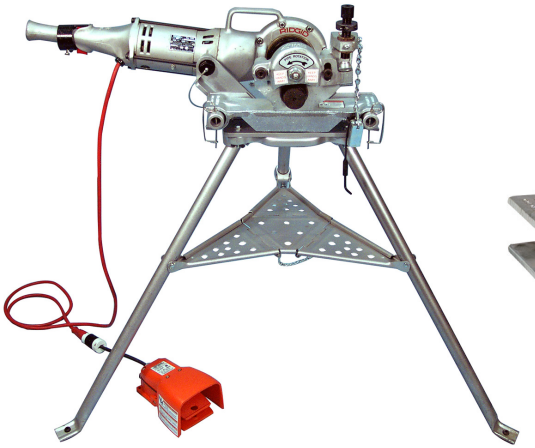
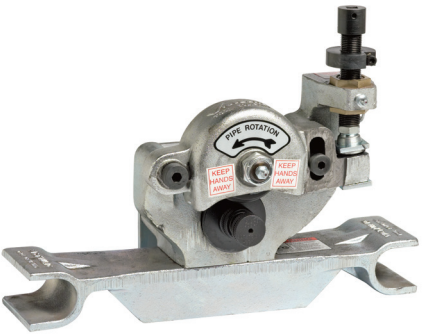
VE226 Pipe Roll Grooving Tool

VE226S, VE226B, VE226M, VE226C, VE226BSS, VE226MSS, AND VE226P MANUAL FEED ROLL GROOVING TOOLS



VE226 WITH POWER DRIVE KIT



VE226

WARNING

WARNING

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

- Before operating or servicing any roll grooving tools, read all instructions in this manual and all warning labels on the tool.
- Wear safety glasses, hardhat, foot protection, and hearing protection while working around this tool.
- Save this 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 this tool, contact Victaulic, P.O. Box 31, Easton, PA 18044-0031, Phone: 1-800-PICK VIC, E-Mail: pickvic@victaulic.com.

Original Instructions

TABLE OF CONTENTS

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 VE226 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 tools. 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.

Use of these tools requires dexterity and mechanical skills, as well as sound safety habits. Although these tools are 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 recommended for safe operation of these tools. 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 these tools to ensure that all operators read this manual and fully understand the operation of these tools.

Store this manual in a clean, dry area where it is always readily available. Additional copies of this manual are available upon request through Victaulic.

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 drive motor to protect the operator from electric shock.** Ensure that the drive motor 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.** DO NOT attempt to lift tool components without the use of mechanical lifting equipment.
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, hard hat, foot protection, and hearing protection.
4. **Keep hands and tools away from grooving rolls and stabilizer wheel 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 from the control station side only.** The tool must be operated with the 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, do not use the tool, and contact Victaulic.
7. **Do not over-reach.** Maintain proper footing and balance at all times. Ensure that the safety foot switch is easily accessible for the operator.

⚠ CAUTION

1. **This tool is designed ONLY for roll grooving pipe sizes, materials, and wall thicknesses listed in the "Tool Rating and Roll Selection" section.**
2. **Inspect the equipment.** Before using the tool, check all moveable parts for any obstructions. Ensure that tool components are installed and adjusted in accordance with the "Tool Setup" section.
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 immediate work area.** All visitors should be kept a safe distance from the equipment at all times.
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/tubing lengths with a pipe stand, in accordance with the "Long Pipe 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 Victaulic VE226 tool is a manual feed tool for roll grooving pipe to prepare it to receive Victaulic grooved couplings. This tool is designed to roll groove pipe of various materials and wall thicknesses, as shown in the "Tool Rating and Roll Selection" section. The tool should only be used to roll groove pipe with specifications that fall within the parameters designated in the charts. Use of the tool for other purposes will overload the tool, shorten tool life, and may cause damage.

