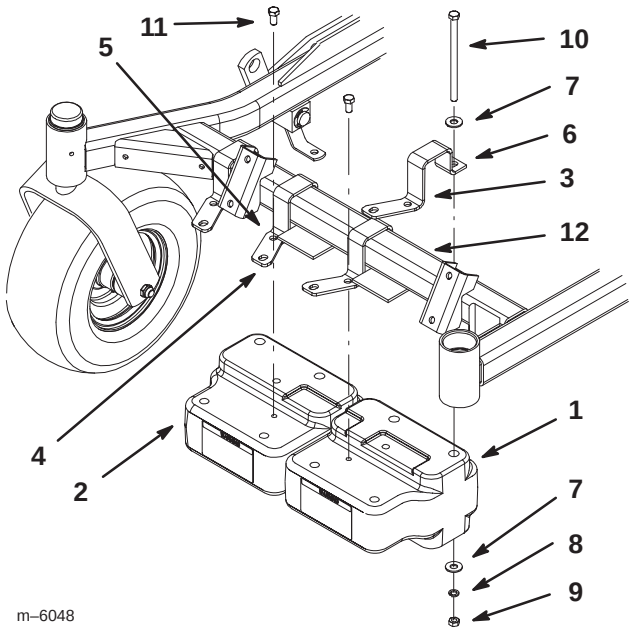

Figure 20

1. Weight—left
2. Weight—right
3. Weight bracket—left
4. Weight bracket—right
5. Center hole
6. Rear hole
7. Flat washer, 3/8 in.
8. Lock washer, 3/8 in.
9. Nut, 3/8 in.
10. Bolt, 3/8 in. x 6 in.
11. Bolt, 3/8 in. x 3/4 in.
12. Front frame

6. Install the two outside bolts that connect the front floorpan to the carrier frame (Fig. 19).

7. Install **only the top 2 bolts** that hold the front floorpan to the front frame (Fig. 19). Use existing hardware.

8. Using the bottom holes that hold the front floorpan, install the support plate to the front of the machine with 2 new bolts (5/16 x 1 in.), 2 existing flat washers (5/16 in.), and 2 existing flange nuts (5/16 in.) (Fig. 21).

9. Using the support plate as a template, drill one 5/16 in. hole into the front floorpan (Fig. 21).

10. Install a self tapping bolt (3/8 x 5/8 in.) into support plate and hole just drilled (Fig. 21).

11. Install the support plate to the brackets and weights with 4 bolts (3/8 x 4–1/4 in.), 8 flat washers (3/8 in.), 4 lock washers (3/8 in.), and 4 nuts (3/8 in.) (Fig. 21).

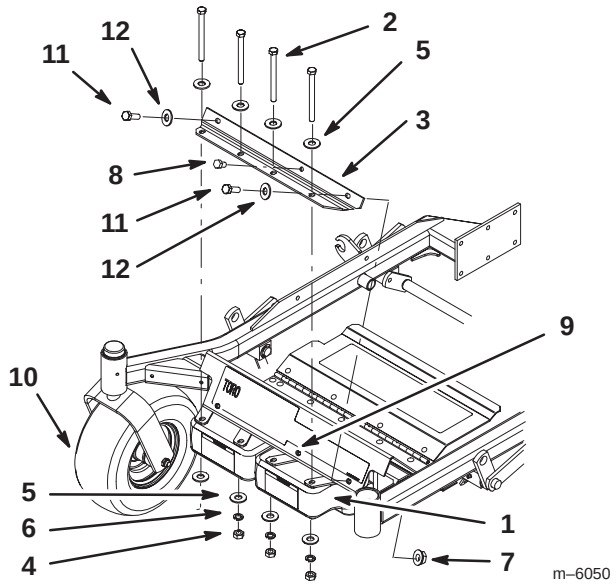

Figure 21

1. Weight
2. Bolt, 3/8 x 4–1/4 in.
3. Support plate
4. Nut, 3/8 in.
5. Flat washer, 3/8 in.
6. Lock washer, 3/8 in.
7. Flange nut
8. Self tapping bolt, 3/8 x 5/8 in.
9. Hole to drill
10. Front caster wheel
11. Bolt, 5/16 x 1 in.
12. Existing flat washer, 5/16 in.

