

# Vermeer®

2683-001-VERM.Hyd. - NAPA 1551

## RT100 Trencher

### Operator's Manual



RT100\_of\_04  
Serial No. 101  
Order No. 105400U37  
Cabled Assembly Order No. 229894001

## INTRODUCTION

This manual explains the proper operation of your machine. Study and understand these instructions thoroughly before operating or maintaining the machine. Failure to do so could result in personal injury or equipment damage. Consult your Vermeer dealer if you do not understand the instructions in this manual, or need additional information.

The instructions, illustrations, and specifications in this manual are based on the latest information available at time of publication. Your machine may have product improvements and features not yet contained in this manual.

Vermeer Manufacturing Company reserves the right to make changes at any time without notice or obligation.

**Operation instructions are included in the two Operator's Manuals provided with the machine.** The tethered (cabled) manual must remain attached to the machine for ready reference. Store it in the manual storage box when not in use.

**Lubrication and maintenance procedures are in the Maintenance Manual provided with the machine.** Refer to it for all lubrication and maintenance procedures.

Additional copies of the manuals are available from your dealer. Use the reorder number on the front cover to order additional manuals.

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Vermeer Manufacturing Company  
1210 Vermeer Road East, P.O. Box 200  
Pella, Iowa 50219-0200



**NOTE:** Right and left sides are determined when facing machine while standing at operator's control station

## TRADEMARKS

VERMEER and VERMEER Logo are registered trademarks of Vermeer Manufacturing Company.

Honda is a trademark of Honda Motor Co. Ltd.

Kohler is a trademark of Kohler Engine Co.

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## PATENTS

This machine may be covered by one or more of the following patents:

AJ 755,335	US 5,544,055	US 5,904,210	US 6,362,330	US 6,516,899	US 6,752,043
CA D 79,393	US 5,553,497	US 5,944,121	US 6,389,360	US 6,517,733	US 6,755,263
DE 896 11 846	US 5,556,253	US 5,950,942	US 6,390,207	US 6,531,046	US 6,766,669
DE 202 14 859.5	US 5,574,642	US 6,014,996	US 6,406,992	US 6,503,059	US 6,804,903
DE Des. 36 006 65 4	US 5,589,474	US 6,050,350	US 6,408,954	US 6,554,982	US 6,814,164
EP 772,543	US 5,590,041	US 6,109,567	US 6,412,715	US 6,557,651	US 6,833,795
EP 630,522	US 5,607,280	US 6,119,376	US 6,422,495	US 6,577,954	US 6,839,991
EP 885,343	US 5,611,486	US 6,136,932	US 6,435,286	US 6,585,062	US 6,840,471
EP 1,153,194	US 5,657,803	US 6,154,987	US 6,439,218	US 6,588,516	US 6,843,435
GB 2,052,636	US 5,659,985	US 6,161,530	US 6,446,365	US 6,651,755	US 6,845,825
HK 1015859	US 5,687,807	US 6,195,922	US 6,446,899	US 6,659,202	US 6,880,430
RJ 2,158,952	US 5,692,348	US 6,247,544	US 6,454,025	US 6,668,946	US 6,885,644
US Des. 308,682	US 5,692,549	US 6,288,997	US 6,470,976	US 6,684,538	US 6,910,541
US Des. 396,637	US 5,704,142	US 6,308,787	US 6,474,831	US 6,701,647	US 6,928,075
US 4,846,423	US 5,720,354	US 6,315,962	US 6,474,932	US 6,719,069	US 6,948,265
US 5,205,181	US 5,748,279	US 6,338,309	US 6,477,795	US 6,725,579	US 6,975,942
US 5,218,380	US 5,768,811	US 6,357,537	US 6,484,818	US 6,729,050	US 6,978,955
US 5,237,888	US 5,778,091	US 6,360,830	US 6,491,115	US 6,749,029	
US 5,291,964	US 5,819,859	US 6,367,564	US 6,497,296	US 6,751,553	
US 5,308,220	US 5,845,889	US 6,374,928	US 6,511,260	US 6,751,893	
This machine may be covered by one or more of the following licensed patents					
US 4,694,913	US 4,867,205	US 5,148,880			
US 4,858,704	US 4,953,636	US 5,799,740			

(Other U.S. and foreign patents pending.)

# VERMEER NEW INDUSTRIAL EQUIPMENT LIMITED WARRANTY

(EFFECTIVE NOVEMBER 1, 1998)

## WARRANTY PERIOD 12 Months / 1000 Hours

Vermeer Mfg. Co. (hereinafter "Vermeer") warrants each new Industrial product of Vermeer's manufacture to be free from defects in material and workmanship, under normal use and service for one (1) full year after initial purchase/retail sale or 1000 operating hours, whichever occurs first. This Limited Warranty shall apply only to complete machines of Vermeer's manufacture, parts are covered by a separate Limited Warranty.

**EQUIPMENT AND ACCESSORIES NOT OF VERMEER'S MANUFACTURE ARE WARRANTED ONLY TO THE EXTENT OF THE ORIGINAL MANUFACTURER'S WARRANTY AND SUBJECT TO THEIR ALLOWANCE TO VERMEER ONLY IF FOUND TO BE DEFECTIVE BY SUCH MANUFACTURER.**

## **EXTENDED WARRANTY OPTIONS ARE AVAILABLE FOR PURCHASE.**

### **WARRANTY TERMS**

During the Limited Warranty period specified above, any defect in material or workmanship in any warranted item of Vermeer Industrial Equipment not excluded below shall be repaired or replaced at Vermeer's option without charge by any authorized independent Vermeer dealer. The warranty repair or replacement must be made by a Vermeer independent authorized dealer at the dealer's location. Vermeer will pay for replacement parts and such authorized dealer's labor in accordance with Vermeer's labor reimbursement policy. Vermeer reserves the right to supply remanufactured replacement parts as it deems appropriate.

