Form No. 3351–160 Rev A

Workman 200 Spray System

Heavy Duty Workman Vehicles

Model No. 41229—Serial No. 240000001 and Up

Operator’s Manual

Register your product at www.Toro.com

Original Instructions (EN, GB)

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.

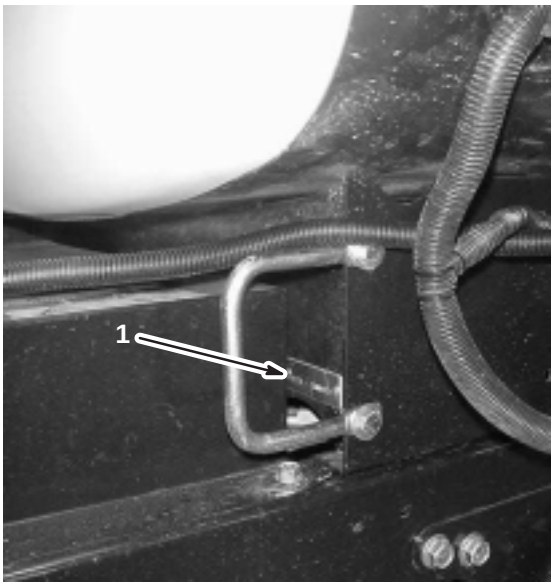


Figure 1

1. Location of the model and serial numbers, front left of tank skid

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.

8111 Lyndale Avenue South
Bloomington, MN 55420-1196

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

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

Safety

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

Warning

The WORKMAN equipped with a spray system is an off-highway vehicle only and is not designed, equipped, or manufactured for use on public streets, roads, or highways.

The WORKMAN was designed and tested to offer safe service when operated and maintained properly. Although hazard control and accident prevention partially are dependent upon the design and configuration of the machine, these factors are also dependent upon the awareness, concern, and proper training of the personnel involved in the operation, maintenance and storage of the machine. Improper use or maintenance of the machine can result in injury or death.

This is a specialized utility vehicle designed for off–road use only. Its ride and handling will have a different feel than what drivers experience with passenger cars or trucks. So take time to become familiar with your WORKMAN .

Not all of the attachments that adapt to the WORKMAN are covered in this manual. See the specific Operator's Manual provided with attachment for additional safety instructions. READ THESE MANUALS.

TO REDUCE THE POTENTIAL FOR INJURY OR DEATH, COMPLY WITH THE FOLLOWING SAFETY INSTRUCTIONS.

Supervisor's Responsibilities

- Make sure that operators are thoroughly trained and familiar with the *Operator's Manual*, Training Video, Engine Manual, and all labels on the Workman vehicle.
- Be sure to establish your own special procedures and work rules for unusual operating conditions (e.g. slopes too steep for vehicle operation). Use the 3rd High Lockout switch if high speed could result in a safety or vehicle abuse situation.

Chemical Safety

Warning

Chemicals are hazardous and can injure you, bystanders, animals, plants, soils, or other property.

- **Carefully read and follow the chemical manufacturer's instructions for the safe preparation, use, and disposal of the chemical.**
- **Keep chemicals off of your and bystander's skin. If contact should occur, wash it off immediately with clean water and detergent.**
- **Wear goggles and other protective equipment as instructed by the chemical manufacturer.**

- Obtain proper training before using or handling chemicals.
- Use the correct chemical for the job.
- Follow the chemical manufacturer's instructions for the safe application of the chemical.
- Handle chemicals in a well ventilated area.
- Wear goggles and other protective equipment as instructed by the chemical manufacturer. Ensure that as little skin as possible is exposed while using chemicals.
- Have clean water available especially when filling the spray tank.
- Do not eat, drink, or smoke while working with chemicals.
- Always wash your hands and other exposed areas as soon as possible after finishing the work.
- Properly dispose of unused chemicals and chemical containers as instructed by the chemical manufacturer and your local codes.
- Chemicals and fumes in the tanks are dangerous; never enter the tank or place your head over or in the opening.

- Follow all local/state/federal requirements for the spraying of chemicals.

Before Operating

- Operate the machine only after reading and understanding the contents of this manual and the vehicle Operator's Manual.
- **Never** allow children to operate the vehicle. **Never** allow adults to operate it without proper instructions. Only trained and authorized persons should operate this vehicle. Make sure all operators are physically and mentally capable of operating the vehicle. Anyone who operates the vehicle should have a motor vehicle license.
- This vehicle is designed to carry **only you**, the operator, and **one passenger** in the seat provided by the manufacturer. **Never** carry any other passengers on the vehicle.
- **Never** operate the vehicle when under the influence of drugs or alcohol.
- Become familiar with the controls and know how to stop the engine quickly.
- Keep all shields, safety devices and decals in place. If a shield, safety device or decal is malfunctioning, illegible, or damaged, repair or replace it before operating the machine.
- Always wear substantial shoes. Do not operate machine while wearing sandals, tennis shoes or sneakers. Do not wear loose fitting clothing or jewelry which could get caught in moving parts and cause personal injury.
- Wearing safety glasses, safety shoes, long pants and a helmet is advisable and required by some local safety and insurance regulations.
- Keep everyone, especially children and pets, away from the areas of operation.
- Before operating the vehicle, always check all parts of the vehicle and any attachments. If something is wrong, **stop using the vehicle**. Make sure problem is corrected before vehicle or attachment is operated again.
- Since gasoline is highly flammable, handle it carefully.
  - Use an approved gasoline container.
  - Do not remove cap from fuel tank when engine is hot or running.
  - Do not smoke while handling gasoline.
  - Fill fuel tank outdoors and to about one inch below top of tank (bottom of filler neck). Do not overfill.
  - Wipe up any spilled gasoline.
- Use only an approved non–metal, portable fuel container. Static electric discharge can ignite gasoline vapors in a ungrounded fuel container. Remove the fuel container from the bed of the vehicle and place on the ground away from the vehicle before filling. Keep nozzle in contact with container while filling.
- Check the safety interlock system daily for proper operation. If a switch should malfunction, replace the switch before operating machine. After every two years, replace the interlock switches in the safety system, whether they are working properly or not.

While Operating

Warning

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

Do not run engine indoors or in an enclosed area.

- Operator and passenger should remain seated whenever the vehicle is in motion. Operator should keep both hands on steering wheel, whenever possible and passenger should use hand holds provided. Keep arms and legs within the vehicle body at all times. Never carry passengers in the box or on attachments. Remember your passenger may not be expecting you to brake or turn and may not be ready.
- Always watch out for and avoid low overhangs such as tree limbs, door jambs, and over-head walkways. Make sure there is enough room over head to easily clear the vehicle, sprayer booms and your head.
- When starting the engine:
  - Sit on operator's seat and ensure parking brake is engaged.
  - Disengage PTO (if so equipped) and return hand throttle lever to OFF position (if so equipped).
  - Move shift lever to NEUTRAL and depress clutch pedal.
  - Keep foot off accelerator pedal.
  - Turn ignition key to START.
- Using the machine demands attention. Failure to operate vehicle safely may result in an accident, tip over of vehicle and serious injury or death. Drive carefully. To prevent tipping or loss of control:
  - Use extreme caution, reduce speed and maintain a safe distance around sand traps, ditches, creeks, ramps, and any unfamiliar areas or other hazards.
  - Watch for holes or other hidden hazards.

- Use caution when operating vehicle on a steep slope. Normally travel straight up and down slopes. Reduce speed when making sharp turns or when turning on hillsides. Avoid turning on hillsides whenever possible.
- Use extra caution when operating vehicle on wet surfaces, at higher speeds or with a full load. Stopping time will increase with a full load. Shift into a lower gear before starting up or down a hill.
- Avoid sudden stops and starts. Do not go from reverse to forward or forward to reverse without first coming to a complete stop.
- Do not attempt sharp turns or abrupt maneuvers or other unsafe driving actions that may cause a loss of vehicle control.
- Do not pass another vehicle traveling in the same direction at intersections, blind spots, or at other dangerous locations.
- When draining, do not let anyone stand behind vehicle and do not drain liquid on any one's feet.
- Keep all bystanders away. Before backing up, look to the rear and assure no one is behind. Back up slowly.
- Watch out for traffic when near or crossing roads. Always yield the right of way to pedestrians and other vehicles. This vehicle is **not** designed for use on streets or highways. Always signal your turns or stop early enough so other persons know what you plan to do. Obey all traffic rules and regulations.
- Never operate vehicle in or near an area where there is dust or fumes in the air which are explosive. The electrical and exhaust systems of the vehicle can produce sparks capable of igniting explosive materials.
- If ever unsure about safe operation, STOP WORK and ask your supervisor.

- Do not touch engine, transaxle, muffler or muffler manifold while engine is running or soon after it has stopped because these areas may be hot enough to cause burns.
- If the machine ever vibrates abnormally, stop immediately, turn engine off, wait for all motion to stop and inspect for damage. Repair all damage before resuming operation.
- Before getting off the seat:
  - Stop movement of the machine.
  - Shut engine off and wait for all movement to stop.
  - Set parking brake.
  - Remove key from ignition.

Note: Block wheels if machine is on an incline.

Braking

- Slow down before you approach an obstacle. This gives you extra time to stop or turn away. Hitting an obstacle can damage the vehicle and its contents. More important, it can injure you and your passenger.
- Gross Vehicle Weight (GVW) has a major impact on your ability to stop and/or turn. Heavy loads and attachments make a vehicle harder to stop or turn. The heavier the load, the longer it takes to stop.
- Turf and pavement are slick when they are wet. It can take 2 to 4 times as long to stop on wet surfaces as on dry surfaces. If you drive through standing water deep enough to get the brakes wet, they will not work well until they are dry. After driving through water, you should test the brakes to make sure they work properly. If they do not, drive slowly while putting light pressure on the brake pedal. This will dry the brakes out.

Operating on Hills and Rough Terrain

Operating the vehicle on a hill may cause tipping or rolling of the vehicle, or the engine may stall and you could lose headway on the hill. This could result in personal injury.

- Do not accelerate quickly or slam on the brakes when backing down a hill, especially with a load.
- Never drive across a steep hill; always drive straight up or down or go around the hill.
- If the engine stalls or you begin to lose headway while climbing a hill, gradually apply the brakes and slowly back straight down the hill.
- Turning while traveling up or down hills can be dangerous. If you have to turn while on a hill, do it slowly and cautiously. Never make sharp or fast turns.
- Heavy loads affect stability. Reduce the weight of the load and your speed when operating on hills.
- Avoid stopping on hills, especially with a load. Stopping while going down a hill will take longer than stopping on level ground. If the vehicle must be stopped, avoid sudden speed changes, which may initiate tipping or rolling of the vehicle. Do not slam on the brakes when rolling backward, as this may cause the vehicle to overturn.
- Reduce speed and load when operating on rough terrain, uneven ground, and near curbs, holes, and other sudden changes in terrain. Loads may shift, causing the vehicle to become unstable.

Warning

Sudden changes in terrain may cause abrupt steering wheel movement, possibly resulting in hand and arm injuries.