Installing the Boot and Discharge Tubes

1. Disengage the PTO, set the parking brake, and chock or block the drive wheels.

2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

3. Remove the locknut, bolt, spring and spacer holding the grass deflector to the mower (Fig. 27).

4. Remove the grass deflector from the mower (Fig. 27). Save grass deflector and hardware for use when in side discharge mode.

5. Position the boot's front hook into the front slot on the mounting bracket (Fig. 22).

6. Place the rear hook over the rear of the mounting bracket (Fig. 22).

7. Install the upper tube into the bagger (Fig. 22).

8. Slide the clamp onto the middle tube (Fig. 22).

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. 22).

10. Tighten the clamp around the upper and middle tube connection (Fig. 22).

11. Slide the middle tube onto the boot and latch them together (Fig. 22).

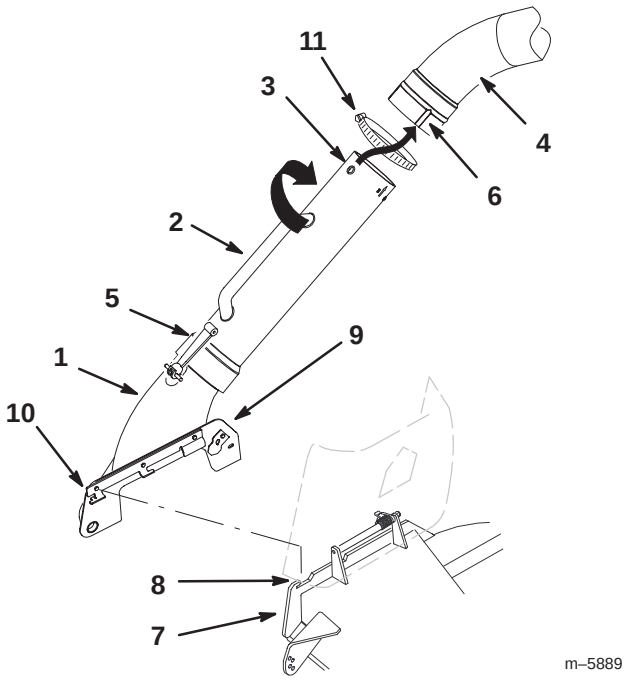

Figure 22

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

Adjusting the Handle

The bagger lever needs to be adjusted to remove slack in the bagger cable.

1. Loosen the nuts on both sides of the stop bracket (Fig. 23).

2. Adjust the stop bolt until there is **no** slack in the bagger cable (Fig. 23).

3. Tighten the nuts on both sides of the stop bracket (Fig. 23).

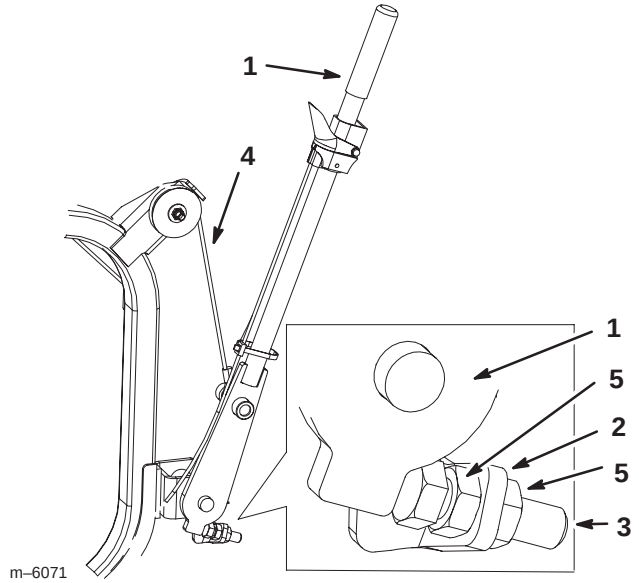

Figure 23

1. Bagger lever
2. Stop bracket
3. Stop bolt
4. Bagger cable
5. Nut

Checking the Tire Pressure

Check the air pressure in the front caster wheel (Fig. 21) and rear tires (Fig. 24). Use the following tires pressure when the bagger is installed.

