



Count on it.

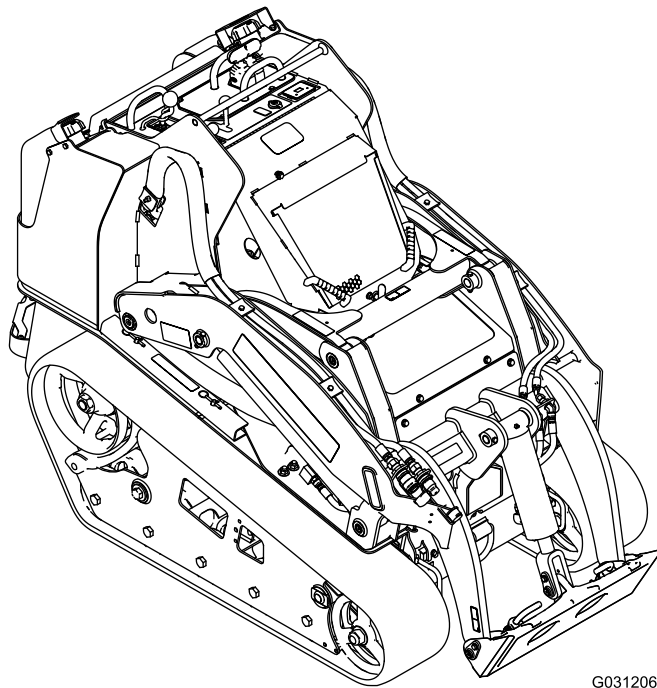
Operator's Manual

TX 1000 Compact Utility Loader

Model No. 22327—Serial No. 315000001 and Up

Model No. 22327G—Serial No. 315000001 and Up

Model No. 22328—Serial No. 315000001 and Up



G031206



⚠ WARNING

CALIFORNIA Proposition 65 Warning

This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects, or reproductive harm.

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

It is a violation of California Public Resource Code Section 4442 or 4443 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire.

The enclosed engine owner's manual is supplied for information regarding the US Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty. Replacements may be ordered through the engine manufacturer.

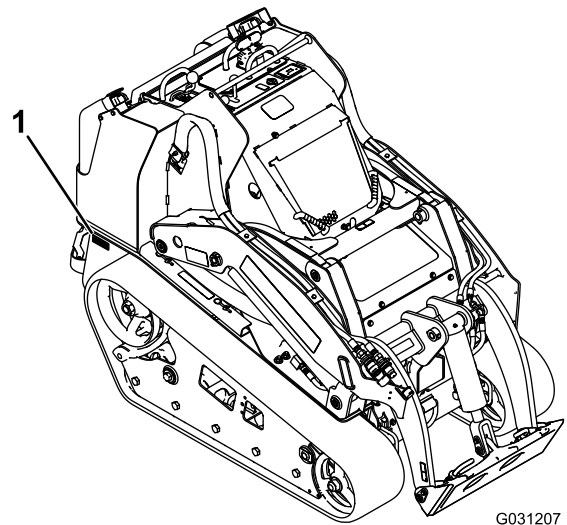
Introduction

This machine is a compact tool carrier intended to move various earth and materials for landscaping and construction work. It is designed to operate a wide variety of attachments each of which perform a specialized function.

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.

You may contact Toro directly at 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. Write the numbers in the space provided.



G031207

Figure 1

1. 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 2](#)), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



Figure 2

1. 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

Improper use or maintenance by the operator or owner 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 the instruction may result in personal injury or death.

Safe Operating Practices

This product is capable of amputating hands and feet. Always follow all safety instructions to avoid serious injury or death.

WARNING

Engine exhaust contains carbon monoxide, an odorless, deadly poison that can kill you.

Do not run the engine indoors or in an enclosed area.

Training

- Read the *Operator's Manual* and other training material. If the operator(s) or mechanic(s) cannot read English, it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people or property.

Preparation

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including gloves, safety glasses, long pants, substantial slip-resistant footwear, and hearing protection. Tie back long hair and do not wear jewelry.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys, and wire which can be thrown by the machine.
- Use extra care when handling fuels. They are flammable and vapors are explosive.
 - Use only an approved container
 - Never remove the fuel cap or add fuel with the engine running. Allow the engine to cool before refueling. Do not smoke.

- Never refuel or drain the machine indoors.

- Check that the operator's presence controls, safety switches, and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operation

- Only operate in good light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral and parking brake is engaged before starting the engine. Only start the engine from the operator's position.
- 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.
- Slow down and use caution when making turns, crossing roads and sidewalks, and changing directions on slopes.
- Never operate without the guards securely in place. Be sure all interlocks are attached, adjusted, and functioning properly.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, lower implements, disengage the auxiliary hydraulics, engage parking brake, shut off the engine before leaving the operator's position for any reason.
- Keep hands and feet away from moving attachments.
- Look behind and down before backing up to be sure of a clear path.
- Never carry passengers and keep pets and bystanders away.
- Slow down and use caution when making turns and crossing roads and sidewalks.
- Do not operate the machine when you are tired, ill, or under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Read all attachment manuals.
- Ensure that the area is clear of other people before operating the traction unit. Stop the traction unit if anyone enters the area.
- Never leave a running traction unit unattended. Always lower the loader arms, stop the engine, set the parking brake, and remove the key before leaving.
- Do not exceed the rated operating capacity, as the traction unit may become unstable which may result in loss of control.
- Do not carry a load with the arms raised. Always carry loads close to the ground.

- Do not overload the attachment and always keep the load level when raising the loader arms. Logs, boards, and other items could roll down the loader arms, injuring you.
- Never jerk the controls; use a steady motion.
- Watch for traffic when operating near or crossing roadways.
- Do not touch parts which may be hot from operation. Allow them to cool before attempting to maintain, adjust, or service.
- Check for overhead clearances (i.e., branches, doorways, electrical wires) before driving under any objects and do not contact them.
- Ensure that you operate the traction unit in areas where there are no obstacles in close proximity to the operator. Failure to maintain adequate distance from trees, walls, and other barriers may result in injury. Only operate the unit in areas where there is sufficient clearance for the operator to safely maneuver the product.
- Before digging, have the area marked for underground utilities, and do not dig in marked areas.

Also, be aware of the location of objects and structures that may not be marked, such as underground storage tanks, wells, and septic systems.

- Locate the pinch point areas marked on the traction unit and attachments and keep hands and feet away from these areas.
- Before operating the traction unit with an attachment, ensure that the attachment is properly installed and a genuine Toro attachment.
- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.

Slope Operation

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution.

- Do not operate the traction unit on hillsides or slopes exceeding the angles recommended in [Stability Data \(page 7\)](#), and those in the attachment *Operator's Manual*. See also the [Slope Indicator \(page 8\)](#).
- **Operate up and down slopes with the heavy end of the traction unit uphill.** Weight distribution changes. An empty bucket will make the rear of the traction unit the heavy end, and a full bucket will make the front of the traction unit the heavy end. Most other attachments will make the front of traction unit the heavy end.
- Raising the loader arms on a slope will affect the stability of the machine. Whenever possible, keep the loader arms in the lowered position when on slopes.
- Removing an attachment on a slope will make the rear of the traction unit heavy. Refer to [Stability Data \(page 7\)](#), to determine whether the attachment can be safely removed on the slope.

- Remove obstacles such as rocks, tree limbs, etc. from the work area. Watch for holes, ruts, or bumps, as uneven terrain could overturn the traction unit. Tall grass can hide obstacles.
- Use only Toro-approved attachments. Attachments can change the stability and the operating characteristics of the traction unit. Warranty may be voided if used with unapproved attachments.
- Keep all movements on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Avoid starting or stopping on a slope. If the traction unit 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 traction unit uphill.
- Do not operate near drop-offs, ditches, or embankments. The traction unit could suddenly turn over if a track goes over the edge of a cliff or ditch, or if an edge caves in.
- Use caution when operating on wet grass. Reduced traction could cause sliding.
- Do not park the traction unit on a hillside or slope without lowering the attachment to the ground, setting the parking brake, and chocking the tracks.

Maintenance and Storage

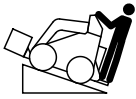


- Disengage the auxiliary hydraulics, lower the attachment, set the parking brake, stop the engine, and remove the key. Wait for all movement to stop and the unit to cool before adjusting, cleaning, or repairing.
- Clean debris from attachments, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let the engine cool before storing and do not store near flame.
- Do not store fuel near flames or drain indoors.
- Park the machine on level ground. Never allow untrained personnel to service the machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect the battery before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug the charger before connecting or disconnecting it from the battery. Wear protective clothing and use insulated tools.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.
- If any maintenance or repair requires the loader arms to be in the raised position, secure the arms in the raised position with the hydraulic cylinder lock.

