Form No. 3463-865 Rev A

TORO®

Count on it.

Operator's Manual

Grapple Bucket

Compact Tool Carriers

Model No. 22590—Serial No. 320000000 and Up
Model No. 23176—Serial No. 323000000 and Up

Register at www.Toro.com.
Original Instructions (EN)

CE UK CA

3463-865

Introduction

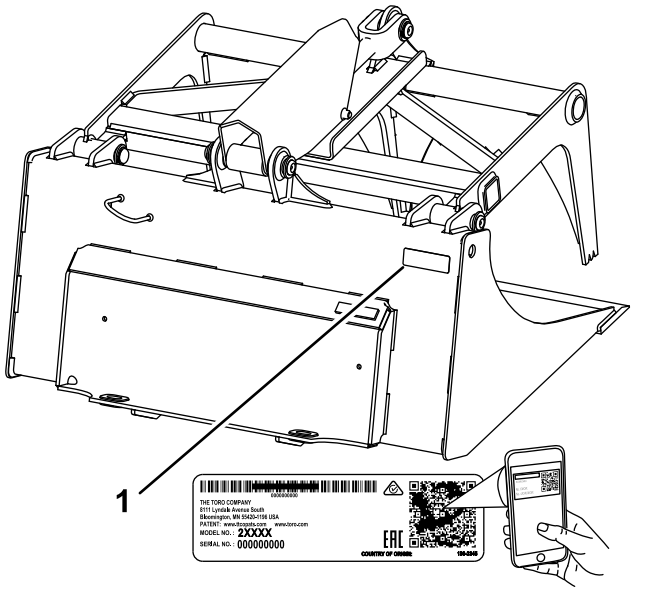
The grapple bucket is a load-bearing attachment intended to be used on a Toro compact tool carrier. It is designed primarily for grabbing, dragging, lifting, and removing materials without picking up topsoil on residential or commercial properties. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

Visit www.Toro.com for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

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 identifies the location of the model and serial numbers on the product for model 22590. Figure 2 identifies the location of the model and serial numbers on the product for model 23176. Write the numbers in the space provided.

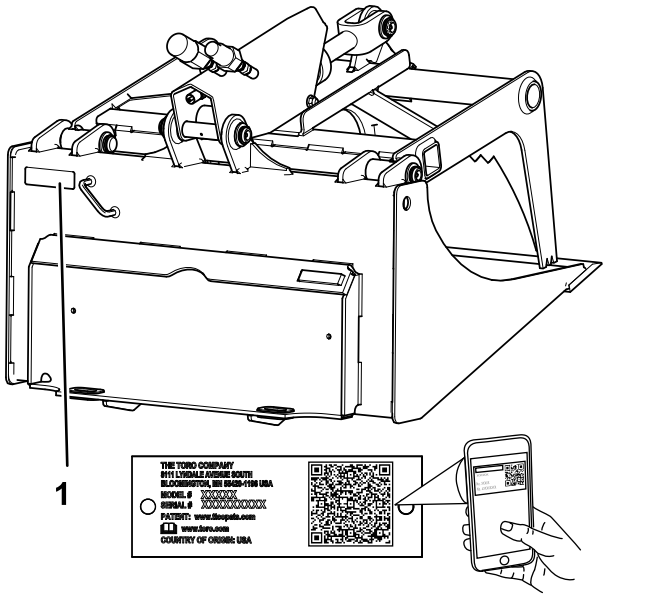
Important: **With your mobile device, you can scan the QR code on the serial number decal (if equipped) to access warranty, parts, and other product information.**



g321300

Figure 1

1. Model 22590 model and serial number location



g446876

Figure 2

1. Model 23176 model and serial number location

Model No. _____

Serial No. _____

This manual identifies potential hazards and has safety messages identified by the safety-alert symbol (Figure 3), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



g000502

Figure 3

Safety-alert symbol

This manual uses 2 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

⚠ DANGER

There may be buried utility lines in the work area. Digging into them may cause a shock or an explosion.

Have the property or work area marked for buried lines and do not dig in marked areas. Contact your local marking service or utility company to have the property marked (for example, in the US, call 811 or in Australia, call 1100 for the nationwide marking service).

