VE414MC Roll Grooving Tool

OGS
AGS™
EndSeal™

⚠ WARNING

Failure to follow instructions and warnings could result in death or serious personal injury, property damage, and product damage.

- **Before operating or servicing any pipe preparation tools, read all instructions in the operating and maintenance manual and all warning labels on the tool.**
- **Wear safety glasses, hardhat, foot protection, and hearing protection while working around pipe preparation tools.**
- **Save the operating and maintenance manual in a place accessible to all operators of the tool.**

If you need additional copies of any literature, or if you have questions concerning the safe and proper operation of any pipe preparation tools, contact Victaulic, P.O. Box 31, Easton, PA 18044-0031, Phone: 1-800-PICK VIC, E-Mail: pickvic@victaulic.com

Original Instructions

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HAZARD IDENTIFICATION

Definitions for identifying the various hazard levels are provided below.

This safety alert symbol indicates important safety messages. When you see this symbol, be alert to the possibility of personal injury. Carefully read and fully understand the message that follows.

⚠ DANGER

- **The use of the word "DANGER" identifies an immediate hazard with a likelihood of death or serious personal injury if instructions, including recommended precautions, are not followed.**

⚠ WARNING

- **The use of the word "WARNING" identifies the presence of hazards or unsafe practices that could result in death or serious personal injury if instructions, including recommended precautions, are not followed.**

⚠ CAUTION

- **The use of the word "CAUTION" identifies possible hazards or unsafe practices that could result in personal injury and product or property damage if instructions, including recommended precautions, are not followed.**

NOTICE

- **The use of the word "NOTICE" identifies special instructions that are important but not related to hazards.**

OPERATOR SAFETY INSTRUCTIONS

The VE414MC Roll Grooving Tool is designed for the sole purpose of roll grooving pipe. These instructions must be read and understood by each operator PRIOR to working with the grooving tool. These instructions describe safe operation of the tool, including set up and maintenance. Each operator must become familiar with the tool's operations, applications, and limitations. Particular care should be given to reading and understanding the dangers, warnings, and cautions described throughout these operating instructions.

Operators shall follow all appropriate OSHA guidelines and training. Use of this tool requires dexterity and mechanical skills, as well as sound safety habits. Although this tool is designed and manufactured for safe, dependable operation, it is difficult to anticipate all combinations of circumstances that could result in an accident. The following instructions are required for safe operation of this tool. The operator is cautioned to always practice "safety first" during each phase of use, including set up and maintenance. It is the responsibility of the lessee or user of this tool to ensure that all operators read this manual and fully understand the operation of this tool.

Make this manual readily available in a clean, dry area. Additional copies are available upon request through Victaulic, or can be downloaded at victaulic.com.

⚠ DANGER

1. **Avoid using the tool in potentially dangerous environments.** Do not expose the tool to rain, and do not use the tool in damp or wet locations. Do not use the tool on sloped or uneven surfaces. Keep the work area well lit. Allow sufficient space to operate the tool properly.
2. **Ground the tool to protect the operator from electric shock.** Ensure that the tool is connected to an internally grounded electrical source.

3. **Disconnect the power cord from the electrical source before servicing the tool.** Only authorized personnel should perform maintenance on the tool. Always disconnect the power cord from the electrical source before servicing or adjusting the tool.
4. **Prevent accidental startups.** Place the power switch in the "OFF" position before connecting the tool to an electrical source.

⚠ WARNING

1. **Prevent back injury.** Always follow OSHA guidelines for safe lifting techniques when handling tool components.
2. **Wear proper apparel.** Do not wear loose clothing, jewelry, or anything that can become entangled in moving parts.
3. **Wear protective items when working with tools.** Always wear safety glasses, hardhat, foot protection, and hearing protection.
4. **Keep hands and tools away from grooving rolls and stabilizer roller during the grooving operation.** Grooving rolls can crush or cut fingers and hands.
5. **Do not reach inside pipe ends during tool operation.** Pipe edges can be sharp and can snag gloves, hands, and shirt sleeves.
6. **Operate the tool only with a safety foot switch.** The power drive shall be operated with a safety foot switch that is located for easy operator access. Never reach across moving parts. If the tool does not contain a safety foot switch, contact Victaulic.
7. **Do not over-reach.** Maintain proper footing and balance at all times. Ensure that the safety foot switch is easily accessible to the operator.
8. **Do not make any modifications to the tool.** Do not remove any safety guarding or any components that would affect tool performance.
9. **Do not operate the tool at ram speeds exceeding those specified in this manual.**

⚠ CAUTION

1. **The VE414MC tool is designed ONLY for roll grooving pipe sizes, materials, and wall thicknesses as designated.**
2. **Inspect the equipment.** Before using the tool, check moveable parts for obstructions. Ensure that tool components are installed and adjusted in accordance with the "Tool Setup" section. Ensure that properly matched roll sets are installed and lubricated.
3. **Stay alert.** Do not operate the tool if you are drowsy from medication or fatigue.
4. **Keep visitors, trainees, and observers away from the work area.** All visitors should be kept a safe distance from equipment at all times, and should be offered the opportunity to review this manual.
5. **Keep work areas clean.** Keep the work area around the tool clear of any obstructions that could limit movement of the operator. Clean up any spills.
6. **Secure the work, machine, and accessories.** Ensure that the tool is stable. Refer to the "Tool Setup" section.
7. **Support the work.** Support long pipe lengths with a pipe stand, in accordance with the "Long Pipe/Tubing Lengths" section.
8. **Do not force the tool.** Do not force the tool or accessories to perform any functions beyond the capabilities described in these instructions. Do not overload the tool.
9. **Maintain tool with care.** Keep the tool clean at all times to ensure proper and safe performance. Follow the instructions for lubricating tool components.
10. **Use only Victaulic replacement parts and accessories**. Use of any other parts may result in a voided warranty, improper operation, and hazardous situations. Refer to the "Parts Ordering Information" and "Accessories" sections.
11. **Do not remove any labels from the tool.** Replace any damaged or worn labels.

INTRODUCTION

NOTICE

- **Drawings and/or pictures in this manual may be exaggerated for clarity.**
- **The tool, along with this operating and maintenance instructions manual, contains trademarks, copyrights, and/or patented features that are the exclusive property of Victaulic.**

The VE414MC Roll Grooving Tool is a motorized, semi-automatic, hydraulic-feed tool for roll grooving pipe to receive Victaulic grooved pipe products. The VE414MC tool is supplied with matched rolls for grooving 2–12-inch/ 60.3–323.9-mm carbon steel pipe to Original Groove System (OGS) specifications and 14–16-inch/355.6–406.4-mm carbon steel pipe to Advanced Groove System (AGS)specifications.

VE414MC rolls are marked with the size and part number, and are color coded to identify the pipe material. For roll grooving to other specifications and materials, refer to the tables on page 45. Grooving tools for other specifications, sizes, and materials must be purchased separately.

⚠ CAUTION

- **This tool must be used ONLY for grooving pipe with specifications that fall within the designated parameters.**
- **Verify that the upper and lower grooving rolls are a matched set.**

Failure to follow these instructions could damage the tool and cause product failure, resulting in property damage or personal injury.

RECEIVING THE TOOL

VE414MC tools are palletized individually and enclosed in a wooden or cardboard sleeve. The stabilizer assembly and additional roll sets are shipped in a separate container. Save the original packaging for return shipment of rental tools.

Upon receipt of the tool, ensure that all necessary parts are included. If any parts are missing, contact Victaulic.

LARGE CONTAINER CONTENTS

Qty.	Description
1	VE414MC Pipe Roll Grooving Tool
1	Roll Set for 8–12-inch/219.1–323.9-mm Steel Pipe - OGS Specifications
1	Pipe Diameter Tape
1	Hydraulic System Bleeder Tube
1	Safety Foot Switch with Detachable Line Cord
2	TM-VE414MC Operating and Maintenance Instructions Manual
2	RP-VE414MC Repair Parts List

SMALL CONTAINER CONTENTS

Qty.	Description
1	Stabilizer Assembly
1	Roll Set for 2–6-inch/60.3–168.3-mm Steel Pipe - OGS Specifications
1	Roll Set for 14–16-inch/355.6–406.4-mm Steel Pipe - AGS Specifications

TOOL RETURN OR DISPOSAL

Prepare tool for shipment as received. Ensure that chips and debris are thoroughly cleaned from the machine, all fluids are drained, and power is disconnected. VE414MC tool, drained fluids, and accessories shall be disposed of or recycled according to local ordinances. Contact Victaulic with questions.

POWER REQUIREMENTS

⚠ DANGER

- **ONLY QUALIFIED ELECTRICIANS SHOULD CONNECT INCOMING POWER TO THE TOOL.**
- **To reduce the risk of electric shock, check the electrical source for proper grounding.**
- **Always turn off the main power supply to the tool before making any tool adjustments or before performing any maintenance.**
- **DO NOT alter the plug in any way.**

Failure to follow these instructions could result in death or serious personal injury.

The VE414MC Roll Grooving Tool is designed to operate on several different electrical configurations. There is a 230/460-volt, 3-phase, 60-Hz version and a 380/415-volt, 3-phase, 50-Hz version. Please ensure that the power requirement is specified with the accompanying part code on your order.

If the need arises, a 230-volt tool can be converted to operate on 460-volt, and vice-versa. For the 50-Hz version, a 380-volt tool can be converted to operate on 415-volt, and vice-versa.

To convert a tool between voltages, the following changes must be completed:

1. Drive Motor Wiring Configuration

2. Hydraulic Pump Motor Wiring Configuration

3. Drive Motor Overload Setting

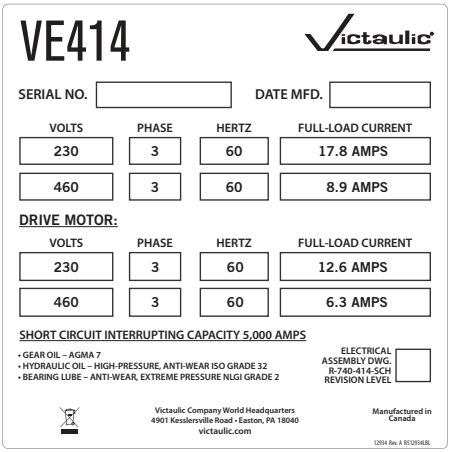
4. Hydraulic Pump Motor Overload Setting

To convert the tool, refer to the electric schematic(s) in the RP-VE414MC Repair Parts List and the information listed on the tool's drive motor and hydraulic pump motor.

All VE414MC components are grounded to the frame of the tool. Ensure that the frame is grounded properly.

POWER HOOKUP

Each VE414MC Roll Grooving Tool is provided with a label that identifies power specifications for the tool (see example below). Reference must be made to this label to ensure proper tool setup.



VE414

Victaulic

SERIAL NO. _____ DATE MFD. _____

VOLTS	PHASE	HERTZ	FULL-LOAD CURRENT
230	3	60	17.8 AMPS
460	3	60	8.9 AMPS

DRIVE MOTOR:

VOLTS	PHASE	HERTZ	FULL-LOAD CURRENT
230	3	60	12.6 AMPS
460	3	60	6.3 AMPS

SHORT CIRCUIT INTERRUPTING CAPACITY 5,000 AMPS

- GEAR OIL – AGMA 7
- HYDRAULIC OIL – HIGH-PRESSURE, ANTI-WEAR ISO GRADE 32
- BEARING LUBE – ANTI-WEAR, EXTREME PRESSURE NLGI GRADE 2

ELECTRICAL ASSEMBLY DWG. R-740-414-SCH REVISION LEVEL

Victaulic Company World Headquarters
4901 Kesslersville Road • Easton, PA 18040
victaulic.com

Manufactured in Canada

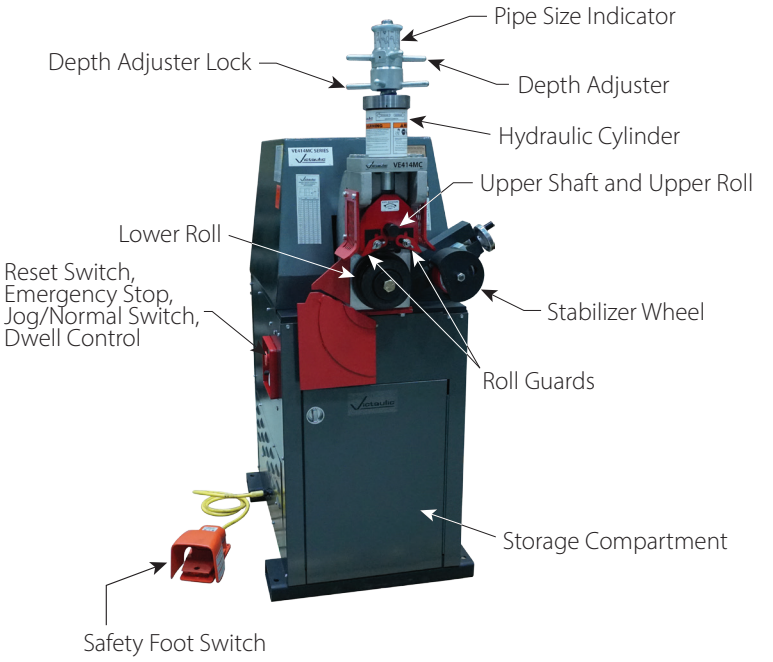
12934 Rev. A 8512934LBL

The tool is supplied with a #10/4 power cord (three power, one ground). After the power is connected properly, the tool must be checked for proper rotational direction (refer to "Verification Of Pipe Rotation Direction" on page 10).