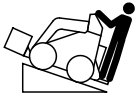

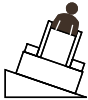
- Secure the loader arm valve with the loader valve lock anytime you need to stop the machine with the loader arms raised.
- Keep nuts and bolts tight. Keep equipment in good condition.
- Never tamper with safety devices.
- Keep the traction unit free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow the traction unit to cool before storing.
- Use extra care when handling fuels. They are flammable and vapors are explosive.
 - Use only an approved container.
 - Never remove the fuel cap or add fuel when the engine is running. Allow the engine to cool before refueling. Do not smoke.
 - Never refuel the traction unit indoors.
 - Never store the traction unit or fuel container inside where there is an open flame, such as near a water heater or furnace.
 - Never fill a container while it is inside a vehicle, trunk, pick-up bed, or any surface other than the ground.
 - Keep container nozzle in contact with the tank during filling.
- Stop and inspect the equipment if you strike an object. Make any necessary repairs before restarting.
- Use only genuine Toro replacement parts to ensure that original standards are maintained.
- Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes, and clothing. Protect your face, eyes, and clothing when working with a battery.
- Battery gases can explode. Keep cigarettes, sparks and flames away from the battery.
- Keep your body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid. Use cardboard or paper to find hydraulic leaks; never use your hands. Hydraulic fluid escaping under pressure can penetrate skin and cause injury requiring surgery within a few hours by a qualified surgeon or gangrene may result.

Stability Data

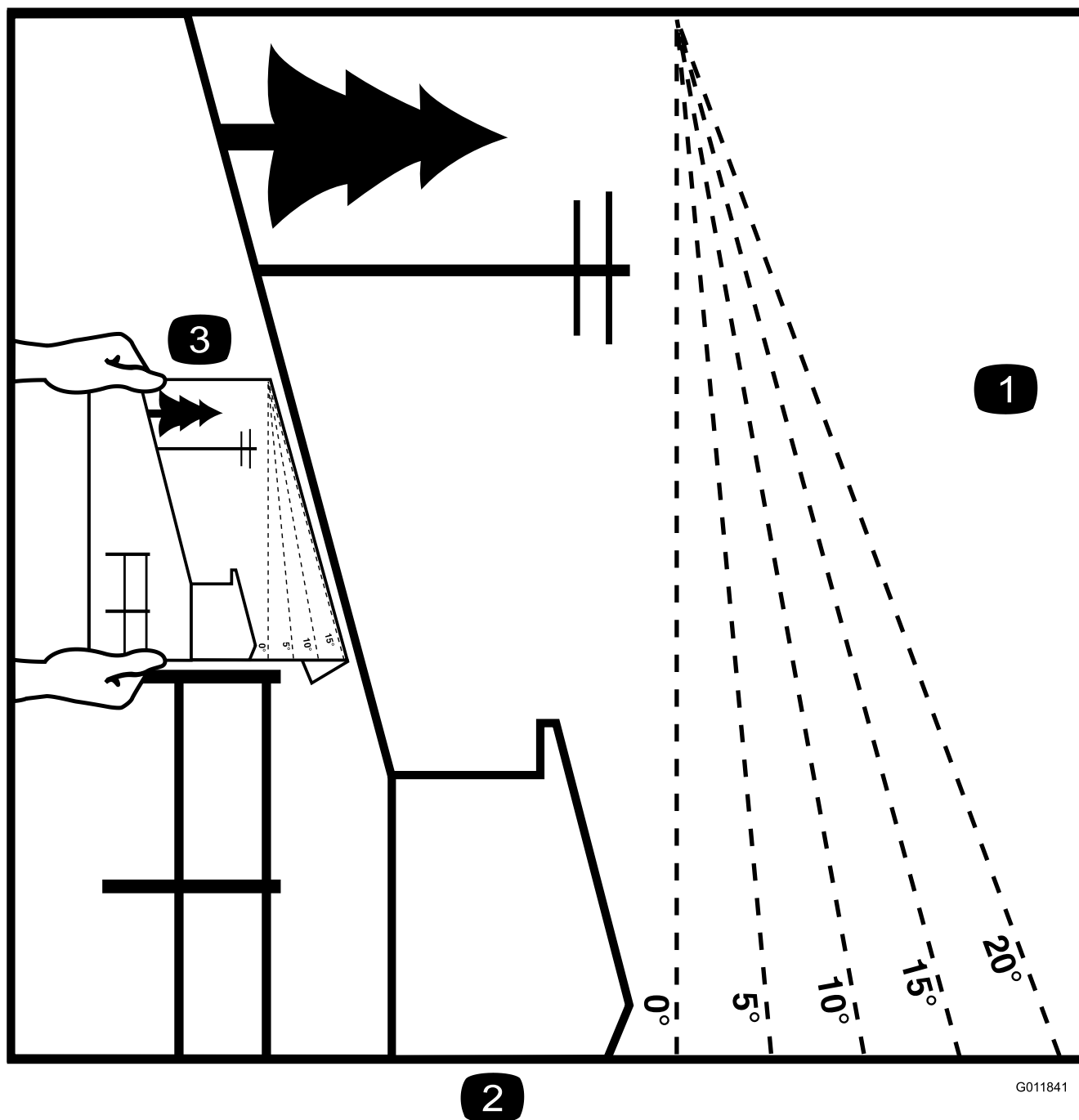
The following tables list the maximum slope recommended for the traction unit in the positions listed in the tables. Slopes over the listed degree may cause the traction unit to become unstable. The data in the tables assume that the loader arms are fully lowered; raised arms may affect the stability.

In each attachment manual is a set of three stability ratings, one for each hill position. To determine the maximum slope you can traverse with the attachment installed, find the degree of slope that corresponds to the stability ratings of the attachment. Example: If the attachment installed on a TX model 22327 traction unit has a Front Uphill rating of B, a Rear Uphill rating of D, and a Side Uphill rating of C, then you could drive forward up a 19° slope, rearward up a 11° slope, or sideways on a 11° slope, as listed in the following table.

Model 22327			
Configuration	Maximum Recommended Slope when Operating with:		
	Front Uphill 	Rear Uphill 	Side Uphill 
Traction unit without attachment	15°	19°	16°
Traction unit with an attachment rated with one of the following stability ratings for each slope position:*			
A	25°	25°	20°
B	19°	20°	15°
C	16°	17°	11°
D	14°	11°	8°
E	5°	5°	5°

Model 22328			
Configuration	Maximum Recommended Slope when Operating with:		
	Front Uphill 	Rear Uphill 	Side Uphill 
Traction unit without attachment	16°	19°	19°
Traction unit with an attachment rated with one of the following stability ratings for each slope position:*			
A	25°	25°	23°
B	21°	19°	18°
C	18°	15°	14°
D	15°	10°	10°
E	5°	5°	5°

Slope Indicator



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Figure 3

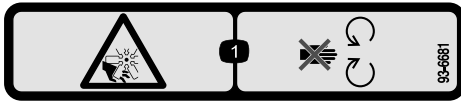
This page may be copied for personal use.

1. To determine the maximum slope you can safely operate the machine on, refer to the Stability Data section. Use the slope indicator to determine the degree of slope of hills before operating. **Do not operate this machine on a slope greater than that specified in the Stability Data section.** Fold along the appropriate line to match the recommended slope.
2. Align this edge with a vertical surface, a tree, building, fence pole, etc.
3. Example of how to compare slope with folded edge.

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 lost.



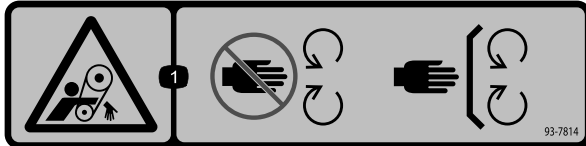
93-6681

1. Cutting/dismemberment hazard, fan—stay away from moving parts.



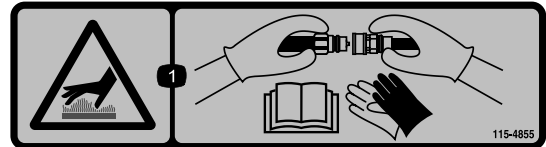
115-2047

1. Warning—do not touch the hot surface.



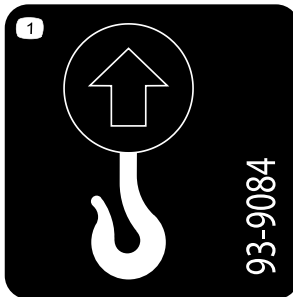
93-7814

1. Entanglement hazard, belt—stay away from moving parts.



115-4855

1. Hot surface/burn hazard—wear protective gloves when handling the hydraulic couplers and read the *Operator's Manual* for information on handling hydraulic components.



93-9084

1. Lift point
2. Tie-down point



115-4858

1. Crushing hazard of hands or feet—install the cylinder lock.



115-4865

1. Engine coolant
2. Read the *Operator's Manual*.



106-6755

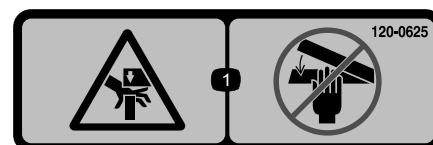
1. Engine coolant under pressure.
2. Explosion hazard—read the *Operator's Manual*.
3. Warning—do not touch the hot surface.
4. Warning—read the *Operator's Manual*.

