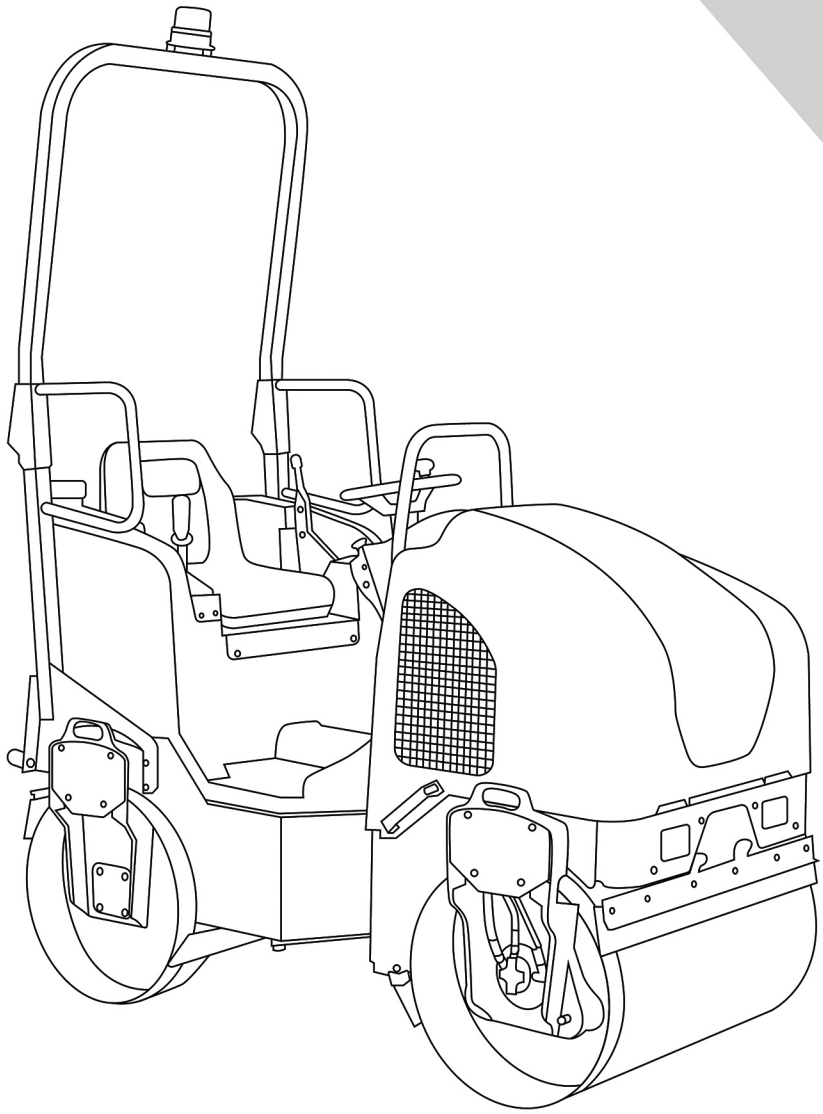
OWNERS MANUAL

TRR15H TANDEM ROLLER



CONTENTS

Foreword

SAVE THESE INSTRUCTIONS—This manual contains important instructions for Tomahawk Rollers. These instructions have been written expressly by Tomahawk Power and must be followed during installation, operation, and maintenance of the machines.

Machine Documentation

- From this point forward in this documentation Tomahawk Power LLC will be referred to as Tomahawk.
- Keep a copy of the Owner's Manual with the machine at all times.
- Use the separate Parts Book supplied with the machine to order replacement parts.
- If you are missing any of these documents, please contact your local Tomahawk distributor to order a replacement or visit www.tomahawk-power.com
- When ordering parts or requesting service information, be prepared to provide the machine model number, item number, revision number, and serial number.

Expectations for information in this manual

- This manual provides information and procedures to safely operate and maintain the Tomahawk Roller. For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this manual.
- Tomahawk expressly reserves the right to make technical modifications, even without notice, which improve the performance or safety standards of its machines.
- The information contained in this manual is based on machines manufactured up until the time of publication. Tomahawk reserves the right to change any portion of this information without notice.
- The illustrations, parts, and procedures in this manual refer to Tomahawk factory-installed components. Your machine may vary depending on the requirements of your specific region.

Safety Precautions

Signal Words Used in this Manual

This manual contains DANGER, WARNING, CAUTION, *NOTICE,* and NOTE signal words which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.

This is the safety alert symbol. It is used to alert you to potential personal hazards.

- Obey all safety messages that follow this symbol.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

- To avoid death or serious injury from this type of hazard, obey all safety messages that follow this signal word.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

- To avoid possible death or serious injury from this type of hazard, obey all safety messages that follow this signal word.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

- To avoid possible minor or moderate injury from this type of hazard, obey all safety messages that follow this signal word.

NOTICE: Used without the safety alert symbol, NOTICE indicates a situation which, if not avoided, could result in property damage.

Note: A Note contains additional information important to a procedure.

Machine Description and Intended Use

This machine is a dual drum, ride-on roller. The Tomahawk Ride-On Roller consists of an articulated frame onto which is mounted a gasoline or diesel engine, a fuel tank, a hydraulic tank, a water tank, a hydrostatic drive system, two steel drums containing internal eccentric weights, and an operator's platform with a ROPS (Roll Over Protective Structure). The

engine powers the hydraulic systems that provide machine movement and drum vibration. The vibrating drums smooth and compact the work surface as the machine moves. Machine speed, direction, and vibration are controlled by the operator from the operator's seat on the platform.

The machine is designed as a lightweight roller to be used in the compaction of sub layers and finish layers of asphalt on roads, driveways, parking lots, and other types of asphalt-covered surfaces.

This machine has been designed and built strictly for the intended use described above. Using the machine for any other purpose could permanently damage the machine or seriously injure the operator or other persons in the area. Machine damage caused by misuse is not covered under warranty.
The following are some examples of misuse:

- Using the machine as a ladder, support, or work surface
- Using the machine to carry or transport passengers or equipment
- Using the machine to tow other machines
- Using the machine to spray liquids other than water (i.e., diesel fuel on asphalt)
- Operating the machine outside of factory specifications.
- Operating the machine in a manner inconsistent with all warnings found on the machine and in the Operator's Manual.

This machine has been designed and built in accordance with the latest global safety standards. It has been carefully engineered to eliminate hazards as far as practicable and to increase operator safety through protective guards and labeling. However, some risks may remain even after protective measures have been taken. They are called residual risks. On this machine, they may include exposure to:

- Heat, noise, exhaust, and carbon monoxide from the engine
- Burns from hot hydraulic fluid
- Fire hazards from improper refueling techniques
- Fuel and its fumes
- Personal injury from improper lifting techniques
- Crushing hazards from improper operation (feet, legs, or arms extending outside of the operator work station) and for other persons in the work zone
- Line of sight blockage by the ROPS

To protect yourself and others, make sure you thoroughly read and understand the safety information presented in this manual before operating the machine.

Safety Guidelines for Operating the Machine

Operator training
Before operating the machine:

- Read and understand the operating instructions contained in all manuals delivered with

the machine.
- Familiarize yourself with the location and proper use of all controls and safety devices.
- Contact your local Tomahawk distributor for additional training if necessary.

When operating this machine:
- Do not allow improperly trained people to operate the machine. People operating the machine must be familiar with the potential risks and hazards associated with it.

Operator qualifications

Only trained personnel are permitted to start, operate, and shut down the machine. They also must meet the following qualifications:
- have received instruction on how to properly use the machine are familiar with required safety devices

The machine must not be accessed or operated by:
- children
- people impaired by alcohol or drugs

Application area

Be aware of the application area.
- Keep unauthorized personnel, children, and pets away from the machine.
- Remain aware of changing positions and the movement of other equipment and personnel in the application area/job site.
- Remain aware of changing surface conditions and use extra care when operating over uneven ground, on hills, or over soft or coarse material. The machine could shift or slide unexpectedly.
- Use caution when operating the machine near the edges of pits, trenches or platforms. Check to be sure that ground surface is stable enough to support the weight of the machine with operator and that there is no danger of the roller sliding, falling or tipping.

Be aware of the application area.
- Do not operate the machine in areas that contain flammable objects, fuels, or products that produce flammable vapors.
- Keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

Safety devices, controls, and attachments

Only operate the machine when:
- All safety devices and guards are in place and in working order.
- All controls operate correctly.
- The machine is set up correctly according to the instructions in the Owner’s Manual.
- The machine is clean.
- The machine’s labels are legible.

To ensure safe operation of the machine:
- Do not operate the machine if any safety devices or guards are missing or inoperative.
- Do not modify or defeat the safety devices.
- Only use accessories or attachments that are approved by Tomahawk.

Safe operating practices

When operating this machine do:

- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts
- Always remain seated and wear the seat belt at all times while operating the machine.
- Keep clear of the articulated steering joint between the front and rear frames.
- Always disengage and stow the locking bar for the articulated steering joint before operating the machine. The machine cannot be steered when the locking bar is engaged.

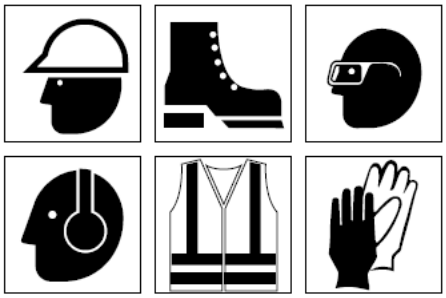
When operating this machine:

- Do not operate a machine in need of repair.
- Do not drive over curbs or other uneven objects that will result in the machine and operator being shaken.
- Do not attempt to start the machine when standing alongside it. Only start the engine when seated in the driver's seat and with the forward/reverse control in the neutral position.
- Do not leave the machine running unattended.
- Do not use a cellphone or send text messages while operating this machine.
- Do not consume the operating fluids used in this machine. Depending on your machine model, these operating fluids may include water, wetting agents, fuel (gasoline, diesel, kerosene, propane, or natural gas), oil, coolant, hydraulic fluid, heat transfer fluid (propylene glycol with additives), battery acid, or grease.

Personal Protective Equipment

Wear the following Personal Protective Equipment (PPE) while operating this machine:

- Hard hat
- Safety shoes
- Safety glasses, goggles, or face shield
- Heavy duty gloves
- Hearing protection
- Reflective clothing
- Wet weather gear
- Respirator or filter mask



Wear whatever is needed to protect yourself—don't take chances.

WARNING: Avoid death or serious injury from entanglement. **Do not wear loose or frayed clothing or accessories that could catch on moving parts.** Examples of items to avoid include flopping cuffs, dangling neckties and scarves, wallets attached to chains, jewelry and wrist watches.

After use

- Stop the engine when the machine is not being operated.
- Close the fuel valve on engines equipped with one when the machine is not being

operated.
- Ensure that the machine will not tip over, roll, slide, or fall when not being operated.
- Store the machine properly when it is not being used. The machine should be stored in a clean, dry location out of the reach of children.

Operating the Machine in Electrical Storms

WARNING
Operating this machine in an electrical storm can be hazardous. You can be injured or killed by lightning.
- Be aware of deteriorating weather conditions and approaching electrical storms.
- Stop work and get to a safe shelter before lightning strikes occur.

Reducing risk of injury
If lightning strikes occur in the vicinity of the work area, there are two methods of reducing risk of injury:
1. If you are on the ground:
- Stay away from the machine.
- Do not attempt to climb onto the machine or into the operator's seat.

2. If you are in the operator's seat:
- Remain in the operator's seat.
- Do not attempt to climb off the machine.

Service Safety

Service Training
Before servicing or maintaining the machine:
- Read and understand the instructions contained in all manuals delivered with the machine.
- Familiarize yourself with the location and proper use of all controls and safety devices.
- Only trained personnel shall troubleshoot or repair problems occurring with the machine.
- Contact Tomahawk for additional training if necessary.
- When servicing or maintaining this machine:
- Do not allow improperly trained people to service or maintain the machine. Personnel servicing or maintaining the machine must be familiar with the associated potential risks and hazards.

Precautions
When servicing or maintaining the machine:
- Read and understand the service procedures before performing any service to the machine.

- All adjustments and repairs must be completed before operating the machine. Do not operate the machine with a known problem or deficiency.
- All repairs and adjustments shall be completed by a qualified technician.
- Turn off the machine before performing maintenance or making repairs.
- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts.
- Re-install the safety devices and guards after repair and maintenance procedures are complete.

Machine modifications

When servicing or maintaining the machine:

- Use only accessories/attachments that are approved by Tomahawk. When servicing or maintaining the machine:
- Do not defeat safety devices.
- Do not modify the machine without the express written approval of Tomahawk.

Replacing parts and labels

- Replace worn or damaged components.
- Replace all missing and hard-to-read labels.
- When replacing electrical components, use components that are identical in rating and performance to the original components.
- When replacement parts are required for this machine, use only Tomahawk replacement parts or those parts equivalent to the original in all types of specifications, such as physical dimensions, type, strength, and material.

Cleaning

When cleaning and servicing the machine:

- Keep the machine clean and free of debris such as leaves, paper, cartons, etc.
- Keep the labels legible.

When cleaning the machine:

- Do not clean the machine while it is running.
- Never use gasoline or other types of fuels or flammable solvents to clean the machine. Fumes from fuels and solvents can become explosive.

Personal Protective Equipment (PPE)

Wear the following Personal Protective Equipment (PPE) while servicing or maintaining this machine:

- Close-fitting work clothes that do not hinder movement
- Safety glasses with side shields
- Hearing protection
- Safety-toed footwear

In addition, before servicing or maintaining the machine:

- Tie back long hair
- Remove all jewelry (including rings)

Operator Safety while Using Internal Combustion Engines

WARNING

Internal combustion engines present special hazards during operation and fueling. Failure to follow the warnings and safety standards could result in severe injury or death.

- Read and follow the warning instructions in the engine owner's manual and the safety guidelines below.

DANGER

Exhaust gas from the engine contains carbon monoxide, a deadly poison. Exposure to carbon monoxide can kill you in minutes.

- NEVER operate the machine inside an enclosed area, such as a tunnel, unless adequate ventilation is provided through such items as exhaust fans or hoses.

Operation safety

When running the engine:

- Keep the area around the exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the machine if fuel leaks are present or the fuel lines are loose.

When running the engine:

- Do not smoke while operating the machine.
- Do not run the engine near sparks or open flames.
- Do not touch the engine or muffler while the engine is running or immediately after it has been turned off.
- Do not operate a machine when its fuel cap is loose or missing.
- Do not start the engine if fuel has spilled or a fuel odor is present. Move the machine away from the spill and wipe the machine dry before starting.

Refueling safety

When refueling the engine:

- Clean up any spilled fuel immediately.
- Refill the fuel tank in a well-ventilated area.
- Re-install the fuel tank cap after refueling.
- Use suitable tools for refueling (for example, a fuel hose or funnel).

When refueling the engine:

- Do not smoke.
- Do not refuel a hot or running engine.
- Do not refuel the engine near sparks or open flames.

Hydraulic Fluid Safety

WARNING
Possibility of severe injury. Hydraulic fluid is under high pressure and becomes very hot during operation.

- To avoid injury, obey the safety instructions listed below.