General Safety

Always follow all safety instructions to avoid serious injury or death.

- Do not exceed the rated operating capacity, as the machine may become unstable, which may result in loss of control.
- **Do not transport an attachment with the arms raised or extended (if applicable)**. Always transport the attachment close to the ground; refer to Transport Position (page 9).
- Have the property or work area marked for buried lines and other objects, and do not dig in marked areas.
- Read and understand the content of this *Operator's Manual* before starting the machine.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Never allow children or untrained people to operate the machine.
- Keep your hands and feet away from the moving components and attachments.
- Do not operate the machine without the guards and other safety protective devices in place and working on the machine.
- Keep bystanders and pets away from the machine.
- Stop the machine, shut off the machine, and remove the key before servicing, fueling, or unclogging the machine.

Improperly using or maintaining this machine can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety-alert symbol ⚠, which means Caution, Warning, or Danger—personal safety instruction. Failure to comply with these instructions may result in personal injury or death.

Slope Safety

- **Operate the machine up and down slopes with the heavy end of the machine uphill.** Weight distribution changes with attachments. An empty load-bearing attachment makes the rear of the machine the heavy end, and a full load-bearing attachment makes the front of the machine the heavy end. Most other attachments make the front of machine the heavy end.
- Raising or extending (if applicable) the loader arms on a slope affects the stability of the machine. Keep the loader arms in the lowered and retracted position when on slopes.
- Slopes are a major factor related to loss of control and tip-over accidents, which can result in severe injury or death. **Operating the machine on any slope or uneven terrain requires extra caution.**
- Establish your own procedures and rules for operating on slopes. These procedures must include surveying the site to determine which slopes are safe for machine operation. Always use common sense and good judgment when performing this survey.
- Slow down and use extra care on hillsides. Ground conditions can affect the stability of the machine.
- Avoid starting or stopping on a slope. If the machine loses traction, proceed slowly, straight down the slope.
- Avoid turning on slopes. If you must turn, turn slowly and keep the heavy end of the machine uphill.
- Keep all movements on slopes slow and gradual. Do not make sudden changes in speed or direction.
- If you feel uneasy operating the machine on a slope, do not do it.
- Watch for holes, ruts, or bumps, as uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Use caution when operating on wet surfaces. Reduced traction could cause sliding.
- Evaluate the area to ensure that the ground is stable enough to support the machine.
- Use caution when operating the machine near the following:
  - Drop-offs
  - Ditches
  - Embankments
  - Bodies of water

  The machine could suddenly roll over if a track goes over the edge or the edge caves in. Maintain a safe distance between the machine and any hazard.
- Do not remove or add attachments on a slope.
- Do not park the machine on a hillside or slope.

Grapple Bucket Safety

- Always lower the attachment, close the jaws, and shut off the machine each time you leave the operating position.
- When lifting the attachment, keep it level and prevent the load from spilling backward.
- Always close the jaws of the attachment when not in use.
- Always grab and lift long items near the center.
- Do not use the jaws for hooking and/or pulling. Always clamp the material securely.

Maintenance and Storage Safety

- Check fasteners at frequent intervals for proper tightness to ensure that the equipment is in safe operating condition.
- Refer to this *Operator's Manual* for important details if you store the attachment for an extended period of time.
- Maintain or replace safety and instruction labels, as necessary.

Safety and Instructional Decals

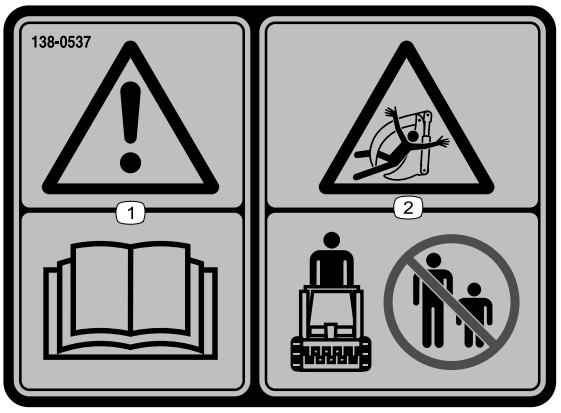
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



