Operator Manual

Stone®
Construction Equipment
Bred tough. Born To Work.

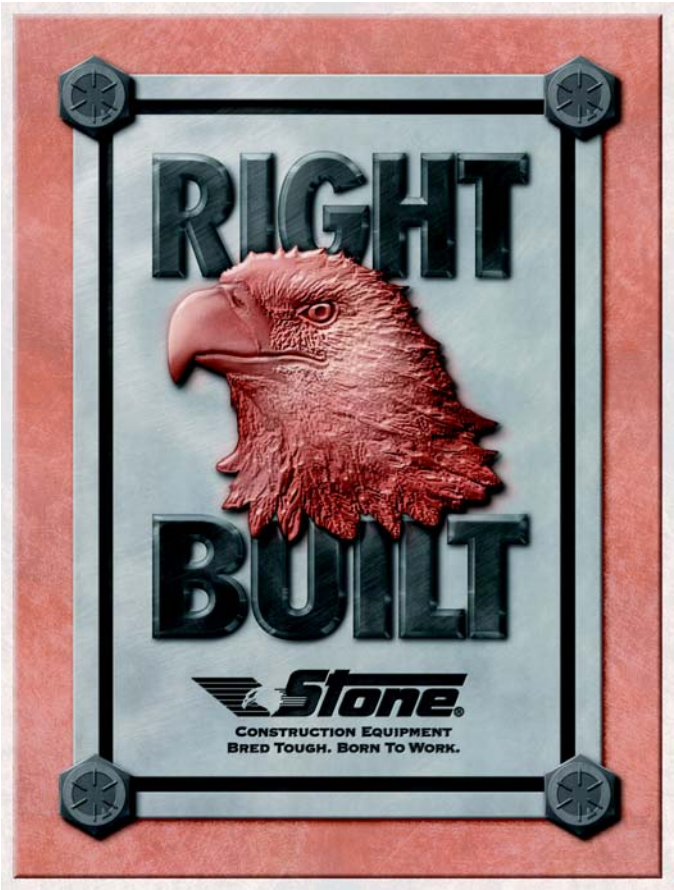
WolfPac™ Vibratory Asphalt Roller

Model: **WP6100**

WOLFPAC 6100

REVISION B 4/2006

P/N 56751



STONE CONSTRUCTION EQUIPMENT, INC.

RIGHT BUILT PRODUCTS FROM A RIGHT BUILT COMPANY.

Right Built means tough, reliable,easy to use machines that lower lifetime costs. They're designed to be reliable, productive, operator friendly and serviceable, always with the end user in mind.

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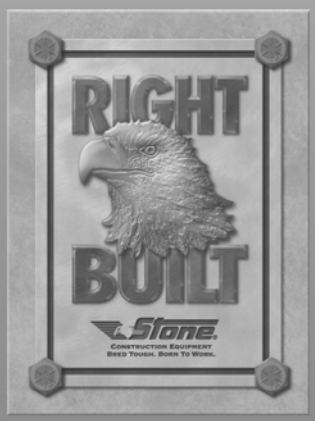


WolfPac™ 6100

Limited Warranty

The Manufacturer warrants that products manufactured shall be free from defects in material and workmanship that develop under normal use for a period of 90 days for concrete vibrators and electric pumps, one year for Rhino®, Bulldog®, WolfPac Rollers™, trowels, Stompers®, saws, forward plates, engine powered pumps, Lift Jockey™, Mortar Buggy™ and 6 months for all other products from the date of shipment. The foregoing shall be the exclusive remedy of the buyer and the exclusive liability of the Manufacturer. Our warranty excludes normal replaceable wear items, i.e. gaskets, wear plates, seals, O-rings, V-belts, drive chains, clutches, etc. Any equipment, part or product which is furnished by the Manufacturer but manufactured by another, bears only the warranty given by such other manufacturer. (The Manufacturer extends the warranty period to "Lifetime" for the drum bearings and seals for the mortar mixers, and agrees to furnish, free of charge, the bearings and seals only upon receipt of the defective parts. The warranty is two years for eccentric bearings on the forward plate compactors, mortar and plaster mixer drums, trowel gearboxes, three years on the Bulldog trench roller microprocessor (ECIB) and five years on the Bulldog trench roller eccentric bearings.) A Warranty Evaluation Form must accompany all defective parts. Warranty is voided by product abuse, alterations, and use of equipment in applications for which it was not intended, use of non-manufacturer parts, or failure to follow documented service instructions. The foregoing warranty is exclusive of all other warranties whether written or oral, expressed or implied. No warranty of merchantability or fitness for a particular purpose shall apply. The agents, dealer and employees of Manufacturer are not authorized to make modification to this warranty, or additional warranties binding on Manufacturer. Therefore, additional statements, whether oral or written, do not constitute warranty and should not be relied upon.

The Manufacturer's sole responsibility for any breach of the foregoing provision of this contract, with respect to any product or part not conforming to the Warranty or the description herein contained, is at its option (a) to repair, replace or refund such product or parts upon the prepaid return thereof to location designated specifically by the Manufacturer. Product returns not shipped prepaid or on an economical transportation basis will be refused (b) as an alternative to the foregoing modes of settlement - the Manufacturer's dealer to repair defective units with reimbursement for expenses, except labor, and be reviewed with the Manufacturer prior to repair. A Warranty Evaluation Form must accompany all warranty claims.

Except as set forth hereinabove and without limitation of the above, there are no warranties or other affirmations which extends beyond the description of the products and the fact hereof, or as to operational efficiency, product reliability or maintainability or compatibility with products furnished by others. In no event whether as a result of breach of contract or warranty or alleged negligence, shall the Manufacturer be liable for special or consequential damages including but not limited to: Loss of profits or revenues, loss of use of the product or any associated product, cost of capital, cost of substitute products, facilities or services or claims of customers.

No claim will be allowed for products lost or damaged in transit. Such claims should be filed with the carrier within fifteen days.

Effective January 2004.

FOREWORD

Location of warranty information:

1. Information on S/N tag.
2. Information on engine tag.
3. Information on S/N tag - if applicable.
4. Date you purchased machine.
5. Dealer machine was purchased from.
6. Information on battery and battery warranty card.

WOLFPAC™ 6100

These instructions include:

Safety regulations
Operating instructions
Maintenance instructions

- **These instructions have been prepared for operation on the construction site and for the maintenance engineer.**
- These instructions are intended to simplify operation of the machine and to avoid malfunctions through improper operation.
- Observing the maintenance instructions will increase the reliability and service life of the machine when used on the construction site and reduce repair costs and down-times.
- **Always keep these instructions at the place of use of the machine.**
- **Only operate the machine as instructed and follow these instructions.**
- **Observe the safety regulations as well as the guidelines of the civil engineering trade association. Observe the safety rules for the operation of road rollers and compactors and the pertinent regulations for the prevention of accidents.**
- Stone Construction Equipment, Inc. is not liable for the function of the machine when used in an improper manner and for other than the intended purpose.
- Operating errors, improper maintenance and the use of incorrect operating materials are not covered by the warranty.
- The above information does not extend the warranty and liability conditions of business of Stone Construction Equipment, Inc.

Please enter the following data. This will help expedite any service or warranty work.

1. Machine Type: _____

   Machine S/N: _____

2. Engine Type: _____

   Engine S/N: _____

3. VIN: _____

4. Purchase Date: _____

5. Dealer/Distributor Information:

   Name: _____

   Address: _____

   _____

   Phone #: _____

   Fax # _____

6. Battery Manufacturer: _____

   Battery Type: _____

   Battery S/N: _____

STONE CONSTRUCTION EQUIPMENT, INC.
P.O. BOX 150, HONEOYE, NEW YORK 14471
PHONE: (800) 888-9926 FAX: (585) 229-2363

1. Introduction

INTRODUCTION

Congratulations on your purchase of the WolfPac6100! You've made an excellent choice! The WolfPac 6100 is ergonomically engineered to optimize operator interface with the total machine--it's really "user friendly". Besides good visibility to the roll-edge as well as the work surface, you'll find that the controls are exactly in the right places for maximum comfort. And, it's really convenient to monitor all the consumables--fuel, hydraulic oil and water level.

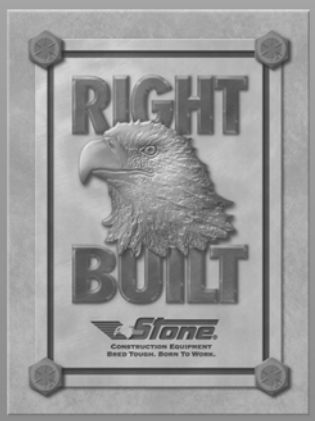
Our common sense approach to servicing is a valuable benefit on the WP6100. Thanks to our modular design, everything that needs servicing is located behind one of the easy-access service panels.

For maneuverability and productivity, nothing beats the proven performance of center-point articulation. Because both drums track each other exactly, it's the best system in the world for rolling close to curbs, curves, in cul-de-sacs and more, with less scuffing and mat tearing.

The following instructions were compiled to provide you information on how to obtain long and trouble free use of the roller. Periodic maintenance of the roller is essential. Read the manual in its entirety and follow the instructions carefully. Refer to the Technical Data Section to familiarize yourself with machine controls and components. Failure to do so may injure yourself or a bystander.

This safety alert system identifies important safety messages in this manual.

When you see this symbol, be alert, your safety is involved. Carefully read the message that follows and inform other operators.



INTENDED USE

These machines are designed to carry out the function of compacting material of the cohesive, bituminous and granular varieties. If used correctly they will provide an effective and safe means of compaction and meet the appropriate performance standards.

Use of the machine in any other way is considered contrary to the intended use and will void the warranty.

Danger Zone

While the machine is in use unauthorized persons must remain out side the danger zone.

GENERAL DESCRIPTION

Drums

Both front and rear drums rotate on sealed-for-life bearings. Each drum is of heavy duty steel construction with seam-welded support plates to prevent ingress of water. The drum is also machine on its outer face to ensure an excellent surface finish.

Chassis

The roller chassis is of the two-part articulating type having a center pivot joint that articulates in both the vertical and horizontal planes.

Steering

The steering of the roller is by an 'Orbitrol' hydrostatic steering unit, controlling a single ram connecting the front and rear chassis units.

Engines

The engines on all machines are multi-cylinder diesel units, which transmit power to both the drums by means of a hydrostatic transmission.

All machines are fitted with a 12v battery and electric start engines. A separate key-operated switch is provided for the engine and is located in the control panel to the right of the steering wheel.

Transmission
The roller has an open loop hydraulic transmission based around a variable displacement pump mounted to the engine.

This pump supplies a variable flow of oil to fixed displacement drive motors that turn the roller drums, hence the roller has infinitely variable travel speed up to a maximum in either direction.

Vibration
The roller has a hydrostatic vibration system to enable greater compaction force to be exerted onto the ground than just the operating weight of the machine.

The system uses a fixed displacement gear pump mounted onto the engine that supplies a set flow-rate of oil to drive two fixed displacement gear motors. These motors are used to turn an eccentric weight at high speed inside each roller drum, thus creating vibration.

A solenoid valve is used to energize the vibration system. This valve directs the oil flow from the gear pump through the front vibration motor, the rear vibration motor and back to tank.

Water Sprinkler System
The WP6100 is equipped with gravity water sprinkler systems. A pressurized sprinkler system is an optional addition. Both systems spray the roller drums with water to prevent the compacted surface from being picked up on the drums.

Hydraulics
The hydraulic system provides power to operate the roller transmission, steering and vibration systems.

Drive
The roller drive system comprises a variable displacement transmission pump close coupled to the engine. This pump has a variable output that is controlled by the Operator via a push-pull cable and lever.

The pump supplies its flow of hydraulic oil to the two fixed displacement drive motors, one mounted to each of the two drums. By moving the directional lever, the operator actuates the transmission pump and controls the hydraulic oil flow rate and direction.

The roller is thereby driven via the drums in the selected direction at the required speed.

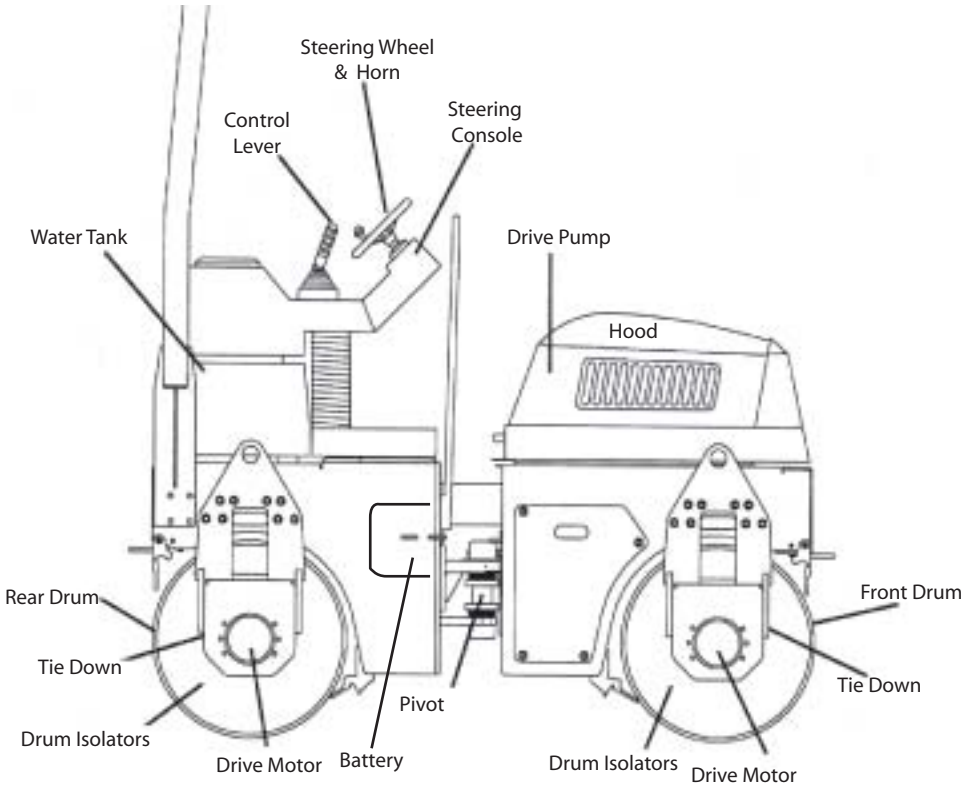
Steer and Vibration System
Two fixed displacement gear pumps, directly driven off the engine, provide a set flow rate of hydraulic oil to power the steering and vibration systems.

