NOTICE

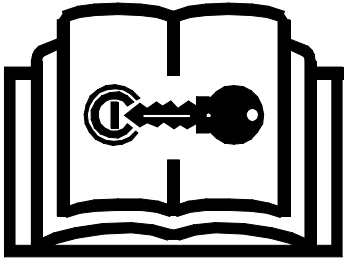
The information contained is for **DEALER REFERENCE PURPOSES ONLY**.
MANUALS ARE MODEL AND SERIAL NUMBER SPECIFIC.

If additional printed manuals are required for your shop/office location, order by part number through the factory's Parts Center.

If a retail customer needs replacement manual(s) for a specific unit, contact the factory's Customer Data Center at: 800-829-0051 or customerdata@vermeermfg.com

Vermeer®

V5750 Tractor With Attachments



Operator's Manual

v5750_o1_02
Serial No. 101 -
Order No. 105400U63
Cabled Order No. 105400U64

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.

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

Vermeer Manufacturing Company

Used Industrial Equipment Registration Form

This Used Equipment Registration form must be completely filled out and returned to Vermeer Manufacturing Company. This will enable Vermeer to send you safety/product information if necessary. Type or legibly print in English. **Send to Vermeer Mfg Co, Attn: Customer Data Center, PO Box 200, Pella, IA 50219, USA.** If the card has been removed, call 641-628-3141 or 800-829-0051. Be prepared to supply the model & serial number of your machine.

❑ **Check to request OPERATOR'S MANUAL**	18 **Model:**	19 **Serial No.:**

Model | **SN**

Customer Type Information: (Which of the following best describes you as a customer?)

1a. Customer Type (check one): (also check 1b/1c for lined types*)

- ❑ A. City/County/State ➔➔➔
- ❑ B. Federal/Military
- ❑ C. Rental Center
- ❑ D. Golf Course
- ❑ E. Contractor ➔➔➔➔➔
- ❑ F. Utility Company ➔➔➔➔
- ❑ G. Nursery or Tree Growing

1b. * If City/County/State, indicate primary work performed (Please check one box)

❑ a. Electric ❑ c. Highway Department ❑ e. Parks and Recreation
❑ b. Streets and Sanitation ❑ d. Water / Sewer ❑ f. Landfill ❑ g. Other

1c. * If Contractor or Utility, indicate primary work performed (Please check one box)

❑ a. Electric ❑ j. Pipeline ❑ n. Golf Course Construction ❑ r. Land Cleaning
❑ d. Water/Sewer ❑ k. Irrigation ❑ o. Roads ❑ s. General Trenching
❑ h. Landscaping ❑ l. Tree Service ❑ p. General Construction ❑ t. Boring
❑ i. Telephone ❑ m. Gas ❑ q. Waste Processing/Landfill ❑ u. CATV ❑ v. Other

New Owner Information: (Please Print and Complete All Fields)

2	Contact Name:			12	Title:	21	Purchase Date:
3	Business Name:			13	National/Global Account? ❑ Yes		
4	Parent Company:			14	Business Phone: ( )		
5	Address 1:			15	Home Phone: ( )		
6	Address 2:			16	Fax: ( )		
7	City:	8	County:	17	E-mail:		
9	State (Province)/Region:	10	Postal Code:	11	Country:		

Former Owner Information:

Name:		25	Attachment #1:
Address:		26	Att #1 Serial #:
		27	Attachment #2:
City:	State/Region:	28	Att #2 Serial #:
Postal Code:	Country:	29	Trailer & Serial #:

Attachment Information

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 56 PELLA, IOWA

POSTAGE WILL BE PAID BY ADDRESSEE

Vermeer Mfg. Co.
Attn: Customer Data Center
Box 200
Pella, Iowa 50219-9986

NOTE: Right and left sides of the machine are determined by facing in the direction of forward travel.

VERMEER® and VERMEER® Logo are registered trademarks of	**Vermeer Manufacturing Company.**
DEUTZ is a trademark of	**Kockner-Humboldt-Deutz, Germany.**

PATENTS

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

CA D 79,593	US Pat. #5,074,063	US Pat. #5,611,496	US Pat. #5,950,942
CC 95 914 404.5	US Pat. #5,088,532	US Pat. #5,657,803	US Pat. #6,014,996
CC ZL96195734.4	US Pat. #5,205,181	US Pat. #5,659,985	US Pat. #6,050,350
DE 696 11 846	US Pat. #5,219,380	US Pat. #5,687,807	US Pat. #6,109,367
DE Des. 96 006 85.4	US Pat. #5,237,888	US Pat. #5,692,548	US Pat. #6,119,376
EP 772,543	US Pat. #5,291,964	US Pat. #5,692,549	US Pat. #6,138,932
EP 885,343	US Pat. #5,394,583	US Pat. #5,704,142	US Pat. #6,154,987
GB 2,053,636	US Pat. #5,507,441	US Pat. #5,720,354	US Pat. #6,161,630
HK 1015859	US Pat. #5,509,220	US Pat. #5,746,278	US Pat. #6,195,922
RU 2,141,907	US Pat. #5,544,055	US Pat. #5,768,811	US Pat. #6,247,544
RU 2,158,952	US Pat. #5,553,407	US Pat. #5,778,991	US Pat. #6,289,997
RU 2,163,963	US Pat. #5,556,253	US Pat. #5,819,859	US Pat. #6,290,155
RU 2,175,368	US Pat. #5,574,642	US Pat. #5,845,689	US Pat. #6,308,787
US Des. Pat. #308,682	US Pat. #5,588,474	US Pat. #5,941,210	US Pat. #6,315,062
US Des. Pat. #396,837	US Pat. #5,590,041	US Pat. #5,941,320	US Pat. #6,332,502
US Pat. #4,848,423	US Pat. #5,607,280	US Pat. #5,944,121	
This machine may be covered by one or more of the following licensed patents:			
US Pat. #4,694,913	US Pat. #4,867,255	US Pat. #5,148,880	
US Pat. #4,858,704	US Pat. #4,953,638	US Pat. #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.

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) Down hole 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/Bed Knife, 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, Tooling, 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, Rod Loader 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, Booms, 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 (12) 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 reinstallation.

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

Dealer Prep

Check or perform the following:

Engine and Drivetrain

___ Check battery electrolyte level and charge.
___ Check air cleaner condition.
___ Check engine oil level.
___ Check engine operation.
___ Check axle differential oil level.
___ Check axle planetary oil level.
___ Check transfer case oil level.

Hydraulics

___ Check hydraulic oil level.
___ Check hydraulic components for leaks or damage.
___ Check hydraulic controls for proper function.

General

___ Check for shipping damage or shortage.
___ Check that Operator's Manual is cabled to the machine.
___ Check shield installation and condition.
___ Check bolts for tightness.
___ Check machine lubrication.

___ Check condition of all decals.

___ Check that all optional and loose items are included with the machine.

___ Check that machine has proper counterweights for attachments.

___ Check that seat belts are installed.

___ Check Neutral Start and Operator Presence system operation.

___ Check service brake master cylinder fluid level.

___ Check service brake operation.

___ Check park brake operation.

___ Check tire pressure: 31 x 15.5 x 15″ tire: 45 psi (3.1 bar)
35 x 19 x 16.1″ tire: 55 psi (3.8 bar)

___ Check wheel lug nut torque: DANA 60 axles - rigid only: 85 ft-lb (115 Nm)
DANA 60 steerable, DANA 70 steerable, and rigid: 200 ft-lb (271 Nm)
Sige planetary axle: 190 ft-lb (258 Nm)

___ Check instrument and operating lights.

___ Check all phases of operation.

___ Complete “Delivery,” *page iii*.

___ Complete “Identification Numbers - Record,” *page v*.

Backhoe

___ Check that backhoe is securely mounted.

___ Check for proper lubrication.

___ Check that boom lift and swing locks function.

___ Check that backhoe control levers are positioned under or on far side of hand rail.

___ Check that remote engine shutdown, if equipped, shuts off the engine.

Trencher

___ Check that trencher is securely mounted.

___ Check trencher for proper lubrication.

___ Check installation, condition, and adjustment of trench cleaner assembly/restraint bar.

___ Check digging chain for proper tension and that chain does not turn with *Attachment Drive Control* in NEUTRAL.

Plow

___ Check plow blade for proper installation.

___ Check that shaker gear case is properly filled with oil.

Rock Wheel

___ Check installation and condition of cutter wheel shield and rubber spoil deflector.

___ Check rotary cutting bit condition.

___ Check gearbox and bearing support oil level.

___ Check cutter segment bolts for proper torque: 270 ft-lb (365 Nm).

___ Check that cutter wheel does not turn with *Attachment Drive Control* in NEUTRAL.

DELIVERY

Check and perform the following with the customer:

Machine

___ Review all sections of the *Operator's Manual*.

___ Grease or oil all lubrication points.

Review of Operation

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

___ overall explanation of how tractor works

___ overall explanation of how attachments work

___ tractor and attachment safety

___ preparing the tractor and attachments for operation

DEALER / CUSTOMER INFORMATION

dealer	owner
address	address
city	city
state / province	state / province
zip / postal code	zip / postal code
country	country

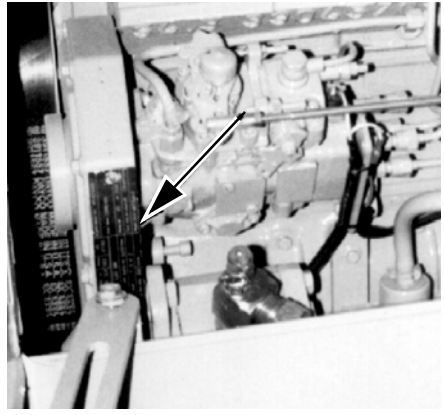
IDENTIFICATION NUMBERS - RECORD

Tractor Model Number_____

Tractor Serial Number_____

Engine Model Number_____

Engine Serial Number_____



Porta Bore Model Number_____

Porta Bore Serial Number_____

B500 Backhoe Model Number_____

B500 Backhoe Serial Number_____

B600 Backhoe Model Number_____

B600 Backhoe Serial Number_____

Plow/Trencher Combo Model Number_____

Plow/Trencher Combo Serial Number_____

Trencher Model Number_____

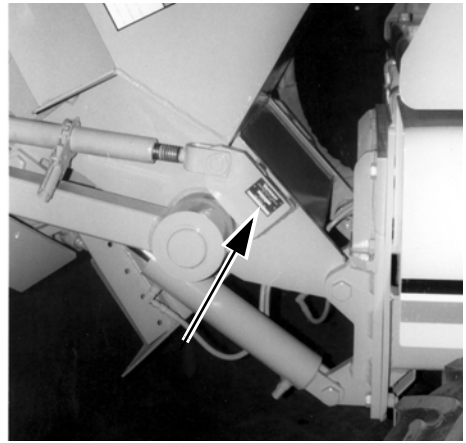
Trencher Serial Number_____

Sliding Offset Bracket Model Number_____

Sliding Offset Bracket Serial Number_____

Rock Wheel Model Number_____

Rock Wheel Serial Number_____



Reel Carrier Model Number_____

Reel Carrier Serial Number_____

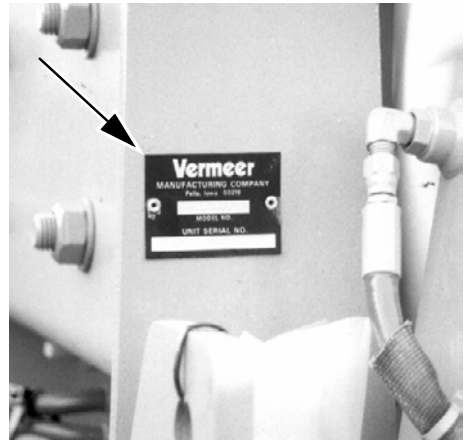


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Table of Contents

Section 5: Counterweight Requirements

Tractor Equipped With	Counterweight Requirements	Notes
TR5750 Trencher w/out blade	700-lb front weight, P/N V5750120	1. Tire fluid counterbalance requirements are based on a calcium chloride solution of 3-1/2 lb (1.6 kg) of calcium chloride per gallon of water. Fill the tire to valve stem level (top of rim). 200 lb (90 kg) each. 2**:** Counterweight chart assumes backfill blade as standard equipment unless noted. 3**:** Counterweights are not required on the following machine configurations: TR5750 Trencher with blade TR5750 Trencher with blade and backhoe VP5750 Plow without blade VP5750 Plow with blade PT5750 Combo with blade and backhoe
TR5750 Trencher w/ sliding offset (SO)	700-lb front weight, P/N V5750120 Rear counterweights included in sales code	
TR5750 Trencher w/ SO and backhoe	Rear counterweights included in sales code	
VP5750 Plow with backhoe	Fluid in all four tires recommended 450-lb rear weight, P/N V5750829	
VP5750 Plow with reel carrier	Two 200-lb front weights and four wheel weights included in reel carrier sales code Fluid in all four tires recommended 1200-lb rear weight, P/N V5750844	
PT5750 Combo without backhoe	700-lb front weight, P/N V5750120 800-lb front weight, P/N V5750125	
RW5750 Rock wheel without backhoe	700-lb front weight, P/N V5750120 800-lb front weight, P/N V5750125 Fluid in two front tires	
RW5750 Rockwheel, with sliding offset, without backhoe	700-lb front weight, P/N V5750120 800-lb front weight, P/N V5750125 Fluid in two front tires Rear counterweights included in sales code	

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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.

Understand Safety Alert Symbol

This is the safety alert symbol. This symbol placed on your machine or in the manual is used to alert you to the potential for bodily injury or death.

Understand Signal Words

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.

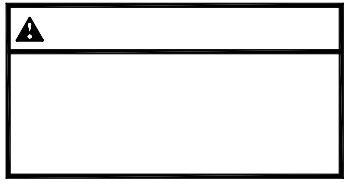
Read, Understand, and Follow Instructions

Read, understand, and follow all instructions and safety messages included in this manual and on decals attached to the machine. These instructions and safety messages contain important information.

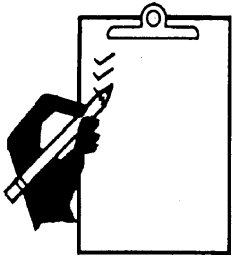
Allow only responsible, properly instructed individuals to operate and service the machine.

Failure to follow instructions and safety messages in this manual and on the decals attached to the machine could result in serious injury or death.

Keep all safety and instruction decals in good condition. Replace any missing or damaged decals.



Keep Machine in Good Condition

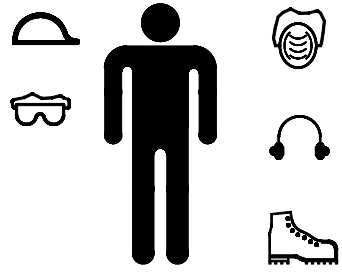


Ensure machine is in good operating condition and that all safety devices are installed and functioning properly.

Visually inspect the machine daily before starting.

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

Personal Protective Equipment



Wear required personal protective equipment.

Wear close-fitting clothing and confine long hair.

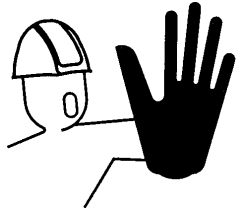
Avoid wearing jewelry, such as rings, wristwatches, necklaces, or bracelets.

Always wear:

- a hard hat
- safety glasses
- hearing protection
- safety shoes
- a respirator (in dusty conditions)

Refer to “Crystalline Silica,” *page 10-4*

Keep Spectators Away from Machine



Keep all spectators and other workers away from the machine and work area while in operation.

CRYSTALLINE SILICA

Breathing crystalline silica dust over time can cause silicosis, a disabling, nonreversible, and sometimes fatal disease of the lungs. United States Federal O.S.H.A. has established exposure limits for the work site. Avoid exposure to dust containing crystalline silica particles in excess of these limits.

Because crystalline silica is a basic component of sand and granite, many activities at construction sites such as trenching, sawing, and boring of material, produce dust containing crystalline silica. When working in soils containing sand or granite, air monitoring may be necessary to determine whether job site conditions expose workers to excessive levels of crystalline silica dust. Depending upon air monitoring results, the following measures may be necessary to avoid exposure to excessive levels of crystalline silica dust:

- Be aware of and follow the guidelines of United States O.S.H.A. 29 CFR 1926.55, or other applicable regulatory guidelines.
- Reduce dust concentration using water spray or other methods.
- Use a respirator approved for protection from crystalline silica dust, or a cab with positive ventilation.
- If possible, change into disposable or washable clothes on the work site. Shower and change into clean clothing before leaving the work site.
- Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica dust. Wash hands before eating, drinking, or using these products.
- Store food, drink, and personal belongings away from the work area.

CALL YOUR ONE-CALL SYSTEM FIRST

WARNING: Always contact your local One-Call system before the start of your digging project.

Before you start any digging project, don't 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 concerned to locate and mark the underground installations. If you don't call, you may have an accident, 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, dial the North American One-Call number, 1-888-258-0808, for this information. Utilities will then mark their underground facilities by using the following international marking codes:

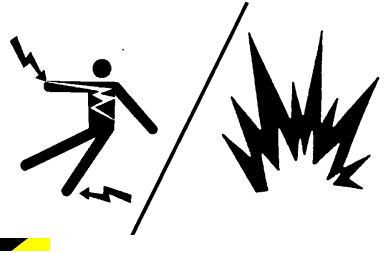
Red.....Electric	Green/Brown ..... Sewer
Yellow ..... Gas, Oil, Petroleum	White .....Proposed Excavation
Orange ..... Communication, Telephone, TV	Pink.....Surveying
Blue .....Potable Water	

Check for Underground Utility Lines

DANGER: Contact with buried utilities may cause serious injury or death.

- **Cut electric line can shock or electrocute.**
- **Ruptured gas lines can cause fire or explosion.**
- **Laser light from cut fiber optic cables can cause eye damage.**

Before excavating or boring, contact the local One-Call system, and any utility company that does not subscribe to One-Call, to locate all buried utilities in and around the proposed excavation or bore.

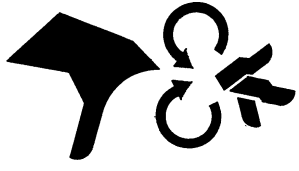


O.S.H.A. CFR 29 1926.651 requires that the estimated location of underground utilities be determined before beginning the excavation or underground boring operation. When the actual excavation or bore approaches an estimated utility location, the exact location of the underground installation must be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

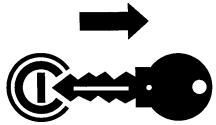
Avoid Moving Parts

Keep hands, feet, and clothing away from power-driven parts.

Keep shields in place and properly secured.



USE SHUTDOWN PROCEDURE



Before servicing, cleaning, repairing, inspecting, lubricating, fueling, or transporting the machine, refer to the *Shutdown Procedure*, page *14-1* for proper instructions.

SOUND LEVELS

Sound pressure and sound power levels were determined according to test procedures specified in ISO 6393 and ISO 6394.

Equivalent Continuous A-Weighted Sound Pressure at Operator's Ear . . . . . L_{Aeq} = 93 dB(A)

Sound Power Level . . . . . L_{WA} = 109 dB(A)

VIBRATION LEVELS

Hand-arm vibration exposure has been measured according to test procedures specified in ISO 5349. The level is less than ___ m/s^{2*}.

Whole body vibration exposure has been measured according to ISO 2631. The level is less than ___ m/s^{2*}.

* Test results not available at time of printing.