- **Reduce your speed when operating on rough terrain and near curbs.**
- **Grip the steering wheel loosely around the perimeter. Keep your hands clear of the steering wheel spokes.**

Loading

The weight of the cargo can change the vehicle center of gravity and vehicle handling. To avoid loss of control and personal injury, follow these guidelines:

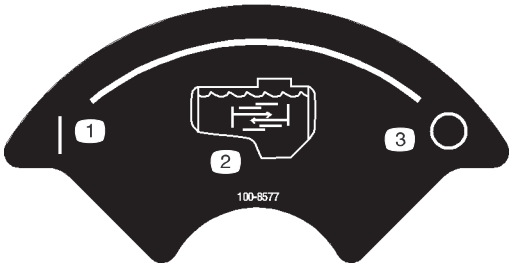
- Reduce the weight of the load when operating on hills and rough terrain to avoid tipping or overturning of the vehicle.
- Liquid loads can shift. This shifting happens most often while turning, going up or down hills, suddenly changing speeds, or while driving over rough surfaces. Shifting loads can cause the vehicle to tip over.
- When operating with a heavy load, reduce your speed and allow for sufficient braking distance. Do not suddenly apply the brakes. Use extra caution on slopes.
- Be aware that heavy loads increase your stopping distance and reduce your ability to turn quickly without tipping over.

Maintenance

- Only permit qualified and authorized personnel to maintain, repair, adjust, or inspect the vehicle.
- Before servicing or making adjustments to the machine, stop engine, set parking brake and remove key from ignition to prevent accidental starting of the engine.
- Empty the tank before tilting or removing sprayer from vehicle and before storage.
- Never work under a sprayer without using tank support prop rod.
- Make sure all hydraulic line connectors are tight, and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- Keep body and hands away from pin hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not hands, to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin and do serious damage. If fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.
- Before disconnecting or performing any work on the hydraulic system, all pressure in system must be relieved by stopping engine, cycling dump valve from raise to lower and/or lowering box and attachments. If box must be in raised position, secure with safety support.
- To make sure entire machine is in good condition, keep all nuts, bolts and screws properly tightened.
- To reduce potential fire hazard, keep the engine area free of excessive grease, grass, leaves and accumulation of dirt.
- Before servicing or making adjustments to the machine, stop the engine, set the parking brake, and remove the key from the ignition to prevent someone from accidentally starting the engine.
- If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing, and any parts of the body away from the engine and any moving parts. Keep everyone away.
- Do not overspeed engine by changing governor settings. Maximum engine speed is 3650 rpm. To assure safety and accuracy, have an Authorized TORO Distributor check maximum engine speed with a tachometer.
- If major repairs are ever needed or assistance is required, contact an Authorized TORO Distributor.
- To be sure of optimum performance and safety, always purchase genuine TORO replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous. Altering this vehicle in any manner may affect the vehicle's operation, performance, durability or its use may result in injury or death. Such use could void the product warranty of The TORO Company.
- This vehicle should not be modified without the TORO Company's authorization. Direct any inquiries to The TORO Company, Commercial Division, Vehicle Engineering Dept., 300 West 82nd St., Bloomington, Minnesota 55420–1196. USA
- Refer to your vehicle's Operator's manual for other maintenance.

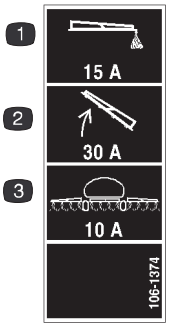
Safety and Instruction Decals

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.



100-8577

1. On
2. Agitation
3. Off

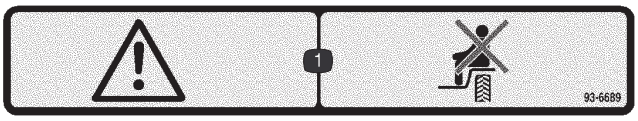


106-1374

1. Foam marker
2. Boom lift
3. Spray system

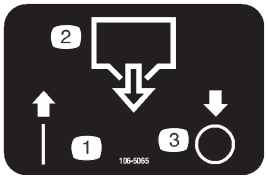
93-6687

1. Do not step here.



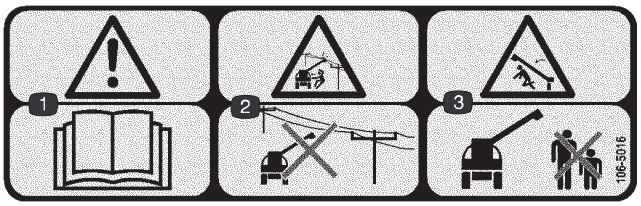
93-6689

1. Warning—do not carry passengers.



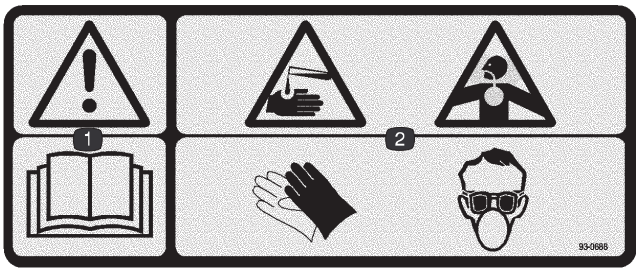
106-5065

1. On
2. Tank drain
3. Off



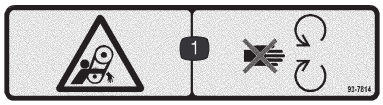
106-5016

1. Warning—read the *Operator's Manual.*
2. Electric shock hazard, overhead power lines—stay away from overhead power lines.
3. Crushing hazard, boom—keep bystanders a safe distance from the machine.



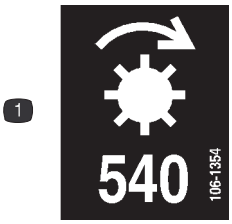
93-0688

1. Warning—read the *Operator's Manual.*
2. Caustic liquid/chemical burn and toxic gas inhalation hazards—wear hand, skin, eye, and respiratory protection.



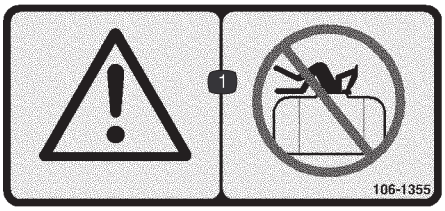
93-7814

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



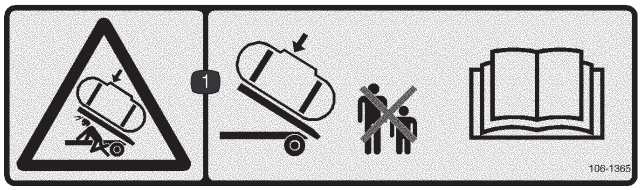
106-1354

1. 540 RPM



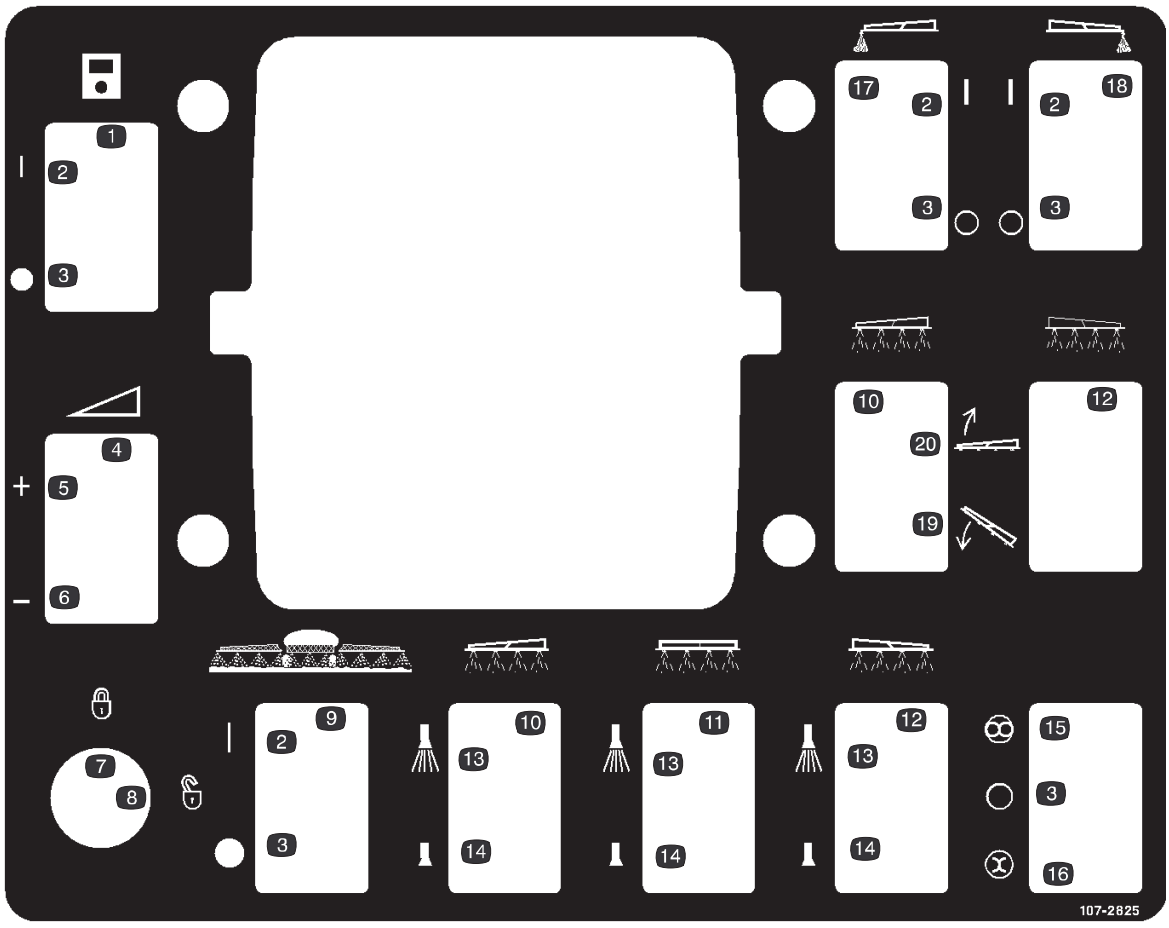
106-1355

1. Warning—do not enter the tank.



106-1365

1. Crushing hazard, sprayer tank—keep bystanders a safe distance from the sprayer tank and read the *Operator's Manual.*



107-2825

1. Monitor
2. On
3. Off
4. Application rate
5. Increase
6. Decrease
7. Locked-rate switch
8. Unlocked-rate switch
9. Master boom spray
10. Left boom
11. Center boom
12. Right boom
13. Spray on
14. Spray off
15. Automatic
16. Manual
17. Left boom foam marker
18. Right boom foam marker
19. Lower the boom.
20. Raise the boom.

Specifications

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

Spray system base weight	434 lb (197 kg)
Tank capacity	200 US gallons (757 L)
Overall vehicle length with the standard spray system	163 inches (415 cm)
Overall vehicle height with standard spray system to the top of the tank	58 inches (147 cm)
Overall vehicle height with standard spray system and the booms stored in the X pattern	72 inches (183 cm)
Overall vehicle width with the standard spray system and the booms stored in the X pattern	78 inches (198 cm)

Optional Equipment

The Toro Company has optional equipment and accessories that you can purchase separately and install on your WORKMAN. Contact your Authorized Service Dealer for a complete list of optional equipment that is currently available for your sprayer.

Setup

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

Note: You will need to purchase RTV silicone sealant before installing this kit.

Contact your Authorized Toro Distributor for information on the available accessories. After you install the booms and nozzles and before using the sprayer for the first time, adjust the boom bypass valves so that the pressure and application rate remains the same for all booms with one or more booms turned off. Refer to Adjusting the Boom Bypass valves, page 26.