⚠ CAUTION

- **This tool must be used ONLY for roll grooving pipe designated in the "Tool Rating and Roll Selection" section of this manual.**

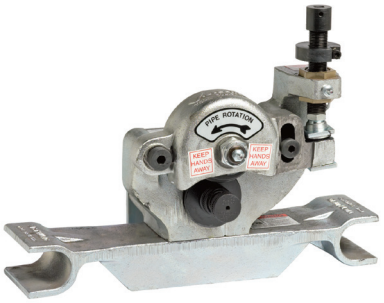
Failure to follow this instruction could overload the tool, resulting in reduced tool life and/or tool damage.

RECEIVING THE TOOL

VE226 Roll Grooving Tools are palletized individually in sturdy containers that are designed for repeated shipping. Save the original container 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.

CONTAINER CONTENTS



Qty.	Description
1	VE226 Tool (S, B, M, C, BSS, MSS, or P version, as ordered)
1	set of Groove Depth Gauges (attached)
1	Hex Key
2	Shear Pin
2	Operating and Maintenance Instructions Manual

POWER DRIVE KIT CONTENTS

Qty.	Description
1	Power Drive/Tool Stand
1	Foot Switch for Power Drive
1	Adapter Plate
2	Pins
4	Bolts with Flat Washers and Wing Nuts
1	Power Drive Trigger Lock
1	Power Drive Adapter

POWER REQUIREMENTS

DANGER

- **To reduce the risk of electric shock, check the electrical source for proper grounding.**
- **Before performing any maintenance on the tool, disconnect the power cord from the electrical source.**

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

POWER DRIVE REQUIREMENTS

The VE226 tool is designed for operation with a power drive. The tool mounts directly onto a Rigid 700® Power Drive. Always refer to the operating manual for the power drive for additional information. Contact Victaulic for information regarding mounts for alternate power drives.

Power must be supplied to the drive motor through a safety foot switch to ensure safe operation. Ensure that the power drive is grounded properly in accordance with Article 250 of the National Electrical Code.

If an extension cord is required, refer to the "Extension Cord Requirements" section that follows for cord sizes.

EXTENSION CORD REQUIREMENTS

When pre-wired outlets are not available and an extension cord must be used, it is important to use the proper cord size (i.e. Conductor Size American Wire Gauge). Cord size selection is based upon tool rating (amps) and cord length (feet). Use of a cord size (gauge) thinner than required will cause significant voltage drop at the power drive while the tool is operating. Voltage drops may cause damage to the power drive and can result in improper tool operation. **NOTE:** It is acceptable to use a cord size that is thicker than required.

The required cord sizes for cord lengths up to and including 100 ft/31 m are listed in the table below. Use of extension cords longer than 100 ft/31 m must be avoided.

Power Drive Rating volts/amps	**Cord Lengths feet/meters**		
	25 8	50 15	100 31
110 12	12 gauge	12 gauge	10 gauge
220 6	14 gauge	12 gauge	10 gauge

® Ridgid is a registered trademark of the Ridge Tool Company

TOOL NOMENCLATURE

NOTICE

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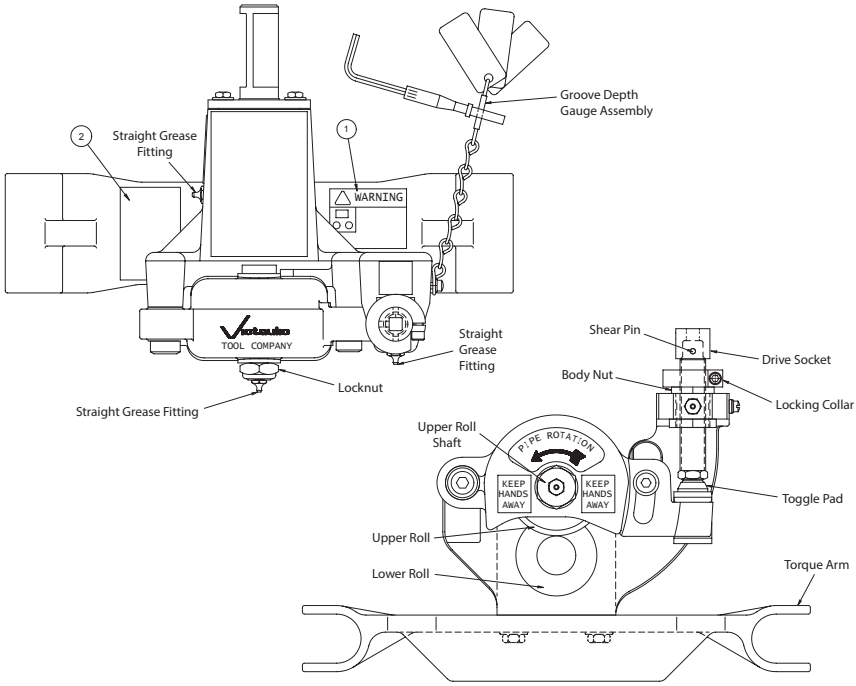