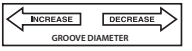
TOOL NOMENCLATURE

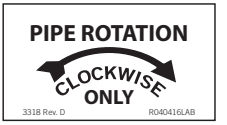
NOTICE

- **Drawings and/or pictures in this manual may be exaggerated for clarity.**
- **The tool, along with this operating and maintenance instructions manual, contains trademarks, copyrights, and/or patented features that are the exclusive property of Victaulic.**



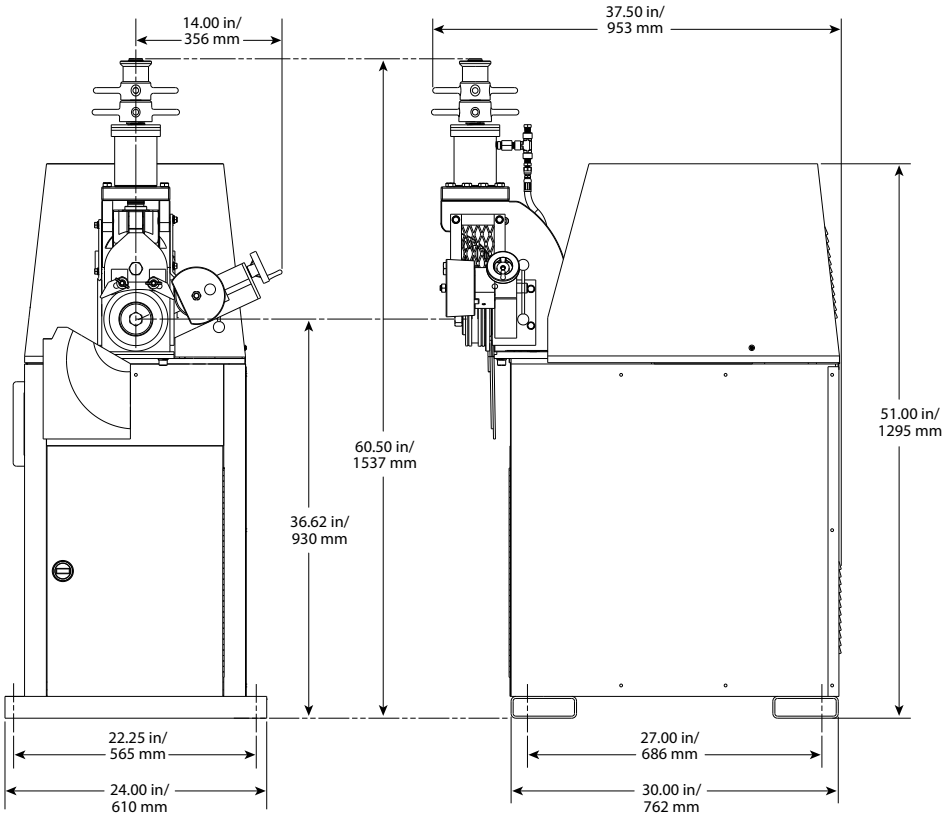
Located on Front of Tool





Located on Electrical Enclosure

TOOL DIMENSIONS AND SPECIFICATIONS



The VE414MC Roll Grooving Tool weighs approximately 975 pounds/442 kilograms.

Tool sound pressure is below 70 dB(A).

TOOL SETUP

⚠ WARNING

- **DO NOT turn on the main power supply to the tool until instructed otherwise.**
- **The tool SHALL be leveled and anchored securely on a concrete floor or base.**

Failure to follow these instructions could result in serious personal injury.

1. Remove all components from the packaging, and ensure that all necessary items are included. Refer to the "Receiving the Tool" section.

2. Select a location for the tool and pipe stand by taking into consideration the following factors:

a. The required power supply (refer to the "Power Requirements" section)

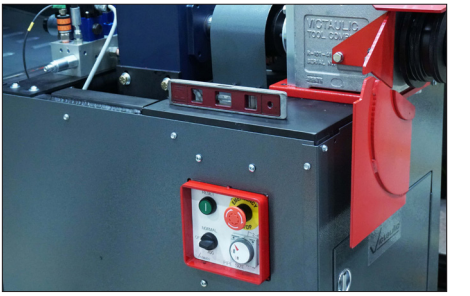
b. Ambient temperature requirements of 20° F to 104° F/-6.7°C to 40° C

c. A level concrete floor or base for the tool and pipe stand

d. Adequate space to handle pipe lengths

e. Adequate clearance around the tool and stabilizer assembly for adjustment and maintenance

NOTE: An overhead crane shall be used to lift/transport the tool to its intended location. An eye bolt is provided in the top-middle section of the tool. Ensure that the minimum capacity rating of the overhead crane is 2000 pounds/910 kilograms. Refer to the "Tool Dimensions and Specifications" section for additional information.



3. The VE414MC tool is designed for use in a permanent location and shall be located on a level concrete floor or base. After an appropriate location is chosen, the tool shall be leveled front-to-back and side-to-side and anchored securely. A non-level tool can severely affect grooving operation. When checking tool level, place the level directly on the tool surfaces, as shown above.

⚠ WARNING

- **During tool setup, two people are needed to safely handle the stabilizer assembly due to its weight.**
- **An alternative is to use a hoist to lift the stabilizer assembly into position.**

Failure to follow these instructions could result in serious personal injury.

NOTICE

- **VE414MC tools are equipped with a detachable safety foot switch cord. The safety foot switch can be removed easily for storage in the cabinet when the tool is not in use.**

5. Install the safety foot switch by aligning the pins/tab of the male adapter plug with the receptacle.

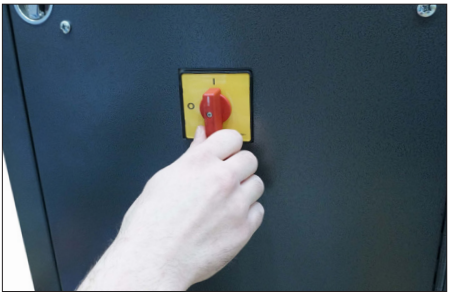
6. Tighten the locking ring on the plug.

7. Proceed to the “Power Requirements” section.

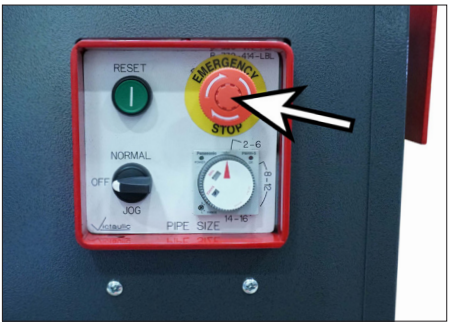
VERIFICATION OF PIPE ROTATION DIRECTION

The VE414MC tool is equipped with a "JOG" setting. Operating the tool in the "JOG" setting allows for:

- Determining rotation of the tool's lower roll
- Confirming that the pipe to be grooved is tracking properly on the lower roll

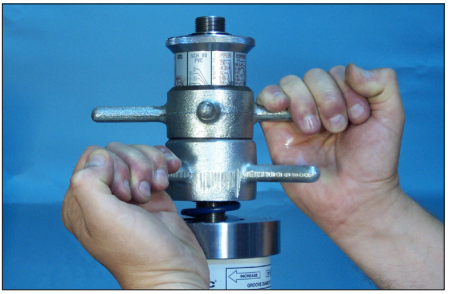


1. Turn the main power switch on the side of the tool to the "ON" position.



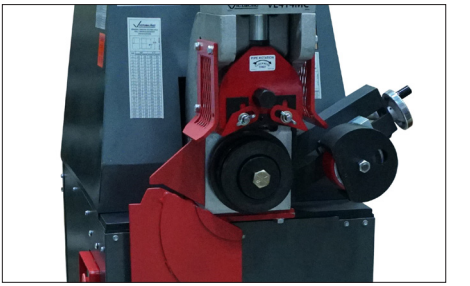
2. Pull the "EMERGENCY STOP" button on the control panel to the out position.

3. Place the selector switch on the control panel to the "NORMAL" mode.



4. Lower the depth stop as far as possible.

5. Depress the safety foot switch and wait for the depth stop to bottom out and trigger the motor. Confirm lower roll rotational direction, then release the safety foot switch.

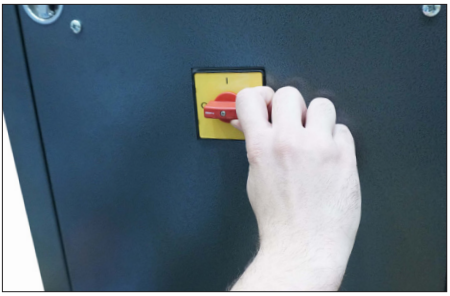


6. Proper rotation of the lower roll is **clockwise** when viewed from the front of the tool. If rotation is clockwise, power hookup is complete.

⚠ WARNING

- **Always turn off the main power supply to the tool before making any tool adjustments.**

Failure to follow this instruction could result in serious personal injury.



7. If rotation of the lower roll is counter-clockwise, turn the main power switch on the side of the tool to the "OFF" position and proceed with the following steps.

8a. Secure a lockout mechanism to the tool.

NOTE: Victaulic does not supply this lockout mechanism.

8b. Turn off the main power supply to the tool (circuit breaker panel, knife switch, etc.). Lock the switch in the "OFF" position to prevent accidental engagement.

NOTE: Victaulic does not supply this lockout mechanism.

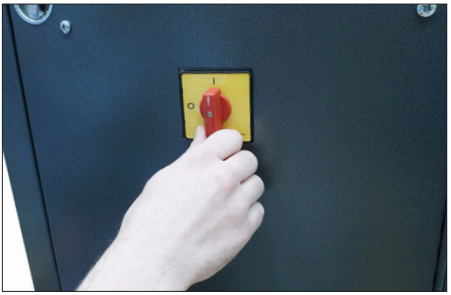
9. Reverse any two of the three power leads at the power source.

10. Turn on the main power supply to the tool (circuit breaker panel, knife switch, etc.).

11. Follow steps 1 – 6 to check rotational direction of the lower roll. If rotational direction is not clockwise, contact Victaulic. If rotational direction is clockwise, the verification procedure is complete.

EMERGENCY STOP OPERATION

Verify that emergency stop function is operational during tool setup. Perform the "PUSH", "PULL", and "RESET" actions to test emergency stop function.



1. Turn the main power switch on the side of the tool to the "ON" position.

⚠ WARNING

- **The motor must not energize until after the "RESET" button has been pressed.**
- **If the motor energizes from a cold start without first pressing the "RESET" button, discontinue use and contact Victaulic.**

Failure to follow this instruction could result in serious personal injury.

2. Press the "RESET" button.

3. Depress the safety foot switch, confirm tool operation, then release the safety foot switch.

4. Push the "EMERGENCY STOP" button and confirm that this action has cut power to the motor. Depressing the footswitch, pressing the start button, or adjusting the selector switch should have no effect on the state of the tool. All components should remain off.

⚠ WARNING

- **The motor must not energize while the "EMERGENCY STOP" button is activated.**
- **If the motor can be energized while the "EMERGENCY STOP" button is activated, discontinue use and contact Victaulic.**

Failure to follow this instruction could result in serious personal injury.

5. Pull the "EMERGENCY STOP" button and confirm that power to the motor remains off. Depressing the foot switch or adjusting the selector switch should have no effect on the state of the tool. All components should remain off.

⚠ WARNING

- **The motor must not re-energize until after the "RESET" button has been pressed.**
- **If the motor energizes after an emergency stop without first being enabled, discontinue use and contact Victaulic.**

Failure to follow this instruction could result in serious personal injury.

6. Press the "RESET" button.

7. Depress the safety foot switch, confirm tool operation, then release the safety foot switch.

8a. Turn the selector switch to the "NORMAL" position. The tool head should lower when the footswitch is depressed, and rise to its resting position when the footswitch is released.

8b. Turn the selector switch to the "JOG" position. The tool head should lower when the footswitch is depressed, and remain in position when the footswitch is released.

8c. Turning the selector switch from "JOG" to "NORMAL" with the head in a lowered position should cause the head to rise to its resting position.

9. If the tool does not function as described, refer to the "Troubleshooting" section.

PREPARING PIPE FOR GROOVING

⚠ CAUTION

- **For maximum grooving roll life, remove foreign material and loose rust from the interior and exterior surfaces of the pipe ends. Rust is an abrasive material that will wear the surface of grooving rolls.**

Foreign material may interfere with or damage grooving rolls, resulting in distorted grooves or grooves that are out of Victaulic specifications.

For proper tool operation and production of grooves that are within Victaulic specifications, the following pipe preparation steps shall be followed.

Victaulic recommends square-cut pipe for use with grooved-end pipe products. Square-cut pipe SHALL be used with Victaulic FlushSeal® and EndSeal® gaskets. For 12-inch/323.9-mm and smaller pipe sizes, beveled-end pipe may be used with Victaulic standard and Vic-Flange gaskets, provided that the wall thickness is standard wall (ANSI B36.10) or less and that the bevel meets ANSI B16.25 (37½°) or ASTM A-53 (30°). **NOTE:** Roll grooving beveled-end pipe may result in unacceptable pipe flare. Beveled steel pipe in 14–16-inch/355.6–406.4-mm sizes is acceptable with Victaulic Advanced Grooving System (AGS) standard or FlushSeal gaskets, including AGS Vic-Flanges.

1a. For 12-inch/323.9-mm and smaller pipe sizes, raised internal and external weld beads and seams shall be ground flush with the pipe surface 2 inches/50 mm back from the pipe ends.

1b. For 14–16-inch/355.6–406.4-mm pipe sizes, raised internal and external weld beads and seams shall be ground flush with the pipe surface 4 inches/100 mm back from the pipe ends.