Safety instructions

- Inspect the hydraulic system thoroughly before operating the machine.
- Do not touch hydraulic fluid or hydraulic components while the machine is operating. Wait until the machine is cool.
- Before disconnecting hydraulic fittings or hoses, ensure that all pressure has been bled from the circuit. Set all controls in neutral, turn engine off, and allow the fluids to cool before loosening hydraulic fittings or attaching test gauges.
- Hydraulic fluid escaping under high pressure may penetrate the skin, cause burns, blind, or cause other serious injuries or infections. Contact a physician immediately for treatment if your skin has been penetrated by hydraulic fluid, even if the wound seems minor.
- Fluid leaks from small holes are often practically invisible. Do not use your bare hands to check for leaks. Check for leaks using a piece of cardboard or wood.
- Hydraulic fluid is extremely flammable. Stop the engine immediately if a hydraulic leak is detected.
- After servicing the hydraulics, make sure all components are reconnected to the proper fittings. Failure to do so may result in damage to the machine and/or injury to a person on or near the machine.

Safety Guidelines for Lifting and Transporting the Machine

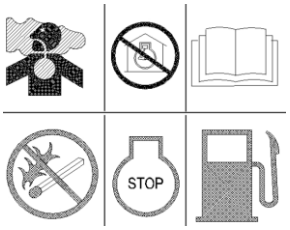
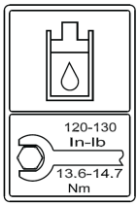
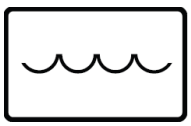
When lifting the machine:

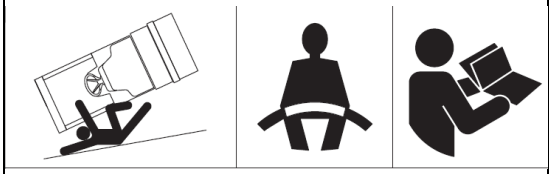
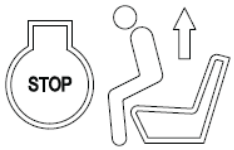
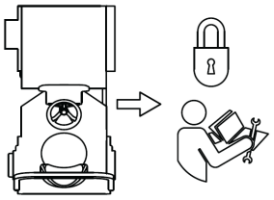
- Make sure slings, chains, hooks, ramps, jacks, forklifts, cranes, hoists, and any other type of lifting device used is attached securely and has enough weight-bearing capacity to lift or hold the machine safely. See chapter *Technical Data* for machine weight.
- Remain aware of the location of other people when lifting the machine.
- Only use the lifting points and tie-downs described in the Owner's Manual.
- Make sure the transporting vehicle has sufficient load capacity and platform size to safely transport the machine.

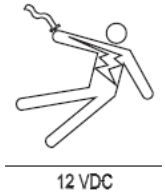
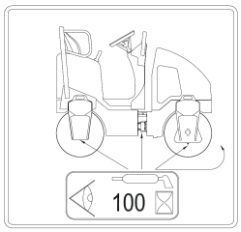
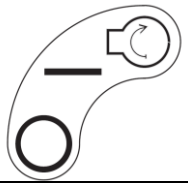
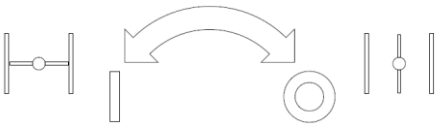
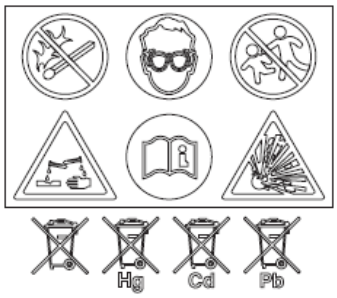
To reduce the possibility of injury:

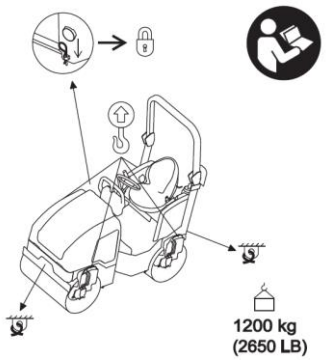
- Do not stand under or get onto the machine while it is being lifted or moved.

Labels

	**DANGER** **EXPLOSION HAZARD** Never operate the machine in an explosive atmosphere, near combustible materials, or where ventilation does not clear exhaust fumes.
	**CAUTION** **READ OWNER'S MANUAL** Read and understand owner's manual before using this machine. Failure to follow operating instructions could result in serious injury or death.
	**DANGER** **ASPHYXIATION HAZARD** ■ Engines emit carbon monoxide. ■ Do not run the machine indoors or in an enclosed area unless adequate ventilation, through such items as exhaust fans or hoses, is provided. ■ Read the Operator's Manual. ■ No sparks, flames, or burning objects near the machine. ■ Stop the engine before refueling. Use only clean, filtered diesel fuel.
	**WARNING** **BURN HAZARD** Never come into contact with the engine or muffler when engine is operating or shortly after it is turned off. Serious burns may occur.
	**WARNING** Pinch point. Avoid crushing area.
	Hydraulic oil reservoir fill Torque nuts to 13.6-14.7 Nm (120-130 in.lbs.) maximum.
	Water tank fill. Use only clean water or water-based retardants.

	Always stop the engine and let it cool for a few minute before refueling.
	**ATTENTION** **LIFTING SPOT** Lift the machine at the spot indicated.
	Tie-down Point
	**CAUTION** No lift point
	**WARNING** **WEAR HEARING-PROTECTOR** The operator must wear ear protection device during the operation
	**WARNING** Always wear seat belt when operating roller. Read the Owner's Manual for machine information.
	Engine will stop without operator seated.
	**WARNING** Avoid crushing area Articulated steering joint locking location. Lock the articulated steering joint before servicing the machine. Read Repair Manual.
	**WARNING** Do not drill or weld the ROPS. Read the Owner's Manual.

	**WARNING** Avoid crushing area.
	**WARNING** Disconnect battery before servicing. Read Repair Manual for instructions. Battery contains caustic acid and potentially explosive hydrogen gas.
	**CAUTION** **ELECTRIC SHOCK HAZARD at auxiliary battery positive terminal**. Never touch this terminal and a metal portion of the machine simultaneously.
	Grease points Inspect and lubricate every 100 hours of operation.
	Noise emission to the environment according to the European Community's Directive. The machine's emission is specified in the Technical data chapter and on the label.
	Positions of the key switch: ON OFF Engine crank
	Choke: O = Open I = Closed
	**WARNING** ➢ Keep all sparks and open flames away from the battery. ➢ Wear eye protection. ➢ Keep away from children. ➢ Battery acid is poisonous and corrosive. ➢ Read the Owner's Manual. ➢ Explosion hazard. Dispose of waste batteries in accordance with local environmental regulations. Battery contains mercury (Hg), cadmium (Cd), or lead (Pb).

	**NOTICE** Lifting spot ➢ Lock articulated joint. ➢ Attach chains to the lifting eyes on machine. ➢ Attach chains to hook on lifting equipment.

All the labels clearly identified according to ISO 6405-1

NAMEPLATE

A nameplate listing the model number, max output, operating mass, Spindle speed max, Serial number is attached to this machine.

Lifting and Transporting

Locking and Unlocking the Articulated Joint

Description

A lockarm located below the articulated joint is provided to fasten the front and rear halves of the roller together. Once secured, the lockarm prevents the two halves from swinging together.

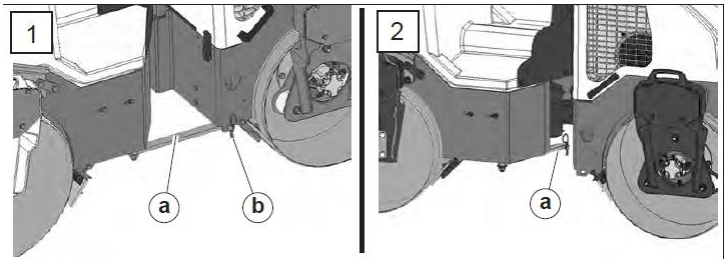
WARNING

Pinching / crushing hazards.

- Always install the lockarm before you lift the machine, transport the machine, or perform maintenance near the center of the machine.

Locking

Move the lockarm (a) to the LOCKED position (1). Fasten the lockarm in place with the retaining pin (b).



Unlocking

Remove the retaining pin and move the lockarm to the UNLOCKED position (2) before you operate the machine. Re-insert the retaining pin in the lockarm.

NOTICE: Attempting to steer the machine with the lockarm in the locked position may damage the steering cylinder and locking mechanism.

Lifting the machine

Requirements

- Lifting equipment (crane or hoist) capable of supporting the machine's weight. See the *Technical Data Chapter* for your machine.
- Lifting devices (hooks, chains, and shackles) capable of supporting the machine's weight.
- Engine stopped.
- All access covers closed and secured.

WARNING

Crushing hazard. You may be crushed if the lifting devices fail.

- Never stand under, or get onto, the machine while it is being lifted or moved.

WARNING

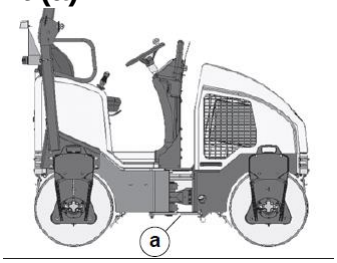
Crushing hazard. The machine can drop if it is lifted by the ROPS or any other part of the frame. These components are not designed to support the weight of the machine.

- Use only the designated lifting points to lift the machine.

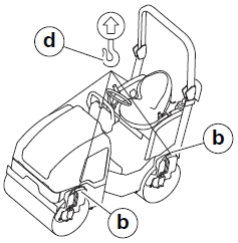
Procedure

Perform the procedure below to lift the machine.

1. Stop the engine.
2. Engage the parking brake.
3. Lock the articulated steering joint **(a)**.



4. There are two lifting eyes **(b)** per side. Attach one lifting chain to each lifting eye.



5. Attach the chains to the hook **(d)** of the lifting equipment.
6. Lift the machine a small distance.

WARNING

Crushing hazard. An unstable machine may cause the lifting device to fail. You may
be crushed if the lifting device fails.

- Check for machine stability before continuing**.**

7.Check for stability. If necessary, lower the machine, reposition the lifting devices, and lift the machine a small distance again.

8.Continue lifting the machine only when it is stable.

Tying Down and Transporting the Machine

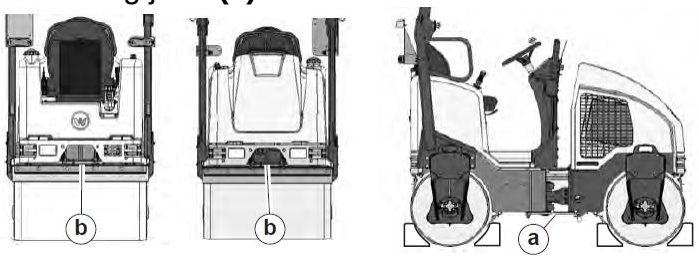
Requirements

- Engine shut down
- Parking brake ON

Procedure

Perform the procedure below to tie down the machine.

1. Make sure that the transport vehicle is capable of handling the weight and size of the machine. See *Technical Data* for dimensions and operating weight.
2. Lock the articulated steering joint **(a)**.



3. Block or chock the drums as shown.
4. Attach steel ropes or chains to each of the two tie down bars **(b)** on the front and ear of the machine.
5. Attach the other end of the chains to the transport vehicle.

NOTICE

- Do not position ropes or chains across the machine frame or the articulated joint when tying down the machine. Damage to the machine may occur.
- Do not completely compress the shock mounts when tying down the machine. Damage to the shock mounts may occur.
- Do not leave the machine tied down for extended periods of time (except when transporting). Damage to the shock mounts may occur.

Towing the machine

Requirements

- Second machine of greater size and rigid towing equipment, or
- Two machines of equal size to towed machine if non-rigid towing equipment is being used
- Shielding for all machines being used

Note: *The strength of the towing line or the tow bar should be at least 150 percent of the gross weight of the towing machine.*

Limitations

The following limitations must be followed:

- Limit towing to emergency situations only
- Limit towing to short distances
- Limit towing speed to 2 km/h (1.2 mph)
- Limit tow line angle to 30°

Procedure

Perform the procedure below to tow the machine.

Note: *If the engine runs and the steering system and/or braking system functions, an operator may be allowed to ride on and steer the machine being towed. In all other cases, do not ride on the machine when it is being towed.*

1. Attach shielding to the machines to protect the operators if the towing equipment breaks.
2. Block the drums so that the machine cannot move.
3. Open the engine compartment.
4. Manually disengage the SAHR brakes. (See topic *Manually Releasing The Parking Brake*.)
5. Attach the tow line to the machine at the tow points.
6. Attach the tow line to the towing vehicle(s).
7. Remove the blocks from the drums.
8. Tow the disabled machine at a slow rate of speed to the desired location.
9. Once the machine is at the desired location, securely block the drums. This will prevent movement of the machine.
10. Close the bypass valve.
11. Manually re-engage the parking brake.
12. Remove the tow lines.

Manually Releasing the Parking Brake

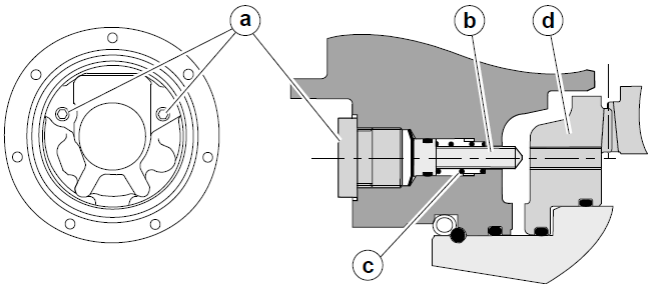
There are two drive motors on the roller—one on each drum. Each drive motor includes a parking brake that is spring activated and hydraulically released (SAHR).

NOTICE: To avoid damaging the internal mechanism, do not use power tools to release or reactivate the brakes.

Note: *This procedure must be performed on both drums.*

To manually release the brakes:

1. Chock each drum to prevent the machine from moving.
2. Lock the articulated steering joint. See section *Articulation Joint Lockarm.*
3. Using an 8mm Allen wrench, remove the plugs **(a)** in order to access the release screws **(b)**.



4. Using a 6mm Allen wrench, press and turn each release screw in until its threads catch in the brake plate **(d)**. Tighten each release screw alternately until the spring **(c)** on each is fully compressed. You will feel a substantial difference in the amount of torque required to turn the screw once its spring is fully compressed.
5. Continue to tighten (turn clockwise) the two release screws to compress the brake plate springs. Alternate back-and-forth between the two screws, turning approximately 45° at a time, until the drums are no longer held by the brake plate. The brake plate should release after turning each screw approximately two (2) turns.

NOTICE: Maximum torque for the release screws is 33 Nm (24.3 ft.lbs.). Overtightening the release screws can destroy the internal mechanism.

6. Manually turn the drum to test if the brake is released.
7. Replace the plugs, tightening them to a maximum torque of 60 ± 6 Nm (44.2 ± 4.4 ft.lbs.).

To reactivate the brakes, carry out the following procedure on both drums.