### **RETAIL PURCHASER RESPONSIBILITY:**

This Limited Warranty requires proper maintenance and periodic inspections of the Industrial Equipment as indicated in the Operator's Manual furnished with each new Industrial Equipment. The cost of routine or required maintenance and services is the responsibility of the retail purchaser. The retail purchaser is required to keep documented evidence that these services were performed.

This Vermeer New Industrial Equipment Limited Warranty may be subject to cancellation if the above requirements are not performed.

Vermeer Industrial Equipment with known failed or defective parts must be immediately removed from service.

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## **EXCLUSIONS AND LIMITATIONS**

The warranties contained herein shall **NOT APPLY TO:**

- 1) Any defect which was caused (in Vermeer's sole judgment) by other than normal use and service of the Industrial Equipment, or by any of the following: (i) accident (ii) misuse or negligence (iii) overloading (iv) lack of reasonable and proper maintenance (v) improper repair or installation (vi) unsuitable storage (vii) non-Vermeer approved alteration or modification (viii) natural calamities (ix) vandalism (x) parts or accessories installed on Industrial Equipment which were not manufactured or installed by Vermeer authorized dealers (xi) the elements (xii) collision or other accident.
- 2) Any Industrial Equipment whose identification numbers or marks have been altered or removed or whose hourmeter has been altered or tampered with.
- 3) Any Industrial Equipment which any of the required or recommended periodic inspection or services have been performed using parts not manufactured or supplied by Vermeer or meeting Vermeer Specifications including, but without limitation, engine tune-up parts, engine oil filters, air filters, hydraulic oil filters, and fuel filters.
- 4) New Industrial Equipment delivered to the retail purchaser in which the warranty registration has not been completed and returned to Vermeer within ten (10) days from the date of purchase.
- 5) Any defect which was caused (in Vermeer's sole judgment) by operation of the Industrial Equipment not abiding by standard operating procedures outlined in the Operator's Manual.
- 6) Engine, battery, and tire Limited Warranties and support are the responsibility of the respective product's manufacturer.
- 7) Transportation costs, if any, of transporting to the Vermeer dealer.
- 8) The travel time of the Vermeer dealer's service personnel to make a repair on the retail purchaser's site or other location.
- 9) In no event shall Vermeer's liability exceed the purchase price of the product.
- 10) Vermeer shall not be liable to any person under any circumstances for any incidental or consequential damages (including but not limited to, loss of profits, out of service time) occurring for any reason at any time.
- 11) Diagnostic and overtime labor premiums are not covered under this Limited Warranty Policy.
- 12) Depreciation damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage.

- (13) Accessory systems and electronics not of Vermeer's manufacture are warranted only to the extent of such manufacturer's respective Limited Warranty, if any.
- (14) Downhole toolage is not covered under this warranty.
- (15) Wear items which are listed by product group below:

**ENVIRONMENTAL:** Belts, Chain, Wear Strips, Cutter Wheels, Pockets, Knives, Service Items, Shear Bar/Bedknife, Sprockets, Brake Pads, Bolts/Torqued Parts, Wear Blocks, Hammermill Bearings, Discharge Conveyor Belts, Hoses, Clutches, Clutch Components, Hammers, Teeth, Blades, Oil Filters, Fuel Filters, Screens, Rods, Rotor Plates, Rollers

**TRACK:** Digging Chain, Base Plates, Cups, End Idler, Wear Plates/Track Frames, Flashings, Pins At Pivot Points, Sprockets, Teeth, Boom Wear Items, Track Chain, Conveyor Belts, Plastic Wear Strips, Pivot Rings

**TRENCHLESS:** Fan Belts, Lights On Light Kits, Wear Bars, Rollers, Treading, Valve Seats, Track Guides, Track Chain, Track Sprockets, Drive Chuck, Earth Stakes, Water Hoses, Leaf Chain, Wear Blocks, Clamping Vise Parts, Packing Assemblies, Jaws, Water Swivels, Bad Loufer Parts, Track Pads, Track Idlers, Rod

**RUBBER TIRE:** Bearings, End Rollers, Belts, Pins, Trench Cleaner, Tires, Bucket, Brake Pads, Clutches, Track Sprockets, Sprockets, Chains, Bushings, Bosses, Rubber Shielding, Bucket Teeth, PLOW Blades, Rock Wheel Teeth, Augers, Track Idlers

#### **PARTS WARRANTY**

Parts replaced in the warranty period will receive the balance of the first year New Industrial Equipment Limited Warranty, during the first 120 months or 1000 hours whichever comes first. Replacement parts after the original machine warranty, are warranted to be free from defects of material for ninety (90) days or the part will be repaired or replaced, without labor coverage for removal or installation.

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**EXCLUSIONS OF WARRANTIES:** EXCEPT FOR THE WARRANTIES EXPRESSLY AND SPECIFICALLY MADE HEREIN, VERMEER MAKES NO OTHER WARRANTIES, AND ANY POSSIBLE LIABILITY OF VERMEER HEREUNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. VERMEER RESERVES THE RIGHT TO MODIFY, ALTER AND IMPROVE ANY PRODUCT WITHOUT INCURRING ANY OBLIGATION TO REPLACE ANY PRODUCT PREVIOUSLY SOLD WITH SUCH MODIFICATION. NO PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY, OR TO ASSUME ANY ADDITIONAL OBLIGATION ON VERMEER'S BEHALF.

MANUFACTURED BY:  
VERMEER MANUFACTURING COMPANY  
Pella, Iowa 50219

# Receiving and Delivery Report

- \_\_\_ Check machine for shortages or damage in transit.

## Engine

- \_\_\_ Check oil level of the engine.
- \_\_\_ Check condition of the air cleaner.
- \_\_\_ Check engine for proper operation.

## Hydraulics

- \_\_\_ Check hydraulic fluid level.
- \_\_\_ Check control levers for proper operation.
- \_\_\_ Check all hydraulic components for leaks or damage.