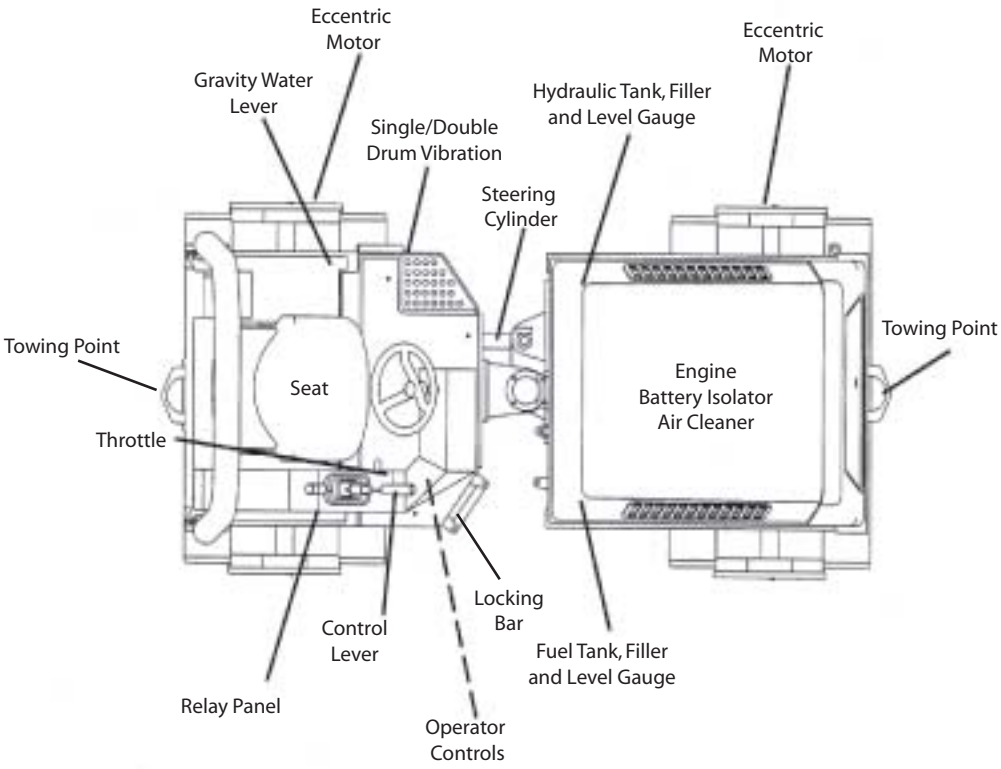
Steering
The roller is power steered by means of a single double- acting hydraulic ram interconnected between the front and rear halves of the center pivot articulated chassis.

When the steering wheel is turned in either direction, the Orbitrol hydrostatic steering unit meters oil to the hydraulic steering ram causing the ram to extend or retract, thus steering the roller to the right or left.

The Orbitrol steering unit contains a relief valve to ensure its gear pump does not over-pressurize the steer system.

MACHINE DIAGRAM





2. Technical Data

Technical Data

Stone WolfPac™ 6100 Specifications

Dimensions	
Dry Wt. (kg)	5,730 (2600)
Operating Wt. (kg)	6,180 (2803)
L x W x H (cm)	101.7 x 50.9" x 107" (281.2 x 129.3 x 271)
Drum Width (cm)	47.25" (120)
Drum Diameter (cm)	27.56" (70)
Wall Clearance (cm)	1.84" (4.6)
Curb Clearance (cm)	20" (52)
Wheelbase (cm)	65.97" (167.5)
Operating System	
Engine (kW)	33.5 hp Kubota (24.98)
Drive	Hydrostatic, Double Drum
Steering	Hydrostatic Power Steering
Frame	Center-Point Articulating
Travel Speed (km/hr)	0-6.2 mph (0-10)
Fuel Capacity (liters)	11.3 gallons (42.8)
Water System	Pressurized, gravity backup
Water Tank Capacity (liters)	43 gallons (163)
Performance	
Vibrating Drum	Front, Rear, Dual
Centrifugal Force (kN)	5,826 lbs. (25.9)
Frequency (Hz) Front/Rear Both	4,000 vpm (66.66) 3,700 vpm (61.66)
Oscillation	±15^0
Gradeability	42%
Tip Angle	15^0
Inside Turning Radius (m)	9.5' (290)
Max. Area Cap. (m^2/hr)	128,871 ft^2/hr (11,972)
Static Linear Force (N/mm)	F 65.4 lb./in. (11,45)
Total Applied Linear Force (kN)	R 188.7 lb./in. (77.1)
Dynamic Linear Force (N/mm)	123.3 lb./in. (21.60)
Options	Working Lights, Beacon

WolfPac™ 6100

ENGINE SPECIFICATIONS

Engine Type	4-Cylinder, 4-Cycle, Water Cooled Diesel
Engine Make	Kubota
Engine Model	V1505-E2B-1
Power HP (kw)	33.5 HP @ 3000RPM (24.98)
Operating Speed Idle/Full RPM	950/3000 (no load) ± 50
Alternator	12 Volt
Battery	12 Volt BC1 Group 34 770 CCA
Fuse – Controls	20 AMP ATC (yellow)
Fuse – Lights	30 AMP ATC (green)
Air Filter	Centrifugal
Engine Coolant	50/50 Mixture Antifreeze/Distilled Water Meeting ASTM 4985.
Fuel Filter	Canister
Fuel Type	Diesel Fuel ASTMD975 or EN590
Fuel Tank Capacity (Liters)	11.3 Gallons (42.8)

LUBRICATION SPECIFICATIONS

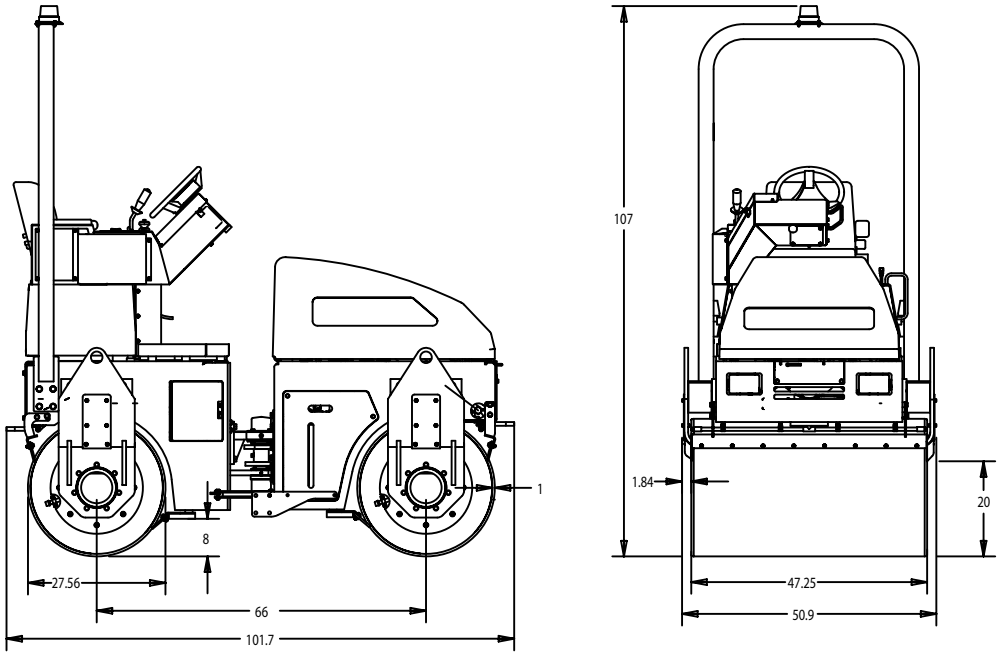
	Type	Quantity
Engine Crankcase	Mobil Delvac 1300 Super 15W-40 (API CG4)	6.3 Quarts (6 Liters)
Hydraulic System	Mobilfluid 424 (VI-152) 55CST c 40° c 9.3 CST c 100° c	11.3 Gallons (42.8 Liters)
Eccentric Oil	Mobil Delvac 1230 30W	12 Ounces (.36 Liters)
Grease Fittings	Mobilgrease XHP 222 (NLGI 2EP lithium complex)	3-4 Ounces (90-120 Milliliters)

MACHINE SOUND LEVEL TEST

Machine Type	WolfPac WP6100
Sound Level Meter Calibration Date	May 26, 2005
Meter Type	Simpson Model 886-2 Type 2
Test Date	March 23, 2006
Test Conditions	
Temperature	36°
Ambient Sound	dba slow mode
Soil Condition	Silts and clays
Moisture Limit	Approximately equal to 50%
Engine Speed	3,200 RPM
Frequency	3,400 VPM
Test Site	Honeoye, New York USA
Sound Level at Operator Position	dba without vibe 87 dba with vibe 93

Since the permissable noise level rating of 89 dB(A) can be exceeded with this machine, the operator must wear suitable hearing protection!

MACHINE DIMENSIONS



Machine Dimensions (in inches)

SERIAL NUMBER PLATE LOCATOR

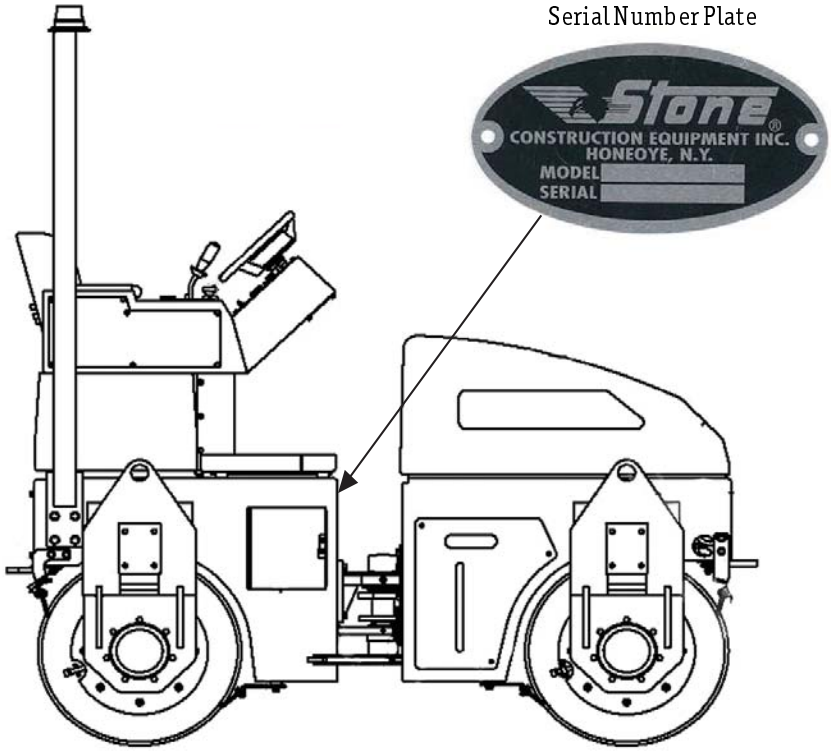
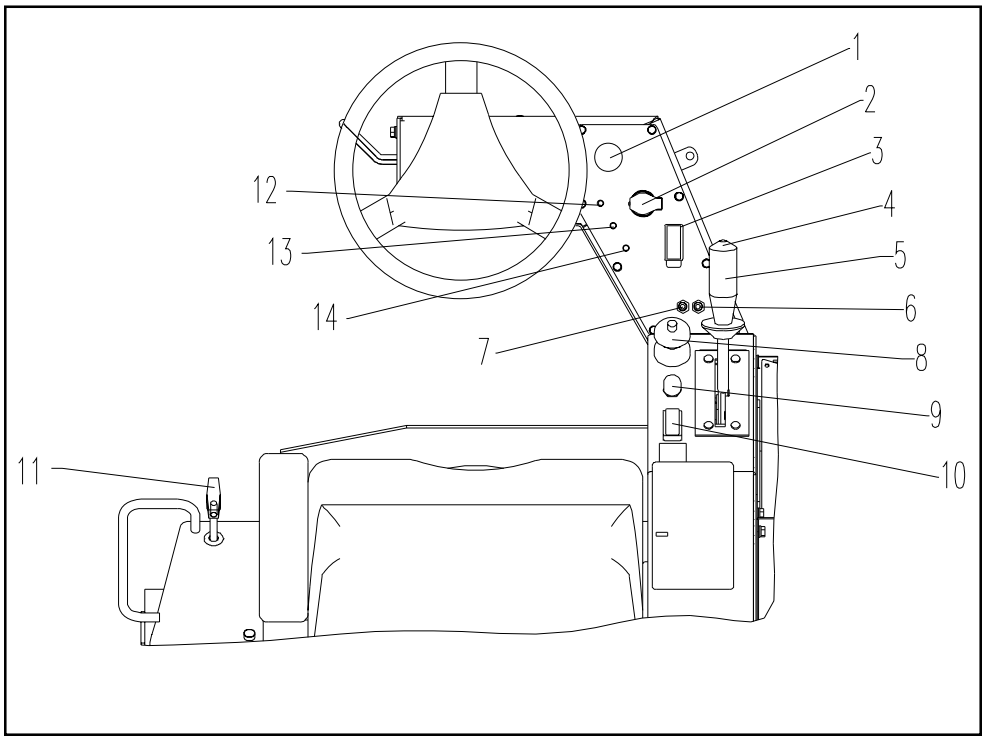


Plate Locator

OPERATOR CONTROLS

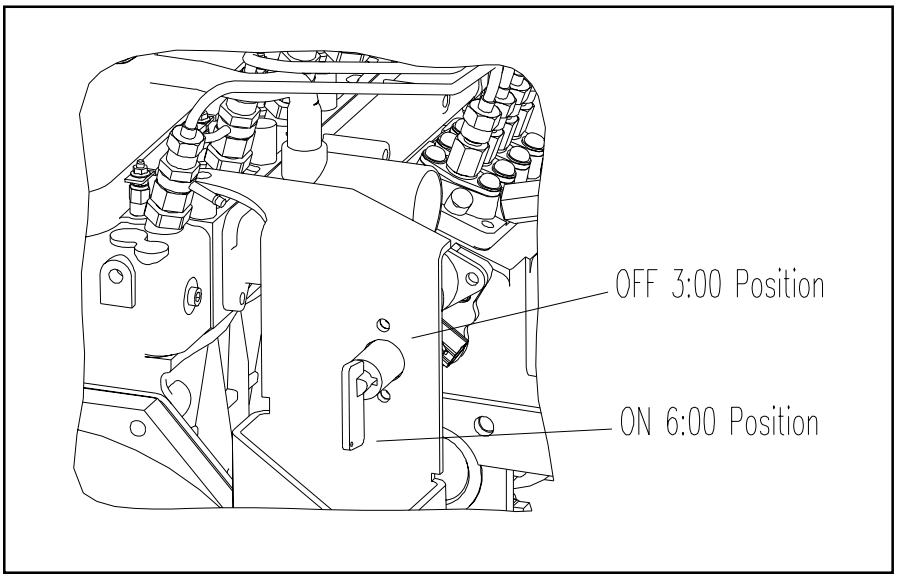


Operator Controls

1. E-STOP BUTTON (Emergency stop) - Push to stop engine. Pull to reset before starting engine.
2. KEYSWITCH – keyswitch positions – OFF, RUN, PREHEAT, START.
3. VIBE SELECTION SWITCH – Select vibe -
   a) FRONT Drum Vibe ON
   b) DUAL Vibe ON, or
   c) REAR Drum Vibe ON
4. VIBE BUTTON – Turn Vibe ON/OFF.
5. CONTROL LEVER – Controls FORWARD/REVERSE direction and speed.
6. BEACON SWITCH - Turns Beacon ON/OFF.
7. LIGHT SWITCH – Turns Lights ON/OFF.
8. THROTTLE – Controls engine RPM.
9. HORN BUTTON – Push to sound Horn.
10. WATER SPRINKLER SWITCH – Turn pressurized water sprinklers ON/OFF.
11. WATER SPRINKLER VALVE – Turn gravity water sprinkler ON/OFF.
12. ENGINE PREHEAT LAMP – for cold starts, turn key clockwise to preheat position until preheat lamp turns off.
13. ENGINE LOW OIL PRESSURE LAMP – Lamp turns on when engine oil pressure is low.
14. ENGINE TEMPERATURE LAMP – Turns on when engine temperature is high.

