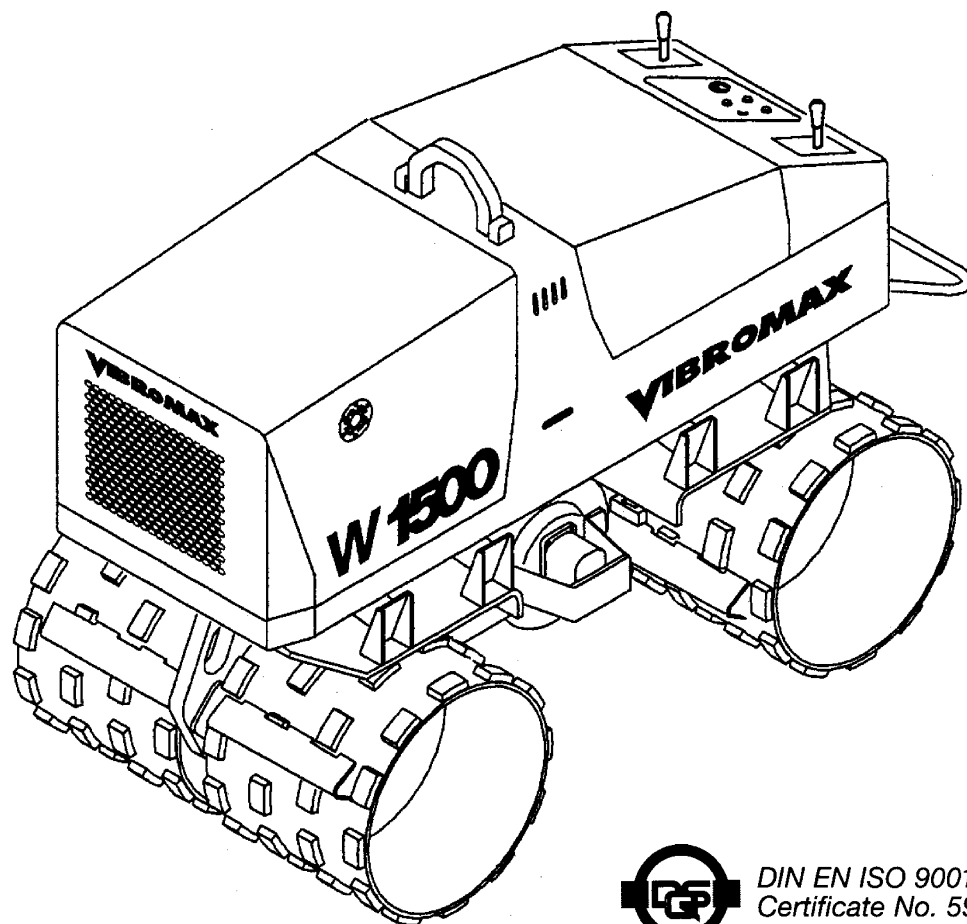




W1500 TRENCH ROLLER

SERVICE MANUAL SM35001

April 2003



DIN EN ISO 9001
Certificate No. 59557-01

Product: Vibromax W1500 Trench Roller Service Repair Workshop Manual SM35001

Full Download: <https://www.arepairmanual.com/downloads/vibromax-w1500-trench-roller-service-repair-workshop-manual-sm35001/>

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Sample of manual. Download All 100 pages at:

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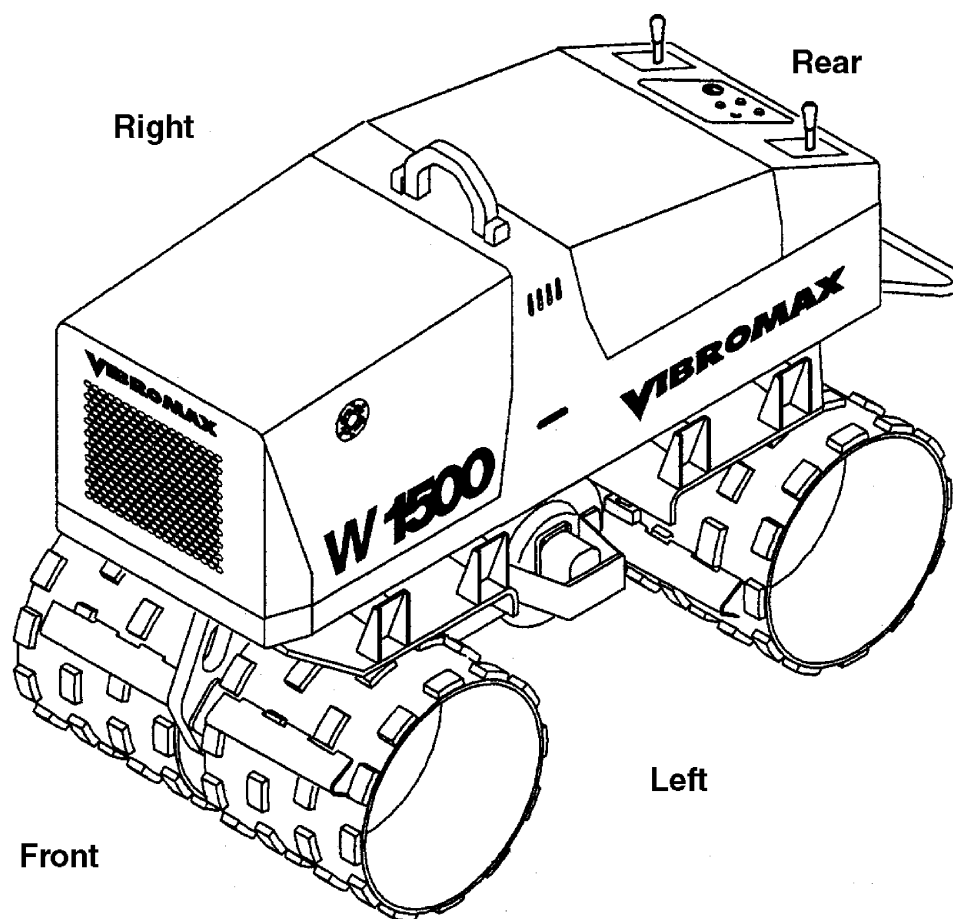
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SECTION ONE

GENERAL INFORMATION



MACHINE DESCRIPTION

The Vibromax Model W1500 Trench Roller is a 1.5 metric ton tandem drum roller with hydrostatic propulsion and a hydrostatic vibratory system. The machine is available with either a 24.8 inch (630 mm) or a 33.5 inch (850 mm) drum.