CALIFORNIA SPARK ARRESTER WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

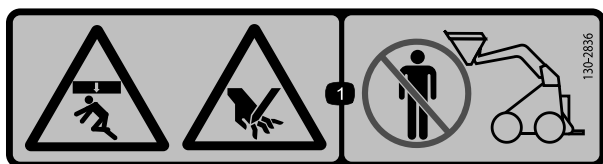
117-2718

117-2718



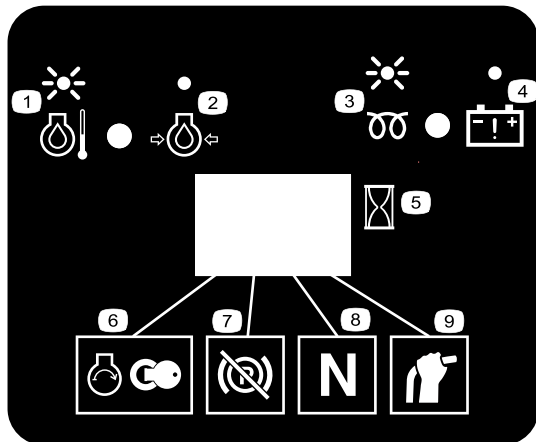
120-0625

1. Pinch point, hand—keep hands away.



130-2836

1. Crushing hazard; cutting hazard—keep away from the bucket and the lift arm.



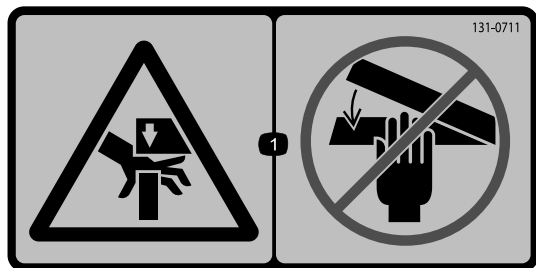
130-7637

- | | |
|--|-----------------------------|
| 1. Blinking light—engine-coolant temperature | 6. Engine start |
| 2. Steady light—engine-oil pressure | 7. Parking brake disengaged |
| 3. Blinking light—glow plug | 8. Traction neutral |
| 4. Steady light—battery warning | 9. Auxiliary lever neutral |
| 5. Hourmeter | |



131-0709

- | | |
|-------------------------|----------------------------|
| 1. Parking brake—engage | 2. Parking brake—disengage |
|-------------------------|----------------------------|



131-0711

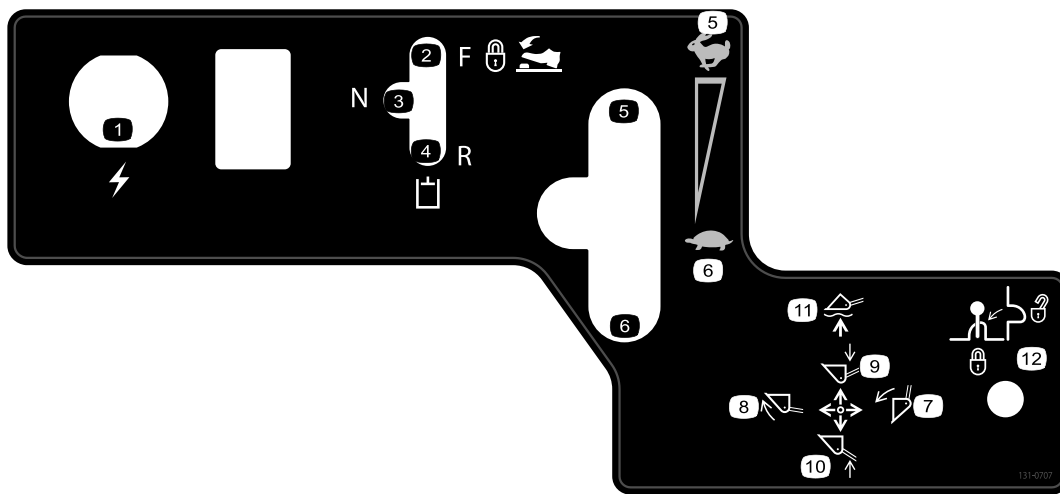
1. Crushing hazard—keep away from pinch points and actuating parts.



Battery Symbols

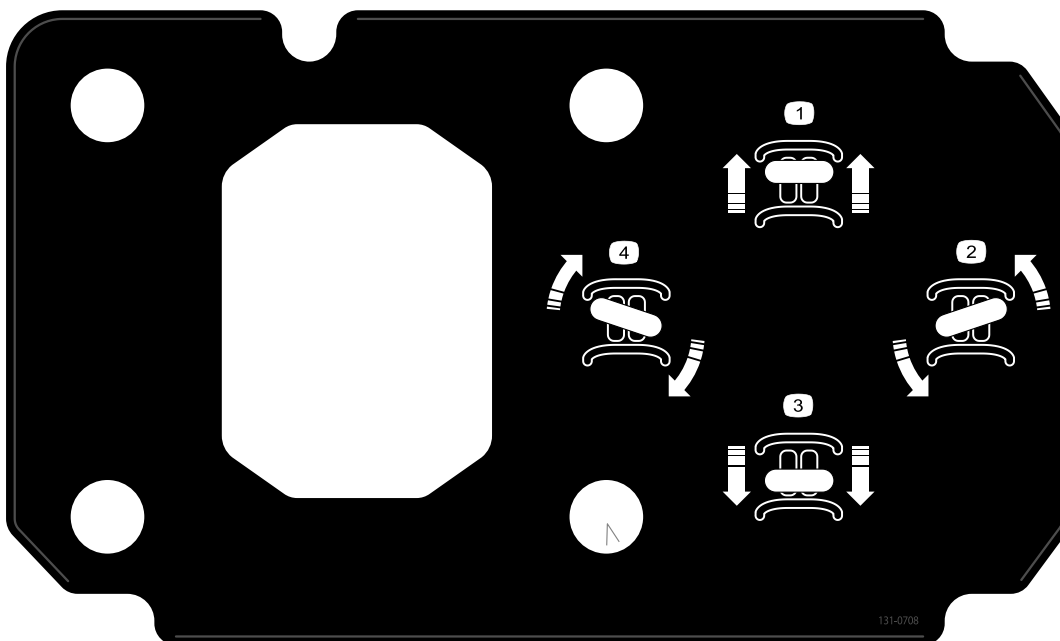
Some or all of these symbols are on your battery

- | | |
|--|--|
| 1. Explosion hazard | 6. Keep bystanders at a safe distance from the battery. |
| 2. No fire, open flame, or smoking. | 7. Wear eye protection; explosive gases can cause blindness and other injuries |
| 3. Caustic liquid/chemical burn hazard | 8. Battery acid can cause blindness or severe burns. |
| 4. Wear eye protection | 9. Flush eyes immediately with water and get medical help fast. |
| 5. Read the <i>Operator's Manual</i> . | 10. Contains lead; do not discard. |



131-0707

1. 12 V power socket
2. Hydraulic attachment—forward operation
3. Hydraulic attachment—neutral position
4. Hydraulic attachment—reverse operation
5. Engine speed—fast
6. Engine speed—slow
7. Tilt the attachment forward.
8. Tilt the attachment rearward.
9. Lower the attachment.
10. Raise the attachment.
11. Move the attachment to a float position.
12. Lever lock



131-0708

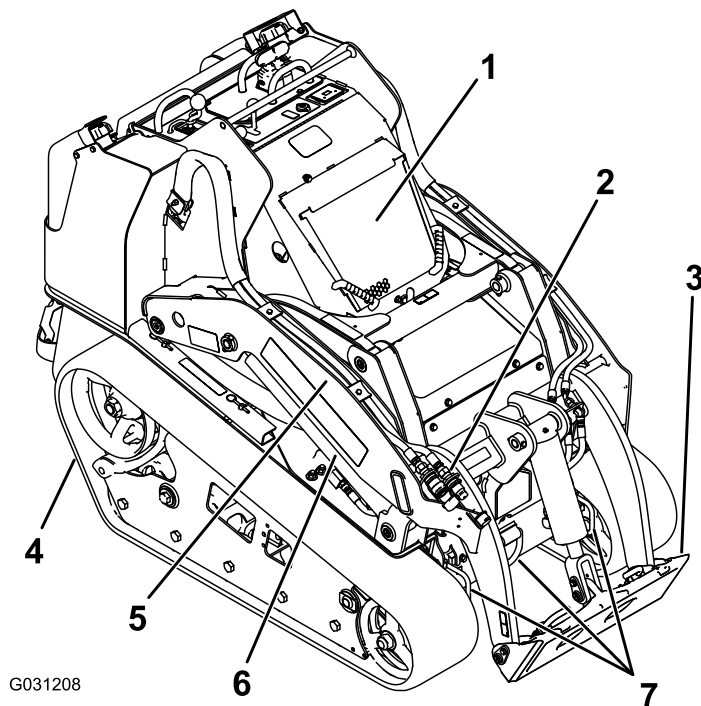
1. Move forward
2. Turn right
3. Move rearward
4. Turn left