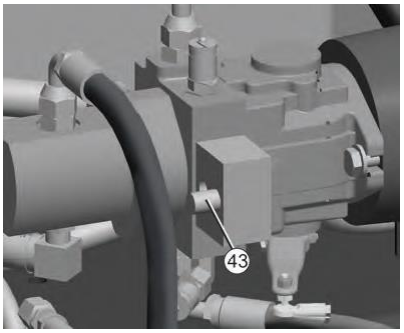
8. Remove the plugs **(a)**.
9. Alternating between the two release screws **(b),** completely loosen them until the brake plate is disengaged.
10. Replace the plugs, tightening them to a maximum torque of 60 ± 6 Nm (44.2 ± 4.4 ft.lbs.).

Note: *After repair, ensure that the releasing screws are back in the normal operating position.*

Note: *Replacement drive motors come with the brakes in the ON position.*

Towing Bypass Valve

The drive circuit is equipped with a towing valve **(43)** to allow oil to bypass the drive motors and let the roller freewheel for towing.
The towing valve should be used in emergency cases where the machine has become bogged down in loose or muddy soil, or cannot be driven due to an engine or hydraulic system failure.



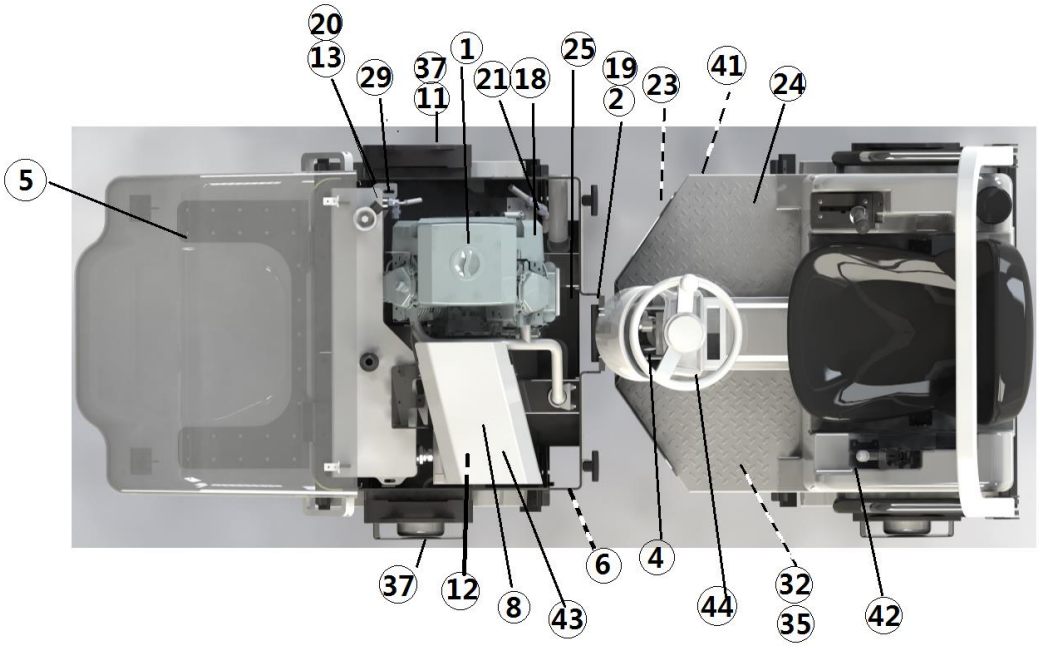
WARNING
With the towing valve open, the drive circuit has no braking action and the machine will roll freely.

- Apply the brake or attach the towing device before opening the towing valve.
- Close the towing valve immediately after the towing operation is complete to prevent the machine from rolling unexpectedly.

Procedure
1. To open the bypass, shut the engine off and rotate the shaft on the towing valve counter-clockwise.
2. To close the bypass, rotate the shaft on the towing valve clockwise.

Controls

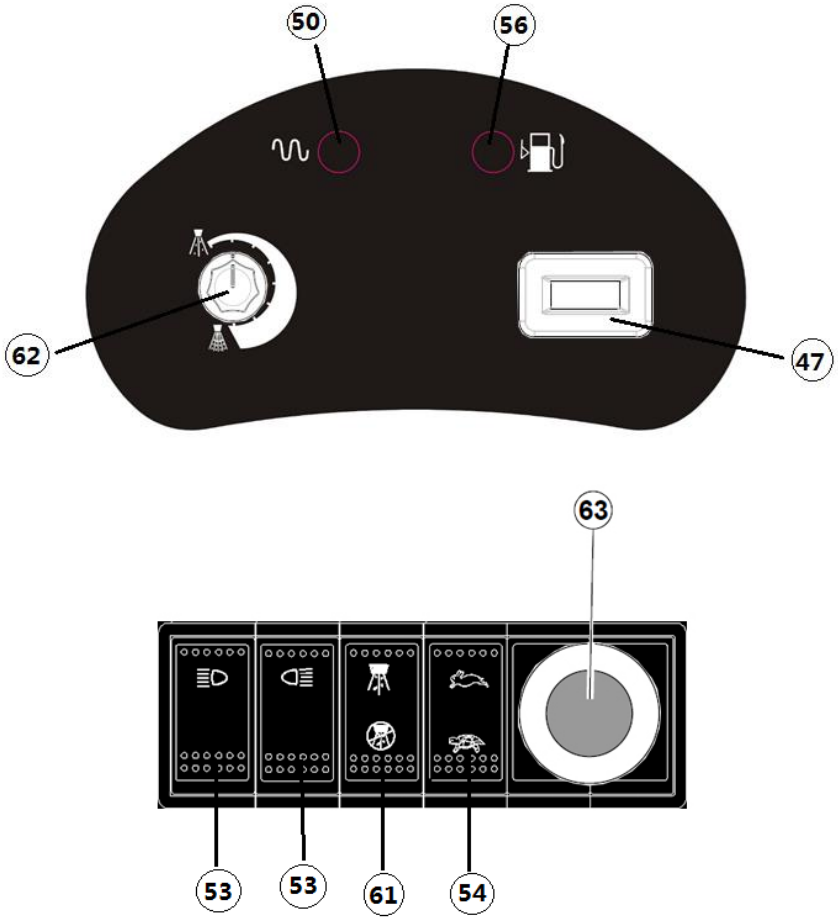
Features and Controls



Ref.	Description	Ref.	Description
1	Air cleaner	24	Operator’s platform
2	Articulated joint	25	Engine oil filter
3	Hand holds	26	Rear drum fill/drain plug
4	Control panel	27	Rear drum—static
5	Dipstick	28	Scraper bar (4 places)
6	Drain hose—hydraulic tank	29	Sightglass—hydraulic tank
7	Drive motor	30	Sprinkler tube (2)
8	Drive pump	31	Steering wheel
9	Engine hood	32	Steering cylinder (under floor panel)
10	Vibration control button	33	Tiedown (2 places)
11	Exciter motor	34	Beacon light (optional)
12	Exciter/Steering pump	35	Battery (under floor panel)
13	Hydraulic filter—return line	36	Hydraulic suction line
14	Hydraulic strainer—suction line	37	Grease fitting—exciter (2 places)
15	Forward / Reverse control	38	Lifting eye (4 places)
16	Front drum—vibratory	39	ROPS
17	Fuel tank fill cap	40	Seat with seatbelt
18	Fuel filter	41	Water drain

19	Grease fittings—articulated joint (4places)	42	Parking brake
20	Hydraulic tank fill port	43	Tow valve
21	Hydraulic manifold block	44	Choke lever
22	Water tank fill cap	45	Auxiliary battery positive terminal
23	Lockarm		

Control Panel and Indicator Lights



Ref.	Item	Function
47	Hour meter	This instrument meters machine usage.
50	Vibration on indicator	This indicator light illuminates to indicate that the vibration is on.
53	Lights switch (if equipped)	This switch controls power to the lights.
54	Throttle switch	This switch sets the position of the throttle, either high or low.
56	Low fuel indicator	This indicator light illuminates to indicate that the fuel level is low.
61	Water spray switch	This switch turns the water pump on and off.
62	Water spary dial	This switch sets the frequency at which the water pump turns on and off when in the automatic mode.
63	Emergency stop switch	This switch shuts down the engine in an emergency. Pull the switch up to de-activate the switch.

Operation

Preparing the Machine for First Use

1. Make sure all loose packaging materials have been removed from the machine.
2. Check the machine and its components for damage. If there is visible damage, do not operate the machine! Contact your Tomahawk dealer immediately for assistance.
3. Take inventory of all items included with the machine and verify that all loose components and fasteners are accounted for.
4. Attach component parts not already attached.
5. Add fluids as needed and applicable, including fuel, engine oil, and battery acid.
6. Move the machine to its operating location.

Position of the Operator

Safe and efficient use of this machine is the operator's responsibility. Full control of the machine is not possible unless the operator maintains the proper working position at all times.
While operating this machine, the operator must:

- be seated in the operator's seat facing forward
- wear the seat belt, properly adjusted and latched
- have both feet on the control deck
- have one hand on the steering wheel at all times
- have the other hand free to operate the controls as needed

Mounting and Dismounting the Machine

When climbing on and off the machine, maintain a three-point contact with the steps and the handholds.
Three-point contact can be:

- two feet and one hand
- one foot and two hands

> ***NOTICE:*** Do not use the control lever when mounting or dismounting the machine. Use only the designated handholds on the ROPS and on the control column.

Fire Extinguisher Requirement

Overview

A fire extinguisher is not supplied with this machine. However, a fire extinguisher must be mounted on the machine and made available for use according to local and national regulations.

Type
Select a fire extinguisher classified for use on engine-powered construction equipment.

Installation
Install the fire extinguisher according to the manufacturer's instructions. The installation must be performed by an authorized Tomahawk dealer or service center.
Recommended mounting locations for the fire extinguisher on this machine are:

- Attached to the panel at the feet of the operator, adjacent to the control column
- Strapped to the ROPS

WARNING
Possibility of injury and equipment damage. Mounting the fire extinguisher improperly can weaken the ROPS or the water tank.

- Do not drill into the ROPS or modify the structure in any way.
- Do not drill into the operator pedestal except in the area adjacent to the control column. The water tank is directly beneath the operator pedestal.

Safety information

- Check the fire extinguisher at regular intervals to make sure that the unit is fully charged and operational.
- Before each use of the machine, make sure that the fire extinguisher is securely mounted in place and fasteners are tight.

Roll Over Protection Structure (ROPS)

Background

The machine is equipped with a Roll Over Protection Structure (ROPS). The ROPS is designed to protect the operator in a rollover accident. Depending on the machine model, the ROPS is either fixed (stationary) or foldable.

A foldable ROPS is equipped with two sets of hinge pins, or locking pins. This enables the ROPS to be folded either forward or backward as required for transportation or storage.

WARNING

Crushing hazard. Without a ROPS, you may be crushed if the machine rolls or tips.

- Never operate the machine without the ROPS in place and securely fastened in the upright position.

WARNING

Crushing / machine damage hazards. The ROPS is intended strictly to protect the operator during a rollover or tip-over incident and must not be used to lift the machine.

- Use only the designated lifting eyes to lift the machine.

WARNING

Personal injury hazard. The ROPS is not a handhold for passengers. Passengers can be seriously injured or killed from falls, tip-overs, or roll-over incidents.

- Do not allow anyone to ride on any part of the machine.

Checking ROPS condition

Each month, check:

- the torque on all of the screws holding the ROPS in place
- the ROPS frame for rust, cracks, and any other damage

Rules for reinstalling

When reinstalling the ROPS:

- Use the original nuts and bolts.
- Tighten the bolts to the specified torques.

NOTICE: Do not weld or drill into the ROPS. Drilling or welding on the ROPS will nullify the ROPS certification.

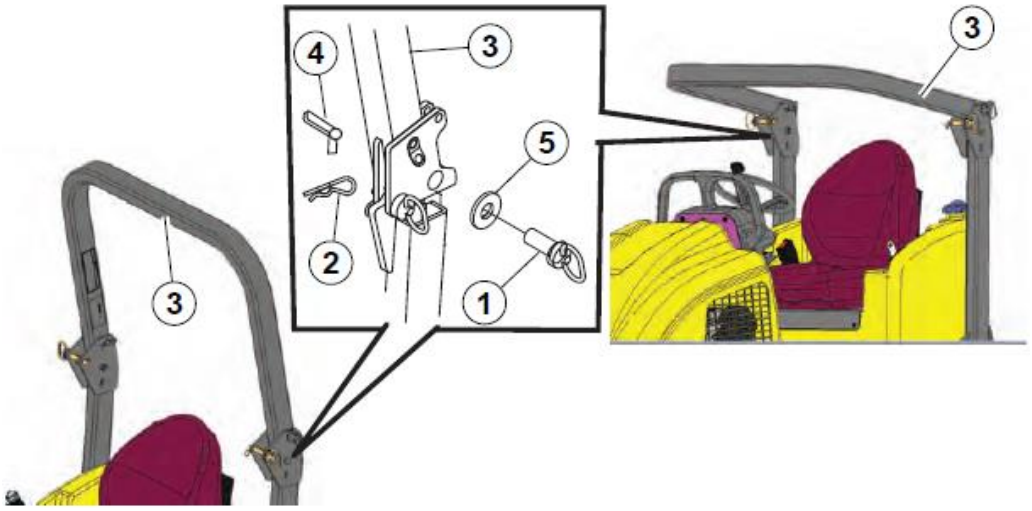
Raising the ROPS

Follow the procedure below to raise the ROPS.

WARNING

Pinching / crushing hazard.

- Keep fingers and extremities away from the pivot points when raising or lowering a foldable ROPS.



1. Support the upper half of the ROPS (3) using a crane and suitable rigging capable of supporting 19 kg.

WARNING

Crushing hazard.

- Do not remove all cotter pins and locking pins from each side of the ROPS at the same time. One set of cotter pins and locking pins must always remain installed on each side of the ROPS during the lifting process.

2. Each side of the ROPS is equipped with two locking pins (1) held in place with two cotter pins (2). Remove the appropriate cotter pins (2) and pull out the corresponding locking pins (1).
3. Lift the ROPS into the upright position.
4. Insert the locking pins and secure them with the washers (5) and cotter pins.
5. Tighten the adjusting handle (screw) (4) to reduce vibration.

The ROPS is now in position and ready for service.

Lowering the ROPS

Follow the procedure below to lower the ROPS.

1. Support the upper half of the ROPS **(3)** using a crane and suitable rigging capable of supporting 19 kg.

2. Remove the appropriate cotter pins **(2)** and pull out the corresponding locking pins **(1)**.

3. Gently lower the upper half of the ROPS.

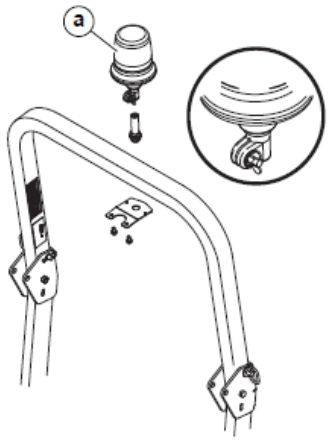
NOTICE: When lowering the ROPS, do not drop the upper frame. Sudden impacts can weaken or damage the ROPS.