## General

- \_\_\_ Check adjustment of trencher digging chain and auger.
- \_\_\_ Check installation and adjustment of trencher restraint bar.
- \_\_\_ Check installation and condition of all shields.
- \_\_\_ Check machine for proper lubrication.
- \_\_\_ Check condition of all safety signs and decals.
- \_\_\_ Check all phases of operation.
- \_\_\_ Check for loose hardware.
- \_\_\_ Check adjustment and operation of neutral start switches.
- \_\_\_ Check battery condition and terminal connections (if equipped).
- \_\_\_ Check that Operator's Manual is cabled to the machine.

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Receiving and Delivery Report |

- \_\_\_ Check wheel lug nut tightness (60 ft-lb/80 Nm).
- \_\_\_ Check drive wheel tires for proper air pressure:
  - 16 x 6.5 x 8": 28 psi/190 kPa maximum
  - 18 x 9.5 x 8": 12 psi/83 kPa maximum
- \_\_\_ Check nose wheel tire for proper air pressure (40 psi/2.8 bar maximum).
- \_\_\_ Check handgrip operator presence control for proper operation.
- \_\_\_ Check that machine does not move when the ground drive lever is in NEUTRAL and engine is at full throttle.
- \_\_\_ Check that digging chain does not move when digging chain drive lever is in NEUTRAL and engine is at full throttle.

## Review of Operation

*Review and demonstrate with the customer the various aspects of tractor operation:*

- \_\_\_ overall explanation of how the machine works
- \_\_\_ overall explanation of how attachments work
- \_\_\_ tractor and attachment safety
- \_\_\_ preparing the machine and attachments for operation

## DEALER/CUSTOMER INFORMATION

dealer \_\_\_\_\_  
address \_\_\_\_\_  
city \_\_\_\_\_  
state / province \_\_\_\_\_  
zip / postal code \_\_\_\_\_  
country \_\_\_\_\_

owner \_\_\_\_\_  
address \_\_\_\_\_  
city \_\_\_\_\_  
state / province \_\_\_\_\_  
zip / postal code \_\_\_\_\_  
country \_\_\_\_\_

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Receiving and Delivery Report III

### MACHINE IDENTIFICATION NUMBERS - RECORD

Machine Model Number \_\_\_\_\_  
Machine Serial Number \_\_\_\_\_

### KOHLER ENGINE IDENTIFICATION NUMBERS - RECORD

Engine Model Number \_\_\_\_\_  
Engine Serial Number \_\_\_\_\_



## HONDA ENGINE IDENTIFICATION NUMBERS - RECORD

Engine Model Number \_\_\_\_\_

Engine Serial Number \_\_\_\_\_



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## Section 10: Safety Messages

General safety messages appear in this Safety Messages section. Specific safety messages are located in appropriate sections of the manual where a potential hazard may occur if the instructions or procedures are not followed.

A signal word "DANGER", "WARNING", or "CAUTION" is used with the safety alert symbol.

Safety signs with signal word "DANGER", "WARNING", or "CAUTION" are located near specific hazards.

**DANGER** Imminent hazards which, if not avoided, will result in serious personal injury or death.

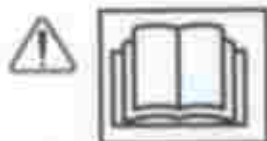
**WARNING** Potential hazards or unsafe practices which, if not avoided, could result in serious personal injury or death.

**CAUTION** Potential hazards or unsafe practices which, if not avoided, could result in minor personal injury or product or property damage.

### SAFETY SYMBOL EXPLANATION



This is the safety alert symbol. This symbol is used in combination with an exclamation mark or other symbols to alert you to the potential for bodily injury or death.



**WARNING:** Read Operator's Manual and safety signs before operating machine.

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Safety Messages 10-1



**WARNING:** Check machine before operating. Machine must be in good operating condition and all safety equipment installed and functioning properly.



**WARNING:** Wear personal protective equipment. Dress properly.



**WARNING:** Keep spectators away.



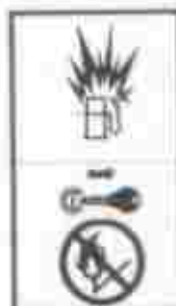
**WARNING:** Engine exhaust can asphyxiate. Operate only outdoors.



**WARNING:** Use Shutdown Procedure before servicing, cleaning, repairing or transporting machine. Refer to "Shutdown Procedure," page 22-1, for instructions.



**WARNING:** Pressurized fluid can penetrate body tissue and result in serious injury or death. Leaks can be invisible. Keep away from any suspected leak. Relieve pressure in the hydraulic system before searching for leaks, disconnecting hoses, or performing any other work on the system. If you must pressurize the system to find a suspected leak, use an object such as a piece of wood or cardboard rather than your hands. When loosening a fitting where some residual pressure may exist, slowly loosen the fitting until oil begins to leak. Wait for leaking to stop before disconnecting the fitting. Fluid injected under the skin must be removed immediately by a surgeon familiar with this type of injury.



**WARNING:** Fuel and fumes can explode and burn.

Shut off engine before refueling. No flames. No smoking.



**WARNING:** Failure to follow any of the preceding safety instructions or those that follow within this manual, could result in serious injury or death. This machine is to be used only for those purposes for which it was intended as explained in this Operator's Manual.