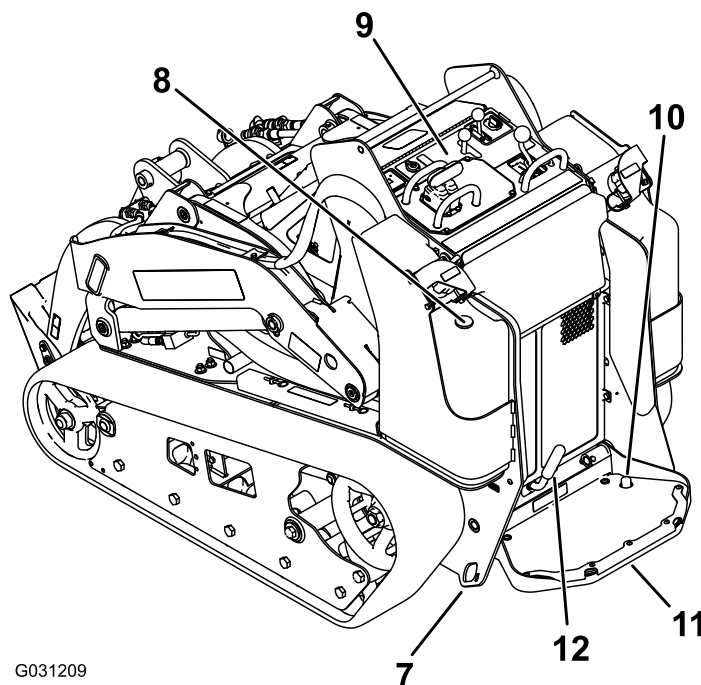
131-0710

1. Warning—read the *Operator's Manual*.
 2. Warning—receive training before operating the machine.
 3. Warning—wear hearing protection.
 4. Warning—engage the parking brake, lower the bucket to the ground, stop the engine, and remove the key from the ignition before leaving the machine.
 5. Electrocution hazard, power lines—check for power lines in the area before using the machine.
 6. Crushing hazard—keep away from pinch points; read the *Operator's Manual* before servicing or performing maintenance.
 7. Cutting/severing hazard of hand or foot—wait for all moving parts to stop before servicing; keep away from moving parts; keep all guards and shields in place.
 8. Explosion hazard; electrocution hazard—call the local utilities hotline before beginning work in an area.
 9. Crushing hazard—keep away from the bucket when operating the machine; keep bystanders away from the machine.
 10. Tipping hazard—always move up or down slopes with the bucket lowered; never drive on a slope with the bucket raised.
 11. Tipping hazard—do not make fast turns; always check behind you before reversing the machine.
-

Product Overview



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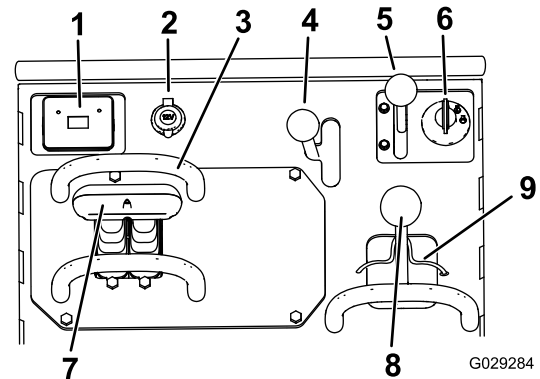
G031209

Figure 4

- | | |
|---------------------------------|--------------------------------------|
| 1. Hood | 7. Tie-down/lift loop |
| 2. Auxiliary-hydraulic couplers | 8. Fuel gauge |
| 3. Mount plate | 9. Control panel |
| 4. Track | 10. Auxiliary-hydraulics-lock switch |
| 5. Loader arm | 11. Operator platform |
| 6. Lift cylinder | 12. Parking brake |

Controls

Become familiar with all the controls ([Figure 5](#)) before you start the engine and operate the traction unit.



G029284

Figure 5

- | | |
|-------------------------------|-------------------------------------|
| 1. Message display | 6. Key switch |
| 2. Power socket | 7. Traction control |
| 3. Reference bar | 8. Loader arm/attachment-tilt lever |
| 4. Auxiliary-hydraulics lever | 9. Loader lock |
| 5. Throttle lever | |

Key Switch

The key switch, used to start and stop the engine, has 3 positions: OFF, RUN, and START.

To start the engine, rotate the key to the START position. Release the key when engine starts and it will move automatically to the RUN position.

To stop the engine, rotate the key to the OFF position.

Throttle Lever

Move the control forward to increase the engine speed and rearward to decrease speed.

Reference Bar

When driving the traction unit, use the reference bar as a handle and a leverage point for controlling the traction control and the auxiliary-hydraulics lever. To ensure smooth, controlled operation, do not take both hands off the reference bar while operating the machine.

Traction Control

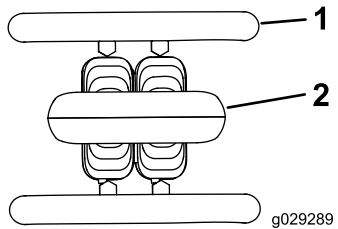


Figure 6

1. Reference bar
2. Traction control

- To move forward, move the traction control forward (Figure 7).

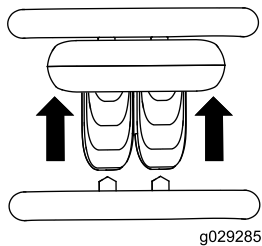


Figure 7

- To move rearward, move the traction control rearward (Figure 8).

Important: When reversing, look behind you for obstructions and keep your hands on the reference bar.

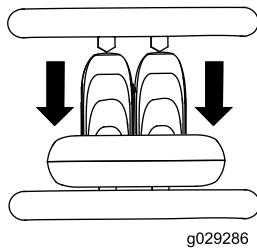


Figure 8

- To turn right, rotate the traction control clockwise (Figure 9).

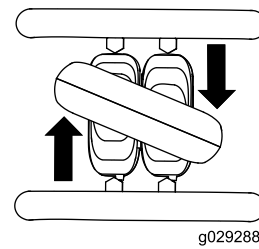


Figure 9

- To turn left, rotate the traction control counterclockwise (Figure 10).

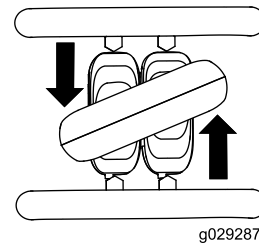


Figure 10

- To stop, release the traction control (Figure 6).

Note: The farther you move the traction control in any direction, the faster the machine moves in that direction.

Loader Arm/Attachment-Tilt Lever

- To tilt the attachment forward, slowly move the lever to the right (Figure 11).
- To tilt the attachment rearward, slowly move the lever to the left (Figure 11).
- To lower the loader arms, slowly move the lever forward (Figure 11).
- To raise the loader arms, slowly move the lever rearward (Figure 11).
- To lower the loader arms to a detent (float) position, push the lever fully forward (Figure 11).

Note: This allows attachments such as the leveler and the hydraulic blade to follow the contours of the ground (i.e., float) when grading.

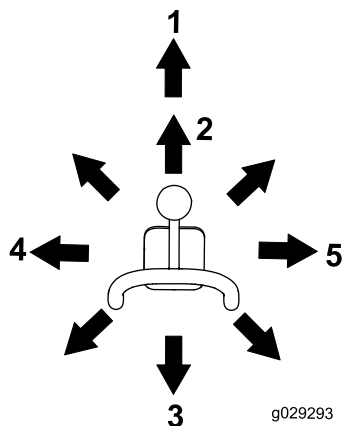


Figure 11

- | | |
|----------------------------|----------------------------------|
| 1. Detent (float) position | 4. Tilt the attachment rearward. |
| 2. Lower the loader arms. | 5. Tilt the attachment forward. |
| 3. Raise the loader arms. | |

By moving the lever to an intermediate position (e.g., forward and left), you can move the loader arms and tilt the attachment at the same time.

Loader Lock

The loader lock secures the loader arm/attachment-tilt lever so that you cannot push it forward. This ensures that no one accidentally lowers the loader arms during maintenance. Secure the loader arms with the lock any time you need to stop the machine with the loader arms raised.

To set the lock, lift up on it so it clears the hole in the control panel and swing it to the left, in front of the loader-arm lever, pushing it down into the locked position (Figure 12).

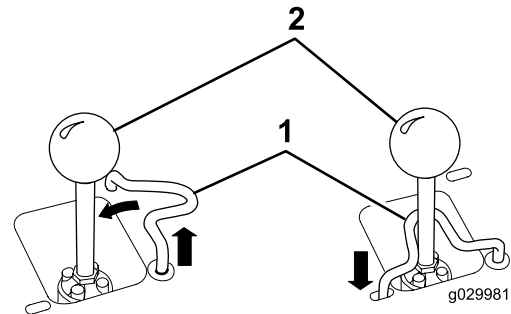


Figure 12

Loader-Control Reference Bar

The loader-control reference bar helps stabilize your hand while operating the loader arm/attachment tilt lever (Figure 4).

Auxiliary-Hydraulics Lever

To operate a hydraulic attachment in the forward direction, move the auxiliary-hydraulics lever forward (Figure 13).

To operate a hydraulic attachment in reverse direction, move the hydraulics lever rearward (Figure 13).

If you release the lever while in the FORWARD or REVERSE position, the lever automatically returns to the NEUTRAL position (Figure 13).

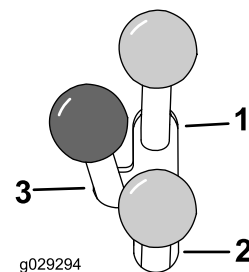


Figure 13

- | | |
|----------------------------|------------|
| 1. Forward flow hydraulics | 3. Neutral |
| 2. Reverse flow hydraulics | |

Auxiliary-Hydraulics-Lock Switch

Press the auxiliary-hydraulics-lock switch to lock the auxiliary-hydraulics lever in the FORWARD position and free your hand for other controls (Figure 5).

Parking Brake Lever

To set the parking brake, rotate the brake lever to left (Figure 14).

Note: The traction unit may roll slightly before the brakes engage in the drive sprocket.

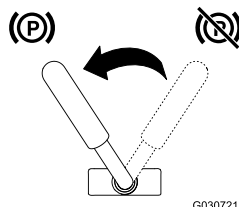


Figure 14

To release the brake, rotate the brake lever to the right.