BATTERY ISOLATOR

Battery Isolator - Key positions noted above, key is removable.
(Shown in ON position)

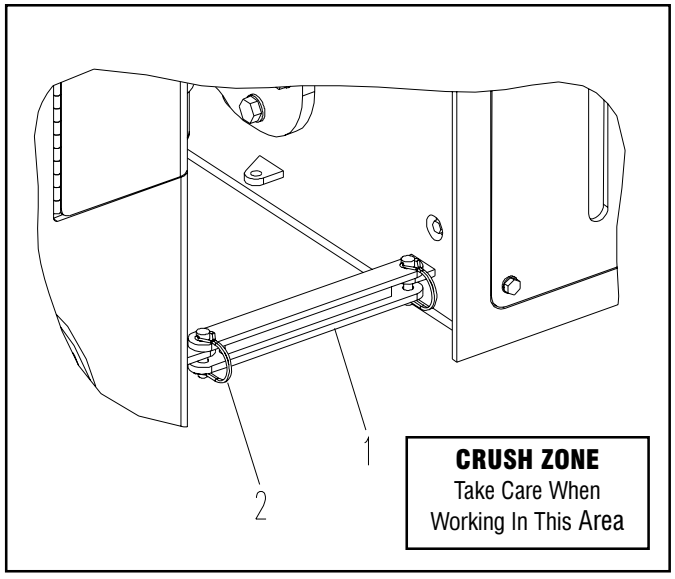


Battery Isolator

LOCKING BAR

Locking bar, shown in LOCK postition.

1. Locking bar
2. Pin



Locking Bar

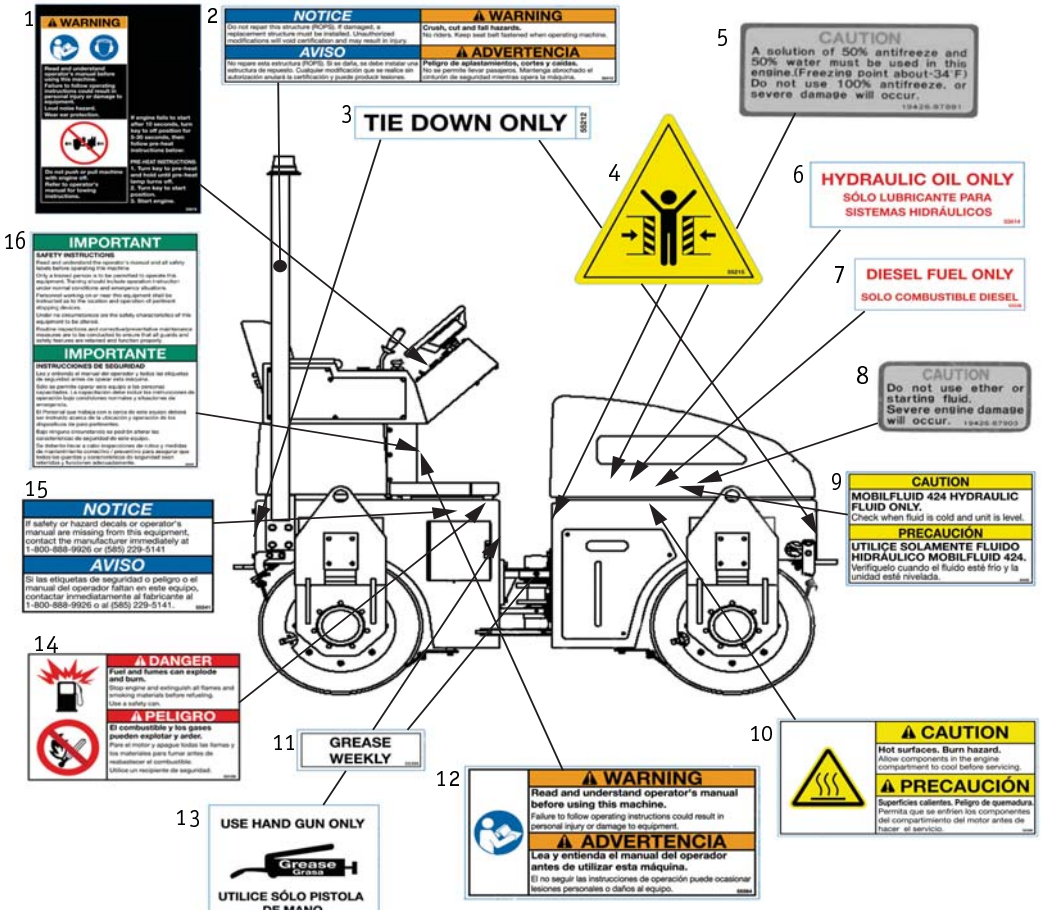
Stone
Construction
Equipment, Inc.

3. Health & Safety

Before using this equipment, study this entire manual to become familiar with its operation. Do not allow untrained or unauthorized personnel, especially children, to operate this equipment. Use only factory authorized parts for service.

When warning decals are destroyed or missing, contact the Manufacturer immediately at 1-800-888-9926 for replacement. For the safety of your self and others, it is imperative that the following rules are observed. Failure to do so may result in serious injury or death.

DECAL IDENTIFICATION



Safety Decals

1 **55616** Decal WP6100 Console	9 **55422** Decal Caution Mobil 424
2 **55413** Decal Notice and Warning ROPS	10 **55398** Decal Caution Hot Surfaces
3 **55212** Decal Tie Down Only	11 **55395** Decal Grease Weekly
4 **55215** Decal caution Pinch Point	12 **55564** Decal Warning Read Manual
5 **55610** Decal Caution Kubota Antifreeze	13 **55618** Decal Grease Use Hand Gun Only
6 **55614** Decal Hydraulic Oil Only	14 **55128** Decal Danger Fuel Flammable
7 **55538** Decal Diesel Fuel Only	15 **55541** Decal Notice Missing Decals
8 **55609** Decal Caution Kubota No Ether	16 **55565** Decal Safety Instructions

FOLLOW SAFETY INSTRUCTIONS

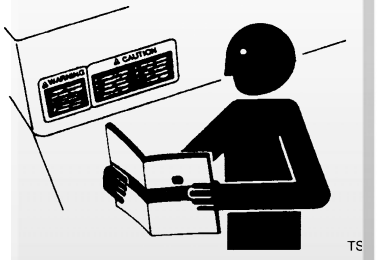
- Carefully read all safety messages and decals in this manual and on your machine safety signs. Keep decals in good condition. Replace missing or damaged decals. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs and decals are available through your dealer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.
- If you do not understand any part of this manual and need assistance, contact your dealer.

UNDERSTAND SIGNAL WORDS

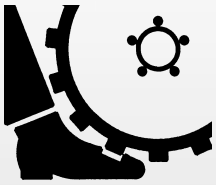
- A signal word – DANGER, WARNING, or CAUTION – is used with the safety-alert symbol. DANGER identifies the most serious hazards.
- DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. IMPORTANT also calls attention to safety messages in this manual.
- This notation appears before warnings in the text. It means that the step that follows must be carried out to avoid the possibility of personal injury or death. These warnings are intended to help the technician avoid any potential hazards encountered in the normal service procedures. We strongly recommend that the reader takes advantage of the information provided to prevent personal injury or injury to others.

PRACTICE SAFE OPERATION

- Users must be trained to operate this roller. Read the Operator's Manual and Engine Owner's Manual. Learn to operate this roller safely.
- Only start engine from operator's seat.
- Operator must always be seated when roller is running.
- Never allow more than one person on roller.
- Before starting machine, make sure that there are no persons or obstacles near or under machine.
- Always turn engine off before dismounting from roller.
- Never park roller on a hill.
- Never operate roller on slope greater than 15 degrees.
- Do not operate across the sides of hills, roller may tip over.
- Do not articulate on grades larger than 15°, roller may tip over.
- Do not operate the roller in standing water.
- Do not operate at the edge of mats or roads, roller may tip over.
- Always turn off engine and apply brake before dismounting.
- Keep feet clear of all drums.



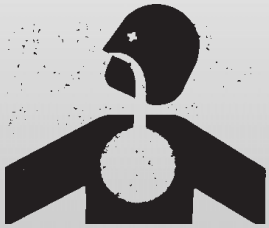
⚠WARNING



PRACTICE SAFE OPERATION

- Ear protection required when operating this equipment.
- Exposure to loud noise can cause impairment or loss of hearing.
- For foot protection, wear steel toe shoes or toe pads.
- Keep away from the machine's articulation area (crush zone) when the engine is running.

Pinch Point Symbol

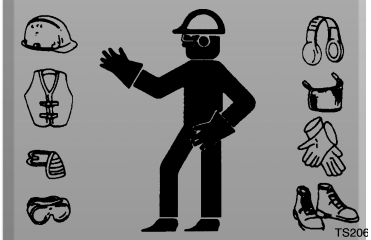


PROPER VENTILATION

- Never operate unit in a poorly ventilated or enclosed area.
- Avoid prolonged breathing of exhaust gases.
- Engine exhaust fumes can cause sickness or death.

PREVENT BYPASS STARTING

- Avoid possible injury or death from engine runaway.
- Do not bypass seat interlock or neutral interlock or engine will start with safety interlocks bypassed.
- Start engine only from operator's station with control lever in neutral.



WEAR PROTECTIVE CLOTHING

- Wear close fitting clothing and safety equipment appropriate to the job.
- Prolonged exposure to loud noise can cause impairment or loss of hearing.
- Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.
- Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

HOT SURFACES

- Muffler, engine, and engine shroud may be hot.
- Allow all components in the engine compartment to cool before performing any service work.

PRACTICE SAFE MAINTENANCE

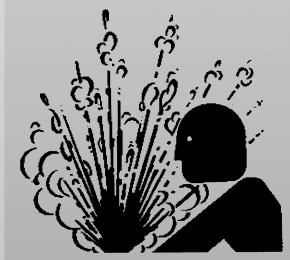
- Understand service procedure before doing work. Keep area clean and dry.
- Never lubricate, service or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Stop the engine. Remove the key. Allow machine to cool.
- Securely support any machine elements that must be raised for service work.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.
- Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.
- Never perform any work on the roller while it is running. Before working on the roller, stop the engine and remove key from the ignition switch and the battery isolator to prevent accidental starting, block drums to prevent rolling.
- Keep engine cover closed during the operation.
- Keep all guards in place.

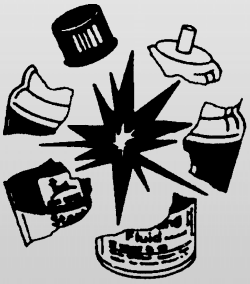
USE CAUTION WHEN WORKING ON HYDRAULICS

- Hydraulic system produces high pressures—incorrect hose replacement can cause serious personal injury. When performing service, refer to Operator's Manual for hose identification and connections.
- Pressurized release of fluids from hydraulic system can cause serious burns.
- Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.
- Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury.
- Hydraulic fluid escaping under pressure from a very small hole can be almost invisible. Use a piece of cardboard or wood to search for possible leaks.
- Never use your hands to detect pressure leaks.
- Hydraulic tank temperature can reach 180° F maximum.

DISPOSE OF WASTE PROPERLY

- Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.
- Use leak proof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.
- Do not pour waste onto the ground, down a drain, or into any water source.
- Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.
- Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center.



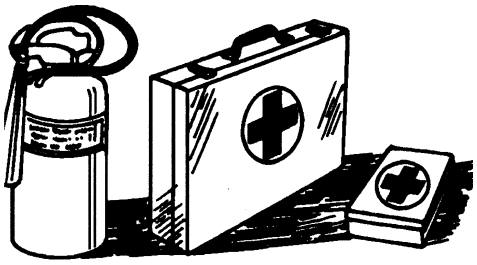


USE COMMON SENSE WHEN HANDLING FUELS

- Transport and handle fuel only when contained in approved safety containers.
- Do not smoke when refueling the engine or during any other fuel handling operation.
- If fuel is spilled during refueling, wipe it off from the engine immediately and discard the rag in a safe place.
- Do not operate the equipment if fuel or oil leaks exist-repair immediately.
- Never operate this equipment in an explosive atmosphere.
- Starting fluid (ether) is highly flammable, do not use or an explosion or fire may result.

PREPARE FOR EMERGENCIES

- Be prepared if a fire starts.
- Keep a first aid kit and fire extinguisher handy.
- Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



BATTERY CHARGING

- Read and understand the Maintenance Section of this manual before attempting to charge the battery.
- Before using a charger, read all the manufacturers' instructions for, and caution markings on (1) charger and (2) battery.
- Wear personal protective equipment including gloves and complete eye protection that protects eyes from all angles.
- Never work alone with electrical equipment. Make sure that someone is nearby to give assistance if you need help.
- Reduce explosive gas (hydrogen). Batteries give off explosive gases when charging and serious injuries can occur. Be sure the area around the battery is clean and well ventilated before and during the charging process.
- Avoid flames and sparks near the battery. Do not smoke or weld near the battery. Keep flames, matches, lighters, cigarettes or other ignition sources away from the battery.
- Use only cables and clamps that are well insulated and in good condition to make connections between battery and charger.
- Exercise caution in using metal tools on or near the battery to reduce the risk of short circuits that may cause battery explosions. Do not place tools on top of the battery.
- Avoid overcharging batteries. Some chargers can overcharge a battery if left connected for an extended period of time resulting in loss of water and creation of hydrogen gas. Rising battery temperature and vigorous gassing are clear indications of excessive charging which may reduce battery life.
- So called FAST (also known as High Rate or Boost) chargers should be used with caution. Do not use a fast charger for more than 30 minutes on any battery.
- In very cold weather, a discharged battery may freeze. Never charge a frozen battery. Gases may form which can crack the case and release battery acid.
- Avoid contact with corrosion due to battery acid. Battery posts may have acid corrosion that may be harmful to eyes and skin.
- If the battery is to be removed and/or replaced, always use a battery carrier. Carrying the battery by hand may put pressure on its ends, causing battery acid to be forced out the vent caps. Avoid tipping the battery, which may cause the release of battery acid through the vent caps. Avoid dropping the battery. Batteries can be heavy and may cause injuries if dropped. Dropping the battery can crack the case and release battery acid.
- Be sure to wash your hands with soap and water after servicing or handling the battery. This will help neutralize any acid you may have contacted. Always have plenty of fresh water and soap nearby in case battery acid contacts the eyes, skin or clothing. If battery acid contacts the skin or clothing, wash immediately with soap and water. If battery acid enters the eye, immediately flood eye with cold running water for at least fifteen (15) minutes and get medical help immediately.