The machines can be ordered with manual or remote controls.

Power is provided by a 61 cubic inch (1000 cc) Kubota, three cylinder water cooled diesel engine, Model D1005/-BB-EC, rated at 22.5 hp (16.8 kW) at 3000 RPM.

The W1500 trench roller operates at a vibration frequency of 1860 vibrations per minute (31 Hz). The machine is designed with a single vibratory shaft mounted between the front and rear drum.

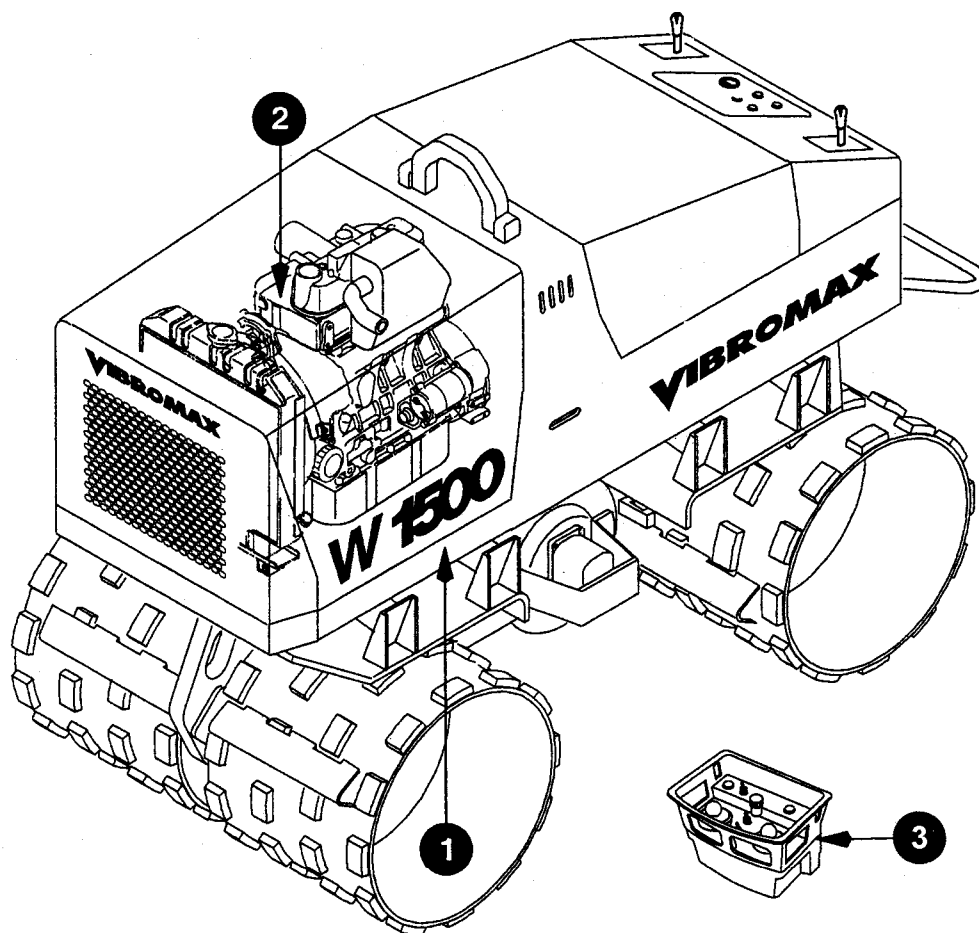
The hydrostatic drive system is designed for two ground speeds. The hydrostatic drive system consists of two gear pumps, left and right drum drive motors with hydraulic brakes, and the system control valves. The left side drums are independently operated from the right side. This feature allows the machine to be steered.

All models include pressure test ports for quick and easy diagnostics of the various hydraulic systems.

Remote controlled units are operated either manually or by using the radio controlled remote system. Remote controlled machines are equipped with an auxiliary battery for the remote controller and a battery charger to insure a fully charged battery is always available.