Note: You may need to adjust the traction control to release the brake pins and rotate the lever.

Fuel Gauge

This gauge measures the amount of fuel in the fuel tanks (Figure 4).

Message Display

Engine-Coolant Temperature

If the engine coolant becomes too hot, the light on the left flashes and the horn sounds (Figure 15). If this happens, disengage the auxiliary hydraulics and let the machine run at high idle to allow the cooling system to cool the machine. Check the coolant level when the engine has fully cooled.

Important: Do not shut off the engine, as this may cause the machine to overheat.

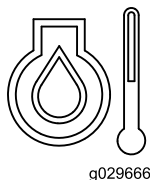


Figure 15

Engine-Oil Pressure

If the engine-oil-pressure becomes too low, the light on the left illuminates steadily (Figure 16). If this happens, shut off the engine immediately and check the oil. If the oil level is low, add oil and/or look for possible leaks.

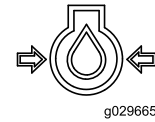


Figure 16

Glow Plug

The light on the right flashes while the glow plugs are charged and warming the engine (Figure 17).

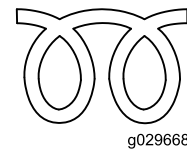


Figure 17

Battery-Charge Indicator Light

If the battery charge becomes too low, the light on the right illuminates steadily (Figure 18). If this happens, shut off the engine and charge or replace the battery. Refer to [Servicing the Battery](#) (page 34)

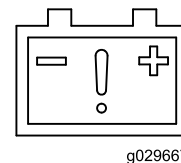


Figure 18

Hour Meter

The hour meter displays the number of hours of operation that have been logged on the traction unit and the following indicators:

- Engine start—displays when you start the engine



Figure 19

- Parking brake—displays when you disengage the parking brake



Figure 20

- Traction neutral—displays when the traction control is in the NEUTRAL position



Figure 21

- Auxiliary lever neutral—displays when the auxiliary lever is in the NEUTRAL position



Figure 22

Specifications

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

Model 22327	
Width	84.8 cm (33.4 inches)
Length	255.8 cm (100.7 inches)
Height	138.2 cm (54.4 inches)
Weight	1234 kg (2720 lb)
Operating capacity (with standard bucket)	454 kg (1000 lb)
Tipping capacity (with standard bucket)	1296 kg (2857 lb)
Wheelbase	41 inches
Dump height (with standard bucket)	61 inches
Reach—fully raised (with standard bucket)	24.5 inches
Height to hinge pin (with standard bucket in highest position)	81 inches

Model 22328	
Width	102.9 cm (40.5 inches)
Length	255.8 cm (100.7 inches)
Height	138.2 cm (54.4 inches)
Weight	1297 kg (2860 lb)
Operating capacity (with standard bucket)	454 kg (1000 lb)
Tipping capacity (with standard bucket)	1296 kg (2857 lb)
Wheelbase	41 inches
Dump height (with standard bucket)	61 inches
Reach—fully raised (with standard bucket)	24.5 inches
Height to hinge pin (with standard bucket in highest position)	81 inches

Attachments/Accessories

A selection of Toro approved attachments and accessories is available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or Distributor or go to www.Toro.com for a list of all approved attachments and accessories.

Important: Use only Toro-approved attachments. Other attachments may create an unsafe operating environment or damage the traction unit.

Operation

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

Important: Before operating, check the fuel and oil level, and remove debris from the traction unit. Ensure that the area is clear of people and debris. You should also know and have marked the locations of all utility lines.

Think Safety First

Carefully read all safety instructions and symbols in the safety section. Knowing this information could help you or bystanders avoid injury.

⚠ CAUTION

This machine produces sound levels that can cause hearing loss through extended periods of exposure.

Wear hearing protection when operating this machine.

⚠ CAUTION

Long-term exposure to vibration while operating the machine may cause some numbness in the hands and wrists.

Wear gloves that dampen the vibration whenever you operate the machine for an extended period of time.

The use of protective equipment for eyes, ears, hands, feet, and head is recommended.

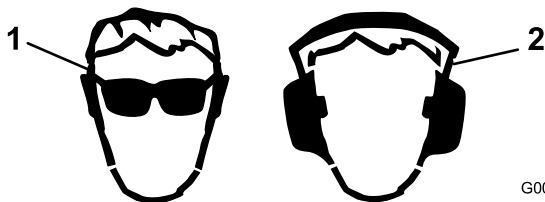


Figure 23

1. Wear safety glasses.
2. Wear hearing protection.

Adding Fuel

Use only clean, fresh diesel fuel or biodiesel fuels with low (<500 ppm) or ultra low (<15 ppm) sulfur content. The minimum cetane rating should be 40. Purchase fuel in quantities that can be used within 180 days to ensure fuel freshness.

Fuel tank capacity: 41 L (11 US gallons)

Use summer grade diesel fuel (No. 2-D) at temperatures above -7°C (20°F) and winter grade (No. 1-D or No. 1-D/2-D blend) below that temperature. Use of winter grade fuel at lower temperatures provides lower flash point and cold flow characteristics which will ease starting and reduce fuel filter plugging.

Use of summer grade fuel above -7°C (20°F) will contribute toward longer fuel pump life and increased power compared to winter grade fuel.

Important: Do not use kerosene or gasoline instead of diesel fuel. Failure to observe this caution will damage the engine.

⚠ WARNING

Fuel is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.

- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and fuel tank or conditioner opening.
- Keep fuel away from eyes and skin.

Biodiesel Ready

This machine can also use a biodiesel blended fuel of up to B20 (20% biodiesel, 80% petrodiesel). The petrodiesel portion should be low or ultra low sulfur. Observe the following precautions:

- The biodiesel portion of the fuel must meet specification ASTM D6751 or EN14214.
- The blended fuel composition should meet ASTM D975 or EN590.
- Painted surfaces may be damaged by biodiesel blends.
- Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may be degraded over time.
- Fuel filter plugging may be expected for a time after converting to biodiesel blends.
- Contact your distributor if you wish for more information on biodiesel.

Filling the Fuel Tanks

⚠ DANGER

In certain conditions, fuel is extremely flammable and highly explosive. A fire or explosion from fuel can burn you and others and can damage property.

- Fill the fuel tanks outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.
- Never fill the fuel tanks inside an enclosed trailer.
- Never smoke when handling fuel and stay away from an open flame or where fuel fumes may be ignited by a spark.
- Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.
- Do not operate without entire exhaust system in place and in proper working condition.

⚠ DANGER

In certain conditions during fueling, static electricity can be released, causing a spark that can ignite the fuel vapors. A fire or explosion from fuel can burn you and others and can damage property.

- Always place fuel containers on the ground away from your vehicle before filling.
- Do not fill fuel containers inside a vehicle or on a truck or trailer bed, because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.
- When practical, remove equipment from the truck or trailer and refuel the equipment with its wheels on the ground.
- If this is not possible, then refuel such equipment on a truck or trailer from a portable container rather than from a fuel-dispenser nozzle.
- If you must use a fuel-dispenser nozzle, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.

Fill the fuel tanks as shown in [Figure 24](#).

Note: The fuel-tank caps click when you close them securely. Use the brackets to lock the fuel tanks.

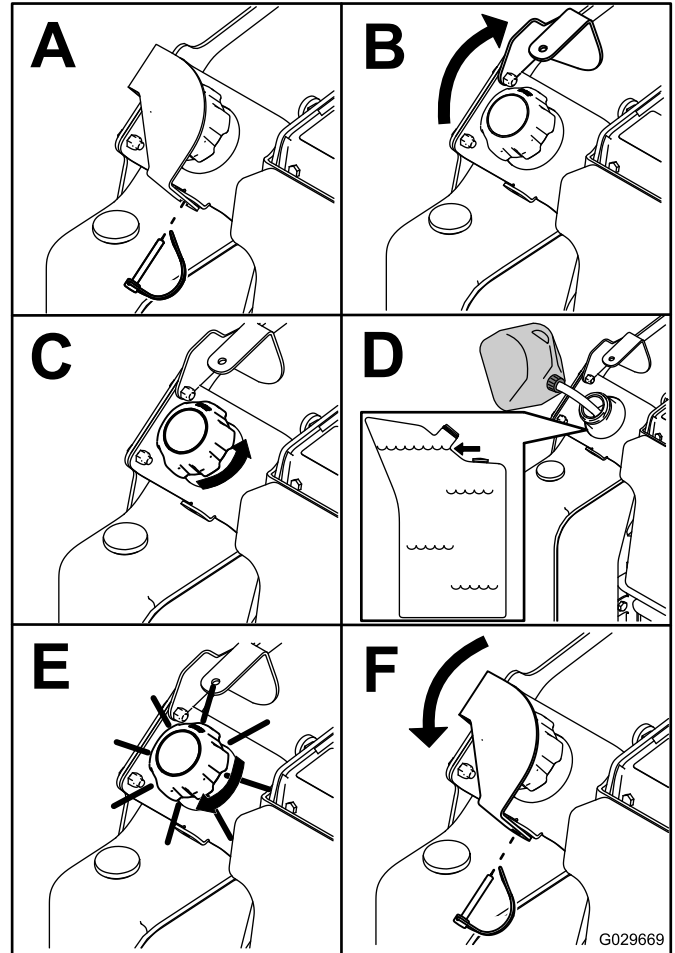


Figure 24

Checking the Engine-Oil Level

Service Interval: Before each use or daily

1. Park the traction unit on a level surface, lower the loader arms, and shut off the engine.
2. Remove the key and allow the engine to cool.
3. Open the hood and secure the hood prop.
4. Clean around the oil dipstick and oil-filler cap (Figure 25).