Loose Parts

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

Description	Qty.	Use
Jack stands	4	Preparing the Workman.
Clevis pins	4	
Cover assembly	1	Installing the vehicle speed sensor.
Geartooth sensor	1	
Screw, M6 x 1.00 x 12	1	
Spring washer, M6	1	
Fuse Block	1	Installing the electrical harness.
Fuse	1	
Screw, #10-24 x 3/4 inch	2	
Washer, 7/32 inch	2	
Locknut, #10-24	2	
Electrical harness	1	
Star washer	1	
Wire ties	8	
Decal	1	
Adapter bracket	1	Installing the control box mount.
Bolt, 1/4 x 3/4 inch	4	
Flange nut, 1/4 inch	4	
Control box mount	1	
Bolt, 5/16 x 1 inch	4	
Lock nut, 5/16 inch	4	
Support bracket assembly	1	Installing the prop rod assembly.
Socket head bolts, 3/8 x 1 inch	2	
Lock nut, 3/8 inch	2	
Prop rod	1	
Nut	1	
Yoke	1	
Clevis pin	1	
Cotter pin	1	

Description	Qty.	Use
Hold-down brackets	2	Installing the attachment hold-down brackets.
Radiator cover Radiator panel Bolts, 3/8 x 1 inch Bolts, 1/4 x 3/4 inch	1 1 4 3	Installing the radiator cover.
Tank and skid assembly Clevis pins Lynch pins Bolts, 1/2 x 1-1/2 inch Washers, 1/2 inc Nuts, 1/2 inch	1 2 4 2 4 2	Installing the tank skid.
Knob J–clips Bolt, 1/4 x 3/4 inch Flange nut, 1/4 inch	1 3 1 1	Installing the control box.
Boom holder assembly, left Boom holder assembly, right	1 1	Installing the boom holders.
Operator's Manual	1	Read before operating the machine.
Operator's Video	1	Watch before operating the machine.
Parts Catalog	1	Use for ordering replacement parts.
Selection Guide	1	Use for selecting nozzles.
Registration Card	1	Complete and return to Toro.
Predelivery Inspection Form	1	Complete and file in your customer history portfolio.

Removing Existing Bed

1. Start the engine. Engage the hydraulic lift lever and lower the bed until cylinders are loose in slots. Release the lift lever and the turn off engine.
2. Remove the lynch pins from the outer ends of the cylinder rod clevis pins (Fig. 2).

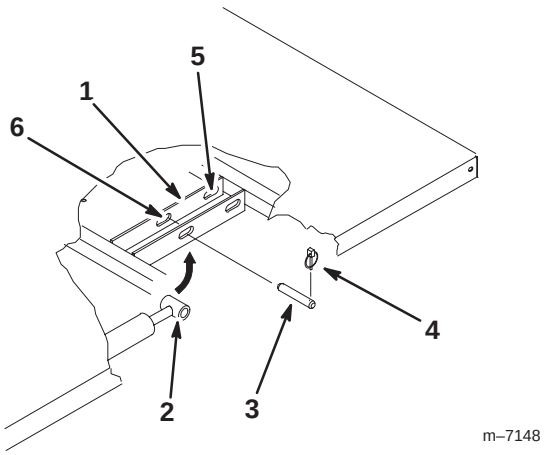


Figure 2

1. Bed mounting plate
2. Cylinder rod end
3. Clevis pin
4. Lynch pin
5. Rear slots (Full bed)
6. Front slots (2/3 bed)

3. Remove the clevis pins securing the cylinder rod ends to the bed mounting plates by pushing the pins toward the inside (Fig. 2).

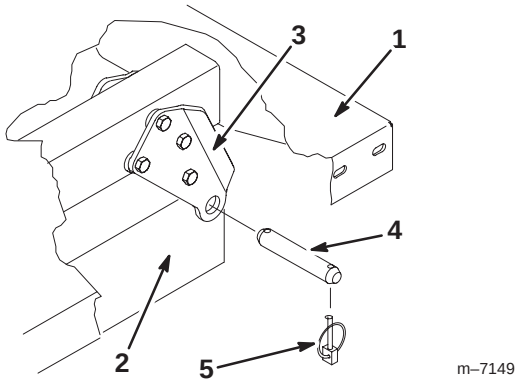


Figure 3

1. Left rear corner of bed
2. Vehicle frame channel
3. Pivot plate
4. Clevis pin
5. Lynch pin

4. Remove the lynch pins and clevis pins securing the pivot brackets to the frame channels (Fig. 3).

5. Lift the bed off the vehicle.

Caution

The full bed weighs approximately 210 pounds, so do not try to install or remove it by yourself. Get the help of two or three other people or use an overhead crane.

6. Store the cylinders in storage clips. Engage the hydraulic lift lock lever on the vehicle to prevent accidental extension of the lift cylinders.

Preparing the Workman

1. Park the vehicle in a safe work space with access to a lift.

2. Turn the engine off and remove the key.

3. Disconnect the negative battery cable from the post.

Note: This is a safety precaution since the installation will require installing an electrical harness.

Installing the Vehicle Speed Sensor

Important The speed sensor must be installed prior to the installation of the Power Take Off (PTO) kit. If a PTO kit was previously installed it must be removed at this time. See the *Installation Instructions* from the PTO kit for more information on removing and installing the PTO kit.

1. Remove the four bolts securing the cover to the top of the transaxle housing (Fig. 4).

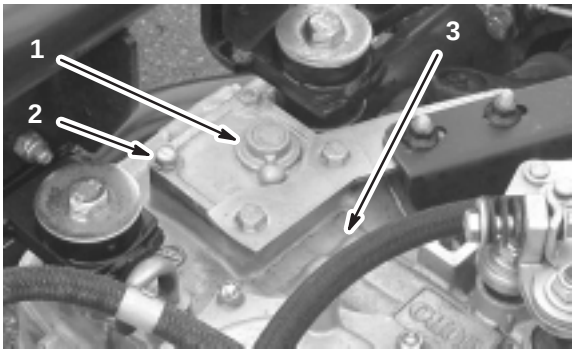


Figure 4

1. Cover
2. Bolt
3. Transaxle housing

2. Apply RTV sealant to the new cover assembly before installing it onto the transaxle unit.

3. Install the new cover assembly to the transaxle using the four bolts removed in step 1 (Fig. 5). The correct orientation of the cover will have the seal facing up and positioned toward the left hand side of the vehicle.

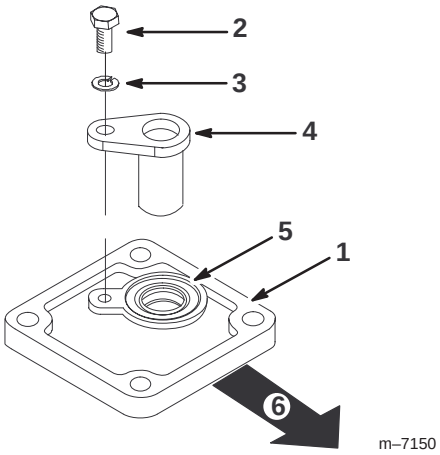


Figure 5

1. Cover
2. Screw, M6 x 1.00 x 12
3. Spring washer, M6
4. Geartooth sensor
5. Seal
6. Front of vehicle

4. Install the geartooth sensor using the screw (M6 x 1.00 x 12) and spring washer (M6) as shown in figure 5.

5. Install the PTO kit. Refer the *Installation Instructions* for more information.

Installing the Electrical Harness

1. Remove the screws holding the front hood to the frame. Remove the hood to access the electrical wiring.

2. Attach the electrical harness to the fuse block by joining the wires in the harness to the corresponding wire connectors in the back of the fuse block (Fig. 6).

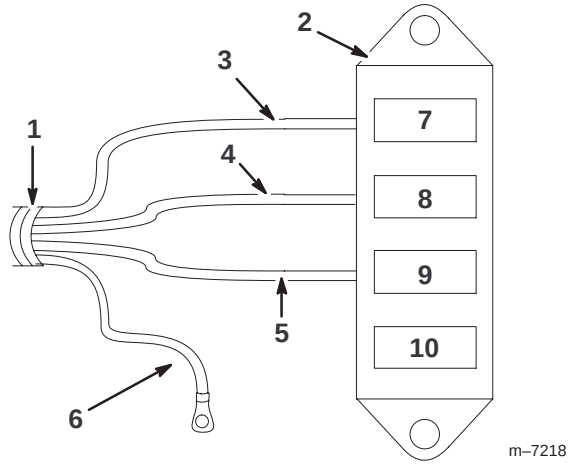


Figure 6

1. Wiring harness
2. New fuse block
3. Red/black wire
4. Red/white wire
5. Red wire
6. Black ground wire
7. Foam marker fuse slot
8. Boom lift fuse slot
9. Spray system fuse slot
10. Open slot, not used

3. Connect the black ground wire to the existing 1/4 inch bolt on the vehicle frame, using the star washer (Fig. 7).

4. Install the fuse block and harness to the frame along side the existing fuse block, using the two screws (#10-24 x 3/4 inch), two washers (7/32 inch), and two locknuts (#10-24) as shown in figure 7.

5. Install the 10 amp fuse to the spray system fuse slot and attach new fuse block decal (Fig. 7).

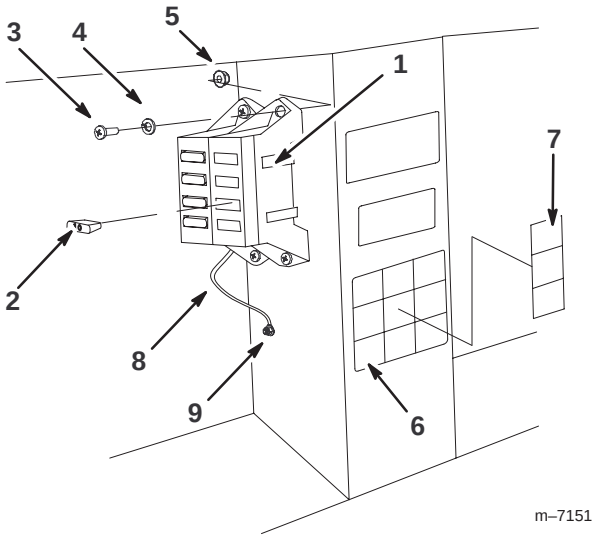


Figure 7

1. Fuse block
2. Fuse, 10 amp
3. Screws, #10-24 x 3/4 inch
4. Washers, 7/32 inch
5. Lock nut, #10-24 inch)
6. Existing decal
7. New fuse block decal
8. Ground wire, black
9. Star washer and bolt

6. Route the wiring harness through the opening in the floor, under the seat base, and rearward along with the existing wiring.

7. At the ROPS cover, rear of the seat assembly, route the wiring harness up from under the seat and above the frame. Make sure the spray system power connector is out from underneath the vehicle (Fig. 8).

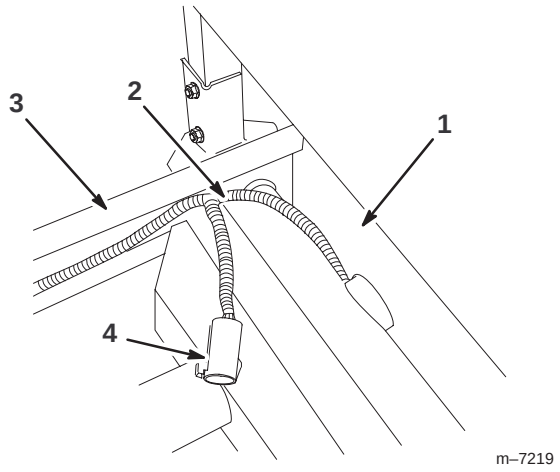


Figure 8

1. ROPS cover
2. Wiring harness
3. Left frame
4. Spray system power connector

8. Route the harness along the left frame and back to the speed sensor with the existing wiring (Fig. 8).
9. Install the electrical connector to speed sensor.
10. Use wire ties to secure the harness to the existing wiring and position it away from any moving parts and heat sources.
11. Install the front hood and secure it with the screws removed previously.