2. The inside diameter of the pipe end shall be cleaned to remove coarse scale, dirt, and other foreign material that might interfere with or damage grooving rolls. The front edge of the pipe end shall be uniform with no concave/convex surface features that will cause improper grooving roll tracking and result in difficulties during coupling assembly.

PIPE LENGTH REQUIREMENTS

VE414MC tools are capable of grooving short pipe lengths without the use of a pipe stand. Table 1 identifies the minimum pipe lengths that can be grooved safely by using Victaulic Grooving Tools. In addition, this table identifies the maximum pipe lengths that can be grooved without the use of a pipe stand. **NOTE:** Grooved pipe nipples, shorter than those listed in Table 1, are available from Victaulic.

Pipe lengths, longer than those listed in Table 1 (and up to 20 feet/6 meters), shall be supported with a pipe stand. Pipe lengths, from 20 feet/6 meters up to double-random lengths (approximately 40 feet/12 meters), shall be supported with two pipe stands.

If pipe is required that is shorter than the minimum length listed in Table 1, shorten the next-to-last piece so that the last piece is as long (or longer) than the minimum length specified.

EXAMPLE: A 20-foot, 4-inch/6.2-m length of 10-inch diameter steel pipe is required to finish a section, and only 20-foot/6.1-m lengths are available. Instead of roll grooving a 20-foot/6.1-m length of carbon steel pipe and a 4-inch/102-mm length of carbon steel pipe, follow these steps:

1. Refer to Table 1, and note that for 10-inch diameter carbon steel pipe, the minimum length that should be roll grooved is 10 inches/255 mm.

2. Roll groove a 19-foot, 6-inch/5.9-m length of pipe and a 10-inch/255-mm length of pipe. Refer to the “Long Pipe Lengths” section.

TABLE 1- PIPE LENGTHS SUITABLE FOR GROOVING

Steel, Stainless Steel, Aluminum, and PVC Pipe Size	Length – inches/mm	
Nominal Pipe Size inches/mm	Minimum	Maximum
2 50	8 205	36 915
2½ 65	8 205	36 915
3 80	8 205	36 915
3½ 90	8 205	36 915
4 100	8 205	36 915
5 125	8 205	32 815
6 150	10 255	28 715
8 200	10 255	24 610
10 250	10 2555	20 510
12 300	12 305	18 460
14 350	12 305	16 410
16 400	12 305	16 410

CHECKING AND ADJUSTING THE TOOL PRIOR TO GROOVING

Every Victaulic roll grooving tool is checked, adjusted, and tested at the factory prior to shipment. However, before attempting to operate the tool, the following checks and adjustments should be made to ensure proper tool operation.

⚠ WARNING

- **Always turn off the main power supply to the tool before making any tool adjustments.**

Failure to follow this instruction could result in serious personal injury.

GROOVING ROLLS

Ensure that the proper roll set is installed on the tool for the pipe size and material that will be grooved. Roll sets are marked with the pipe size, part number, and they are color coded for the pipe material. Refer to the tables on page 46. If the proper rolls are not installed on the tool, refer to the “Roll Changing” section.

⚠ CAUTION

- **Ensure that the lower-roll retaining bolt is tight and that the upper shaft is locked in position.**

A loose lower-roll retaining bolt or upper shaft could cause damage to the tool and rolls.

ADJUSTING THE ROLL GUARDS

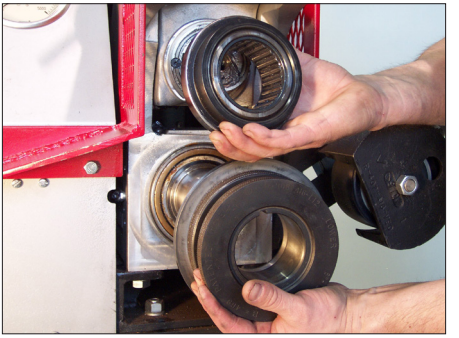
⚠ CAUTION

- **The "Adjusting the Roll Guards" section shall be completed with every roll change.**
- **Verify that the upper and lower grooving rolls are a matched set and are properly lubricated.**

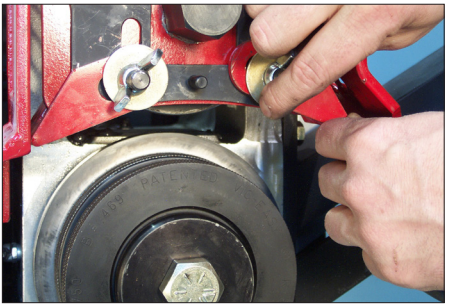
Failure to follow these instructions could result in property damage or personal injury.

The VE414MC guards must be adjusted every time the rolls are changed, or when the pipe size or wall thickness is different from the pipe that was previously grooved.

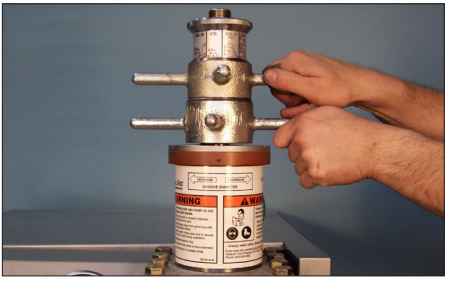
NOTE: Both the VE414 and the VE414MC use the same upper and lower grooving roll sets, as well as other features. Because of similarities between the VE414MC and the VE414 models, some of the photos in this section show the VE414 model. Therefore, some of these photos may look different from your model.



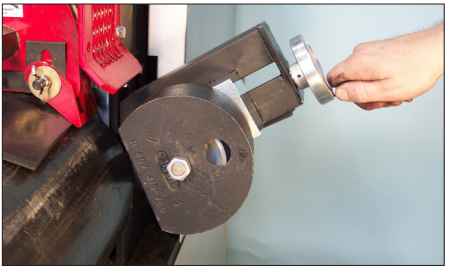
1. Ensure that the proper roll set is on the tool for the pipe size and material. Rolls are marked with the pipe size, part number, and they are color coded for the pipe material (refer to the tables on page 46). If the proper rolls are not on the tool, refer to the "Roll Changing" section.



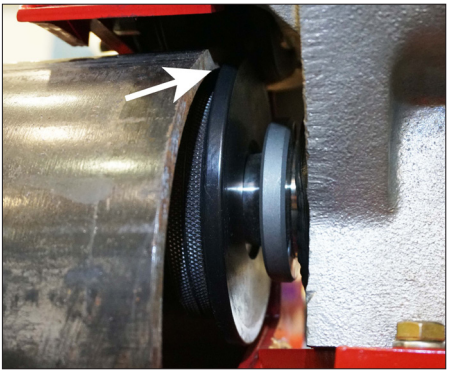
2. Loosen the wing nuts, and move the adjustable guards to the fully-up position. Tighten the wing nuts.



3. Set the groove diameter stop to the pipe size and schedule/thickness to be grooved. Back off the depth adjuster lock, and align the depth adjuster with the proper diameter and thickness. Lock the depth adjuster in position with the depth adjuster lock. Refer to the "Groovable Pipe Lengths" section.

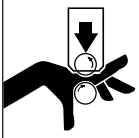


4. Retract the stabilizer, if necessary, to insert the pipe onto the lower roll. To do this, loosen the locking handle, and use the handwheel to retract the stabilizer roller. Tighten the locking handle.



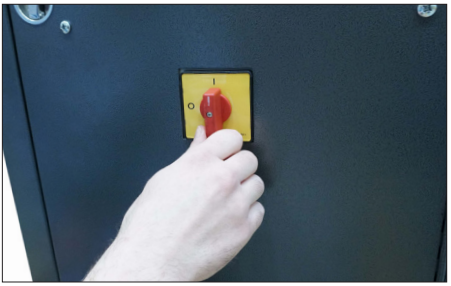
5. Insert a length of pipe that is the correct size and thickness onto the lower roll. Ensure that the pipe end contacts the lower-roll backstop flange completely.

⚠ WARNING



Grooving rolls can crush or cut fingers and hands.

- **Always turn the main power switch OFF before making any tool adjustments, unless instructed otherwise.**
- **Loading and unloading pipe will place your hands close to the rollers. Keep hands away from the grooving rolls during operation.**
- **Never reach inside the pipe end or across the tool or pipe during operation.**
- **Always groove pipe in a direction that rotates away from the operator.**
- **Never groove pipe that is shorter than the recommended lengths listed in this manual.**
- **Never wear loose clothing, loose gloves, or anything that can become entangled in moving parts.**



6. Set the main power switch to the “ON” position.

7. Turn the selector switch to the “JOG” position.

8. Use the safety foot switch to bring the upper roll down into firm contact with the pipe. Withdraw your foot from the safety foot switch.

9. Remove the guard setting pad from its storage location.

10. Hold the guard setting pad firmly against the pipe. Push it under the adjustable guards.

11. Loosen the wing nuts, and adjust each guard to lightly pinch the pad against the pipe. Tighten the wing nuts to secure the guards in position.

12. Remove the guard setting pad from between the pipe and the guards. Return the guard setting pad to its storage location.

13. Prepare to support the pipe, and turn the selector switch to the "NORMAL" position. The arm/upper roll assembly will return to its upper position, and the pipe will release.

⚠ CAUTION

- **Use the "JOG" setting only for pre-operation adjustments to the tool. When the tool is left in the "JOG" setting with the power on, the pipe will be gradually released. This may result in the pipe falling out of the tool.**
- **Always return the switch to the "NORMAL" setting at the completion of the pre-operation adjustments.**

Failure to follow these instructions could result in personal injury, product damage, and/or property damage.

PIPE STABILIZER ADJUSTMENT

⚠ WARNING

- **Always turn off the main power supply to the tool before making any tool adjustments.**
- **DO NOT reach over pipe while making adjustments.**
- **DO NOT make adjustments while the tool/pipe is in operation/motion.**

Failure to follow these instructions could result in serious personal injury.

The pipe stabilizer for the VE414MC is designed to prevent pipe sway of short and long pipe lengths. When the stabilizer is adjusted for a selected pipe size and wall thickness, it does not require further adjustment unless pipe of a different size and wall thickness will be grooved. Pipe of the same size and wall thickness can be moved in and out of the tool without retracting the stabilizer.

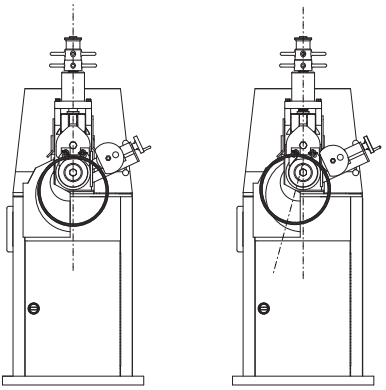
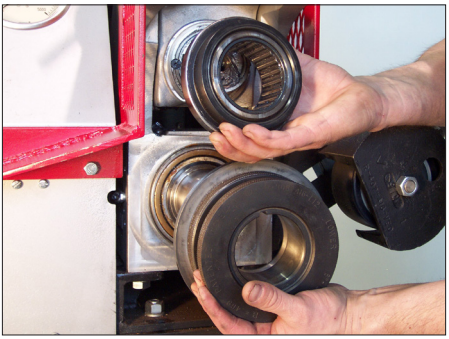
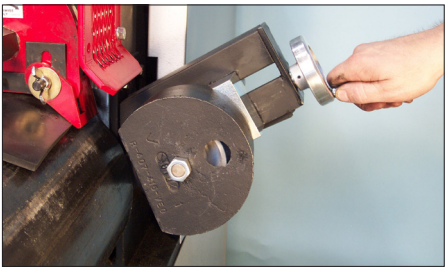


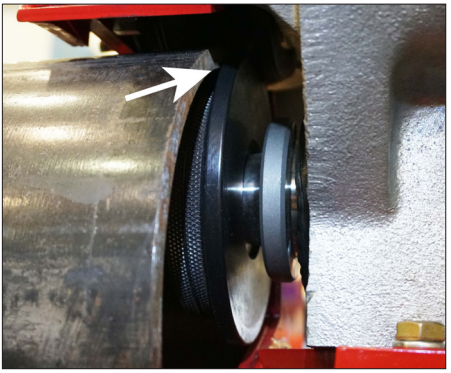
FIGURE 1



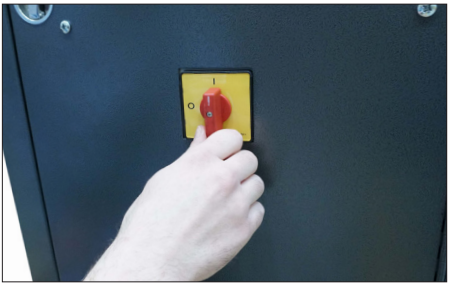
1. Ensure that the proper roll set is on the tool for the pipe size and material. Rolls are marked with the pipe size, part number, and they are color coded for the pipe material (refer to the tables on page 46). If the proper rolls are not on the tool, refer to the “Roll Changing” section.



2. Loosen the stabilizer’s locking handle. Using the handwheel, fully retract the stabilizer roller.

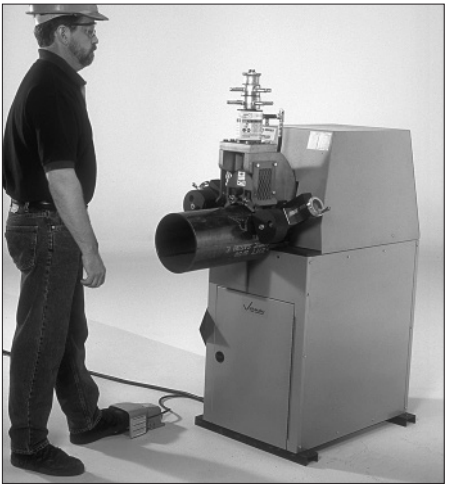


3. Insert a length of pipe that is the correct size and thickness onto the lower roll. Ensure that the pipe end contacts the lower-roll backstop flange completely. Remove hands from the pipe.