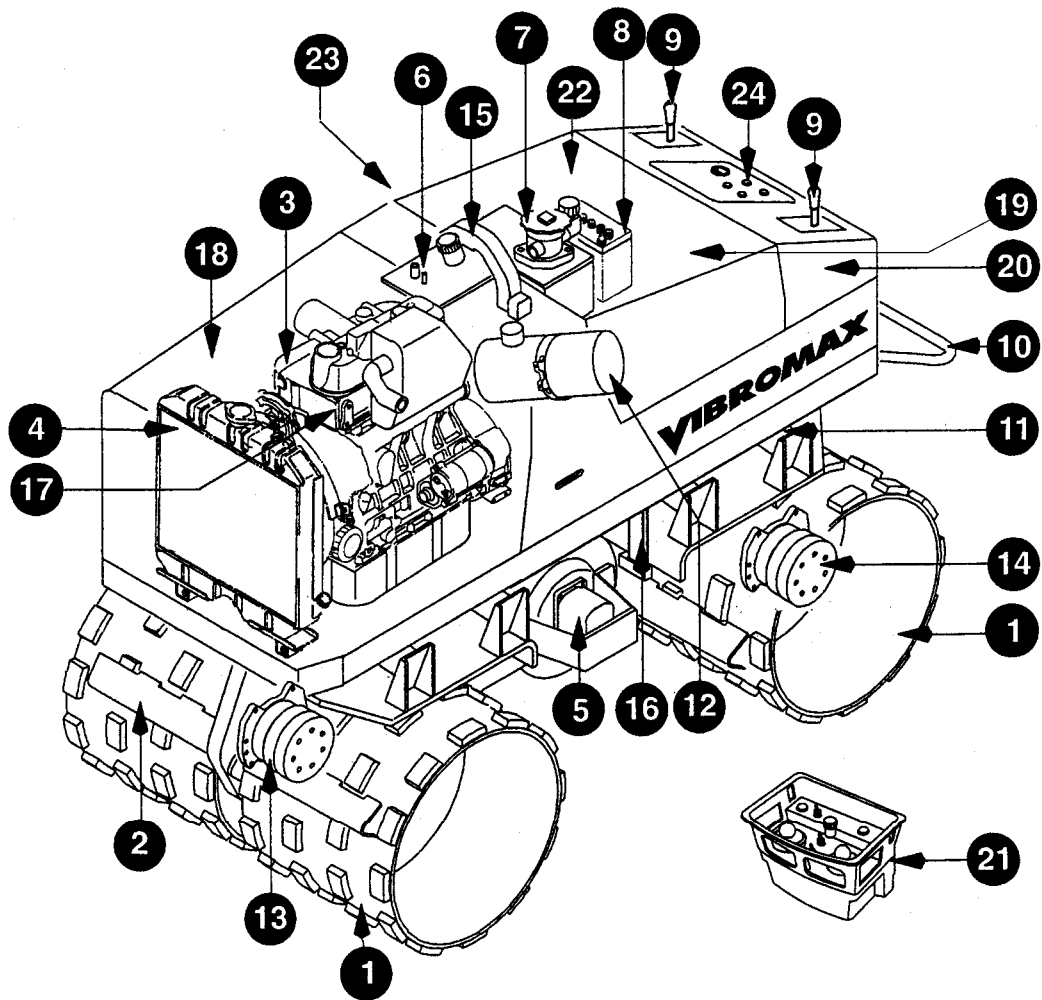
MACHINE SERIAL NUMBERS

Enter the machine and components serial numbers on the following lines. When ordering spare parts or requesting information on the machine, have these numbers available for your dealer.



Make a copy of these numbers and keep them in a safe place. If the machine is stolen, these numbers should be made available to the investigating authorities.

- #1 Make and Model
- #2 Engine ID. Numbers
- #3 Remote Control Serial Number
Remote Control Frequency Number
(numbers located under remote battery)

COMPONENT IDENTIFICATION

1	drum	13	drum motor
2	drum scraper	14	drum motor with brake
3	diesel engine	15	lifting point
4	radiator	16	safety strap
5	vibratory shaft	17	engine oil dipstick
6	fuel tank	18	engine hood
7	hydraulic oil tank	19	rear hood
8	battery	20	control panel cover
9	drive controls	21	remote control transmitter
10	emergency stop bar	22	remote receiver
11	platform buffers	23	remote battery charger
12	air filter	24	control panel

SAFETY

The information in this manual does not replace any safety rules and laws used in your area. Before operating this machine, learn the rules and laws for your area and make sure your machine has the correct equipment according to these rules and regulations. Before starting the engine study the operator's manual.

- Know the location and function of all machine controls.
- Clear the area of other persons before you start the engine.
- Check all controls in a safe area before you operate the machine.
- Understand the limits of the machine.
- Do not try to do too much too fast.
- Keep the machine under control at all times.

SPARK ARRESTER

NOTE: Rules or laws in some areas may require that this machine be equipped with a spark arrester or spark arrester muffler. Check the rules or laws in your area.

PERSONAL



Loose clothing and jewelry can cause an accident. Do not wear loose clothing or jewelry that can catch on controls, etc. Do wear safety shoes, hard hat, heavy gloves, etc. when required for your protection.

Foreign materials and loose objects on the machine can cause accidents and injury. Keep the machine clear at all times.

Know and understand the arrangements for movement of trucks, machines, and persons on your job site. Understand and follow the instructions of flagmen, road signs, or signals.



Check machine controls for proper operation prior to starting the machine.

A fire can cause injury or death. Always have a fire extinguisher on the job site near the machine. Make sure the fire extinguisher is serviced according to the manufacturer's

instructions.

Holes, obstructions, debris, and other work area hazards can cause injury or death. Always walk-around and look for these and other hazards before you operate your machine in a new work area.

Lack of, or incomplete, machine inspection and maintenance can cause accidents. Always follow the instructions in this manual for machine inspection and maintenance.

Always wear the proper ear protection when operating this machine. Permanent hearing loss can result from extended exposure to loud noises.

The following decal is located on the control panel to the right side of the main gauge cluster. Check the decal daily. Clean or replace as needed.



MACHINE OPERATION



Dust, smoke, fog, etc. can decrease your vision and cause an accident. Always stop or slow the machine until you can clearly see your work area and the surrounding traffic.



Sparks from the electrical system or engine exhaust can cause a fire or explosion. Before you operate this machine in an area with flammable dust or vapors, use good ventilation to remove the flammable dust or vapors.

Engine exhaust fumes can cause injury or death. If you operate this machine in an enclosed area, use good ventilation to replace the exhaust fumes with fresh air.

The vibrations from this machine can cause the walls of a trench or high bank to collapse. Make sure the walls of the trench or bank are braced. If you do not follow these instructions, you can cause personal injury. or death to persons working in these areas.



A machine out of control can cause injury or death. You must make a judgement if weather and earth conditions will permit safe operation on a hill, ramp, or rough ground. Adjust machine operation accordingly.

Operating this machine too close to High Voltage electrical lines can cause injury or death. Follow the guide lines listed below.

NOTE: IF THE CLEARANCES IN THE SPECIFICATIONS BELOW ARE LESS THAN THE CLEARANCES GIVEN IN THE RULES AND LAWS OF YOUR AREA, YOU MUST FOLLOW THE RULES AND LAWS OF YOUR AREA!

Table 1: Electrical Safety Rules

Cable Voltage	Minimum Clearance From Cable When Machine is Working	Minimum Clearance From Cable When Transporting Machine
50,000 volts or less	10 feet (3 meters)	4 feet (1.2 meters)
50,000 volts to 345,000 volts	10 feet (3m) plus 1/2 inch (13mm) for every 1000 volts over 50,000 volts	10 feet (3 meters)
345,000 volts to 750,000 volts	10 feet (3m) plus 1/2 inch (13mm) for every 1000 volts over 50,000 volts	16 feet (5 meters)

MAINTENANCE



Engine fuel is flammable and can cause a fire or an explosion. Do not fill the fuel tank or service the fuel system while the machine is running, or near an open flame, welding, burning cigars and cigarettes, etc.

Machine movement without an operator can cause injury or death. If you must service this machine with the engine running, have another person help you and follow the instructions in the machine manuals. Lock the articulation joint and do not leave the machine when the engine is running.

Improper service or repair can cause injury or death. If you do not understand the service procedures for this machine, see your Vibromax dealer.

Flammable cleaning solvents can cause injury or death. Use nonflammable cleaning solvents for cleaning purposes.

