



4 in 1 Bucket
Sitework Systems Attachment
Model No. 22411—890001 & Up

Operator's Manual



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Introduction

We want you to be completely satisfied with your new product, so feel free to contact your local Authorized Service Dealer for help with service, genuine replacement parts, or other information you may require.

Whenever you contact your Authorized Service Dealer or the factory, always know the model and serial numbers of your product. These numbers will help the Service Dealer or Service Representative provide exact information about your specific product. You will find the model and serial number on a plate located on the back of the bucket.

For your convenience, write the product model and serial numbers in the space below.

<p>Model No: _____</p> <p>Serial No. _____</p>

The warning system in this manual identifies potential hazards and has special safety messages that help you and others avoid personal injury, 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 the recommended precautions are not followed.


WARNING signals a hazard that may cause serious injury or death if the recommended precautions are not followed.



CAUTION signals a hazard that may cause minor or moderate injury if the recommended precautions are not followed.



Two other words are also used to highlight information. “Important” calls attention to special mechanical information and “Note” emphasizes general information worthy of special attention.

The left and right side of the machine is determined by standing in the normal operator’s position.

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 those in the traction unit operator’s manual. 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.

 DANGER 
<p>POTENTIAL HAZARD</p> <ul style="list-style-type: none"> • There may be buried power, gas, and/or telephone lines in the work area. <p>WHAT CAN HAPPEN</p> <ul style="list-style-type: none"> • Shock or explosion may occur. <p>HOW TO AVOID THE HAZARD</p> <ul style="list-style-type: none"> • Have the property or work area marked for buried lines and don’t dig in marked areas.

 DANGER 
<p>POTENTIAL HAZARD</p> <ul style="list-style-type: none"> • There may be overhead power lines in the work area. <p>WHAT CAN HAPPEN</p> <ul style="list-style-type: none"> • Shock may occur if a power line is touched by a tree or other object that is being transported. <p>HOW TO AVOID THE HAZARD</p> <ul style="list-style-type: none"> • Survey and mark the area where there are overhead power lines, and do not transport trees or tall objects under the power lines.

WARNING

POTENTIAL HAZARD

- When the engine is off, attachments in the raised position can gradually lower.

WHAT CAN HAPPEN

- Someone nearby may be pinned or injured by the attachment as it lowers.

HOW TO AVOID THE HAZARD

- Always lower the attachment lift each time you shut off the traction unit.

CAUTION

POTENTIAL HAZARD

- If the bucket is not kept level while lifting, the load could be inadvertently dumped on the operator.

WHAT CAN HAPPEN

- The operator could be injured when the load is dumped.

HOW TO AVOID THE HAZARD

- When lifting the bucket, tilt it forward to keep it level and prevent it from spilling backwards.

WARNING

POTENTIAL HAZARD

- When going up or down hill, the machine could overturn if the heavy end is toward the downhill side.

WHAT CAN HAPPEN

- Someone may be pinned or seriously injured by the machine if it overturns.

HOW TO AVOID THE HAZARD

- Operate up and down slopes with the heavy end of the machine uphill. An empty bucket will make the rear end heavy and a full bucket will make the front end heavy.

Safety Decal

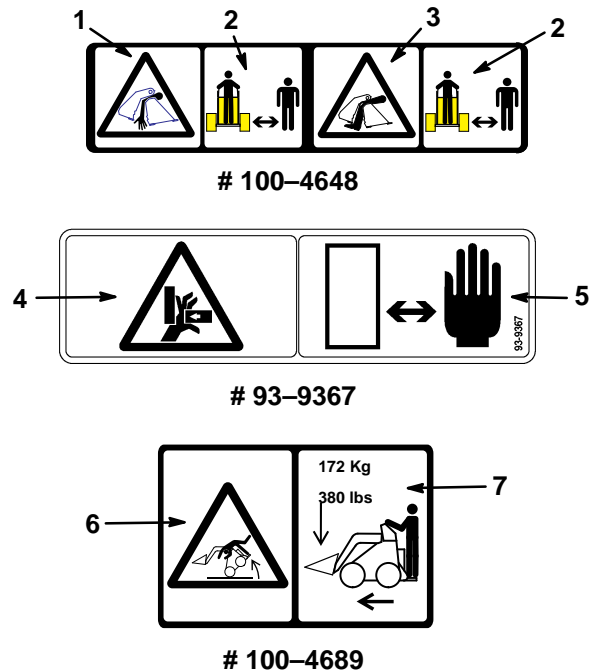


Figure 1

- | | |
|---------------------------------------|---|
| 1. Crushing hazard in bucket—hand/arm | 5. Keep hands away |
| 2. Keep bystanders away | 6. Machine rollover—exceeding rated load capacity can cause instability |
| 3. Crushing hazard in bucket—foot/leg | 7. Maximum load capacity |
| 4. Pinching/crushing hazard—hand | |