Installing the Control Box Mount

On some vehicles the control mount plate is attached to the dashboard at the same point the hand throttle assembly is mounted. If the hand throttle kit is installed it must be separated from the dashboard in order to install the control mount plate. Refer to the Hand Throttle Kit *Operator's Manual* for directions in removing and installing the hand throttle assembly.

Installing the Adapter Plate

If you are installing the spray system on a Workman vehicle with a serial number of 239999999 or lower, you will need to use the adapter plate, bolts, and nuts included in the loose parts.

1. Install the adapter plate to the Workman dashboard using four bolts (1/4 x 3/4 inch) and four flange nuts (1/4 inch) as shown in figure 9.

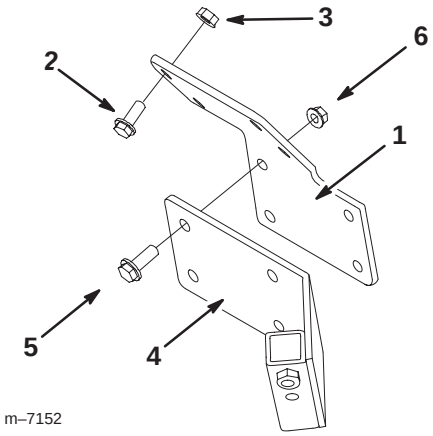


Figure 9

1. Adapter plate
2. Bolt, 1/4 x 3/4 inch
3. Flange nut, 1/4 inch
4. Control mount
5. Bolt, 5/16 x 1 inch
6. Lock nut, 5/16 inch

Installing the Control Box Mount

2. Install the control box mount to the Workman dashboard (or adapter plate) using four bolts (5/16 x 1 inch) and four lock nuts (5/16 inch) as shown in figure 10.

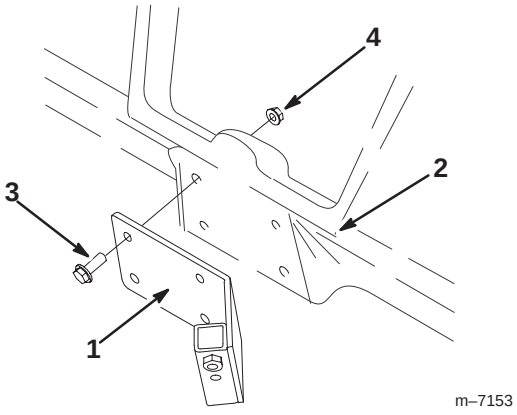


Figure 10

1. Control box mount
2. Dashboard
3. Bolt, 5/16 x 1 inch
4. Lock nut, 5/16 inch

Installing the Prop Rod Assembly

1. Install the strut support assembly to the inside of the left frame rail using two socket head bolts (3/8 x 1 inch) and two lock nuts (3/8 inch) as shown in figure 11 and 12. Torque the nuts to 30 ± 3 ft·lb (30 ± 4 N·m).

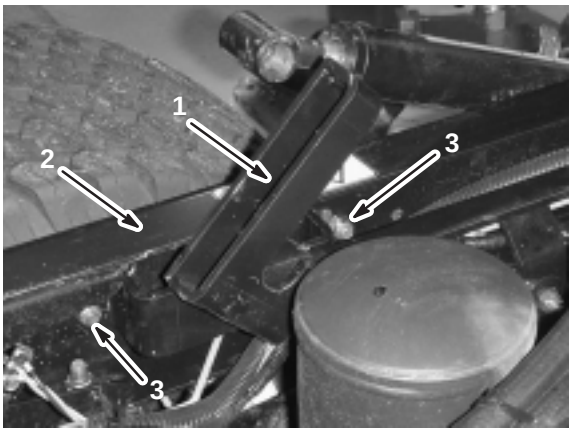


Figure 11

Inside View

1. Strut support assembly
2. Left frame rail
3. Lock nut, 3/8 inch

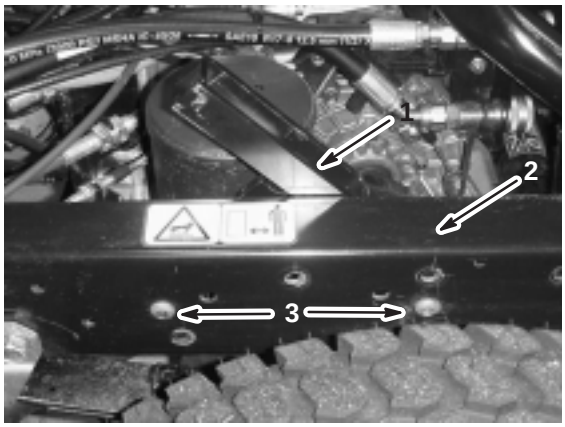


Figure 12

Outside View

1. Strut support assembly
2. Left frame rail
3. Socket head bolt, 3/8 x 1 inch

2. Loosely assemble the prop rod, jam nut, and yoke (Fig. 13).

3. Install the prop rod assembly on the inside of the rear, lefthand side of the tank skid frame at the yoke using a clevis pin and cotter pin (Fig. 13).

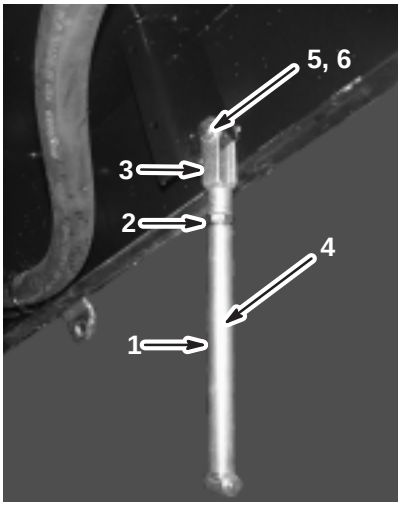


Figure 13

1. Prop rod
2. Jam nut
3. Yoke
4. Prop rod assembly
5. Clevis pin
6. Cotter

4. Bend the cotter pin to secure the prop rod into place.

Installing the Attachment Hold-down Brackets

1. Locate and remove the two rear bolts and flange nuts on the lift cylinder bracket. Retain the fasteners for later use.

2. Install the attachment hold-down brackets using the two bolts and flange nuts removed previously (Fig. 14).

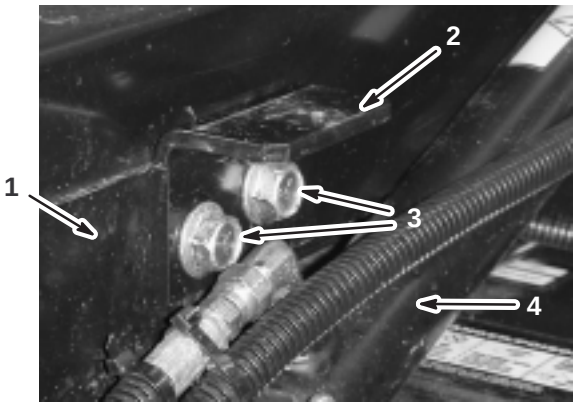


Figure 14

Left hand side shown

1. Lift cylinder bracket
2. Hold-down bracket
3. Bolts
4. Lift cylinder

3. Repeat steps to install the hold-down bracket on the opposite side.

Installing the Radiator Cover

1. Locate the spray system power connector on the wiring harness installed previously.
2. Install the radiator cover assembly over the vehicle's radiator (Fig 15).

Important Make sure the spray system power connecter is routed toward the front of the vehicle and not trapped under the radiator cover assembly.

3. Secure the cover to the frame using four bolts (3/8 x 1 inch).

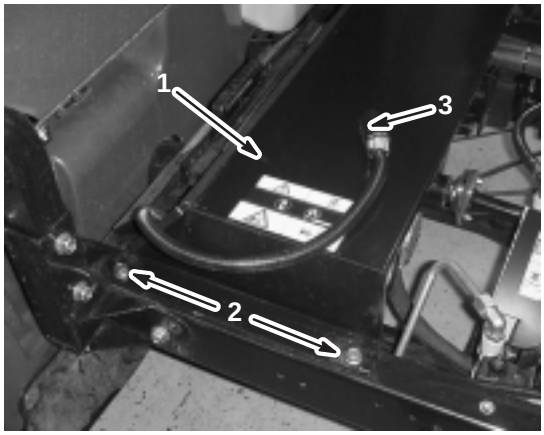


Figure 15

Left hand side shown

1. Radiator cover assembly
2. Bolt, 3/8 x 1 inch
3. Spray system power connector

Installing the Radiator Panel on Air Cooled Vehicles

An additional panel is attached to the front, left of the radiator cover assembly on all vehicles with air cooled engines.

4. Install the radiator panel to the radiator cover assembly by lining the three drilled holes in the panel with the corresponding holes in the cover assembly.

Important Make sure the spray system power connecter is routed toward the front of the vehicle and not trapped under the radiator cover assembly.

5. Secure the panel to the cover using three bolts (1/4 x 3/4 inch).

Installing the Tank Skid

1. Using a lift, raise the tank skid assembly and position over the vehicle frame with the pump and valve assemblies facing rearward.
2. Turn the prop rod 90° and guide it through the prop rod support (Fig 16) as the tank skid is slowly lowered.

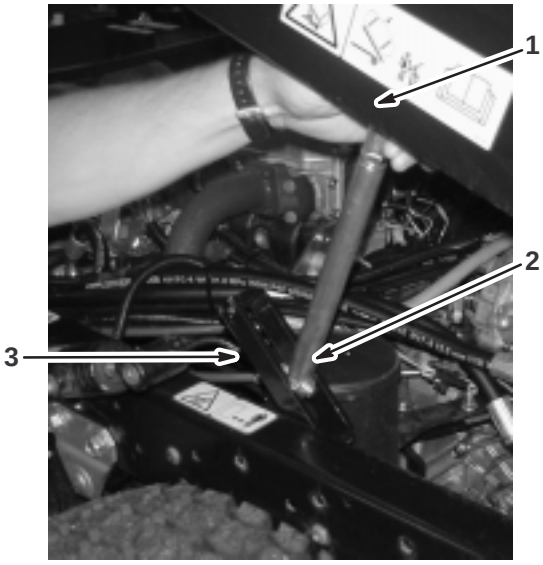


Figure 16

1. Tank skid assembly
2. Prop rod, turned 90°
3. Prop rod support assembly

3. Once the prop rod is through the support assembly, turn the prop rod 90° to retain it within the support.
4. Continue to lower the tank skid assembly to the vehicle frame.