Missing shields, guards, or access panels can cause injury or death. Always install all shields, guards, or access panels before you start the engine.

Metal chips or debris can cause eye injury. Wear eye protection when you service this machine. If you use a hammer to drive hardened pins or for other service, use a hammer with a soft face (brass, plastic, etc.).

Unauthorized modifications to cast iron parts can cause injury or death. Welding can cause cast iron parts to break. Do not use welding to repair or attach items to cast iron parts on this machine.

Batteries produce explosive gases. Keep away from flames. Ventilate when charging. Always wear eye protection when working near batteries. Do not wear jewelry or watch bands when working on batteries.

When you install a battery or use a booster battery, connect the negative ground cable last. When you remove a battery or booster battery, disconnect the negative ground cable first.

Unauthorized modifications to this machine can cause injury or death. Never make modifications to this machine without prior written approval from Vibromax.

GENERAL INFORMATION**CLEANING**

Clean all metal parts, except bearings, in mineral spirits or by steam cleaning. Do not use caustic soda when steam cleaning. After cleaning, dry and put oil on all parts. Clean oil passages with compressed air. Clean bearings in kerosene, dry the bearings completely and put oil on the bearings.

INSPECTION

Check all parts as they are disassembled. Replace all parts that have wear or damage. Small scoring or grooves can be removed with a hone or crocus cloth. Complete visual inspection for indications of wear and pitting. Replacement of bad parts will prevent early failure.

BEARINGS

Check bearings for easy movement. If bearings have a loose fit or rough action, replace the bearing. Wash bearings in kerosene and allow to air dry. **DO NOT USE COMPRESSED AIR TO DRY BEARINGS.**

NEEDLE BEARINGS

Before pressing needle bearings into a bore, always remove any metal protrusions in the bore or at the edge of the bore. Before pressing bearing, lubricate the inner and outer diameters as needed.

GEARS

Check and replace all gears that have wear or damage.

OIL SEALS, O-RINGS, & GASKETS

Always install new oil seals, o-rings and gaskets. Put petroleum jelly or the specified oil on seals and o-rings.

SHAFTS

Check all shafts for wear damage. Check the surfaces where bearings and oil seals operate for signs of wear.

SERVICE PARTS

Always install genuine Vibromax service parts. When ordering refer to the parts manual for the correct part numbers. Failure to use genuine Vibromax replacement parts can void your warranty.

LUBRICATION

Use the oils and lubricants specified in the Operator's or Service Manual. Failures due to the use of non specified lubricants are not covered by warranty.

STANDARD TORQUE DATA

Where no special torque data is specified, the following torque figures should be applied. Threads should be lubricated with engine oil or grease. Loctite products also act as a lubricant.

STANDARD TORQUE SPECIFICATIONS +/- 10%

	GRADE 8.8		GRADE 10.9		GRADE 12.9	
SIZE	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5mm	4	5.5	5.5	7.5	6.6	9
6mm	6.6	9	9.2	12.5	11	15
8mm	16.5	22.5	23	31.5	26.5	36
10mm	32	44	45	62	55	75
12mm	57	77.5	81	110	95	130
14mm	88	120	125	170	155	210

STANDARD TORQUE SPECIFICATIONS +/- 10%

	GRADE 8.8		GRADE 10.9		GRADE 12.9	
SIZE	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
16mm	140	190	195	265	236	320
18mm	192	260	269	365	320	435
20mm	273	370	383	520	457	620
22mm	369	500	516	700	619	840
24mm	471	640	665	900	796	1080
27mm	702	950	996	1350	1195	1620
30mm	955	1300	1328	1800	1593	2160

NUTS FOR TUBES AND HOSES

DIAMETER & PITCH	NEWTONS/METER	POUNDS/FOOT
16MM X 1.5	20	14.5
18MM X 1.5	35	26
20MM X 1.5	45	33.2
24MM X 1.5	60	44

FITTINGS, CONNECTIONS AND PLUGS

DIAMETER & PITCH	NEWTONS/METER	POUNDS/FOOT
10MM X 1	20	14.5
12MM X 1.5	35	26
14MM X 1.5	45	33.2
16MM X 1.5	60	44
18MM X 1.5	70	51
22MM X 1.5	100	73
27MM X 2	200	147
33MM X 2	280	207
42MM X 2	380	281

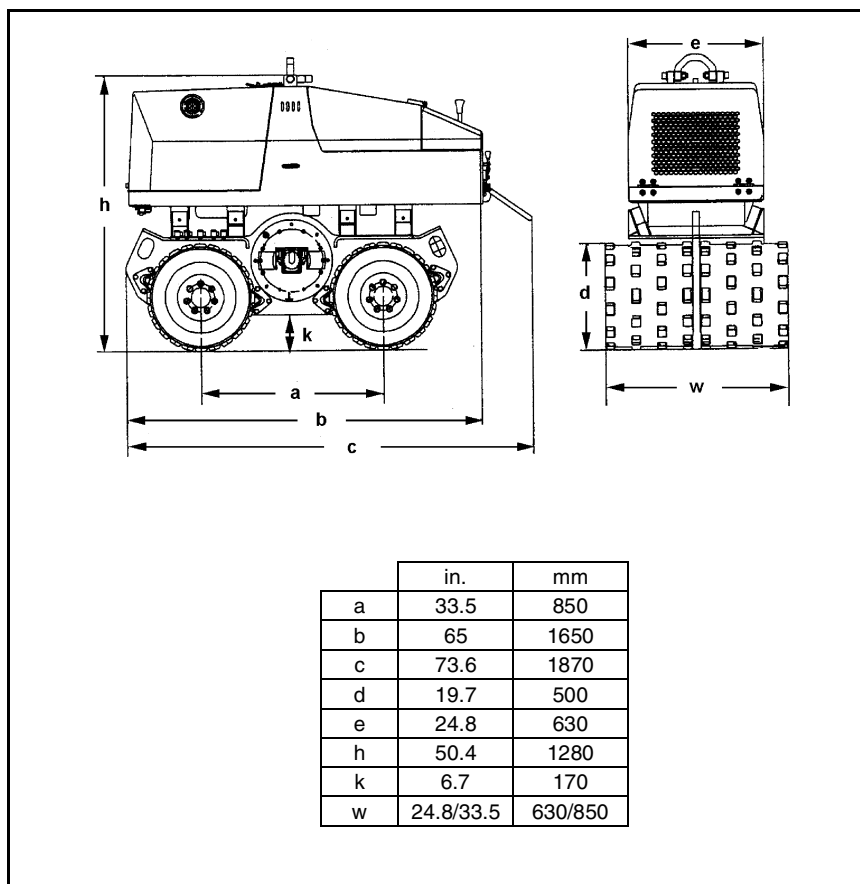
FLANGES

DIAMETER & PITCH	NEWTONS/METER	POUNDS/FOOT
8MM X 1.5	28	21
10MM X 1.5	55	41
12MM X 1.75	90	67
14MM X 2	145	107
16MM X 2	230	170