SAFETY USE

These machines are designed to carry out the function of compacting material of the cohesive, bituminous and granular varieties.

If used correctly they will provide an effective and safe means of compaction and meet the appropriate performance standards.

It is essential that the driver/operator of the machine is adequately trained in its safe operation, be authorized to drive it, and have sufficient knowledge of the machine to ensure that it is in full working order before being put to use.

4. Operation

SAFETY SYMBOLS

Safety symbols are used in these instructions to bring attention to actions that may cause personal injury or damage to the equipment. Always observe these symbols, they are included for your safety and for the protection of the machine.

DELIVERY INSPECTION

Upon receipt of your roller, CAREFULLY CHECK FOR ANY FREIGHT DAMAGE. Any damage should be immediately reported to the carrier and a claim registered.

WolfPac 6100 is manufactured to the strictest specifications and inspection procedures. If any material or manufacturing defects are found, return the tag on the machine with the assembler's signature and your findings to the manufacturer. We want to know when a product is less than perfect. We also welcome any and all input on how the product may serve you better.

The following instructions were compiled to provide you information on how to obtain long and trouble free use of the roller. Periodic maintenance of the roller is essential. Read the manual in its entirety and follow the instructions carefully. Refer to the Technical Data Section to familiarize yourself with machine controls and components. Failure to do so may injure yourself or a bystander.

This symbol is used to identify an action that requires particular attention and/or care.

BREAK-IN PERIOD

The WP6100 roller is ready for normal operation. However, extra care during the first 50 hours of operation will result in more satisfactory, long-term machine performance and cost of ownership. Do not exceed 50 hours of operation before conducting the break-in first service. See First Service 50 Hours in the Maintenance Section.

- Run engine at full throttle.
- Run engine under load. DO NOT overload the engine.
- Idle engine 3 minutes before stopping.
- DO NOT idle engine for long periods.
- Check engine oil level daily.

BEFORE STARTING

Review the following information. Specific information regarding these items can be found in the Technical Data Section or located by the Table of Contents.

Fuel is highly flammable, handle with care. Do not refuel the engine while smoking or when near an open flame or sparks. Always stop engine before refueling. Clean up spilled fuel before starting. Avoid fires by keeping engine clean of accumulated grease and debris.

Diesel fuel stored in galvanized containers reacts chemically with the zinc coating on the container. The chemical reaction creates powdery flakes of zinc sulfide. If water is present in the fuel, a zinc hydroxide gel will form.

Do not run unit in an enclosed, unventilated area. Avoid prolonged breathing of exhaust gases.

PRE-START CHECKLIST

- Check engine oil level.
- Check engine air filter.
- Check engine fuel level. Note: Always use clean diesel fuel to prevent damage to the fuel injection components.
- Check hydraulic fluid level.
- Check hardware for looseness. If loose, tighten according to torque chart.
- Check hoses for looseness or leaking.
- E-Stop Button - check that button is not damaged and that it moves properly.
- Check radiator coolant.
- Check water level.

FUEL

Be sure to use a strainer when filling the fuel tank. Dirt or sand in the fuel may cause trouble in the fuel injection pump. ALWAYS use No.2 diesel fuel, DO NOT use alternative fuels. Alternative fuel may be inferior in quality and kerosene, which is very low in cetane rating, adversely affects the engine. Be careful not to let the fuel tank become empty, as air can enter the fuel system, which may require bleeding air from the fuel system.

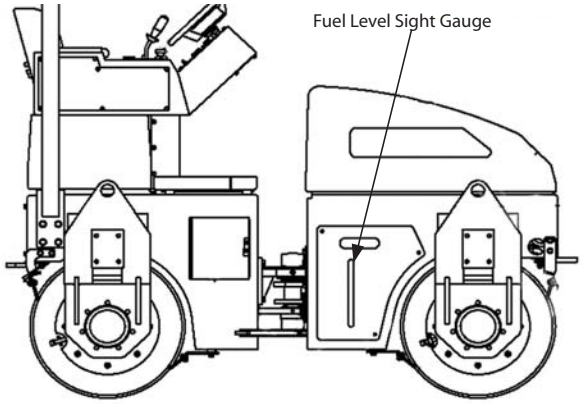
⚠WARNING

Fuel is both toxic and flammable. Do not smoke while working with fuel. Do not use near open flame. Start, store and refuel on level ground to prevent personal injury. Do not run unit in an enclosed, non-ventilated area. Avoid prolonged breathing of vapors and skin contact. Serious illness or loss of life could result.

Keep the vent hole in fuel tank cap open. If vent hole is plugged, pressure may build up in tank, causing dangerous spraying of fuel when cap is removed. A vacuum may also be created during operation, which could stop fuel flow.

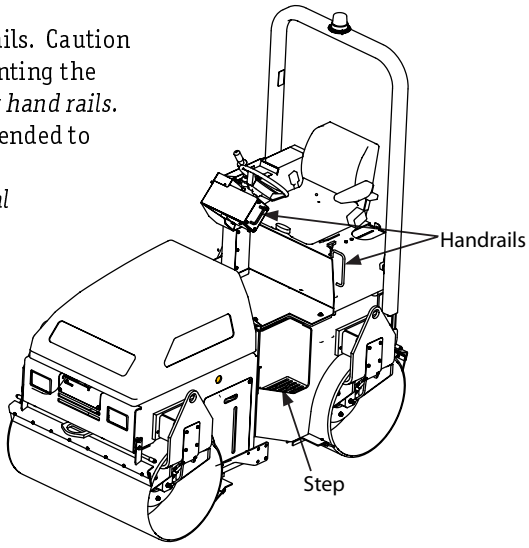
Fuel Level

Check the fuel level when the roller is parked on level ground and the engine is off. Use the sight tube located on the right side of front frame to check fuel level. The fuel cap is located on the right side of the front frame under the hood. The hood is lockable and key is provided.



MOUNTING/DISMOUNTING THE MACHINE

The machine is fitted with steps and hand rails. Caution should be used when mounting and dismounting the machine. *DO NOT remove or modify steps or hand rails.* Using the steps and hand rails, it is recommended to mount and dismount facing the operator's seat. *DO NOT jump from machine or personal injury may occur.*



Handrail and step locations

STARTING THE MACHINE

- Operator must always be seated and seat belt must be worn.
- Forward/reverse must be in NEUTRAL position.
- Throttle should be set at idle.
- Turn key counterclockwise to "preheat" position until preheat lamp turns off.
- Turn key clockwise until the engine cranks over. Release the key when the engine starts. DO NOT crank the engine for more than 20 seconds at a time.

COLD WEATHER STARTING

If the ambient temperature is below 23° F (-5° C) preheating times may be lengthened. The preheat lamp goes off after 6 seconds. At low ambient temperatures, preheat for 10 seconds and no more than 20 seconds. If engine fails to start, repeat preheat cycle.

TO OPERATE

Apply full throttle and move forward/reverse lever slowly forward to gain speed desired. Use the same procedure for reverse. To slow down move forward/reverse lever towards neutral.

To gain power or speed, move the forward/reverse lever slightly off neutral. This will produce the greatest amount of torque. Moving the lever all the way forward or reverse will give the greatest amount of speed.

OPERATION ON SLOPES

Tip angle

Never operate the machine in violation of the tip angle. Refer to the technical Data Section for tip angle and gradeability. Running the machine in excess of tip angle will cause the machine to be unstable. This could result in operator injury or engine/machine damage.

⚠WARNING

Never operate on slopes greater than 15 degrees or tipping may occur, resulting in personal injury.

FORWARD/REVERSE/NEUTRAL

The forward/reverse lever should be aligned with "NEUTRAL" on the console when the roller is not moving forward or backward and the engine is running. The neutral interlock switch should not allow the engine to start unless forward/reverse lever is in neutral.

SHUTTING THE MACHINE OFF

- Select a safe area where it will cause the least obstruction and inconvenience to others.
- Before stopping, turn vibration OFF.
- Return control lever to the NEUTRAL position, this will stop the machine immediately.
- Throttle engine down to idle speed, idle engine for 2-3 minutes. DO NOT idle engine for long periods.
- Turn the key to the OFF position to stop the engine and set brakes. Remove ignition key.

CAUTION: *Idle engine 2-3 minutes before stopping. This will allow engine to cool.*

PARKING THE MACHINE

Always use care when parking the machine. Do not park on unstable ground or in an unsafe position. Observe the following caution: Never park the roller on an incline. The roller may creep forward or reverse even when engine is off. Tipping may occur resulting in personal injury or engine damage.

- Return the control lever to the NEUTRAL position.
- Ensure machine is stationary on firm ground.
- Idle engine 2-3 minutes.
- Turn the key to the OFF position to stop the engine and set brakes. Remove ignition key and battery isolator key.
- Chock drums.

SAFETY FEATURES

To help prevent accidents, the machine is equipped with the following safety features. Check safety features daily. It is the driver's responsibility to operate the machine safely.

Neutral Interlock

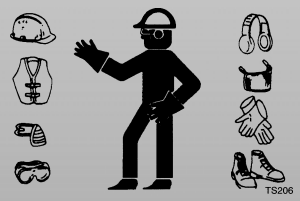
The neutral interlock switch does not allow the engine to start unless the forward/reverse lever is in NEUTRAL and the operator is firmly seated. The forward/reverse lever should be aligned with "NEUTRAL" on the console when the roller is moving neither forward nor backward with the engine running.

Seat Interlock

Seat interlock is controlled by a switch operated by the weight of the operator on the seat. The engine cannot be started unless operator is firmly seated facing forward. Seat belts MUST ALWAYS be worn.

Wear protective clothing:

- Hard Hat at all times
- Safety Boots at all times
- Safety Glasses at all times
- Reflective Clothing at all times
- Gloves as conditions dictate
- Ear Protection as needed
- Respirator in dusty conditions



ROPS

The roller is equipped with a roll-over protection structure - ROPS. DO NOT operate this machine if the ROPS is missing or structurally damaged, shows cracks, is not properly secured as originally installed or has been rolled. See maintenance section for ROPS inspection guide.

DO NOT repair, modify, or add attachments to the ROPS unless authorized in writing by the manufacturer.

The seat belt must always be worn by the operator. In the event of a roll-over DO NOT jump off the roller.

During a roll-over:

- Grip the steering wheel tightly with both hands and wait until the roller comes to rest.
- Press the Emergency Stop Button.
- Dismount the roller immediately if it is safe to do so.

Horn

The horn should be used as a warning to others. The horn is operated by pressing the button in the center of the steering wheel.

Back-Up Alarm

The Back-Up Alarm is located at the rear of machine. Alarm must activate whenever the *machine is moving in reverse.*

SEAT

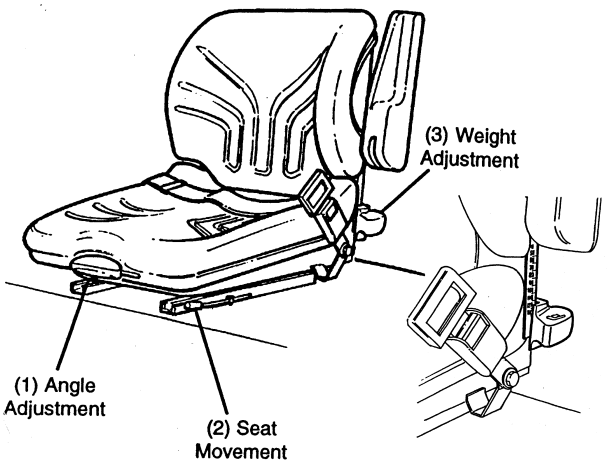
Adjustable seat with flip-up arm rests and seat belt for operator comfort and safety.

Angle adjustment (Item 1)

The seat backrest is adjustable for angle, this is achieved by lifting the lever (1) at the front of the seat cushion and sliding the seat cushion forward/backward. Release the lever and ensure the seat runners engage in one of the preset locking positions.

Seat Movement (Item 2)

The operator is able to adjust the seat in the fore-aft direction by lifting knob (2) and sliding seat to desired position, then releasing the knob to lock the seat into position.



Seat adjustments

Weight Adjustment (Item 3)

The seat may be adjusted for the driver's weight by sliding the lever (3) downwards to the relevant weight position as indicated by the scale on the side of the seat. To return the lever to the top of the scale, push the lever fully downwards to the bottom of the scale and then lift the lever to the top.

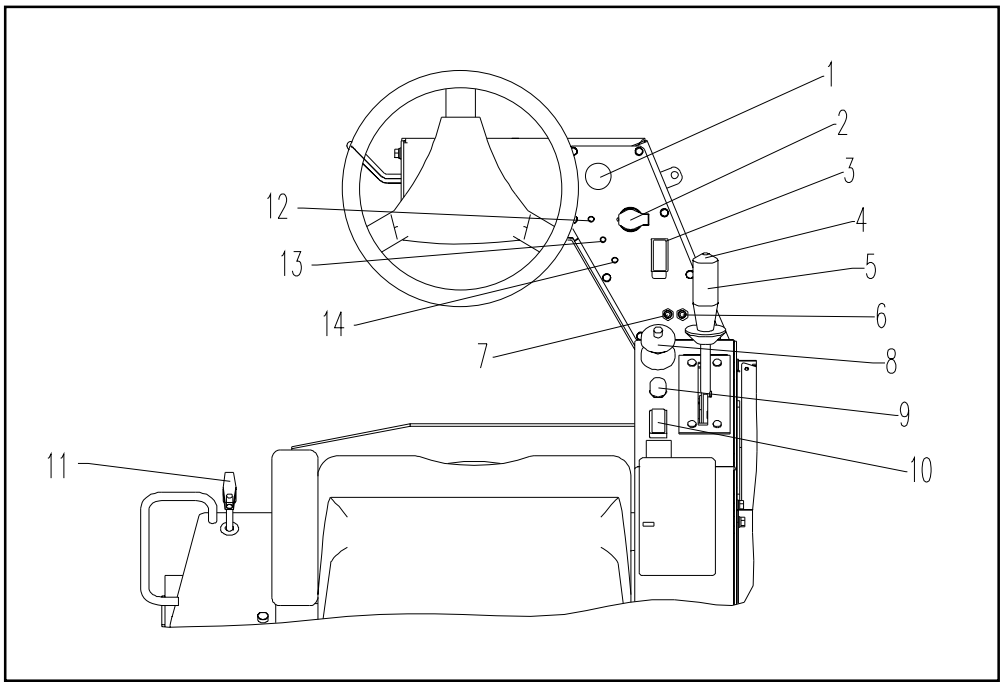
The engine cannot be started unless operator is firmly seated facing forward. Seat belt MUST ALWAYS be worn.