4. Insert the locking pins and secure them with the washers **(5)** and cotter pins.

Rotating Beacon (if equipped)

The rotating beacon (a) powers up when the ignition switch is turned to the ON position. The beacon illuminates and rotates when powered up. To install the beacon:

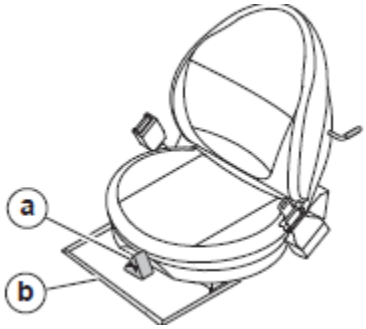
1. Slide the rotating beacon onto the light staff.
2. Tighten the wing nut on the base of the light.



Operator Presence System

The machine is equipped with an “operator presence system”. This system is part of the seat and senses the weight of an operator in the seat. During operation, if the operator leaves the seat, **the engine will shut down**
When the operator sits down again, the forward/reverse control must be placed in the neutral position before the roller can be moved or the vibration can be started. The engine will need to be restarted to continue operation.
Note: *A one-half second delay keeps the system from tripping when the roller passes over a bump.*
If the roller is supplied with an adjustable seat, it can be adjusted as follows:

- Knob **(a)** for adjusting the seat tension to the operator's weight.
- Lever **(b)** for adjusting the distance from the seat to the controls.



Note: *Do not change position of the operator’s seat while the machine is moving. The “OPERATOR PRESENCE” safety device will prevent all machine movements if an operator is not seated.*

WARNING
Possibility of injury.
- Always wear the seat belt provided when operating the roller.

Recommended Fuel

Use of oxygenated fuels

The engine requires regular grade unleaded gasoline. Use only fresh, clean gasoline. Gasoline containing water or dirt will damage the fuel system. Consult the engine owner's manual for complete fuel specifications.

Some conventional gasoline is blended with alcohol. These gasoline is collectively referred to as oxygenated fuels. If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement.

Before using an oxygenated fuel, confirm the fuel's contents. Some states and provinces require this information to be posted on the fuel pump.

The following is the Wacker Neuson approved percentage of oxygenates:

ETHANOL - (ethyl or grain alcohol) 10% by volume. You may use gasoline containing up to 10% ethanol by volume (commonly referred to as E10). Gasoline containing more than 10% ethanol (such as E15, E20, or E85) may not be used because it could damage the engine.

If you notice any undesirable operating symptoms, try another service station, or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned above are not covered under warranty.

Refueling the Machine

Requirements

- Machine shut down
- Engine cool
- Machine/fuel tank level with the ground
- Fresh, clean fuel supply

Procedure

Perform the procedure below to refuel the machine.

WARNING

Fire hazard. Fuel and its vapors are extremely flammable. Burning fuel can cause severe burns.

- Keep all sources of ignition away from the machine while refueling.
- Do not refuel if the machine is positioned in a truck fitted with a plastic bed liner. Static electricity can ignite the fuel or fuel vapors.
- Refuel only when the machine is outdoors.
- Clean up spilled fuel immediately.

1. Remove the fuel cap.
2. Fill the fuel tank until the fuel level reaches the bottom of the fuel tank neck.

CAUTION

Fire and health hazard. Fuel expands when heated. Expanding fuel in an over-filled tank can lead to spills and leaks.

- Do not overfill the fuel tank.

3. Re-install the fuel cap.

Result

The procedure to refuel the machine is now complete.

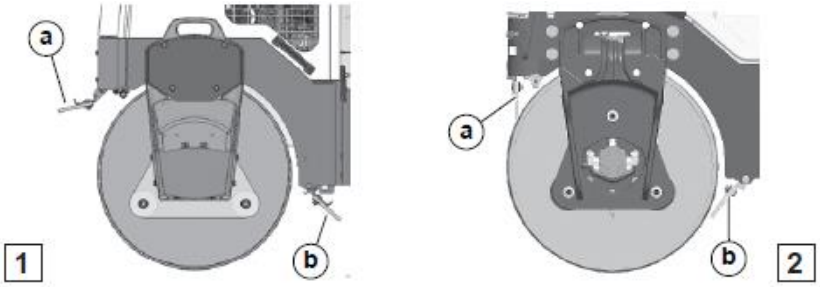
Positioning the Scrapers

Requirements

- Machine shut down
- Parking brake engaged

Positions

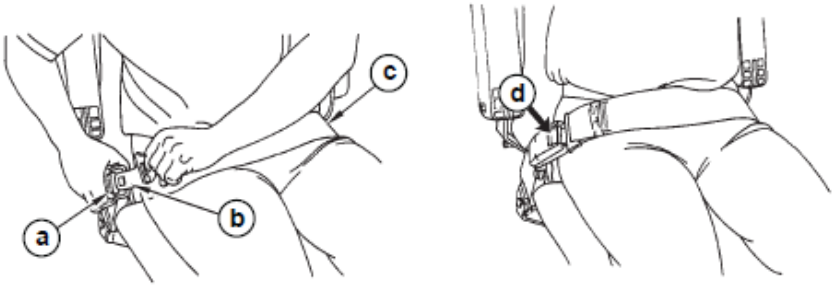
Each drum has two scrapers **(a**, **b)**. Scrapers prevent dirt and asphalt from sticking to and accumulating on the drum surface. They are spring loaded, and may be set in the travel position **(1)** or the scraping position **(2)** by moving the bar up or down.



Using the Seat Belt

Precaution
Always use the seat belt when operating the machine.

To use
To use the seat belt:
1. Pull seat belt **(c)** out of the retractor in a continuous motion.



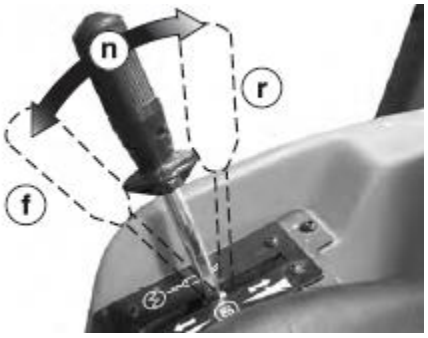
2. Fasten seat belt catch **(b)** into buckle **(a)**.
3. Position the seat belt low across the lap of the operator. The retractor will adjust the belt length and the retractor will lock in place.
4. Push the release button **(d)** on the buckle in order to release the seat belt. The seat belt will automatically retract into the retractor.

CAUTION
Possibility of injury. A worn seat belt may not protect the operator in an emergency.
- Replace the seat belt every three years.

Using the Forward / Reverse Lever

Background
Both roller drums are driven. An infinitely variable displacement pump drives the hydraulic motors fitted to each drum. The machine moves forward or reverse by using the forward/reverse lever located to the side of the operator's seat.

Travel direction
Move the forward/reverse lever into FORWARD **(f)** or REVERSE **(r)** according to the direction of travel desired.



To change direction of travel from FORWARD to REVERSE or vice versa:
1. Move the forward/reverse lever to the "N" NEUTRAL position **(n)**.
2. Allow the machine to come to a complete stop.
3. Move the forward/reverse lever in the direction desired.

Note: *In order to comply with safety standards, the machine has a device which only enables starting of the engine when the forward/reverse lever is in the neutral position.*

Travel speed
■ Travel speed varies from "ZERO" to a permitted maximum of 10 kph.
■ The farther forward or reverse the forward/reverse lever is positioned, the faster the roller will travel.
■ Travel speed is the same in both FORWARD and REVERSE.

Note: *When negotiating slopes, keep the forward/reverse lever at minimum travel speed.*

Braking
The forward/reverse lever can be used as an engine brake. Shifting the forward/reverse lever to the neutral position stops the machine.

Operator present system
The machine is equipped with an operator present system. The system prevents the machine from moving forward or reverses unless the operator is seated. The operator should remain seated at all times.

Using the Vibration System

Background

The machine has an exciter on front drum. The exciter is driven by gear-type hydraulic motors. The exciter motor is fed by a fixed-displacement, gear-type hydraulic pump.

Starting and stopping vibration

To start vibration, press button **(a)**.
When vibration is active, the vibration ON indicator on control panel will illuminate.
Vibration can be activated while operating in either or forward or reverse, and will remain active until button **(a)** is pressed again.
To stop vibration, press button **(a)** again.

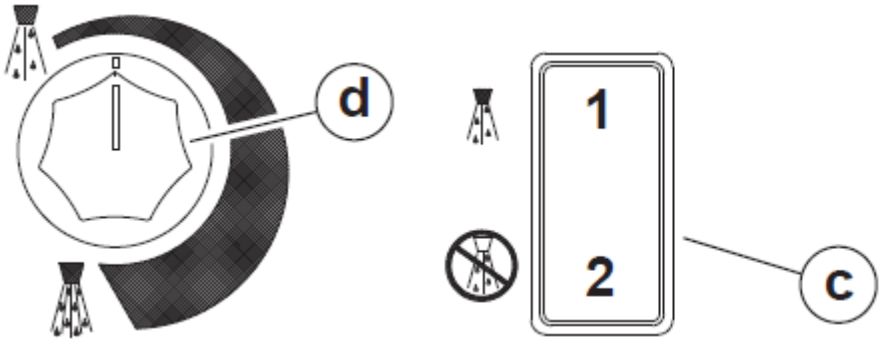
Using vibration

- Vibration remains active even when the forward / reverse control is in NEUTRAL.
- To keep the surface finish smooth when operating on asphalt, stop vibration before stopping the engine.
- If vibration is not stopped before the engine is stopped, vibration will resume immediately when the engine is started. Therefore, be ready to stop vibration as soon as the engine cranks.

Using the Water Spray System

Water spray controls

Water from the tank is fed to the spray nozzles by an electric pump. A water spray switch **(c)** controls the water pump motor. A water spray dial **(d)** controls the water flow.



To operate the water spray controls:
Water spray switch position 1: activates the water spray
Water spray switch position 2: stops the water spray
Water spray dial: Rotate the dial clockwise to increase spray frequency.
Rotate the dial counter-clockwise to decrease spray frequency.

Guidelines when using

- When using the water spray system:
- Check that the tank is full of water.
- Use only clean water. Dirty water, even when filtered, can clog the system.
- Keep the water system clean and well maintained. See *Maintenance.*
- If spray does not begin immediately when the system is turned on, it may be necessary to clean the spray bars. See *Maintenance.*

Using the Manual Parking Brake

Background
To hold the machine in a stopped position (parked), there is a mechanical parking brake on the rear drive motor. The engine will automatically shut off when the operator leaves the seat, but the parking brake must be set manually.

Engaging and releasing
To set the parking brake pull the brake lever **(a)** up until the brake pad engages the rear drum. Always set the parking brake before leaving the machine. To release the parking brake, lower the brake lever. The forward/reverse control should be in the NEUTRAL position when the parking brake is released.

The parking brake is connected to the brake pads and can be adjusted by turning the knob on the end of the handle. See section *Parking Brake Adjustment*.

Emergency use

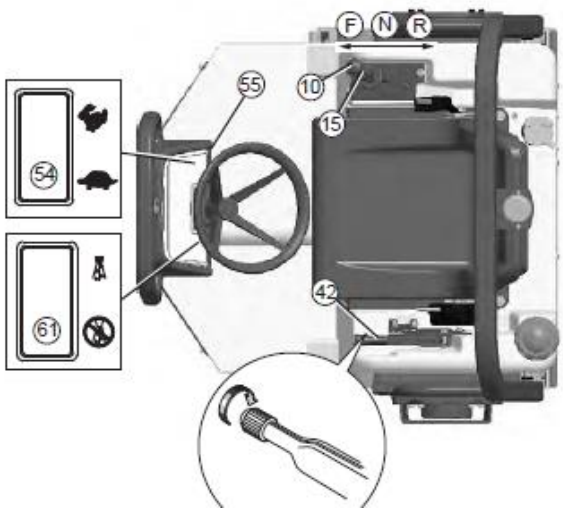
NOTICE: Under normal operating conditions, do not use the parking brake when the machine is moving. Using the parking brake while the machine is moving may cause damage to the drive motor.

Only use the parking brake to stop the machine when the machine is moving during an emergency condition. For example:

- During failure of the main hydraulic braking system (no braking action when the forward/reverse control is moved to the neutral position)
- In a runaway condition traveling down a slope.

Parking Brake Adjustment

The parking brake is located on the rear drive motor drum support, and is used to prevent the roller from moving when the engine is turned off.
Adjust brake for proper holding force as follows:
1. Unscrew brake lever knob (42) until brake can be applied with moderate force.
2. Start roller on level ground and try to travel forward and reverse with brake applied. If roller drives through brake, stop machine, tighten lever knob one turn and repeat process.
3. When machine no longer moves with brake set, stop machine, turn knob one more turn and brake is properly set.

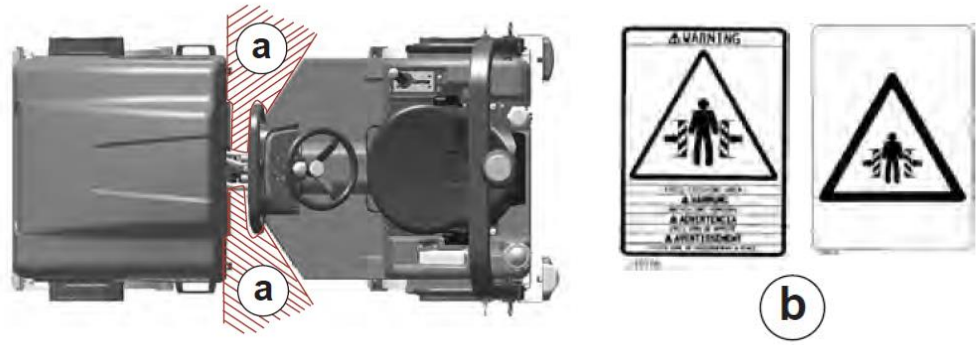


Avoiding the Danger Zone

Description

A “danger zone” is an area near a machine where a person can be seriously injured if struck by, or caught between, moving parts of the machine.

On this machine, the danger zone specifically refers to the area near the articulated joint between the front and rear frames **(a)**. The danger zone is identified with safety labels **(b)** on both sides of the front frame.



Avoiding injury

Obey the instructions below to avoid injury within the danger zone.

- Make sure that the safety labels are present and clearly visible on both sides of the articulated joint.
- Before operating the machine, instruct all personnel in the vicinity to stay away from the machine while it is being operated.
- While operating the machine, remain aware of people moving in the work area. Be ready to react to these movements if necessary.
- Lock the articulated joint before servicing the machine. See topic *Locking and Unlocking the Articulated Joint.*

Preliminary Checks

Requirements
Machine on a flat, level surface

Before starting
Before starting the machine, check the following items:

- Engine coolant level
- Engine oil level
- Hydraulic oil level
- Fuel level
- Condition of oil cooler and radiator cooling fins
- Water level in tank

> ***NOTICE:*** Top off the lubricating and hydraulic oil levels using products with the grades and specifications shown in the “Lubricants” table found in the *Technical Data* chapter of this Operator’s Manual. When doing so, use clean containers, funnels, etc., to avoid contamination.