5. Use the access panels on both sides of the tank skid to check for pinching of any hoses or wiring (Fig 17).

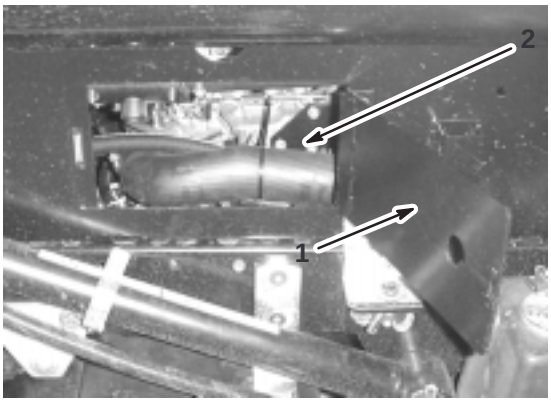


Figure 17

Right side shown

1. Access panel door
2. Interior of the tank skid

Important If any hoses or wiring on the tank skid assembly are being pinched or bent, raise the assembly up, adjust its positioning, and tie items back.

6. Line up the pivot lug at the rear of the tank skid assembly with the opening at the end of the vehicle frame (Fig 18).

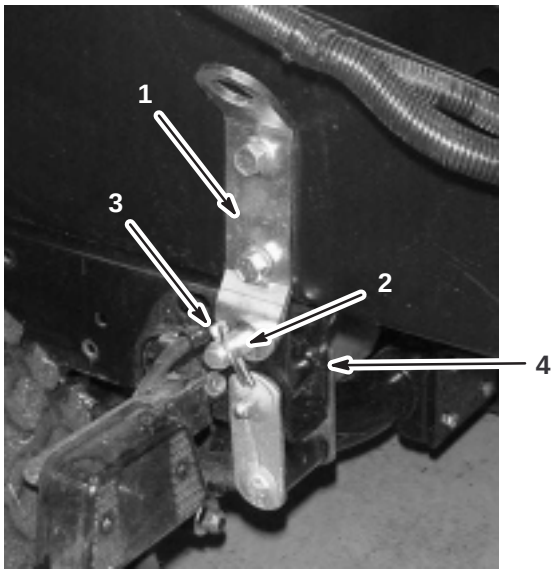


Figure 18

Left side shown

1. Pivot lug
2. Clevis pin, (3/4 inch)
3. Lynch pin
4. Vehicle frame

7. Install a clevis pin (3/4 inch) and two lynch pins to the pivot lug to secure the tank assembly to frame (Fig 18).

8. Repeat on the opposite side.

Attaching Pump Drive

9. Pull rearward on the rubber cowling of the front of the PTO drive shaft and install the drive shaft onto the PTO output shaft (Fig. 19).

Important Verify the PTO shaft is secured by making sure the locking balls are seated in the groove of the output shaft.

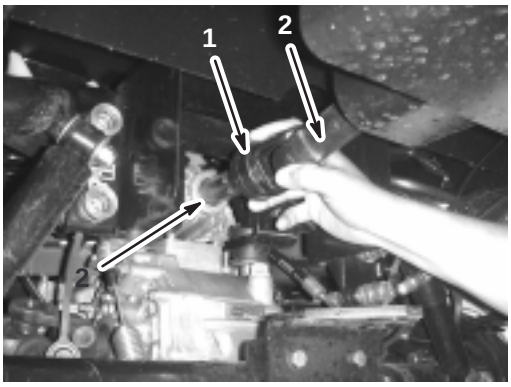


Figure 19

1. Rubber cowling
2. PTO drive shaft
3. PTO output shaft

Finishing the Tank Skid Installation

10. Line up the front mounting brackets with the hold down brackets installed previously.

11. Secure the tank skid assembly to the frame with a bolt (1/2 x 1-1/2 inch), two washers (1/2 inch), and a locknut (1/2 inch) as shown in figure 20.

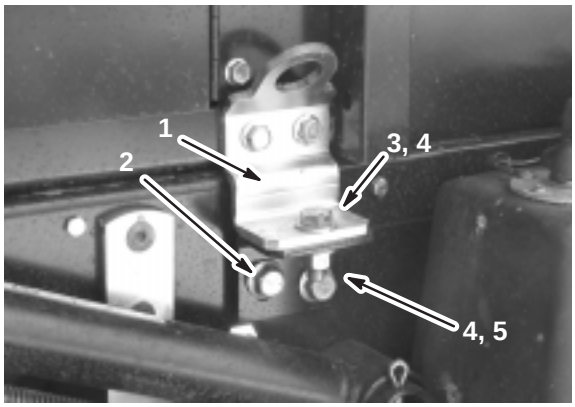


Figure 20

Left side shown

1. Front mounting bracket
2. Hold -down bracket
3. Bolt, 1/2 x 1-1/2 inch
4. Washer, 1/2 inch
5. Locknut, 1/2 inch

12. Repeat these steps for the front mount and hold-down bracket on the opposite side.

Installing the Control Box

The control box is mounted on the tank skid by a clevis pin, hair pin and hand knob. It is located on the left side toward the back.

1. Remove the clevis pin, and hair pin securing the control box to the tank skid.
2. Install the control box, with the controls facing the driver, to the control mount using the clevis pin and hair pin removed previously.
3. Install the hand knob to stabilize the control box. Tighten by hand.
4. Connect the tank skid wiring harness to the spray system power connector.

Installing the J-Clips

5. Install two J–clips in the center console at the points located in figure 21 using the existing screws.

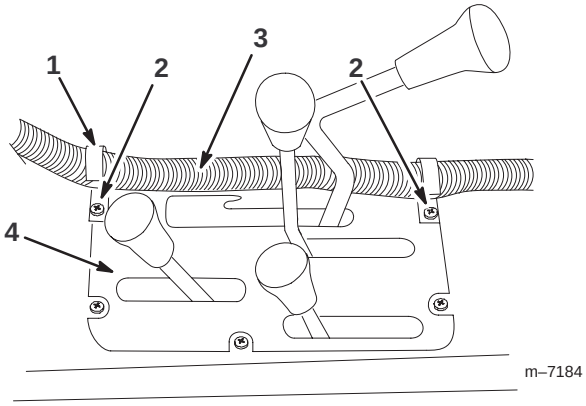


Figure 21

1. J-clip
2. Existing screws
3. Control box harness
4. Center console

6. Install a J-clip in the ROPS cover behind the operator using a bolt (1/4 x 1 inch) and a nut (1/4 inch). The hole is on the centerline, approximately 20 inches in from the operator's side edge of the ROPS cover.

Note: If a hole is not present, one must be drilled. Drill a 1/4 inch hole in the top surface of the cover on the centerline approximately 20 inches from the edge on the operator's side (Fig. 22).

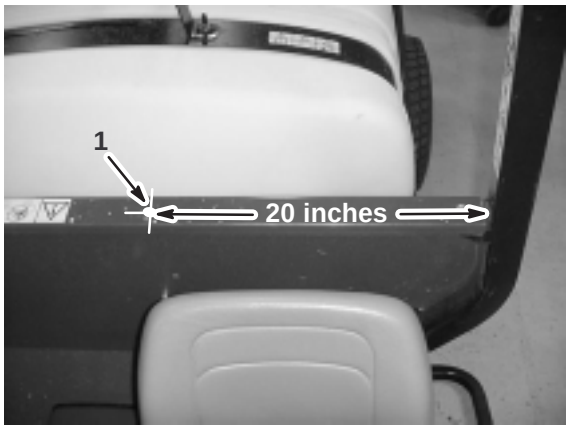


Figure 22

1. Drill hole, 1/4 inch

7. Secure the control box harness to the console and ROPS cover using the J-clips.

Installing Boom Holders

Install the boom holder assemblies included with the Spray System when installing the Boom Kit. Use the Boom Kit *Installations Instructions* for more information on installing the boom extensions.

1. Install the left boom holder assembly included in the spray system loose parts to the tank skid frame when the center boom is installed as shown in figure 23, using 1 bolt (1/2 x 1-1/4 inches), 1 bolt (1/2 x 3 inches), and 2 flange nuts (1/2 inch). The fasteners used are in the boom kit.
2. Repeat Step 1 to install the boom holder on the right side.

Note: The spray system is now prepared for the continued installation of the Boom Kit. Refer to the Boom Kit *Installations Instructions* for more information.

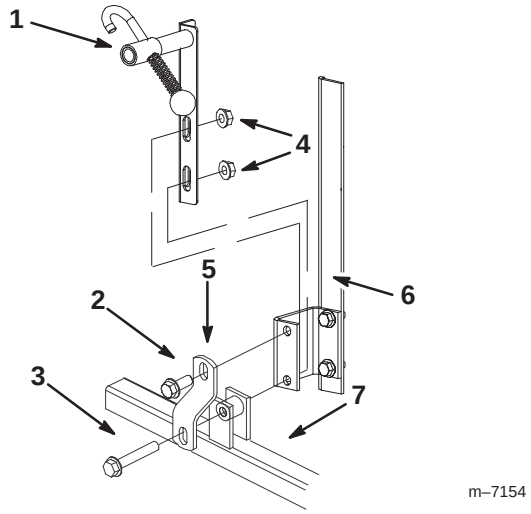


Figure 23

Left side shown

1. Left boom holder assembly
2. Bolt, 1/2 x 1-1/4 inch
3. Bolt, 1/2 x 3 inch
4. Flange nut, 1/2 inch
5. Frame mounting bracket
6. Frame
7. Center boom

Before Operating

Filling the Fresh Water Tank

The sprayer is equipped with a fresh water tank (Fig. 24) for you to wash chemicals off of your skin, eyes, or other surfaces in the case of accidental exposure. Always fill the fresh water tank with clean water before handling or mixing any chemicals.

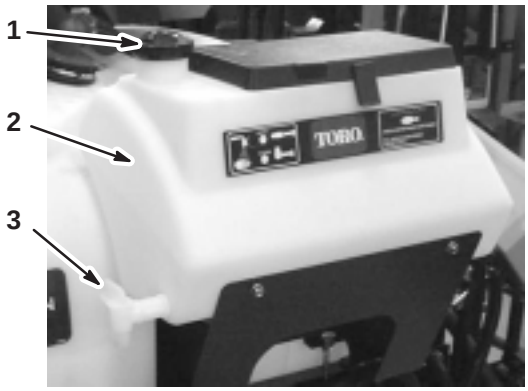


Figure 24

1. Filler cap
2. Fresh water tank
3. Spigot

To open the fresh water tank spigot, turn the lever on the spigot toward the front of the sprayer.

Operation

This section covers the operation of the spray system only. See your Workman *Operator's Manual* for information on vehicle operation.

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

Think Safety First

Please carefully read all of the safety instructions and decals in the safety section of both this manual and your vehicle manual. Knowing this information could help you or bystanders avoid injury.

Figure 25

1. Power switch, Spray Pro monitor
2. Spray Pro monitor
3. Application rate switch
4. Rate lockout key switch
5. Master boom switch
6. Left boom switch
7. Center boom switch
8. Right boom switch

Sprayer Controls and Components

Spray Pro Monitor Power Switch

The Spray Pro monitor power switch is the On/Off switch for the monitor. Press the switch to enable or disable the Spray Pro monitor (Fig. 25). When the switch is turned on, a light on the switch illuminates. See the *Spray Pro Monitor* section on page 24 for information on operating the monitor.

Important The Spray Pro monitor switch has power supplied to it at all times. Make sure the switch is turned off when stored.

Master Boom Switch

The master boom switch allows you to start or stop the spray operation. Press the switch to enable or disable the spray system (Fig. 25). When the master switch is off, the Spray Pro screen reads "Hold."

Boom Switches

The boom switches are located along the bottom of the control panel (Fig. 25). Toggle each switch upward to turn the corresponding boom section on and downward to turn them off. When the switch is turned on, a light on the switch illuminates. These switches will only affect the spray system when the master boom switch is on.