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# Section 20: Controls

## MACHINE CONTROLS

### (1) Hydraulic Wheel Lock Lever

Rotate counterclockwise ..... engage hydraulic lock

Rotate clockwise ..... disengage hydraulic lock

### (2) Trencher Lift Lever (Green)

Push ..... lower trencher boom

Pull ..... raise trencher boom

**NOTE:** Lever will spring return to NEUTRAL when released.

### (3) Propel Lever (Orange)

Push ..... variable speed forward

Center ..... NEUTRAL

Pull ..... variable speed backward

**NOTE:** Lever must be in NEUTRAL before engine will start.



### (4) Digging Chain Drive Lever (Yellow)

Push ..... engage digging chain

Center (NEUTRAL) ..... stop digging chain

Pull ..... momentarily reverse chain

**NOTE:** Lever will spring return to NEUTRAL from reverse position.

**NOTE:** Lever must be in NEUTRAL before engine will start.

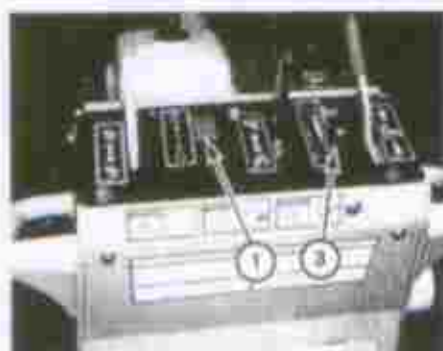


## ENGINE CONTROLS - KOHLER

### (1) On/Off Switch

Push down top of switch ..... engine ON

Push down bottom of switch ..... engine OFF



### (2) Fuel Shutoff Valve

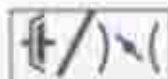
Rotate clockwise ..... open valve

Rotate counterclockwise ..... close valve

### (3) Clutch/Throttle

Push ..... engage clutch/increase engine RPM

Pull ..... disengage clutch/decrease engine RPM



**NOTE:** Centrifugal clutch engages when engine speed is increased above minimum speed.

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Controls 20-3

### Choke

- (4) Slide lever forward when starting a cold engine. Gradually slide lever rearward after the engine starts and warms up.



### (5) Ignition Switch (Electric Start Option)

OFF ..... shuts off engine and electrical system

RUN ..... turns on electrical system

START ..... starts engine; returns to RUN when released

**NOTE:** ON/OFF Switch on machine dash must be ON to start.



(6) **Hoist Start**

Pull rope to crank engine for starting. On/Off Switch on machine dash must be ON to start.



## ENGINE CONTROLS - HONDA

(1) **On/Off Switch**

Push down top of switch..... engine ON

Push down bottom of switch..... engine OFF

(2) **Fuel Shutoff Valve**

Slide lever right..... open valve

Slide lever left..... close valve

(3) **Clutch/Throttle**

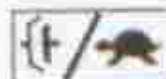
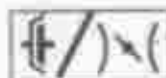
Push..... engage clutch/increase engine RPM

Pull..... disengage clutch/decrease engine RPM

**NOTE:** Centrifugal clutch engages when engine speed is increased above minimum speed.

(4) **Choke**

Slide lever left when starting a cold engine. Gradually slide lever right after the engine starts and warms up



(5) Ignition Switch (Electric Start Option)

OFF ..... shuts off engine and electrical system.

ON ..... turns on electrical system.

START ..... starts engine; returns to RUN when released.  
**NOTE:** ON/OFF Switch on machine dash must be ON to start.



(6) Rope Start

Pull rope to crank engine for starting. On/OFF Switch on machine dash must be ON to start.



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# Section 21: Starting Procedure

## STARTING THE ENGINE

- Step 1: Place *Propel Lever* in NEUTRAL.
- Step 2: Place *Digging Chain Drive Lever* in NEUTRAL.
- Step 3: Open *Fuel Shut-off Valve*.
- Step 4: Choke cold engine.
- Step 5: Place *Throttle* at 1/4.
- Step 6: Push *On/Off Switch* to ON.
- Step 7: Pull on *Rope Start handle*, or turn *ignition key* to START position to start machine.

**IMPORTANT:** Do not crank engine continuously for more than 10 seconds at a time. If the engine does not start, allow a 60-second cool-down period between starting attempts. Failure to follow these guidelines can burn out the starter motor.

Step 8: As soon as engine starts, reduce throttle to idle to prevent clutch from engaging and allow engine to warm up without load from hydraulic system.

**IMPORTANT:** If engine fails to start in three attempts, turn switch to OFF and check for fuel blockage or problems with ignition system.

Step 9: As the engine warms up, gradually move *Clutch Lever* to the OPEN position.

Do not operate engine under load until engine has warmed up.

For cold weather starting, refer to *Engine Cold Weather Starting* in this section.

## AFTER ENGINE STARTS

- Check operation of *Operator Presence* controls. The engine must stop if the *Operator Presence Lever* is released while the *Ground Drive Lever* or *Digging Chain Drive Lever* is engaged.

**NOTE:** This system is intended to help you operate the machine safely and must be maintained in good, functional condition.

- Check that machine does not move with *Propel Lever* in NEUTRAL.
- Check that trencher digging chain does not turn with *Digging Chain Drive Control* in NEUTRAL.

## COLD WEATHER STARTING

### Engine

Before operating in cold weather, refer to the *Engine Operation Manual* for recommended engine oil, fuel, and starting procedures.

### Hydraulic Fluid

Refer to "Lubricants," *Specifications* section in the *Maintenance Manual* for recommended hydraulic fluids.

When using ISO 68 hydraulic fluid below -5°C (+23°F):

- Warm up engine.
- Gradually increase engine RPM to engage clutch and hydraulic system, and allow hydraulic oil to warm up for 30 minutes.

**NOTE:** Reduce engine speed if hydraulic pump whines. Pump noise may indicate lack of oil which can damage the pump.

For frequent starts below 18°F (-7°C), consult your Vermeer dealer.

**IMPORTANT:** Do not spray starting fluid into the air cleaner. Engine damage can result.

## JUMP-STARTING (ELECTRIC START OPTION)

### Avoid Battery Explosion



**WARNING:** Battery fumes are flammable and can explode. Keep all burning materials away from battery. Battery explosion can blind. Acid can blind and burn. Tools and cable clamps can make sparks.

Do not smoke. Shield eyes and face. Read instructions.

Do not jump-start or charge a battery that is frozen or low on electrolyte.

Avoid explosion hazard. If equipped with battery caps, they must be in place and tight.

**IMPORTANT:** Use only a 12-volt system for jump-starting. Do not allow vehicle used to jump-start to be in contact with the disabled machine. Vehicles in contact have a ground connection which allows a spark to occur at the battery when the positive jumper cable is connected or removed. If equipped with battery caps, they must be in place and tight to reduce risk of battery explosion.