Before operating
Before operating the machine:

- Check the machine for fluid leaks. Repair them before operating.
- Unlock the articulated joint.
- Adjust drum scraper position.
- Check the work area for obstructions. Remove all obstructions.
- Check that all handles, steps, and platforms are free of dirt, snow, grease, fuel, or anything else which might endanger operator safety.
- Allow the engine to warm up according to the following schedule:

Ambient Temperature	**Time (min.)**
Above 0°C (32°F)	**5**
Below 0°C (32°F)	**15***

** More time may be required if hydraulic controls are sluggish.*

Starting, Operating, and Stopping the Machine

Requirements

- Machine is in serviceable condition and has been properly maintained
- There is fuel in the tank

DANGER

Asphyxiation hazard. Exhaust gases contain carbon monoxide and can kill you in minutes.

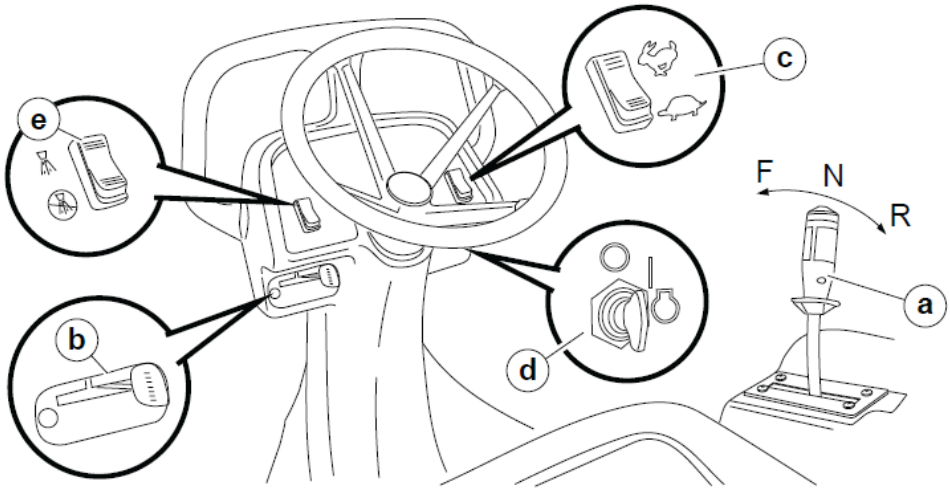
- Do not start the engine in an enclosed space.

Starting the machine

Perform the steps below to start the machine.

1. Sit in the operator's seat and fasten the seat belt.
2. Set the parking brake.
3. Set the forward/reverse control **(a)** in the NEUTRAL position.

Note: *The roller will not start unless the forward/reverse control is in the NEUTRAL position.*



4. If the engine is cold, move the choke lever **(b)** to the left into the CLOSED position. If the engine is warm, move the choke control to the right in the OPEN position.
5. Set the engine throttle **(c)** to the high position.
6. Turn the start key **(d)** to the start position until the engine starts, then release the key. If the vibration indicator light is on, press the vibration control button. This turns off the vibration.

NOTICE: Do not crank the engine starter for more than 15 seconds at one time. Longer cranking cycles could lead to starter damage.

7. Move the choke lever **(b)** to the OPEN position as the engine warms up.
8. Set the engine throttle to the low position.

Note: *Allow the engine to warm up for a few minutes before operating the roller.*

Operating the machine

Perform the procedure below to operate the roller

1. Before moving the machine, release the parking brake by lowering the brake lever.
2. Set the engine throttle to the high position. This ensures maximum travel speeds and will produce the best compaction results

NOTICE: Operating the machine at slower engine speeds will reduce compaction, slow down machine functions, and damage hydraulic components.

WARNING

High noise levels. Prolonged exposure can damage your hearing.

- Wear appropriate hearing protection while operating this machine.

3. Move the forward/reverse lever into FORWARD. The forward/reverse lever controls both the direction and speed of the roller. The farther forward the control is moved the faster the machine will travel.

Note: *Use the control lever, rather than the throttle, to control the speed of the machine while compacting.*

4. Press the vibration button on the forward/reverse lever to start vibration.
5. Press the water spray switch to activate the water spray system.
6. Rotate the water spray dial to select the water flow frequency desired.

Stopping the machine

1. Maneuver the machine to a flat surface with a suitable load bearing capacity.
2. Turn the vibration off.
3. Set the water spray switch **(e)** to the OFF position.
4. Set the forward/reverse control **(a)** to the NEUTRAL position.
5. Set the engine throttle switch **(c)** to the low position and allow the engine to cool down.
6. Set the parking brake**.** To set the parking brake, pull the brake lever up until the brake pad engages the drum. To release the brake, lower the brake lever. Always set the parking brake before leaving the machine.

Note: *The parking brake engages the rear drum only.*

WARNING

The vehicle constitutes a hazard or obstacle to traffic when parked.

- Mark the vehicle with signs, lights, and other warnings.

7. Turn the start key to the OFF position.
8. Chock the drums.

Emergency Shutdown Procedure

If a breakdown/accident occurs while the machine is operating, follow the procedure below.

1. Press the emergency stop switch on panel.

Activate the emergency stop switch by pushing the button. Pushing the emergency stop switch:

- turns off (opens) the main circuit breaker
- cuts power to the fuel solenoid
- stops the engine

The emergency stop switch will remain activated until the switch is pulled out.

Note: *Press the emergency stop switch only in the case of an actual emergency where the machine must be stopped immediately.*

2. Engage the parking brake.
3. Allow the machine to cool.
4. Using appropriate equipment, return the machine to an upright position if tipped over.
5. Contact the rental yard or machine owner for further instructions.

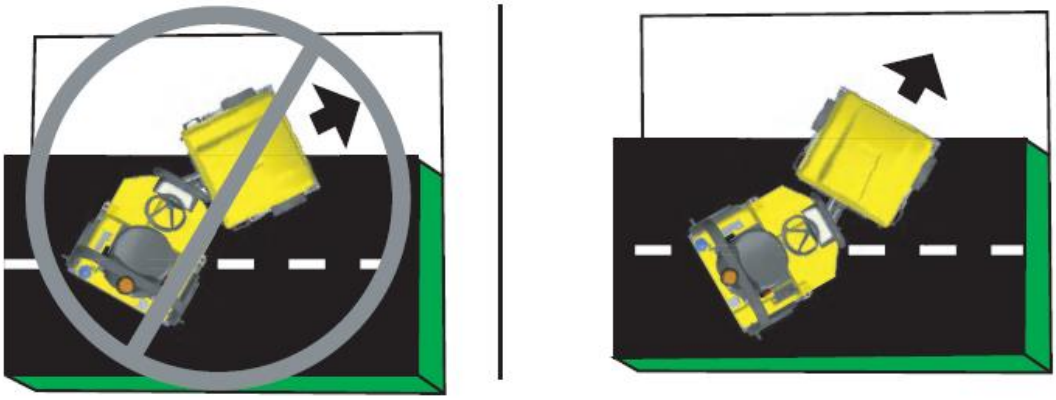
Machine Stability

WARNING
Crushing hazards. Certain job site conditions or operating practices may adversely affect machine stability.

- Follow the instructions below to reduce the risk of tipping or falling incidents.

Surface conditions
Pay attention to changing surface conditions while operating the machine. Adjust speed and travel direction as necessary to maintain safe operation.

- Machine stability and traction may be severely reduced when operating on uneven or rough terrain, rocky soils, or wet or loosely packed surface material.
- The machine may suddenly tip, sink, or fall when moved onto surfaces that have been newly filled with earth.



Steering angle
An articulated roller is more likely to tip when moving off an elevated surface if the machine is turned away from the edge.

- As shown in the illustration on the right, always turn the machine toward the edge when moving off an elevated surface.

Travel speed
A fast moving machine is more likely to tip or fall over while making turns or changing direction.

- Reduce travel speed before turning the machine.

Drum overhang
The machine can tip suddenly if more than half of the drum width extends beyond the edge of the elevated surface.

- Reduce travel speed and watch the drum position carefully when operating along the edge of an elevated surface.
- Keep as much of the drum on the elevated surface as possible.

Vibrating on a compacted surface

Activating the vibration system on a fully compacted surface may cause the drums to rebound and momentarily lose contact with the ground. If this occurs while the machine is on an incline, the machine may slide.

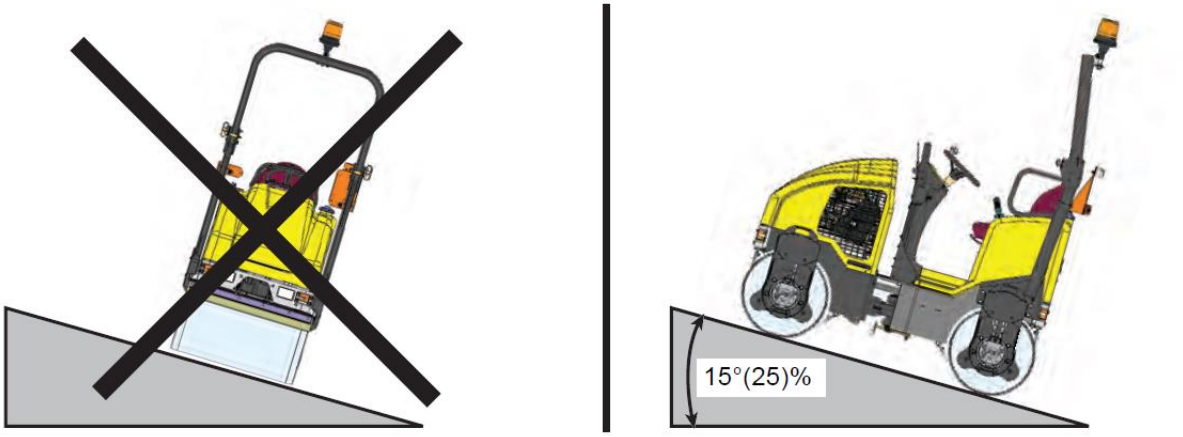
- If the drums rebound on the compacted surface, reduce vibration speed or stop vibration entirely.

Operating on Slopes

Background
When operating on slopes or hills, special care must be taken to reduce the risk of personal injury or damage to the machine.

Procedure
Always operate the machine up and down slopes rather than from side to side. For safe operation and for protection of the engine, continuous duty use should be restricted to slopes of 15° (25% grade) or less.

WARNING
Crushing hazard. Never operate the machine sideways on slopes. The machine may tip or roll over even on stable ground.
► Operate the machine straight up and down slopes.



Surface conditions
Pay attention to changing surface conditions while operating the machine. Adjust speed and travel direction as necessary to maintain safe operation.

- Machine stability and traction may be severely reduced when operating on uneven or rough terrain, rocky soils, or wet or loosely packed surface material.
- The machine may suddenly tip, sink, or fall when moved onto surfaces that have been newly filled with earth.

Anti-Vandalism Protection and Machine Access

Parts of the machine which may be subject to theft or vandalism when the vehicle is parked unattended can be padlocked to prevent unauthorized access or use.
Lockable parts are:

- Engine cover.
  a.To lock the engine cover, close the cover.
  b. Attach a padlock to the fastener.
- Control panel.
  a.To lock the control panel, place the anti-vandalism cover over the controls.
  b. Attach a padlock to the fastener.
- Fuel cap.
  a.To lock the fuel cap, close cap completely.
  b.Push in the locking tab on the cap.
  c. Attach a padlock.

Note: *Padlocks are not supplied with the machine.*

Maintenance

WARNING

A poorly maintained machine can malfunction, causing injuries or permanent damage to the machine.

- Keep the machine in safe operating condition by performing periodic maintenance and making repairs as needed.

Periodic Maintenance Schedule

The table below lists basic machine and engine maintenance. Tasks designated with check marks may be performed by the operator. Tasks designated with square bullet points require special training and equipment.
Refer to the engine owner's manual for additional information.

	Daily before starting	Every 100 hours	Every 500 hours	Every 1000 hours
Check external hardware.	√			
Check water filter.	√			
Check level of hydraulic oil.	√			
Check condition of hydraulic hoses and connections.	√			
Check electrical wiring and connections.	√			
Check operation of parking brake and make sure it engages.(if equipped)	√			
Check operation of neutral safety switch.	√			
Check seat belt.	√			
Grease articulated joint.		◆		
Grease rear drum drive bearings.		◆		
Grease exciter bearings.		◆		
Clean scraper bars.		√		
Check battery.		◆		
Grease steering cylinder ends.		◆		
Clean water filter.		√		
Change hydraulic system return line filter.[1]			◆	
Clean battery terminals.			◆	
Change hydraulic oil.				◆

[1]Replace hydraulic system return line filter after first month or 100 hours of operation.

Rear Frame Access

Overview

The operator's platform is hinged and can be tilted to provide access to the water pump, the water filter, the battery, the hydraulic hoses, and the fuel tank. The platform has lifting cylinders and a prop rod that hold the platform in the open position.

WARNING

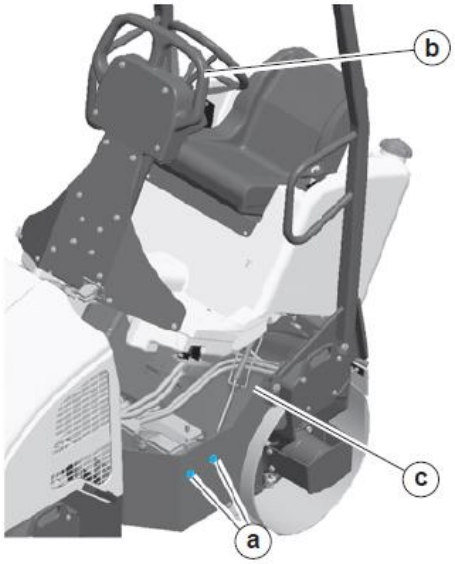
Pinching/crushing hazard. The lifting cylinders do not have enough force to lift and hold the platform in the open position when the tank is filled with water.

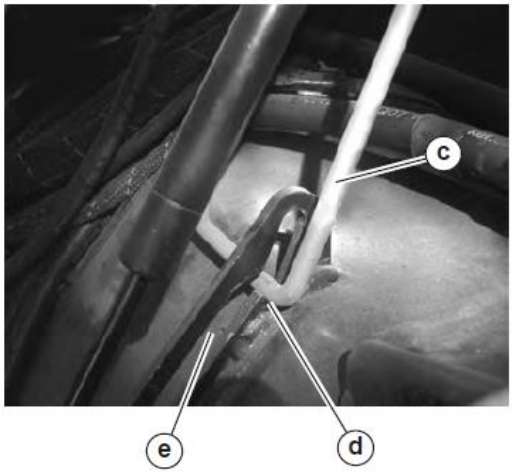
- Drain the water tank before tilting the platform. See *Water Spray System* for instructions.

Raising the platform

Follow the procedure below to tilt the platform and engage the prop rod.

1. Drain the water tank.
2. Remove the two bolts **(a)** locking the operator's platform to each side of the rear frame.





3. Stand on the left side of the machine, facing the rear.
4. Grasp the steering column handle **(b)** and push firmly up and rearward to tilt the platform.
5. The prop rod **(c)** will automatically drop into the detent **(d)** when the platform reaches its highest position. The platform is now supported.
6. Perform necessary maintenance work.

Lowering the platform

Follow the procedure below to disengage the prop rod and lower the platform.

1. Stand on the left side of the machine, facing the rear.
2. Grasp the steering column handle and push firmly up and rearward. At the same time, lift the prop rod out of the detent and pull it slightly forward into the guide slot **(e)**.