HANDLE FUEL SAFELY

Fuel or fumes near sparks, flame or heat can catch fire or explode. Death or serious injury can result.

Shut off engine before fueling. No smoking. No flame.

Avoid High Pressure Leaks

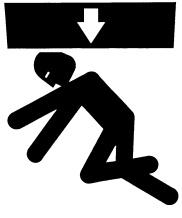
Pressurized fluid can penetrate body tissue and result in serious injury or death. Leaks can be invisible. Relieve pressure before working on system. When searching for a leak, use an object like cardboard - not your hand. Fluid injected under the skin must be removed immediately by a surgeon familiar with this type of injury.

Avoid Tire Explosion

Tire explosion can result in serious injury if the following procedures are not followed:

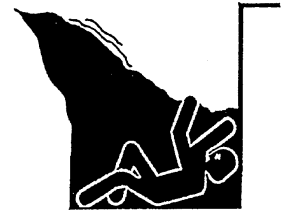
- Maintain correct tire pressure. Do not inflate tire above recommended pressure.
- Check for low tire pressure. Inflate to recommended pressure.
- Replace any tire with cuts or bubbles. Replace damaged rims.
- Do not weld or heat wheel assembly. Heating will increase tire pressure.

Raised Attachments Can Fall



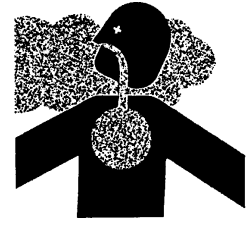
Never work under an attachment unless it is adequately supported to prevent it from falling.

DO NOT WORK IN TRENCH



Do not work in trench with unstable sides which could cave in. Specific requirements for shoring or sloping trench walls are available from several sources including federal and state O.S.H.A. offices. Be sure to contact suitable authorities for these requirements before working in the trench. Federal O.S.H.A. regulations can be obtained by contacting the Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402. State O.S.H.A. regulations are available at your local state O.S.H.A. office.

WORK IN VENTILATED AREA



Exhaust fumes can be fatal.

If operating the machine in an enclosed area, remove exhaust fumes with an exhaust pipe extension to the outside.

WARNING

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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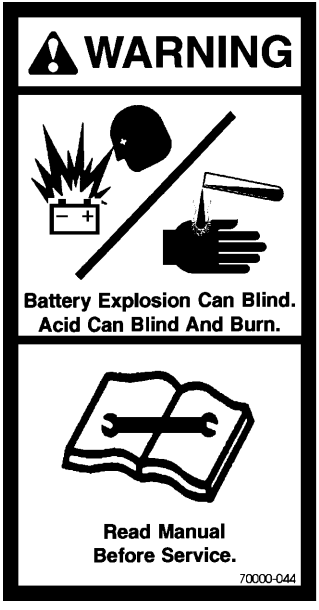
Section 11: Safety Decals

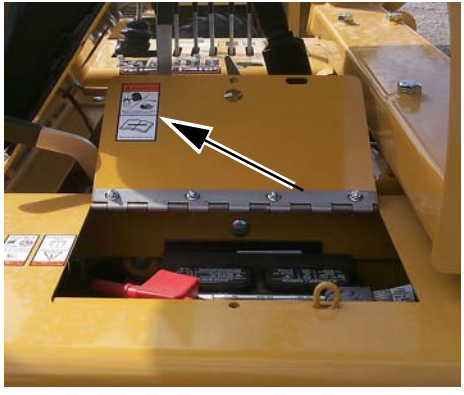
Safety Decal Maintenance

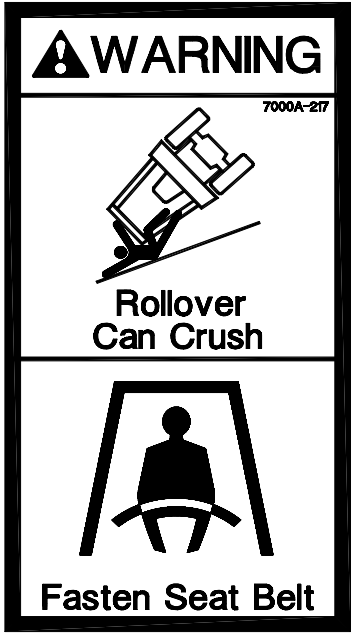
Safety decals located on your machine contain important and useful information that will help you operate your equipment safely.

To assure that all decals remain in place and in good condition, follow these instructions:

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


WARNING
Battery Explosion Can Blind.
Acid Can Blind And Burn.
Read Manual
Before Service.
70000-044

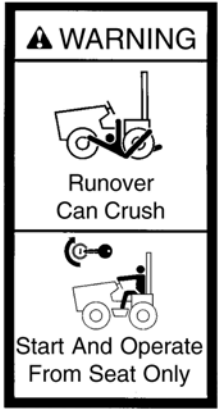



WARNING
7000A-217
Rollover
Can Crush
Fasten Seat Belt

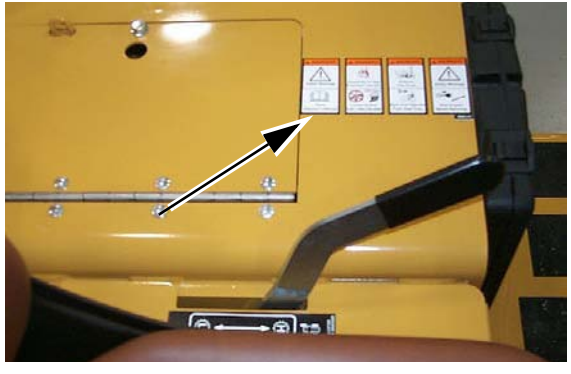

WARNING
2326-744
Runover Possible.
Start Engine Only From
Operator's Seat.

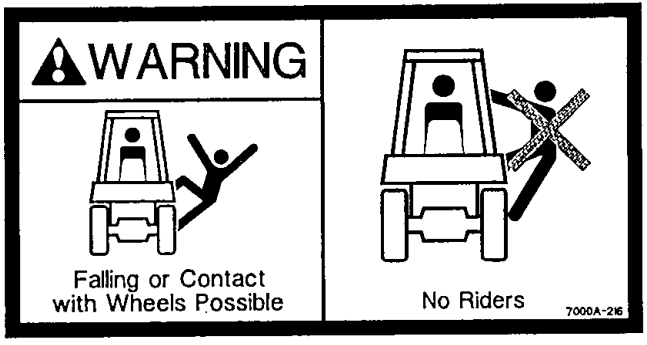

WARNING
Safety Message
Read
Operator's Manual

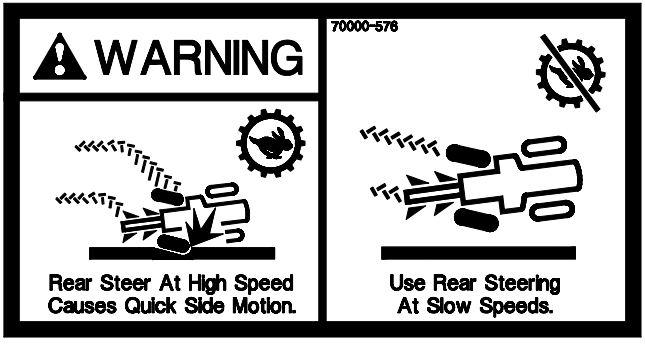

WARNING
Electricity, Or Gas
Explosion Can Kill.
ONE-CALL
Locate Utilities
Call 1-888-258-0808

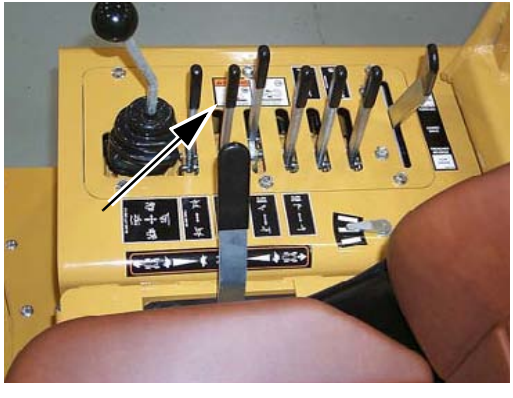

WARNING
Runover
Can Crush
Start And Operate
From Seat Only

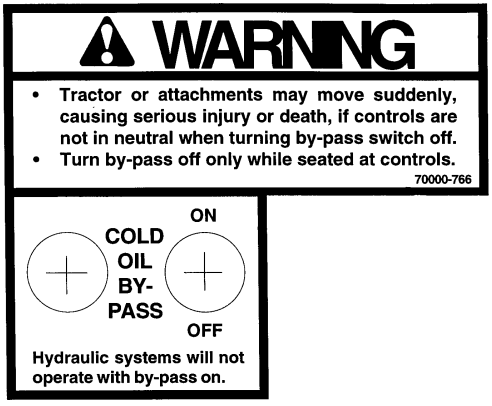

WARNING
Safety Message
Stop Engine
Before Servicing



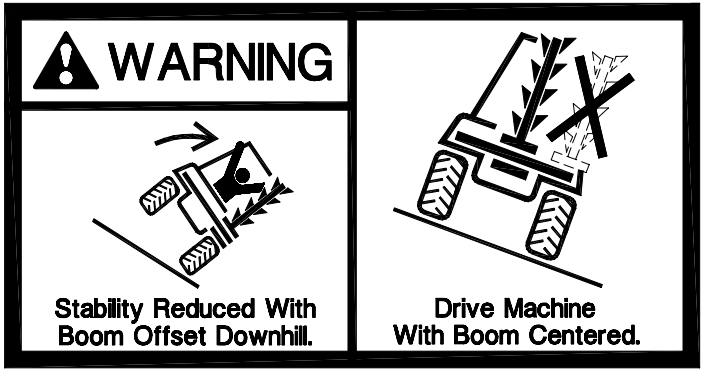

WARNING
Falling or Contact with Wheels Possible
No Riders
7000A-216


WARNING
70000-576
Rear Steer At High Speed Causes Quick Side Motion.
Use Rear Steering At Slow Speeds.




WARNING
• Tractor or attachments may move suddenly, causing serious injury or death, if controls are not in neutral when turning by-pass switch off.
• Turn by-pass off only while seated at controls.
70000-766
ON
COLD OIL BY-PASS
OFF
Hydraulic systems will not operate with by-pass on.


Vermeer


WARNING
Stability Reduced With Boom Offset Downhill.
Drive Machine With Boom Centered.

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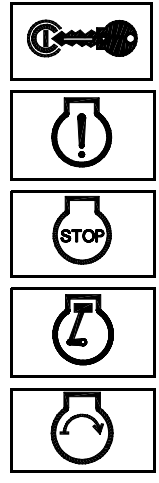
Section 12: Controls

ENGINE CONTROLS

(1) Ignition Switch

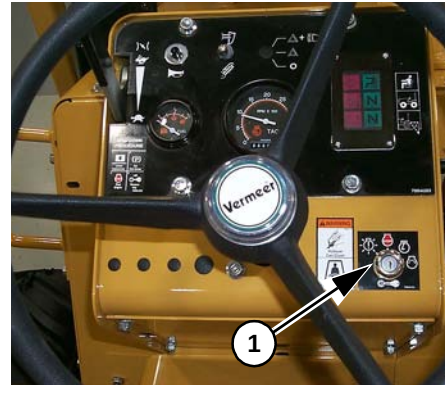


Counterclockwise position. . . . . test indicator lights

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

ON (first stop) . . . . . engine run/electrical system on

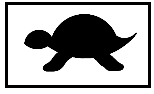
START (fully clockwise) . . . . . starts the engine



(2) Throttle Lever

Up . . . . . .increase engine speed

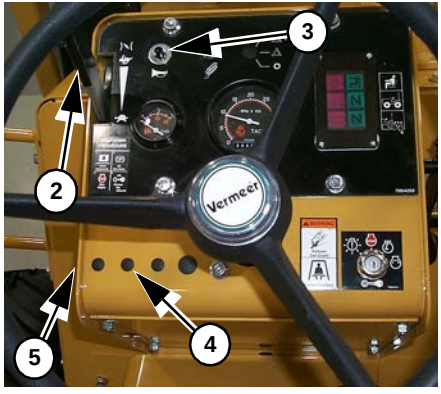
Down . . . . . decrease engine speed



(3) Horn Button
Press button to sound horn.

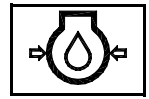
(4) Hydraulic Cold Start Bypass Switch
Use the hydraulic bypass system for starting the machine below 20°F (-7°C). (Refer to the *Starting Procedure* section, “Hydraulic Bypass System,” *page 13-4*.)

(5) Ether Button (Optional)
Push button once while cranking, when initially starting the engine in cold weather. (Refer to the *Starting Procedure* section, “Ether Cold Starting System,” *page 13-3*.)



ENGINE MONITORS

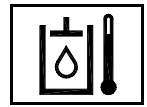
(1) Low Oil Pressure Warning Light
Turns on when oil pressure is too low. If light turns on when engine is running, or if light does not shut off within 15 seconds after starting engine, shut off engine and correct the problem.



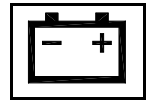
(2) High Coolant Temperature Warning Light
Turns on when engine coolant becomes too hot. If light turns on during operation, reduce engine speed to low idle until light shuts off. (If light does not shut off in approximately 30 seconds, shut off engine.)

Shut off engine and allow to cool before correcting the problem. Check for blockage of air intake screen and shrouding or broken blower belt.

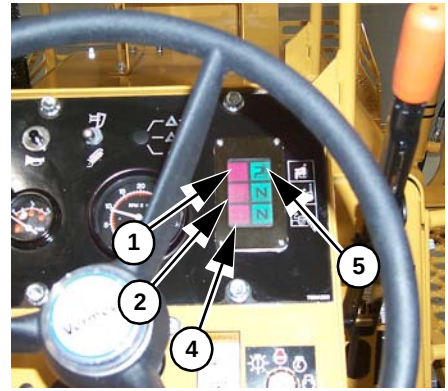
(3) High Hydraulic Oil Temperature Warning Light
Turns on when hydraulic oil becomes too hot. If light turns on during operation, shut off engine and correct problem.

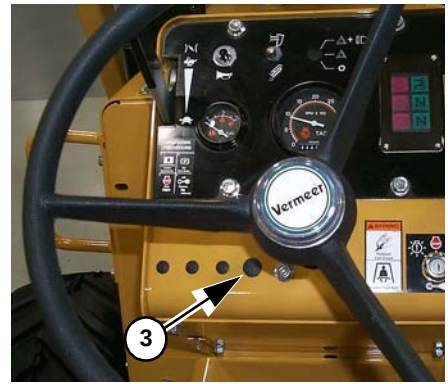


(4) Low Alternator Output Warning Light
Light turns on when alternator is not charging sufficiently.



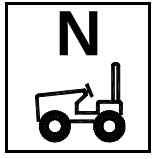
(5) Operator Presence Indicator
Turns on when operator is seated and key is on. Light turns off when operator leaves the seat.
NOTE: Engine will shut off (5–6 seconds) if light turns off when the ground drive or rear attachment drive is engaged.





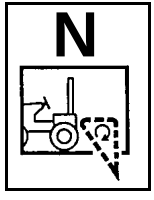
(6) Ground Drive Neutral Indicator

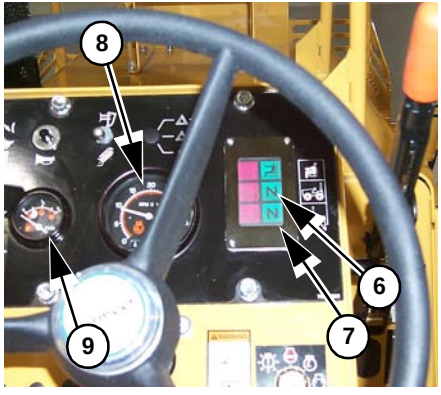
Indicator light turns on when ground drive is in NEUTRAL. Light must be on to start engine.



(7) Rear Attachment Drive Neutral Indicator

Indicator light turns on when attachment drive is in NEUTRAL. Light must be on to start engine.





(8) Tachometer/Hourmeter

Indicates number of hours of machine service and engine RPM.

(9) Fuel Gauge

Indicates amount of fuel in tank.

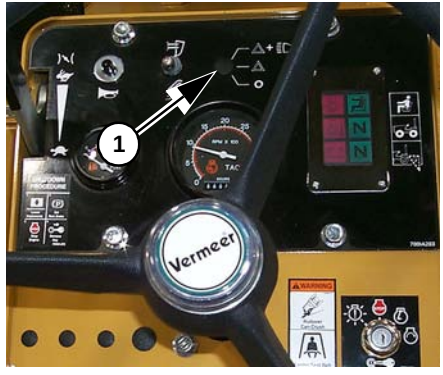
WORK LIGHTS

(1) Work Lights

Up. . . . . .safety lights and headlights on

Center. . . . . safety lights on

Down . . . . . .lights off

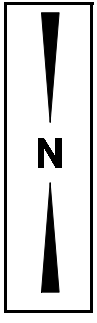


GROUND DRIVE CONTROLS

(1) Ground Drive Pedal

Forward . . . . . variable speed FORWARD
Center . . . . . NEUTRAL
Back . . . . . variable speed REVERSE

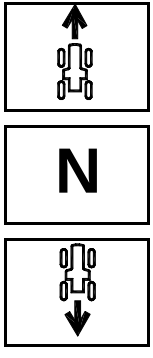
(2) Creep Lever



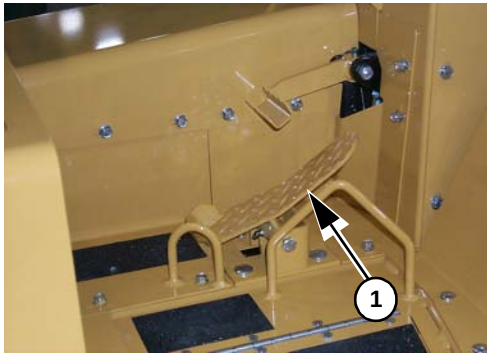
Forward . . . . . variable speed FORWARD

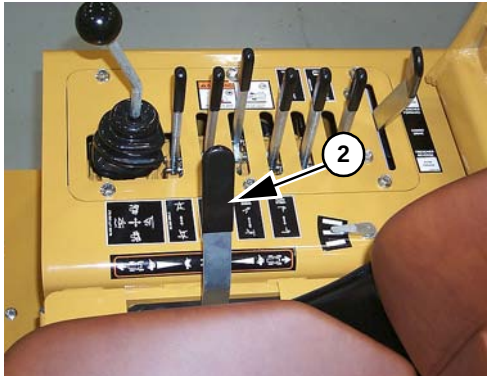
Center . . . . . NEUTRAL

Back . . . . . variable speed REVERSE



NOTE: *Ground Drive Pedal* overrides *Creep Lever*. When *Ground Drive Pedal* is released, machine resumes operation at *Creep Lever* setting.





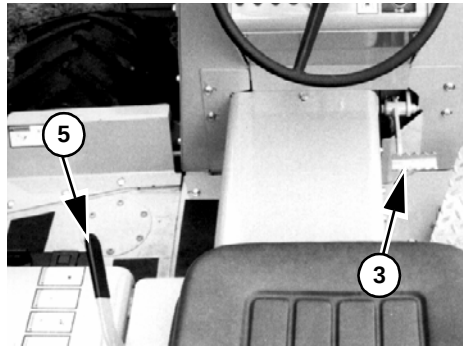
(3) Service Brake Pedal
Press pedal to apply brake.