METRIC/USA CONVERSIONS

METRIC UNITS	CHANGE TO	ARITHMETIC
millimeters (mm)	inches (in)	$\text{mm} \times .03937 = \text{inches}$
bars	pound per sq. in. (psi)	$\text{bar} \times 14.22 = \text{psi}$
kilograms (kg)	pounds (lb)	$\text{kg} \times 2.204 = \text{pounds}$
kilowatts (kW)	horsepower (hp)	$\text{kW} \times 1.341 = \text{horsepower}$
celsius ($^{\circ}\text{C}$)	fahrenheit ($^{\circ}\text{F}$)	$^{\circ}\text{C} \times 1.8 + 32 = ^{\circ}\text{F}$
newton meters (Nm)	pounds feet (lb ft)	$\text{Nm} \times .737 = \text{lb ft}$
newton meters (Nm)	pounds inch (lb in)	$\text{Nm} \times 8.85 = \text{lb in}$
liters (L)	U.S. gallon	$\text{liters} \times .264 = \text{gallons}$
liters (L)	U.S. quarts	$\text{liters} \times 1.056 = \text{quarts}$
cubic centimeters (cm^3)	cubic inches (in^3)	$\text{cm}^3 \times .061 = \text{in}^3$

MACHINE SPECIFICATIONS



FLUID CAPACITY

MACHINE PART	CAPACITY USA (metric)	SPECIFICATIONS
Fuel tank	5.8 gal (22 l)	see diesel fuel
Engine crankcase	4.2 qts(4 l)	engine oil API classification API-CD MIL-L-2104C multigrade engine oil (see oil chart) single grade engine oil (see oil chart)
Hydraulic system	18.5 gal (70 l)	cold weather HLP 46 DIN 51524 hot weather HLP 68 DIN 51524 Mobil DTE 25,26 Shell Tellus OL 46,68 Amoco Rykon HD 46,68 Texaco Rando HD 46,68
Vibration system	0.53 qts (0.5 l)	15W-40
Battery	as required	Distilled water
Engine coolant	1.32 gal (5 l)	50% ethylene glycol and 50% water SAE J814c

ENGINE DATA

Make / Model / Type	D1005-BB-EC Kubota, 3 cylinder, diesel
Cooling	Water
Displacement - cu.in. (cc)	61 (1000)
HP, SAE net (kW)	16.8 (22.5)
Operating speed (rpm)	3000
Air Cleaner	Dry replaceable element
Fuel filter	Inline and Spin-on
Fuel Consumption - gal/hr. (liter/hr.)	0.7 (2.57)
Fuel capacity - gal (liter)	5.8 (22)
Electrical system	12 volt
Battery, amp hours/alternator amps	66/40
Injector pump timing	17 to 19 degrees
Injector pop off pressure	1991 to 2133 PSI
Valve clearance (intake \ exhaust)	.018 \ .022 mm (cold)

OPERATING DATA

Operating Weight , max - lbs (kg)	3307 (1500)
Operating axle load, front - lbs (kg)	1654 (750)
Operating axle load, rear - lbs (kg)	1654 (750)
Frequency - vpm (Hz)	3300(55)
Nominal Amplitude - in. (mm)	.020 (0.51)
Centrifugal force - lbs (kN)	18878 (84)
Compaction depth - inch (cm)	31.5 (80)
Propulsion - front and rear	Infinitely variable hydrostatic
Travel speed - mph (km/hr)	1st gear 0 - 0.7 (0-1.1)
	2nd gear 0 - 1.6 (0-2.5)
Theoretical gradeability, with vibration - %	45
Theoretical gradeability, without vibration - %	55

DIESEL FUEL SPECIFICATION

If fuel is stored for a long time, foreign particles or water can collect in the fuel storage tank. Many engine problems are caused by contaminated fuel. Store fuel outside and keep the fuel as cool as possible. Drain water from the fuel storage tank at regular intervals.

NOTE: Paraffin crystals will start to form in fuel when the fuel temperature falls below the fuel's cloud point. These paraffin crystals will clog the fuel filter and cause the engine to stop or lose power. At ambient temperatures above 32°F (0°C) use #2 diesel fuel. At temperature below 32°F (0°C) use #1 diesel fuel.

Different brands of fuel can exhibit different properties. Make sure that the #2 diesel fuel you use meets the following minimum requirements.

MINIMUM REQUIREMENTS FOR #2 DIESEL FUEL:

Maximum cloud point	 -10°F (-23°C)
Maximum pour point	42°F (6°C) below the lowest ambient air temperature at which the engine must start
Cetane number, min	 40 (45 to 55 in winter or at high altitude)
Max. sulphur content, by weight	 0.50%
Max. water content & sediment by volume	 0.05%
Max. ash content, by weight	 0.01%
Max. carbon residue (10% point)	 0.20%
Distillation temperature @ 90% point	540 to 625°F (282-329°C)
Distillation temperature @ end point	675°F (357°C)
Minimum flash point	 125°F (52°C)
Viscosity at 100°F (38°C)	
Centistokes	2.0 to 4.3
Saybolt Universal Seconds (SUS)	32 to 40
Copper strip test, 3 hours @ 212°F (100°C)	 No 3 ASTM
Minimum API gravity	30