3. Pull the steering column handle down to lower the platform.
4. Replace the two bolts locking the platform to each side of the rear frame.

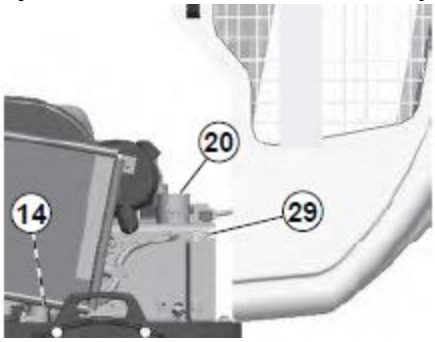
Maintaining the Seat and Seat Belt

Background
In order for the seat and seat belt to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary. Poorly maintained equipment can become a safety hazard!

Maintaining the seat and seat belt
- Keep the seat clean. Dirt, dust, or harsh chemicals can damage the upholstery. Repair holes or tears immediately.
- If necessary, clean the seat belt with a mild soap solution. Do not use chemical cleaners, as they will damage the fabric.
- Replace the seat belt immediately if it becomes worn or damaged. Otherwise, replace the seat belt every three years.
- Periodically test the operation of the seat tension knob and the front-to-back lever. Repair or replace worn or malfunctioning components.
- If the seat does not move smoothly during adjustment, apply a small amount of standard bearing grease (such as Shell Gadus® S2 V100 or equivalent) to the rails.

Hydraulic Oil Level

A hydraulic oil level sightglass **(29)** is located on the side of the hydraulic fluid reservoir.



While the machine is turned off, check that the hydraulic oil level is visible at the middle level or higher in the sightglass. If it is not, add oil through the filler port **(20)** inside the engine compartment. Use only clean hydraulic oil.
Thoroughly clean the top of the filler cap before removing it from the tank. Care should be taken to prevent small dirt particles from entering the system.
If hydraulic oil continually needs to be added, inspect hoses and connections for possible leaks.

Checking the Water Filter

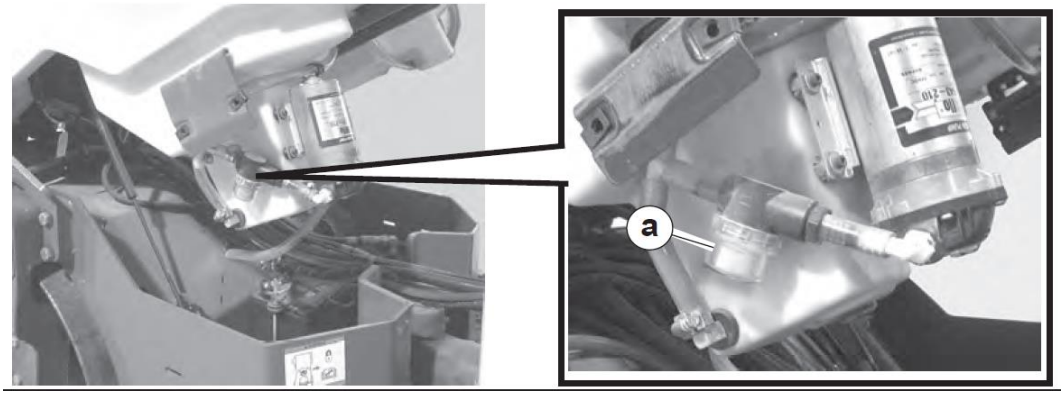
When
Check the water filter daily before operating the machine. Daily checks are especially important if the available water supply is cloudy or dirty.

Location
The water filter is located on the right side of the machine beneath the operator's platform. The operator's platform must be lifted to access the water filter.

Requirements
- Engine stopped
- Water tank drained
- Operator's platform lifted (see *Rear Frame Access)*.

WARNING
Pinching/crushing hazard. The lifting cylinders do not have enough force to lift and hold the platform in the open position when the tank is filled with water.
- Drain the water tank before lifting the platform. See *Draining the Water Spray System* for instructions.

Procedure
Inspect the water filter **(a)** according to the checklist below.



Clean or replace the water filter if any of the following conditions exist:
- Cup is missing, damaged, cracked, or chipped
- Strainer is damaged or missing
- Hose connections are loose or leaking
- Cup is filled with sediment or dirt

Cleaning the Water Filter

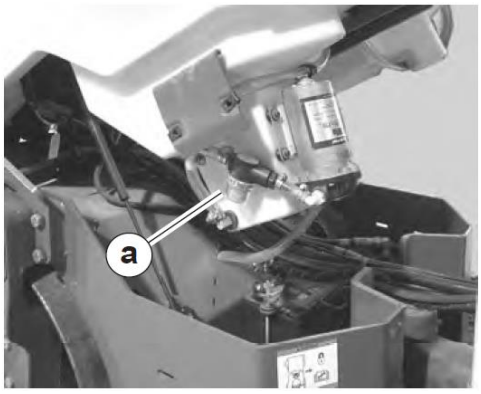
When
Clean the water filter every 100 hours, or more often if the available water supply is cloudy or dirty.

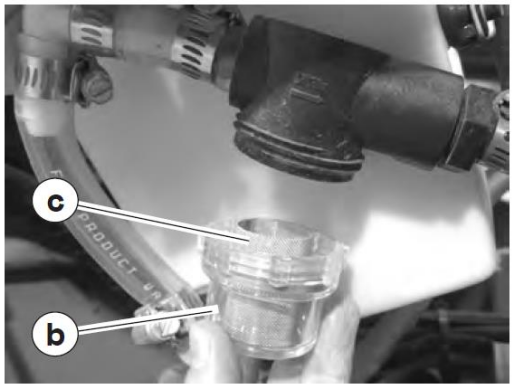
Location
The water filter is located on the right side of the machine beneath the operator's platform. The operator's platform must be lifted to access the water filter.

Requirements
- Engine stopped
- Water tank drained
- Operator's platform lifted (see *Rear Frame Access)*.

WARNING
Pinching/crushing hazard. The lifting cylinders do not have enough force to lift and hold the platform in the open position when the tank is filled with water.
- Drain the water tank before lifting the platform. See *Draining the Water Spray System* for instructions.

Cleaning the water filter
Perform the steps below to clean the water filter (a).





1. Unscrew the cup **(b)** and remove the strainer **(c)**.
2. Empty the cup.
3. Rinse the cup and strainer thoroughly with clean water to remove sediment and dirt.
4. Re-install the strainer in the cup, making sure that the strainer is properly seated inside the base of the cup.
5. Re-install the cup and hand-tighten.

Result
The water filter is now clean.

Grease Fittings

See section *Technical Data* for oil quantity and type.

Articulation Joint Lockarm

The articulated joint is equipped with grease fittings **(a)** for lubrication.

WARNING

Pinching hazard.

- To avoid being pinched by the machine halves, set the lockarm before greasing the articulating joint!

Rear Drum

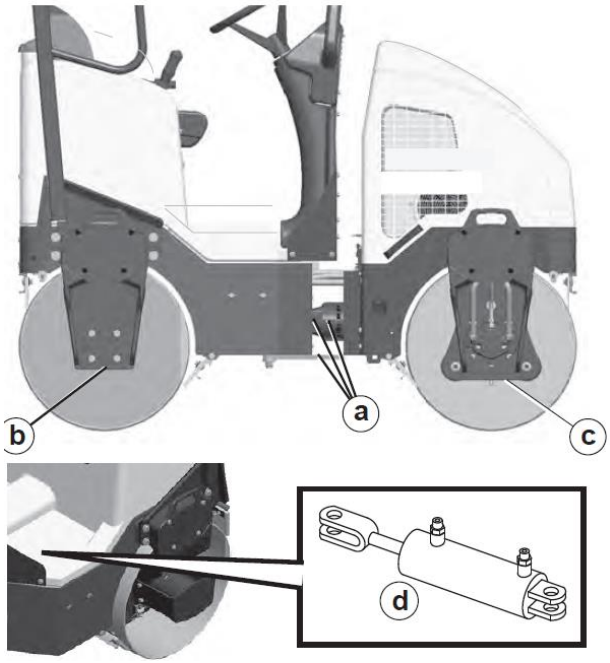
The rear drum drive bearing is equipped with a grease fitting **(b)** located at the center of the drum behind the right rear drum support.

Exciter

The exciter is grease lubricated. There are two grease fittings **(c)**, one on each side of the machine, located behind the front drum supports.

Steering Cylinder

The steering cylinder is located under the operator's platform. There is grease fitting near the base and rod ends of the cylinder **(d)**.



Battery

WARNING
Explosion hazard. Batteries can emit explosive hydrogen gas.
- Keep all sparks and flames away from the battery.
- Do not short-circuit battery posts.

WARNING
Battery fluid is poisonous and corrosive.
- In the event of ingestion or contact with skin or eyes, seek medical attention immediately.

The battery on this machine is equipped with a terminal that allows temporary disconnection of the battery for maintenance work. See topic “Battery Disconnect” in the *Operation* chapter for more information on using this terminal.

Disconnecting
To completely disconnect the battery (for example, when removing it):
1. Stop the machine and shut down the engine.
2. Place all electrical switches in the OFF position.
3. Disconnect the negative battery cable from the battery.
4. Disconnect the positive battery cable from the battery.

Connecting
To connect the battery:
1. Connect the positive battery cable to the battery.
2. Connect the negative battery cable to the battery.

Maintaining
- Keep battery terminals clean and connections tight.
- When necessary, tighten the cables and grease the cable clamps with petroleum jelly.
- Maintain the battery at full charge to improve cold weather starting.

Precautions
Observe the following precautions to prevent serious damage to the electrical system:
- Do not disconnect the battery while the machine is running.
- Do not attempt to run the machine without a battery.
- Do not attempt to jump-start a machine.
- In the event that the machine has a discharged battery, either replaces the battery with a fully charged battery or charge the battery using an appropriate battery charger. Use the auxiliary battery positive terminal for this purpose.

Dispose of discharged batteries in accordance with local environmental regulations.

Hydraulic System Cleanliness

Keeping the hydraulic oil clean is a vital factor affecting the service life of hydraulic components. Oil in hydraulic systems is used not only to transfer power, but also to lubricate the hydraulic components used in the system. Keeping the hydraulic system clean will help avoid costly downtime and repairs.

Major sources of hydraulic system contamination include:

- Particles of dirt introduced when the hydraulic system is opened for maintenance or repair
- Contaminants generated by the mechanical components of the system during operation
- Improper storage and handling of hydraulic oil
- Use of the wrong type of hydraulic oil
- Leakage in lines and fittings

To minimize hydraulic oil contamination:

- Clean hydraulic connections before opening the lines. When adding oil, clean the hydraulic tank filler cap and surrounding area before removing it.
- Avoid opening the pumps, motors, or hose connections unless absolutely necessary.
- Plug or cap all open hydraulic connections while servicing the system.
- Clean and cover the containers, funnels, and spouts used to store and transfer the hydraulic oil.
- Change the hydraulic filters and oils at the recommended service intervals.

Hydraulic Oil Requirements

We recommend the use of a good petroleum-based, anti-wear hydraulic oil in the hydraulic system of this equipment. Good anti-wear hydraulic oils contain special additives to reduce oxidation, prevent foaming, and provide for good water separation.

When selecting hydraulic oil for your machine, be sure to specify anti-wear properties.

Most hydraulic oil suppliers will provide assistance in finding the correct hydraulic oil for your machine.

Avoid mixing different brands and grades of hydraulic oils.

Most hydraulic oils are available in different viscosities.

The SAE number for oil is used strictly to identify viscosity—it **does not** indicate the type of oil (engine, hydraulic, gear, etc.).

When selecting a hydraulic oil be sure it matches the specified SAE viscosity rating and is intended to be used as a hydraulic oil. See section *Technical Data—Lubrication.*

Checking and Cleaning the Hydraulic Tank Breather

Prerequisites

- Machine shut down
- Clean, nonflammable solvent

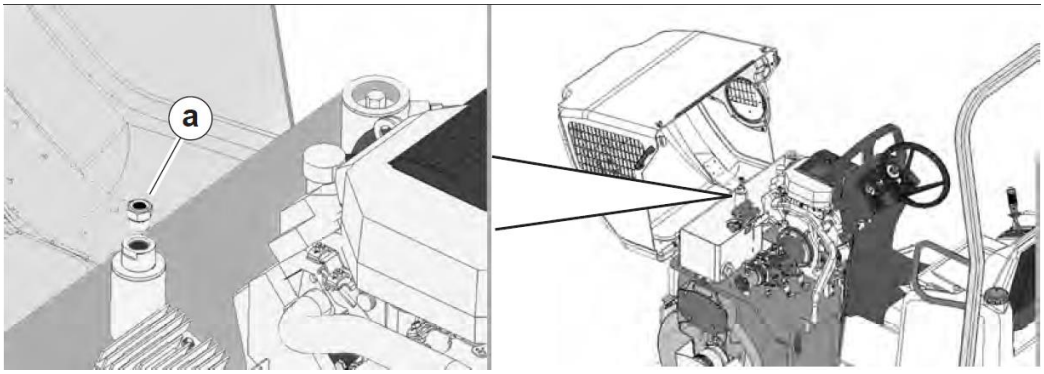
When

Every 1000 hours of service or yearly

Procedure

Follow the procedure below to clean the hydraulic tank breather **(a)**.

1. Open the engine compartment.



2. Remove the breather from the hydraulic tank.
3. Clean the breather with clean, nonflammable solvent.
4. Dry the breather with compressed air.
5. Re-install the breather.

Changing the Hydraulic Oil and Filter

Set all controls in neutral, stop the engine, and allow the engine and fluids to cool before performing this procedure.

All oils eventually shear or thin out with use, reducing their lubricating ability. In addition, heat, oxidation, and contamination may cause the formation of sludge, gum, or varnish in the system. For these reasons, it is important to change the hydraulic oil at specified intervals. See *Maintenance Schedule.*

1. Remove the filler cap/filter cartridge from top of the hydraulic tank.
2. Remove the drain plug on the drain hose and allow the hydraulic fluid to drain.

Note: *In the interests of environmental protection, place plastic sheeting and a container under the machine to collect the liquid which drains off. Dispose of this liquid properly.*

3. Unscrew the return line filter and replace the filter cartridge.
4. Install the drain plug on the drain hose.
5. Fill the hydraulic tank through the filler port with clean hydraulic fluid.

6. Bleed the hydraulic system. See section *Bleeding the Hydraulic System.*

Bleeding the Hydraulic System

Overview

Bleeding trapped air from the hydraulic system is necessary each time the drive system or hydraulic system is opened up. Trapped air bubbles can cause equipment malfunctions or erratic performance.

Procedure

Follow the procedure below to bleed trapped air from the exciter circuit and the drive circuit.

1. Fill the hydraulic system with clean hydraulic oil until it is visible at the middle level or higher in the sightglass. Do not re-use used hydraulic oil.
2. Disconnect the wire located on the fuel solenoid.
3. Crank the engine 5–10 seconds. This will allow the oil to fill the inlet lines.
4. Reconnect the fuel solenoid wire.
5. Place forward/reverse control in the NEUTRAL position. Start the engine and run the machine at idle for 3–4 minutes.
6. To bleed air from the exciter circuit,

a.Select Single Drum Vibration mode and turn the vibration on.

b.Run the machine for 3–4 minutes.

c. Turn the vibration off, and switch to dual drum vibration mode.

d. While still at idle, turn vibration on again and run for 3–4 minutes in dual drum vibration mode.

e.Turn vibration off, increase engine speed to full, and turn vibration on.

f. Verify hydraulic oil level and add oil as needed.