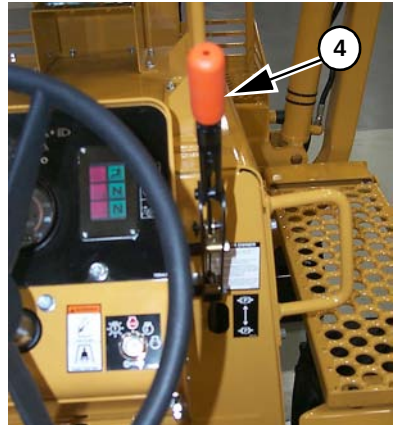
NOTE: Use the hydrostatic ground drive system for normal slowing and stopping of machine motion.

(4) Park Brake
Pull back ..... apply
Push forward .....release

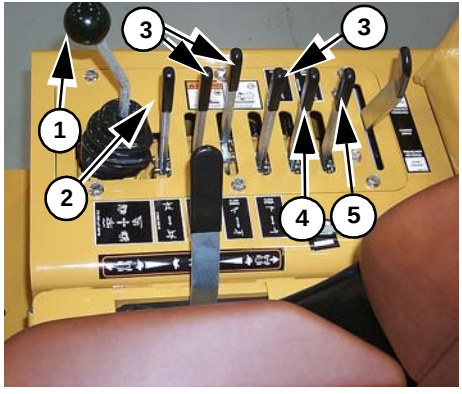
(5) Ground Drive Range Lever
Push forward ..... HIGH - backfilling, transport
Pull back ..... LOW - trenching, plowing, trailer loading

IMPORTANT: Stop tractor and apply brake before pushing *Ground Drive Range Lever* forward or back to select ground drive range. Jog *Ground Drive Pedal* while shifting to ensure shift is completed.





HYDRAULIC CONTROLS



(1) Blade Lift and Tilt Lever
Refer to *Backfill Blade* sections.

(2) Blade Angle Lever
Refer to *Backfill Blade* sections.

(3) Rear Attachment Lever
NOTE: Refer to decals to identify correct lever for attachments.

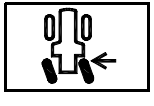
(4) Auxiliary Tool
Refer to tool instructions.

(5) Rear Steer Lever

WARNING: Machine may move sideways quickly if rear steering is done at fast travel speeds. Operator or bystanders may be seriously injured or killed if struck by machine. Use rear steering at slow speeds only.

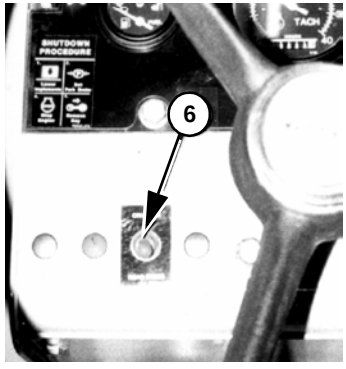
Push . . . . . rear steering right

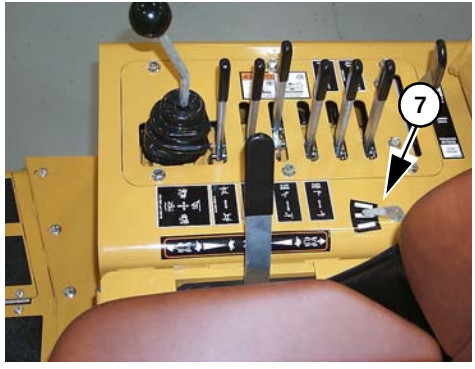
Pull . . . . . rear steering left



(6) Function Selector
The function selector allows one valve section to control two hydraulic functions when the number of required hydraulic functions exceeds capacity of valve assembly. Follow decal instructions for position of selector valve.

(7) Rear Steering Indicator
Indicates position of rear wheels.





SEAT BELTS

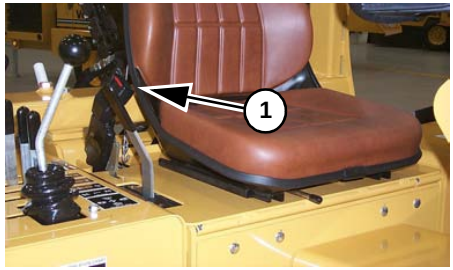
WARNING: This machine is equipped with a Rollover Protective Structure (ROPS) and seat belts. The operator must wear seat belts when driving the machine. Seat belts help hold the operator inside the protected area of the ROPS. Failure to wear the seat belts could cause the operator to be thrown from the seat and crushed if a rollover occurs.

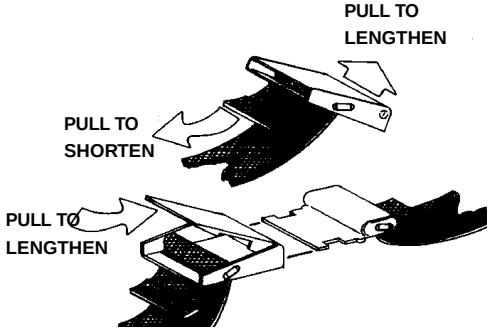
The seat belt **(1)** must be worn at all times while operating the machine from the tractor controls. To fasten seat belt, extend belts and snap the two ends together. Ensure all slack is out of the belt. Seat belts must be snug but not tight.

Most tractors have a 2" (5 cm) seat belt with an inertia reel. No belt length adjustment is required with these seat belts.

Some tractors have a 3" (7.5 cm) seat belt. If belt is too loose, pull belt end extending from the buckle until the belt fits snugly. If belt needs to be lengthened, pull on buckle as shown, then follow the above procedure.

To unfasten 3″ (7.5 cm) seat belt, lift buckle release.



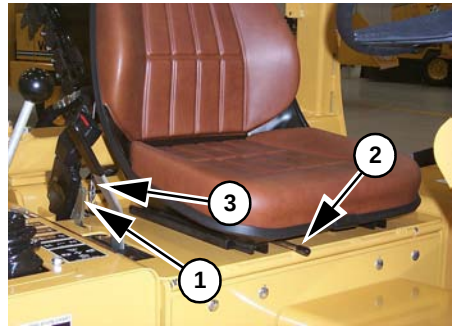


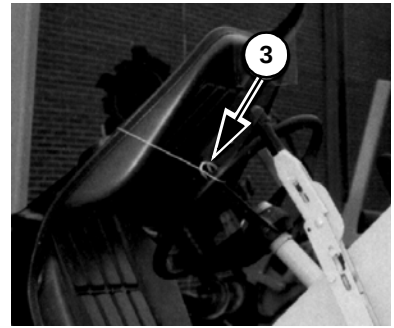
SEAT LEVERS

Push lever **(1)** to lift seat and mounting plate for access to hydraulic tank.

Always fasten cable **(3)** to steering wheel when seat is raised. Check that seat lever **(1)** latches when seat is lowered.

Push lever **(2)** left or right to adjust seat position forward and backward.





OPERATOR PRESENCE SWITCH

(1) Operator Presence Seat Switch
Turns on indicator light on control panel when operator is sitting in the seat.

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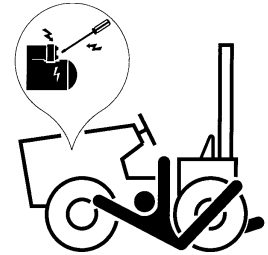
Section 13: Starting Procedure

WARNING: Do not start or operate the machine unless the instructions in this manual have been carefully read and understood.

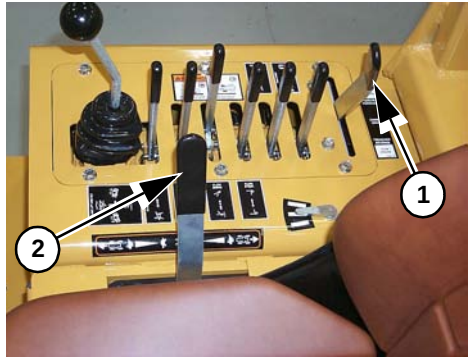
WARNING: Serious injury or death is possible if someone is run over. To avoid machine runaway, start engine only from the operator's seat with the park brake ON and the ground drive controls in NEUTRAL. Never start the engine by shorting across the starter terminals. Machine will start and move with the ground drive engaged if normal starting circuitry is bypassed.

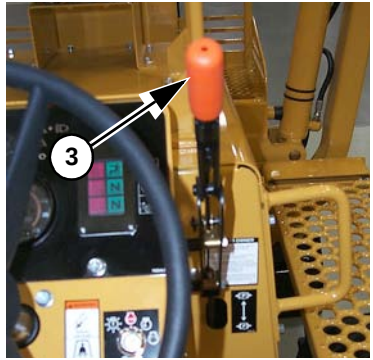


STARTING THE ENGINE

The operator must be seated at the tractor controls, with seat belt fastened, when starting the engine.

Step 1: Place *Attachment Drive Lever* **(1)** and *Ground Drive Lever* **(2)** and foot pedal in NEUTRAL. Apply Park Brake **(3)**.

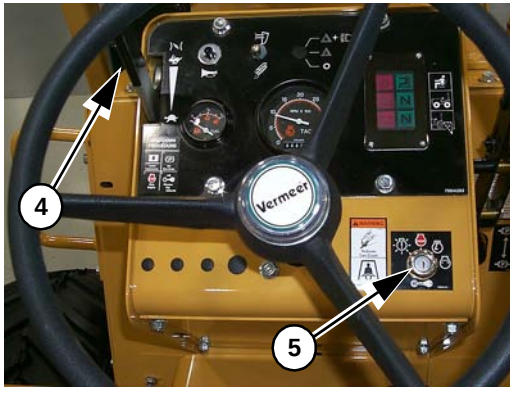




Step 2: Set throttle **(4)** to idle (above 32°F/0°C) or 1/4 (below 32°F/0°C).

NOTE: Starter will not engage if attachment and ground drive controls are not in NEUTRAL.

Step 3: Turn key **(5)** clockwise to start engine; release key and move throttle to idle when engine starts. Shut off engine if oil light does not go off within 15 seconds of starting.



IMPORTANT: Never run the starter motor for more than 20 seconds at a time. Allow starter motor to cool one minute between attempts.

- Do not exceed idle until the engine oil pressure warning light is off. Increase RPM slowly to allow oil pressure to stabilize.
- Do not operate engine under load until engine has warmed up at least five minutes.
- Consult engine manual for allowable idle RPM and time periods.

Engine Cold Weather Starting

Allow adequate time for the hydraulic oil to warm up, especially in cold weather.

When operating in cold weather, it is important to use the recommended engine oil viscosity and fuel to reduce starting problems (refer to Engine Operation Manual).

Ether Cold Starting System

WARNING: Starting fluid is highly flammable and can explode. Keep container away from heat, sparks, and open flame. Do not puncture or incinerate container.

Use the ether system below 32°F (0°C) and only if engine is cold.

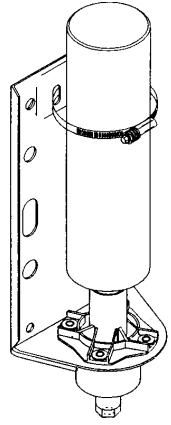
Step 1: Remove cap from new cylinder and install in valve. Turn until seated tightly against gasket and secure with hose clamp.

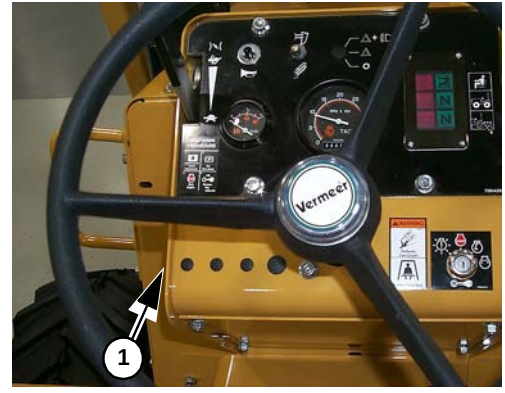
IMPORTANT: Keep starting fluid container in place to protect cold starting system components.

Step 2: Move throttle lever to 1/4.

Step 3: While turning starter switch, push in and release ether button **(1)**. Inject only one shot of ether per starting attempt.

Step 4: Return throttle to idle as soon as engine starts.





Hydraulic Bypass System

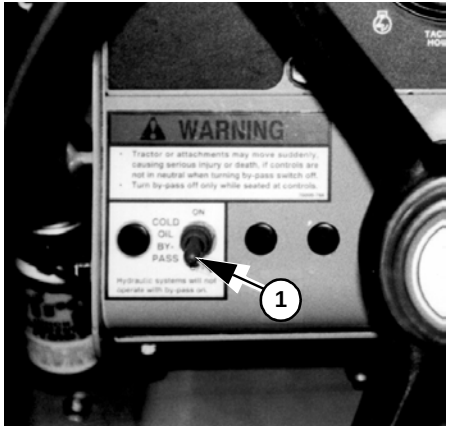
WARNING: Releasing the bypass switch engages the hydraulic systems. If hydraulic controls are not in NEUTRAL when the bypass switch is released, unexpected movement of the tractor, attachments, or hydraulic cylinders can occur.

Use the hydraulic bypass system for starting the machine below 20°F (-7°C).

Step 1: Hold *Hydraulic Cold Start Bypass Switch* **(1)** in "bypass" position. Steering, implement and closed loop hydrostatic circuits are bypassed.

Step 2: Start engine. Use ether system if equipped.

Step 3: Allow engine idle to stabilize, then release switch.



JUMP-STARTING

Battery Explosion - Avoid

WARNING: Battery fumes are flammable and can explode. Keep all burning materials from battery. Do not smoke. Tools and cable clamps can make sparks. Shield eyes and face.

WARNING: Battery posts, 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.

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 vehicles to touch.

Battery Burns - Avoid

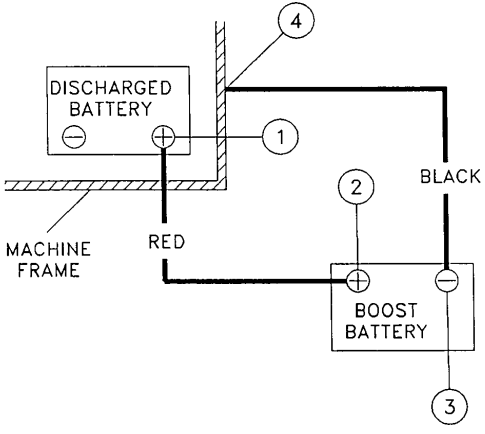
Battery contains sulfuric acid which can cause severe burns. Avoid contact with eyes, skin, and clothing.

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, beaten egg, or vegetable oil. Call a physician immediately.

Jump-Starting Procedure



Step 1: Turn ignition key OFF.

Step 2: Make jumper cable connections in following order:

a. Red to discharged battery POSITIVE (+) **(1)**.

b. Red to boost battery POSITIVE (+) **(2)**.

c. Black to boost battery NEGATIVE (-) **(3)**.

d. Black to frame **(4)** of machine with the discharged battery. Make connection away from battery. Do not attach to negative (-) terminal of discharged battery.

IMPORTANT: To prevent sparks near the battery, always disconnect the NEGATIVE (black) jumper cable from the frame **(4)** before disconnecting the POSITIVE (red) cable from the battery.

Step 3: While seated at the controls, start engine.

Step 4: Remove cables in REVERSE order and install red cover over POSITIVE (+) cable clamps.

Section 14: Shutdown Procedure

Stopping the Engine

IMPORTANT: For your safety and the safety of others, use the Shutdown Procedure before working on the machine for any reason, including servicing, cleaning, inspecting, or transporting 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 *Ground Drive Lever* and foot pedal in NEUTRAL

Step 2: Disengage power to all attachments.

Step 3: Engage *Park Brake*.

Step 4: Lower attachments.

Step 5: Reduce engine speed to idle.

Step 6: Shut off engine and remove key.

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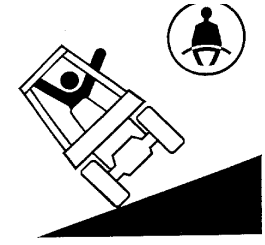
Section 15: Transporting the Machine

Driving the Machine

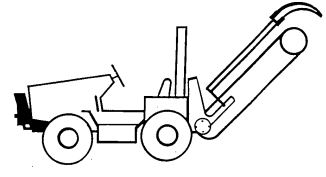
WARNING: No riders. A rider can fall off and be crushed or run over. Never allow anyone to ride in the operator's seat while the machine is being moved.



WARNING: Rollover possible. Be alert and use extreme caution when operating on hillsides, or near ditches, gullies, holes, or obstructions where rollover could occur.

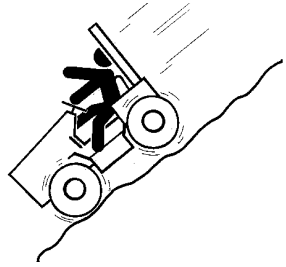
Serious injury or death can result if crushed under the machine. Always wear your seat belt.

Never allow anyone to be on the downhill side of the machine.



WARNING: Proper tractor stability requires an attachment on the front and rear of the tractor. Some attachment combinations require additional counterweighting. Refer to *Counterweight Requirements, page 5-1***.**

WARNING: Shift gears safely. Hydraulic braking is disconnected when gearbox is not in gear. Always stop machine travel and apply foot brake before shifting; jog the *Propel Pedal* while pushing on *Shift Lever* to ensure gears have fully engaged. Avoid shifting on steep slopes.



Mount and Dismount Safely

Face the machine when mounting and dismounting.

Do not use any controls as handholds when climbing on or off machine.

Never jump off the machine.

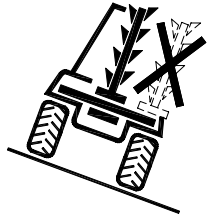
Never get on or off a moving machine.

Driving the Machine

WARNING: Machine may move sideways quickly if rear steering is done at fast travel speeds. Operators or bystanders may be seriously injured or killed if struck by machine. Use rear steering at slow speeds only.

Raise and secure the front and rear attachments in transport position.

WARNING: Rear attachment in offset position reduces machine stability. Rollover may result in serious crushing injury or death. Never drive across slope with rear attachment shifted to downhill side. Center rear attachment before driving machine.



Drive machine using only the *Propel Pedal,* which automatically returns to NEUTRAL when released. Do not use the creep control hand lever, which does not return to NEUTRAL when released.

IMPORTANT: When driving on public roads, check on applicable laws concerning the use of lights, a slow-moving vehicle sign, and other possible requirements.

IMPORTANT: Drive machine at a speed suitable for the terrain. Use slower ground speeds if you are inexperienced or driving on hillsides or uneven terrain, or near ditches, gullies, holes, or barriers. Avoid sudden stopping, starting, or turning unless necessary.

Step 1: Select desired transmission range.

Step 2: Disengage Park Brake.

Step 3: Use *Propel Pedal* to move the machine.

TRAILERING THE MACHINE

Loading

WARNING: Before transporting machine on a truck or trailer, read the truck or trailer manual for safety precautions and information. Be sure the trailer bed and ramps are clean and free of obstacles and debris that may interfere with the loading process.

Ensure gross weight of the machine with attachments is within gross weight limits of trailer and towing vehicle. Load machine on a level surface with trailer attached to towing vehicle. Use caution when going up or down trailer ramps.