1

⚠ WARNING

Failure to follow instructions and warnings could result in serious personal injury.

- Before operating or servicing this tool, read all instructions in the operating and maintenance manual and all labels on the tool.
- Wear safety glasses, hardhat, foot protection, and hearing protection.

If you have questions concerning the safe and proper operation of this tool, contact Victaulic, P.O. Box 31, Easton, PA 18044-0031, Phone: 1-800-PICK VIC, E-Mail: pickvic@victaulic.com.

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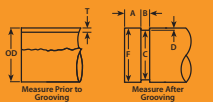
Pipe and groove features, noted below, must be measured to verify they are within current Victaulic specifications. Victaulic submittal publications can be downloaded at www.victaulic.com.



OD= Average Pipe Outside Diameter
T = Pipe Wall Thickness
A = Distance from Pipe End to Groove
B = Groove Width
C = Average Diameter at Base of Groove
D = Groove Depth
F = Pipe-End Flare

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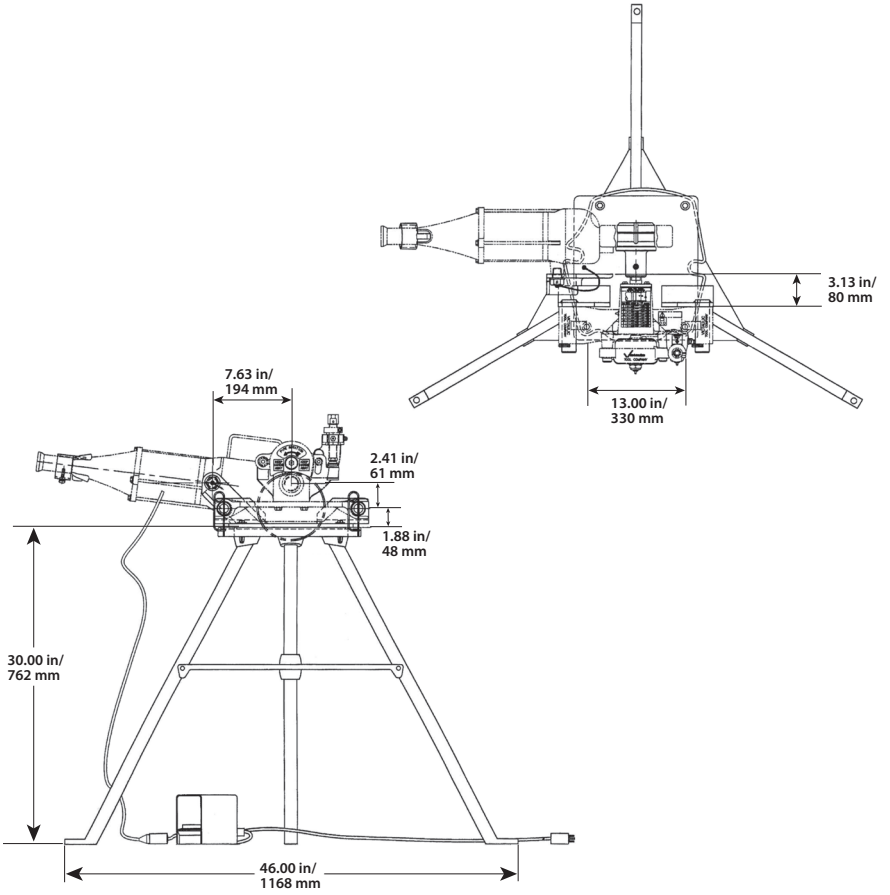
TOOL DIMENSIONS AND SPECIFICATIONS



Tool weight is 112 pounds/51 kilograms.