Application Rate Switch

The application rate switch is located on the left side of the control panel (Fig. 25). Press and hold the switch upward to increase the spray system application rate, or press and hold it downward to decrease application rate.

Rate Lockout Key Switch

The rate lockout key switch is located on the lower, left corner of the control pane (Fig. 25). Turn the key counterclockwise to the locked position to disable the application rate switch, thereby keeping anyone from accidentally changing the application rate. Turn the key clockwise to the unlocked position to enable the application rate switch.

Boom Lift, Sonic Boom, and Foam Marker Switch Locations

If you install the electric boom lift, sonic boom, and foam marker kit, you will add switches to the control panel for controlling their operation. The sprayer comes with plastic plugs in these locations.

Rate Control Valve

This valve, located behind the tank (Fig. 26), controls the amount of fluid that is routed to the booms by directing fluid flow to the booms or the bypass hose to the agitation valve. You can control this valve in two ways: the application rate switch or manually. To control it manually, you need to disconnect the wire connector on the valve, then you can rotate the knob on top of the valve to manually obtain the desired application rate.

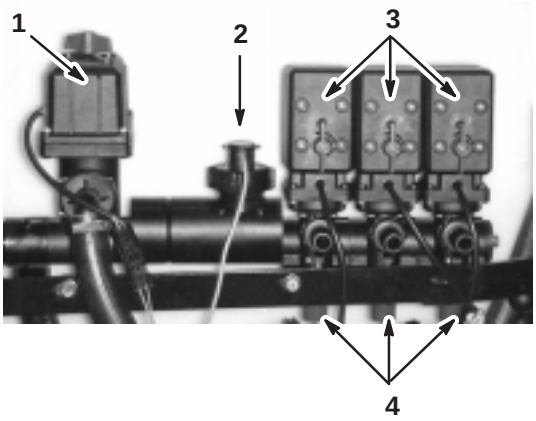


Figure 26

1. Rate control valve
2. Flowmeter
3. Boom valves
4. Boom bypass valves

Flowmeter

The flowmeter measures the flow rate of the fluid for use by the Spray Pro™ system (Fig. 26).

Boom Valves

These valves turn the three booms on or off (Fig. 26). If you do not have a boom installed or do not want a boom to be able to be turned on, you can manually operate each valve by disconnecting the wire connector in the valve, then rotate the knob on the valve clockwise to turn the valve off or counterclockwise to turn it on.

Boom Bypass Valves

The boom bypass valves (Fig. 26) redirect the fluid flow for a boom to the tank when you turn off the boom section. You can adjust these valves to ensure that the boom pressure remains constant no matter how many booms are on. Refer to Adjusting the Boom Bypass Valves, page 26.

Agitation Control Valve

This valve is located on the right side of the tank (Fig. 27). Turn the knob on the valve to the 9 o'clock position to turn on the tank agitation and to the 3 o'clock position to turn off the tank agitation.

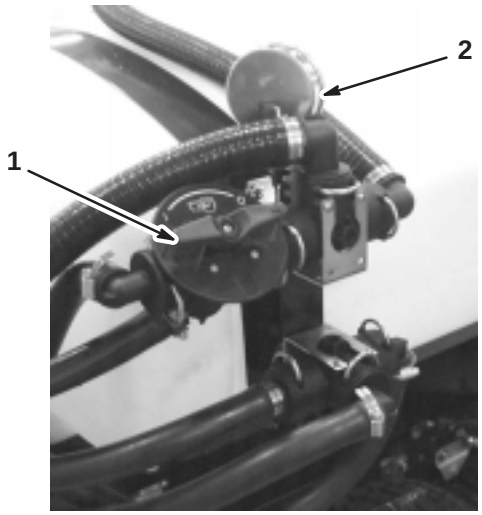


Figure 27

1. Agitation control valve
2. Pressure gauge

For agitation to work, the PTO and clutch must be engaged, and the engine must be running above an idle. If you stop the sprayer and need agitation on, place the range shift lever in the Neutral position, let out the clutch, set the parking brake, and set the hand throttle (if equipped).

Pressure Gauge

The pressure gauge is located to the right of the tank (Fig. 27). This gauge shows the pressure of the fluid in the system in psi and bar.

Pump

The pump is located near the rear of the vehicle (Fig. 28).

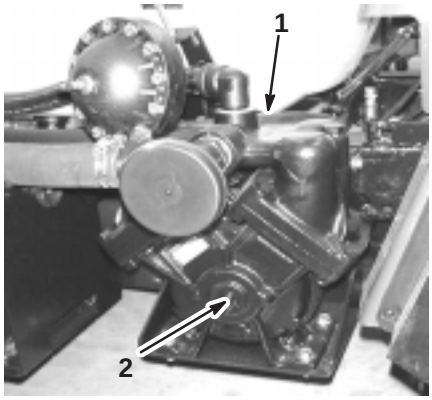


Figure 28

1. Pump
2. Grease fitting

Tank Drain Handle

The tank drain handle is located on top of the tank (Fig. 29). Pull the handle up to drain the tank.

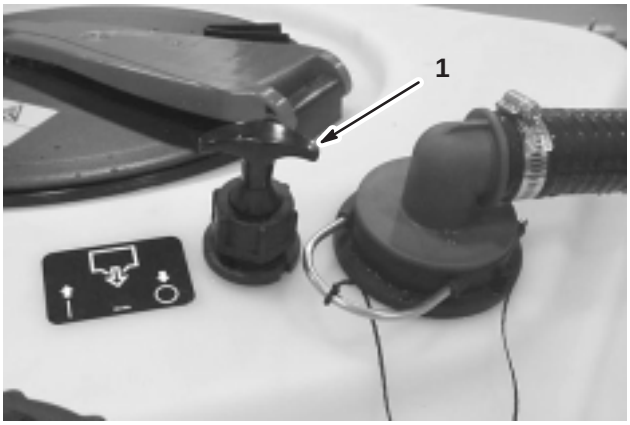


Figure 29

1. Tank drain handle

Important Pull the knob gently out until it stops. Do not pull too hard or you may damage the knob.

Tank Cover

The tank cover is located in the center of the top of the tank (Fig. 30). To open it, turn off the engine and set the parking brake, then turn the front half of the cover to the left and swing it open. You can remove the strainer inside for cleaning. To seal the tank, replace the strainer if removed, close the cover, and rotate the front half toward the right.

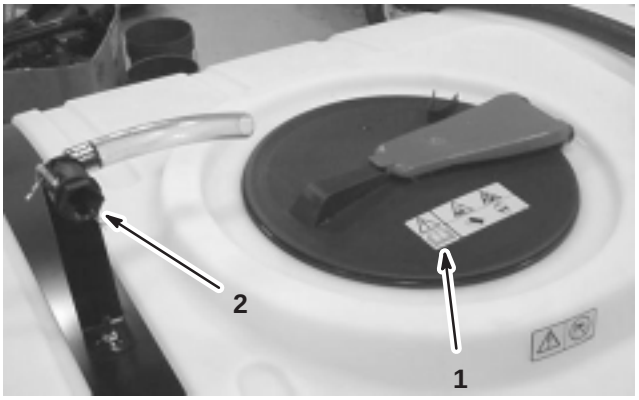


Figure 30

1. Tank cover
2. Anti-siphon fill receptacle

Anti-siphon Fill Receptacle

The anti-siphon fill receptacle, in front of the tank cover, is a hose receptacle with a threaded fitting and a 90 degree barbed fitting which you can direct toward the tank opening (Fig. 30). This receptacle allows you to connect a water hose and fill the tank without contaminating the hose and water supply with the chemicals in the tank.

Important Do not allow the hose receptacle to contact tank fluids. Do not lengthen the hose to allow contact with the tank fluids.

Spray Pro® Monitor

The Spray Pro monitor displays and monitors various system performance data such as vehicle speed and application rates. It does not control the application rate.

The monitor has an LCD screen that displays the data you select, a selection dial, and 4 buttons for calibrating the monitor (Fig. 31).

Figure 31

1. LCD screen
2. Selection dial
3. Calibration buttons

Selection Dial

The selection dial contains the following positions:

- Speed

  Displays the ground speed in miles per hour (if the Units of Measure is set to US or TURF) or kilometers per hour (if the Units of Measure is set to SI).

- Units of Measure

  Displays the current measurement unit selection as follows:

  – US (United States measuring system)

  – SI (metric system)

  – TURF (as US but the volumes are in US gallons per 1000 sq ft instead of US gallons per acre)

- App. Rate

  Displays the application rate in US gallons per acre (US), liters pre hectare (SI), or US gallons per 1000 sq ft (TURF).

- Total Volume

  Displays the total volume in US gallons (US and TURF) or liters (SI) that you have applied since you last pressed the [RESET] button for this setting.

- Sub Volume

  Displays the total volume in US gallons (US and TURF) or liters (SI) that you have applied since you last pressed the [RESET] button for this setting, without affecting the Total Volume display. If you press [RESET], the Sub Area also resets.

- Distance

  Displays the distance you have traveled in feet (US and TURF) or meters (SI) since you last pressed the [RESET] button for this setting.

- Total area

  Displays the total acres (US), hectares (SI), or sq feet (TURF) that you have covered since you last pressed the [RESET] button for this setting.

- Sub Area

  Displays the total acres (US), hectares (SI), or sq feet (TURF) that you have covered since you last pressed the [RESET] button for this setting, without affecting the Total Area display. If you press [RESET], the Sub Volume also resets.

Buttons

The monitor has the following buttons:

- [RESET]

  Resets the dial selection to 0.

- [CAL]

  Used to enter and exit the calibration mode.

- [–]

  Reduces values displayed on the screen during calibration.

- [+]

  Increases values displayed on the screen during calibration.

Calibrating the Spray Pro Monitor

The Spray Pro monitor has a calibration mode that allows you to change various settings to customize the display and calibrate the monitor to your needs. You can calibrate or change the following settings:

- Boom Width
- Units of Measure
- Flowmeter
- Distance

Setting the Units of Measure

The default setting for the units of measure is US. You can also change the units to SI (metric) or TURF.

1. Stop the vehicle and set the parking brake.
2. Set the master spray lever to the Off position. The monitor displays ”HOLD.”
3. Press and hold [CAL] until the monitor displays “CAL HOLD” and the red light on the monitor illuminates.
4. Turn the selection dial to the Units of Measure position.
5. Use the [+] or [–] buttons to select desired units of measure.
6. Press [CAL] until the red light turns off. You can also exit calibration mode by driving the vehicle.

Setting the Boom Width

The default settings for the boom widths are 80 inches (200 cm) for the right and left booms and 60 (150 cm) for the center boom. This is based on 4 nozzles on the right and left booms and 3 on the center boom all spaced 20 inches (50.8 cm) apart. If you change the spacing of the nozzles, you should change the boom width to reflect your changes as follows:

1. Stop the sprayer and set the parking brake.
2. Set the master boom switch to the Off position. The monitor displays ”HOLD.”
3. Press and hold [CAL] until the monitor displays “CAL HOLD” and the red light on the monitor illuminates.
4. Turn the selection dial to the Total Area position.
5. Use the [+] or [–] buttons to select the boom for which you wish to change the width, where 1 is the left boom, 2 is the center boom, and 3 is the right boom.
6. Turn the selection dial to the Sub Area position.
7. Use the [+] or [–] buttons to change the boom width as needed.
8. Repeat steps 4 through 7 for the other booms as needed.
9. Press [CAL] until the red light turns off. You can also exit calibration mode by driving the sprayer.