The seat is fitted with a retractable, self-adjusting seat belt for operator protection. Check operation daily and always fasten seat belt before starting the machine. DO NOT modify or remove.

STEERING CONTROL

This machine has center-point articulation power steering and always has priority flow to the steering control valve. Turning the steering wheel will provide smooth steering in both directions.

OPERATOR CONTROLS



Operator Controls

E-Stop/Brake Button (Item 1)

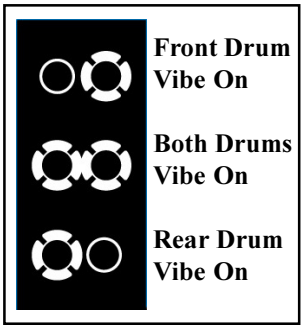
This is an emergency stop button to be used in a situation where an immediate stop of the machine is desired. Pressing this button will stop the engine and machine immediately. This button, red in color, is located on the key switch plate.

Keyswitch (Item 2)

In the OFF position the electrical control circuits are not powered. In the RUN position all instruments and electrical control circuits are powered.

Vibe Switch (Item 3)

Three position switch activates lighter or heavier compaction. Select drum vibe by setting rocker switch to desired vibe, front, rear or both drums.



Vibe Switch Postions

Vibe On/Off Button (Item 4)

Machine vibration is accomplished by directing the pump flow to the hydraulic motor on the eccentric shaft. Vibe rocker switch selects vibe to the front, rear or both drums.

To start vibration: Push button to initiate vibration ON.

To stop vibration: Push button.

Control Lever (Item 5)

Once the engine is at run speed move forward/reverse lever slowly forward to gain speed desired. The same procedure is for reverse. To slow down move forward/reverse lever towards neutral.

To gain power or speed by move the forward/reverse lever slightly off of neutral to produce the greatest amount of torque. Moving the lever all the way forward or reverse will give the greatest amount of speed.

Beacon Switch (Option) (Item 6)

Select ON/OFF position using toggle switch.

Light Switch (Option) (Item 7)

Select ON/OFF position using toggle switch.

Throttle (Item 8)

Pull throttle out to increase engine speed. Push throttle in to reduce engine speed. Fine adjustment is made by rotating the knob. Throttle speed may be locked or unlocked by turning the locking knob clockwise to lock, counter clockwise to unlock. For best performance, run engine at full throttle. Idle engine 2-3 minutes before stopping. This will allow engine to cool.

Horn Button (Item 9)

The horn should be used as a warning to others. The horn is operated by pressing the button in the center of the steering wheel.

Water Sprinkler Switch (Item 10)

Turn pressurized water sprinklers ON/OFF using the rocker switch.

Water Sprinkler Valve (Item 11)

Turn gravity water sprinklers ON/OFF by turning the knob.

Engine Preheat Lamp (Item 12)

Turn key clockwise to "PREHEAT" position until Preheat lamp turns off.

Engine Oil Pressure Lamp (Item 13)

Lamp turns on when engine oil pressure is low.

Engine Temperature Lamp (Item 14)

Lamp turns on when engine temperature is high.

HOUR METER

The hour meter records the hours of opertation and is used to determine when periodic maintenance is required. Record hours and dates of service on Service Record Chart.

⚠WARNING

Avoid leaving the key on when machine is not running. This will have an effect on the hour meter readings.

Never push or pull the roller, The roller is equipped with a bypass valve.

WATER TANK/SPRINKLERS

Check the water level when the roller is parked on level ground and the engine is off. The water cap is located on top of the water tank (fig. 7). Fill the tank with clean water. The water tank holds 43 US gallons. Dirty water will clog the sprinkler bars. The roller is equipped with front and rear sprinklers. If the water tank is subject to freezing temperatures, all the water lines and the water tank must be drained by draining through sprinkler tubes.

SCRAPERS

Scrapers, located on the front and rear of both drums (fig. 7), must make uniform contact across entire width of drum to ensure even application of water from the sprinkler system. Also, scrapers prevent dirt and asphalt from collecting.

ECCENTRICS

When vibratory compaction is necessary, engage eccentrics by pushing the vibe button. For best performance, run engine at full RPM. The eccentrics should be turned off whenever the roller is stopped, or stopped to change direction. Do not run the eccentric on any non-yielding surface, such as concrete or aged asphalt.

BEACON (OPTION)

The beacon is located on top of ROPS. The beacon is a self-contained unit, operated by a rocker switch.

⚠WARNING

High voltages exist in electronic beacon lights. Before attempting service on any beacon light, be sure to disconnect the power for at least five minutes to allow the capacitor to discharge. Failure to heed this warning may result in severe electrical shock and/or personal injury or equipment damage.

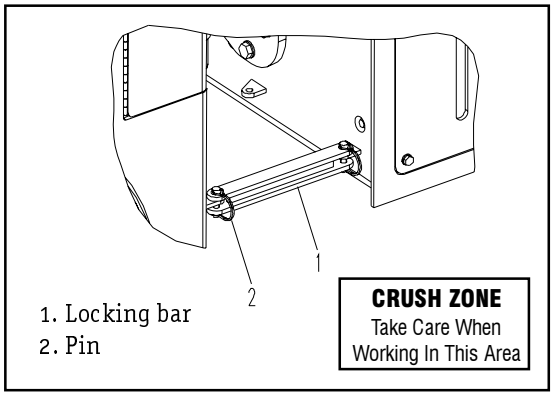
LIGHTS (OPTION)

The lights are located both front and rear and are operated by a toggle switch.

LOCKING BAR

The locking bar is used during transportation to lock front and rear frames. This will prevent articulation.

- Stop machine.
- Remove pin.
- Move locking bar into position.
- With engine stopped, turn steering wheel to align holes. Insert pin.
- Immediately after use, disconnect locking bar and reverse above procedures.



Locking bar (LOCK position)

⚠WARNING

The locking bar MUST be used whenever the machine is to be lifted clear of the ground or when placed on a trailer or truck bed for transporting.

TRANSPORTATION

Loading

See Technical Data Section for roller sizes and weights. Use properly rated ramps, chains, transportation equipment, etc. When loading roller, use proper loading equipment and procedures. Failure to do so may result in personal injury and/or machine damage. It is recommended to chock drum and also use locking bar to prevent articulation during transport.

To protect paint at tie down points, use plastic covering on tow cables/chains or other means of protection. Always use four tie down points located at the four corners of the machine to secure the machine in transport. DO NOT use rails/handles to secure the machine. Ensure the trailer or truck will not move during loading by applying brakes and also blocking wheels if necessary. The angle of ramps must not exceed the gradeability of the roller and in wet, icy or muddy conditions may need to be less.

Dragging the roller when winching, i.e. without the drums turning, may result in the drums developing flat spots which will seriously affect the finish obtained when rolling soft surfaces. Damage may also be caused to the vibration isolation mountings (see Towing Section).

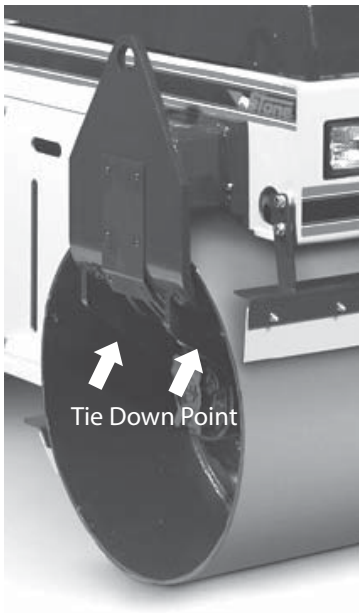
TIE DOWNS

Roller is equipped with front and rear tie down rings for shipping purposes. Use only these tie downs to secure unit, tie downs may be used in emergency or breakdown (see Towing & Bypass Section)

⚠WARNING

Tie downs are not intended for lifting purposes.

- When loaded, the roller must be secured using chains, ropes, straps, etc. of sufficient strength to hold the roller safely in all circumstances.
- The tie down points on each side, must be used in conjunction with those on the trailer or lorry.

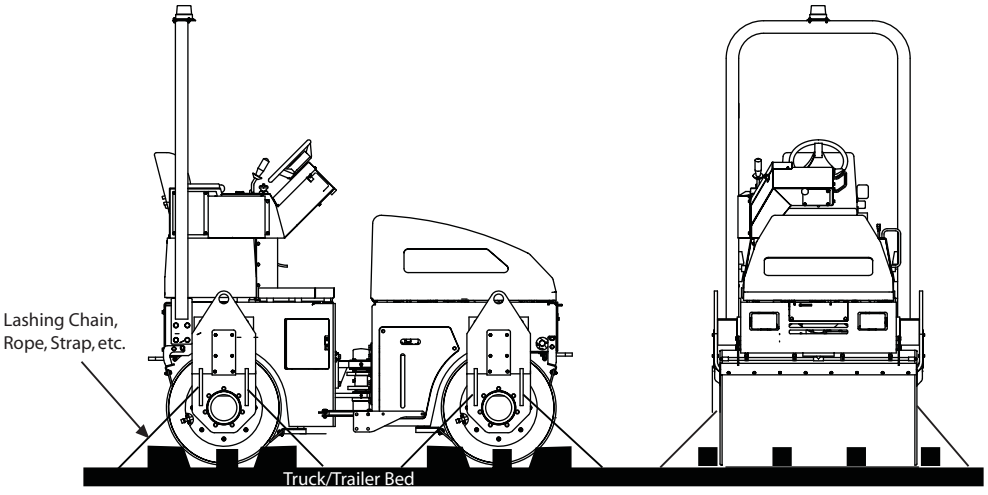


Tie Down and Lifting Points

Ensure the following:

1. Drive Control Lever is in the Neutral Position
2. Start Key has been Removed
3. Battery Isolator Key has been Removed

Suggested method for securing roller to trailer bed/truck



Place chocks as shown and nail to Truck/Trailer bed.

Securing Roller for Transport

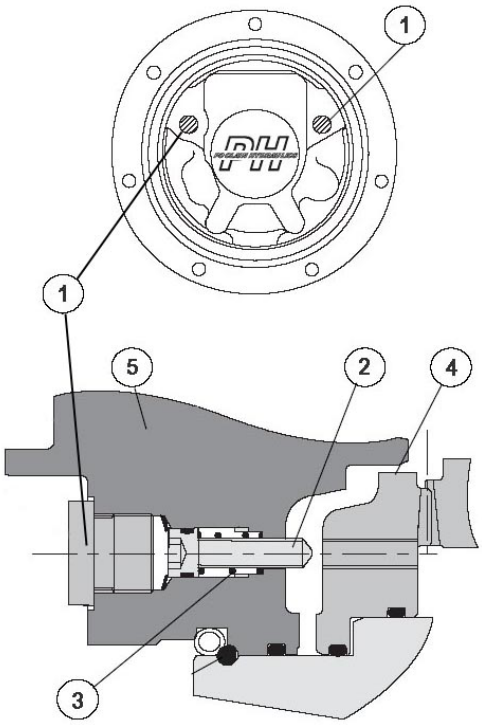
⚠WARNING

Tow roller in an emergency only.

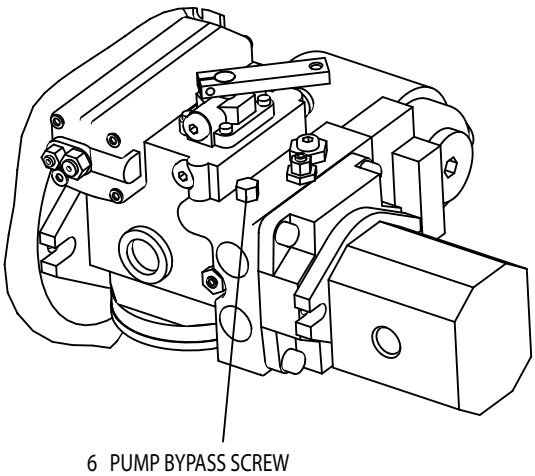
Do not drag the roller without the drum turning or damage may occur.

It is necessary to release the parking brake and unlock the transmission. Follow procedures in sequence or personal injury may occur.

1. Stop engine on firm, level ground. Chock drum to prevent movement.
2. Remove key from keyswitch to prevent starting.
3. Remove two plugs on each wheel motor (1).
4. Push the M8 screws, (2) by compressing the springs (3), to press them into the brake piston(4) internal thread, until the screw head (2) comes into contact with the valving cover (5).
5. Tighten the two screws (2) alternately and progressively to pull the brake piston (4) (approximately two turns of screw). Respect the tightening torque of the M8 screws, 22.1 lbf.ft (30Nm).
6. To bypass hydraulic pump turn pump bypass screw (6) out two turns.
7. Attach 1-ton tow cables/chains to tie down points and tension.
8. Carefully remove blocks from drum. Tow at 2 mph maximum.
9. Immediately after towing, chock drums on flat, level ground, re-instate the brakes, loosen the two screws (2) completely then reinstall the plugs(1). Tighten plugs to 44.2 lbf.ft (60Nm).
10. Re-instate pump bypass by turning screw (6) in two turns. Do not overtighten, 12.5ft-lbs (17.5Nm)



Wheel motor



6 PUMP BYPASS SCREW

ASPHALT COMPACTION TIPS

- Make sure drums are coated with just enough water to prevent asphalt sticking to the drums.
- Two passes should be sufficient if the asphalt temperature is about 285 degrees F or greater.
- Do not let asphalt stand for an extended time before rolling.
- As soon as the asphalt will support roller without shoving or causing excessive movement of the mat, the operator may proceed with the breakdown pass. If the mat shows cracks or splits perpendicular to the roller path, let mix cool 3 to 5 minutes before continuing.
- Whenever possible, back roller towards paver so that static drive roll proceeds the vibrating front roll.
- Always stop vibratory unit before roller comes to a standstill to avoid ridging the mat.
- Change directions and speed slowly to avoid tearing the mat.
- Reduce engine RPM if vibratory roll "bounces" or is "erratic" to avoid over compacting the asphalt and damaging the unit.
- To assist edge compaction and confinement, leave 4" uncompacted and allow to cool slightly before finishing.
- When possible, begin breakdown pass downhill and return uphill on same pass before moving over to next pass.
- Compact on low edge first making breakdown pass and immediately reversing on breakdown pass before moving toward high edge of the second pass.
- On cool, thick or coarse mats, make as many intermediate and finish passes as necessary to achieve desired compaction and surface finish but avoid over-compaction (aggregate fracturing).
- A general guideline for maximum lift:

  Dirt: 6-8″

  Asphalt: 4-6″

Avoid sharp turns by steering gradually. If articulation is a new concept, we suggest the operator take 20 minutes or so to get used to the feel of the unit.

Recommended asphalt rolling should be at 3 m.p.h. or less to achieve a uniform mat. Slow the paver down rather than speed up the roller.