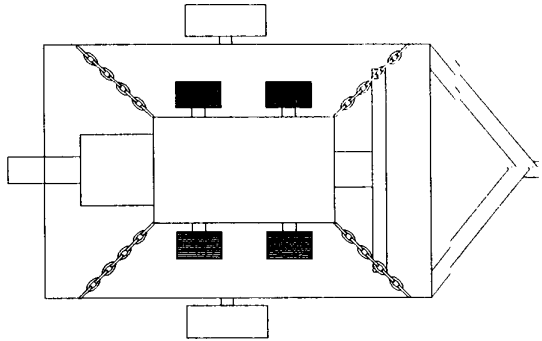
WARNING: Drive the machine on and off the trailer squarely to avoid driving off the side of the trailer, which can result in serious injury or death.

Step 1: Center machine on the trailer centerline; drive squarely onto trailer. Stop at the tie-down position for correct weight distribution as recommended by trailer manufacturer.

Step 2: Engage *Park Brake.* Lower attachments to trailer bed. If equipped, ensure backhoe and plow transport locks are engaged.

Step 3: Shut down engine.

Step 4: Fasten each corner of the machine to the trailer using tie-down points provided on the machine.



Unloading

To unload machine, place trailer on a level surface, properly supported or hitched to tow vehicle.

Step 1: Remove tie-down chains.

Step 2: Follow *Starting Procedure*, page *13-1*.

Step 3: Raise attachments to transport position.

Step 4: Disengage *Park Brake*.

Step 5: Place *Ground Drive Range Lever* in LOW. Use *Propel Pedal* to move the tractor. Use a slow ground speed to unload machine from trailer.

TOWING THE MACHINE

Towing requires disengaging the *Park Brake* and moving the *Ground Drive Range Lever* to NEUTRAL.

Do not attempt to push-start the machine.

LIFTING THE MACHINE

No provisions are made for lifting the machine. If transport requires that machine be lifted, it must be loaded in an appropriate container.

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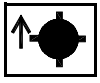
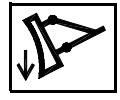
Section 20: Backfill Blade Controls

BACKFILL BLADE CONTROLS

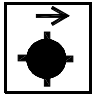
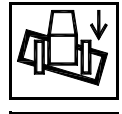
(1) Blade Lift and Tilt Lever

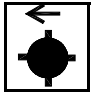
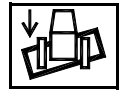

Push ..... lower



Push to Detent ..... float



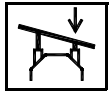
Pull ..... raise



Right ..... tilt right side down


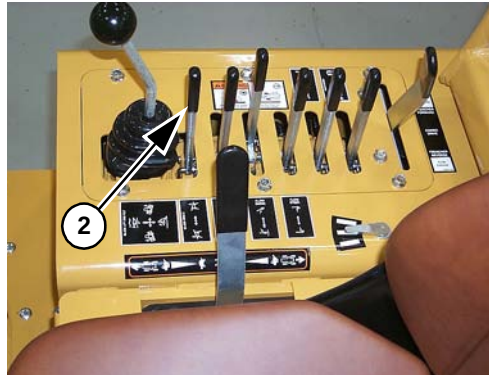

Left ..... tilt left side down


(2) Blade Angle Lever

Push..... swing blade right



Pull ..... swing blade left



Section 21: Operating the Backfill Blade

WARNING: Before attempting to operate the machine refer again to *Safety Messages, page 10-1*, and *Safety Decals, page 11-1,* for important safety information.

Familiarize yourself with the location and function of the tractor controls and backfill blade controls before operating. Refer to *Backfill Blade Controls, page 20-1*.

BACKFILLING

Step 1: Shift ground drive to HIGH range. Disengage *Park Brake,* and use *Propel Pedal* to drive the machine for backfilling.

NOTE: Do not use the *Creep Lever* to backfill. The control lever does not return to NEUTRAL automatically.

Step 2: Lower and tilt backfill blade to match contour of ground.

Step 3: Angle/Swing backfill blade toward trench to be filled.

IMPORTANT: To prevent possible damage to the blade when changing angle, raise blade enough to remove contact with the ground.

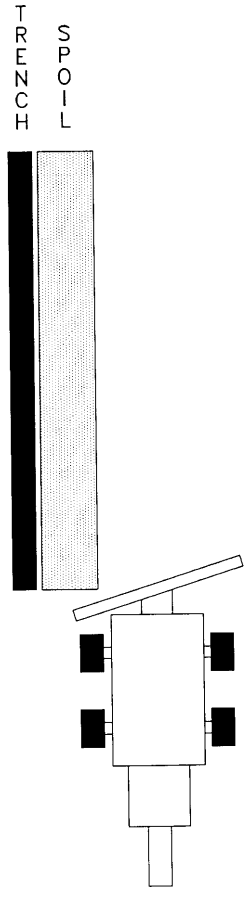
NOTE: When moving spoil, it is recommended not to fill blade to full capacity. Make more than one pass at the spoil pile.

Step 4: On the first pass, roll the spoil pile from the outside to inside. On additional passes, place spoil into the trench. This will result in a better backfilling job.

NOTE: If engine begins to stall while pushing spoil, reduce amount of spoil being pushed by raising the blade or moving more to the outside of the spoil pile.

Step 5: Once trench is filled, drive with wheels on filled trench to compact soil.

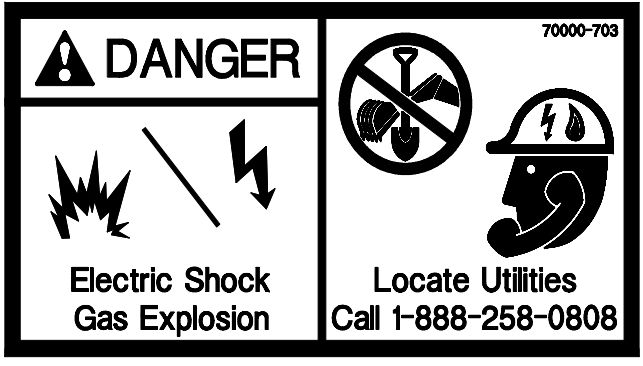
Step 6: For final dress, back drag blade in reverse with blade lift control set in FLOAT position.



Section 30: Porta Bore Safety Decals

SAFETY DECAL MAINTENANCE

Refer to “Safety Decal Maintenance,” *page 11-1* in the *Safety Decals* section, for important decal maintenance information.

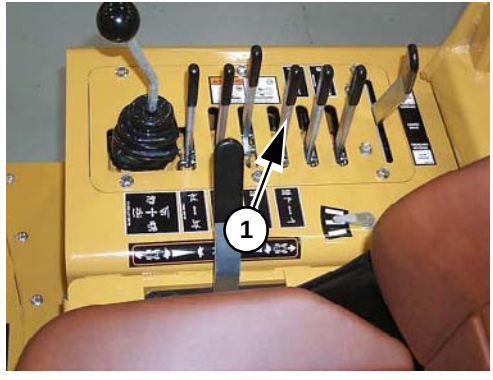



DANGER
70000-072
Rotating Rod
Can Kill.
Clothes Can Snag,
Stay Away.


DANGER
Rotating Rod
Can Kill.
Clothes Can Snag,
Stay Away
Vermeer

Section 31: Porta Bore Controls

PORTA BORE CONTROLS



(1) Auxiliary Tool Lever

Push ..... run boring motor FORWARD
Pull ..... run boring motor in REVERSE

NOTE: Lever location may vary depending on tractor features.

Always use FORWARD when boring. Reversing the motor when using threaded-pipe type drill rod will uncouple the rod in the ground.

NOTE: Boring lever must self-center to NEUTRAL and stop rod motion.

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Section 32: Operating the Porta Bore

WARNING: Before attempting to operate the machine refer again to *Safety Messages, page 10-1*, and *Porta Bore Safety Decals, page 30-1,* for important safety information.

Familiarize yourself with the location and function of the tractor controls and Porta Bore controls before operating. Refer to *Controls, page 12-1,* and to *Porta Bore Controls, page 31-1.*

Call Your One-Call System First

WARNING: Always contact your local One-Call system before the start of your digging project. If you don't call, you may have an accident of suffer injuries; cause interruption of services; damage the environment; or, experience job delays.

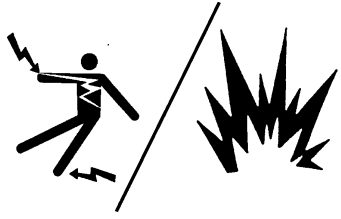
Before you start any digging project, don't forget to call the local One-Call system in your area and any utility company that does not subscribe to the One-Call system. For areas not represented by One-Call Systems International, contact the appropriate utility companies or national regulating authority concerned to locate and mark the underground installations.

Refer to "Call Your One-Call System First," *page 10-5* in the *Safety Messages* section, for additional One-Call information.

DANGER: Contacting buried utilities may result in death or serious injury.

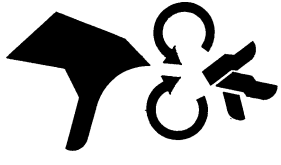
- **Cut electric lines can shock or electrocute.**
- **Ruptured gas lines can cause fire or explosion.**
- **Laser light from cut fiber optic cable can cause eye damage.**

Before excavating or boring, contact the local One-Call system and any utility company that does not subscribe to One-Call, to locate all buried utilities in and around the proposed excavation or bore.



WARNING: Keep all spectators and unauthorized workers away from the machine and work area while in operation.

WARNING: Serious injury or death is possible from contact with moving parts. Keep hands, feet, and clothing away from power-driven parts. Keep shields in place and properly secured.



DRILL ROD SAFETY

WARNING: Entanglement in rotating drill rod and cutting tool can cause death or serious injury. Stay away from rotating drill rod and cutting tool. Do not wear loose clothing that could catch on rotating equipment. Never allow anyone in the entrance or exit pit when the machine is operating. Boring rotation and ground drive must stop when the Operator Presence button is released.

WARNING: Check overhead for electrical power lines or other obstructions and be certain there is adequate clearance when handling the drill rods. Contact with overhead electrical lines may cause death or serious injury.

- Drill rod connectors are designed not to snag clothing. Never substitute bolts or pins as a means to connect drill rods.
- Never allow anyone near the Porta Bore or any of its rotating parts while it is operating.

BORING OPERATION

Always use forward rotation when boring. Reversing motor direction when using threaded-pipe type drill rod will uncouple the rod in the bored hole. Reverse the motor only if rod has hit an obstruction (refer to “Motor Direction - Reverse” in this section).

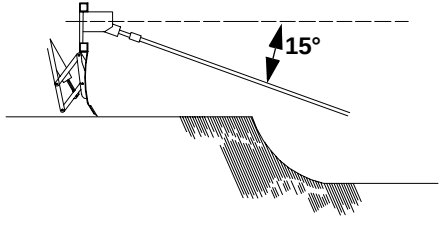
Boring Operation - Use Two People

Boring requires a trained operator and a trained helper. Operator must be present at the machine, operating the controls. The helper aligns the bore, changes drilling rods, attaches cutters, and watches drilling operation.

Shaft Angle - Limit

Limit drill shaft angle to 15° at the Porta Bore I universal joint.

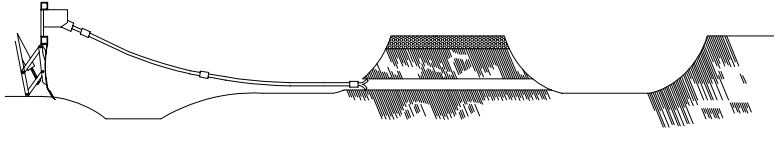
Excessive angle could break extension shaft, universal joint, or hydraulic motor.



Trench - Set Up

A trench or pit may be needed on both ends of the area to be bored.

The entrance trench should be as deep as the proposed bore and about three times as long, depending on grade of bore.



Set Up Machine for Boring

Step 1: Position the machine for boring. Follow *Shutdown Procedure*, page *14-1*.

WARNING: Never have more than two drill rods exposed. The whipping action of the flexible rod is extremely powerful and can injure anyone within reach. Stay away from the side of the drill string during operation.

Step 2: Install one or two drill rods and the desired cutters.

Step 3: Follow *Starting Procedure*, page *13-1*.

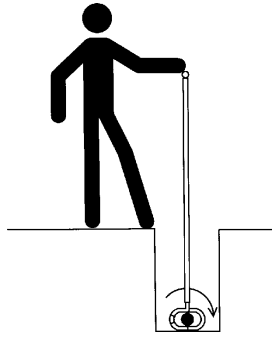
Step 4: Place the ground drive in low range and set engine at low RPM.

Guide Cutting Head

WARNING: Never use hands, feet, shovels, rakes, or other tools to manually assist the boring attachment. Serious injury or death is possible if struck by guide tool.

The helper may guide and align the cutting head to the point of cutter head entry, ensuring the following safety requirements are met:

- The helper must use only the rod guide tool supplied with the boring attachment.
- The rod guide must be positioned behind the cutting head.
- The helper must be outside of the entrance pit, standing to the side of the turning drill rod as shown. This position will prevent the helper from being struck by the rod guide if it catches on the boring rod or cutting tool.
- The guide tool must be removed when the cutting head has entered the ground.



DANGER: Electrocution possible. Serious injury or death may result if the boring tool strikes an underground electric power line. Take the following precautions to prevent injury or death.

- Qualified persons must locate underground lines.
- Never stand on ground and touch metal parts on boring attachment or machine when boring or backreaming.
- Never step off the tractor if an electric strike occurs. Jump clear of machine with both feet together.

Start Boring

Step 1: Run engine at low RPM.

Step 2: Push *Boring Lever* FORWARD to run boring tool.

Step 3: Drive tractor forward slowly. Control forward creep travel speed to avoid bending rod, causing drill string to whip.

Operation - Check

Shut down machine at first sign of malfunction or hazardous condition.

If the tool turns but does not move forward, turn off the machine. Ensure tool is not in contact with a gas line, water line, electrical line, or some other underground obstruction that can be damaged or cause personal injury.

Drill Rod Grade - Check

Step 1: After the cutting head has entered the ground, shut off machine and remove the rod guide tool.

Step 2: Check the grade of the rod using a level.

Step 3: Make necessary adjustments, restart machine, and continue drilling.

Motor Direction - Reverse

If the rod hits an obstruction, reverse motor direction to back out the rod.

Step 1: Pull *Boring Lever* back to reverse motor direction and remove rod from obstruction.

Step 2: Resume boring at a new location to avoid the obstruction.

Rod - Install Additional

When the last 12–18″ (30–46 cm) of the drill string is still exposed, shut off machine. Uncouple the drill string and install an additional rod.

Do Not Allow Drill Rod to Whip

- Always start Porta Bore attachment at a low engine RPM.
- Never have more than 20 ft (6 m) of drill rod exposed between the bore entrance and the machine.
- Control forward travel speed to avoid bending the rod, causing the drill string to whip.

Universal Joint - Remove

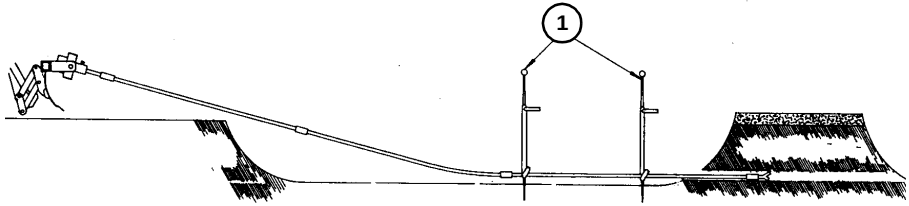
WARNING: Personal injury or damage to the boring attachment may result if the hydraulic motor is started with only the universal joint attached.

When finished boring, remove the universal joint from the boring motor.

GUIDE STAKES

Vermeer auger-type guide stakes **(1)** may be used to guide drill rods. Place them 10 ft (3 m) apart in the trench. Position drill rods within the loops of each guide stake.

If it is necessary to avoid obstacles, the machine can be moved slightly to the side for offset boring. Use guide stakes to direct the drill rod.



BACKREAMING

Cutting Tool - Change

When the cutting tool has exited the bore and is visible in the exit pit or trench:

Step 1: Follow *Shutdown Procedure*, page *14-1*.

Step 2: Remove cutting tool and install reaming tool.

Step 3: Connect and turn on water supply.

Reaming - Start

Station helper outside entrance pit. Clear the entrance trench area.

Step 1: Follow *Starting Procedure*, page *13-1*, and run engine at low RPM.

Step 2: Push *Boring Lever* forward to run boring tool.

Step 3: Drive tractor backward slowly until a rod coupling emerges from the bore entrance.

Rod - Remove

Step 1: Follow *Shutdown Procedure*, page *14-1.*

Step 2: Uncouple and remove rod connected to the boring motor.

Step 3: Follow *Starting Procedure*, page *13-1.*

Step 4: Move tractor toward the entrance trench. Follow *Shutdown Procedure,* and recouple.

Step 5: Clear the area and station the helper outside the pit.

Step 6: Follow *Starting Procedure.* Continue removing one rod at a time until reamer is withdrawn from the bore.

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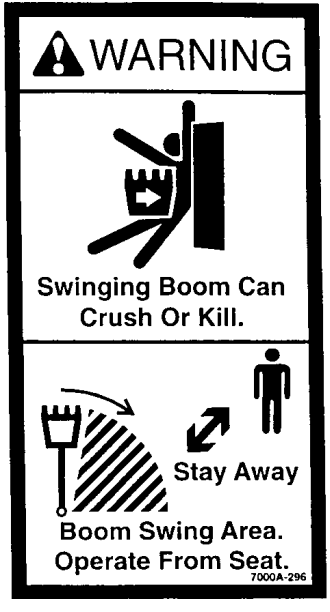
Section 40: Backhoe Safety Decals

SAFETY DECAL MAINTENANCE

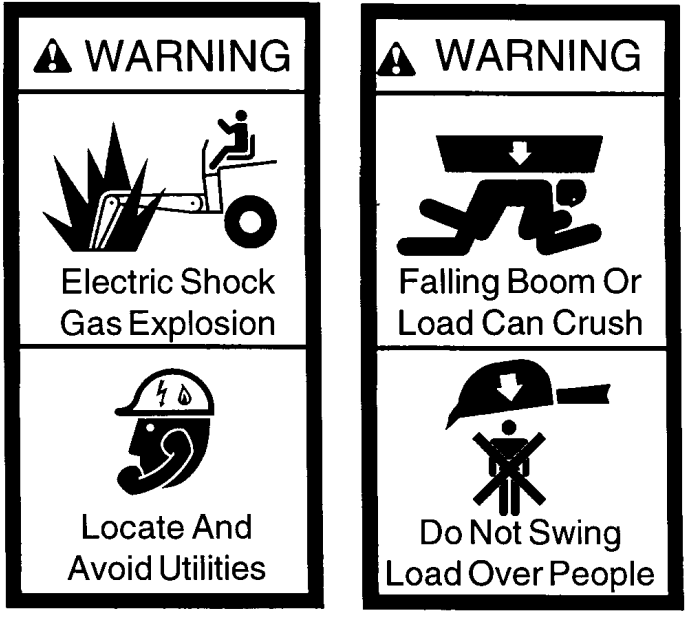
Refer to “Safety Decal Maintenance,” *page 11-1* in the *Safety Decals* section, for important decal maintenance information.