4. Set the main power switch to the “ON” position.

5. Turn the selector switch to the “JOG” position.



6. Use the safety foot switch to bring the upper roll down into firm contact with the pipe. Withdraw your foot from the safety foot switch.

7. Using the handwheel, advance the stabilizer roller inward to the position indicated in Figure 1. Tighten the locking handle.

⚠ CAUTION

- **DO NOT adjust the stabilizer roller to push the pipe to the left and off center from the rolls. Increased pipe-end flare and shortened roll life will result if the pipe is pushed to the left and off center.**
- **DO NOT reach across the pipe to make pipe stabilizer adjustments.**
- **DO NOT adjust the pipe stabilizer while the pipe is in motion.**
- **Assembly of couplings on pipe that exceeds the maximum allowable flare dimension may prevent proper pad-to-pad assembly of coupling housings and gasket distortion/damage.**

Failure to prepare pipe in accordance with all instructions may cause joint failure, resulting in property damage or personal injury.

8. Prepare to support the pipe, and turn the selector switch to the "NORMAL" position. The arm/upper roll assembly will return to its upper position, and the pipe will release.

⚠ CAUTION

- **Use the "JOG" setting only for pre-operation adjustments to the tool. When the tool is left in the "JOG" setting with the power on, the pipe will be gradually released. This may result in the pipe falling out of the tool.**
- **Always return the switch to the "NORMAL" setting at the completion of the pre-operation adjustments.**

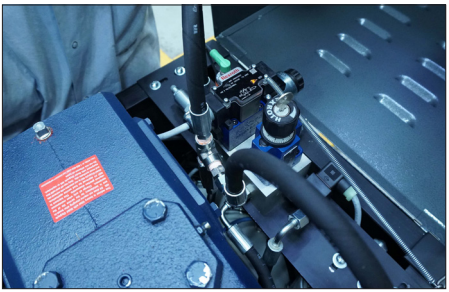
Failure to follow these instructions could result in personal injury, product damage, and/or property damage.

RAM SPEED ADJUSTMENT

The ram speed adjustment is factory set for roll grooving carbon steel pipe. When grooving a pipe material other than carbon steel pipe, the ram speed may need to be re-adjusted.

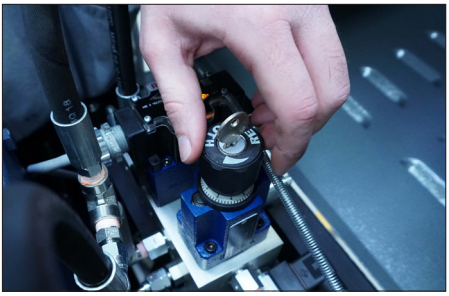
NOTE: Both the VE414 and the VE414MC use the same upper and lower grooving roll sets, as well as other features. Because of similarities between the VE414MC and the VE414 models, some of the photos in this section show the VE414 model. Therefore, some of these photos may look different from your model.

The ram speed adjustment is factory set for roll grooving steel pipe. If the pipe being grooved is another material, the ram speed must be re-adjusted.



1. Open the top enclosure.

2. Insert the key into the ram speed control valve, as shown. Turn to unlock.



3. With the key inserted in the valve, rotate the knob until the knob "locks in." Adjust the valve to the proper setting, as indicated in the table on this page.

Pipe Material	Ram Speed Control Valve Setting *
Steel	2.0
Steel (Grooved to AGS Specifications)	2.0
Stainless Steel (Type 304/304L and Type 316/316L)	1.5
Stainless Steel (Type 304/304L and Type 316/316L Grooved to AGS Specifications)	2.0
Aluminum (Types 6061-T4 and 6063-T4)	3.0
PVC	10.0
Copper	1.5

Scale: 1.0 = Slow, 10.0 = Fast
* Settings listed are nominal. Adjustment may be required when different pipe material/grades are being grooved. Refer to the NOTICE below.

NOTICE

- **The ram speed control valve affects only the rate at which the upper roll forms the groove. It does not affect the rate at which the upper roll advances to contact the pipe, nor does it affect the rate at which the roll retracts at the completion of the groove.**
- **Ram speed during the formation of the groove can have a significant effect on pipe-end flare. The recommended setting, listed in the table above, will produce excellent grooves in most situations. However, if excessive flare results at these settings, reduce the settings to correct the condition. For example, adjust the setting to 1.8 on steel when flare is excessive at the 2.0 setting.**

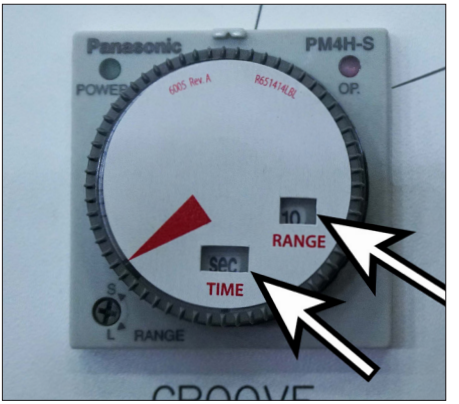
DWELL CONTROL ADJUSTMENT

The dwell control adjustment controls the length of time the tool continues to rotate the pipe after the groove diameter stop contacts the top of the hydraulic cylinder. The dwell control timer is adjustable for time range and pipe size settings.

When adjusted to the proper pipe size, the pipe will rotate a minimum of one revolution after the groove diameter stop contacts the hydraulic cylinder. This ensures that the groove in the pipe will be of uniform depth around the entire pipe circumference.

TIME RANGE ADJUSTMENT

The time range setting will set the operating parameters of the timer.

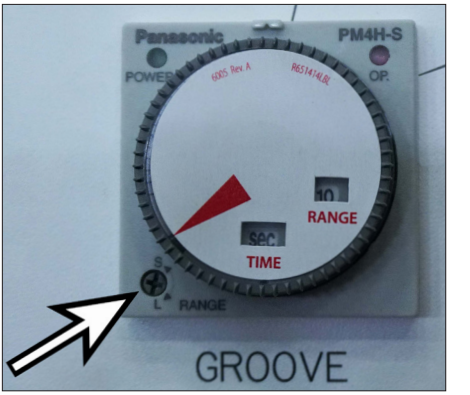


1. To adjust the time range setting, rotate the timer dial counterclockwise completely until the range settings are visible on the dial.

⚠ CAUTION

- **Use only a #0 Phillips-head screwdriver to adjust the range screw.**

Failure to follow this instruction may damage the screw head.



2. If necessary, rotate the time range screw, located in the lower left-hand corner of the timer, to the desired range shown on the dial face.

NOTE: VE414MC tools are factory set in the "SEC-10" position. Use only a #0 Phillips head screwdriver to adjust the range screw. Use of any tools other than a #0 Phillips-head screwdriver may damage the screw head.

- For 2–6-inch/60.3–168.3-mm pipe sizes, set the timer range to "SEC-10"
- For 8–12-inch/219.1–323.9-mm pipe sizes, set the timer range to "SEC-50"

⚠ CAUTION

- **The timing range shall be set properly for the pipe size being grooved.**

Failure to follow this instruction could cause excessive or insufficient dwell, resulting in improper groove diameters and grooves that are not uniform in depth.

PIPE SIZE ADJUSTMENT

Rotate the timer dial to the appropriate pipe size.

- 2–6-inch/60.3–168.3-mm pipe sizes are in the 12:00 position. Ensure that the timer range is set to “SEC-10.”
- 8–12-inch/219.1–323.9-mm pipe sizes are in the 2:00 position. Ensure that the timer range is set to “SEC-50.”

GROOVE DIAMETER STOP ADJUSTMENT

The groove diameter stop shall be adjusted for each pipe size or change in wall thickness. The groove diameter is identified as the “C” dimension (reference the applicable groove specification links on page 47). In addition, a label affixed to the tool lists the “C” dimensions.

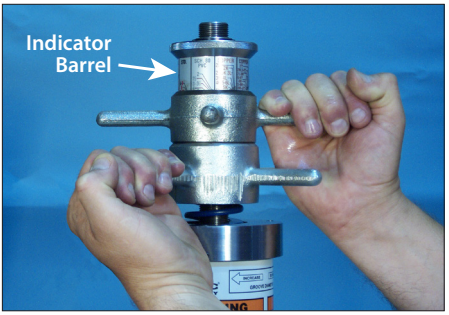
NOTICE

- **To perform the following adjustments, use several short, scrap sections of pipe that are the proper material, diameter, and thickness to be grooved. Ensure that the scrap sections meet the length requirements listed in Table 1.**

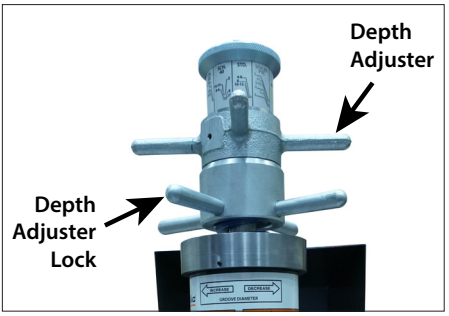
To achieve the proper diameter:

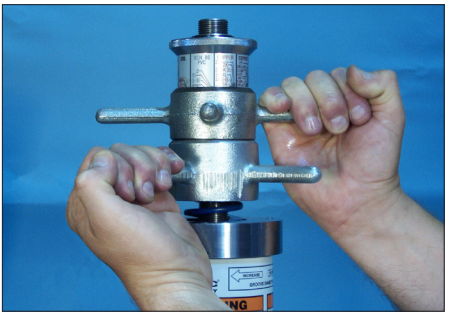
1. Determine the diameter and thickness of the pipe to be grooved.

2. Locate the proper diameter and thickness on the pipe size indicator label of the depth stop. The pipe size indicator barrel can be rotated for ease of viewing.



3. Unlock the depth adjuster lock (clockwise) from the depth adjuster. Align the top edge of the depth adjuster with the lowest line position of the proper size and schedule markings on the indicator barrel. Hold the depth adjuster to prevent it from turning.



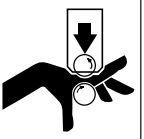


4. Turn the depth adjuster lock counter-clockwise to lock the depth adjuster in position.

NOTICE

- **Rotating the depth adjusters while locked will cause premature thread wear of the depth adjusters and cylinder ram.**
- **The markings provide an approximate groove diameter adjustment and are not exact groove diameter settings. Variations in pipe OD and wall thickness make it impossible to calibrate the groove diameter stop exactly.**
- **Set the initial adjustment shallow (at bottom edge of mark), groove a sample piece of pipe, then make the final adjustment.**

⚠ WARNING



Grooving rolls can crush or cut fingers and hands.

- **Always turn off the main power supply to the tool before making any tool adjustments.**
- **Loading/unloading pipe will place your hands close to the rollers. Keep hands away from the grooving rolls and the roller on the pipe stabilizer during operation.**
- **Never reach inside the pipe ends or across the tool or pipe during operation.**
- **Always groove pipe in a CLOCKWISE direction.**
- **Never groove pipe that is shorter than the recommended lengths listed in this manual.**
- **Never wear loose clothing, loose gloves, or anything that can become entangled in moving parts.**

5. Prepare a trial groove. Refer to the “Grooving Operation” section.

NOTICE

- **Occasionally during grooving, the groove diameter stop may move up and down slightly, making contact and then breaking contact with the hydraulic cylinder. This is normal for pipe that has a noticeable weld seam or hard spot.**

6. After a trial groove is prepared and the pipe is removed from the tool, check the groove diameter (“C” dimension) carefully. Reference the applicable groove specification links on page 47. A standard pipe tape, supplied with the tool, is the best method for checking the “C” dimension. In addition, a vernier caliper or narrow-land micrometer can be used to check this dimension at two locations (90° apart) within the groove. The average reading shall be within the required groove diameter specification.

⚠ CAUTION

- **The “C” dimension (groove diameter) shall conform to Victaulic specifications to ensure proper joint performance.**

Failure to follow this instruction could cause joint failure, resulting in property damage or personal injury.

7. If the groove diameter ("C" dimension) is not within Victaulic specifications, the diameter stop shall be adjusted.

a. Unlock the depth adjusters.

b. To adjust for a smaller groove diameter (deeper groove), loosen the groove diameter stop and turn the depth adjuster counter-clockwise (when viewed from above the tool). Turn the groove diameter stop counter-clockwise to lock the depth adjuster in this position.

c. To adjust for a larger groove diameter (shallower groove), loosen the loosen the groove diameter stop and turn the depth adjuster clockwise (when viewed from above the tool). Turn the groove diameter stop counter-clockwise to lock the depth adjuster in this position.

NOTE: A quarter-turn either way will change the groove diameter adjustment by approximately 0.031″/0.8 mm (0.125″/3.2 mm per full turn).

NOTICE

- **Rotating the depth adjusters while locked will cause premature thread wear of the depth adjusters and cylinder ram.**

8. Prepare another trial groove, and check the groove diameter ("C" dimension) as described in previous steps. Repeat these steps, as necessary, until the groove diameter is within specification.

GROOVING SHORT PIPE LENGTHS

⚠ DANGER

- **To reduce the risk of electric shock, check the tool for proper grounding and follow all instructions.**
- **Before operating the tool, review the "Operator Safety Instructions" section of this manual.**

Failure to follow these instructions could result in death or serious personal injury.