decal125-6110

125-6110

1. Crushing hazard—do not stand under any part of the machine.



decal138-0537

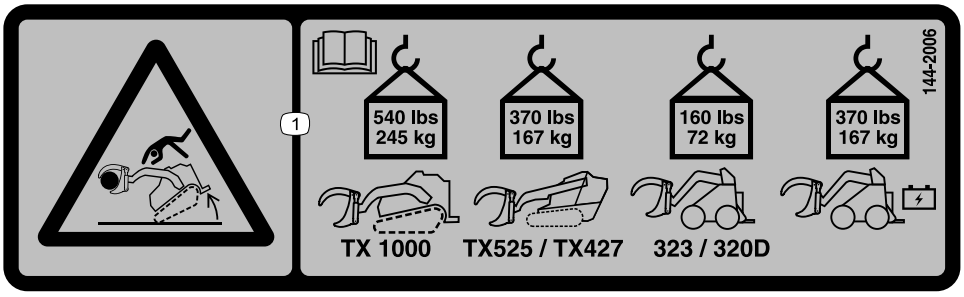
138-0537

1. Warning—read the *Operator's Manual*.
2. Entanglement hazard, grapple—keep bystanders away.



decal133-8061

133-8061



decal144-2006

144-2006

1. Tipping hazard—read the *Operator's Manual*; the maximum load capacity for the TX1000 is 245 kg (540 lb); the maximum load capacity for the TX525/TX427 is 167 kg (370 lb); the maximum load capacity for the Dingo 323/323-D is 72 kg (160 lb); the maximum load capacity for the e-Dingo is 167 kg (370 lb).

Product Overview

Specifications

Note: Specifications and design are subject to change without notice.

Model 22590

Width	85.6 cm (33.5 inches)
Length	78.2 cm (30.8 inches)
Height	53.6 cm (21.1 inches)
Weight	115 kg (253 lb)
Maximum load rating	
TX 1000	245 kg (540 lb)
TX 525 and TX 427	167 kg (370 lb)
323 and 320-D Compact Tool Carrier	72 kg (160 lb)
e-Dingo	167 kg (370 lb)

Model 23176

Width	76.2 cm (30 inches)
Length	79 cm (31.1 inches)
Height	54.9 cm (21.6 inches)
Weight	107 kg (235 lb)
Maximum load rating	
TX 1000	245 kg (540 lb)
TX 525 and TX 427	167 kg (370 lb)
323 and 320-D Compact Tool Carrier	72 kg (160 lb)
e-Dingo	167 kg (370 lb)

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Maximum Material Density at Capacity

The density of the materials moved by the bucket varies and, therefore, so does the amount of material that the bucket can carry before reaching the maximum load rating. The first 2 tables lists the density of material that can be carried, both heaped and struck (i.e., leveled off), in the bucket. The Material Density table lists common materials and their densities.

TX 1000

Bucket Capacity	Maximum Density
Struck (leveled) bucket	3962 kg/m^3 (259 lb/ft^3)
Heaped bucket	3170 kg/m^3 (212 lb/ft^3)

Note: Maximum density = Maximum load rating / Capacity

TX 525 and TX 427

Bucket Capacity	Maximum Density
Struck (leveled) bucket	2262 kg/m^3 (148 lb/ft^3)
Heaped bucket	1810 kg/m^3 (121 lb/ft^3)

323 and 320-D Compact Tool Carrier

Bucket Capacity	Maximum Density
Struck (leveled) bucket	1185 kg/m^3 (74 lb/ft^3)
Heaped bucket	961 kg/m^3 (60 lb/ft^3)

e-Dingo

Bucket Capacity	Maximum Density
Struck (leveled) bucket	2611 kg/m^3 (163 lb/ft^3)
Heaped bucket	208 kg/m^3 (13 lb/ft^3)