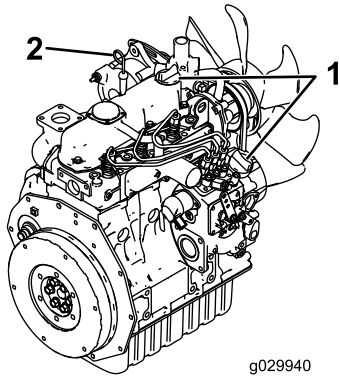


Figure 25

1. Oil-filler cap
2. Oil dipstick

5. Check the oil and add additional oil as needed (Figure 26).

Important: Do not overfill the crankcase with oil because the engine may be damaged.

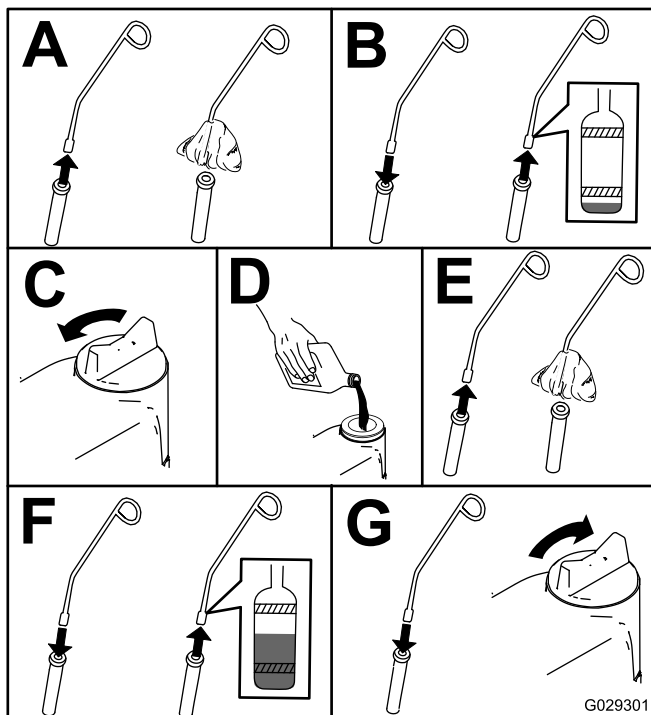


Figure 26

Checking the Hydraulic Fluid Level

Service Interval: Every 25 hours

Hydraulic Tank Capacity: 37.9 L (10 US gallons)

Refer to [Changing the Hydraulic Fluid \(page 40\)](#) for hydraulic fluid specifications.

Important: Always use the correct hydraulic fluid. Unspecified fluids will damage the hydraulic system.

1. Remove the attachment, if one is installed; refer to [Removing an Attachment \(page 24\)](#).
2. Park the traction unit on a level surface, shut off the engine, and remove the key.
3. Open the hood and secure the hood prop.
4. Remove the right side screen; refer to [Removing the Side Screens \(page 28\)](#).
5. Clean the area around the filler neck of the hydraulic tank (Figure 27).

Note: Raising the loader arms may improve your access to the hydraulic-tank cap. Install the cylinder lock if you raise the arms; refer to [Installing the Cylinder Lock \(page 27\)](#).

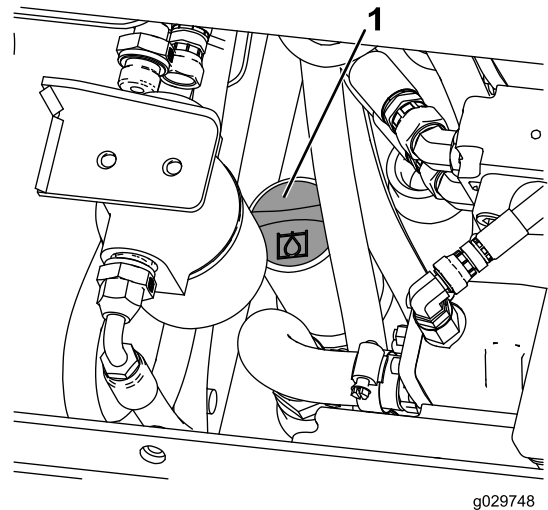


Figure 27

1. Hydraulic filler-neck cap

6. Remove the cap from the filler neck and check the fluid level on the dipstick (Figure 28).

Note: The fluid level should be between the 2 notches of the dipstick while the arms are lowered or at the lower notch while the arms are raised.

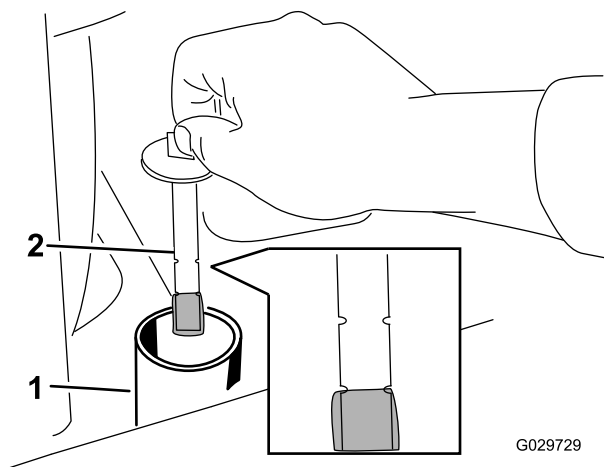


Figure 28

1. Filler neck
2. Dipstick

7. If the level is low, add enough fluid to raise it to the proper level.
8. Install the cap on the filler neck.
9. Install the side screen.
10. Close the hood.

Checking the Engine Coolant

Service Interval: Before each use or daily

Before each use or daily—Clean the screen, oil cooler, and front of the radiator (more often in dirty or dusty conditions).

The cooling system is filled with a 50/50 solution of water and permanent ethylene-glycol antifreeze.

⚠ DANGER

If the engine has been running, the pressurized, hot coolant can escape and cause severe burns.

- Do not remove the radiator cap when the engine is hot. Always allow the engine to cool at least 15 minutes or until the radiator cap is cool enough to touch without burning your hand before removing the radiator cap.
- Do not touch radiator and surrounding parts that are hot.
- Use a rag when opening the radiator cap and open the cap slowly to allow steam to escape.

⚠ DANGER

Rotating shaft and fan can cause personal injury.

- Do not operate the machine without the covers in place.
- Keep fingers, hands, and clothing clear of rotating fan and drive shaft.
- Shut off the engine and remove the ignition key before performing maintenance.

1. Check the level of coolant in the expansion tank (Figure 29).

Note: The coolant level should be at or above the mark on the side of the tank.

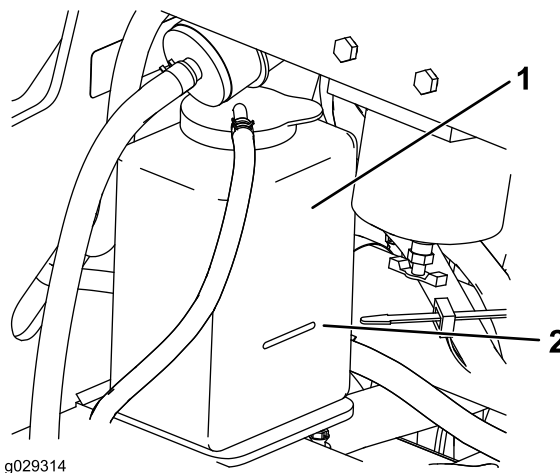


Figure 29

1. Expansion tank
2. Full mark

2. If the coolant level is low, remove the expansion tank cap and add a 50/50 mixture of water and permanent ethylene-glycol antifreeze.

Important: Do not overfill.

3. Install the expansion-tank cap.

Bleeding the Fuel System

You must bleed the fuel system before starting the engine if any of the following situations have occurred:

- Initial start up of a new machine.
- Engine has ceased running due to lack of fuel.
- Maintenance has been performed upon fuel-system components (e.g., filter replaced).

⚠ DANGER

Under certain conditions, diesel fuel and fuel vapors are highly flammable and explosive. A fire or explosion from fuel can burn you and others and can cause property damage.

- Use a funnel and fill the fuel tanks outdoors, in an open area, when the engine is off and is cold. Wipe up any fuel that spills.
- Do not fill the fuel tanks completely full. Add fuel to each fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.
- Never smoke when handling fuel and stay away from an open flame or where fuel fumes may be ignited by a spark.
- Store fuel in a clean, safety-approved container and keep the cap in place.

1. Ensure that the fuel tanks are at least half full.
2. Open the hood and secure the hood prop.
3. Open the air-bleed screw on the fuel-injection pump (Figure 30).