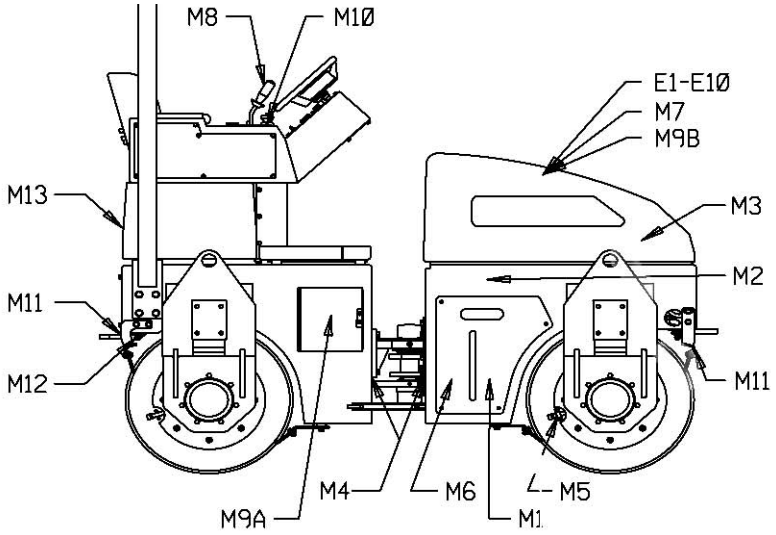
NOTE: Depressions in the mat will occur if the roller is left standing on it. When roller needs to be stopped for refueling, maintenance, etc. remove from fresh asphalt.

5. Maintenance

IMPORTANT!

The person attempting *any* of the following maintenance tasks must be authorized to do so and have read *and* understood *all* sections within this manual.

WP6100 MAINTENANCE CHART



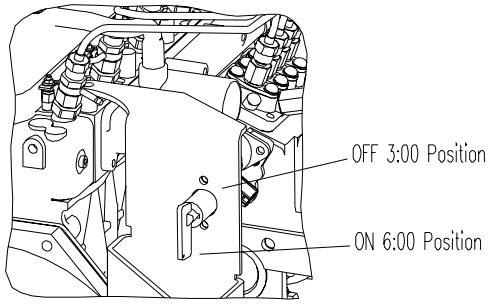
√ Check/Adjust ❍ Clean/Replace	Daily	Weekly	Other	Instruction	Replacement P/Ns
Engine				**Read Stone Operator's Manual and Kubota Owner's Manual and Emission Warranty**	
E1 Oil Level	√		❍	Replace at 50 hrs, then every 100 hrs SAE 15W 40 CF, CG-4	-
E2 Oil Filter			❍	Replace every 200 hours	30629
E3 A. In-Line Filter			❍	Check every 100 hours, replace every 300 hrs	31370
E3 B. Engine Fuel Filter			❍	Check every 100 hours, replace every 400hrs	30631
E4 Air Filter	√		❍	Clean every 100 hours, replace every year	30630
E5 Engine RPM			√	Check idle & full speed RPM every 300 hours	-
E6 Cooling System		√	❍	Clean/blow out air inlets, engine & ducting	-
E7 Valve Clearance ##			√	Check/adjust every 800 hours	-
E8 Radiator Hoses and Clamps			❍	Check/tighten every 200 hours, replace every two years	-
E9 Radiator, Coolant	√		❍	Clean every 500 hours, replace coolant every two years	-
E10 Nozzle ##			❍	Check injection pressure every 1000 hours	-
E11 Fan Belt			❍	Check at 50 hours, then every 100 hours	32645
Machine				**Important Read Operating Manual & Engine Owner's Manual**	
M1 Hydraulic Oil Level	√		❍	Replace every 800 hours Mobilfluid 424	-
M2 Hydraulic Filter (Tank)			❍	Replace every 100 hours	36988
M2 Hydraulic Filter (Charge)			❍	Replace at 50 hours, then every 500 hours	32536
M3 Hydraulic Breather			❍	Replace every 800 hours	36989
M4 Pivot (4x)		❍		Lube weekly with lithium base grease	-
M5 Eccentric Oil (2x)			❍	Change every 500 hours SAE 30	-
M6 Fuel Tank			❍	Flush/clean fuel tank every year	-
M7 Fuel Lines & Clamps		√	❍	Check weekly, replace every two years	-
M8 Controls	√			Check operation, lightly oil cables and levers every 200 hours	-
M9 A. Battery			❍	Clean and check monthly/check for 13-14 volts at full RPM	-
M9 B. Charging System			❍	Check monthly for 13-14 volts at full RPM	-
M10 Emergency Stop	√			Clean unit and inspect	-
M11 Scrapers/Mounts	√			Clean unit and inspect	-
M12 Sprinklers	√			Clean unit and inspect	-
M13 Water Strainer	√			Clean unit and inspect	-
M14 Oil & Fuel Strainer	√			Clean unit and inspect	-
M15 Hardware/Engine	√			Clean unit and inspect	-
## See authorized engine service dealer and/or refer to engine shop manual for procedures					

BATTERY ISOLATOR

The battery isolator, located to the right rear of the engine, must always be used when carrying out service/maintenance work which would be dangerous is the engine was to start or the electrics activated. When major manitnenace work is being carried out, the battery must be disconnected and the key removed.

In OFF postition (3:00) the battery negative circuitis disconnected and the key may be removed. In ON postition (6:00) the battery circuit is connected.

The Battery Isolator key is removable when in the OFF position and may be used as an anti-vandal device when the machine is left for periods of time.



Battery Isolator (ON position)

FIRST SERVICE 50 HOURS

After the 50 hour break-in period, perform the following services:

- Check hydraulic oil level (See Hydraulic Oil and Sight Gauge section).
- Change the engine oil and engine oil filter (See Engine Oil and Filter section).
- Check radiator coolant (see Radiator Coolant section).
- Change the hydraulic filter(charge) (see Hydraulic Filter (Charge) section).
- Check belt tension (see Engine Fan Belt section).
- Check air filter (see Engine Air Filter section)

ADDITIONAL SERVICE INFORMATION

This is not a detailed engine service manual. If you want more detailed service information refer to engine manuals: Kubota Diesel Engine Owner's Manual, 56750 Manual Workshop Kubota V1505.

⚠WARNING

Before making any adjustments, be sure the roller is parked on level ground, engine is off, key is removed and drums are blocked. Disconnect battery to avoid accidental ignition of engine. Severe personal injury may occur.

Important: Read Kubota Emission Warranty Statement and Engine Manual before operating or performing maintenance.

IMPORTANT:
Read Kubota Emission Warranty Statement and Engine Manual before operating or performing maintenance.

ROLL OVER PROTECTIVE STRUCTURES (ROPS)

Proper inspection and maintenance procedures can ensure that the ROPS will perform the lifesaving function they are designed for and expected to do. Make regular, periodic inspections to ensure that the ROPS are damage-free and thus capable of functioning in an upset.

Generally ROPS structures are not intended as external load carrying members and must not be used to mount attachments such as pull hooks, winches, side brooms, etc. without the manufacturer's approval. Modifications to basic design should be avoided as recertification is required.

ROPS Inspection Guide

Rollover Protection Structures (ROPS) Inspection Guide

ROPS, like any other safety device, need to be periodically inspected to verify that the integrity of the device has not been compromised through normal machine use, misuse, age degradation, modifications or roll-overs.

Some mechanical discretion is essential, therefore personnel who inspect ROPS need to comprehend and understand the significance of issues like structural corrosion, cracks, and deformation. Conservatism is the essential rule – if in doubt, remove the machine from service and contact the ROPS manufacturer for assistance. Certain conditions will absolutely render the ROPS unusable, examples are:

- Permanent deformation or twisting
- Missing, damaged or loose mounting hardware
- Heavily weathered or torn rubber isolators
- Mounting hardware that is of a grade lesser than specified
- Any cracks in the structure (structural members and/or welds)
- Significant corrosion
- Modifications, i.e. unauthorized welds and holes
- Missing or unreadable ROPS label
- Applicable ROPS/machine model not specified on the ROPS label
- Machine GVW (including attachments, restrained payload, fuel and operator) in excess of the maximum weight specified on the ROPS label
- Missing, damaged or unusable operator restraint devices, i.e. seatbelts
- Any unauthorized repair
- Incomplete/improper installation

Other conditions may require imminent service but may not render the unit immediately unusable, examples are:

- Faded paint
- Slightly weathered rubber isolators
- Faded, hard to read ROPS label
- Heavily soiled operator restraint
- Slightly corroded mounting hardware

ROPS must be inspected immediately after any type of collision, rollover or impact. If any damage is evident, the ROPS must be removed from service, repaired and/or replaced.

When a ROPS is removed or reinstalled, mounting hardware must be examined for signs of over stressing. Damaged mounting hardware must be replaced with proper specification hardware before placing the ROPS back in service.

Operators are to be instructed to properly adjust and use restraints at all times.

⚠WARNING

Do not repair, modify, or add attachments to ROPS unless authorized in writing by the manufacturer.

SEAT BELTS

Seat belt. The presence and operability of a seat belt should be noted. The belt should be clean, free of dirt and grease, and the latch should function smoothly. The structure should be inspected following a roll over, collision, or fire.

FUEL FILTERS

When cleaning or changing any fuel filters, the following cautions must be observed:

⚠WARNING

CAUTION: Dangerous spraying of fuel can occur when changing fuel filter, due to pressure build up.

CAUTION: DO NOT clean or replace fuel filters while the engine is still hot. Escaping fuel may contact hot surfaces causing personal injury and/or death.

DO NOT allow dirt to enter fuel system. Before a connection is disconnected, clean the area around the connection thoroughly. After a component has been disconnected, fit a suitable cover to all open connections.

It is important that only genuine Kubota replacement parts are used. The use of a wrong canister or element can damage the fuel injection pump.

Discard the used canister and fuel oil in a safe place and in accordance with the local regulations.

ENGINE FUEL FILTER

Check engine fuel filter every 100 hours. Replace filter every 400 hours.

Replace engine fuel filter

1. Close the fuel cock (3)
2. Replace the filter element.
3. Bleed the fuel system.

IN LINE FUEL FILTER

Inspect In-Line fuel filter every 100 hours. Replace filter every 300 hours.

Inspect In-Line Fuel Filter

Replace

1. Loosen hose clamps, disconnect filter from fuel lines.
2. Install new filter with arrow pointing toward the fuel pump.
3. Retighten hose clamps.
4. Bleed air from the fuel system. (see Bleeding Air from Fuel System section)

FUEL TANK

Flush and clean the fuel tank annually.

FUEL LINES

Inspect fuel line condition and clamps weekly. Replace fuel lines every 2 years.

BLEEDING AIR FROM FUEL SYSTEM

⚠WARNING

If your skin comes into contact with high-pressure fuel, obtain medical assistance immediately.

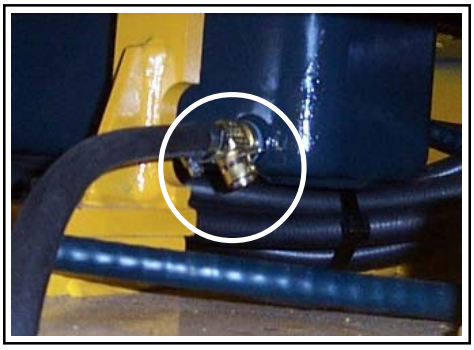
Air will normally be removed from the fuel pump automatically when the engine is in operation. Bleed air from the fuel system: when replacing fuel filter; disconnecting fuel lines; after fuel tank has been emptied and/or drained; when fuel system leaks during operation; or before the engine is to be used following storage.

Bleeding Fuel System

1. Fill the fuel tank to the fullest extent. Open the fuel filter lever.
2. Loosen air vent plug of the fuel filter a few turns.
3. Retighten the plug when bubbles do not come up any more.
4. Open the air vent plug on top of the fuel injection pump.
5. Retighten the plug when bubbles do not come up any more.

ENGINE OIL AND FILTER

- Replace oil at 50 hours, then change oil every 100 hours. Change the oil filter every 200 hours.
- Remove the oil filler cap (and oil filter when required). Locate the oil drain valve on the engine. Move drain valve lever to OPEN to drain oil. Drain oil into a suitable container.
- Close drain valve by moving level to CLOSED position. When required install new oil filter, lightly oil filter seal.
- Fill with the recommended oil, fill to the upper limit mark on the dipstick, and tighten the oil filler cap securely.
- Run engine for 2 – 3 minutes, stop engine and check oil level and check for leaks.



Oil drain valve

NOTICE: DO NOT overfill engine oil reservoir. It may cause erratic engine operation.

- Please dispose of used motor oil and filter in a manner that does not harm the environment.

⚠WARNING

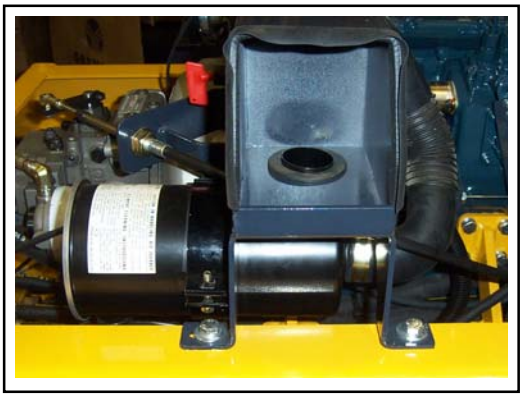
Under heavy loads, change engine oil and filter more frequently.

AIR FILTER

Clean air filter every 50hours, replace every 300 hours.

Paper Element: Tap the element lightly on a hard surface to remove excess dirt or blow pressurized air (30 psi max.) through the filter from the air cleaner cover side. Do not brush the dirt off.

Open evacuator valve once a week to rid air cleaner of large particles of dust and dirt. Replace elements if damaged or excessively dirty.



Air filter

AIR FILTER HOSES & CLAMPS

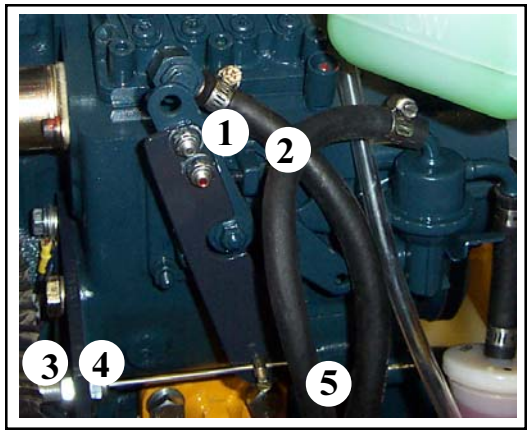
Every 100 hours check to see that air filter hoses are secure and clamps are tight. Replace hoses if they are swollen or cracked. If clamps are loose, apply oil to the threads and retighten securely. Replace hoses and clamps every two years.

ENGINE RPM

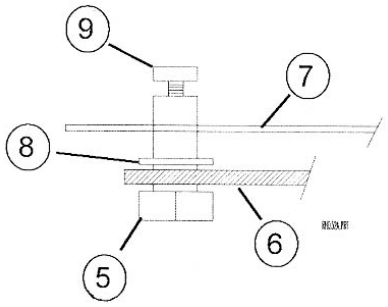
Special tools and training are required to perform this maintenance. See your authorized engine service dealer and/or refer to shop manual.