ENGINE OIL SPECIFICATION

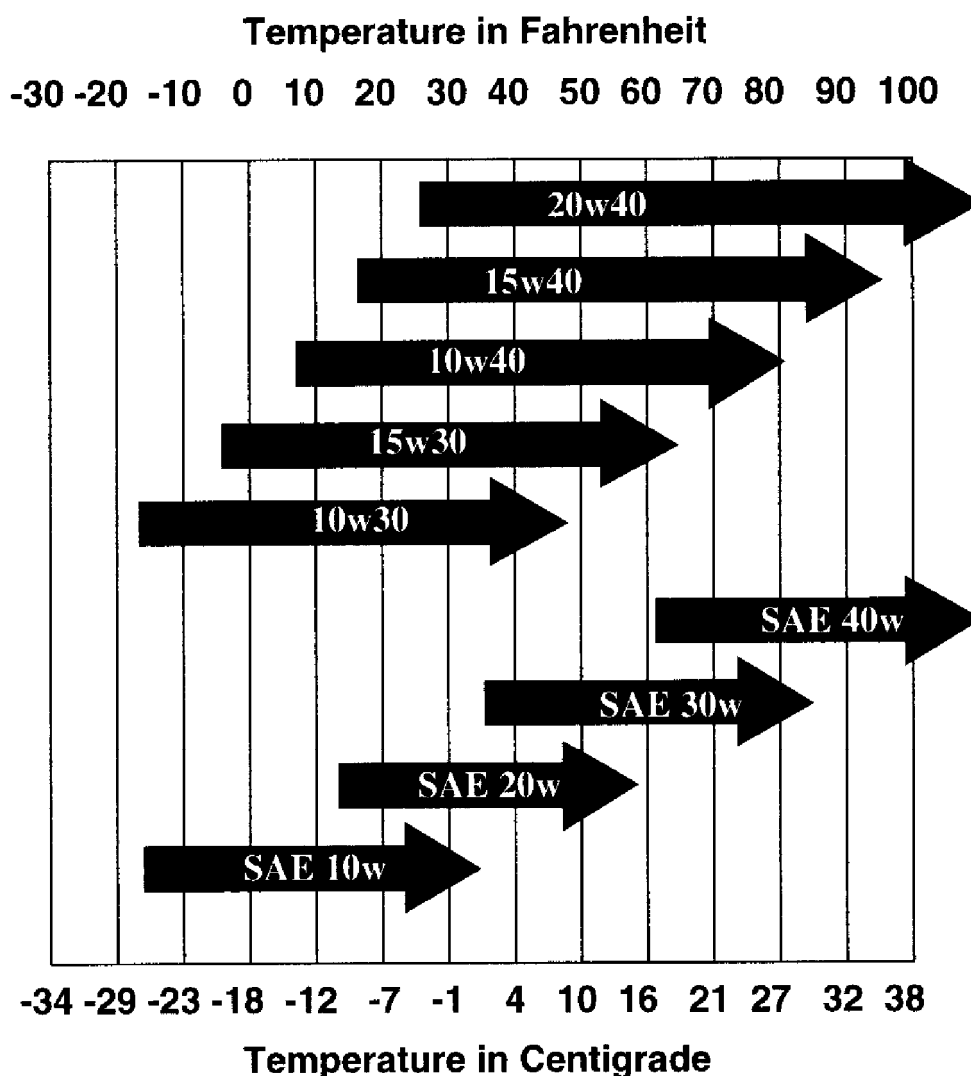
Use multigrade or single grade engine oil with API engine oil service classification "CD".

NOTE: DO NOT use performance additives or other oil additives in your engine crankcase.

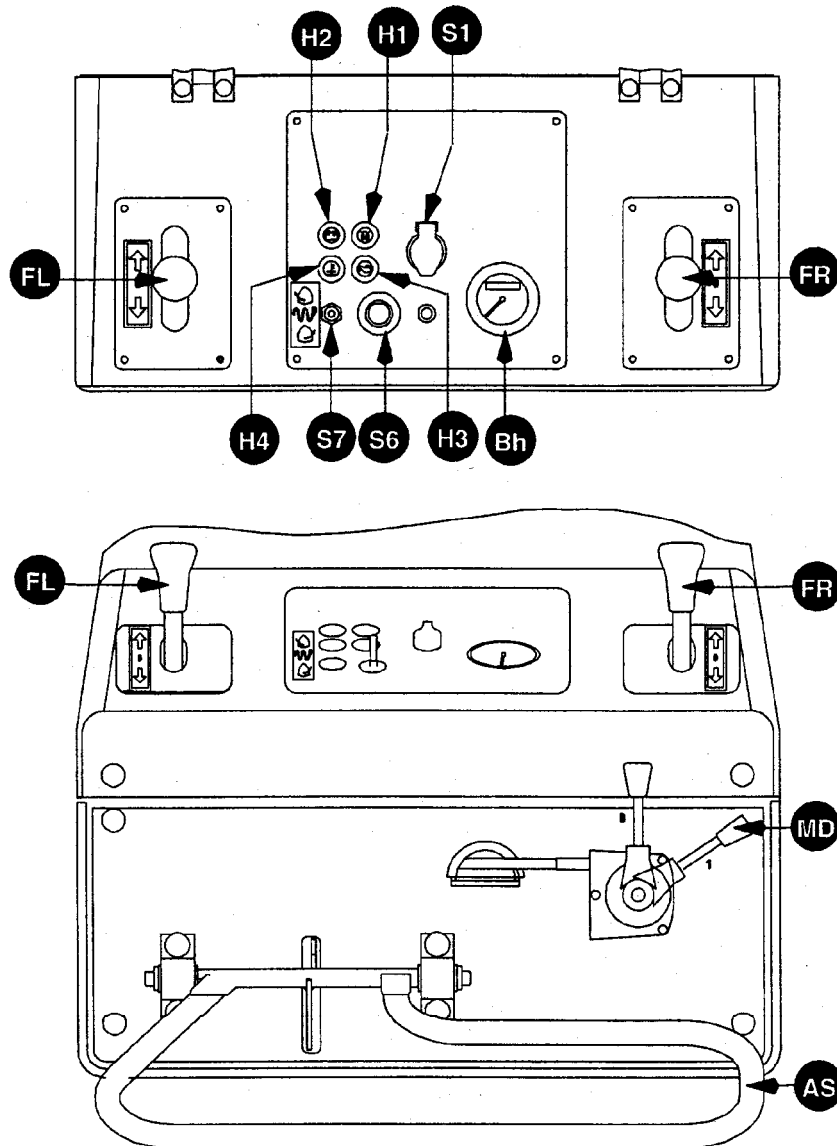
See the chart below for recommended oil viscosity at the various ambient air temperature range.