Calibrating the Flowmeter

The Spray Pro comes approximately calibrated for the flowmeter. Complete the following procedure to fine tune the flowmeter calibration:

1. Set the parking brake.
2. Fill the tank with enough water to prime and purge the system.
3. Prime and purge the system.
4. Set the pump switch to the On position to start the pump.
5. Fill the sprayer tank with a known quantity of water, at least 100 US gallons (380 L).

   Note: If you park the vehicle on a flat, level surface and fill the tank until the water over flows out of the top of the tank, you will have 200 US gallons (760 L).

   Note: Do not rely on the marks on the side of the tank for measuring the water for this procedure. They are approximate measurements, but not accurate enough for this calibration.
6. Set all three boom switches to the On position and the master boom switch to the Off position.
7. Turn the selection dial to the Calibration Volume position.
8. Press and hold [RESET] until the display reads “0.”
9. Set the master boom switch to the On position and run the booms until the water level is down to the sump. Turn the master boom switch off just before the suction tube draws air, then stop them using the master boom switch.
10. Compare the volume displayed on the monitor to the volume of water you put into the tank.
    - If the volumes are the same, you do not need to calibrate the monitor any further.
    - If the values are different, continue with the rest of this procedure.
11. Press and hold [CAL] until the red light on the monitor illuminates.

    The display will alternate between the flowmeter calibration value (indicated by the word”CAL” on the monitor) and the calibration volume.

12. When the calibration volume is displayed, use the [+] or [–] buttons to change it to the amount of water you put in the tank.

13. When the display begins alternating again, the flowmeter calibration value will have changed; write this number down and save it. This is the calibration value for your vehicle.

14. Press [CAL] until the red light turns off. You can also exit calibration mode by driving the vehicle.

Calibrating the Speed Sensor

The Spray Pro comes approximately calibrated for the speed sensor. Complete the following procedure to fine tune the speed sensor calibration:

1. Check and fill all tires to their recommended pressure. See your Workman *Operator's Manual* for more information.

2. Fill the fresh water tank.

3. Fill the sprayer tank half-full of water.

4. Select a straight, flat track of ground that is similar to your turf conditions.

Note: Using a road or other paved surface could cause an inaccurate reading when you later drive the vehicle on turf.

5. Measure 500 feet, marking both the start and end points.

6. Position the vehicle about 30 feet behind the starting point.

7. Set the master boom switch to the Off position. The monitor should display "HOLD".

8. Turn the selection dial to the Distance position.

9. Press and hold [RESET] until the display reads "0."

10. Drive the machine from the start point you marked to the 500 ft end point. Ensure that you come up to speed before reaching the start point and do not stop or brake until after you pass the end point. When you reach the start point, press the master boom switch to start the distance tracking with the monitor.

11. When you reach the end point, set the master boom switch to the Off position to stop the monitor.

12. Look at the distance displayed on the monitor.

    - If it reads "500 feet," you do not need to calibrate the monitor any further.
    - If it does not read "500 feet," continue with the rest of this procedure.

13. Set the parking brake.

14. With the selection dial set to the Distance position, press and hold [CAL] until the monitor displays "CAL HOLD" and the red light on the monitor illuminates.

    The display will alternate between the speed sensor calibration value and the distance value.

15. When the distance is displayed, use the [+] or [–] buttons to change it to 500 feet.

16. When the display begins alternating again, the speed sensor calibration value will have changed; write this number down and save it. This is the calibration value for your sprayer.

17. Press [CAL] until the red light turns off. You can also exit calibration mode by driving the vehicle.

Note: Using a smaller distance than 500 feet will decrease accuracy.

Resetting an OFL Condition

If the monitor reads "OFL," it indicates that you have exceeded the monitor screen dimensions. Press and hold [RESET] to set the display to 0.

Adjusting the Boom Bypass Valves

After you install your booms and nozzles and before using the sprayer for the first time, adjust the boom bypass valves so that the pressure and application rate remains the same for all booms when you turn one or more booms off.

Select an open flat area to perform this procedure.

1. Fill the spray tank with clean water.

2. Put the extension booms down, if installed.

3. Set the parking brake and start the engine .

4. Place the range selector in the Neutral position.

5. Set the hand throttle.

6. Engage the PTO lever to start the pump.

7. Set all three boom switches and the master boom switch to the On position.

8. Use the application rate switch to adjust the pressure as read on the pressure gauge until it is in the range for the nozzles you installed on the booms (typically 40-50 psi).

9. Record the reading on the pressure gauge.

10. Turn off one of the booms using the appropriate boom switch.

11. Adjust the boom bypass valve (Fig. 26) under the boom control valve for the boom you turned off until the pressure reading on the gauge is the same as it was in step 8.

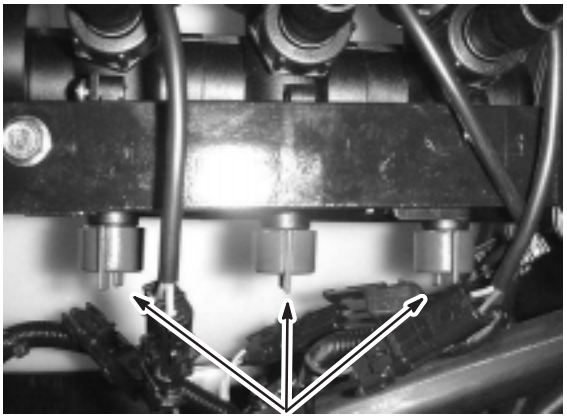


Figure 32

1. Boom bypass valves

12. Turn the boom on.

13. Repeat steps 10 through 12 for the other booms.

14. Drive the vehicle at the desired speed while spraying and turn each boom off individually. The pressure on the gauge should not change.

Operating the Sprayer

To operate the sprayer you first fill the spray tank, then apply the solution to the work area, and finally clean the tank. It is important that you complete all three of these steps in succession to avoid damaging the sprayer. For example, do not mix and add chemicals in the spray tank at night and then spray in the morning. This would lead to separation of the chemicals and possible damage to the sprayer components.

⚠ Caution ⚠

Chemicals are hazardous and can cause personal injury.

- **Read the directions on the chemical labels before handling the chemicals and follow all manufacturer recommendations and precautions.**
- **Keep chemicals away from your skin. Should contact occur, wash the affected area thoroughly with soap and clean water.**
- **Wear goggles and any other protective equipment recommended by the chemical manufacturer.**

Filling the Spray Tank

Important Ensure that the chemicals you will be using are compatible for use with Viton (see the manufacturer's label; it should indicate if it is not compatible). Using a chemical that is not compatible with Viton will degrade the o-rings in the sprayer, causing leaks.

1. Stop the sprayer on a level surface, move the range selector to the Neutral position, stop the engine, and set the parking brake.

2. Determine the amount of water needed to mix the amount of chemical you need as prescribed by the chemical manufacturer.

3. Open the lid on the spray tank.

4. Add 3/4 of the required water to the spray tank using the anti-siphon fill receptacle.

Important Always use fresh clean water in the spray tank. Do not pour concentrate into an empty tank.

5. Start the engine, engage the PTO, and set the hand throttle if equipped.

6. Turn the agitation control valve to the 9 o'clock position to start agitation in the tank.

7. Add the proper amount of chemical concentrate to the tank, as directed by the chemical manufacturer.

Important If you are using a wetable powder, mix the powder with a a small amount of water to form a slurry before adding it to the tank

8. Add the remaining water to the tank.

Note: Better agitation can be achieved by decreasing the application rate setting.

Applying Chemicals

Important In order to ensure that your solution remains well mixed, use the agitation feature whenever you have solution in the tank. For agitation to work, the PTO must be engaged and the engine must be running above an idle. If you stop the vehicle and need agitation on, place the shift lever in the Neutral position, set the parking brake, Engage the PTO, engage the clutch, and set the hand throttle, if equipped.

Note: This procedure assumes that the PTO is engaged from the Filling the Spray Tank procedure.

1. Swing the booms into position.

2. Set the master boom switches to the Off position. The Spray Pro monitor displays "HOLD."

3. Set the individual boom switches, as needed, to the On positions.

4. Drive to the location where you will be spraying.

5. Turn the Spray Pro selection dial to the Application Rate position and use the application rate switch to achieve the desired rate.

Note: The vehicle must be moving for the Spray Pro to calculate the application rate.

6. Set the master boom switch to the On position to begin spraying.

Note: When the tank is nearly empty, the agitation may cause foaming in the tank. In this case, turn the agitation control valve to the 3 o'clock position to turn it off. Alternatively, you can use an anti-foaming agent in the tank.

7. When finished spraying, set the master boom switch to the Off position to turn off all booms, then disengage the PTO lever.

Operating Tips

- Do not overlap areas that you have previously sprayed.
- Watch for plugged nozzles. Replace all worn or damaged nozzles.
- Use the master boom switch to stop the spray flow before stopping the sprayer. Once stopped, use the hand throttle, if equipped, to hold the engine speed up to keep the agitation running.
- You will obtain better results if the sprayer is moving when you turn the booms on.
- Watch for changes in the application rate that may indicate that your speed has changed beyond the range of the nozzles or there is a problem with the spray system.

Cleaning the Sprayer

Important You must always empty and clean the sprayer immediately after each use. Failure to do so may cause the chemicals to dry or thicken in the lines, clogging the pump and other components.

1. Stop the sprayer, set the parking brake, place the range selector in the Neutral position, and turn off the engine.
2. Use the tank drain knob to drain any unused material from the tank and dispose of it according to local codes and the material manufacturer's instructions.
3. Fill the tank with at least 50 US gallons (190 L) of clean fresh water and close the cover.

Note: You can use a cleaning/neutralizing agent in the water as needed. On the final rinse, use only clean, clear water.

4. Start the engine.
5. With the shift lever in the Neutral position, engage the PTO, and set the hand throttle.
6. Ensure that the agitation control valve is in the On position.
7. Set the master boom switch and boom switches to the On positions to begin spraying.
8. Allow all of the water in the tank to spray out though the nozzles.
9. Check the nozzles to ensure that they are all spraying correctly.
10. Set the master boom switch to the Off position, disengage the PTO, and stop the engine.
11. Repeat steps 3 through 10 at least 2 more times to ensure that the spray system is fully cleaned.
12. Clean the strainer; refer to Cleaning the Suction Strainer, page 31.

Important If you used wetable powder chemicals, clean the strainer after each tank.

13. Using a garden hose, spray off the outside of the sprayer with clean water.
14. Remove the nozzles and clean them by hand. Replace damaged or worn nozzles.

Stowing the Boom Extensions

Use the boom restraints to lock the boom extensions in the X position when you are not spraying.

1. Pivot the left boom extension into the upright position.

Important Do not force the boom extension past the restraint hook when stowing or you may damage the extension and nozzles.

2. Push up on the left restraint knob to compress the spring and extend the hook.
3. With the spring compressed, rotate the hook to catch the boom extension frame.
4. Release the knob allowing the hook to catch the boom extension frame and secure it to the boom holder.
5. Repeat steps 1-4 with the right boom extension and right boom holder.

Maintenance

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

Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure
8 hours	• Clean the suction strainer[1]
100 hours	• Grease the spray system

[1]More often when using wetable powers

Important Refer to your Workman® and engine operator's manual for additional maintenance procedures.

Daily Maintenance Checklist

Duplicate this page for routine use.