Pressure: Rear tires—20 psi (138 kPa)
Front caster wheels—35 psi (241 kPa)

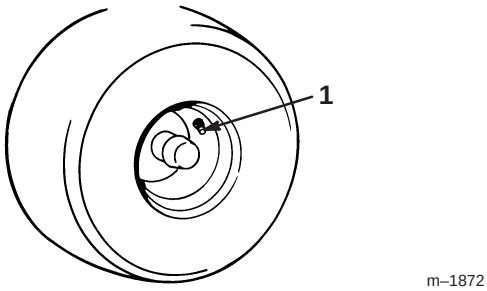

Figure 24

1. Valve stem

Operation

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

Important Set the parking brake, and chock or block the tires when leaving the machine unattended, even if just for a few minutes.

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.**
- **Set the parking brake and chock or block the tires.**

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.

- **Always install the grass deflector when removing the bagger and changing to side discharge mode.**
- **If the grass deflector is ever damaged, replace it immediately. The grass deflector routes material down toward the turf.**
- **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 o*ff*. Also remove the key and pull the wire off of the spark plug(s).**

Caution

Children or bystanders may be injured if they move or attempt to operate the machine while it is unattended.

Always remove the ignition key, set the parking brake and chock or block tires when leaving the machine unattended, even if just for a few minutes.

Opening the Bagger

1. Disengage the PTO.
2. Reach back, squeeze and release the latch lever against the bagger lever (Fig. 25). This will open the latch that secures the bagger door.
3. Pull down on the bagger arm to allow the grass to fall out of the bagger (Fig. 25).
4. Return the bagger arm to upright position in one quick motion. Make sure the bagger door fully engages into the latch (Fig. 25).

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

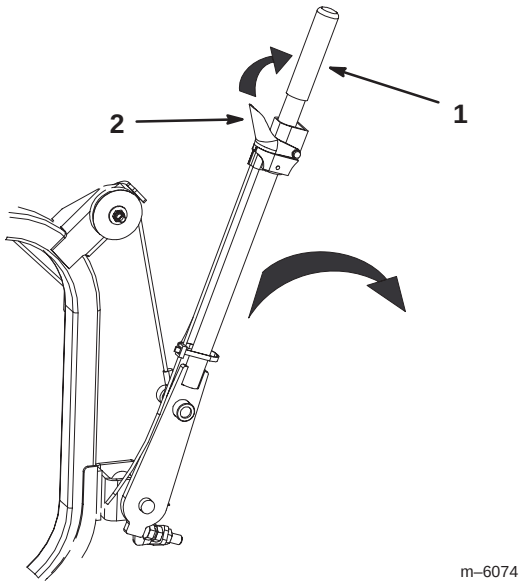

Figure 25

1. Bagger lever
2. Latch lever

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.**

1. Disengage the PTO, set the parking brake, and chock or block the tires.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