Engine Oil Viscosity Chart

Ambient Air Temperature Ranges



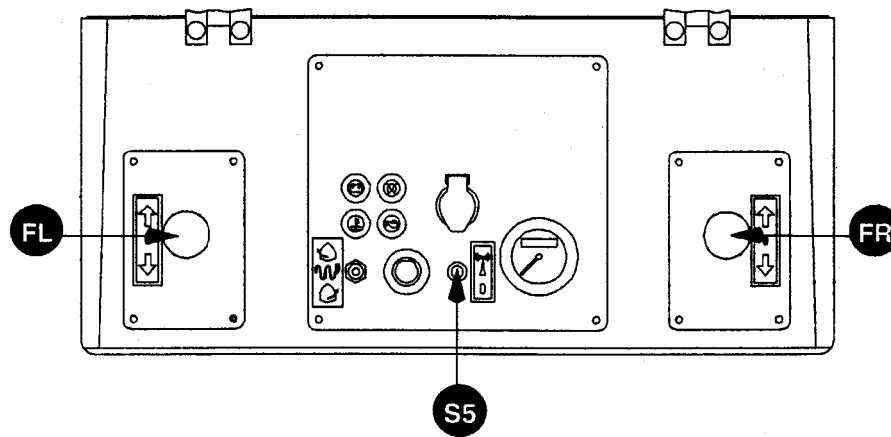
MACHINE CONTROLS, MANUAL



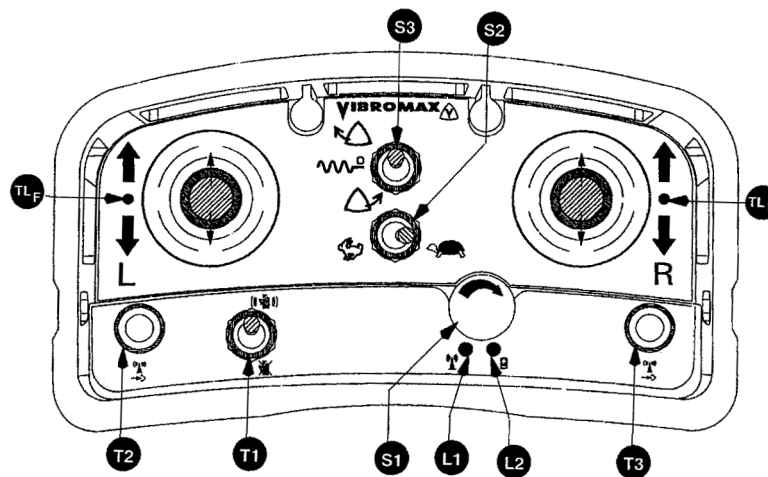
- S1 Key Switch - The switch has four positions; OFF, ON, PREHEAT and START. Place the switch in the ON position to turn on the electrical system and indicator lamps H2 and H3 will illuminate. Place the switch in preheat position and hold until the preheat indicator light (item H1) goes out. Place the switch in the start position. When engine starts, release the switch and it will return to the ON position. To stop the engine, place the switch in the OFF position. Remove the key
- H1 Preheat Indicator Lamp - illuminates for a predetermined length of time when the key switch is placed in the preheat position.
- H2 Alternator Indicator Lamp - illuminates to indicate charge circuit problems.
- H3 Engine Oil Pressure Indicator Lamp - illuminates if engine oil pressure is low.

- H4 Engine Temperature Indicator Lamp - illuminates if engine overheats.
- Bh Hourmeter - tracks operating time when engine is running.
- S6 Travel Speed Switch - turns on high speed travel when pressed in. Vibratory operation is not available in high speed travel.
- S7 Vibration Control Switch - has three positions: Forward/Off/Reverse. Push switch forward for vibratory operation in forward travel and push switch to the rear for vibratory operation in reverse travel. Vibratory operation is not available during high speed travel.
- FR Travel control - right side manual operation.
- FL Travel control - left side manual operation
- MD Engine throttle control.
- AS Emergency stop lever.

MACHINE CONTROLS, WITH REMOTE



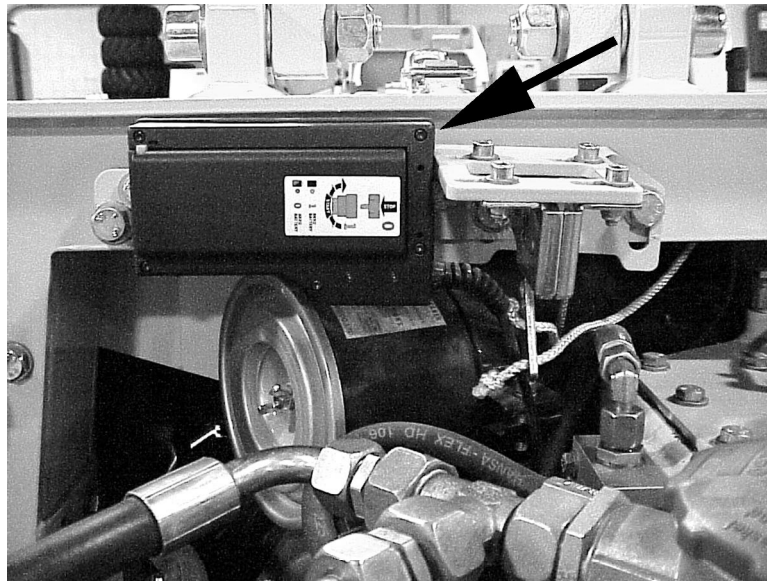
- S5 Remote actuation switch - turns on remote control circuits. If this switch is in the REMOTE mode the machine **can not** be started with the key switch.
- FR Travel control - right side manual operation with remote option.
- FL Travel control - left side manual operation with remote option.