Maintenance Check Item	For the week of:						
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Check the brake and parking brake operation.							
Check the gear shift/neutral operation.							
Check the fuel level.							
Check the engine oil level before filling the tank.							
Check the transaxle oil level before filling the tank.							
Inspect the air filter before filling the tank.							
Inspect the engine cooling fins before filling the tank.							
Check any unusual engine noises.							
Check any unusual operating noises.							
Check the tire pressure.							
Check for fluid leaks.							
Check the instrument operation.							
Check the accelerator operation.							
Clean the suction strainer.							
Check toe-in.							
Lubricate all grease fittings.[1]							
Touch up and damaged paint.							

[1]Immediately after **every** washing, regardless of the interval listed

Notation for Areas of Concern

Inspection performed by:		
Item	**Date**	**Information**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Caution

If you leave the key in the ignition switch, someone could accidently start the engine and seriously injure you or other bystanders.

Remove the key from the ignition and disconnect the wire(s) from the spark plug(s) before you do any maintenance. Set the wire(s) aside so that it does not accidentally contact the spark plug(s).

Cleaning the Flowmeter

Occasionally, the flowmeter may need to be cleaned to remove an obstruction, as follows:

1. Remove the retaining cap from the flowmeter body (Fig. 33).
2. Carefully pull the paddle wheel assembly from the body.
3. Use warm water, a soft-bristled brush, and a mild detergent as necessary to clean the flowmeter body and paddle wheel. Remove any small metallic debris.

Important Do not use solvents or fuel to clean the flowmeter.

4. Install the paddle wheel assembly into the flowmeter body.

Important The paddle wheel assembly will only fit into the body one way. Align the pin of the paddle wheel assembly with the hole in the flowmeter body. Do not force the paddle wheel assembly into the body in any other orientation.

5. Install the retaining cap.

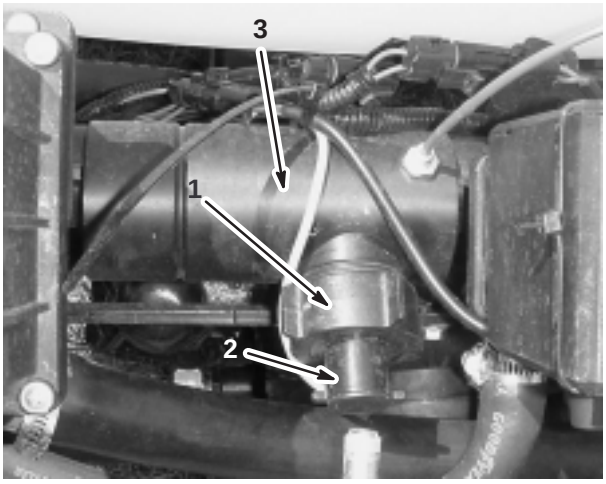


Figure 33

1. Retaining cap
2. Paddle wheel assembly
3. Flowmeter body

Cleaning the Suction Strainer

Clean the suction strainer daily. If you are using wetable powders, clean it after every tank.

1. Remove the retainer from the red fitting attached to the large hose on the top of the tank.

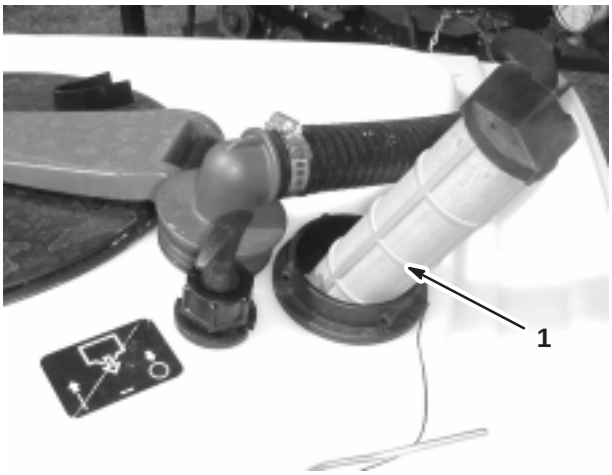


Figure 34

1. Suction strainer

2. Disconnect the hose from the tank.
3. Pull the strainer out of the hole.
4. Clean the strainer with clean running water.
5. Replace the strainer, seating it fully into the hole.
6. Connect the hose to the top of the tank and secure it with the retainer.

Greasing the Spray System

Lubricate all bearings and bushings after every 100 hours or once a year, whichever occurs first.

Grease Type: No. 2 General Purpose Lithium Base Grease

1. Wipe the grease fitting clean so that foreign matter cannot be forced into the bearing or bushing.
2. Pump grease into the bearing or bushing.

Important Only a few pumps of grease are required to lubricate the system. Do not over grease. Grease will not purge from the system.

3. Wipe off excess grease.

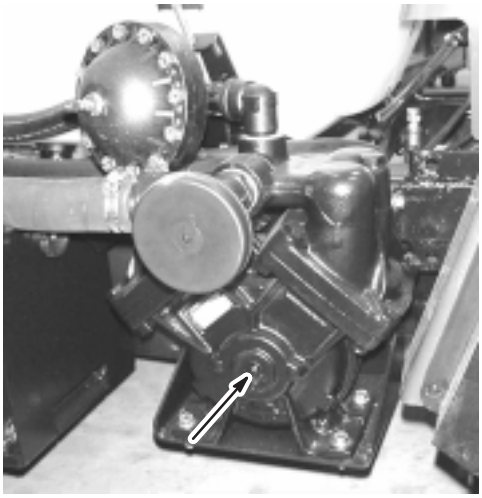


Figure 35

Storage

1. Position the sprayer on a level surface, set the parking brake, disengage the PTO, stop the engine, and remove the ignition key.
2. Clean dirt and grime from the entire machine.

Important You can wash the machine with mild detergent and water. **Do not** use **high pressure water** to wash the machine. Pressure washing may damage the electrical system or wash away necessary grease at friction points. Avoid excessive use of water, especially near the control panel, lights, engine, and the battery.

3. Clean the spray system; refer to Cleaning the Sprayer, page 28.
4. Add a rust inhibiting, non-alcohol based, RV antifreeze solution to the system and run the pump for a few minutes to circulate it through the system, then drain the spray system as completely as possible.
5. Inspect the brakes; refer to Workman *Operator's Manua*l.
6. Service the air cleaner; refer to Workman *Operator's Manua*l.
7. Grease the sprayer; refer to Greasing the Sprayer, page 32.
8. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged.
9. Check the condition of all spray hoses, replacing any that are damaged or worn.
10. Tighten all hose fittings.
11. Paint all scratched or bare metal surfaces.

    Paint is available from your Authorized Service Dealer.
12. Store the machine in a clean, dry garage or storage area.
13. Cover the machine to protect it and keep it clean.

Removing the Sprayer

If removing the sprayer from the Workman vehicle, use the eyelets on the skid frame to lift the sprayer off the vehicle using straps and an overhead hoist. The wire harness, prop rod, and PTO shaft must be disconnected. Lock the jackstands with the clevis pins provided. When the sprayer is clear of the vehicle, insert the four jack stands provided and lower the sprayer onto them. The control box can be stored, using the existing fasteners, to the left, rear of the tank skid.

Troubleshooting

Troubleshooting the Spray System

Problem	Possible Causes	Corrective Action
A boom section does not spray.	1. Pinched hose 2. A boom by-pass valve is improperly adjusted. 3. Damaged boom valve	1. Repair or replace the hose. 2. Adjust the boom by-pass valves. 3. Contact your Authorized Service Dealer.
A boom section does not turn off.	1. The valve is damaged.	1. Stop the spray system and pump and turn off the sprayer. Remove the retainer from under the boom valve and pull out the motor and stem. Inspect all parts and replace any that appear damaged.
A boom valve is leaking	1. An O-ring is deteriorated.	1. Stop the spray system and pump and turn off the sprayer. Disassemble the valve and replace the O-rings.

Problem	Possible Causes	Corrective Action
A pressure drop occurs when you turn on a boom.	1. The boom bypass valve is improperly adjusted. 2. There is an obstruction in the boom valve body. 3. A nozzle is missing.	1. Adjust the boom bypass valve. 2. Remove the inlet and outlet connections to the boom valve and remove any obstructions. 3. Inspect all nozzles and replace any if necessary.

Troubleshooting the Spray Pro Monitor

Problem	Possible Causes	Corrective Action
The monitor does not function.	1. The monitor cable is loose or disconnected. 2. The monitor or cable is damaged. 3. The monitor fuse is damaged or ground is loose.	1. Connect the monitor cable. 2. Contact your Authorized Service Dealer. 3. Contact your Authorized Service Dealer.
The Speed is always 0 or is erratic.	1. The monitor cable is loose. 2. The speed sensor is not calibrated correctly. 3. The speed sensor is damaged.	1. Connect the monitor cable. 2. Calibrate the speed sensor. 3. Contact your Authorized Service Dealer.
The Distance is inaccurate.	1. The speed sensor is not calibrated correctly. 2. The speed sensor is damaged.	1. Calibrate the speed sensor. 2. Contact your Authorized Service Dealer.
The monitor does not display Application Rate.	1. The monitor cable is loose. 2. The flowmeter is dirty or clogged. 3. The flowmeter is not calibrated correctly. 4. The flowmeter is damaged. 5. The speed sensor is not calibrated correctly. 6. The speed sensor is damaged. 7. Nozzle size and vehicle speed configuration is unable to reach desired application rate.	1. Connect the monitor cable. 2. Clean the flowmeter. 3. Calibrate the flowmeter 4. Contact your Authorized Service Dealer. 5. Calibrate the speed sensor. 6. Contact your Authorized Service Dealer. 7. Use the Nozzle Selection Guide to choose the correct configuration of nozzle and vehicle speed.
The monitor displays 6553.5 when in the Application Rate setting.	1. The monitor is not receiving data from the speed sensor.	1. Contact your Authorized Service Dealer.

Problem	Possible Causes	Corrective Action
The monitor is erratic in operation.	1. A two-way radio is too close to the monitor or its cables.	1. Keep two-way radios away from the monitor and its cables.
The displayed measurements do not make sense.	1. The Units of Measurement is set to a system other than what you expect.	1. Check the Units of Measurement to ensure that it is set correctly.
The monitor reads “OFL.”	1. The data has exceeded the maximum allowed.	1. Press and hold the [Reset] button to clear the monitor.

The Toro General Commercial Products Warranty

A Two-Year Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Commercial Product ("Product") to be free from defects in materials or workmanship for two years or 1500 operational hours*, whichever occurs first. Where a warrantable condition exists, we will repair the Product at no cost to you including diagnosis, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.

* Product equipped with hour meter

Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists.

If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro Commercial Products Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
952-888-8801 or 800-982-2740
E-mail: commercial.service@toro.com

Owner Responsibilities

As the Product owner, you are responsible for required maintenance and adjustments stated in your operator's manual. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This express warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, modified, or unapproved accessories
- Product failures which result from failure to perform required maintenance and/or adjustments
- Product failures which result from operating the Product in an abusive, negligent or reckless manner
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, blades, reels, bedknives, tines, spark plugs, castor wheels, tires, filters, belts, etc.
- Failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, or chemicals, etc.
- Normal "wear and tear" items. Normal "wear and tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part.

Parts replaced under this warranty become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use factory remanufactured parts rather than new parts for some warranty repairs.

General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Note regarding engine warranty: The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) and/or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the Engine Emission Control Warranty Statement printed in your operator's manual or contained in the engine manufacturer's documentation for details.

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

Part No. 374-0031 Rev. a