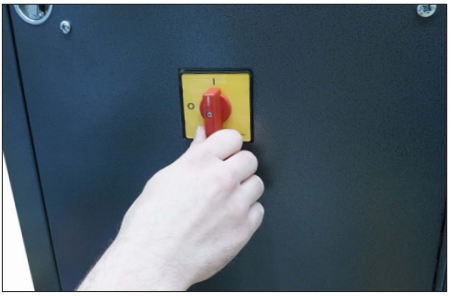
⚠ CAUTION

- **This tool must be used ONLY for grooving pipe with specifications that fall within the designated parameters.**
- **Verify that the upper and lower grooving rolls are a matched set.**

Failure to follow these instructions could damage the tool and cause product failure, resulting in property damage or personal injury.

1. Before grooving, ensure that all instructions in the previous sections of this manual have been followed.

2. Turn on the main power supply to the tool (circuit breaker panel, knife switch, etc.).



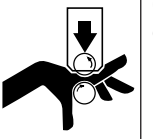
3. Turn the main power switch on the side of the tool to the "ON" position.

4. Ensure that the selector switch on the control panel is set to the "NORMAL" position.

5. Pull the "EMERGENCY STOP" button on the control panel to the out position.

6. Push the "RESET" button.

⚠ WARNING



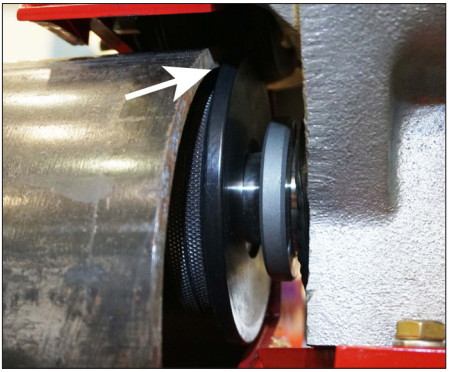
Grooving rolls can crush or cut fingers and hands.

- **Always turn off the main power supply to the tool before making any tool adjustments.**
- **Loading/unloading pipe will place your hands close to the rollers. Keep hands away from the grooving rolls and the roller on the pipe stabilizer during operation.**
- **Never reach inside the pipe ends or across the tool or pipe during operation.**
- **Always groove pipe in a CLOCKWISE direction.**
- **Never groove pipe that is shorter than the recommended lengths listed in this manual.**
- **Never wear loose clothing, loose gloves, or anything that can become entangled in moving parts.**

⚠ CAUTION

- **Pipe shall be supported manually before and after the grooving cycle.**

Failure to follow this instruction could result in personal injury.

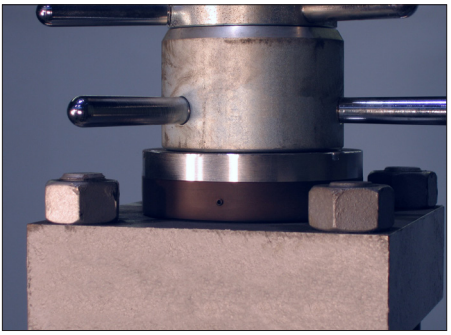


7. Insert a length of pipe that is the correct size and thickness onto the lower roll. Ensure that the pipe end contacts the lower-roll backstop flange completely.

8. While manually supporting the pipe, depress and hold down the safety foot switch. The upper roll will advance and contact the pipe. Remove hands from the pipe.

NOTICE

- **Occasionally during grooving, the groove diameter stop may move up and down slightly, making contact and then breaking contact with the hydraulic cylinder. This is normal for pipe that has a noticeable weld seam or hard spot.**



9. As grooving continues, the depth adjuster lock will move down and contact the hydraulic cylinder. This contact activates the dwell timer, which allows the pipe to rotate one to three more revolutions to ensure groove completion (refer to the “Dwell Control Adjustment” section).

a. The upper roll will retract automatically and will release the pipe.

b. Release the safety foot switch, and withdraw foot from the switch.

10. Inspect the groove/pipe end to ensure they are within Victaulic specifications.

11. If roll grooving will not be performed for an extended time period, turn off the hydraulic system by turning off the main power switch on the side of the tool.

NOTICE

- **The groove diameter shall be within specification for the diameter and wall thickness of pipe. The groove diameter should be checked and adjusted, as necessary, to ensure grooves remain within specification.**

GROOVING LONG PIPE LENGTHS

⚠ DANGER

- **To reduce the risk of electric shock, check the tool for proper grounding and follow all instructions.**
- **Before operating the tool, review the "Operator Safety Instructions" section of this manual.**

Failure to follow these instructions could result in death or serious personal injury.

⚠ CAUTION

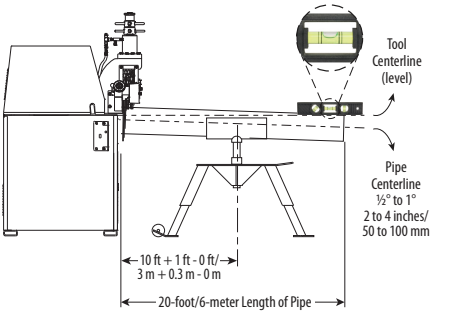
- **For long pipe lengths, ensure that the pipe stand is positioned properly to minimize pipe-end flare.**
- **DO NOT install couplings on pipe that exceeds the maximum allowable flare.**
- **This tool must be used ONLY for grooving pipe with specifications that fall within the designated parameters.**
- **Verify that the upper and lower grooving rolls are a matched set.**
- **Always reference the applicable groove specification links on page 47 for details.**

Failure to follow these instructions could damage the tool and cause product failure, resulting in property damage or personal injury.

When roll grooving pipe that exceeds the maximum length shown in Table 1, a roller-type pipe stand shall be used. The roller-type pipe stand shall be capable of handling the weight of the pipe, while allowing the pipe to rotate freely.

1. Ensure that the tool is level. Refer to the "Tool Setup" section for leveling requirements.

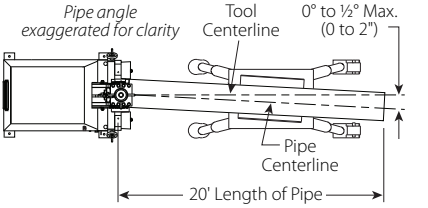
2. Place the pipe stand at a distance slightly beyond half the pipe length from the tool. Refer to Figure 2.



SUPPORT OF PIPE
FIGURE 2

3. Position the pipe stand approximately 0 - ½ a degree to the left for the tracking angle. Refer to Figure 3.

NOTE: When pipe flare is excessive, right-to-left tracking shall be kept to a minimum. It may be necessary to use less than ½ a degree for the tracking angle.

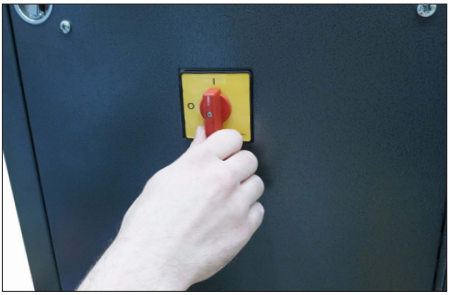


TRACKING ANGLE
FIGURE 3

4. If the tool is properly set up in a level position, but the back end of the pipe is higher than the end being grooved, the pipe may not track. In addition, excessive flare may occur on the pipe end. Refer to the "Tool Setup" section and the drawings above for tool setup and pipe positioning requirements.

5. Before grooving, ensure that all instructions in the previous sections of this manual have been followed.

6. Turn on the main power supply to the tool (circuit breaker panel, knife switch, etc.).



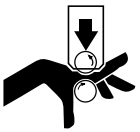
7. Turn the main power switch on the side of the tool to the "ON" position.

8. Ensure that the selector switch on the control panel is set to the "NORMAL" position.

9. Pull the "EMERGENCY STOP" button on the control panel to the out position.

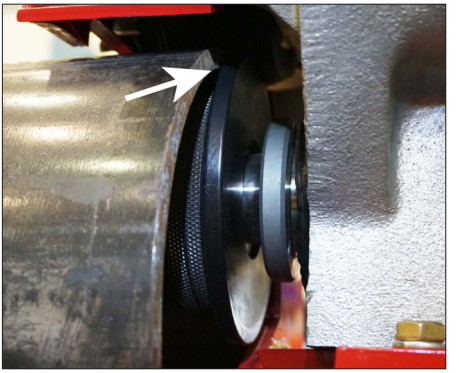
10. Push the "RESET" button.

⚠ WARNING

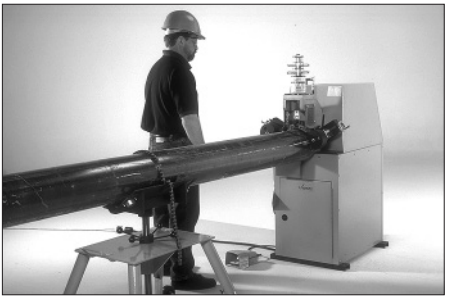


Grooving rolls can crush or cut fingers and hands.

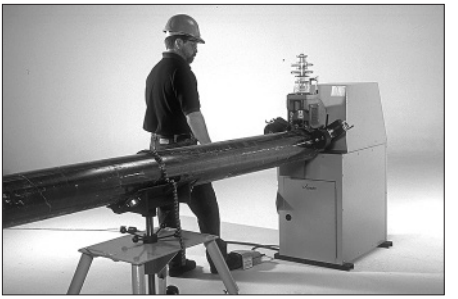
- **Always turn off the main power supply to the tool before making any tool adjustments.**
- **Loading/unloading pipe will place your hands close to the rollers. Keep hands away from the grooving rolls and the roller on the pipe stabilizer during operation.**
- **Never reach inside the pipe ends or across the tool or pipe during operation.**
- **Always groove pipe in a CLOCKWISE direction.**
- **Never groove pipe that is shorter than the recommended lengths listed in this manual.**
- **Never wear loose clothing, loose gloves, or anything that can become entangled in moving parts.**



11. Insert a length of pipe that is the correct size and thickness onto the lower roll. Ensure that the pipe end contacts the lower-roll backstop flange completely. Remove hands from the pipe.



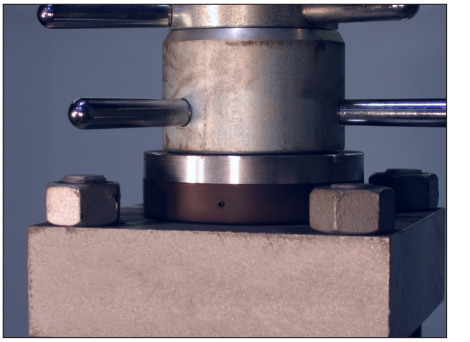
12. The operator should be positioned as shown.



13. To start grooving, depress and hold down the safety foot switch. The upper roll will move down to contact the pipe, and the pipe will then begin rotating.

14. During the grooving operation, visually check the tracking of the pipe as it rotates. Ensure that the pipe remains against the lower-roll backstop flange. If the pipe does not stay in contact with the lower-roll backstop flange, stop the tool by releasing the safety foot switch, and withdraw foot from the switch. Ensure that pipe is positioned properly. Repeat steps 11–13.

15. As grooving continues, the depth adjuster lock will move down and contact the hydraulic cylinder. This contact activates the dwell timer, which allows the pipe to rotate one to three more revolutions to ensure groove completion (refer to the "Dwell Control Adjustment" section). The tool will automatically release the pipe a few seconds later. Release the safety foot switch, and withdraw foot from switch.



16. Inspect the groove/pipe end to ensure they are within Victaulic specifications.

NOTICE

- **Occasionally during grooving, the groove diameter stop may move up and down slightly, making contact and then breaking contact with the hydraulic cylinder. This is normal for pipe that has a noticeable weld seam or hard spot.**
- **Ensure that short pipe lengths are properly supported.**

17. If roll grooving will not be performed for an extended time period, turn off the hydraulic system by turning off the main power switch on the side of the tool.

NOTICE

- **If pipe remains lodged on the lower roll: Jogging the lower roll will free the pipe. DO NOT attempt to pull the pipe out of the rolls while "jogging" the lower roll. Pull the "EMERGENCY STOP" button on the control panel and the electrical enclosure to the out position, depress the "RESET" button, then push down (in) on the "EMERGENCY STOP" button on the control panel and the electrical enclosure to "jog" the lower roll.**
- **The groove diameter shall be within specification for the diameter and wall thickness of pipe. The groove diameter should be checked and adjusted, as necessary, to ensure grooves remain within specification.**

ROLL CHANGING

VE414MC tools are designed with rolls to accommodate several pipe sizes and materials, which eliminates the need for frequent roll changes.

When a different pipe size or material is required for grooving, the upper and lower rolls shall be changed. For proper roll selection, refer to the tables on page 46.

⚠ WARNING

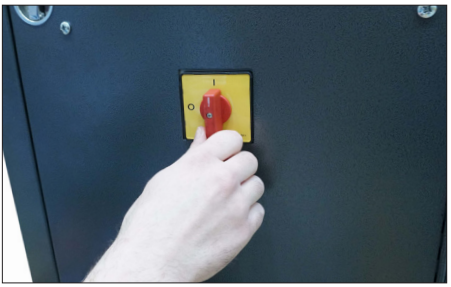
- **Upper and lower rolls are matched components and shall not be intermixed.**
- **Always turn off the main power supply to the tool before making any tool adjustments.**
- **DO NOT reach over pipe while making adjustments.**
- **DO NOT make adjustments while the tool/pipe is in operation/motion.**

Failure to follow these instructions could result in serious personal injury.