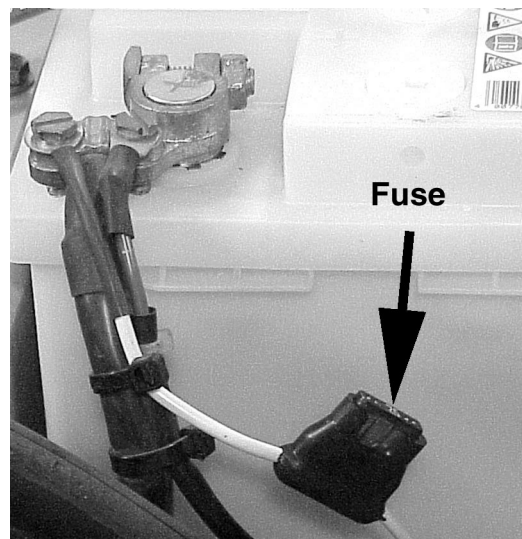
The machine can be controlled by radio remote when equipped with the remote option. Arm the remote with the switch on the machine's instrument panel. **It must be noted that the radio transmitters and receivers are matched units and are not interchangeable.**

- S1 Master Switch - rotate the switch clockwise to arm the remote. Push the switch in to shut off the remote. Removing the red button key will lock the switch. If this switch is left on the battery will drain itself!
- L1 Indicator Light - transmitter
- L2 Indicator Light - remote battery, illuminates when battery has 15 minutes charge remaining.
- T1 Engine Start Switch - after arming the remote with switch S1, toggle switch T1 back then full forward to start the engine. Switch S3 must be OFF.
- T2/T3 Frequency Control Switch - This feature allows changing the frequency in cases of radio interference. Press and hold switch T2 on the left side of the remote control unit then press and release switch T3 on the right side of the unit to change the radio frequency in 25 mhz steps up to about a 434 mhz range.
- TLF Left Travel Control - push the lever forward or reverse to control left side travel.
- TLR Right Travel Control - push the lever forward or reverse to control right side travel.
- S2 Travel Speed Switch - turns on high speed travel when toggled left. Vibratory operation is not available in the high speed travel mode.
- S3 Vibration Control Switch - has three positions: Forward/Off/Reverse. Push switch forward for vibratory operation in forward travel and push switch to the rear for vibratory operation in reverse travel. Vibration will not work if travel switch S2 is in high range.

REMOTE BATTERY CHARGER



The battery charger is located under the rear hood to the left of the hood latch. It is wired direct through a fuse to the machine's chassis battery. The auxiliary remote battery will charge whenever the chassis battery is charged and a fuse is in the fuse holder. A green light on the charger indicates power to the charger. A yellow light will illuminate when the battery is charging. When the battery is fully charged the yellow light will flash.



NOTE: When the machine is to be placed into long term storage it is best to remove the auxiliary battery from the charger and remove the charger fuse shown above.

External 115 volt chargers are available under part# 5731/80211.

External 12 volt chargers are available under part # 5731/80212.

STARTING THE ENGINE

- 1 Complete the daily walk-around inspection.
- 2 Check around the machine to ensure that the area is clear.
- 3 Make sure the drive control is in the neutral position.
- 4 Move the engine throttle to the IDLE position.
- 5 Make sure the vibrator system switches are OFF.
- 6 The parking brake is engaged whenever the engine is off.
- 7 Turn the key switch to the ON position but do not start.
- 8 The following warning lamps on the instrument panel should be on: (replace or repair as needed)
 - a) Alternator warning lamp.
 - b) Engine oil pressure warning lamp.
 - c) You should also be able to hear the electric fuel pump working.
- 9 Turn the key switch in the preheat position. Hold the key until the preheat light on the panel goes out.

NOTE: Do not use starting fluid. Use of starting fluid can damage the engine. The engine pre-heater is designed as a cold weather starting aid.

- 10 Turn the key to the START position. Release the key as soon as the engine begins to run. If the engine starts to run then stops, do not actuate the starter again until the engine is at a full stand still.
- 11 Do not operate the starter motor for more than 30 seconds at one time. After 30 seconds of cranking, the starter motor should be allowed to cool for 3 minutes before re-engaging.
- 12 Do not run the engine at low engine speeds for long periods of time. Prolonged low engine speeds tend to cause more acids and deposits in the engine oil.
- 13 Prior to starting the engine with the remote control it is best to start and run the engine in the manual mode to allow it to warm up to operating temperature.
- 14 To start the engine with the remote controller toggle the radio switch on the instrument panel to radio mode. Stand approximately 20 feet away from the machine and restart the machine with the remote. Doing this allows the remote unit to lock onto a good radio signal.

PARKING BRAKE

The parking brake is a hydraulically released spring applied unit built into the rear drum motors which disengages when the machine starts.

SM35001 SECTION ONE

GENERAL INFORMATION

MACHINE OPERATION

Read the Safety section of this manual and become aware of all operational dangers. Conduct the proper walk-around inspection and make sure your machine is in good working condition.

- 1 Move the engine throttle control to the high idle position. ENGINE HIGH IDLE IS THE NORMAL OPERATING SPEED.
- 2 The Parking Brake will release when the engine is started. The machine position will be held by the propulsion system's closed center control valves.
- 3 Slowly move the drive control lever forward or backward for desired travel direction and speed. To gain more control in the lower speed ranges make sure the two speed button is OFF. Return the drive control to the neutral position to stop travel.
- 4 Make the first and last passes on fresh fill materials with the vibratory system OFF.
- 5 Switch the vibratory system ON only when the machine is in a traveling mode. There are two vibratory modes. One for forward travel, and one for reverse travel. Vibratory operations should be adjusted to travel direction. The machine does not allow vibratory operation in high speed travel mode.
- 6 Do not operate the vibratory system when the machine is stationary. Switch off the vibratory system before coming to a complete stop.
- 7 Do not continue vibratory compaction after the optimum compaction has been achieved. Continued vibratory operation has an adverse affect on compaction results.
- 8 To ensure the best results, test the compaction job using a recognized measuring method.

PARKING

- 1 Drive the machine to level ground. If the machine must be parked on a slope, point the front of the machine uphill and ensure that the machine is blocked with a fixed object.
- 2 Place the drive control in the neutral position.
- 3 Shut off the engine to set the spring actuated parking brake.

TURNING OFF THE ENGINE

NOTE: Before turning off the engine make sure the machine is properly parked.

- 1 Reduce the engine speed to low idle and let the engine idle for approximately 2 minutes.
- 2 If the machine is being run with the remote controller push in the red button on the controller to turn off the engine.

NOTE: It is necessary that the key switch on the machine's instrument panel be shut off.

- 3 Turn off the key switch on the instrument panel. If the key switch is not turned off the hourmeter will continue to run.
- 4 Remove the key from the switch.