### Avoid Battery Burns

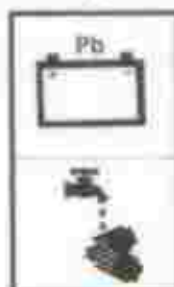
Battery contains sulfuric acid which can cause severe burns. Avoid contact with eyes, skin, and clothing.

In case of acid contact:

**External:** Flush with plenty of water. If eyes have been exposed, flush with water for 15 minutes and get prompt medical attention.

**Internal:** Drink large quantities of water or milk, follow with milk of magnesia, benton egg, or vegetable oil. Call a physician immediately.

## Jump-Starting Procedure



**WARNING:** Battery pool, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.

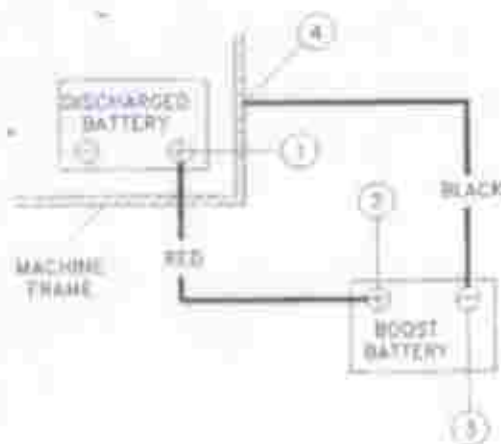
Wash hands after handling.

- Step 1: Turn ignition switch to OFF and open battery access door.
- Step 2: Connect jumper cables in the following order:
- Red to discharged battery POSITIVE (+) terminal (1).
  - Red to boost battery POSITIVE (+) terminal (2).
  - Black to boost battery NEGATIVE (-) terminal (3).
  - Black to frame (4) of machine with the discharged battery. Make connection away from battery.

**NOTE:** To avoid sparks near battery, disconnect black jumper cable at point (4) before adjusting red cable at point (1).

Step 3: Start engine.

Step 4: Remove cables in REVERSE order and install covers over cable clamps. Close battery access door.



## Section 22: Shutdown Procedure

**IMPORTANT:** For your safety and the safety of others, use shutdown procedure before working on the machine for any reason, including servicing, cleaning, or inspecting the machine.

A variation of this procedure may be used if so instructed within this manual or if an emergency requires it.

Step 1: Place *Propel Lever* in NEUTRAL.

Step 2: Place *Digging Chain Drive Lever* in NEUTRAL.

Step 3: Reduce engine speed to idle.

Step 4: Push *On/Off Switch* to OFF to shut off engine.

Step 5: Shut off fuel valves to prevent flooding of the carburetor.

Step 6: If equipped, turn ignition key to OFF and remote key (electric start optional).

**NOTE:** If shutting down on a slope, turn machine to face across the slope to prevent machine from creeping away from the parked position.

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# Section 30: Transporting the Machine

## DRIVING THE MACHINE



**WARNING:** Rollover can crush.

Do not allow anyone to ride on machine.



**WARNING:** Runover can crush.

Keep feet away from wheels.

Step 1: Follow *Starting Procedure*, page 23-1.

Step 2: Increase engine RPM to engage clutch.

Step 3: Fully raise trencher boom.



**WARNING:** Rollover can crush. Avoid situations where rollover can occur.

Step 4: Use *Hydraulic Wheel Lock Lever* to select:

**Unlocked (Disengaged)**

- easier maneuverability when driving over level ground.

**Locked (Engaged)**

- used to aid in traction when driving over rough or sloping terrain.
- used to aid in traction when driving up and down trailer ramps.
- used during trenching at all times to provide necessary traction.

Step 5: Set throttle to desired engine speed.

Step 6: Pull up either red *Operator Presence Lever*.

**NOTE:** Machine will shut off when the *Propel Lever* is moved out of NEUTRAL if either *Operator Presence Lever* is not engaged.



**DANGER:** Never move machine with digging chain engaged. Contact with moving digging chain will result in death or serious injury.

Step 7: Use *Propel Lever* to move machine.

**IMPORTANT:** Until the operator has become familiar with the controls and understands the capability of the machine, use a slower ground speed to move machine.

## Steering the Machine

- Step 1: Disengage *Hydraulic Wheel Lock Lever*.
- Step 2: Push handlebars down to raise nose wheel and swing handlebars to turn the machine in the desired direction.

## TRAILERING THE MACHINE

### Loading



**WARNING:** Machine may slide down loading ramps or off trailer deck. Serious injury or death may result. Do not load onto slick trailer surfaces.

- Step 1: Ensure gross weight of machine with attachments is within the gross weight limits of the trailer and the towing vehicle. Load machine on a level surface with trailer attached to towing vehicle.
- Step 2: Follow *Steering Procedure*, page 21-1.
- Step 3: Position machine in-line with the trailer ramps.
- Step 4: Engage side lock to aid in traction when driving up ramps and to prevent nose wheel and trencher boom from suddenly swinging sideways if starting or stopping abruptly.
- Step 5: Set throttle to half speed. Use *Propel Lever* to move machine.

- Step 6: Drive machine squarely onto trailer.
- Step 7: Stop machine when tie-down position is reached. The tie-down position distributes weight on the trailer as recommended by the trailer manufacturer.
- Step 8: Shut off engine.
- Step 9: Turn fuel shutoff to OFF.

**NOTE:** If fuel is not shut off while trailering, air turbulence around engine can draw fuel into carburetor and cause engine flooding. In extreme cases, fuel can get into engine crankcase oil, which can cause engine wear or damage.

- Step 10: Fasten machine to the trailer using tie-downs (1) provided on the front and rear of machine.



### Unloading

- Step 1: To unload machine, place trailer on a level surface.
- Step 2: Remove chains.
- Step 3: Open fuel shutoff valve.
- Step 4: Start engine.
- Step 5: Set *Throttle* to half speed.
- Step 6: Engage *Hydraulic Wheel Lock Lever* to aid in traction when driving off trailer and to prevent nose wheel and trencher boom from suddenly swinging sideways if starting or stopping abruptly.
- Step 7: Use *Propel Lever* to move machine off the trailer.