Material Density

Material	Density (Approximate)
Caliche	1250 kg/m³ (78 lb/ft³)
Clay:	
Natural bed	1600 kg/m³ (104 lb/ft³)
Dry	1480 kg/m³ (93 lb/ft³)
Wet	1660 kg/m³ (104 lb/ft³)
With gravel, dry	1420 kg/m³ (89 lb/ft³)
With gravel, wet	1540 kg/m³ (96 lb/ft³)
Coal:	
Anthracite, broken	1100 kg/m³ (69 lb/ft³)
Bituminous, broken	830 kg/m³ (52 lb/ft³)
Earth:	
Dry, packed	1510 kg/m³ (94 lb/ft³)
Wet, packed	1600 kg/m³ (100 lb/ft³)
Loam	1250 kg/m³ (78 lb/ft³)
Granite, broken or large crushed	1660 kg/m³ (104 lb/ft³)
Gravel:	
Dry	1510 kg/m³ (94 lb/ft³)
Pit run (graveled sand)	1930 kg/m³ (120 lb/ft³)
Dry, 13 to 51 mm (1/2 to 2 inch)	1690 kg/m³ (106 lb/ft³)
Wet, 13 to 51 mm (1/2 to 2 inch)	2020 kg/m³ (126 lb/ft³)
Limestone, broken or crushed	1540 kg/m³ (96 lb/ft³)
Sand:	
Dry	1420 kg/m³ (89 lb/ft³)
Wet	1840 kg/m³ (115 lb/ft³)
With gravel, dry	1720 kg/m³ (107 lb/ft³)
With gravel, wet	2020 kg/m³ (126 lb/ft³)
Sandstone, broken	1510 kg/m³ (94 lb/ft³)
Shale	1250 kg/m³ (78 lb/ft³)
Slag, broken	1750 kg/m³ (109 lb/ft³)
Stone, crushed	1600 kg/m³ (100 lb/ft³)
Topsoil	950 kg/m³ (59 lb/ft³)

Operation

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

Installing and Removing the Attachment

Refer to the *Operator's Manual* for the traction unit for the installation and removal procedure.

Important: **Before installing the attachment, position the machine on a level surface, ensure that the mount plates are free of any dirt or debris, and ensure that the pins rotate freely. If the pins do not rotate freely, grease them.**

Note: Always use the traction unit to lift and move the attachment.

⚠ WARNING

If you do not fully seat the quick-attach pins through the attachment mount plate, the attachment could fall off the machine, crushing you or bystanders.

Ensure that the quick-attach pins are fully seated in the attachment mount plate.

⚠ WARNING

Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Fluid injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury; otherwise, gangrene may result.

- **Ensure that all hydraulic-fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**
- **Keep your body and hands away from pinhole leaks or nozzles that eject high-pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks; never use your hands.**

⚠ CAUTION

Hydraulic couplers, hydraulic lines/valves, and hydraulic fluid may be hot. If you contact hot components, you may be burned.

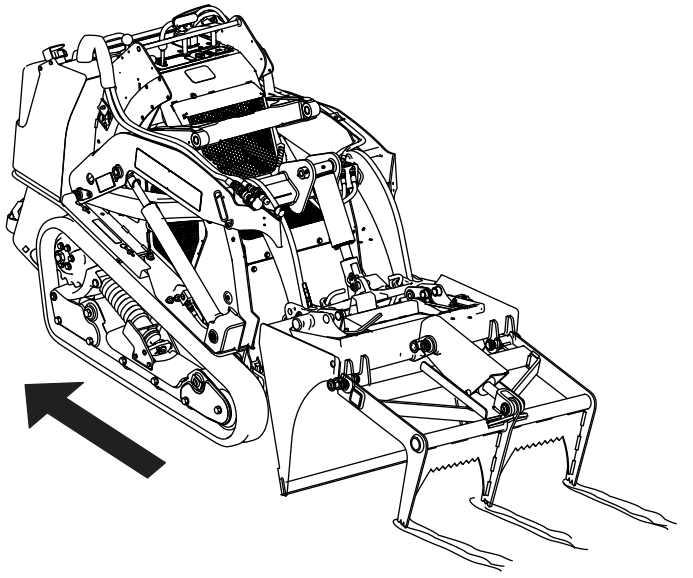
- **Wear gloves when disconnecting the hydraulic couplers.**
- **Allow the machine to cool before touching hydraulic components.**
- **Do not touch hydraulic fluid spills.**

Grapple Bucket Operation and Control

After you attach the grapple bucket to the mount plate of the traction unit, ensure that the hydraulic couplers are connected. Start and run the machine at full throttle (maximum engine speed).