Specifications

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

Overall width	41 inches (105.4 cm)
Overall length	30.5 inches (77.5 cm)
Overall height	20 inches (50.8 cm)
Weight	271 lbs (123 Kg)
Capacity (SAE struck capacity)	4.3 ft ³ (0.12 m ³)
Hydraulic cylinders (2):	
Rod diameter	1.25 inches (3.175 cm)
Stroke	4.72 inches (12 cm)
Bore Diameter	2 inches (51.3 cm)

Material Density Chart

Material	Density (Loose)
Caliche	78lb/ft ³ (1250 kg/m ³)
Clay:	
Natural bed	104 lb/ft ³ (1600 kg/m ³)
Dry	93 lb/ft ³ (1480 kg/m ³)
Wet	104 lb/ft ³ (1660 kg/m ³)
With gravel, dry	89 lb/ft ³ (1420 kg/m ³)
With gravel, wet	96 lb/ft ³ (1540 kg/m ³)
Coal:	
Anthracite, broken	69 lb/ft ³ (1100 kg/m ³)
Bituminous, broken	52 lb/ft ³ (830 kg/m ³)
Earth:	
Dry, packed	94 lb/ft ³ (1510 kg/m ³)
Wet, packed	100 lb/ft ³ (1600 kg/m ³)
Loam	78 lb/ft ³ (1250 kg/m ³)
Topsoil, pulverized	59 lb/ft ³ (950 kg/m ³)
Granite, broken or large crushed	104 lb/ft ³ (1660 kg/m ³)

Maximum Material Density at Capacity

The density of materials being moved by the bucket varies and therefore so will the amount of a given material that can be carried by the bucket before the maximum load rating is reached. The first table lists the density of material that can be carried, both heaped and struck (i.e., leveled off), in the bucket. Following that is a table listing common materials and their densities.

To move materials with densities greater than the maximum allowed for the bucket, reduce the volume of material placed in the bucket.

Maximum Density for Capacity Chart

Bucket Capacity	Maximum Density
Bucket, heaped	70 lb/ft ³ (1110 kg/m ³)
Bucket, struck	88 lb/ft ³ (1403 kg/m ³)

Material	Density (Loose)
Gravel:	
Dry	94 lb/ft ³ (1510 kg/m ³)
Pit run (graveled sand)	120 lb/ft ³ (1930 kg/m ³)
Dry 1/2"-2" (13-51mm)	106 lb/ft ³ (1690 kg/m ³)
Wet 1/2"-2" (13-51mm)	126 lb/ft ³ (2020 kg/m ³)
Limestone, broken or crushed	96 lb/ft ³ (1540 kg/m ³)
Sand:	
Dry	89 lb/ft ³ (1420 kg/m ³)
Wet	115 lb/ft ³ (1840 kg/m ³)
With gravel, dry	107 lb/ft ³ (1720 kg/m ³)
With gravel, wet	126 lb/ft ³ (2020 kg/m ³)
Sandstone, broken	94 lb/ft ³ (1510 kg/m ³)
Shale	78 lb/ft ³ (1250 kg/m ³)
Slag, broken	109 lb/ft ³ (1750 kg/m ³)
Stone, crushed	100 lb/ft ³ (1600 kg/m ³)



*Actual material density will vary from these typical values.

Stability Ratings

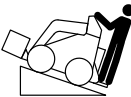


To determine the degree of slope you can traverse with the bucket installed on a traction unit, find the stability rating for the hill position you want to travel in the appropriate table in the section, then find the degree of slope for the same rating and hill position in the Stability Data section of the traction unit operator’s manual.

The bucket may be used when loaded or unloaded and, if you have a traction unit with a rear operator’s platform, with or without the counterweight on the traction unit. The following tables reflect the differences in stability of these various conditions.

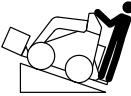


Note: If your traction unit does not have rear operator’s platform, refer to your traction unit operator’s manual for more information of counterweights and stability.