## Lifting



**WARNING:** Never lift machine over personnel. The load may fall or shift, crushing anyone beneath it.

- Step 1: Follow *Shutdown Procedure*, page 22-1.
- Step 2: Attach lifting chains or straps to handlebar lifting points (1) and front tie-down points (2). Ensure machine weight is evenly distributed.
- NOTE:** Minimum required working load limit per sling leg is 1000 lb (450 kg). Minimum sling leg length is 6 ft (2 m).
- Step 3: Use suitable equipment to lift and lower machine onto the transport vehicle.
- Step 4: Fasten machine to transport vehicle using tie-downs.
- Step 5: If desired, attach optional lift bracket (PIN RT100130) (3) using four bolts (4), two on each side.



RT100 Trencher

L-01 L-04



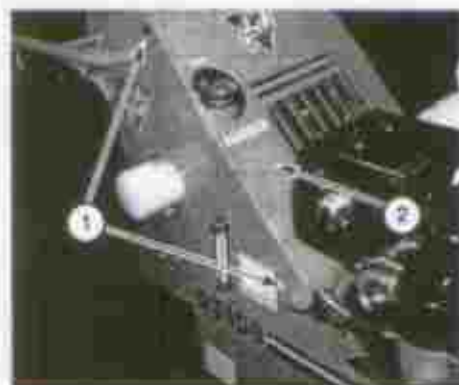
Transporting the Machine 30-5

## Emergency Towing

The machine can be towed slowly a short distance by opening the tow valve (3), allowing hydraulic fluid to bypass the pump.

**NOTE:** Chock wheels to prevent machine from moving when opening bypass valve with machine on a slope.

- Step 1: Remove four bolts (1) and shield (2).



- Step 2: Turn valve (3) counterclockwise two revolutions. The valve has a hole so that a rod can be used to turn it.
- Step 3: Attach 1/4" tow chain to front or rear tie-down points (4), and tow machine to transport vehicle.
- Step 4: After towing, tighten tow valve; torque to 7-10 ft-lb (9.5-13.6 Nm).
- Step 5: Install shield (2) and bolts (1) before placing machine back into service.



# Section 40: Preparing Machine and Work Area

## OPERATOR QUALIFICATIONS



**WARNING:** Read Operator's Manual and safety signs before operating.

Allow only responsible, properly instructed individuals to operate machine.

Become familiar with the controls, operation and use of the machine under the supervision of a trained and experienced operator.

The operator must be familiar with the workplace's safety rules and regulations, and must be mentally and physically capable of operating the machine safely.

## OPERATOR PRESENCE SWITCH - CHECK

The Operator Presence system uses two red levers below the handlebars to detect the presence of an operator. The operator must pull up these levers for the ground drive or attachment drive to be operated.

If the operator releases the levers while the ground drive or attachment drive is engaged, the engine will stop. The ground drive and attachment drive controls must be returned to NEUTRAL before restarting the engine.

The Operator Presence system is intended for your safety and must be maintained in good functional condition. Contact your Vermeer dealer if it does not function properly.

## PERSONAL PROTECTION



**WARNING:** Wear personal protective equipment. Wear close-fitting clothing and confine long hair. Avoid jewelry, such as rings, wristwatches, necklaces, or bracelets.

Operating the machine will require you to wear protective equipment. You should always wear a hard hat, safety shoes, hearing protectors, and eye protection. If working near traffic, wear reflective clothing.

Hearing protection is recommended when operating the machine. Hearing protection devices provide differing levels of sound reduction. It is important to select a device that is adequate and appropriate for your specific work environment. Actual sound levels may vary widely, depending on your working conditions. To determine the level of hearing protection your work environment requires, enlist the help of your local environmental noise specialist.

Eye protection must consist of wraparound safety glasses or goggles.

Other workers in the immediate area must also wear hard hats, hearing, and eye protection.

Wear close-fitting clothing and confine long hair.

Avoid wearing jewelry, such as rings, wristwatches, necklaces, or bracelets.

## SOUND AND VIBRATION LEVELS

Sound pressure and sound power levels were determined according to test procedures specified in ISO 3744 and ISO 6394.

Equivalent Continuous A-Weighted Sound Pressure

at Operator's Ear ..... Kohler CH15 and Honda:  $L_{Aeq} = 91$  dB(A)

..... Kohler CH13:  $L_{Aeq} = 92$  dB(A)

Guaranteed Sound Power Level as determined by

EU Directive 2000/14/EC ..... Kohler:  $L_{WA} = 102$  dB(A)

..... Honda:  $L_{WA} = 104$  dB(A)

Hand/arm vibration exposure has been measured according to test procedures specified in ISO 5349.

Hand/arm vibration .....  $13.4 \text{ m/s}^2$  (Z-direction)

**NOTE:** The stated sound levels are representative for a given operating condition. Operating conditions may vary at each job site. The actual sound levels for your application and operating conditions may be different.



### PREPARE THE AREA



**WARNING:** Keep spectators away.

### UNDERGROUND UTILITY CONTACT



**WARNING:** Electricity or gas explosion can kill. Laser light in cut cable can cause eye damage.

Locate utilities before trenching. Call 811 or 1-888-258-0808 (U.S. or Canada) or local utility companies or national regulating authority.

Before you start any digging project, do not forget to call the local One-Call system in your area and any utility company that does not subscribe to the One-Call system. For areas not represented by One-Call Systems International, contact the appropriate utility companies or national regulating authority to locate and mark the underground installations. If you do not call, you may have an accident or suffer injuries; cause interruption of services; damage the environment; or, experience job delays.