Digging/Raking with the Jaw

1. To dig or rake using the jaw, open the jaw all the way, and tilt the attachment forward until the jaw teeth touch (or penetrate) the ground.
2. Drive the machine rearwards. To rake up loose sticks and other debris, which you can then grab with the jaws, place the teeth on the ground. To dig furrows in the earth and break up the sod, penetrate the ground with the teeth (Figure 4).



g324965

Figure 4

3. You can also use this method to rip out bushes. Place the upper jaw teeth into the ground on the far side of the bush, close the jaws around the bush and roots, then tilt the attachment rearward to rip the bush out of the ground.

Bucket Operation

With the jaws open, you can use this attachment as a standard bucket.

When loading material, always have the bucket level to the ground and move forward into the material to be lifted. When the bucket is full, tilt it rearward to decrease the lifting resistance when you lift the load.

When transporting a load, keep the bucket as close to the ground as possible.

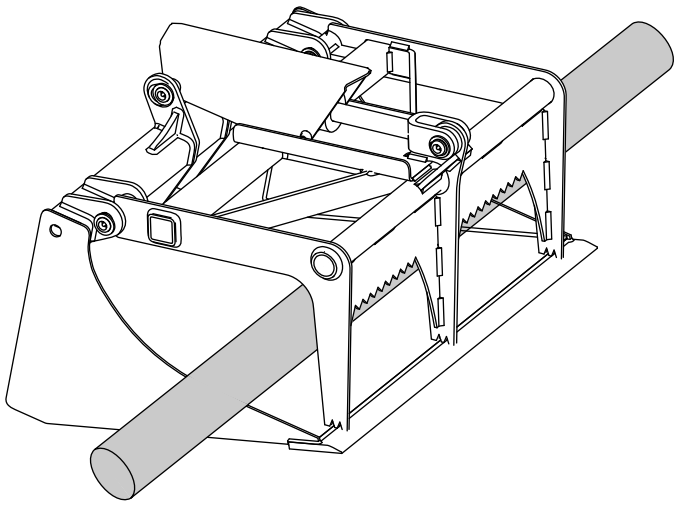
Grapple Operation

Use the jaws for picking up material by closing them over objects or materials to be transported (Figure 5).

Important: **Grab objects from the center. Never lift more than the rated lift capacity of the attachment as listed on the decals. When transporting a load, keep it as close to the ground as possible with the loader arms retracted.**

Important: **If you are lifting more delicate or hollow items, such as crates, close the jaws with care so as not to crush the item being moved.**

Note: Take care when using this method that you do not crush an object that you are picking up between the jaws.



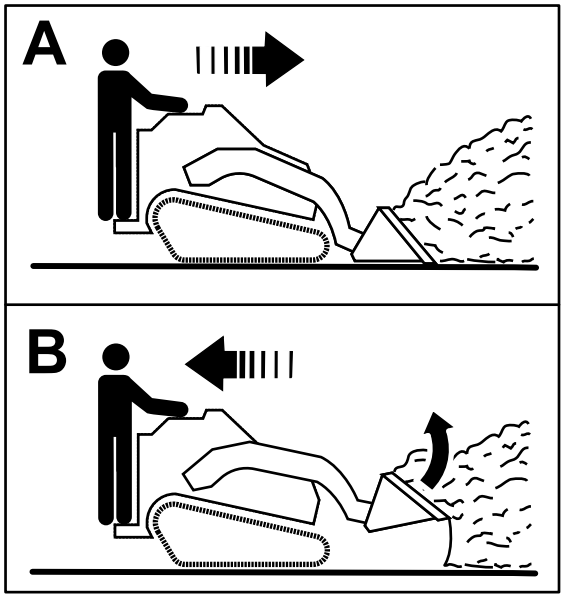
g320031

Figure 5

Filling the Bucket

1. Position the bucket level to the ground.
2. Drive forward and insert the bucket into the pile of material.
3. When the bucket is full, drive the machine in reverse and gently tilt the bucket rearward to decrease the lifting resistance when you lift the load.