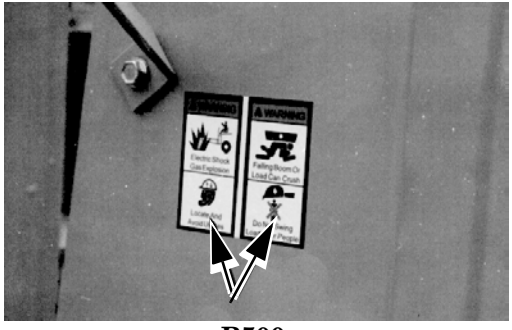


One decal located on each side of boom

B500

B600


WARNING
Electric Shock
Gas Explosion
Locate And
Avoid Utilities
WARNING
Falling Boom Or
Load Can Crush
Do Not Swing
Load Over People

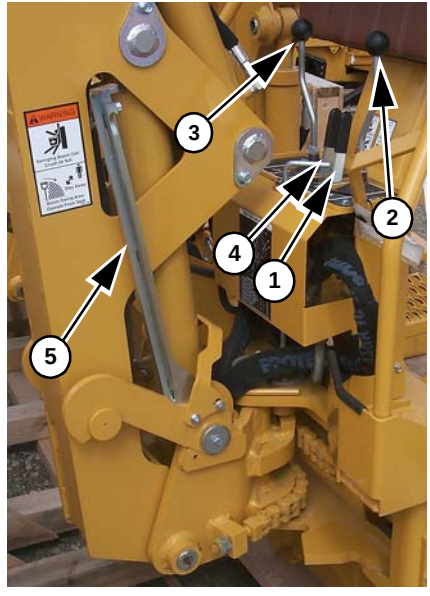


B500

B600

Section 41: Backhoe Controls

B500 Control Levers



(1) Left Stabilizer/Blade Lift Control
Forward ..... lower stabilizer
Back ..... raise stabilizer

(2) Boom Lift and Swing Control
Forward ..... lower boom
Back ..... raise boom
Left ..... boom swings left
Right ..... boom swings right

(3) Bucket and Dipperstick Control
Forward ..... dipperstick out
Back ..... dipperstick in
Left ..... curl bucket in
Right ..... curl bucket out

(4) Right Stabilizer Control
Forward ..... lower stabilizer
Back ..... raise stabilizer

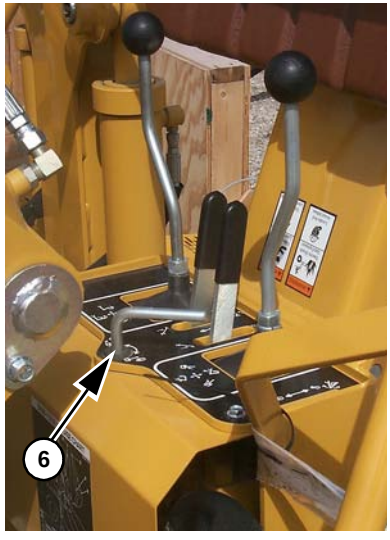
(5) Boom Lift Lock
With boom in full up position:
Pull ..... engage or disengage lock

Engage *Boom Lift Lock* before transporting the machine, disengage lock before operating the machine.

(6) Boom Swing Lock

Pull handle and twist counterclockwise .....disengage lock
Twist clockwise and push handle .....engage lock

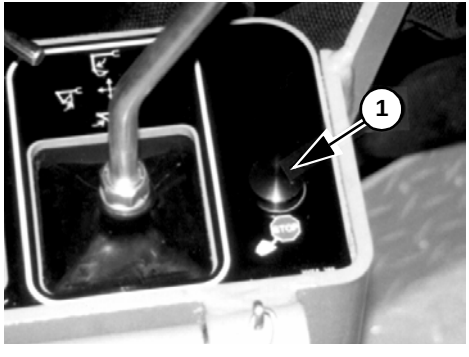
Center backhoe boom before locking.
Engage *Boom Swing Lock* to keep the boom from swinging while transporting.
Disengage lock before operating.



B500 Engine Shutoff

Momentarily press switch **(1)** to shut off engine.

NOTE: The ignition switch must be turned off before the engine can be restarted.



B600 Control Levers

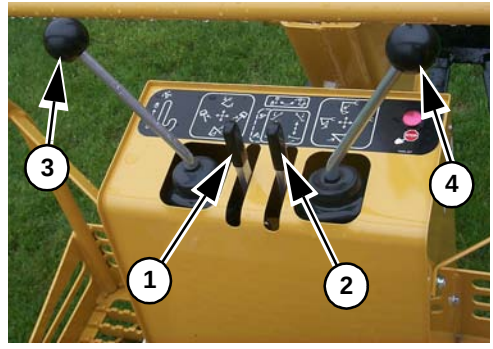
(1) Left Stabilizer/Blade Control (Optional)
With pedal **(5)** released:
Forward ..... lower stabilizer
Back ..... raise stabilizer
With pedal **(5)** depressed:
Forward ..... lower blade
Back ..... raise blade

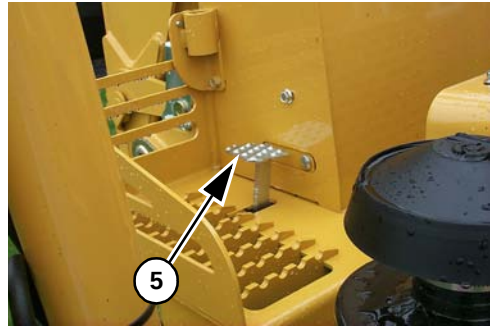
(2) Right Stabilizer Control
Forward ..... lower stabilizer
Back ..... raise stabilizer

(3) Boom Lift and Swing Control
Forward ..... lower boom
Back ..... raise boom
Left..... boom swings left
Right ..... boom swings right

(4) Bucket and Dipperstick Control
Forward ..... dipperstick out
Back ..... dipperstick in
Left..... curl bucket in
Right ..... curl bucket out

(5) Left Stabilizer/Blade Selector Pedal
Depress ..... enables lever **(1)** to control backfill blade
Release..... enables lever **(1)** to control left stabilizer





(6) Boom Lift Lock

With boom in full up position:

Pull .....engage or disengage lock

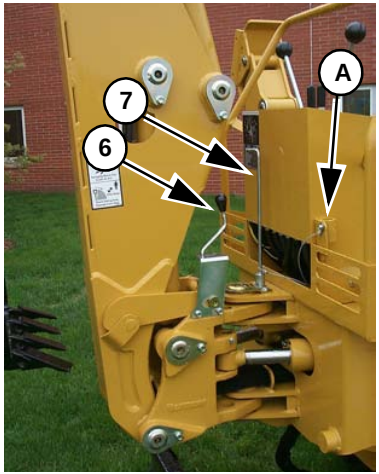
Engage *Boom Lift Lock* before transporting the machine, disengage lock before operating the machine.

(7) Boom Swing Lock Pin

Locked (shown) .....when transporting

Unlocked/storage **(A)**..... when operating

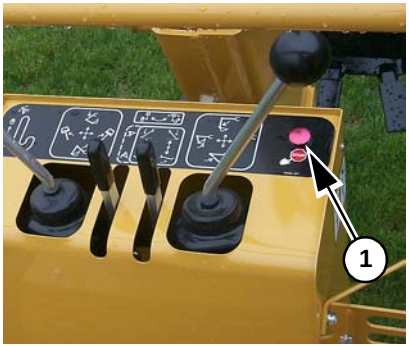
Center backhoe boom and install boom lock pin **(7)** as shown before transporting backhoe. Remove pin and store before operating backhoe.



B600 Engine Shutoff

Momentarily press switch **(1)** to shut off engine.

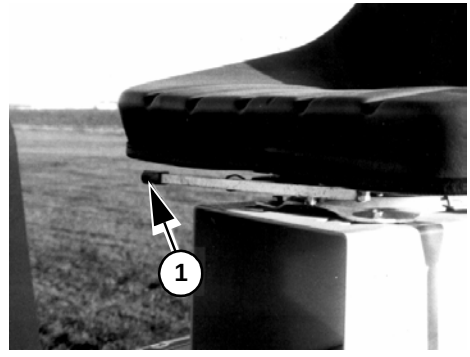
NOTE: The ignition switch must be turned off before the engine can be restarted.



SEAT ROTATION LEVER

Pull lever **(1)** to rotate seat.

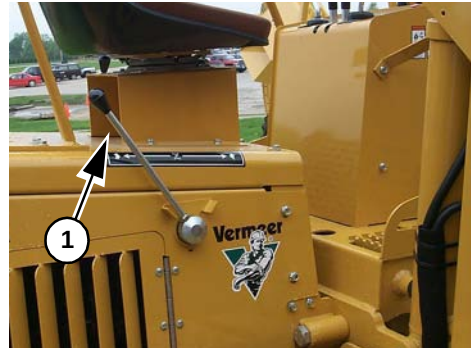
NOTE: Before driving the machine, rotate seat sideways to provide better visibility.



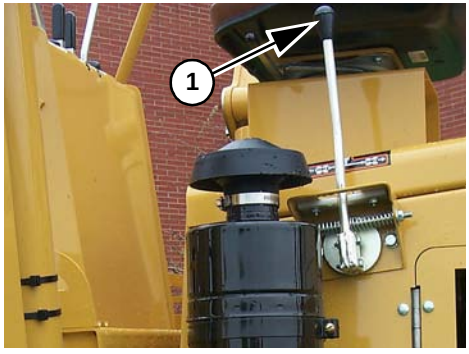
REMOTE THROTTLE CONTROL

(1) Remote Throttle Control Lever

Forward. . . . . increase engine speed
Back . . . . . .decrease engine speed



REMOTE CREEP CONTROL



(1) Remote Creep Control Lever

Push forward . . . . . variable speed FORWARD
Center . . . . . NEUTRAL
Pull back . . . . . variable speed REVERSE

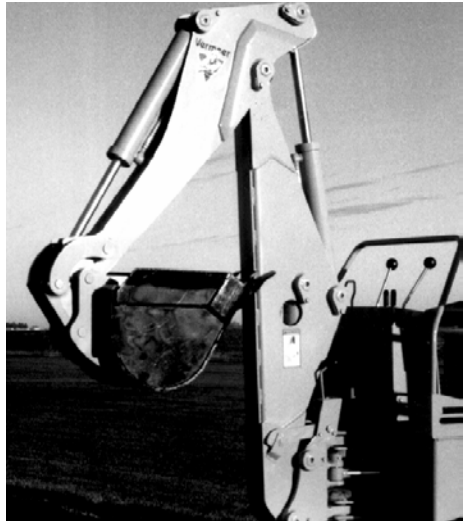
NOTE: Ground drive gearbox must be in LOW range to move machine.

Section 42: Transporting the Machine With Backhoe

Driving the Machine

WARNING: Never allow anyone to ride in the backhoe seat while the machine is being moved by an operator at the tractor controls. The backhoe operator station is not equipped with a Rollover Protective Structure and seat belts.

Transporting with Backhoe



Place backhoe dipperstick and bucket in a tucked position.

Secure the backhoe boom by engaging:

- Boom lift lock
- Swing lock

Rotate backhoe seat sideways for better forward visibility when driving the tractor.

Follow *Shutdown Procedure*, page *14-1*.

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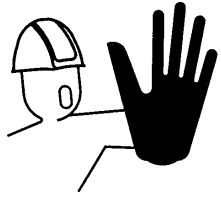
Section 43: Operating the Backhoe

BACKHOE SAFETY

WARNING: Before attempting to operate the machine, refer again to *Safety Messages, page 10-1*, and *Backhoe Safety Decals, page 40-1*, for important safety information.

Familiarize yourself with the location and function of the tractor controls and backhoe controls before operating. Refer to *Backhoe Controls, page 41-1*.

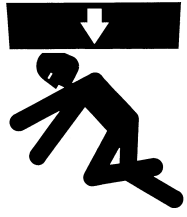
WARNING: Keep all spectators and other workers away from the backhoe swing area during operation. Being struck by the backhoe can seriously injure or kill.



WARNING: Operate the backhoe only while seated at the backhoe controls with feet positioned on the platforms. Do not move any controls while standing on the ground. Death or serious injury can occur if struck or crushed by the backhoe.

WARNING: Do not work in trench with unstable sides which could cave in. Cave-in could cause death or serious injury from suffocation. Specific requirements for shoring or sloping trench walls are available from several sources including federal and state O.S.H.A. offices. Be sure to contact suitable authorities for these requirements before working in the trench.

WARNING: Never work under an attachment unless it is adequately supported to prevent it from falling. The attachment may fall or shift, crushing anyone beneath it.



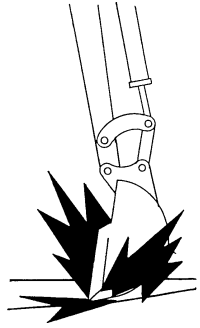
CALL YOUR ONE-CALL SYSTEM FIRST

WARNING: Always contact your local One-Call system before the start of your digging project. If you don't call, you may have an accident or suffer injuries, cause interruption of services, damage the environment, or experience job delays.

Before you start any digging project, don't 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 concerned to locate and mark the underground installations.

Refer to "Call Your One-Call System First," *page 10-5* in the *Safety Messages* section, for additional One-Call information.

UNDERGROUND UTILITY CONTACT



DANGER: Contact with buried utilities can cause death or serious injury.

- **Cut electric cables can shock or electrocute**
- **Ruptured gas lines can cause a fire or explosion**
- **Laser light from cut fiber optic cables can cause eye damage.**

Before excavating or boring, contact the local One-Call system and any utility company that does not subscribe to the One-Call system, to locate all buried utilities in and around the proposed excavation or bore.

OPERATION TIPS

- Adjust engine speed as needed based on digging conditions.
- Operate controls slowly at first, to become familiar with the speed of swing when moving boom from side to side.
- For best results, locate backhoe so digging is near the center of the swing.

Dual Operation of Controls

After becoming familiar with operating the backhoe, operators typically operate two controls at one time to hasten and simplify the digging operation. Smooth, light handling of these controls will result in more efficient backhoe operations.

Operating the dipperstick and bucket together will ensure full buckets and prevent lost motion and time.

For example:

- With bucket extended and dipperstick extended, the boom control and dipperstick control can be operated together to bring the bucket toward the operator with downward pressure on it.
- As dipperstick is extended away from you, dipperstick and bucket controls can be operated to move bucket up and away from the operator to save time in clearing the excavation.

BACKHOE STARTUP

Step 1: Follow *Starting Procedure*, page *13-1*.

Step 2: Place machine throttle between idle and 1/3 open throttle, depending on digging conditions.

Step 3: Use platform and grab handle to move from tractor operator's seat to backhoe operator's seat.

Step 4: Pivot backhoe seat to face forward.

WARNING: Rollover can crush. Always lower stabilizers before digging to improve stability when using the backhoe. Do not undermine stabilizers or tractor. Use extra caution in unstable soils.

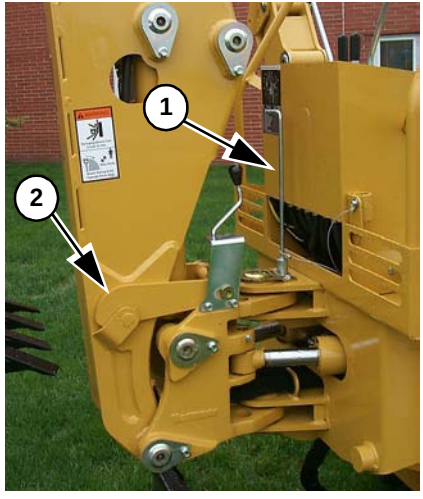
NOTE: Lower stabilizers at approximately the same time to decrease machine frame twist.

Step 5: Lower stabilizers to the ground to steady and level machine. Lower backfill blade to further stabilize machine.

Step 6: Remove swing lock pin **(1)** and place lock pin in storage holder.

Step 7: Fully raise backhoe boom, then pull boom lift lock lever to disengage the lock **(2)**.

Step 8: Use Throttle Lever to adjust engine speed based on digging conditions.



OPENING A TRENCH

WARNING: Operate the backhoe only while seated at the backhoe controls with feet positioned on the platforms. Do not move any controls while standing on the ground. Death or serious injury can occur if struck or crushed by the backhoe.

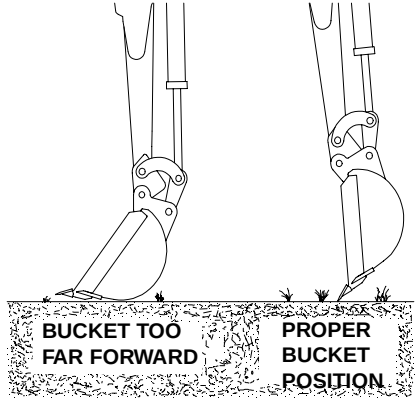
NOTE: Bucket must be properly positioned before starting digging operation.

Step 1: Place dipperstick in a vertical position.

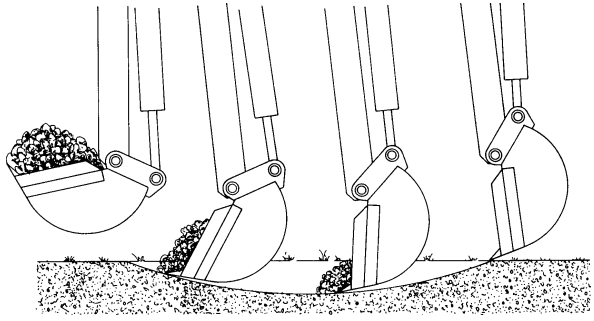
Step 2: Move dipperstick ahead approximately 2 ft (.6 m).

Step 3: Position bucket to remove 3–4″ (7–10 cm) of spoil from ground surface without dragging the heel of the bucket.

Step 4: Lower bucket to the ground and, by using downward pressure on the bucket, force bucket into the ground.



DIGGING



Once bucket is in the ground, simultaneously retract dipperstick and curl bucket until bucket is full.

If bucket stalls, raise boom slightly and continue procedure until the sequence is completed. Raise bucket to top of trench and dump the spoil.

When loading a truck with high sides, continue to curl bucket while raising boom to minimize spillage.

REMOTE CREEP

WARNING: Rollover can crush. Do not risk rollover. Follow the instructions in this section when using remote controls. If job site conditions are not suitable for using remote controls, then move to the tractor seat, fasten your seatbelt, and use the tractor controls to move the machine.

The remote creep control allows the backhoe operator to reposition the machine while digging. Forward travel may be used to position machines before digging. Use creep control only when:

- travel path is firm and level
- moving 5 ft (1.5 m) or less
- away from the excavation

To reposition the machine:

Step 1: Raise stabilizers and backfill blade.

Step 2: Use *Remote Creep Lever* to move machine forward or rearward.

Step 3: After repositioning machine, lower stabilizers and backfill blade before resuming operation.

BACKHOE SHUTDOWN

When finished excavating with the backhoe:

Step 1: Stow backhoe in transport position by placing dipperstick and bucket in a tucked position.

Step 2: Secure backhoe boom by engaging boom lift lock and swing lock.

Step 3: Raise stabilizers.

Step 4: Swivel seat.

Step 5: Return to the tractor operator station and follow *Shutdown Procedure*, page *14-1*.

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Section 50: Trencher Safety Decals

SAFETY DECAL MAINTENANCE

Refer to “Safety Decal Maintenance,” *page 11-1* in the *Safety Decals* section, for important decal maintenance information.