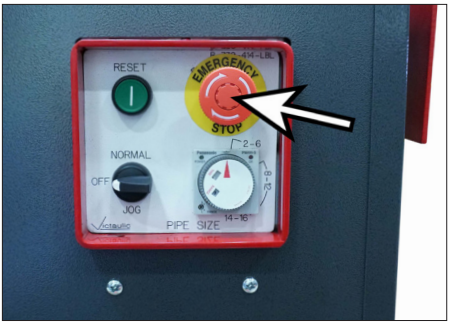
INSTALLATION OF SLIDE SPACER FOR 2 – 3 ½"/60.3 – 101.6 MM SIZES

The slide/upper roll must return to its "full-up" position before changing rolls. The slide spacer will limit the upward travel of the slide.

1. Turn on the main power supply to the tool (circuit breaker panel, knife switch, etc.).



2. Set the main power switch to the "ON" position.



3. Pull the “EMERGENCY STOP” button on the control panel to the out position.

4. Turn the selector switch to the “JOG” position.

5. Push the “RESET” button.

6. Use the safety foot switch to energize the tool and to bring the upper roll down into firm contact with the pipe.

7. Withdraw your foot from the safety foot switch. Be prepared to support the pipe, since the slide/upper roll will return to its “full-up” position and the pipe will release from the rolls.

8. Verify that the guards are adjusted per the "Roll Guard Adjustment" section.

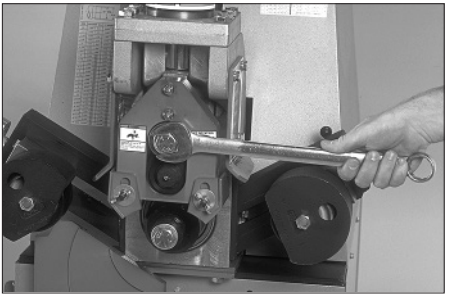
9. Snap in the slide spacer on top of the slide.

10. Turn the selector switch to the "NORMAL" position.

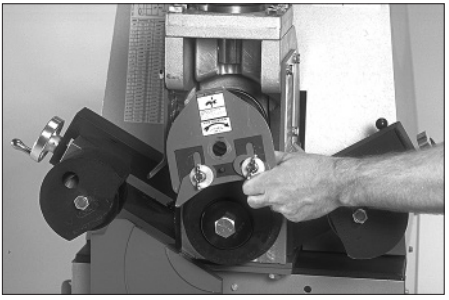
11. Set the main power switch to the "OFF" position.

UPPER ROLL REMOVAL FOR 4 – 16"/114.3 – 406.4 MM SIZES

1. Set the main power switch to the "OFF" position.

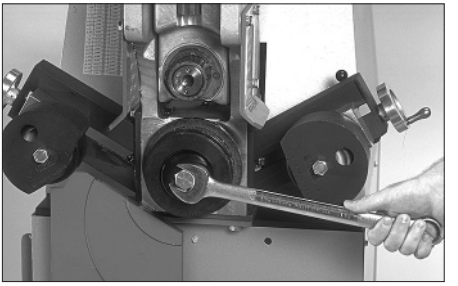


2. Loosen and remove the upper roll's bolt, as shown above. Place the bolt on a clean surface.

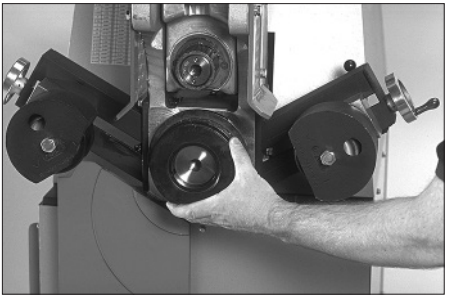


3. Slide the upper roll and retaining plate off the upper shaft, as shown. Store these components in the cabinet.

LOWER ROLL REMOVAL FOR 4 – 16"/114.3 – 406.4 MM SIZES



1. Loosen and remove the lower roll's bolt and retaining plate, as shown. Place these components on a clean surface.

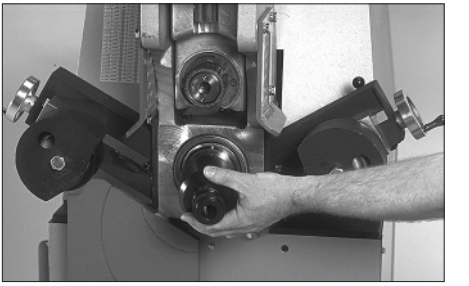


2. Slide the lower roll off the main shaft, as shown. Store the lower roll in the tool's storage compartment.

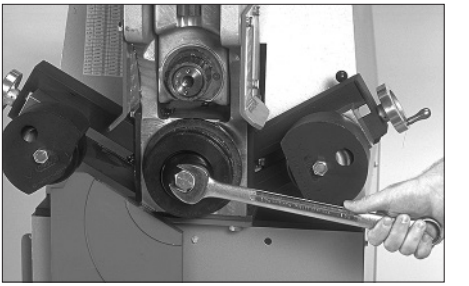
NOTICE

- **Be careful not to lose the Woodruff key. It should remain in the lower shaft. Inspect the Woodruff key and replace if damaged. Spare Woodruff keys are supplied with instruction manual.**

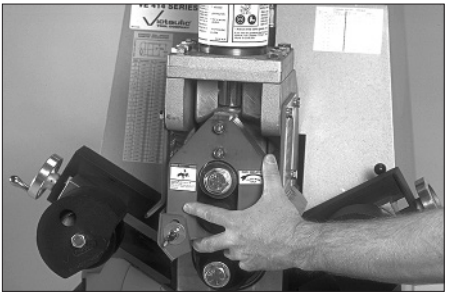
UPPER AND LOWER ROLL INSTALLATION FOR 2 – 3½"/60.3 – 101.6 MM SIZES



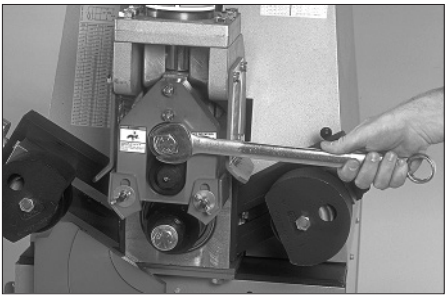
1. Lightly lubricate the lower shaft with a thin film of oil or grease before installing the lower roll. Slide the 2 – 3½"/60.3 – 101.6 mm lower roll onto the main shaft. Properly align the roll with the Woodruff Key on the main shaft.



2. Place the ¾-inch/19-mm flat washer onto the ¾ x 3 ¼"/19 x 83 mm bolt. Install the bolt and washer, as shown above. Tighten the bolt securely with a wrench.



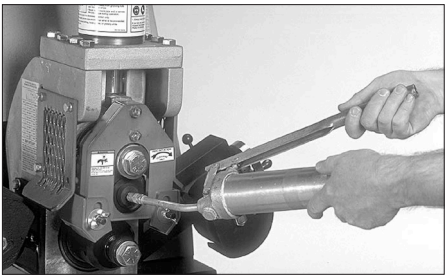
3. Carefully slide the upper roll assembly onto the upper shaft. Properly align the upper support block with the recess in the slide, as shown above.



4. Thread the upper support block's bolt into the upper shaft, as shown above. Tighten this bolt securely.

NOTICE

- **As the upper support block's bolt is tightened, it will draw the upper roll assembly into proper alignment with the lower roll.**

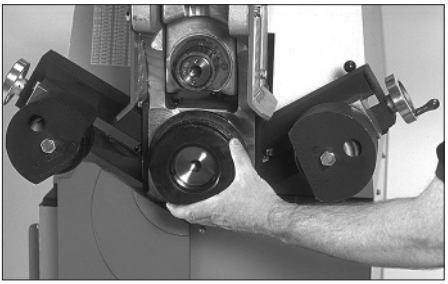


5. Lubricate the upper roll, as shown. Refer to the applicable "Recommended Lubricants" table for the proper grease.

LOWER ROLL INSTALLATION FOR 4 – 16"/114.3 – 406.4 MM SIZES

NOTICE

- **Clean the main shaft and the lower roll's bore of any dirt and/or scale before installation. Make any repairs, as necessary.**



1. Carefully slide the applicable size lower roll fully onto the main shaft with the marked side facing forward, as shown above. Properly align the roll with the Woodruff Key on the main shaft.

NOTICE

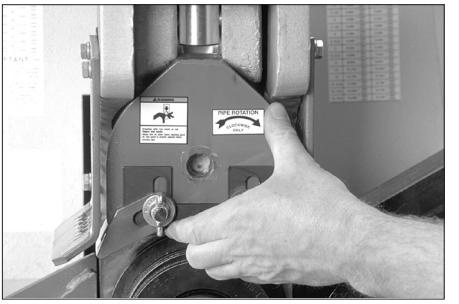
- **To aid in removing the roll later, apply a thin film of oil or grease (anti-seize lubricant) to the main shaft before installing the lower roll.**

UPPER ROLL INSTALLATION FOR 4 – 16"/114.3 – 406.4 MM SIZES

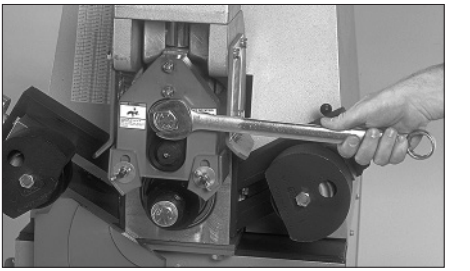
NOTICE

- **Clean the upper shaft of any dirt and/or scale before installing the upper roll.**
- **Inspect the roller bearing, inside the upper roll, for proper lubrication and condition. Make any repairs, as necessary.**

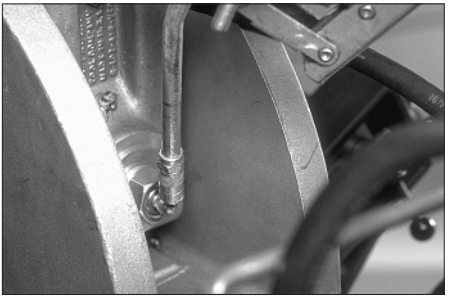
1. Carefully slide the applicable size upper roll onto the upper shaft, as shown above, with the markings facing forward.



2. Install the upper roll's retaining plate by aligning the tab on the plate with the recess in the slide, as shown above.



3. Install the upper roll's retaining bolt, and securely tighten the bolt with a wrench.



4. Lubricate the upper roll bearings, as shown. Refer to the applicable "Recommended Lubricants" table for the proper grease.

5. Roll set installation is now complete. Before grooving, ensure that all instructions in the previous sections of this manual have been followed (i.e. adjusting the roll guards, adjusting the groove diameter stop, etc.).

MAINTENANCE

⚠ DANGER

- **Always turn off the main power supply to the tool before making any tool adjustments or before performing any maintenance.**

Failure to follow this instruction could result in death or serious personal injury.

This section provides information about keeping tools in proper operating condition and guidance for making repairs when it becomes necessary.

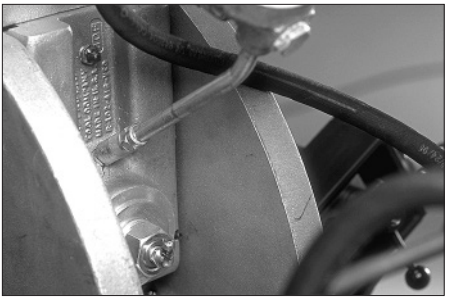
Replacement parts shall be ordered from Victaulic to ensure proper and safe operation of the tool.

Before making any tool adjustments or before performing maintenance on the tool, turn off the main power supply (main circuit breaker panel, knife switch, etc.). Lock the switch in the "OFF" position to prevent accidental engagement.

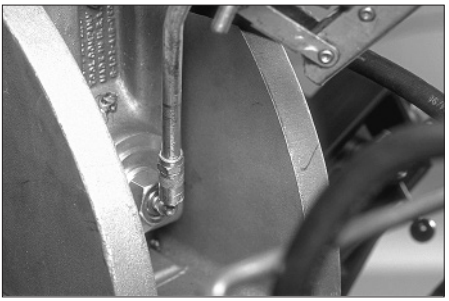
NOTE: Victaulic does not supply this lockout mechanism.

LUBRICATION

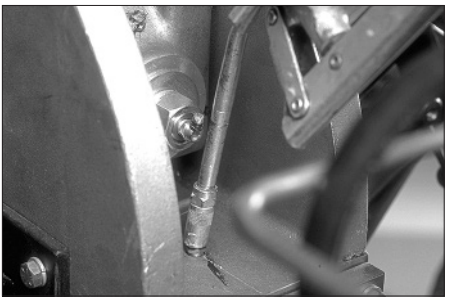
1. After every 8 hours of operation, lubricate the tool. **Always lubricate the upper roll bearings when rolls are changed.**



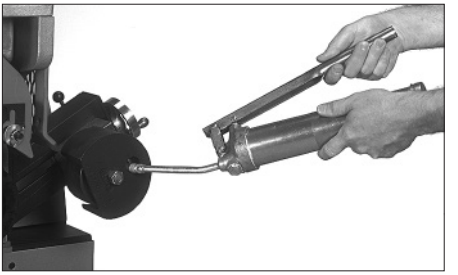
1. Lubricate the slide gibs at the two grease fittings, as shown.