   Important: **Always carry loads close to the ground; refer to Transport Position (page 9).**

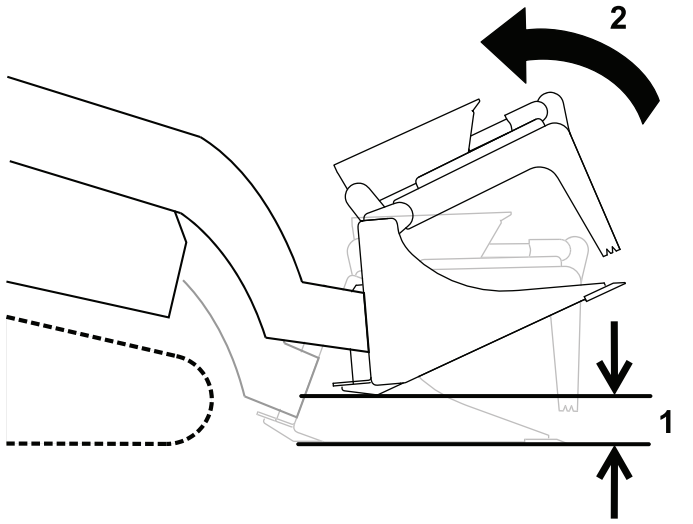


g266856

Figure 6

Transport Position

When transporting a load, keep the attachment as close to the ground as possible, no more than 15 cm (6 inches) above the ground. Tilt it rearward to keep the load level.



g319918

Figure 7

1. No more than 15 cm (6 inches) above the ground
2. Tilt the load rearward

Maintenance

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
Before each use or daily	• Lubricate the bucket. • Check the hydraulic lines for leaks, loose fittings, kinked lines, loose mounting supports, wear, weather, and chemical deterioration. • Ensure that all fasteners are securely tightened. • Clean the areas around the bucket cylinder and mount plate pivot. • Check for wear of pins, linkages, and cutting edges.
Every 200 hours	• Inspect the hydraulic hoses and replace them if they are damaged.
Before storage	• Inspect the hydraulic system for leaks and loose fittings. • Inspect the hydraulic hoses and replace them if they are damaged. • Paint chipped or worn surfaces.

Lubricating the Bucket

Service Interval: Before each use or daily

Using a grease gun, pump general purpose grease into each of the 4 grease fittings on the grapple bucket until the grease begins to ooze (Figure 8). Wipe away any excess grease with a shop cloth.

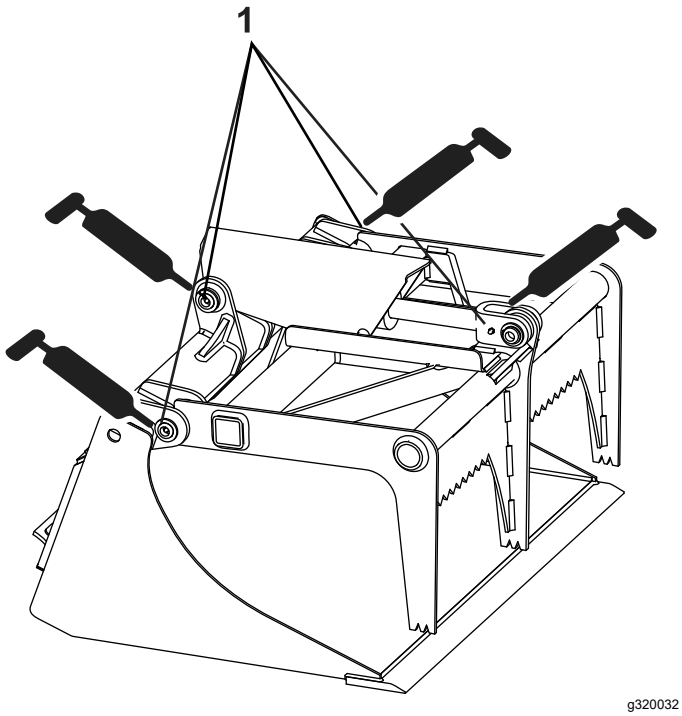


Figure 8
Left side shown

1. Grease fittings

Checking the Hydraulic Lines

Service Interval: Before each use or daily

⚠ WARNING

Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Fluid injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury; otherwise, gangrene may result.