7. To bleed air from the drive circuit,

a. Slowly move the travel control lever back and forth, from forward to reverse, for a short time.

b. Switch the engine to high idle for 15–20 seconds. Return the engine to low idle for 1 minute. Repeat this process 2–-3 times. to bleed the remaining air from the hydraulic lines.

c. Check the hydraulic oil level and add oil as required.

NOTICE: *If the drive pump chatters or operation is noisy, turn the machine off and check for air leaks in the inlet line of the charge pump.*

Checking the Neutral Switch

Requirement
Parking brake engaged

When
Every 10 hours of service or daily

Procedure
Follow the procedure below to check the neutral switch.

WARNING
Crush hazard. The machine may lurch forward if the neutral switch is out of adjustment while making this test.

- Be sure the area is clear of all personnel and equipment before making this test.

1. Turn off the engine.
2. Engage the parking brake.
3. Move the forward/reverse lever to the FORWARD position.
4. Hold the engine start switch in the START position.
5. Slowly move the forward/reverse lever toward the NEUTRAL position.

- If the engine starts before the forward/reverse lever reaches the NEUTRAL position, the neutral switch must be adjusted. Refer to the Repair Manual.
- If the engine starts only when the

Inspecting the Seat Belt

Requirements

- Machine shut down
- Parking brake engaged

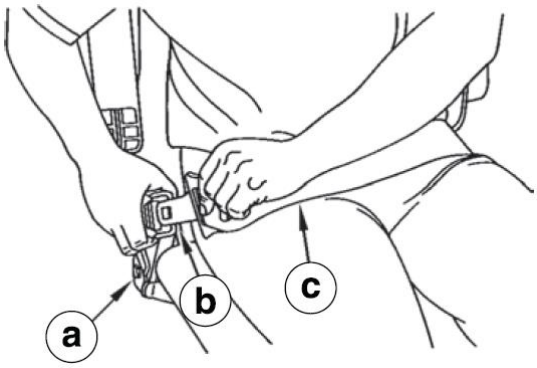
When

Daily, before starting the machine.

Procedure

Perform the procedure below to inspect the seat belt.

1. Check the seat belt mounting hardware **(a)** for wear and damage. Replace damaged hardware.



2. Check the buckle **(b)** for wear and damage. Replace the seat belt if the buckle is damaged.
3. Inspect the seat belt **(c)** for wear and damage. Replace the seat belt if it is damaged.

Note: *Replace the seat belt every three years even if none of the components show visible wear or damage.*

Cleaning the Spray Bars

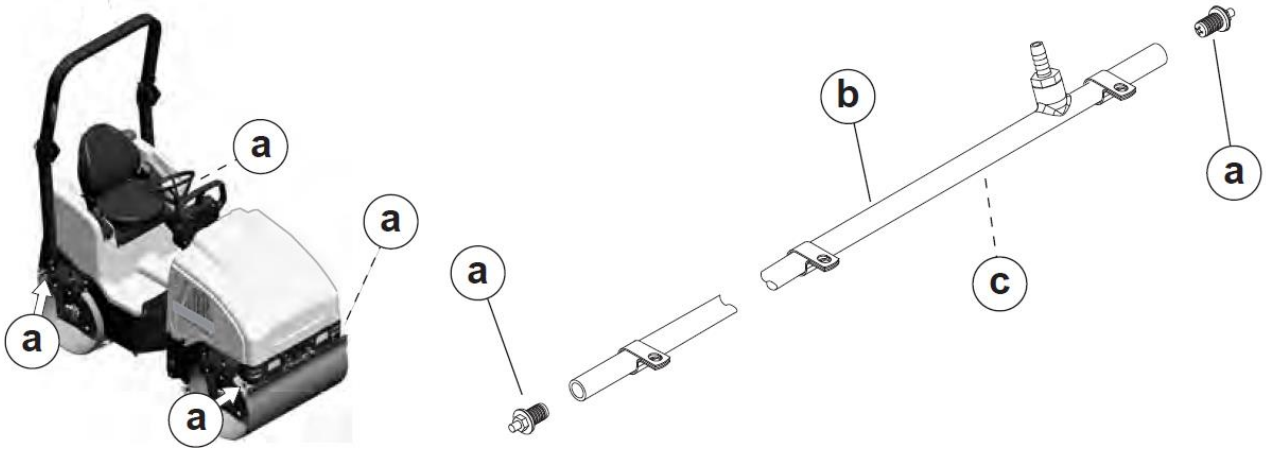
Background

Clogged or dirty spray bars can prevent water from spraying onto the drums. If water spray is noticeably reduced or absent even though there is water in the tank, then clean the spray bars.

Procedure

Follow the procedure below to clean the spray bars.

1. Locate the plugs **(a)** at the ends of each spray bar **(b)**. Unscrew and remove the plugs.



2. Flush the inside of the spray bar with clean water.
3. Reinstall one of the plugs, and again flush the inside of the spray bar with clean water. Check for free flow of water through each spray hole **(c).**
4. If any of the spray holes are blocked, use a small pointed object (i.e. a stiff piece of wire) to remove the blockage.
5. Reinstall the second plug when all spray holes are clean.

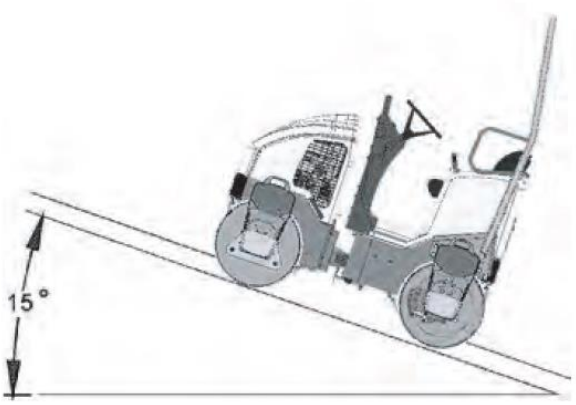
Testing the Brake System

Prerequisites
15° slope

When
Every 500 hours of service or yearly

Precaution
Use this test to determine if the parking brake is functioning on the specified slope.
This test is not intended to measure the maximum brake holding effort.

Procedure
Follow the procedure below to test the braking system.
1. Position the machine on a 15° slope as shown.



2. With the engine running, place the throttle control into the LOW IDLE position and the forward/reverse control lever in the NEUTRAL position.
3. Engage the parking brake. The machine should not move.
If the machine moves, consult our service.

Long-Term Storage

Introduction
Extended storage of equipment requires preventive maintenance. Performing these steps helps to preserve machine components and ensures the machine will be ready for future use. While not all of these steps necessarily apply to this machine, the basic procedures remain the same.

When
Prepare your machine for extended storage if it will not be operated for 30 days or more.

Preparing for storage
Perform the procedures below to prepare your machine for storage.
- Complete any needed repairs.
- Replenish or change oils (engine, exciter, hydraulic, and gear case) per the intervals specified in the Scheduled Maintenance table.
- Grease all fittings and, if applicable, repack bearings.
- Inspect engine coolant. Replace coolant if it appears cloudy, is more than two seasons old, or does not meet the average lowest temperature for your area.
- If your machine has an engine equipped with a fuel valve, start the engine, close the fuel valve, and run the engine until it stops.
- Consult the engine owner's manual for instructions on preparing the engine for storage.

Stabilizing the fuel
After completing the procedures listed above, fill the fuel tank completely and add a high-quality stabilizer to the fuel.
- Choose a stabilizer that includes cleaning agents and additives designed to coat/protect the cylinder walls.
- Make sure the stabilizer you use is compatible with the fuel in your area, fuel type, grade and temperature range. Do not add extra alcohol to fuels which already contain it (for example, E10).
- For engines with diesel fuel, use a stabilizer with a biocide to restrict or prevent bacteria and fungus growth.
- Add the correct amount of stabilizer per the manufacturer's recommendations.

Storing the machine
Perform these remaining steps to store your machine.
- Wash the machine and allow it to dry.
- Move the machine to a clean, dry, secure storage location. Block or chock wheels to prevent machine movement.
- Use touch-up paint as needed to protect exposed metal against rust.
- If the machine has a battery, either remove or disconnect it.

NOTICE: Allowing the battery to freeze or completely discharge is likely to cause permanent damage. Periodically charge the battery while the machine is not in use. In cold climates, store and charge the battery indoors or in a warm location.

- Cover the machine. Tires and other exposed rubber items should be protected from the weather. Either cover them or use a readily available protectant.

Machine Disposal and Decommissioning

Introduction

This machine must be properly decommissioned at the end of its service life. Responsible disposal of recyclable components, such as plastic and metal, ensures that these materials can be reused—conserving landfill space and valuable natural resources. Responsible disposal also prevents toxic chemicals and materials from harming the environment. The operating fluids in this machine, including fuel, engine oil, and grease, may be considered hazardous waste in many areas. Before decommissioning this machine, read and follow local safety and environmental regulations pertaining to the disposal of construction equipment.

Preparation

Perform the following tasks to prepare the machine for disposal.

- Move the machine to a protected location where it will not pose any safety hazards and cannot be accessed by unauthorized individuals.
- Ensure that the machine cannot be operated from the time of final shutdown to disposal.
- Drain all fluids, including fuel, engine oil, and coolant.
- Seal any fluid leaks.

Disposal

Perform the following tasks to dispose of the machine.

- Disassemble the machine and separate all parts by material type.
- Dispose of recyclable parts as specified by local regulations.
- Dispose of all non-hazardous components that cannot be recycled.
- Dispose of waste fuel, oil, and grease in accordance with local environmental protection regulations.

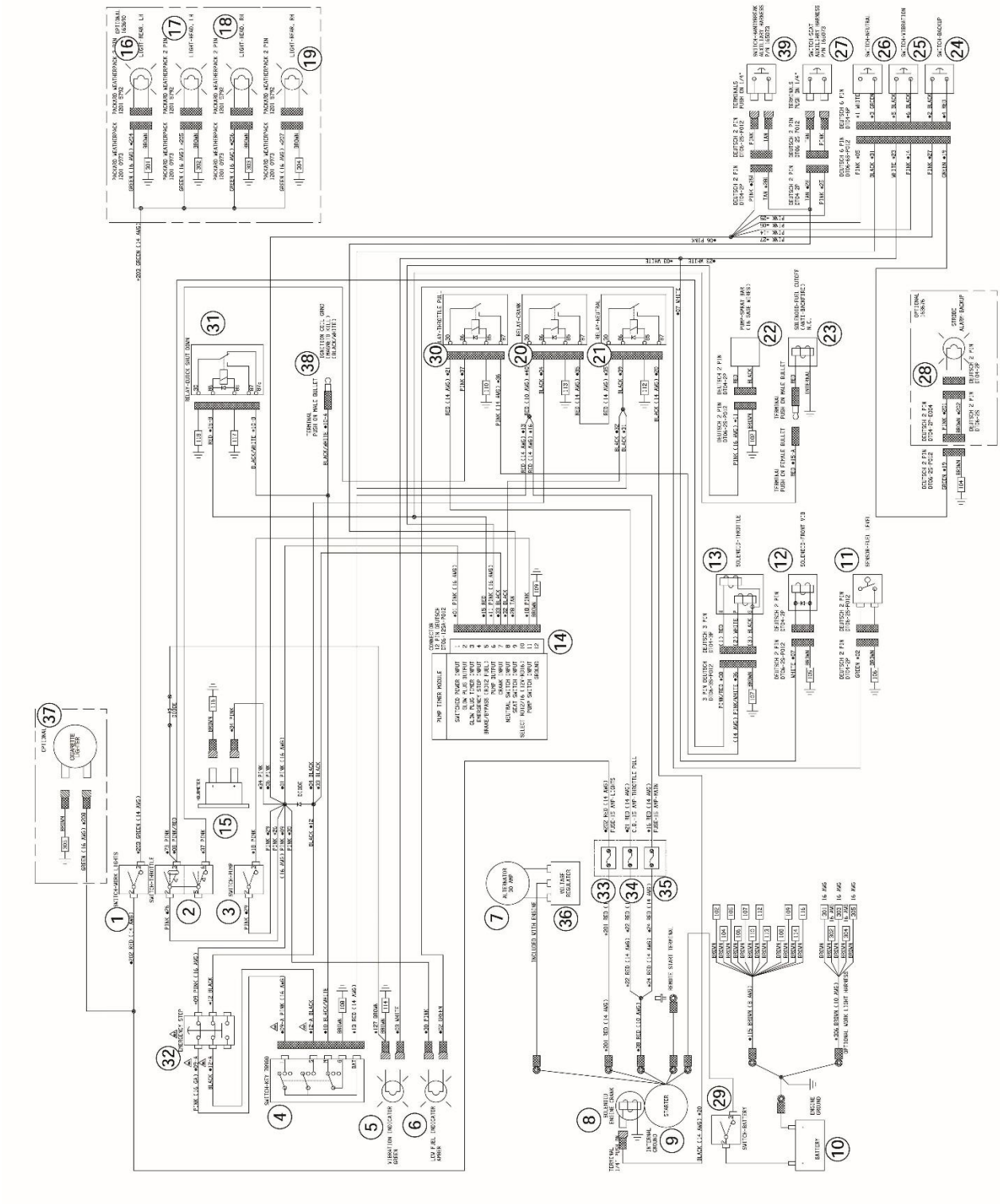
Troubleshooting

Problem / Symptom	Reason	Remedy
Engine does not start	Fuel tank is empty	Refill fuel tank.
	Wrong type of fuel	Drain tank, change fuel filter, and refill with the proper fuel.
	Old fuel	Drain tank, change fuel filter, and refill with fresh fuel.
	Fuel system not primed	Prime the fuel system.
	Fuel filter is restricted or clogged	Replace fuel filter.
	Battery connections are loose or corroded, or battery is dead	Check battery connections or replace battery as needed.
	Plugged air cleaner or filter elements	Clean air cleaner or replace filter elements.
	Defective starter motor	Repair or replace.
	Inoperative fuel solenoids on engine	Repair or replace.
	Inoperative starter relay	Repair or replace.
	Loose or broken electrical connections	Check connections and tighten or repair as needed.
Engine stops by itself	Fuel tank is empty	Refill fuel tank.
	Fuel filter is restricted or	Clean or replace.
	Loose or broken fuel lines	Check connections and tighten or repair as needed.
No vibration	Defective vibration switch or poor connection	Check components and tighten or repair as needed.
	Damaged or disconnected solenoid on vibration valve	Reconnect or repair solenoid.
	Damaged exciter assembly	Repair the assembly.
	Damaged or broken exciter motor coupling	Repair or replace.
	Damaged exciter motor	Repair or replace.
	Damaged exciter pump	Repair or replace.
	Damaged exciter bearings	Repair or replace.