The One-Call representative will notify participating utility companies of your proposed digging activities. If you are in the U.S. or Canada, and do not know the number for the local One-Call representative in your area, you can dial 811 or the North American One-Call number 1-888-358-0808 for this information. Utilities will then mark their underground facilities by using the following international marking codes:

Red	Electric	Green/Brown	Sewer
Yellow	Gas, Oil or Petroleum	White	Proposed Excavation
Orange	Communication, Telephone, TV	Pink	Surveying
Blue	Potable Water		

OSHA CFR 29 1926.651 requires that the estimated location of underground utilities be determined before beginning the excavation or underground drilling operation. When the actual excavation or bore approaches an estimated utility location, the exact location of the underground installation must be determined by a safe, acceptable and dependable method. If the utility cannot be precisely located, it must be shut off by the utility company.

#### Look for Evidence of Underground Placement

Visually check for:

- notices of underground placements
- manhole covers
- drop boxes
- recent trenching activity

#### Striking a Utility Electricity



**WARNING:** Electric shock can kill. If strike occurs, stay on machine. Have someone who is clear of the area contact the utility company to shut off electrical power. Do not allow anyone to approach the machine.

Some circuit breakers automatically reset. Do not assume power has been permanently disconnected until you confirm that the utility company has locked out power to that line.

#### Gas



**DANGER:** Gas explosion can kill.  
If you strike a gas line, shut off engine and evacuate area immediately. Contact utility company and do not return until the utility company gives permission to do so.

If you strike a gas line, shut off engine and evacuate area immediately. Contact utility company and do not return until the utility company gives permission to do so.

#### Fiber Optic



**WARNING:** Laser light may damage eyes. Do not look into the end. Fiber optic cables carry laser light which may damage your eyes. If you are not sure what kind of cable it is, do not look into the end. Contact appropriate utility company for assistance.

Do not look into the end. Fiber optic cables carry laser light which may damage your eyes.  
If you are not sure what kind of cable it is, do not look into the end.

Contact appropriate utility company for assistance.

## Work Site Assessment

Examine work area for any obstructions, conditions, or situations which may impair machine operation or create a safety hazard for the operator or other persons. Use information in this manual combined with your own good judgment when identifying these hazards and implementing hazard avoidance measures.

The operator or job foreman should inspect job site for:

- notices of underground placements
- manhole covers
- drop boxes
- recent trenching activity
- any evidence of possible underground placements
- banks, overhangs, drop-offs, and trenches

When work is planned inside or around structures such as buildings, bridges, and low-hanging tree limbs, check for adequate overhead and side clearances.



**WARNING:** Engine exhaust can asphyxiate. If inhaled directly or continuously, the combustion fumes produced by the engine can be very dangerous and/or lethal for the human body. If work has to be done in enclosed environments, take all necessary precautions to ensure the circulation of fresh air and protect the respiratory tract using a suitable mask.

Good ventilation is very important. Sparks from the electrical system and engine exhaust can cause an explosion or fire in a flammable or explosive atmosphere. Do not operate this machine in an area with flammable dust or vapors.

Carbon monoxide fumes from the engine can asphyxiate. Operate only outdoors or provide adequate ventilation if indoor operation is essential.

## PREPARE THE MACHINE



**WARNING:** Check machine before operating. Machine must be in good operating condition and all safety equipment installed and functioning properly.

- Ensure you understand and comply with all work site rules that might apply to your work situation.
- If operating along a road, properly warn and divert motor and pedestrian traffic. Use all necessary signs, cones, flag persons, or lighting devices needed for the work situation.

# Section 50: Operating the Trencher

## OPERATE SAFELY

Operate only from operator's control area.

The machine is equipped with an Operator Presence system. This system is intended for your safety and must be maintained in good functional condition. The engine must stop if the operator presence levers are released while the ground drive lever or digging chain lever is engaged. Storing the ground drive or digging chain drive without engaging the operator presence levers must also stop the engine. Contact your authorized independent Vermeer dealer if system requires repair or adjustment.

Ensure you are familiar with the location and function of each control before operating the machine. Refer to "Controls," page 20-1.

## TRENCHING TIPS

For optimum trenching performance:

- Keep trencher chain adjusted properly.
- For small loose rock or dirt, use cup cutters. In these conditions, using a partial set of cutters can result in increased production. Start with one-half of a full set. Add more cutters if you are having trouble removing spoil from the trench quickly enough.
- Ensure cutters are in good condition.
- Back and frost cutting normally require rotary cutters.
- Some digging conditions, such as mixed aggregate rock that fractures easily and crumbles, may go better with a combination cup cutter and rotary cutter setup.
- Do not overload engine while trenching.

## TRENCHING



**DANGER:** Moving digging chain can kill or cut off arm or leg. Trench cave-in may cause you to fall onto moving chain.

Stay away from moving digging chain.

### Trench Cleaner Assembly/Restraint Bar

The trench cleaner assembly or restraint bar is intended to help protect against accidental personal contact with the digging chain. The trench cleaner assembly or restraint bar must be in place while digging. Refer to the Maintenance Manual for adjustment instructions.

## Trench - Start/Plunge Cut



**WARNING:** The digging chain can suddenly drag the machine forward if the trencher is forced too quickly into the ground or catches on an object. Stay away from houses, fences, trees, and other objects. Digging chain contact with fences, trees, or walls can cause chain to climb upward quickly and turn machine over rearward. Serious injury or death can result if struck by machine.

- Step 1: Line up machine at beginning of trench.
- Step 2: If equipped with trench cleaner, raise cleaner (1) and latch.
- Step 3: Engage *Hydraulic Wheel Lock Lever* (2) to aid in traction and to help prevent machine from being pulled by the digging chain when plunge cutting.
- Step 4: Engage digging chain and move *Throttle* to full RPM.

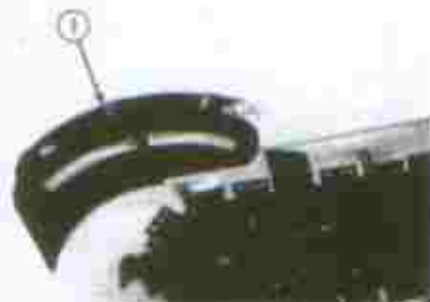
**NOTE:** Keep *Throttle* at or near full RPM to prevent clutch from slipping under load and overheating.