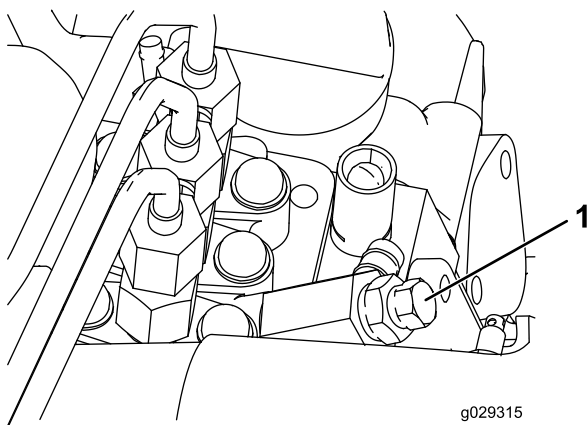


Figure 30

1. Air-bleed screw

4. Turn the key in the ignition switch to the ON position.

Note: The electric fuel pump will begin operation, thereby forcing air out around the air-bleed screw.

Leave the key in the ON position until a solid stream of fuel flows out around the screw.

5. Tighten the screw and turn the key to the OFF position.

Note: Normally, the engine should start after you follow the above bleeding procedure. However, if engine does not start, air may be trapped between injection pump and injectors; contact your Authorized Service Dealer.

Starting and Stopping the Engine

Starting the Engine

1. Ensure that the auxiliary-hydraulics lever and traction-control lever are in neutral.
2. Move the throttle lever midway between the SLOW and FAST positions.
3. Turn the ignition key to the ON position.
4. Wait for the glow-plug indicator light to stop blinking.
5. Turn the ignition key to the START position. When the engine starts, release the key.

Important: Do not engage the starter for more than 10 seconds at a time. If the engine fails to start, wait 30 seconds between attempts. Failure to follow these instructions can burn out the starter motor.

6. Move the throttle lever to desired setting.

Important: If you run the engine at high speeds when the hydraulic system is cold (i.e., when the ambient air temperature is near freezing or lower), hydraulic system damage could occur. When starting the engine in cold conditions, run the engine in the middle throttle position for 2 to 5 minutes before moving the throttle to the FAST position.

Note: If the outdoor temperature is below freezing, store the traction unit in a garage to keep it warmer and aid in starting.

Stopping the Engine

1. Move the throttle lever to the SLOW position.
2. Lower the loader arms to the ground.
3. Turn the ignition key off.

Note: If the engine has been working hard or is hot, let it idle for a minute before turning the ignition key off. This helps cool the engine before it is stopped. In an emergency, the engine may be stopped immediately.

Stopping the Machine

To stop the machine, release the traction control, move the throttle lever to the SLOW position, lower the loader arms to the ground, and shut off the engine. Set the parking brake and remove the key.

⚠ CAUTION

A child or untrained bystander could attempt to operate the traction unit and be injured.

Remove the key from the switch when leaving the traction unit, even if just for a few seconds.

Moving a Non-functioning Machine

Important: Do not tow or pull the traction unit without first opening the tow valves or the hydraulic system will be damaged.

1. Shut off the engine.
2. Open the hood and secure the hood prop.
3. Remove the side screens; refer to [Removing the Side Screens](#) (page 28).
4. Using a wrench, turn the tow valves on the hydraulic pumps twice counter-clockwise ([Figure 31](#)).

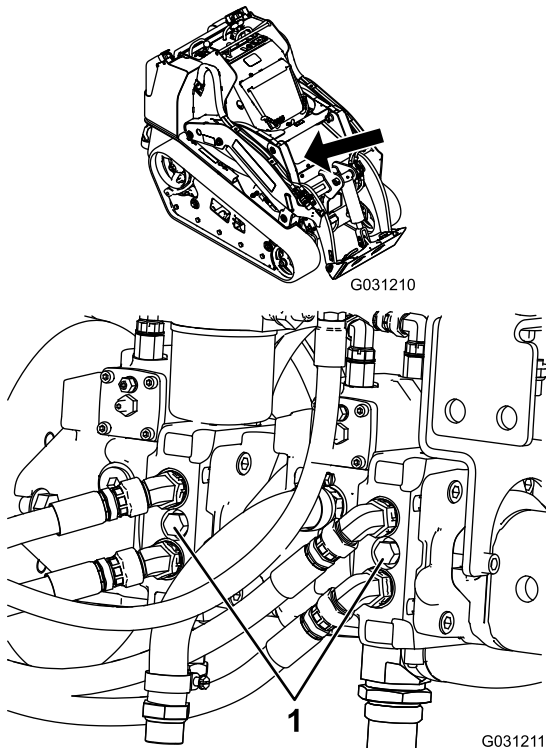


Figure 31

1. Tow valve

5. Tow the traction unit as required.
6. After repairing the machine, close the tow valves before operating it.

Using Attachments

Installing an Attachment

Important: Use only Toro-approved attachments. Attachments can change the stability and the operating characteristics of the traction unit. The warranty of the traction unit may be voided if used with unapproved attachments.

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

1. Position the attachment on a level surface with enough space behind it to accommodate the traction unit.
2. Start the engine.
3. Tilt the attachment mount plate forward.
4. Position mount plate into the upper lip of the attachment receiver plate ([Figure 32](#)).

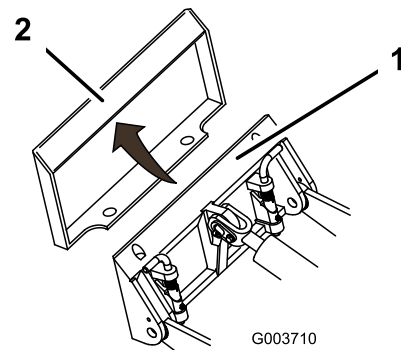


Figure 32

1. Mount plate
2. Receiver plate

5. Raise the loader arms while tilting back the mount plate at the same time.

Important: Raise the attachment enough to clear the ground and tilt the mount plate all the way back.

6. Shut off the engine.
7. Engage the quick-attach pins, ensuring that they are fully seated in the mount plate ([Figure 33](#)).

Important: If the pins do not rotate to the engaged position, the mount plate is not fully aligned with the holes in the attachment receiver plate. Check the receiver plate and clean it if necessary.

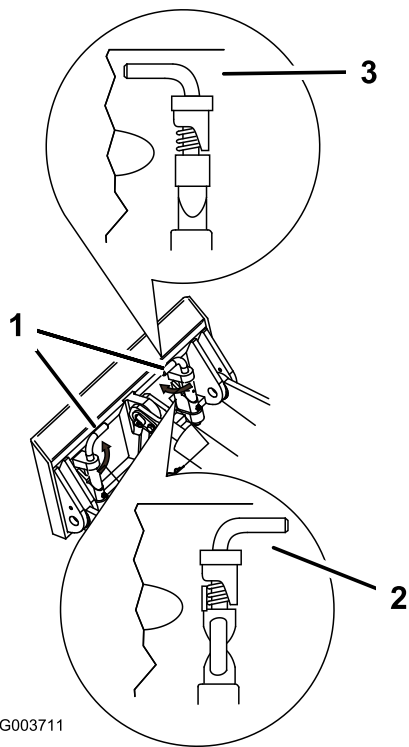


Figure 33

- | | |
|---------------------------------------|---------------------|
| 1. Quick-attach pins—engaged position | 3. Engaged position |
| 2. Disengaged position | |

⚠ WARNING

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

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

Connecting the Hydraulic Hoses

If the attachment requires hydraulics for operation, connect the hydraulic hoses as follows:

1. Shut off the engine.
2. Move the auxiliary-hydraulics lever forward, backward, and back to neutral to relieve pressure at the hydraulic couplers.
3. Remove the protective covers from the hydraulic couplers on the traction unit.
4. Ensure that all foreign matter is cleaned from the hydraulic connectors.
5. Push the attachment male connector into the female connector on the traction unit.

Note: When you connect the attachment male connector first, you relieve any pressure built up in the attachment.

⚠ 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 or gangrene may result.

- Keep your body and hands away from pin hole 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 operating the hydraulic couplers.
- Allow the traction unit to cool before touching hydraulic components.
- Do not touch hydraulic fluid spills.

6. Push the attachment female connector into the male connector on the traction unit.
7. Confirm that the connection is secure by pulling on the hoses.

Removing an Attachment

1. Lower the attachment to the ground.
2. Shut off the engine.
3. Disengage the quick-attach pins by turning them to the outside.
4. If the attachment uses hydraulics, move the auxiliary-hydraulics lever forward, backward, and back to neutral to relieve pressure at the hydraulic couplers.
5. If the attachment uses hydraulics, slide the collar back on the hydraulic couplers and disconnect them.

Important: Connect the attachment hoses together to prevent hydraulic system contamination during storage.

6. Install the protective covers onto the hydraulic couplers on the traction unit.
7. Start the engine, tilt the mount plate forward, and back the traction unit away from the attachment.

Securing the Machine for Transport

Use a heavy-duty trailer or truck to transport the machine. Ensure that the trailer or truck has all the necessary brakes, lighting, and marking as required by law. Please carefully read all the safety instructions. Knowing this information could help you, your family, pets or bystanders avoid injury. Refer to your local ordinances for trailer and tie-down requirements.

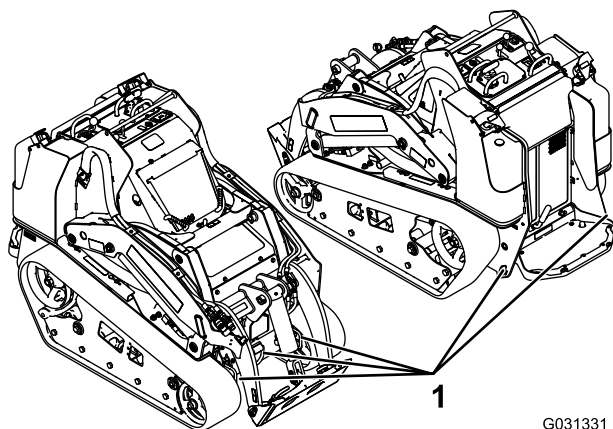
⚠ WARNING

Driving on the street or roadway without turn signals, lights, reflective markings, or a slow-moving-vehicle emblem is dangerous and can lead to accidents causing personal injury.