2. Lubricate the upper roll bearing at the fitting, as shown.



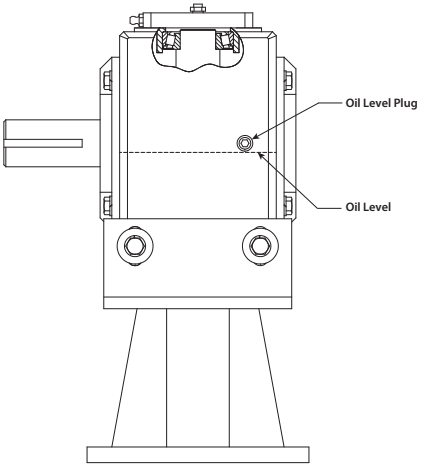
3. Lubricate the main shaft bearings at the fittings, as shown.



4. Lubricate the stabilizer wheel, as shown.

CHECKING AND FILLING GEAR REDUCER OIL

The gear reducer oil level shall be checked every six months or 2,500 operating hours, whichever comes first. Oil shall be changed more often if the tool is used in a severe environment (i.e. dusty, humid). If leakage is present, repairs shall be made to correct the leak. **NOTE:** The gear reducer's oil capacity is 75 oz (2 liters).

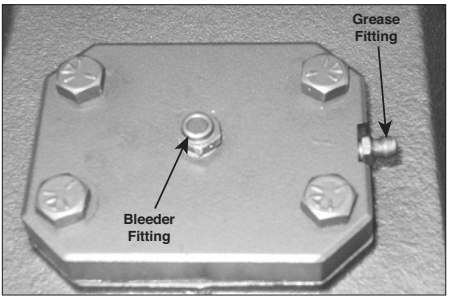


1. Remove the oil level plug from the gear reducer (refer to drawing above). The oil level should be even with the bottom of the hole.

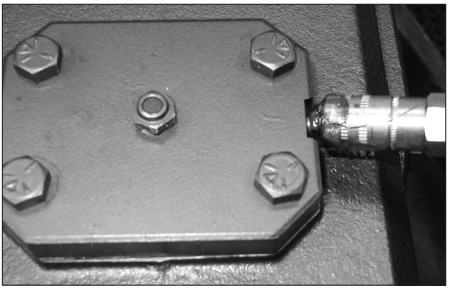
2. To add oil, remove the oil level plug from the gear reducer and fill to the proper level (refer to drawing above). Refer to the tag attached to the gear reducer for the required gear oil.

3. Re-install the oil level plug.

GEAR REDUCER INPUT SHAFT



1. The gear reducer's input shaft cover contains a grease fitting (shown above). This grease fitting is located on the chain coupling side of the gear reducer. A bleeder fitting is located on the center of the gear reducer's input shaft cover (shown above).



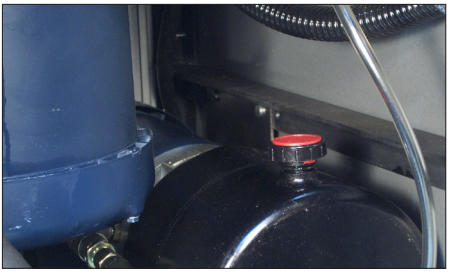
2. Lubricate the input shaft bearing after every 40 hours of operation. This fitting must be lubricated with a No. 2EP Lithium-base grease until it weeps from the bleeder fitting.

CHECKING AND FILLING HYDRAULIC OIL

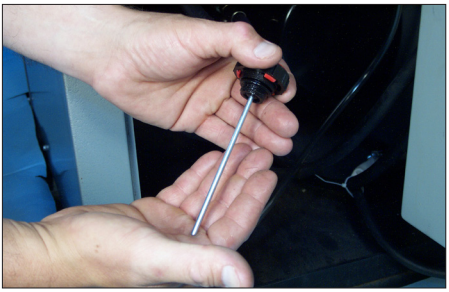
1. The hydraulic oil level shall be checked every month or 50 operating hours, whichever comes first. Check the hydraulic oil level preferably before tool startup. The level should be no lower than ¾ inch/19 mm from the top of the tank. Add recommended hydraulic oil to no higher than ½ inch/13 mm from the top of the tank. The ½-inch/13-mm clearance is required to accommodate expansion of the hydraulic oil. Refer to the "Recommended Lubricants" table for the proper hydraulic oil.

REPLACING HYDRAULIC OIL AND FILTER

Replace the hydraulic oil and hydraulic oil filter annually or every 2,000 operating hours, whichever comes first.



1. Open the tool's rear door.



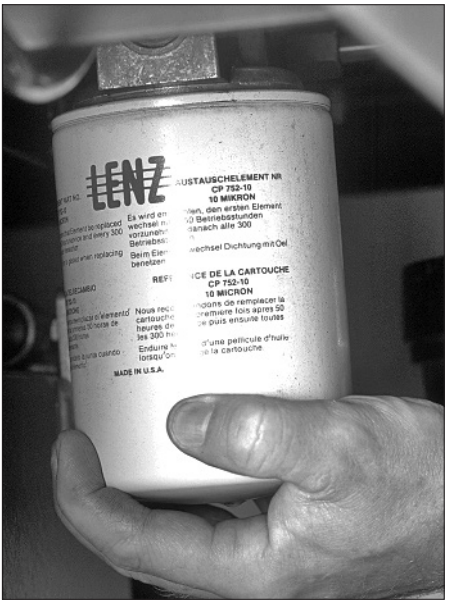
2. Remove the hydraulic breather cap/dipstick on top of the hydraulic tank.

3. Position a container, large enough to hold 1½ gallons/6 liters of oil, underneath the oil tank's drain plug. Remove the drain plug, located on the underside of the hydraulic oil tank. Allow the oil to drain completely into the 1½-gallon/6-liters or larger container.

4. Replace the drain plug.

NOTICE

- **Reference local ordinances regarding the proper disposal of hydraulic oil.**



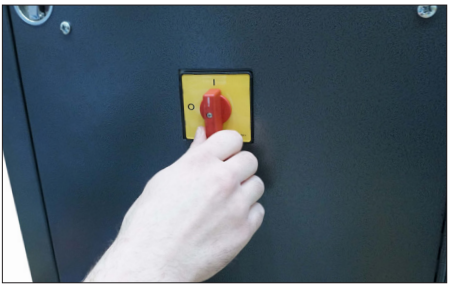
5. Place a tray under the oil filter, and remove the filter.

6. Lubricate the gasket of the new hydraulic oil filter with new hydraulic oil. Install the new filter hand-tight into the tool.

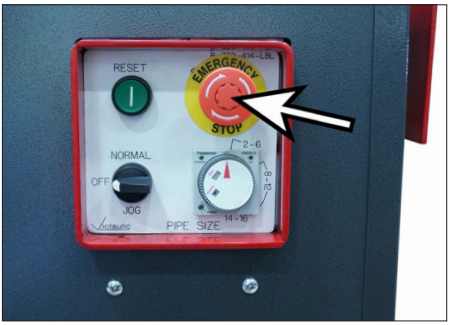
7. Fill the tank with new hydraulic oil to approximately ¾ – 1″/20 – 25 mm from the threaded neck of the tank.

8. Re-install the hydraulic breather cap/dipstick.

9. Turn on the main power supply to the tool (circuit breaker panel, knife switch, etc.).



10. Set the main power switch to the "ON" position.



11. Pull the "EMERGENCY STOP" button on the control panel to the out position.

12. Push the "RESET" button.

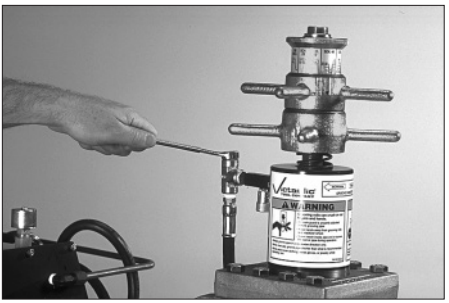
13. Inspect the hydraulic system for leaks.

14. Turn off the hydraulic system by pushing the "EMERGENCY STOP" button on the control panel.

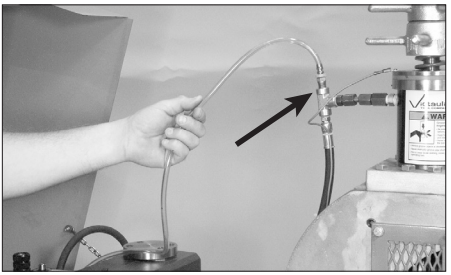
15. Check the hydraulic oil level. Add oil, as necessary.

AIR BLEEDING

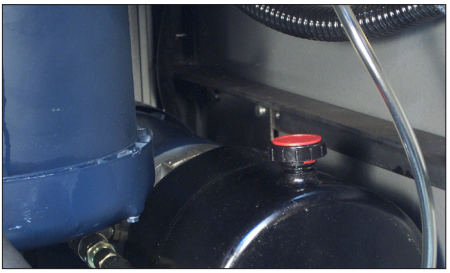
1. Fill the hydraulic tank with a recommended hydraulic oil to approximately ¾ – 1″/20 – 25 mm) below the threaded neck of the tank.

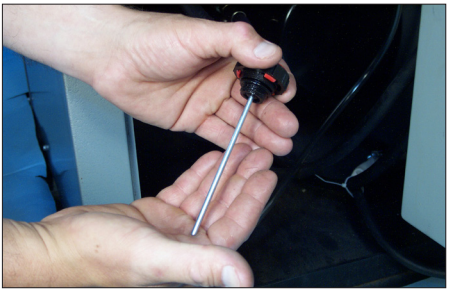


2. Remove the plug from the tee fitting near the hydraulic cylinder.



3. Install the bleeder tube (supplied with the tool) hand-tight into the tee fitting.

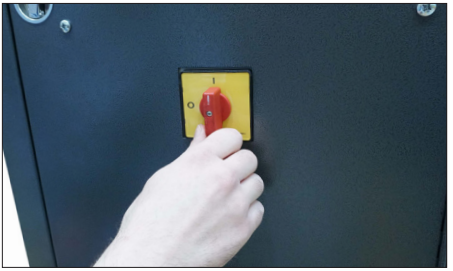




4. Remove the hydraulic breather cap/dipstick.

5. Insert the end of the bleeder tube (clear hose) into the tank so that the end is submerged in the hydraulic fluid.

6. Connect the tool to the proper power supply.



7. Set the main power switch to the “ON” position.

8. Turn the selector switch to the “JOG” position.

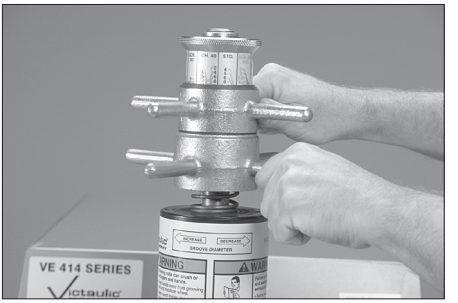
9a. Depress the safety foot switch. The fluid will start to flow through the bleeder tube (the fluid should contain air bubbles).

9b. Continue to run the fluid through the bleeder tube for at least five minutes. While doing this, lightly tap on all of the steel hydraulic tubes to free any trapped air inside the walls.

9c. Once the fluid flows through the bleeder tube without any air bubbles, continue to run it through for another two to three minutes. After this is complete, release the safety foot switch.

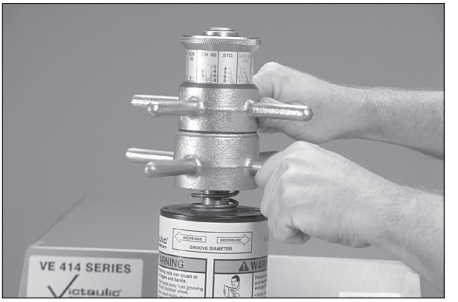
10. Remove the bleeder tube from the tee fitting and tank. Install the plug back into the tee fitting. Make sure air is not allowed back into the tee fitting while doing this.

11. Fill the tank with new hydraulic oil approximately ¾ – 1″/20 – 25 mm) from the threaded neck of the tank.



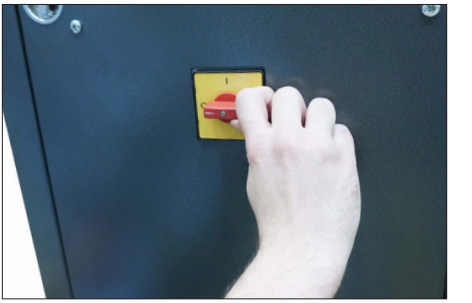
12. Set the depth stop on the tool to obtain approximately a ¼-inch/5-mm gap between the depth stop and the cylinder.

13. Turn the selector switch to the "NORMAL" position.



14. Depress the foot switch, and observe the hydraulic ram's motion. The hydraulic ram should move down approximately ¼-inch/5-mm rapidly. Release the foot switch. The hydraulic ram should return to its full-up position. Repeat this step several times.

15. If the slide does not move rapidly in the downward direction, repeat steps 2 – 14.



16. Set the main power switch to the "OFF" position.

RECOMMENDED LUBRICANTS

BEARING AND SLIDE GREASE

NLGI #2 Summer Grade graphite moly base (General Purpose EP Lithium Base Grease)

Manufacturer	Product
BP Amoco	Energrease LC-EP2
Gulf Oil Corp.	Gulfcrown Grease EP#2
Lubriplate	No. 630-2
Mobil Oil Corp.	Mobilux EP2
Pennzoil Products Co.	Pennlith EP 712 Lube
Shell Oil Co.	Alvania EP2
Sun Refining	Sun Prestige 742 EP
Texaco Inc.	Multifak EP2

GEAR OIL

Refer to the tag located on the gear reducer.