 WARNING 	
POTENTIAL HAZARD	
<ul style="list-style-type: none"> Exceeding the maximum recommended slope can cause the traction unit to tip. 	
WHAT CAN HAPPEN	
<ul style="list-style-type: none"> If the traction unit tips, you or bystanders could be crushed. 	
HOW TO AVOID THE HAZARD	
<ul style="list-style-type: none"> Do not drive the traction unit on a slope steeper than the maximum recommended slope, as determined in the following tables and the traction unit operator’s manual. 	

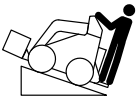


Stability With a Loaded Bucket Without the Counterweight

Orientation	Stability Rating
Front Uphill 	B
Rear Uphill 	D
Side Uphill 	B

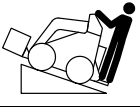


Stability With an Unloaded Bucket Without the Counterweight

Orientation	Stability Rating
Front Uphill 	C
Rear Uphill 	C
Side Uphill 	B

Stability With a Loaded Bucket with the Counterweight

Orientation	Stability Rating
Front Uphill 	B
Rear Uphill 	D
Side Uphill 	B

Stability With an Unloaded Bucket with the Counterweight

Orientation	Stability Rating
Front Uphill 	D
Rear Uphill 	B
Side Uphill 	B

Operation

Note: Refer to your traction unit operator's manual for complete instructions on installing/removing attachments onto/from the traction unit and connecting/disconnecting hydraulic hoses.

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

Modes of Operation

The 4 in 1 bucket can be used in 4 different operating modes, as follows:

- Bucket
- Blade
- Grapple bucket
- Leveler

Bucket Operation

With the jaws together, this attachment can be used as a standard loader bucket. However, by opening the bucket jaws with a full load, the bucket can dump into a higher truck, spill out a sticky load, or dribble its contents better than a standard bucket.

When loading material into the front of the bucket, always have the bucket level with the ground, moving forward into the material to be lifted. When the bucket is full, tilt it gently rearwards to decrease the lifting resistance when you lift the load.

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

Blade Operation

With the jaws completely open, you can use the back of the bucket as a blade to push material. You can also partially close the jaws using the bottom of the front bucket to knock the top off of clumps and grade with the rear blade.

When scraping, leveling, and surface stripping, lower the blade to the ground, ensuring that the cutting edge makes contact. The blade will bite into the soil as you move forward.

Grapple Bucket Operation

The jaws can also be used for picking up material by closing them over the objects or materials to be transported. This is especially useful for picking the remnants of a pile of dirt or rocks.

Take care when using this method that you don't crush an object that you are picking up between the jaws. Also, when grabbing an object of uneven dimensions or one off center in the bucket, do not apply excessive force or you may damage the bucket.

Leveler Operation

With the jaws partially open and the bucket tipped slightly forward, you can use the bucket as a leveler by moving the cutting edges back and forth across the surface of the ground.

Bucket Operation and Controls

1. If your traction unit has a speed selector and a flow divider, move the speed selector valve to the fast (rabbit) position and the flow divider to the 10 to 11 o'clock position.
2. Pull the auxiliary hydraulics valve to the operator grip to close the bucket.
3. Push the auxiliary hydraulics valve away from the operator grip to open the bucket.

Maintenance

Service Interval Chart

Service Operation	Each Use	5 Hours	25 Hours	200 Hours	Storage Service	Notes
Hydraulic hoses—inspect				X	X	Replace if damaged
Chipped surfaces—paint					X	

CAUTION

POTENTIAL HAZARD

- If you leave the key in the ignition switch, someone could start the engine.

WHAT CAN HAPPEN

- Accidental starting of the engine could seriously injure you or other bystanders.

HOW TO AVOID THE HAZARD

- Remove the key from the ignition switch before you do any maintenance.

Storage

1. Before long term storage, wash the attachment with mild detergent and water to remove dirt and grime.
2. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged or worn.
3. Ensure that all hydraulic couplers are connected together to prevent contamination of the hydraulic system.
4. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
5. Store the attachment in a clean, dry garage or storage area. Cover it to protect it and keep it clean.

Troubleshooting

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Bucket does not open and close.	<ol style="list-style-type: none"> 1. Hydraulic coupler not completely connected 2. Defective hydraulic coupler 3. An obstruction in a hydraulic hose 4. Auxiliary valve on the traction unit is not opening. 5. Defective hydraulic cylinder(s) 	<ol style="list-style-type: none"> 1. Check and tighten all couplers. 2. Check couplers and replace any that are defective. 3. Find and remove the obstruction. 4. Repair the valve. 5. Replace or repair any defective cylinders.