Problem / Symptom	Reason	Remedy
No travel, or travel only in one direction	Parking brake is on	Release parking brake.
	Sheared pin on forward/ reverse control	Replace pin.
	Loose or broken control cable	Tighten or replace.
	Damaged drive motor	Repair or replace.
	Damaged drive pump	Repair or replace.
	Defective relief valve(s)	Repair or replace.
No steering	Damaged steering cylinder	Repair or replace.
	Damaged steering unit	Repair or replace.
	Stuck or damaged steering relief valve	Repair or replace.
	Articulating joint pin is in the LOCKED position.	Set the articulating joint pin to the UNLOCKED position.
Water leaking from spray nozzles when machine is shut off	One or both of the diaphragm valves is not completely closed	Close the diaphragm valve(s) completely.
	The diaphragm is worn	Replace the diaphragm.

Schematics

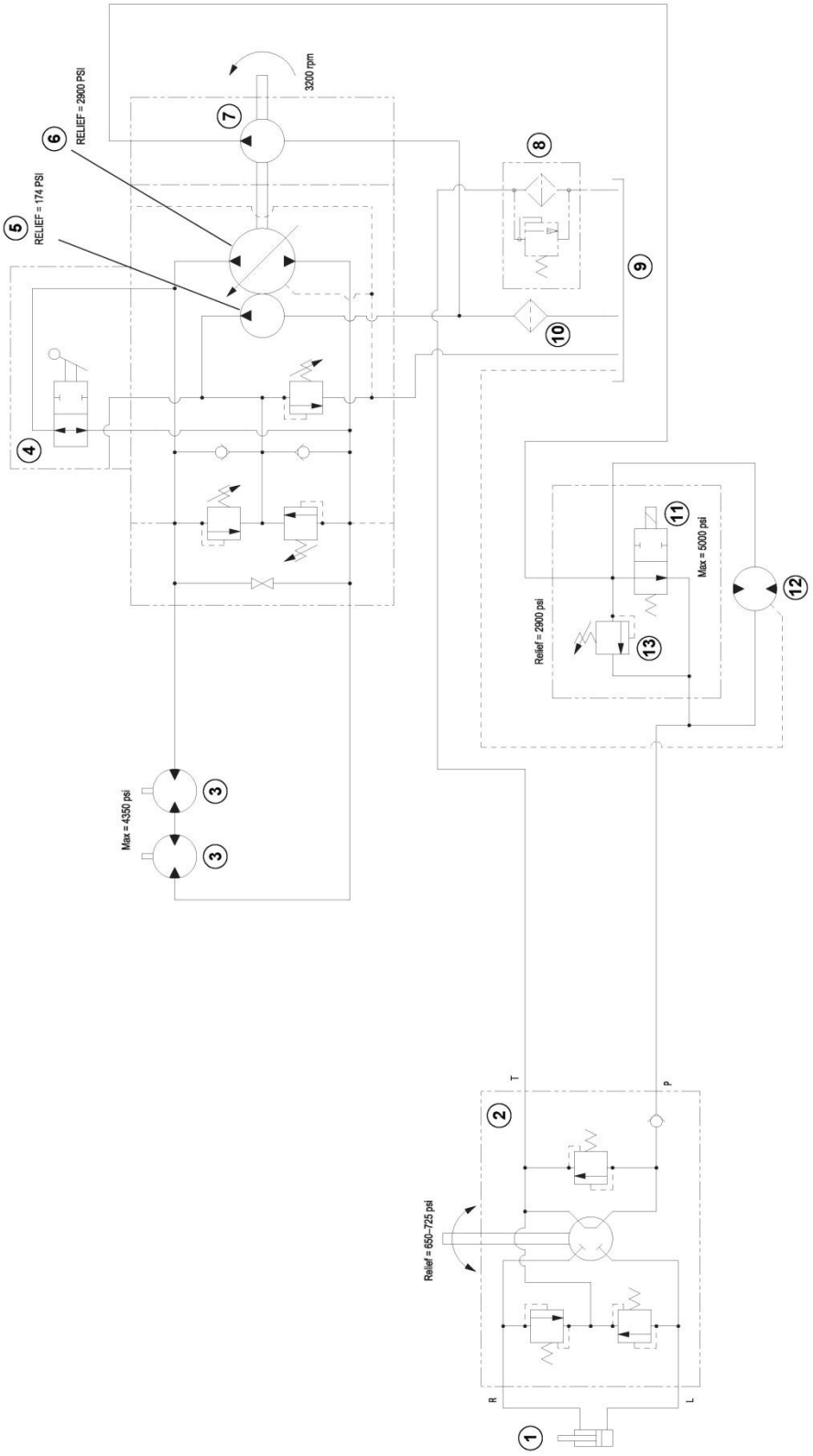
Electrical Schematics



Electrical Schematic Components

Ref.	Description	Ref.	Description
1	Work light switch (optional)	21	Neutral relay
2	Throttle switch	22	Spray bar pump
3	Pump switch	23	Fuel cutoff solenoid
4	Key switch	24	Reverse switch
5	Vibration indicator light (green)	25	Vibration switch
6	Low fuel indicator light (amber)	26	Neutral switch
7	Alternator (30A)	27	Seat switch
8	Starter solenoid	28	Backward strobe alarm light (optional)
9	Starter motor	29	Battery Switch
10	Battery	30	Throttle relay
11	Fuel level sensor	31	Quick shut-off relay
12	Vibration solenoid	32	Emergency stop switch
13	Throttle solenoid	33	15A Fuse, lights
14	Pump timer module	34	15A Fuse, throttle pull
15	Hour meter	35	15A Fuse, main
16	Left Rear light (optional)	36	Voltage regulator
17	Left head light (optional)	37	Cigarette Lighter
18	Right head light (optional)	38	To magneto kill
19	Right Rear light (optional)	39	Handy break switch
20	Crank relay		

Hydraulic Schematic



Hydraulic Schematic Components

Ref.	Description	Ref.	Description
1	Steering cylinder	8	Return filter
2	Steering unit	9	Tank
3	Drive motor	10	Suction strainer
4	Bypass lever	11	Vibration solenoid valve
5	Charge pump	12	Exciter motor
6	Main pump	13	Pressure relief valve
7	Exciter pump		

Specification

Engine

Item no.		TRR15
Engine type		4-stroke, 2 cylinder, air cooled
Engine make		Honda
Engine model		GX630
Max. rated power @ rated speed[1]	kW (hp)	15.1 (20.3) @ 3,600 rpm
Displacement	cm^3 (in^3)	688 (42)
Spark plug		(NGK) ZFR5F
Electrode gap	mm (in.)	0.71-0.79 (0.028-0.031)
Engine speed - operating	rpm	3,100
Valve clearance (cold) intake: exhaust:	mm (in.)	0.10-0.16 (0.004-0.006) 0.10-0.16
Battery		U1 12VDC 30AH
Air cleaner	type	Dual element
Fuel	type	Regular unleaded gasoline
Fuel tank capacity	L (gal)	23 (6.1)
Fuel consumption	L (gal)/hr	Up to 6.0 (1.59)
Engine oil	type L (qt)	10W30 SJ or higher 1.9 (2.0)

[1]Net power rating per SAE J1349. Actual power output may vary due to conditions of specific use.

Machine

Item No.		TRR15
Dry Weight	kg (lb.)	1200 (2,171)
Dimensions (LxWxH)	mm (in.)	1824(71.8)x1040(40.9)x2290(90.4)
Curb Clearance: Right Left	mm (in.)	 399 (15.7) 208 (8.2)
Water Tank Capacity	l (gal.)	100 (26.4)
Outside Turning Radius	m (ft.)	2.45 (8.0)
Forward / Reverse Speed	km/hr. (mph)	0-8.7 (0-5.4)
Grade ability		30%
Vibration Frequency	vpm	4,200

Lubrication

Item No.		CRR-12
Hydraulic System	type L (gal.)	Premium grade, anti-wear hydraulic fluid 10W30 20.8 (5.5)
Exciter	type	No.3 grease
Rear Drum Drive Bearing	type qty.	No.3 grease as required
Front Drum Drive Bearing	type	Sealed Bearings — No lubrication required
Articulated Joint	type qty.	No.3 grease as required

Hydraulic Pressures

System	Operating Pressure		Relief Pressure	
	bar	psi	bar	psi
Drive**	55–69	800–1,000	200	2,900
Steering* —while turning	0–41	0–725	45–51	650–725
Vibration —single drum	55–76	800–1,100	200	2,900

** Values for hard-packed surface shown. Values may differ depending on surface.*

*** Charge pressure: 11.4 – 12.8 bar (165–185 psi).*

Sound Measurements

The operating sound level, measured per the requirements of EN 500-1:2006+A1:2009, EN 500-4:2011, EN ISO 12100:2010, is:

- the guaranteed sound power level (LWA): 102 dB(A)
- the sound pressure level at operator's location (LpA): 85.6 dB(A)

This sound value was determined according to ISO 3744 for the sound power level (LWA).

Measurements of Operator Exposure to Vibration

The operator of this machine should expect to be exposed to vibration levels listed below when using the machine in performance of its normally intended function:

Maximum hand/arm vibration levels are: 1.4 m/s2 (4.6 ft/s2)

These are the representative values of the weighted root mean square **(rms)** acceleration to which the hands and arms are subjected. These weighted **rms** values are measured according to ISO 5349-1.

Whole body vibration levels do not exceed: 0.22 m/s2 (0.7 ft/s2)

These are the representative values of the weighted root mean square **(rms)** acceleration to which the whole body is subjected. These weighted **rms** values are measured

according to ISO 2631-1.
The results are compliant to the limit and action vibration values (hand/arm and whole body) as specified in European directive 2006/42/EC.

Proposition 65
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

For More Information Visit

https://www.p65warnings.ca.gov/

CALIFORNIA AND FEDERAL EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board, the United States Environmental Protection Agency and Tomahawk Power, LLC are pleased to explain the emissions control system warranty on your 2018-2019 small engine/equipment (SORE). In the United States and California, new small engine/equipment must be designed, built and equipped to meet the State's stringent anti-smog standards. Tomahawk Power, LLC must warrant the emissions control system on your small engine/equipment for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small engine/equipment.

Your emission control system may include parts such as the carburetor, fuel-injection system, the ignition system, catalytic convertor, fuel tanks, fuel lines, fuel caps, valves, canisters, filters, vapor hoses, belts, clamps, connectors, and other associated emission related

components. For engines less than or equal to 80 cc, only the fuel tank is subject

to the evaporative emission control warranty requirements of this section.

(California only)

Where a warrantable condition exists, Tomahawk Power, LLC will repair your small offroad engine/equipment at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The emissions control system is warranted for two years. If any emissions-related part on your small engine/equipment is defective, the part will be repaired or replaced by Tomahawk Power, LLC

OWNER'S WARRANTY RESPONSIBILITIES:

As the small engine/equipment owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Tomahawk Power, LLC recommends that you retain all receipts covering maintenance on your small engine/ equipment, but Tomahawk Power, LLC cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small engine/equipment owner, you should however be aware that Tomahawk Power, LLC may deny your warranty coverage if your small engine/equipment or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small engine/equipment to distribution center or service center authorized by Tomahawk Power, LLC as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

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If you have any questions regarding your warranty rights and responsibilities, you should contact Tomahawk Power, LLC customer service representative at 1-866-577-4476 or Email: support@tomahawk-power.com .

DEFECTS WARRANTY REQUIREMENTS

(a)The warranty period begins on the date the small engine/equipment is delivered to an ultimate purchaser.

(b)General Emissions Warranty Coverage. Tomahawk Power, LLC warrants to the ultimate purchaser and each subsequent owner that the engine/equipment is:

(1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board; and

(2) Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.

(c)Subject to certain conditions and exclusions as stated below, the warranty on emissions related parts is as follows:

(1)Any warranted part that is not scheduled for replacement as required maintenance in your ***Owner's Manual*** is warranted for the warranty period stated above. If the part fails during the period of warranty coverage, the part will be repaired or replaced by Tomahawk Power, LLC according to Subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period.

(2)Any warranted part that is scheduled only for regular inspection in your ***Owner's Manual*** is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.

(3)Any warranted part that is scheduled for replacement as required maintenance in your ***Owner's Manual*** is warranted for the period of time before the first scheduled replacement date for that part. If the part fails before the first scheduled replacement, the

part will be repaired or replaced by Tomahawk Power, LLC according to Subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(4)Repair or replacement of any warranted part under the warranty provisions herein must be performed at a warranty station at no charge to the owner.

(5)Notwithstanding the provisions herein, warranty services or repair will be provided at all of our distribution centers that are franchised to service the subject small engine/ equipment.

(6)The small engine/equipment owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

(7)Tomahawk Power, LLC is liable for damages to other small engine/equipment components proximately caused by a failure under warranty of any warranted part.

(8)Throughout the small engine/equipment warranty period stated above, Tomahawk Power, LLC will maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(9)Any replacement part may be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of Tomahawk Power, LLC

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(10)Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claims. Tomahawk Power, LLC will

not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

(11)The manufacturer issuing the warranty shall provide any documents that describe that manufacturer's warranty procedures or policies within five working days of request by the Air Resources Board.

EMISSION WARRANTY PARTS LIST

The repair or replacement of any warranted part otherwise eligible for warranty coverage may be excluded from such warranty coverage if Tomahawk Power, LLC demonstrates that the small engine/equipment has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part. That notwithstanding, any adjustment of a component that has a factory installed, and properly operating, adjustment limiting device is still eligible for warranty coverage. The following emissions warranty parts for each engine family list is covered.

For engine families greater than 80cc:

(1)Fuel Metering System:

(a)Gasoline carburetor assembly and its internal components

(b)Carburetor gaskets

(c) Fuel tank

(d) Fuel Line

(e) Fuel Line Fittings

(f) Clamps

(g) Pressure regulator (if equipped)

(h) Mixer assembly and its internal components (if equipped)

(2) Air Induction System including:

(a)Intake pipe/manifold

(b)Air cleaner

(3)Ignition System including:

(a)Spark plug

(b)Ignition coil

(4)Catalytic Muffler Assembly including:

(a)Muffler gasket

(b)Exhaust manifold

(c)Catalytic converter

(5)Crankcase Breather Assembly including:

(a) Breather connection tube.

(6) Fuel tank evaporative emissions control system including:

(a) Purge Valves

(b) Carbon Canister

(c) Canister Mounting Brackets

(d) Fuel Cap

(e) Fuel Tank

(7)Miscellaneous items Used in Above Systems including:

(a) Switches

(b) Hoses, belts, connectors, and assemblies.

(8)Air injection system

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(a) Pulse valve

For engine families less than or equal to 80cc:

(1)Fuel Metering System:

(a)Gasoline carburetor assembly and its internal components

(b)Fuel filter (if so equipped)

(c)Carburetor gaskets

(d)Fuel pump (if so equipped)

(2) Air Induction System including:

(a)Intake pipe/manifold

(b)Air cleaner

(3)Ignition System including:

(a) Spark plug

(b)Ignition module/coil

(4)Catalytic Muffler Assembly (if so equipped) including:

(a)Muffler gasket

(b)Exhaust manifold

(5)Crankcase Breather Assembly including:

(a) Breather connection tube.

(6)Miscellaneous items Used in Above Systems including:

(a) Switches

(b) Hoses, belts, connectors, and assemblies.

(7) Fuel tank evaporative emissions control system including:

(a) Fuel Tank

The warranty is provided in accordance with the “California AND FEDERAL Emission Control Warranty Statement”.

TOMAHAWK
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