Check engine RPM every 300 hours. Start the engine and allow it to warm up to normal operating temperature. Check engine speed with a strobe or photo tachometer. Adjust idle speed and full speed as required.

1. Idle Stop Screw
2. Idle Speed Jam Nut
3. Throttle Cable Connection
4. Full Speed Jam Nuts (Left, Right)
5. Throttle Swivel
6. Engine Throttle Lever
7. Throttle Cable
8. Swivel Washer
9. Swivel Screw



Engine throttle assembly



Throttle swivel

THROTTLE SWIVEL

Throttle swivel (5) to be assembled to throttle lever as shown. The throttle cable (3) and jam nuts are centered around mounting plate to provide full speed (RPM) adjustments. If required, loosen jam nuts (4), center throttle cable, and reposition the throttle swivel.

Adjust Engine Idle Speed

1. Check engine idle speed with photo tachometer (P/N 48493) or strobe light.
2. Loosen jam nut on idle stop screw.
3. Adjust idle stop screw out to increase idle speed or in to decrease idle speed.
4. Confirm with photo tachometer or strobe light and tighten jam nut.

Adjust Engine Full Speed

1. Check engine full speed with photo tachometer or strobe light.
2. Loosen jam nuts on throttle cable connection.
3. Tighten left nut to increase full speed or right nut to decrease full speed.
4. Confirm with photo tachometer or strobe light and tighten jam nut.

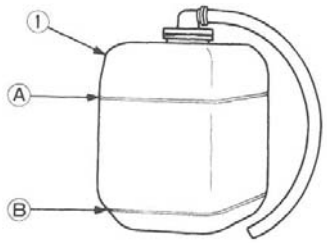
COOLING SYSTEM

The air inlet and outlet screens, the radiator and the engine should be kept clean to allow proper airflow for engine cooling.

RADIATOR COOLANT

Checking Coolant Level/Adding Coolant

The Kubota diesel engine is equipped with a radiator and reserve tank (1). Check coolant level daily. Level should be between the 'full' (A)and 'low' (B) marks on the reserve tank. If coolant level drops due to evaporation, add coolant only up to the 'full' level. If coolant level is low due to leakage, check hoses, clamps, radiator and reserve tank. Repair and/or replace as neccesary.



Coolant reserve tank

Changing Coolant

To drain coolant, always open both drain cocks and simultaneously open the radiator cap as well. Remove overflow pipe to drain reserve tank. The radiator capacity is approximately .82 gallons (3.1 liters). Use 50% pure water and 50% anti-freeze to fill radiator.

⚠WARNING

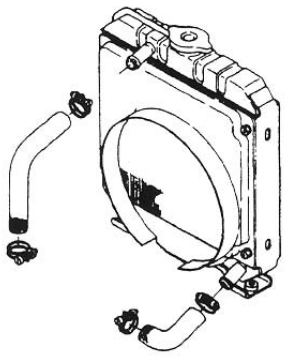
Engine is equipped with high temperature shut down. Roller will shut down if radiator temperature exceeds 226° f (108° c)

To avoid personal injury:

- Do not stop engine suddenly, stop it after about 5 minutes of unloaded idling.
- Work only after letting the engine and radiator cool off completely (more than 30 minutes after it has been stopped).
- Do not remove the radiator cap while coolant is hot. When cool to the touch, rotate cap to the first stop to allow excess pressure to escape. Then remove cap completely.
- If overheating should occur, steam may gush out from the radiator or reserve tank; severe burns could result.
- When using anti-freeze, put on some protection such as rubber gloves.
- If you should drink anti-freeze, throw up at once and seek medical attention immediately.
- When anti-freeze comes in contact with the skin or clothing, wash it off immediately.
- Do not mix different types of anti-freeze.
- Keep fire and children away from anti-freeze.
- Be mindful of the environment and ecology. Before draining any fluids, find out the correct way of disposing by checking with local codes.
- Also, observe the relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters and batteries.

RADIATOR HOSES & CLAMPS

Check to see that radiator hoses are secure and clamps are tight every 200 hours and replace if hoses are swollen or cracked. If clamps are loose, apply oil to the threads and retighten securely. Replace hoses and clamps every two yea



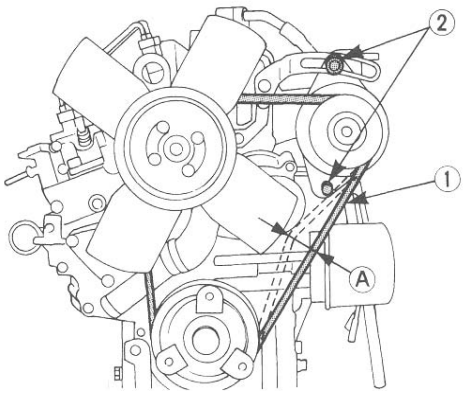
Radiator hoses

ENGINE FAN BELT

Check belt tension at the first 50 hours and then every 100 hours. Apply moderate thumb pressure 22lbs (98N) at the center of the longest free length (A). The correct deflection is .28 to .35 in. (7-9mm). Replace if worn.

Adjusting Engine Fan Belt

1. Loosen the pivot fasteners of the alternator and the adjustment link fasteners.
2. Change the position of the alternator to give the correct tension. Tighten the pivot fasteners of the alternator and the adjustment link fasteners.
3. Check the belt tension again to ensure that it is still correct. If a new belt is fitted, the belt tension must be checked again after the first 50 hours of operation.



Fan belt adjustment

VALVE CLEARANCE

Check valve tip clearance every 800 hours and adjust as neccesary. Due to special tool requirements and training, an authorized engine dealer should perform this service unless the owner has the proper tools and proper shop manuals.

HYDRAULIC OIL

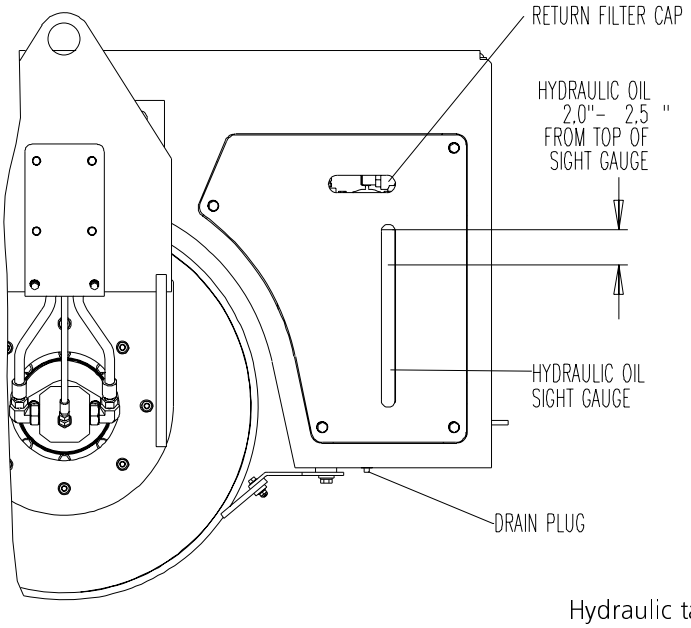
⚠WARNING

Hydraulic fluid escaping under pressure can have sufficient force to penetrate the skin, causing serious personal injury.

Hydraulic fluid escaping under pressure from a very small hole can be almost invisible. Use a piece of cardboard or wood to search for possible leaks. Never use your hands to detect pressure leaks. If you are injured by escaping hydraulic fluids, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

Do not mix hydraulic oils. Check oil level daily, replace hydraulic oil every 800 hours.

- Remove return filter cap slowly.
- Remove hydraulic filter.
- Remove drain plug from hydraulic tank and drain into suitable container.
- Clean drain plug, apply thread sealant to the plug, install and tighten.
- Add fresh hydraulic oil until oil level is 2.0 - 2.5 inches from the top of the sight gauge.
- Install new hydraulic filter and return filter cap.
- Idle engine 2-3 minutes, stop engine and check for proper hydraulic oil level and leaks.



Hydraulic tank

CAUTION: If hoses, filter and/or hydraulic components were changed, start the engine and purge the air from the system prior to checking the oil level. To do this, idle the engine for three minutes with control lever in neutral position. Slowly engage forward to reverse. This allows fluid to replace air introduced with the filter change. If this procedure is not followed, partial or complete failure of the pump may result.

NOTE: When changing the hydraulic oil, it is recommended to also change the hydraulic oil filters.

HYDRAULIC FILTER (CHARGE)

Replace at 50 hours, then every 500 hours.

Hydraulic filter

HYDRAULIC FILTER (TANK)

Replace every 100 hours or when clog indicator needle is between 2 and 5. Never let the filter be completely clogged.

CAUTION: Never overfill the hydraulic tank. Use the sight gauge located on the hydraulic tank. Fill hydraulic tank until oil level is 2.5 - 3.0 inches from the top of the sight gauge (see Hydraulic Oil Section). Before disconnecting any hydraulic lines, be sure engine is shut off and all pressure has been relieved. Before applying pressure to system, be sure all connections are tight and lines, fittings and hoses are not damaged.

HYDRAULIC AIR BREATHER

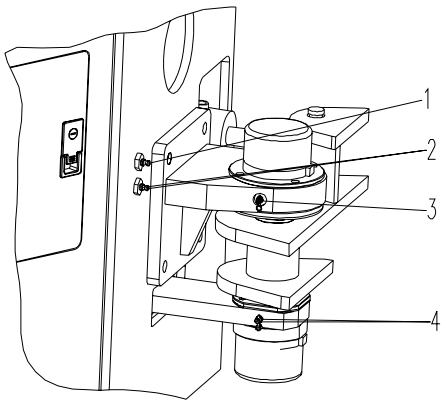
Replace element every 800 hours. To replace air breather element, unscrew air breather from the tank filter. Replace element. Reinstall air breather.

Hydraulic air breather

GREASE FITTINGS

Use a grease gun to grease fittings. Remove the blue protective cap from fitting before greasing. *Use hand operated grease gun, only.* Do not use pressurized grease gun or machine damage may occur.

- Hinge (4) fittings

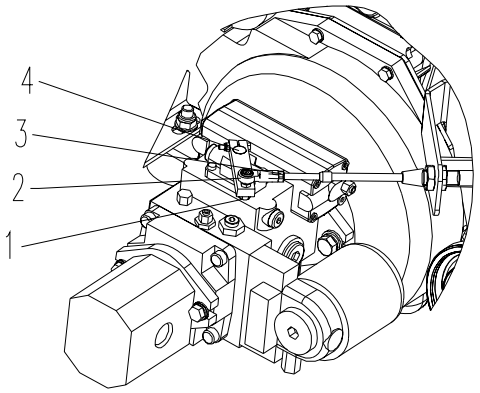


Grease fittings

FORWARD/REVERSE/NEUTRAL ADJUSTMENT

The forward/reverse lever should be aligned with 'NEUTRAL' on the console when the roller is not moving forward or backward with the engine running. If the lever is not aligned, adjust it as follows:

- Shut off the engine with the forward/reverse lever left in operating neutral position, the position when the roller moves neither forward nor reverse.
- Open the engine hood of the machine.
- Disconnect the linkage from the hydrostatic transmission. Do this by removing the jam nut (1) from the rod end (2).
- Loosen the rod end nut (3) and screw rod end (2) in or out to adjust.
- Secure the rod end (2) to the transmission lever (4) with the jam nut (1) and tighten rod end nut (3).



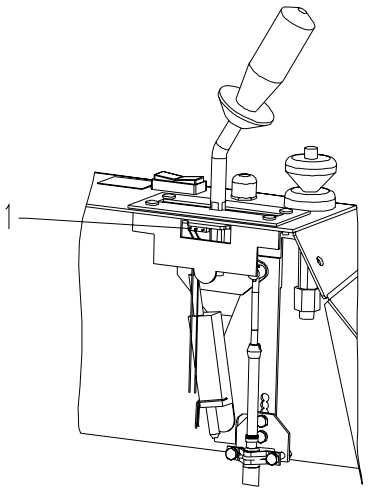
Forward/Revrse/Neutral Adjustment

Linkage play must be minimal at both connections. Replace rod end, cable and/or linkage if required.

NEUTRAL INTERLOCK

The purpose of the neutral interlock switch is to prevent engine starting when the forward/reverse lever is not in the neutral position.

- Disconnect battery cables from battery.
  a. Disconnect two wires from neutral interlock switch (1) and connect it to leads from an ohmmeter.
  b. When switch is actuated, ohmmeter should read zero resistance.
- Adjustments must be made at transmission.
- Disconnect ohmmeter and reconnect interlock wires and battery cables.



Neutral Interlock

CONTROLS

Check forward/reverse and throttle every day for smooth operation. Lightly oil cables and levers every 200 hours.

Replace control cables if any of the following conditions are present, otherwise personal injury or damage to machine could result. These conditions indicate a present or pending performance problem.

- A gradual or sudden increase or decrease in the friction (no-load)
- A gradual or sudden increase or decrease in the usable stroke
- Moisture inside the cable and/or frozen cable
- Looseness in the forward/reverse lever or cable
- Excessive loss of motion in the forward/reverse lever or cable

⚠WARNING

To avoid risk of injury, do not adjust the control cable with the power on or the engine running.

THROTTLE LEVER

Throttle should operate smoothly and hold engine at full RPM. Engine speed is made by depressing the button and pulling out for full speed and pushing in for idle speed. Fine adjustment is made by rotating the knob. Throttle speed may be locked or unlocked by turning the locking knob clockwise to lock, counter-clockwise to unlock.

WATER TANK

The water tank is polyethylene to prevent corrosion. If the water tank is subject to freezing temperatures, all the water lines and the water tank must be drained by drawing through sprinkler tubes or through the flush and drain plug which is accessed by removing the cover at the rear of the machine.

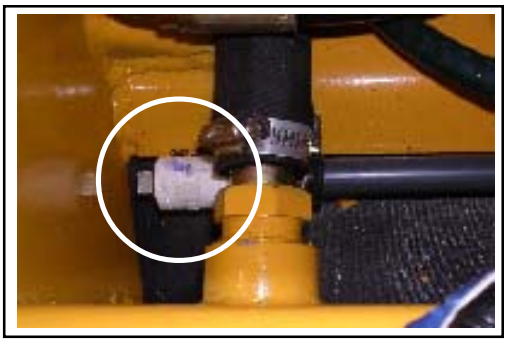
WATER STRAINER

Clean every 500 hours. Regular maintenance of the water strainer will prevent sprinklers from becoming plugged with debris. The water strainer is attached to the water tank located in the rear of the machine. To clean, remove sediment bowl and screen by unscrewing from the strainer. Clean screen and sediment bowl with soap and water and replace. If strainer or screen is damaged it must be replaced.