- Step 5: Lower trencher boom slowly to the desired digging depth.

**NOTE:** Lowering boom too quickly will result in excessive boom and machine bounce. A small amount of rearward ground travel during the plunge cut may help in reducing boom and machine bounce.

**IMPORTANT:** Do not attempt to force boom down faster than digging chain can remove material. Do not overload engine. If the engine lugs down or the digging chain slows down, raise boom until speed increases, then continue lowering the boom. Move machine rearward slightly when making plunge cut to avoid damaging restraint bar or trench cleaner.

- Step 6: Use *Propel Lever* to move machine slowly towards the operator.



RT100 Trencher

50-3

Operating the Trencher 50-3

- Step 7: If using a trench cleaner, follow "Trench Cleaner Adjustment," page 50-4, instructions.
- Step 8: Adjust ground speed for the best productivity when the required trench depth has been reached.

## Trench Cleaner Adjustment

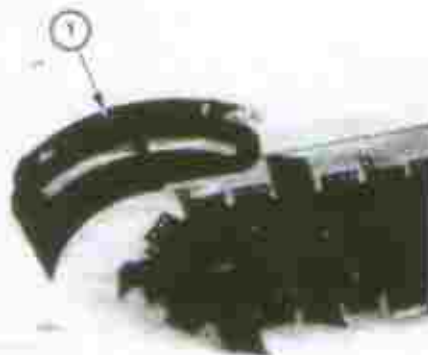


**DANGER:** Contact with a moving digging chain will cause serious injury or death. Never adjust trench cleaner assembly with the digging chain or engine running.

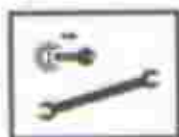
- Step 1: After making plunge cut, raise trencher out of ground until boom is level with ground.
- Step 2: Stop digging chain and shut off engine.
- Step 3: Unlatch trench cleaner (1) and lower.

## Trench - Complete

- Step 1: Return *Propel Lever* to NEUTRAL to stop machine travel.
- Step 2: Raise trencher slowly. When the chain is out of the ground, move *Digging Chain Drive Lever* to NEUTRAL.
- Step 3: Restore engine speed to idle.



# Section 60: Maintenance Intervals



**WARNING:** Use Shutdown Procedure before servicing, cleaning, repairing or transporting machine. Refer to Shutdown Procedure, page 22-1, for instructions.

## MAINTENANCE MANUAL

Maintenance intervals are included for reference only. Before performing any maintenance, refer to the Maintenance Manual for safety guidelines and correct procedures.

Visually inspect machine daily before starting the machine.

Make no modifications to your equipment unless specifically recommended or requested by Vermeer Manufacturing Company.

## SAFETY SIGNS

Safety signs located on your machine contain important and useful information that will help you operate your equipment safely.

To assure that all safety signs remain in place and in good condition, follow instructions given below:

- Keep safety signs clean. Use soap and water - not mineral spirits, abrasive cleaners, or other similar cleaners that will damage the safety sign.
- Replace any damaged or missing safety signs. When attaching signs, the temperature of the mounting surface must be at least 40°F (5°C). The surface must also be clean and dry.
- When replacing a machine component with a safety sign attached, replace the safety sign also.
- Replacement safety signs can be purchased from your Vermeer equipment dealer.

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Maintenance Intervals 60-1

## HOURLY METER - CHECK FOR MAINTENANCE INTERVAL (IF EQUIPPED)

The hourmeter is used to determine maintenance intervals for the machine.

Maintenance intervals are based on normal operating conditions. When operating under severe conditions, the maintenance intervals should be shortened.

## MAINTENANCE INTERVALS

Refer to Engine Operation Manual for additional information and service requirements. Shorten maintenance intervals when operating under dusty, dirty conditions.

Initial = Initial maintenance on new machine. Regular maintenance interval may be different.

- = Regular maintenance interval.

For Vermeer part numbers, consult your Vermeer dealer.

Service	Maintenance Interval - Service Hours								As Required
	5 or Twice Daily	10 or Daily	20 or 1 Month	50 or Weekly	100	250	300	500	
Outboard Bearing - Grease	•								
Engine Oil Level - Check		•							
Kohler Engine Air Cleaner and Restriction Indicator (Option) - Check		•							
Fuel Tank - Fill		•							
Hydraulic Level - Check		•							
Node Wheel Bearing - Grease		•							
Engine Oil - Change									
Kohler Fuel Filter Element - Clean			Initial						
Air Cleaner Element - Check				•					
Control Levers Linkage Oil				•					

Service	Maintenance Interval - Service Hours								
	5 or Twice Daily	10 or Daily	20 or 1 Month	50 or Weekly	100	250	300	500	As Required
Hydraulic Filter - Replace				Initial					
Fuel Sediment Cup - Clean					•				
Control Levers - Check					•				
Engine Oil and Filter - Change/Replace					•				
Trencher Components - Check					•				
Digging Chain - Check					•				
Tires and Fins - Check					•				
Overall Machine - Check					•				
Operator Presence System - Check					•				
Hydraulic System - Check					•				
Neutral Start Interlocks - Check					•				
Spark Plug Condition - Check					•				
Hydraulic Filter - Replace						•			
Valve Clearance - Check/Readjust							•		
Fuel Tank and Strainer - Clean							•		
Hydraulic Fluid - Change								•	
Battery Electrolyte Levels and Terminals - Check/ Clean								•	
Engine System - Check									•
Air Cleaner Element - Replace									•
Battery - Replace									•
Digging Chain Drive Sprocket - Replace									•
Digging Chain - Maintain									•
Digging Chain - Adjust									•

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Maintenance Intervals 60-3

Service	Maintenance Interval - Service Hours								
	5 or Twice Daily	10 or Daily	20 or 1 Month	50 or Weekly	100	250	300	500	As Required
Digging Chain - Remove/Install									•
Digging Chain Wear - Check									•
Cutters - Replace									•
Trench Cleaner Assembly/Restraint Bar - Adjust									•
Dual Tires (Option) - Remove									•

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