One decal on each side of trencher

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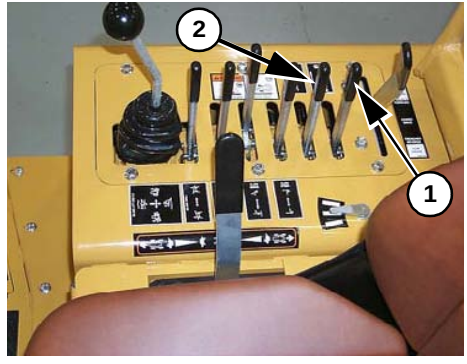
Section 51: Trencher Controls

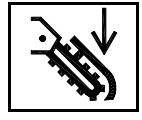
TRENCHER CONTROLS

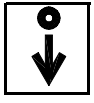
NOTE: Lever and switch functions may vary with tractor features.



(1) Trencher Lift Lever

Push.....lower trencher

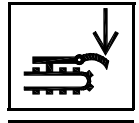


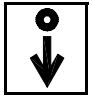


Pull .....raise trencher

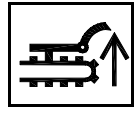
(2) Trench Cleaner Fold Control (Option)

Push.....lower trench cleaner

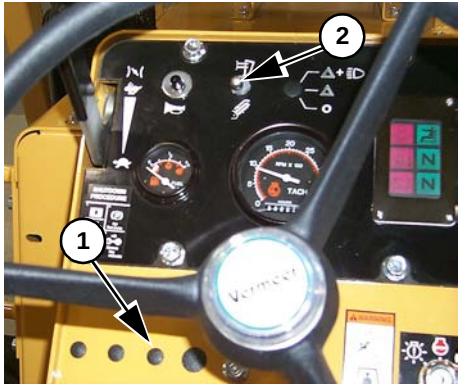




Pull .....raise trench cleaner



FUNCTION SELECTOR



The function selector **(1)** allows one valve section to control two hydraulic functions when the number of required hydraulic functions exceeds the capacity of the valve assembly.

NOTE: Switch location is indicated. Not all machines are equipped with the switch.

Up . . . . . trench cleaner function
Down . . . . . rear steer function

ATTACHMENT SELECTOR

(2) Attachment Selector Switch (Combo Attachment)

Down . . . . . select trencher

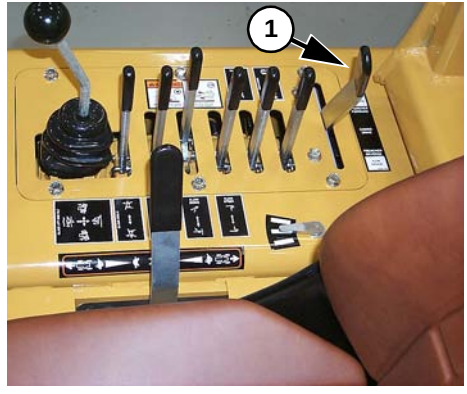
DIGGING CHAIN DRIVE CONTROLS

(1) Digging Chain Drive Lever

Push.....digging chain ON, variable speed FORWARD

Center.....digging chain OFF

Pull .....digging chain ON, variable speed REVERSE



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Section 52: Operating the Trencher

WARNING: Before attempting to operate the trencher refer again to *Safety Messages* section and *Trencher Safety Decals* section for important safety information.

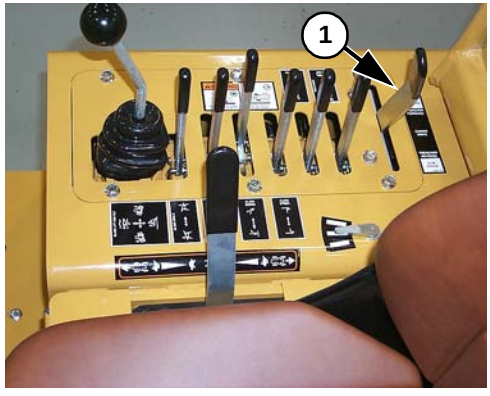
Familiarize yourself with the location and function of the tractor controls and trencher controls before operating. Refer to *Trencher Controls* section.

TRENCHING TIPS

For optimum trenching performance:

- Keep trencher chain adjusted properly.
- For light rock or dirt, use cup cutters. In these conditions, using a partial set of cutters can result in increased production. Start with 1/2 of a full set. Add more cutters if spoil removal is too slow.
- Ensure that cutters are in good condition and not worn.
- Rock and frost cutting normally require rotary cutters, shark teeth, or shark 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 the engine while trenching. Do not pull engine down below 2,200 rpm.

CHAIN SPEED - SET



Trenching and optimum chain speeds will vary depending on digging conditions.

In average conditions, running the chain speed at 1/2 to 3/4 speed may result in the best digging. In rocky conditions, slower chain speed may be the best speed for digging.

To determine the best chain speed for your ground conditions:

Step 1: Set *Digging Chain Drive Lever* **(1)** at about 2/3 speed.

Step 2: Adjust chain speed up and down until engine speed increases, then increase ground speed. Never run chain below 1/2 speed.

Step 3: Continue adjusting speed until optimal creep is achieved for digging conditions. In rocky conditions, a slower chain speed may be optimal.

Digging Conditions

Rock digging . . . . . slow chain speed

Frost digging . . . . . fast chain speed

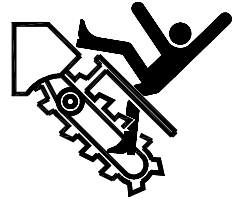
Muddy conditions . . . . . fast chain speed

It is not unusual to run the chain slower for maximum production. Some digging conditions such as rock digging require a great deal of force to carry the cutter through the material.

Mud, especially gumbo, plugs the chain quickly, so faster chain speeds are required to fling mud from the cutters.

Vary chain speed to find the best setting that maximizes cutting footage and carbide life.

TRENCHING

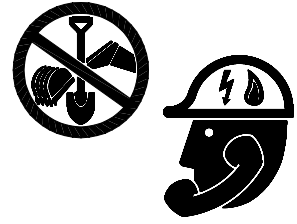


DANGER: Do not risk accidental contact with the digging chain while it is operating. Keep everyone well away from the digging chain. Contact with digging chain will result in death or serious injury.

DANGER: When operating the trencher, never allow anyone to stand at the edge of the trench above or near the digging chain. The trench might cave in, causing you to fall onto the digging chain, which will result in death or serious injury.

CALL YOUR ONE-CALL SYSTEM FIRST

WARNING: Always contact your local One-Call system before the start of your digging project.



Before you start any digging project, don't 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 concerned to locate and mark the underground installations.

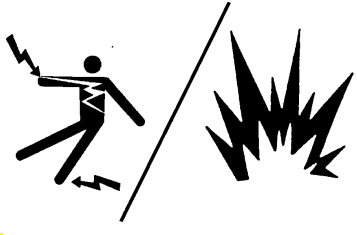
Refer to *Safety Messages* section, "Call Your One-Call System First," *page 10-5*, for additional One-Call information.

UNDERGROUND UTILITY CONTACT

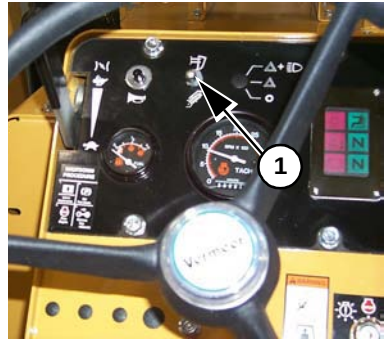
DANGER: Contact with buried utilities can cause death or serious injury.

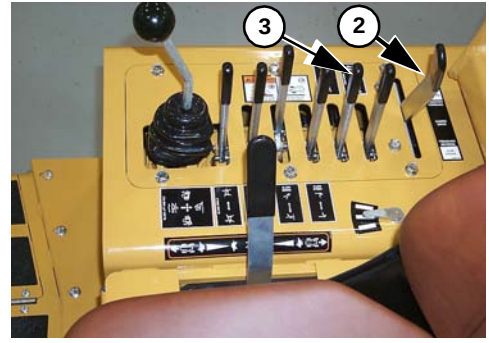
- **Cut electric cables can shock or electrocute**
- **Ruptured gas lines can cause a fire or explosion**
- **Laser light from cut fiber optic cables can cause eye damage.**

Before excavating or boring, contact the local One-Call system and any utility company that does not subscribe to the One-Call system, to locate all buried utilities in and around the proposed excavation or bore.



Starting the Trench





Step 1: Line machine up at beginning of trench.

Step 2: Raise trench cleaner arch:

Manual Trench Cleaner - With machine shut down, fold trench cleaner arch back, insert lock pin, and secure with hairpin.

Hydraulic Trench Cleaner - Raise trench cleaner.

IMPORTANT: A trench can be started without raising the trench cleaner, but the trench cleaner bridge tube can bend if boom is lowered into the ground without also moving the machine forward.

Step 3: Shift *Ground Drive Range Lever* to LOW.

Step 4: *(Combo only)* Move *Attachment Selector Switch* **(1)** down to trencher position.

Step 5: Push *Digging Chain Drive Lever* **(2)** to turn digging chain ON and set at approximately 2/3 speed.

Step 6: Push *Throttle Lever* to increase engine speed to full RPM.

Step 7: Push *Trencher Lift Lever* **(3)** to lower digging chain boom.

Step 8: Gradually lower boom to desired digging depth. Do not overload engine. If engine drops below 2,200 rpm, decrease creep speed until RPM increases, then continue to adjust creep speed to digging conditions.

NOTE: Keep creep speed slow when starting trench to avoid bending trench cleaner or restraint bar.

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

Step 9: Use *Ground Drive Creep Lever* to move machine forward. Adjust ground drive speed for best productivity once required trench depth is reached.

Trench Cleaner - Lower

Lower trench cleaner as follows:

Hydraulic Trench Cleaner - Push *Trench Cleaner Control Lever* and lower trench cleaner.

Manual Trench Cleaner -

a. Place ground drive controls in NEUTRAL and raise boom out of the ground after completing plunge cut.

b. Shut off trencher drive and engine.

c. Remove lock pin and lower trench cleaner arch. Insert lock pin and secure it with hair pin.

Completing the Trench

Step 1: Follow guidelines in “Chain Speed” section and continue cutting trench. Keep engine speed above 2,200 rpm.

NOTE: If engine pulls down too far, pushing on rear of *Ground Drive Pedal* to slow creep speed will allow engine to pick up speed. If digging becomes easier after a few feet, pushing on front of pedal will increase machine creep speed without using *Ground Drive Creep Lever*.

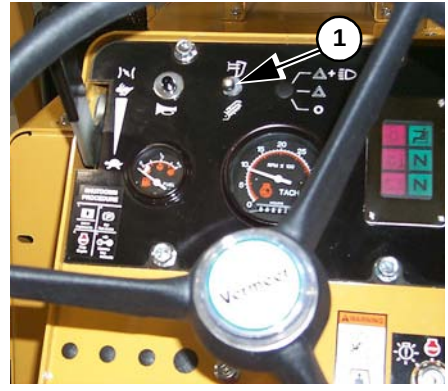
Step 2: Move *Propel Lever* to NEUTRAL to stop machine travel.

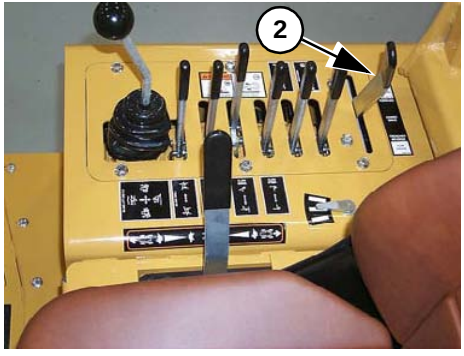
Step 3: Raise boom slowly. When the digging chain is out of the ground, move *Trencher Drive Lever* to OFF.

Section 60: Plow Controls

(1) Attachment Selector Switch (Combo Attachment)

Up . . . . . select plow





(2) Plow Shaker Drive Lever

Push.....**DO NOT USE WITH SHAKER**

Center.....shaker off

Pull .....variable shaker speed

NOTE: Shaker speed is also affected by engine RPM.

NOTE: Refer to control lever decals to identify correct levers for the following plow functions.

Plow Lift Lever

Push..... lower plow

Center..... off

Pull ..... raise plow

Plow Swing Lever

Push..... swing plow right

Push to detent.....plow swing floats

Center..... off

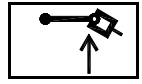
Pull .....swing plow left

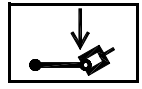
Plow Steer Lever

Push ..... plow steers right

Center ..... off

Pull ..... plow steers left





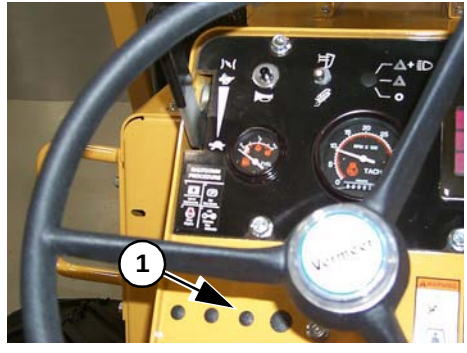
FUNCTION SELECTOR

The function selector **(1)** allows one valve section to control two hydraulic functions when the number of required hydraulic functions exceeds capacity of valve assembly.

NOTE: Switch location is indicated. Not all machines are equipped with the switch.

Down . . . . . refer to left side of control decals

Up . . . . . refer to right side of control decals

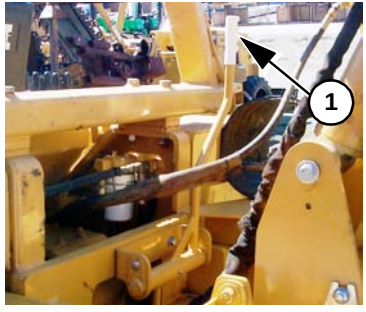


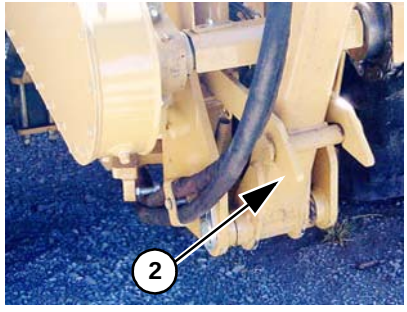
PLOW TRANSPORT LOCK

(1) Plow Transport Lock Lever

Pull lock lever **(1)** to release plow lock and lower plow for operating. Plow must be fully raised to release lock. To lock plow for transport, fully raise plow. Lock engages automatically as shown **(2).**

Raise plow to engage lock before transporting.





Section 61: Operating the Plow

WARNING: Before attempting to operate the plow, refer again to *Safety Messages, page 10-1*, for important safety information.

Familiarize yourself with the location and function of the tractor controls and plow controls before operating. Refer to *Plow Controls, page 60-1*.

Call Your One-Call System First

WARNING: Always contact your local One-Call system before the start of your digging project. If you don't call, you may have an accident or suffer injuries, cause interruption of services, damage the environment, or experience job delays.

Before you start any digging project, don't 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 concerned to locate and mark the underground installations.

Refer to "Call Your One-Call System First," *page 10-5* in the *Safety Messages* section, for additional One-Call information.

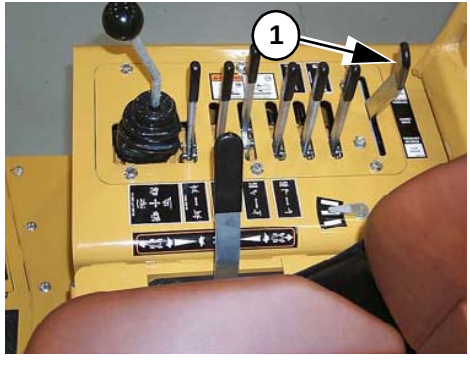
PLOWING TIPS

WARNING: Never work under an attachment unless it is adequately supported to prevent it from falling. The attachment may fall or shift, crushing anyone beneath it.

For optimum plowing performance:

- Keep tractor maintained properly and operating at full power. Use proper fuel, oil, and hydraulic oil.
- In most ground conditions, a plow blade with a toe is not necessary. In hard and dry soil conditions, a blade with a small toe will help maintain the working depth of the plow. Plow blades with a standard toe may cause too much downward pressure and are not recommended for this plow unit.
- Keep plow blade sharp and in good condition.
- Do not overload engine while plowing.

SETTING SHAKER SPEED



Optimum ground and shaker speeds are dependent upon soil conditions. The maximum shaker speed of 1,800 to 2,000 rpm may not be the most efficient. It uses more power and produces less up-and-down movement than lower speeds. The hydraulic drive allows shaker speed to be adjusted as conditions require.

To determine the best RPM for your ground condition:

Step 1: Move *Plow Shaker Drive Lever* **(1)** 3/4 of the way to full speed.

Step 2: Set ground speed.

Step 3: Adjust shaker speed up or down until engine RPM increases; then increase ground speed.

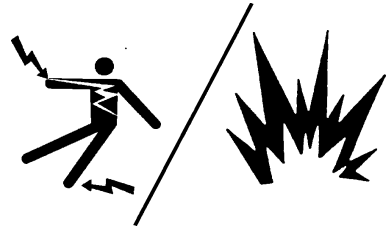
Step 4: Repeat until optimum ground and shaker speeds are reached. (Most plowing conditions require full shaker RPM.)

UNDERGROUND UTILITY CONTACT

DANGER: Contact with buried utilities can cause death or serious injury.

- **Cut electric cables can shock or electrocute**
- **Ruptured gas lines can cause a fire or explosion**
- **Laser light from cut fiber optic cables can cause eye damage.**

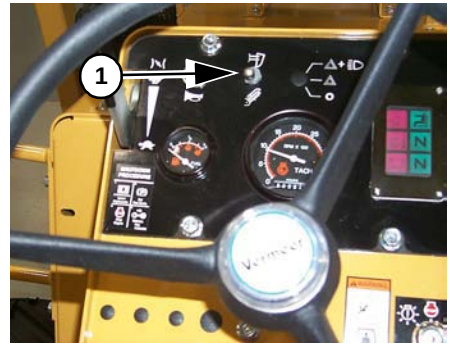
Before excavating or boring, contact the local One-Call system and any utility company that does not subscribe to the One-Call system, to locate all buried utilities in and around the proposed excavation or bore.



PLOWING

Step 1: Follow *Starting Procedure*, page *13-1*.

Step 2: *(Combo attachment only)* Move *Attachment Selector Switch* **(1)** up to select plow function.



Starting With a Bell Hole or Trench

WARNING: Do not work in trench with unstable sides which could cave in. Cave-in could cause death or serious injury from suffocation. Specific requirements for shoring or sloping trench walls are available from several sources including federal and state O.S.H.A. offices. Be sure to contact suitable authorities for these requirements before working in the trench.

NOTE: Bell hole or trench enables plow blade to lower and easily start at desired depth.

Step 1: Remove feed tube gate **(A).**

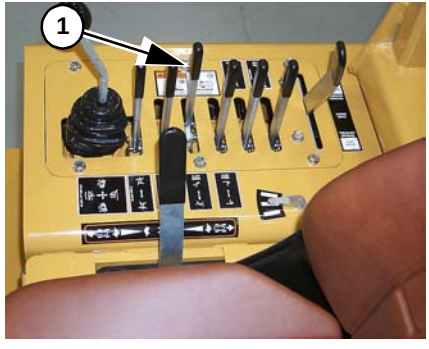
Step 2: Move machine into starting position.