3. Open the bagger; refer to Opening the Bagger, page 15.

4. With the bagger open, pull out the holding pin and insert into the hole in the hinge (Fig. 26).

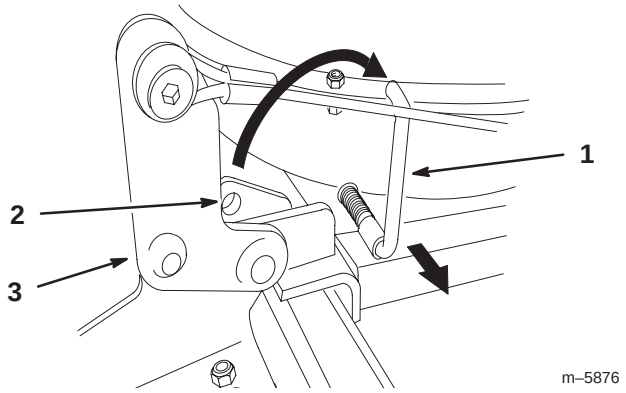

Figure 26

1. Holding pin
2. Hole in hinge
3. Hinge

Clearing Obstructions From the Bagger System

1. Empty the bagger.
2. Disengage the PTO, set the parking brake, and chock or block the drive wheels.
3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Remove the complete tube assembly from the bagger and boot.
5. Remove the boot from the mower.
6. Using a stick or similar object, carefully remove and clear the obstruction from the mower, upper tube, middle tube, or boot assembly.
7. After you remove the obstruction, install the complete bagger system and resume operation. Refer to Installing the Discharge Tubes on page 13.

Removing the Discharge Tubes

Note: Remember to install the grass deflector when in side discharge mode. Refer to Installing the Grass Deflector on page 16.

1. Disengage the PTO, set the parking brake, and chock or block the drive wheels.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Unlatch the middle tube from the boot and slide apart (Fig. 22).
4. Remove the tube assembly from the bagger (Fig. 22).
5. Remove the boot from the mounting bracket (Fig. 22).
6. If you are changing to side discharge mode, **install the grass deflector**. Refer to Installing the Grass Deflector on page 16.

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 PTO, set the parking brake, and chock or block the drive wheels.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the discharge tubes. Refer to removing The Discharge Tubes on page 16.
4. Remove hairpin cotters and clevis pins from the bagger and bagger bracket (Fig. 15).
5. Remove the skid plate (Fig. 16).
6. Remove the bagger belt and bagger tensioner arm with the pulley (Fig. 18).
7. Remove the bagger from the bagger mounting bracket (Fig. 15).
8. Install the bagger tensioner arm with the pulley and the skid plate (Fig. 16).
9. **Install the grass deflector.** Refer to Installing the Grass Deflector on page 16.
10. Remove **both front weights** (Figures 20 and 21).

Installing the Grass Deflector

The grass deflector spring will have either an **L** end or a straight end (Fig. 27).

Note: Make sure the grass deflector is installed when the bagger and tubes are removed.

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 cover plate, a mulch plate, grass deflector or a grass chute and catcher.

1. Place spacer and spring onto grass deflector. Place the **L** or the straight end of spring behind deck edge.

Note: Make sure the **L** or the straight end of spring is installed behind deck edge before installing the bolt as shown in figure 27.

2. Install bolt and nut. Place **J** hook end of spring around grass deflector (Fig. 27).

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

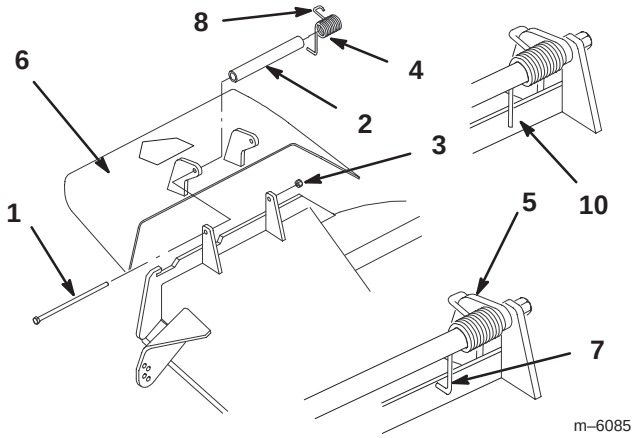

Figure 27

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 that 2 to 3 inches (51 to 76 mm) or 1/3 of the grass height, which ever 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 machines 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.

Bagging Wet Grass

If possible, always try to cut grass when it is dry. Wet grass can cause plugging.