- **Keep your body and hands away from pinhole leaks or nozzles that eject high-pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks; never use your hands.**

Storage

1. Before long-term storage, wash the attachment with mild detergent and water to remove dirt and grime.
2. Check and tighten all hardware. Repair or replace any part that is damaged or worn.
3. Ensure that all of the hydraulic hose couplers are connected together to prevent contamination of the hydraulic system.
4. Paint all scratched or bare metal surfaces.

   Note: Paint is available from your Authorized Service Dealer.
5. Grease the pivot points; refer to Lubricating the Bucket (page 10).
6. Store the attachment in a clean, dry garage or storage area.
7. Cover the bucket to protect it and keep it clean.

California Proposition 65 Warning Information

What is this warning?

You may see a product for sale that has a warning label like the following:



WARNING: Cancer and Reproductive Harm—www.p65Warnings.ca.gov.

What is Prop 65?

Prop 65 applies to any company operating in California, selling products in California, or manufacturing products that may be sold in or brought into California. It mandates that the Governor of California maintain and publish a list of chemicals known to cause cancer, birth defects, and/or other reproductive harm. The list, which is updated annually, includes hundreds of chemicals found in many everyday items. The purpose of Prop 65 is to inform the public about exposure to these chemicals.

Prop 65 does not ban the sale of products containing these chemicals but instead requires warnings on any product, product packaging, or literature with the product. Moreover, a Prop 65 warning does not mean that a product is in violation of any product safety standards or requirements. In fact, the California government has clarified that a Prop 65 warning "is not the same as a regulatory decision that a product is 'safe' or 'unsafe.'" Many of these chemicals have been used in everyday products for years without documented harm. For more information, go to https://oag.ca.gov/prop65/faqs-view-all.

A Prop 65 warning means that a company has either (1) evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) has chosen to provide a warning based on its understanding about the presence of a listed chemical without attempting to evaluate the exposure.

Does this law apply everywhere?

Prop 65 warnings are required under California law only. These warnings are seen throughout California in a wide range of settings, including but not limited to restaurants, grocery stores, hotels, schools, and hospitals, and on a wide variety of products. Additionally, some online and mail order retailers provide Prop 65 warnings on their websites or in catalogs.

How do the California warnings compare to federal limits?

Prop 65 standards are often more stringent than federal and international standards. There are various substances that require a Prop 65 warning at levels that are far lower than federal action limits. For example, the Prop 65 standard for warnings for lead is 0.5 µg/day, which is well below the federal and international standards.

Why don't all similar products carry the warning?

- Products sold in California require Prop 65 labelling while similar products sold elsewhere do not.
- A company involved in a Prop 65 lawsuit reaching a settlement may be required to use Prop 65 warnings for its products, but other companies making similar products may have no such requirement.
- The enforcement of Prop 65 is inconsistent.
- Companies may elect not to provide warnings because they conclude that they are not required to do so under Prop 65; a lack of warnings for a product does not mean that the product is free of listed chemicals at similar levels.

Why does Toro include this warning?

Toro has chosen to provide consumers with as much information as possible so that they can make informed decisions about the products they buy and use. Toro provides warnings in certain cases based on its knowledge of the presence of one or more listed chemicals without evaluating the level of exposure, as not all the listed chemicals provide exposure limit requirements. While the exposure from Toro products may be negligible or well within the "no significant risk" range, out of an abundance of caution, Toro has elected to provide the Prop 65 warnings. Moreover, if Toro does not provide these warnings, it could be sued by the State of California or by private parties seeking to enforce Prop 65 and subject to substantial penalties.