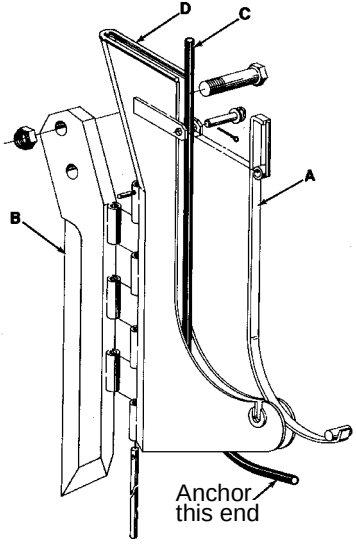
Step 3: Push lever **(1)** and lower plow blade **(B)** into starting hole until tamping feet contact ground.

Step 4: Follow *Shutdown Procedure*, page *14-1*.

NOTE: For 1–2″ (2.5–5 cm) diameter cable **(C)**, use a feed tube **(D)** with an inside diameter at least 1/4″ (6 mm) larger than the cable.

Step 5: Install cable **(C)** into feed tube **(D).** Reinstall feed tube gate **(A)** and secure with cable gate pin. Anchor free end of cable to prevent it from being pulled into the plow cut.

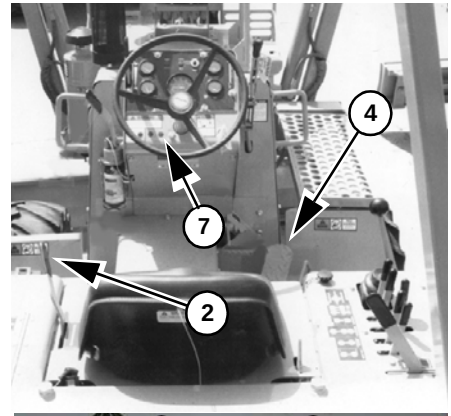




Step 6: Shift transmission lever **(2)** to LOW.

IMPORTANT: The tractor must be completely stopped before selecting the ground drive range. Apply foot brake or park brake if on a slope, to prevent tractor from rolling. If necessary, jog *Ground Drive Control Pedal* slightly to help align gears when shifting.

Step 7: Follow *Starting Procedure*, page *13-1*. Using *Creep Drive Lever* **(3)** or *Ground Drive Pedal* **(4),** move machine and lower plow until plow blade contacts dirt.

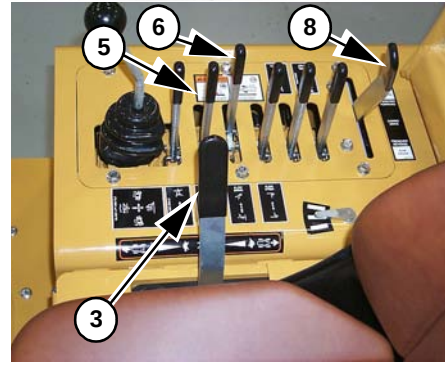


Step 8: Once tamping feet contact the ground, depress tamping feet springs approximately 1″ (2.5 cm). Use *Plow Lift Lever* **(5)** to maintain downward pressure and control blade depth. Move *Plow Swing Lever* **(6)** to FLOAT position.

NOTE: If necessary, push *Function Selector* **(7)** down for plow steer.

Step 9: Pull *Plow Shaker Drive Lever* **(8)** to the left to start the shaker.

Refer to “Starting the Cut” in this section to continue forward travel.



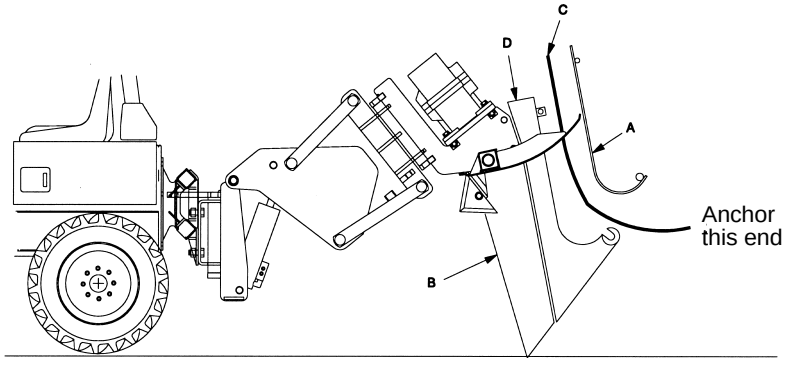
Starting Without a Bell Hole or Trench

NOTE: Bell hole or trench enables plow blade to lower and easily start at desired depth. Starting to plow without a bell hole requires several feet of travel before plow blade will be at its full depth.

Step 1: Position machine and plow blade **(B)** at starting point. Push *Plow Lift Lever* **(1)** and lower blade to the ground.

Step 2: Remove feed tube gate **(A)**.

NOTE: For 1–2″ (2.5–5 cm) diameter cable **(C)**, use a feed tube **(D)** with an inside diameter at least 1/4″ (6 mm) larger than the cable.



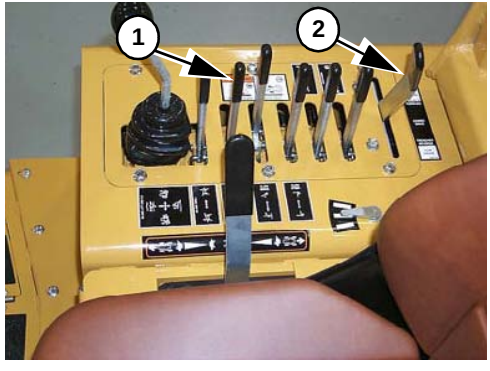
Step 3: Install cable **(C)** into feed tube **(D).** Reinstall feed tube gate **(A)** and secure with cable gate pin. Anchor free end of cable to prevent it from being pulled into the plow cut.

Step 4: Use *Plow Lift Lever* **(1)** to push plow blade into the ground.

NOTE: If necessary, push *Function Selector* down for plow steer.

Step 5: Move ahead until plow blade is approximately halfway into the ground.

Step 6: Pull *Plow Shaker Drive Lever* **(2)** to the left to start shaker. Continue forward travel and lower plow blade until blade is at proper depth.



Starting the Cut

IMPORTANT: The *Plow Lift Lever* **(1)** must be actuated to control downward pressure on the tamping feet. Excessive downward or upward pressure will transfer shaker vibration to tractor, possibly causing tractor damage and lost production.

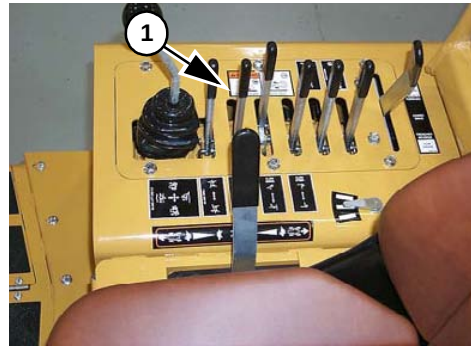
Step 1: Push *Throttle Lever* **(2)** until engine is at full RPM.

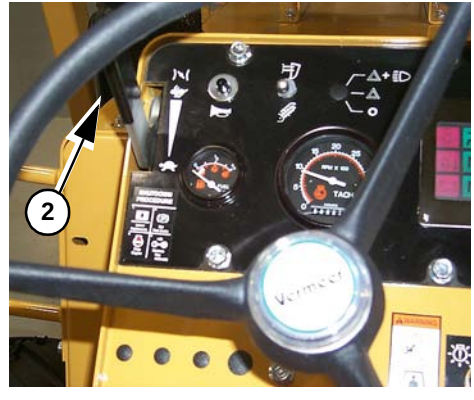
Step 2: Adjust ground speed and shaker speed for optimum plowing speed. Do not overload engine. Plowing speed will depend on ground conditions and plow blade size and style. Refer to “Shaker Speed - Set” in this section.

NOTE: The optional sod cutter should cut 2–3″ (5–8 cm) into the soil. The tamping feet should be depressed about 1″ (2.5 cm).

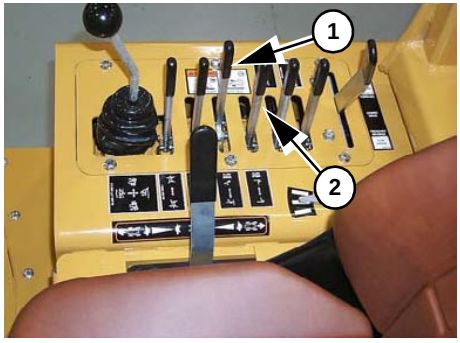
NOTE: For the most efficient plowing, keep the cutting edges of the plow blade and sod cutter sharp.

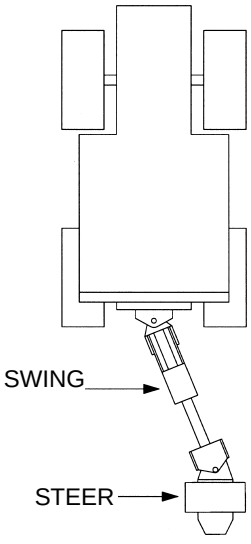
Step 3: Use *Plow Lift Lever* **(1)** to control downward pressure on the tamping feet.





Steering





Step 1: With *Plow Swing Lever* **(1)** in FLOAT position, use *Plow Steer Lever* **(2)** to reposition plow. Push lever to move plow right; pull to move plow left.

Step 2: After plow has reached maximum swing, realign plow blade with direction of travel to avoid significantly slowing forward movement of plow. It may help to return *Plow Swing Lever* to CENTER, applying some outward pressure with swing cylinder to maintain maximum plow steer.

Step 3: Further adjustment (i.e., steering back to center) requires placing *Plow Swing Lever* in FLOAT position.

Offset Plowing Position

It is possible to start plowing from an offset position. After following Steps 1–3 above:

Step 4: Swing plow to required position.

Step 5: Lower plow until ground contact is made.

Step 6: Position plow blade steer so that blade is aligned with the direction of travel.

NOTE: Failure to realign blade after maximum swing is reached will significantly slow forward movement of plow.

Step 7: Proceed as previously described to lower blade into ground. See “Starting With a Bell Hole or Trench,” *page 61-4*, or “Starting Without a Bell Hole or Trench,” *page 61-6* in this section.

IMPORTANT: Removing plow blade from the ground in an offset position will develop side load pressure against the blade, possibly damaging it. Pressure is dependent on ground conditions, amount of offset, and blade length. The worst condition is very hard ground with full offset and a maximum-length blade. Eliminate pressure by turning plow blade until it is pointing toward the swing pivot center, or by reducing amount of offset before lifting plow out of the ground.

PLOWING - STOP

Step 1: Move *Creep Control Lever* to NEUTRAL to stop machine travel.

Step 2: Lower engine RPM to idle.

Step 3: Disengage shaker drive by moving *Plow Shaker Drive Lever* to NEUTRAL.

Step 4: Raise plow out of the ground to its full height.

Step 5: If required, the shaker drive can be run at a slow speed while raising plow. Disengage drive once plow blade is free from the ground.

Step 6: If plow is offset, swing plow frame to its center position.

Step 7: Raise plow slowly to its full height to engage plow transport lock.

Step 8: Follow *Shutdown Procedure*, page *14-1*.

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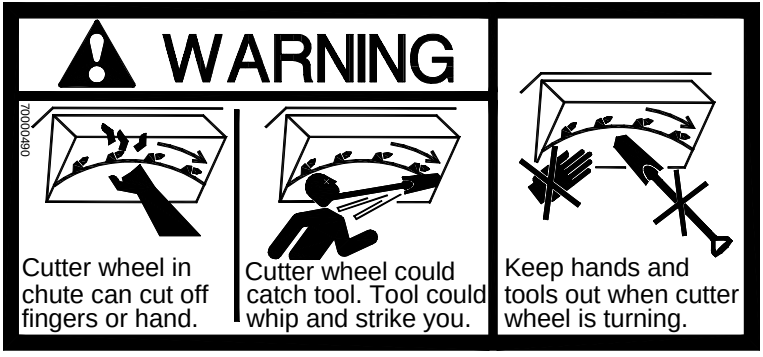
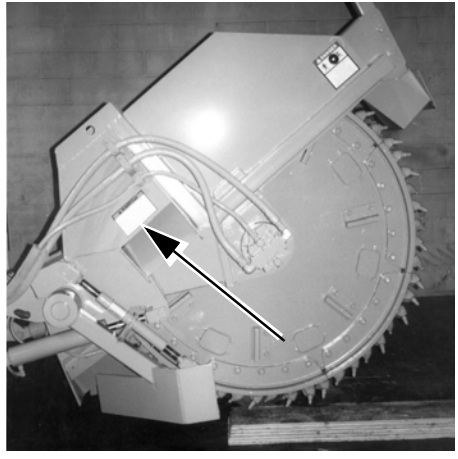
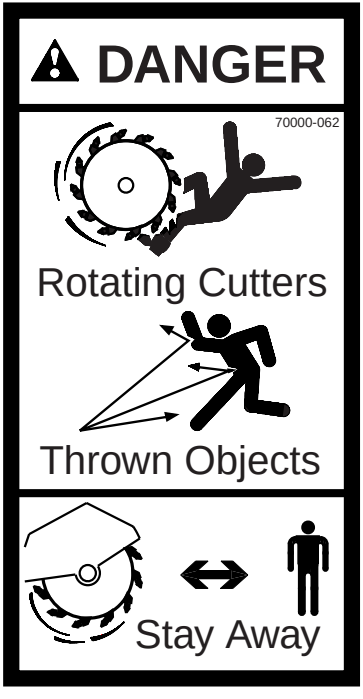
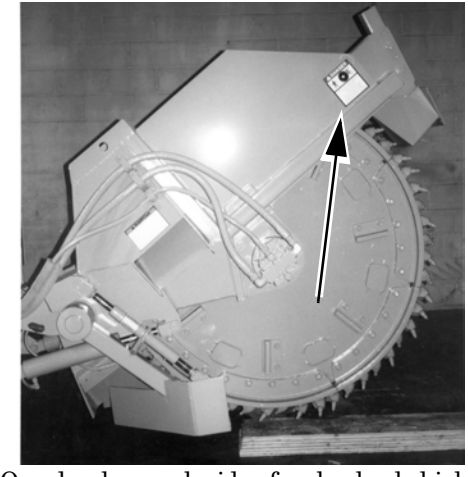
Section 70: Rock Wheel Safety Decals



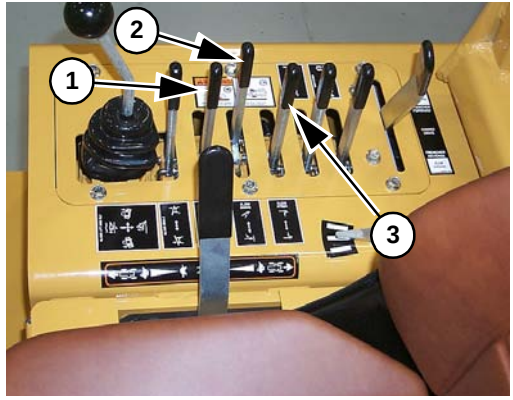




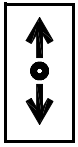


One decal on each side of rock wheel shield

Section 71: Rock Wheel Controls



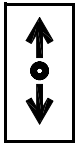
(1) Cutter Wheel Lift Lever



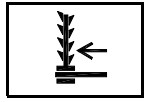
Push . . . . . lower cutter wheel

Pull . . . . . raise cutter wheel

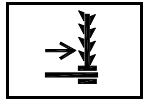
(2) Shift Lever



Push . . . . . shift cutter wheel left

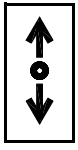


Pull . . . . . shift cutter wheel right



IMPORTANT: Always center wheel to improve stability before driving machine.

(3) Stabilizer Lift Lever

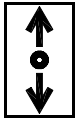


Push . . . . . lowers stabilizers

Pull . . . . . .raises stabilizers

(4) Cutter Wheel Drive Lever

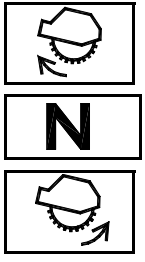
Controls direction and speed of the cutter wheel. Wheel speed increases as lever is moved farther away from center.

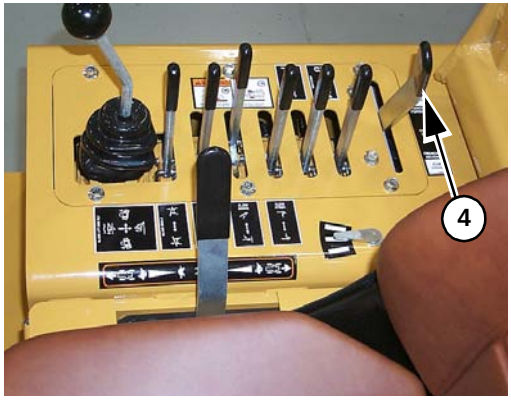


Push . . . . . turns cutter wheel forward

Center . . . . . NEUTRAL/cutter wheel stationary

Pull . . . . . turns cutter wheel in reverse





Section 72: Operating the Rock Wheel

WARNING: Before attempting to operate the rock wheel, refer again to *Safety Messages* section, and *Rock Wheel Safety Decals, page 70-1* sections for important safety information.

Familiarize yourself with the location and function of the tractor controls and rock wheel controls before operating. Refer to *Rock Wheel Controls, page 71-1*.

CALL YOUR ONE-CALL SYSTEM FIRST

WARNING: Always contact your local One-Call system before the start of your digging project.

Before you start any digging project, don't 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 concerned to locate and mark the underground installations.

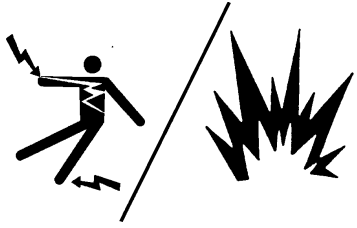
Refer to *Safety Messages* section, "Call Your One-Call System First," *page 10-5*, for additional One-Call information.

UNDERGROUND UTILITY CONTACT

DANGER: Contact with buried utilities can cause death or serious injury.

- **Cut electric cables can shock or electrocute**
- **Ruptured gas lines can cause a fire or explosion**
- **Laser light from cut fiber optic cables can cause eye damage.**

Before excavating or boring, contact the local One-Call system and any utility company that does not subscribe to the One-Call system, to locate all buried utilities in and around the proposed excavation or bore.



CRYSTALLINE SILICA

Breathing crystalline silica dust over time can cause silicosis, a disabling, nonreversible, and sometimes fatal disease of the lungs. United States Federal O.S.H.A. has established exposure limits for the work site. Avoid exposure to dust containing crystalline silica particles in excess of these limits.

Because crystalline silica is a basic component of sand and granite, many activities at construction sites such as trenching, sawing, and boring of material, produce dust containing crystalline silica. When working in soils containing sand or granite, air monitoring may be necessary to determine whether job site conditions expose workers to excessive levels of crystalline silica dust. Depending upon air monitoring results, the following measures may be necessary to avoid exposure to excessive levels of crystalline silica dust:

- Be aware of and follow the guidelines of United States O.S.H.A. 29 CFR 1926.55, or other applicable regulatory guidelines.
- Reduce dust concentration using water spray or other methods.
- Use a respirator approved for protection from crystalline silica dust, or a cab with positive ventilation.

- If possible, change into disposable or washable clothes on the work site. Shower and change into clean clothing before leaving the work site.
- Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica dust. Wash hands before eating, drinking, or using these products.
- Store food, drink, and personal belongings away from the work area.