HYDRAULIC OIL

(High Pressure, Anti-Wear/Anti-Foam Hydraulic Oil ISO Grade 32)

Manufacturer	Product
BP Amoco	Energol HLP-HM32
Gulf Oil Corp.	Harmony 32 AW
Kendall Refining Co.	Kenoil R&O AW-32
Lubriplate	HO-o
Mobil Oil Corp.	Mobil DTE 24
Pennzoil Products Co.	Pennzbell AW32
Shell Oil Co.	Tellus 32
Sun Refining	Survis 832
Texaco Inc	Rando

ACCESSORIES

VAPS112 VICTAULIC ADJUSTABLE PIPE STAND

The Victaulic VAPS112 Pipe Stand is a portable, adjustable, roller-type pipe stand that contains four legs for additional stability. The VAPS112 supports pipe sizes ¾ to 12 inches/26.9 to 323.9 mm (1½-foot/0.5-meter to full, single 20-foot/6-meter random lengths) and has a load rating of 1075 pounds/490 kilograms. The turnstile design permits ease of grooving for both pipe ends. Contact Victaulic for details.

OPTIONAL ROLLS

Refer to the tables on page 46, which identify rolls that are available for different pipe materials and groove specifications.

VAPS224 VICTAULIC ADJUSTABLE PIPE STAND

The Victaulic VAPS224 Pipe Stand contains features that are similar to the VAPS112, but supports pipe sizes 2 to 24 inches/60.3 to 610.0 mm (1½-foot/0.5-meter to full, single 20-foot/6-meter random lengths) and has a load rating of 1800 pounds/817 kilograms. Contact Victaulic for details.

PARTS ORDERING INFORMATION

When ordering parts, the following information is required for Victaulic to process the order and send the correct part(s). Request the RP-VE414MC Repair Parts List for detailed drawings and parts listings.

1. Tool Model Number – VE414MC
2. Tool Series Number – The serial number can be found on the side of the tool on the nameplate
3. Quantity, Part Number, and Description
4. Where to Send the Part(s) – Company name and address
5. To Whose Attention to Send the Part(s)
6. Purchase Order Number
7. Billing Address

Parts can be ordered by calling 1-800-PICK VIC.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Pipe will not stay in grooving rolls.	Incorrect pipe positioning	Refer to the "Long Pipe Lengths" section.
	Improper manual grooving technique.	Refer to the "Short Pipe Lengths" section.
Pipe starts rotating during grooving.	Rust or dirt has built up on the lower roll.	Remove any dirt or rust accumulation from the lower roll with a stiff, wire brush.
	Excessive ram speed. The ram speed control valve requires adjustment.	Reduce the ram speed to a lower setting. Turn the ram speed control valve's knob clockwise two to three revolutions to reduce flow.
	Worn grooving rolls.	Inspect the lower roll for worn knurls. Replace lower rolls, if worn.
Pipe flare is excessive.	Excessive ram speed.	Reduce the ram speed to a lower setting.
	The ram speed control valve requires adjustment.	Turn the ram speed control valve's knob clockwise two to three revolutions to reduce flow.
	The pipe support is adjusted too high.	Check pipe levelness. Refer to the "Long Pipe Lengths" section.
	The tool is tilted forward.	Check tool levelness. Refer to the "Tool Setup" section..
	Pipe is "over-tracking" due to incorrect pipe support positioning.	Move the pipe support to the right. Refer to the "Long Pipe Lengths" section.
	The stabilizer is pushing the pipe to the left and off center from the rolls.	Back off the stabilizer to the furthest point to where it still stabilizes the pipe effectively. Refer to the "Stabilizer Adjustment" section.
Pipe sways or vibrates from side to side.	Incorrect stabilizer adjustment.	Move the stabilizer in or out until the pipe rotates smoothly.
While grooving, loud squeaks echo through the pipe.	Pipe is "over-tracking" due to incorrect pipe support positioning.	Move the pipe support to the right. Refer to the "Long Pipe Lengths" section.
	Pipe is not square cut.	Cut pipe ends square.
While grooving, loud thumps or bangs occur approximately once every revolution of the pipe.	Pipe has a pronounced weld seam.	Grind weld seams flush with the pipe surface inside and outside 2"/50.8 mm back from the pipe end.
The pump will not start, or the lower roll will not rotate.	The main power is off.	Turn the main power "ON."
	The thermal units have tripped.	Reset the thermal units.
	Fuses have blown.	Check all fuses and replace, as necessary.
Tool comes up to operating pressure extremely slow.	Air is in the hydraulic system.	Bleed any air from the hydraulic system.
The upper roll will not rotate.	Dirt is trapped between the roll and slide or the retaining plate.	Remove the upper roll, and clean off any dirt. Re-install the upper roll.

In the event of tool malfunction outside the scope of the troubleshooting section, contact Victaulic for assistance.

NOTICE

- **The "Maximum Pipe Size and Wall Thickness Capacity" tables below are accurate as of the date printed on the back cover of this manual. For the most up-to-date information, reference Victaulic publication 24.01, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/24.01.pdf**

VE414MC RATINGS - MAXIMUM PIPE SIZE AND WALL THICKNESS CAPACITY (OGS)

			Pipe Size (inches/mm)									
Model	**Pipe Material**	**Notes**	**2 50**	**2½ 65**	**3 80**	**3½ 90**	**4 100**	**5 125**	**6 150**	**8 200**	**10 250**	**12 300**
VE414MC	Steel		Sch. 5 – 80 1.7 – 7.6 mm				Sch. 5 – 40 2.1 – 9.3 mm					Sch. 10 – STD 4.6 – 9.5 mm
	Stainless		Sch. 40S 3.9 – 9.5 mm									
	Lt. Wall SS		Sch. 5S – 10S 1.7 – 4.6 mm									
	Aluminum	1	Sch. 5 – 40 1.7 – 9.3 mm									Sch. 5 – STD 4.0 – 9.5 mm
	PVC Plastic		Sch. 40 3.9 mm	Sch. 40 – 80 5.2 – 11.0 mm						Sch. 40 8.2 mm		
	Copper		K, L, M and DWV									

1 6061-T4 or 6063-T4 Alloy must be used.

VE414MC RATINGS - MAXIMUM PIPE SIZE AND WALL THICKNESS CAPACITY AGS

		Pipe Size (inches/mm)	
Model	**Pipe Material**	**14 350**	**16 400**
VE414MC	Steel	Sch. 10 – STD 4.8 – 9.5 mm	
	Stainless	STD 9.5 mm	
	Lt. Wall SS	Sch. 5S – 10S 4.0 – 4.8 mm	

ORIGINAL GROOVE SYSTEM (OGS) ROLL PART NUMBERS

STEEL AND SCHEDULE 40 STAINLESS STEEL PIPE - COLOR CODED BLACK

(For light-wall stainless steel pipe, refer to separate table on this page)

Pipe Size inches/mm	Roll Part Numbers
2 – 3½ 50 – 90	Roll Set R902414L03
4 – 6 100 – 150	Lower Roll R904416L06 Upper Roll R9A4416U06 Roll Set R904416006
8 – 12 200 – 300	Lower Roll R908416L12 Upper Roll R9A8416U16 Roll Set R908416012

ENDSEAL "ES" ROLL PART NUMBERS

STEEL PIPE - COLOR CODED BLACK

Pipe Size inches/mm	Roll Part Numbers
2 – 3½ 50 – 90	Roll Set RZ02414003
4 – 6 100 – 150	Lower Roll RZ04416L06 Upper Roll RZA4416U06 Roll Set RZ04416006
8 – 12 200 – 300	Lower Roll RZ08416L12 Upper Roll RZA8416U12 Roll Set RZ08416012

ADVANCED GROOVE SYSTEM AGS ROLL PART NUMBERS

STEEL PIPE - COLOR CODED BLACK WITH YELLOW BAND

STAINLESS STEEL PIPE - COLOR CODED SILVER WITH BLACK BAND

Pipe Size inches/mm	Roll Part Numbers for Steel Pipe	Roll Part Numbers for Stainless Steel Pipe
14 – 16 350 – 400	Lower Roll RW01416L16 Upper Roll RW01416ASY Roll Set RW01416016	Lower Roll RWX1416L16 Upper Roll RWX1416ASY Roll Set RWX1416016

ORIGINAL GROOVE SYSTEM (OGS) ROLL PART NUMBERS

ALUMINUM AND PVC PLASTIC PIPE - COLOR CODED YELLOW ZINC

Pipe Size inches/mm	Roll Part Numbers
2 – 3½ 50 – 90	Roll Set RP02414003
4 – 6 100 – 150	Lower Roll RP04416L06 Upper Roll RPA4416U06 Roll Set RP04416006
8 – 12 200 – 300	Lower Roll RP08416L12 Upper Roll RPA8416U12 Roll Set RP08416012

ORIGINAL GROOVE SYSTEM (OGS) ROLL PART NUMBERS

SCHEDULE 5S AND 10S STAINLESS STEEL PIPE - COLOR CODED SILVER

Pipe Size inches/mm	Roll Part Numbers
2 – 3½ 50 – 90	Roll Set RX02414003
4 – 6 100 – 150	Lower Roll RX04416L06 Upper Roll RXA4416U06 Roll Set RX04416006
8 – 12 200 – 300	Lower Roll RX08416L12 Upper Roll RXA8416U16 Roll Set RX08416012

ORIGINAL GROOVE SYSTEM (OGS) ROLL PART NUMBERS

CTS US STANDARD ASTM DRAWN COPPER TUBING - COLOR CODED COPPER

Pipe Size inches	Roll Part Numbers
2 – 6	Roll Set RR02414006
8	Lower Roll RR08416L08 Upper Roll RRA8416U08 Roll Set RR08416008

OGS GROOVE SPECIFICATIONS

For the most up-to-date information regarding OGS roll groove specifications, reference the current revision of Victaulic publication 25.01, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/25.01.pdf

ENDSEAL "ES" GROOVE SPECIFICATIONS

For the most up-to-date information regarding EndSeal "ES" roll groove specifications, reference the current revision of Victaulic publication 25.02, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/25.02.pdf

AGS GROOVE SPECIFICATIONS

For the most up-to-date information regarding AGS roll groove specifications, reference the current revision of Victaulic publication 25.09, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/25.09.pdf

COPPER TUBING GROOVE SPECIFICATIONS

For the most up-to-date information regarding copper tubing roll groove specifications, reference the current revision of Victaulic publication 25.06, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/25.06.pdf

ADDITIONAL RESOURCES

For additional information on 24-inch/DN600 and smaller Victaulic mechanical piping products for carbon steel, stainless steel, aluminum, and CPVC/PVC pipe, reference the current revision of the I-100 Field Installation Handbook, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/I-100.pdf

For additional information on Victaulic Advanced Groove System (AGS) products, reference the current revision of the I-W100 Field Installation Handbook, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/I-W100.pdf

For additional information on Victaulic Copper Connection Products, reference the current revision of the I-600 Field Installation Handbook, which can be viewed/downloaded by scanning the mobile QR code link to the right, or by clicking on this desktop link: https://www.victaulic.com/assets/uploads/literature/I-600.pdf

EC DECLARATION OF CONFORMITY

In Accordance with the Machinery Directive 2006/42/EC

Victaulic Company, headquartered at 4901 Kesslersville Road, Easton, PA 18040, USA, hereby declares that the machinery listed below complies with the essential safety requirements of the Machinery Directive, 2006/42/EC.

Product Models:	VE414MC, VE415MC
Serial No. :	Refer to Machinery Nameplate
Product Description:	Pipe Roll Grooving Tool
Conformity Assessment:	2006/42/EC, Annex I
Reference Standards:	EN ISO 12100 : 2010 EN IEC 60204-1:2018 EN ISO 13857 : 2019
Technical Documentation:	The relevant technical documentation prepared in accordance with Annex VII (A) of the Machinery Directive 2006/42/EC, will be made available upon request to the governing authorities.
Authorized Representative:	Victaulic Company c/o Victaulic Europe BVBA Prijkelstraat 36 9810, Nazareth Belgium

Signed for and on behalf of Victaulic Company,

Mr. Len R. Swantek
Director – Global Regulatory Compliance
Machinery Manufacturer Representative

Place of Issue: Easton, Pennsylvania, USA
Date of Issue: May 1, 2020

UK DECLARATION OF CONFORMITY

In Accordance with The Supply of Machinery (Safety) Regulations 2008 No. 1597

Victaulic Company, headquartered at 4901 Kesslersville Road, Easton, PA 18040, USA, hereby declares that the machinery listed below complies with the essential safety requirements of The Supply of Machinery (Safety) Regulations 2008 No. 1597.

Product Models:	VE414MC VE415MC
Serial No. :	Refer to Machinery Nameplate
Product Description:	Pipe Roll Grooving Tool
Conformity Assessment:	2008 No. 1597, Annex I
Reference Standards:	BS EN ISO 12100 : 2010 BS EN ISO 13857 : 2019 BS EN ISO 14120 : 2015
Technical Documentation:	The relevant technical documentation prepared in accordance with Annex VII (A) of The Supply of Machinery (Safety) Regulations 2008 No. 1597, will be made available upon request to the governing authorities.
Authorized Representative:	Victaulic Company c/o Victaulic Europe BVBA Units B1 & B2 Cockerell Close off Gunnels Wood Road Stevenage, Hertfordshire SG1 2NB, United Kingdom

Signed for and on behalf of Victaulic Company,

Mr. Len R. Swantek
Director – Global Regulatory Compliance
Machinery Manufacturer Representative

Place of Issue: Easton, Pennsylvania, USA
Date of Issue: May 14, 2021

VE414MC Roll Grooving Tool

TM-VE414MC 3303 REV F UPDATED 12/2022 RM00414000