Water strainer

SPRINKLERS

The sprinkler tube assemblies are PVC to prevent corrosion. The sprinkler tubes are equipped with a clean out plug for cleaning if sprinkler tubes become plugged. To clean, remove sprinkler tubes and clean out plugs, wash with soap and water. Use pressurized air, 30psi max.(2.1 bar), to blow dirt and debris from sprinkler tubes. Check to ensure sprinkler holes are not plugged.



Clean out plug

SCRAPER MAINTENANCE/ADJUSTMENT

Scrapers must make uniform contact across entire width of drum to ensure even application of water from the sprinkler system. Tension is adjusted by sliding slotted brackets in or away from drum surface.

- Loosen the 2 bolts that hold item to the frame and slide away or towards the drum and retighten.

Scraper adjustment

ECCENTRICS

When vibratory compaction is necessary, engage eccentrics by pushing vibe button. Operator may vary the frequency and therefore the centrifugal force by varying engine RPM. Eccentrics should be turned off whenever the roller is stopped. Do no run the eccentric on any non-yielding surface, such as concrete or aged asphalt.

Checking Eccentric Pressures

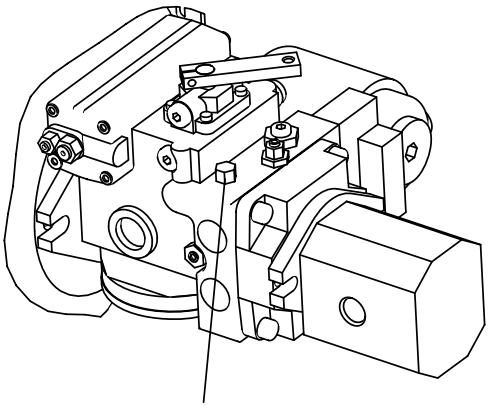
⚠WARNING

Chock drums to prevent movement.

NOTE: To ensure accuracy when checking eccentric pressure warm unit up completely so that hydraulic oil will be the proper viscosity.

To check the eccentric speed pressure, place main transmission pump in the by-pass mode. See Hydraulic Bypass Section.

Find set screw on main pump, loosen set screw two or three turns.

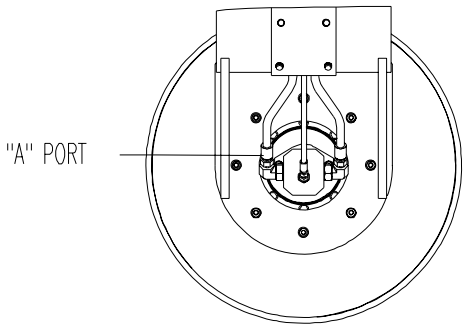


PUMP BYPASS SCREW

Remove hose from "A" port on eccentric motor. Install pressure gauge (0-5000 psi) directly to hose (deadheading).

Sit on seat to test eccentric, start engine, flip vib rocker switch to eccentric motor that is being tested.

Move throttle to full RPM shift forward/ reverse lever to forward and turn vibe switch on. Check hydraulic relief pressure, should be 2500 psi , turn vib off, shift to neutral. Idle engine down for a couple of minutes.



Check other eccentric motor the same way making sure to flip vibe switch for eccentric motor being tested. Make any necessary repairs as needed. Re-attach hydraulic hose to "A" port of eccentric motor, check for any leaks.

Re-Setting Pump By-Pass

Turn set screw (Illustration) in two or three turns. Torque to 12.5ft-lbs (17.5Nm)

Testing Vibration Speed

NOTE: Test vibration with both drums on soft ground. Run engine at full RPM to obtain vibe speed ± 100 - check per below.

To check vibration with a vibrotach, place the vibrotach on the vibrating member surface, record reading when the wire reaches maximum movement. (Vibrotach P/N 37891).

When checking vibration with a strobe light, place a horizontal line on the vibrating member surface. Check with strobe light – record reading when the line reaches minimum movement.

BATTERY

Servicing Battery

⚠WARNING

Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded NEGATIVE (-) battery clamp first and replace it last.

- On regular batteries, check electrolyte level. Fill each cell to bottom of filler neck with distilled water.
- Keep batteries clean by wiping them with a damp cloth. Keep all connections clean and tight. Remove any corrosion, and wash terminals with a solution of 1 part baking soda and 4 parts water. Tighten all connections securely.

NOTE: Coat battery terminals and connectors with a mixture of petroleum jelly and baking soda to retard corrosion.

- Keep battery fully charged, especially during cold weather. If a battery charger is used, turn charger off before connecting charger to battery(ies). Attach POSITIVE (+) battery post. Then attach NEGATIVE (-) battery charger lead to a good ground.

Once a month, check the battery for proper charge of 12.5 volts. Check for proper fluid level. Use distilled water when adding and run 30 minutes to mix. Clean battery, posts and terminals. Disconnect battery cables before charging to avoid damage to the electrical system.

⚠WARNING

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing and cause blindness if splashed into eyes.

Avoid the hazard by:

- Filling batteries in a well-ventilated area.
- Wearing eye protection and rubber gloves.
- Avoiding breathing fumes when electrolyte is added.
- Avoiding spilling or dripping electrolyte.
- **Use proper jump start procedure.**

If you spill acid on yourself:

- Flush your skin with water.
- Apply baking soda or lime to help neutralize the acid.
- Flush your eyes with water for 10 – 15 minutes. Get medical attention immediately.

If acid is swallowed:

- Drink large amounts of water or milk.
- Then drink Milk of Magnesia, beaten eggs, or vegetable oil.
- **Get medical attention immediately.**

In freezing weather, run engine at least 30 minutes to assure thorough mixing after adding water to battery.

If necessary to replace battery(ies), replacements must meet or exceed the recommended capabilities. See Technical Data section for battery specifications.

Battery Installation

⚠WARNING

Always connect grounded cable last. Clean and securely connect each cable to battery terminal of the same polarity. Battery should be securely fastened with properly installed hold-downs.

JUMP STARTING

CAUTION: Do not let vehicles touch. Put emergency brake ON. Set both vehicles in PARK (NEUTRAL if manual transmission) and turn ignition and electrical accessories off.

Attach jumper cables in this order:

1. dead positive block to
2. good positive
3. good negative to
4. engine block or frame of dead vehicle. Start GOOD vehicle and let run a few minutes.Then start DEAD VEHICLE. Remove cables in reverse order 4, 3, 2, 1.

CHARGE SYSTEM

Charge system should be checked every month. With the engine running at full speed, voltage should be 13 – 14 volts. If the charge system fails, check the fuse at the control plate.

FUSE - CONTROLS

The electrical system is protected by a fuse located at the control plate. If the electrical system fails, check the fuse. If the fuse fails frequently, it usually indicates a short circuit or an overload in the electrical system. Refer to wiring diagram and inspect wires.

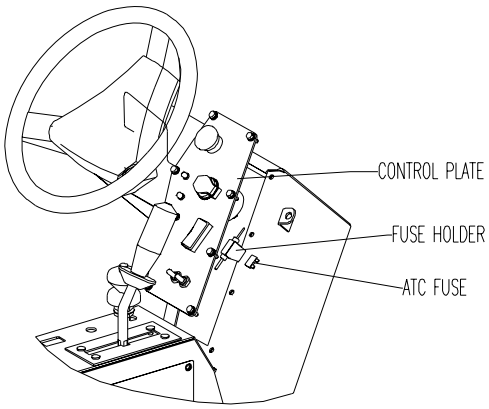
NOTICE: Electrical system is not designed for field add-on electrical options, do not modify the electrical system. Contact your authorized dealer.

FUSE - REPLACEMENT

Turn the engine switch OFF and remove the key before checking or replacing fuses to prevent accidental short-circuiting.

To replace fuse pull the old fuse out of the fuse holder with your finger. Push a new fuse into the fuse holder.

NOTICE: Never use a fuse with a different rating from that specified. Serious damage to the electrical system or fire may result.



Fuses

IGNITION SYSTEM

The Kubota Engine is equipped with an electronic ignition.

When cleaning machine, caution should be used around electrical components. Direct water spray is not good. (Regulator should be covered or protected if direct spraying will happen). Excessive water pressure may also loosen wire connections or start terminals corroding. After cleaning, all terminals should be dried if wet and connections checked for proper seating.

ENGINE MOUNTING

Check weekly-tighten all mounting hardware for proper torque, refer to illustrations in Parts Manual for proper torque.

HARDWARE

Inspect all hardware for tightness. Refer to illustrations in Parts Manual for proper torque.

LOCTITE

Loctite 262 threadlocker is required to prevent hardware from loosening. Refer to exploded diagrams and parts list in Parts Manual for * where loctite is required.

BEACON (OPTION)

The beacon is a self-contained unit with a replaceable flashtube.

Flashtube Replacement

Park roller on level ground. Remove key from keyswitch. Remove lens by unscrewing from beacon, pull worn flashtube up to remove. Plug in new flashtube and replace lens.

⚠WARNING

High voltages exist in electronic beacon lights. Before attempting service on any beacon light, be sure to disconnect the power for at least five minutes to allow the capacitor to discharge. Failure to heed this warning may result in electrical shock and/or personal injury or equipment failure.

NOTE: Most beacon failures can be traced to wiring and battery problems. Before attempting any service on the circuit itself, please be sure to check all connections and wiring to ensure the correct voltage and/or polarity is reaching your beacon.

LIGHTS (OPTION)

The lights are a self-contained unit with replaceable halogen bulbs.

Bulb Replacement

Park roller on level ground. Remove key from keyswitch, pull rubber boot from the back of light, remove screw and replace worn bulb.

NOTE: Most light failures can be traced to wiring and battery problems. Before attempting any service on the circuit itself, please be sure to check all connections and wiring to ensure the correct voltage and/or polarity is reaching your light.

Aligning Lights

1. Park roller on level surface in front of wall or garage door. Park roller square to wall or door about 25 feet away.
2. Loosen the hardware so the light may be adjusted.
3. Aim lights so the center of light beam is about 4 inches off the ground.
4. Tighten hardware so the light position is secure.

STORAGE

- Store the roller on level ground with drums blocked.
- Remove the key. Operation of roller by untrained persons could result in personal injury.
- In freezing climates, drain the water from the water tank, sprinkler tubes and drums.
- During extended storage, drums should be coated with any type of oil or grease to prevent rusting.
- Storage instructions for the engine are stated in the Engine Manual and should be adhered to.

TROUBLESHOOTING

Engine will not start

Forward/Reverse lever not in neutral position.	Place lever in neutral position.
Battery not fully charged.	Charge or replace.
Loose battery or starter cables.	Check and tighten.
Ignition fuse blown.	Replace fuse.
Faulty or improperly adjusted neutral interlock switch.	Make sure neutral switch wires are secured. See neutral interlock adjustment.
Faulty engine starting circuit.	See Kubota Engine Manual for troubleshooting.

Engine will not start but cranks over

Low on fuel or oil.	Add fuel and/or oil.
Fuel filter plugged.	Check fuel filter, replace if necessary.
No contact at seat switch .	Remain seated. Check contacts. Replace seat switch.

Engine starts but does not keep running

No fuel to engine.	Check fuel lines. Drain fuel system.
Water/dirt in fuel.	Check fuel filter for water accumulation or sediment.
Fuel on pump drawing in air.	Check fuel lines or replace.

Roller will not move forward or reverse

Loose or broken forward/reverse linkage.	Readjust linkage or replace worn rod end, cable linkage.
Low hydraulic oil.	Check oil level gauge. Add if required.
Faulty hydraulic pump or drive motor.	Test hydraulic pressure for proper PSI at full test load on drive motors with engine at full RPM.

Unit lacks power moving forward-but OK in reverse or vice versa

Improperly adjusted forward/reverse linkage.	Adjust linkage so that lever travel is the same in either direction from neutral.

Unit lacks power

Engine not properly warmed up.	Idle before operating to achieve operating temperature.
Air cleaner restricted.	Clean or replace.
Low hydraulic oil level.	Add.
Engine RPM too low.	Check throttle linkage for proper actuation.
Plugged hydraulic filter.	Replace.
Valve Clearance incorrect.	See authorized dealer or Kubota Workshop Manual.
Dirty fuel filter.	Replace.
Fuel pump drawing in air.	Check fuel lines or replace.

TROUBLESHOOTING

Unit lacks power

Too much oil in crankcase.	Drain and check.
Faulty hydraulic pump or drive motor.	Test hydraulic pressure for proper PSI at full load on drive motors with engine at full RPM.
	Replace pump if pressure is not in specified range in hydraulic motor drive circuit.
Bearings seized up.	Check drums for resistance.

Oil Consumption

Too much oil in crankcase.	Drain.
Loose oil filter or sending unit.	Tighten.
Loose bolts.	Tighten.

Blue Smoke

Worn valves.	Replace.
Worn cylinder & piston rings.	Replace.
Too much oil in crankcase.	Drain-Fill to proper level.

Overheated

Crankcase oil level low.	Fill to proper level.
Restricted exhaust.	Clean or replace.
Cooling fins dirty.	Clean.

Unit will not steer

Cylinder-leaking.	Replace hydraulic cylinder.
Piston rod bent.	Replace hydraulic cylinder.
Missing hydraulic cylinder pin.	Replace.
Kinked or broken hoses.	Replace.
Low hydraulic fluid.	Add fluid.
Faulty hydraulic pump.	Check hydraulic steering circuit for max. pressure at full engine RPM. Replace or repair by authorized Service Center.

Brakes do not hold properly

Loose or broken wires.	Inspect wires, replace if necessary.
Brakes worn out.	Replace.
	Fill tank & adjust flow.

Asphalt sticks to roller

Insufficient water supply on drums.	Check & clean sprinkler tubes.
	Check & clean water tank.
	Check hoses for kinks or dirt.
	Urethane scrapers not making contact allowing water to leak past. Adjust or replace if necessary.
Rusty or scored drums.	Sand/replace.

MAINTENANCE LOG

Machine Model _____ Date of Purchase _____

Serial Number _____ Engine Serial Number _____

Use this chart to record dates of service and hours on machine.

Maintenance	Date/ Hours	Date/ Hours	Date/ Hours	Date/ Hours	Date/ Hours	Date/ Hours	Date/ Hours
Engine Oil & Filter							
Hydraulic Oil, Filter & Breather							
Engine Coolant							
Air Cleaner							
Fuel/Water Filter & Strainer							
Fan/Alternator Belt							
Grease Fittings							
Battery							
Brakes/E-stop							
Valve Clearance							
Engine RPMs							
Fuel Tank							
Fuel Lines							
Hydraulic Hoses/Connections							
Forward/Reverse							
Neutral Interlock							
Control Cables							
Eccentrics/Eccentric Housing Oil							
Charge System							
Hardware							
ROPS/Seat Belt							
Scrapers							
Beacon							
Lights							
Other							
Other							

Notes:


RIGHT
BUILT
Stone
CONSTRUCTION EQUIPMENT
BRED TOUGH. BORN TO WORK.

CALIFORNIA PROPOSITION 65 WARNING: Operation of this equipment and/or engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.

Stone
CONSTRUCTION EQUIPMENT
BRED TOUGH. BORN TO WORK.

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