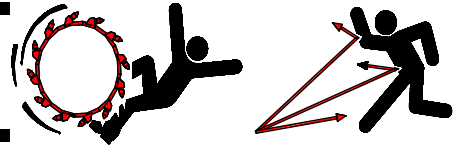
DUST SUPPRESSION

Use a dust suppression system, such as a water spray, if dust produced by cutter wheel obscures the operator's view of the cutter wheel or if the dust reduces the visibility for vehicular traffic.

CUTTING

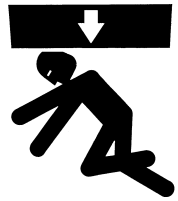
WARNING: Shut off the power to the cutter wheel before moving the machine with the cutter wheel raised.

DANGER: Rotating cutter wheel can kill or cut off arm or leg. Material thrown by cutter wheel can cause serious injury. Stay away from cutter wheel and work area until engine and cutter wheel have stopped.



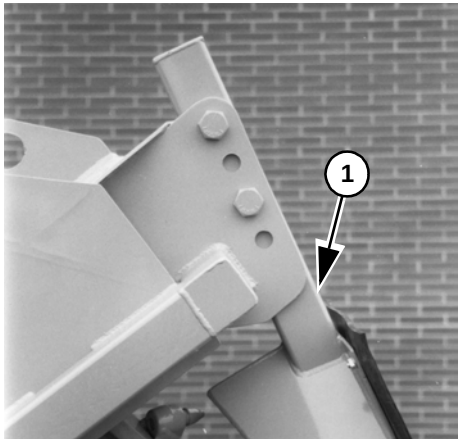
WARNING: Never work under a raised attachment unless it is adequately supported or suspended to prevent it from falling unexpectedly.

The attachment may fall or shift, crushing anyone beneath it.



Trench Cleaner/Spoil Deflector - Adjust

Support trench cleaner/spoil deflector **(1)**, then loosen bolts and position as desired.

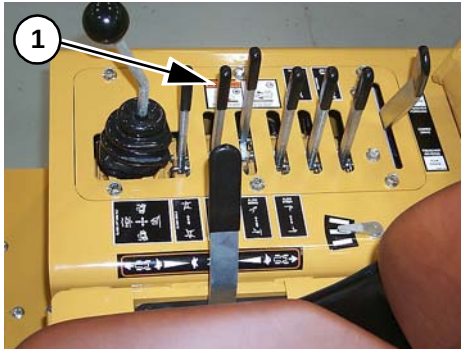


Position Machine

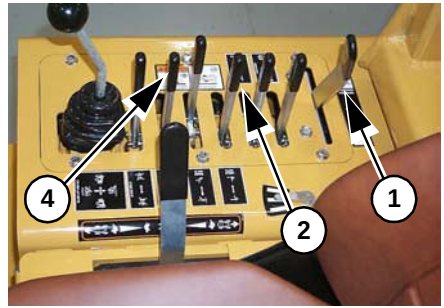
Step 1: Position machine at the starting point of the trench. Whenever possible, start cutting at the edge of the rock or concrete.

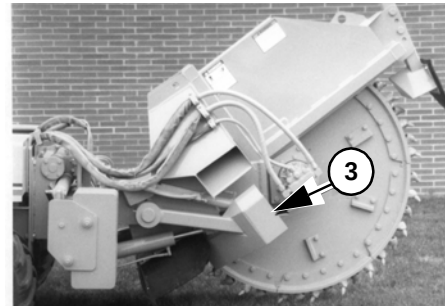
Step 2: Lower cutter wheel using *Cutter Wheel Lift Lever* **(1)** until it is about 1″ (3 cm) from the ground.

Step 3: Engage *Park Brake.*



Begin Cut





Step 1: Set *Ground Drive Range Lever* to LOW.

Step 2: Increase engine RPM to full throttle.

Step 3: Push *Cutter Wheel Drive Lever* **(1)** to full forward to start cutter wheel.

IMPORTANT: Never operate at less than 1/2 wheel speed. Hydrostatic system overheating and damage can result.

Step 4: If equipped, use *Stabilizer Lever* **(2)** to lower stabilizers **(3)** until they touch the ground.

WARNING: Be alert for cutter teeth catching. Unexpected rearward movement can result when making plunge cuts or when back-cutting.

If a tooth catches and starts pulling machine rearward, place cutter wheel drive in NEUTRAL and apply brake.

Step 5: Use *Cutter Wheel Lift Lever* **(4)** to lower cutter wheel until stabilizers start to force tractor rear wheels off the ground.

Step 6: Slowly raise stabilizers to lower wheel into ground. Maintain stabilizer contact with ground.

Step 7: After wheel has penetrated about 8″ (20 cm), drive forward approximately 1 ft (30 cm) while continuing to cut. Then stop driving forward and lower cutter wheel an additional 8″ (20 cm).

Step 8: Continue to lower wheel, then move ahead until desired trench depth is reached.

Step 9: Disengage *Park Brake*.

Step 10: Engage *Ground Drive* controls.

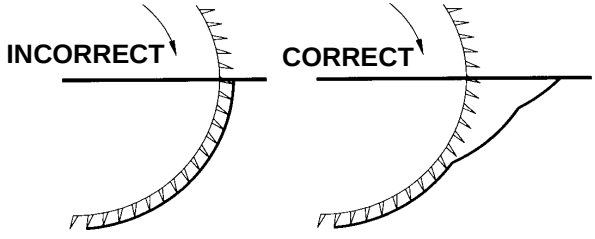
Step 11: Proceed with cutting operation.

Plunge Cutting

When making a plunge cut, lower cutter wheel slowly to reduce machine bounce.

After the wheel has penetrated about 8″ (20 cm), drive forward approximately 1 ft (30 cm) while continuing to cut. Then stop driving forward and lower cutter wheel an additional 8″ (20 cm). Continue to lower wheel, then move ahead until desired trench depth is reached.

Lowering wheel too far without moving forward will result in the teeth hammering on the back side of the cut. Excessive vibration and reduced machine life will result.



Efficient Operation

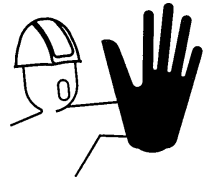
- Different types of roadway or rock, different digging depths, and desired smoothness of finished cut will all affect optimum wheel speed, ground speed, and stabilizer use. The operator will have to experiment for best settings according to local conditions.
- Back cutting (cutting bits hitting top of road or rock surface as they enter the cut) should be avoided. Correct the alignment of the cutter wheel with the direction of travel by changing the position of the rear tractor tires.

Depth Corrections

After making a depth correction, allow machine to travel far enough to expose approximately 5 ft (1.5 m) of new trench. This will allow the new depth to be determined accurately. Making depth corrections too frequently over a short distance will result in a wavy trench bottom.

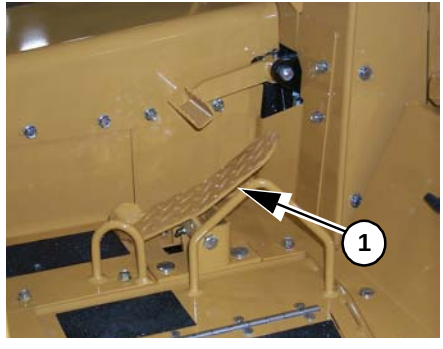
When the operator has an assistant measuring trench depth, the assistant must stay away when the cutter wheel is turning.

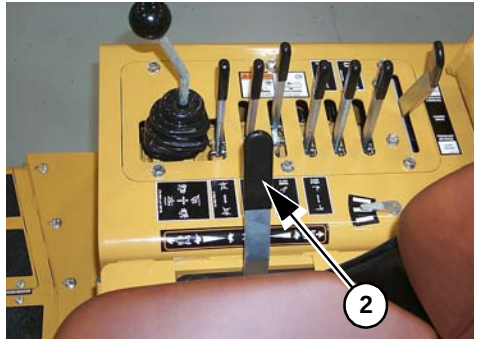
DANGER: Moving cutter wheel can kill or cut off arm or leg. Trench cave-in may cause you to fall onto the moving cutter wheel. Stay away. Do not work in or near a trench with unstable sides which could cave in.



Ground Drive

Use *Ground Drive Pedal* **(1)** or *Creep Lever* **(2)** to move the machine.





Creep Lever - Override

While cutting, the *Ground Drive Pedal* will override *Creep Lever* setting. This is helpful when cutting conditions change. If engine pulls down too far, pushing foot pedal back will slow creep speed and allow engine to pick up speed. If cutting becomes easier for a few feet, pushing foot pedal forward will increase machine creep speed without moving *Creep Lever*.

Straight Line Cutting

To cut a straight trench, place a line along the side of the unit parallel to the proposed trench. Line up the tractor with the line so the front wheel is the same distance from the line as the rear wheel. Steer the machine (front and rear axle) to maintain the preset distance to both front and rear wheels throughout the length of the trench.

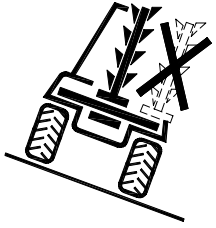
Completing the Trench

Step 1: Stop machine travel. Slowly move *Cutter Wheel Drive Lever* to NEUTRAL to stop cutter wheel.

Step 2: Raise cutter wheel and stabilizers slowly.

WARNING: Rock wheel in offset position reduces machine stability. Rollover may result in serious crushing injury or death.

Never drive across slope with rock wheel shifted to downhill side. Center rock wheel before driving machine.



Step 3: Before traveling with the cutter wheel raised, position tractor on a level surface and center cutter wheel if equipped with sliding offset.

Section 80: Operating the Reel Carrier

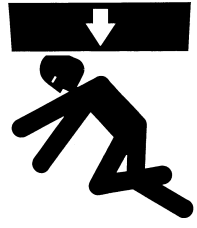
WARNING: Before attempting to operate the machine, refer again to *Safety Messages, page 10-1* and to *Safety Decals, page 11-1* for important safety information.

Familiarize yourself with the location and function of the tractor controls before operating.

WARNING: For improved stability and to reduce risk of rollover, lower the reel carrier as close to the ground as possible when driving the machine or loading onto a trailer.

WARNING: Never work under a raised attachment unless it is adequately supported or suspended to prevent it from falling unexpectedly.

The attachment may fall or shift, crushing anyone beneath it.



CARRY REELS ONLY

WARNING: Do not use reel carrier to lift or transport anything other than reels.

Do not attempt to lift or transport reels heavier than the rated capacity of the reel carrier.

Reel carrier has a rated capacity of 1,500 lb (680 kg).

MACHINE COUNTERWEIGHTS

Use of reel carrier requires counterweighting. Refer to *Counterweight Requirements, page 5-1*.

LOAD REEL

Step 1: Remove bolts and washer **(1)** on end of reel shaft.

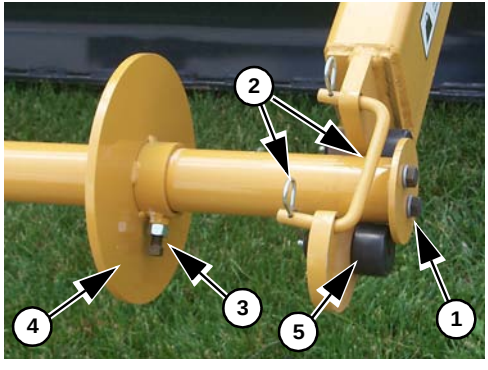
Step 2: Remove hairpins and links **(2)** from both reel carrier arms.

Step 3: Loosen set screw **(3),** and remove slide stop **(4)** from shaft. Slip shaft through center of reel and adjust slide stops so reel is centered on shaft. Tighten set screws **(3)**.

Step 4: Install washer and bolts **(1)** on end of reel tube.

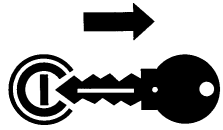
Step 5: Follow *Starting Procedure*, page *13-1*. Position reel carrier lift arms so that shaft rests on rollers **(5)** as shown, and reel is 1–2″ (2–5 cm) off ground.

Step 6: Follow *Shutdown Procedure*, page *14-1*. Install links **(2)** and hairpins to hold shaft in place.



Section 90: Maintenance Schedule

WARNING: Before servicing, cleaning, repairing, inspecting, lubricating, fueling, or transporting the machine, refer to the *Shutdown Procedure*, page *14-1* for proper instructions.



Maintenance Manual

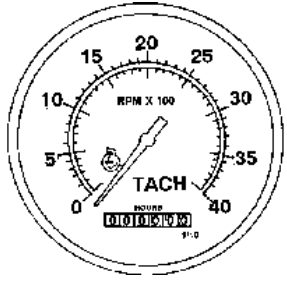
Maintenance intervals are included for reference only. Before performing any maintenance, refer to the Maintenance Manual for safety guidelines and correct procedures.

Greasing the Machine

As a general rule, grease the machine after it is shut down for the day. This protects the metal under the seals from corrosion caused by condensation as the temperature drops.

Ensure all fittings and the nozzle of the grease applicator are clean before applying the grease. If any grease fittings are missing, replace them immediately.

Check Hourmeter for Maintenance Interval



The hourmeter is used to determine maintenance intervals for the machine. The hourmeter indicates the total number of hours the engine has been in operation.

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

MAINTENANCE INTERVALS

Every 5 Service Hours or Twice Daily

Trencher Maintenance

- End Idler - Grease
- Boom Head Pivots - Grease
- Auger Bearings - Grease

Every 10 Service Hours or Daily

- Fuel Tank - Fill
- Fluid Levels - Check
- Cooling System - Check
- Air Cleaner and Restriction Indicator - Check

Porta Bore Maintenance

- Porta-bore I Drive - Grease

Backhoe Maintenance

- Bucket Cylinder and Bucket Pins (B-500) - Grease
- Bucket Cylinder Pins (B600) - Grease
- Bucket Linkage Pins (B600) - Grease
- Dipperstick Cylinder Pins - Grease
- Dipperstick Pin - Grease
- Main Boom Pin - Grease
- Boom Cylinder Pins - Grease
- Swing Pin - Grease
- Swing Cylinder Pins - Grease
- Stabilizer Pivot Pin - Grease
- Stabilizer Cylinder Pins - Grease

Plow Maintenance

- Lift Cylinder - Grease
- Plow Swing Pivot - Grease
- Pull Arm Pivots - Grease
- Plow Lift - Grease
- Plow Steer Pivot (Option) - Grease
- Steer Cylinder (Option) - Grease
- Shaker Gearbox Oil - Change
- Tamping Shoe Condition - Check
- Shaker Gearbox Oil - Check

Trencher Maintenance

- Trencher Lift Cylinders - Grease
- Hydraulic Trench Cleaner Cylinder - Grease
- Motor Housing Bearings - Grease
- End Idler Side Play - Check

Rock Wheel Maintenance

- Planetary Gearbox and Support Bearing - Check

Every 50 Service Hours or Weekly

- Engine Belt Condition - Check
- Axle Drive - Grease

- Dana Steerable Axle - Grease
- Planetary Axle Pivot - Grease
- Axle Differential Oil - Check
- Axle Planetary Hub Oil - Check
- Planetary Axle Differential Oil - Check
- Control Pedals - Grease
- 2-Speed Drop Gearbox Oil - Check
- Control Levers Linkage - Oil
- Axle Drive Coupler Chain - Oil
- Slide Wear Pads and Bolts (SO5750) - Check

Trencher Maintenance

- Boom Tightener Grease Tube - Grease
- Trencher Components - Check
- Trencher Digging Chain - Check

Rock Wheel Maintenance

- Planetary Gearbox and Support Bearing Oil - Initial Change
- Stabilizers - Grease
- Rock Wheel Pivots - Grease

Every 100 Service Hours

- Brake Master Cylinder Fluid - Check
- Oil Cooler - Clean
- Neutral Start Interlock - Check
- Overall Machine - Check
- Indicator Lights - Check
- Operator Presence System - Check

Backhoe Maintenance

- Backhoe - Check
- Backhoe Hydraulic Components - Check

Trencher Maintenance

- Trencher Hydraulic Components - Check
- Control Lever - Check
- Overall Attachment - Check

Every 250 Service Hours or 3 months

- Engine Oil and Filter - Change
- Hydraulic Fluid Filters - Initial Change

Every 500 Service Hours or 6 Months

- Fuel Filters - Change
- Hydraulic Fluid Filters - Change
- Battery Electrolyte Level and Terminals - Check

Plow Maintenance

- Shaker Gearbox Oil - Change

Rock Wheel Maintenance

- Planetary Gearbox and Support Bearing Oil - Change

Every 1000 Service Hours or Yearly

- Hydraulic Fluid - Change
- Inline Fuel Filter - Change

- Transfer Case Oil - Change
- Axle Differential Oil (Dana Axle) - Change
- Axle Differential Oil (Planetary Oil) - Change
- Axle Planetary Oil - Change

As Required

- Engine - Check
- Battery - Replace
- Air Cleaner - Replace
- Rollover Protection Structure (ROPS) - Check
- Seat Belts - Check
- Control Lever Tension - Adjust
- Bolt Torque - Check
- Park Brake - Adjust
- Service Brake - Check
- Storage

Porta Bore Maintenance

- Porta Bore Boring Rod, Extension Shaft, and Adapter - Clean

Backhoe Maintenance

- Bucket Teeth - Replace
- Bucket - Replace

Plow Maintenance

- Plow Blade Condition - Check
- Sid Knife (Option) Condition - Check

Trencher Maintenance

- Digger Drive Sprocket - Reverse/Replace
- Auger Shaft Bearings - Replace
- Rock and Frost Slide - Maintain
- Digging Chain - Maintain
- Digging Chain - Adjust
- Digging Chain - Remove/Install
- Digging Chain Wear - Check
- Cutters - Replace
- Base Plates - Replace
- Trench Cleaner Bridge - Adjust
- Restraint Bar - Adjust
- Augers - Maintain
- Slide Wear Pads (SO5750) - Adjust
- Slide Wear Pads (SO5750) - Maintain

Rock Wheel Maintenance

- Spoil Deflector Belting - Replace
- Cutter Segment Bolts - Replace
- Hydraulic Components - Check

Index

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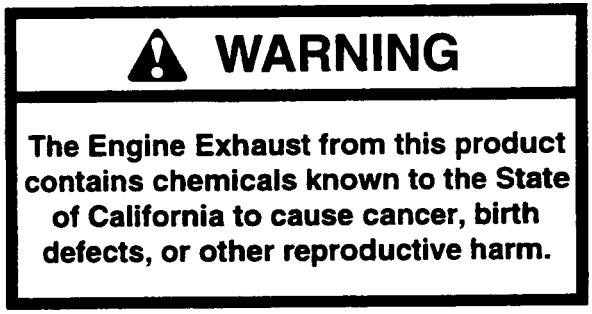
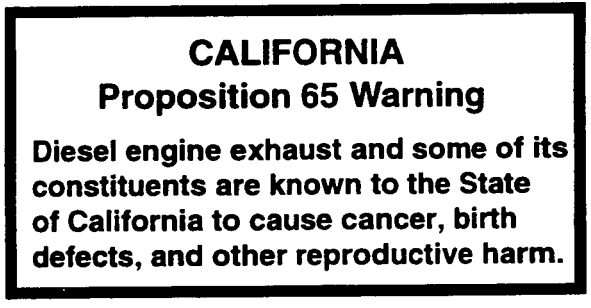
Revision History

Revision	Date	Page(s)	Description
OMAU96-1	8/96	All	1st edition manual released.
o1_02	04/02	All; book reformat	2nd revision released, book reformat.


WARNING
The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.


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.