Do not drive machine on a public street or roadway.

To transport the machine:

1. Lower the loader arms.
2. If using a trailer, connect it to the towing vehicle and connect the safety chains.
3. If applicable, connect the trailer brakes.
4. Carefully load the machine onto the trailer or truck.
5. Shut off the engine, remove the key, and set the brake.
6. Use the metal tie-down loops on the machine to securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes ([Figure 34](#)).



G031331

Figure 34

1. Tie-down loops

Lifting the Machine

You can lift the machine using the tie-down/lift loops as lift points indicated in [Figure 34](#).

Troubleshooting

Problem	Possible Cause	Corrective Action
The starter does not crank.	<ol style="list-style-type: none"> 1. The electrical connections are corroded or loose. 2. A fuse is blown or loose. 3. The battery is discharged. 4. The relay or switch is damaged. 5. A starter or starter solenoid is damaged. 6. The internal engine components have seized. 7. The safety interlock is engaged. 	<ol style="list-style-type: none"> 1. Check the electrical connections for good contact. 2. Correct or replace the fuse. 3. Charge the battery or replace it. 4. Contact your Authorized Service Dealer. 5. Contact your Authorized Service Dealer. 6. Contact your Authorized Service Dealer. 7. Check the neutral setting on the traction and auxiliary controls.
The engine cranks, but does not start.	<ol style="list-style-type: none"> 1. An incorrect starting procedure was used. 2. The fuel tank is empty. 3. The fuel shutoff valve is closed. 4. Dirt, water, stale fuel, or incorrect fuel is in the fuel system. 5. The fuel line is clogged. 6. There is air in the fuel. 7. The glow plugs are inoperative. 8. The cranking speed is slow. 9. The air cleaner filters are dirty. 10. The fuel filter is clogged. 11. The fuel grade is improper for cold weather use. 12. There is low compression. 13. The injection nozzles or pump are malfunctioning. 14. The ETR solenoid is broken. 	<ol style="list-style-type: none"> 1. Refer to Starting and Stopping the Engine. 2. Fill the tank with fresh fuel. 3. Open the fuel shutoff valve. 4. Drain and flush the fuel system, then add fresh fuel. 5. Clean or replace the fuel line. 6. Bleed the nozzles and check for air leaks at the fuel hose connections and fittings between the fuel tank and the engine. 7. Check the fuse, glow plugs, and wiring. 8. Check the battery, oil viscosity, and starting motor (contact your Authorized Service Dealer). 9. Service the air filters. 10. Replace the fuel filter. 11. Drain the fuel system and replace the fuel filter. Add fresh fuel of the proper grade for ambient temperature conditions. You may need to warm the entire traction unit. 12. Contact your Authorized Service Dealer. 13. Contact your Authorized Service Dealer. 14. Contact your Authorized Service Dealer.

Problem	Possible Cause	Corrective Action
The engine starts, but does not keep running.	<ol style="list-style-type: none"> 1. The fuel tank vent is restricted. 2. Dirt or water is in the fuel system. 3. The fuel filter is clogged. 4. There is air in the fuel. 5. The fuel grade is improper for cold weather use. 6. The spark arrestor screen is clogged. 7. The fuel pump is damaged. 	<ol style="list-style-type: none"> 1. Loosen the cap. If the engine runs with the cap loosened, check the vent lines for blockage. 2. Drain and flush the fuel system; add fresh fuel. 3. Replace the fuel filter. 4. Bleed the nozzles and check for air leaks at fuel hose connections and fittings between the fuel tank and engine. 5. Drain the fuel system and replace the fuel filter. Add fresh fuel of proper grade for ambient temperature conditions. 6. Clean or replace the spark arrestor screen. 7. Contact your Authorized Service Dealer.
The engine runs but knocks or misses.	<ol style="list-style-type: none"> 1. Dirt, water, stale fuel, or incorrect fuel is in the fuel system. 2. The engine is overheating. 3. There is air in the fuel. 4. The injection nozzles are damaged. 5. There is low compression 6. The injection pump timing is incorrect. 7. There is excessive carbon buildup. 8. There is internal wear or damage. 	<ol style="list-style-type: none"> 1. Drain and flush the fuel system; add fresh fuel. 2. Refer to Engine Overheats. 3. Bleed nozzles and check for air leaks at the fuel hose connections and fittings between the fuel tank and engine. 4. Contact your Authorized Service Dealer. 5. Contact your Authorized Service Dealer. 6. Contact your Authorized Service Dealer. 7. Contact your Authorized Service Dealer. 8. Contact your Authorized Service Dealer.
The engine does not idle.	<ol style="list-style-type: none"> 1. The fuel tank vent is restricted. 2. Dirt, water, stale fuel, or incorrect fuel is in the fuel system. 3. The air cleaner filters are dirty. 4. The fuel filter is clogged. 5. There is air in the fuel. 6. The fuel pump is damaged. 7. There is low compression 	<ol style="list-style-type: none"> 1. Loosen the cap. If the engine runs with the cap loosened, check the vent lines for blockage. 2. Drain and flush the fuel system; add fresh fuel. 3. Service the air filters. 4. Replace the fuel filter. 5. Bleed the nozzles and check for air leaks at fuel hose connections and fittings between the fuel tank and engine. 6. Contact your Authorized Service Dealer. 7. Contact your Authorized Service Dealer.

Problem	Possible Cause	Corrective Action
The engine overheats.	<ol style="list-style-type: none"> 1. More coolant is needed. 2. There is restricted air flow to the radiator. 3. The crankcase oil level is incorrect. 4. There is excessive loading. 5. The incorrect fuel is in the fuel system. 6. The thermostat is damaged. 7. The fan belt is loose or broken. 8. Injection timing is incorrect. 9. The coolant pump is damaged. 	<ol style="list-style-type: none"> 1. Check and add coolant. 2. Inspect and clean the side panel screens with every use. 3. Fill or drain to the full mark. 4. Reduce the load and use a lower ground speed. 5. Drain and flush the fuel system; add fresh fuel. 6. Contact your Authorized Service Dealer. 7. Contact your Authorized Service Dealer. 8. Contact your Authorized Service Dealer. 9. Contact your Authorized Service Dealer.
There is excessive black smoke in the exhaust.	<ol style="list-style-type: none"> 1. There is excessive loading. 2. The air cleaner filters are dirty. 3. Incorrect fuel is in the fuel system. 4. The injection pump timing is incorrect. 5. The injection pump is damaged. 6. The injection nozzles are damaged. 	<ol style="list-style-type: none"> 1. Reduce the load and use a lower ground speed. 2. Service the air filters. 3. Drain the fuel system and refill with specified fuel. 4. Contact your Authorized Service Dealer. 5. Contact your Authorized Service Dealer. 6. Contact your Authorized Service Dealer.
There is excessive white smoke in the exhaust.	<ol style="list-style-type: none"> 1. The key was turned to the start position before the glow plug light turned off. 2. The engine temperature is low. 3. The glow plugs are inoperative. 4. The injection pump timing is incorrect. 5. The injection nozzles are damaged. 6. There is low compression 	<ol style="list-style-type: none"> 1. Turn the key to the run position and allow the glow plug light to turn off before starting the engine. 2. Check the thermostat. 3. Check the fuse, glow plugs, and wiring. 4. Contact your Authorized Service Dealer. 5. Contact your Authorized Service Dealer. 6. Contact your Authorized Service Dealer.

Problem	Possible Cause	Corrective Action
The engine loses power.	<ol style="list-style-type: none"> 1. The engine load is excessive. 2. The crankcase oil level is incorrect. 3. The air cleaner filters are dirty. 4. Dirt, water, stale fuel, or incorrect fuel is in the fuel system. 5. The engine is overheating. 6. The spark arrestor screen is clogged. 7. There is air in the fuel. 8. There is low compression 9. The fuel tank vent is restricted. 10. The injection pump timing is incorrect. 11. The injection pump is damaged. 	<ol style="list-style-type: none"> 1. Reduce ground speed. 2. Fill or drain to the full mark. 3. Service the air filters. 4. Drain and flush the fuel system; add fresh fuel. 5. Refer to Engine Overheats. 6. Clean or replace the spark arrestor screen. 7. Bleed the nozzles and check for air leaks at fuel hose connections and fittings between the fuel tank and engine. 8. Contact your Authorized Service Dealer. 9. Contact your Authorized Service Dealer. 10. Contact your Authorized Service Dealer. 11. Contact your Authorized Service Dealer.
The traction unit does not drive.	<ol style="list-style-type: none"> 1. The parking brake is on. 2. The hydraulic fluid level is low. 3. The tow valves are open. 4. The pump and/or wheel motor is damaged. 5. The relief valve is damaged. 	<ol style="list-style-type: none"> 1. Release the parking brake. 2. Add hydraulic fluid to the reservoir. 3. Close the tow valves. 4. Contact your Authorized Service Dealer. 5. Contact your Authorized Service Dealer.