Reducing Plugging

To avoid plugging the bagging system, reduce ground speed and mow the grass at a high height-of-cut, then lower the mower to your normal cutting height and repeat the bagging process.

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.

- **Always install the grass deflector when removing the bagger and changing to side discharge mode.**
- **If the grass deflector is ever damaged, replace it immediately. The grass deflector routes material down toward the turf.**
- **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 o*ff*. Also remove the key and pull the wire off of the spark plug(s).**

Bagging Blades

In certain mowing conditions, improved bagging performance can be achieved by using bagging blades. Contact an Authorized Service Dealer for the proper blades for different mowing conditions.

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, set the parking brake and chock or block the wheels to prevent the machine from slowly rolling.

Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure
Each Use	• Screen—clean
8 Hours	• Bagger—clean
First 10 Hours	• Bagger—inspect
40 Hours	• Bagger idler arm—grease
100 Hours	• Bagger—inspect
Storage Service	• Belts—check for wear/cracks • Bagger—inspect • Bagger—clean

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

Cleaning the Screen

The screen needs to be cleaned before each use. In wet grass it will need to be cleaned more often.

1. Disengage the PTO, set the parking brake, and chock or block the drive wheels.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Open the bagger and hold the bagger door open. Refer to Holding the Bagger Door Open on page 15.
4. Clean the debris from the screens.
5. 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.

Note: With all parts installed, start and run the machine for a minute to assist in drying.

Checking the Bagger Belt

Check the bagger belt for wear and cracks at when storing the bagger.

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 PTO, set the parking brake, and chock or block the drive wheels.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check the upper tube, lower tube, and the boot assembly. Replace these parts if they are cracked or broken.
4. Check the bagger, bagger frame, and screen. Replace any parts that are cracked or broken.
5. 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.

Storage

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

Troubleshooting

Problem	Possible Causes	Corrective Action
Abnormal vibration.	1. Cutting blade(s) is/are bent or unbalanced.	1. Install new cutting blade(s).
	2. Blade mounting bolt is loose.	2. Tighten blade mounting bolt.
	3. Loose bagger pulley or pulley assembly.	3. Tighten the appropriate pulley.
	4. Bagger belt is worn or damaged.	4. Replace the bagger belt.
	5. Bagger impeller is out of balance.	5. Contact Authorized Service Dealer.
	6. Blade interferes with mower baffles.	6. Do not use machine. Replace bent blades and/or baffles.
Reduced bagging performance.	1. Low engine speed.	1. Always operate the bagger at full throttle.
	2. Plugged fan screen.	2. Remove debris, leaves or grass clippings from the fan screen.
	3. Loose bagger belt.	3. Tighten the bagger belt.
	4. Broken seal between hopper and rear door.	4. Ensure the rear door is latched.
	5. A plugged boot.	5. Locate and remove plugged debris.
	6. Improper seal around the upper tube going into the hopper.	6. Ensure that there is a good seal at hopper.
	7. Full hopper.	7. Empty hopper.

Problem	Possible Causes	Corrective Action
Boot and tubes plug too frequently.	1. Hopper is too full.	1. Dump more frequently.
	2. Low engine speed.	2. Always operate the bagger at full throttle.
	3. Grass is too wet.	3. Cut grass when dry.
	4. Grass is too long.	4. Cut no more that 2–3 inches or 1/3 of the grass height, which ever is less.
	5. Plugged fan screen.	5. Remove debris, leaves or grass clippings from the fan screen.
	6. Ground speed is too fast.	6. Drive slower at full throttle.
	7. Worn belt.	7. Replace belt.
Debris blowout.	1. Hopper is too full.	1. Dump more frequently.
	2. Ground speed is too fast.	2. Drive slower at full throttle.
	3. Center tunnel baffle not installed.	3. Install the center baffle when bagging leaves.
	4. Mower is not leveled.	4. See the mower operator's manual for leveling the mower.


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