Tool weight includes the tool head assembly, power drive, base assembly, hand pump, and foot switch. The tool head assembly alone weighs approximately 37 pounds/17 kilograms.

Tool sound pressure is 103.6 dB(A), while tool sound power is 95.6 dB(A). All measurements taken with a Ridgid 700 power drive.

NOTE: Noise measurements are dependent on the power drive, and will vary based on configuration. Always check the power drive manufacturer's documentation for details.

TOOL SETUP

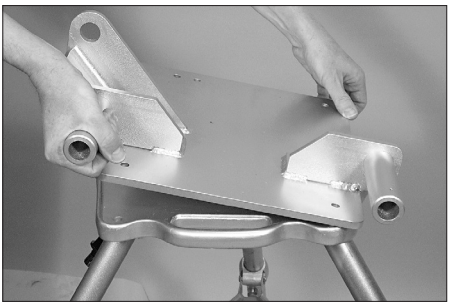
⚠ WARNING

- **DO NOT connect the power until instructed otherwise.**
- **DO NOT set up or operate the tool until you have read and understood the Operating and Maintenance Instructions manual supplied with the tool.**

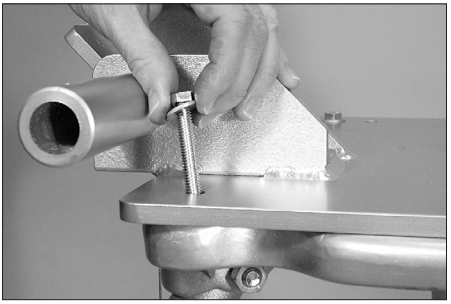
Failure to follow these instructions could result in property damage or personal injury.

Before grooving, the tool must be mounted on a Rigid-700 Power Drive or equivalent power drive.

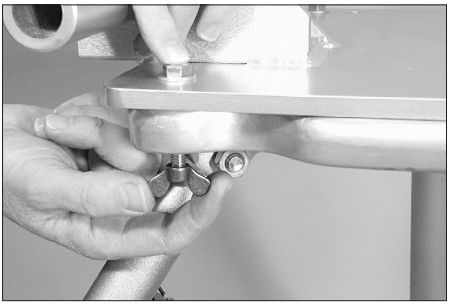
1. Select the location for the tool. The choice of tool location and position should take into account the following factors:
   - **a.** Pipe handling support requirements
   - **b.** Power supply requirements
   - **c.** Pipe support and tool anchoring requirements
2. Secure the tool stand to a platform or the floor. Level the unit.



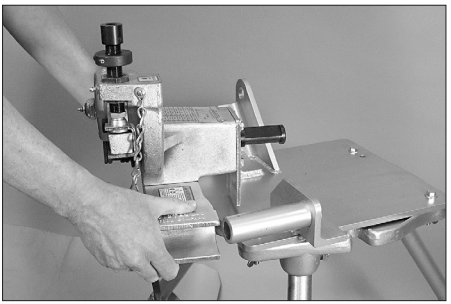
3. Install the adapter plate onto the tool stand, as shown above.



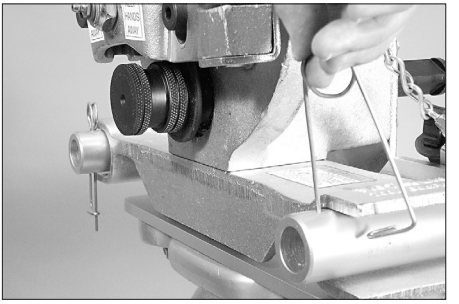
4. Install the bolts with flat washers through the four holes on the adapter plate and into the tool stand, as shown above.



5. Install the wing nuts over the ends of the bolts and tighten.



6. Install the VE226 tool onto the arms of the tool stand.



7. Install a pin into each hole in the arms of the tool stand, as shown above. Close the pins.

DANGER

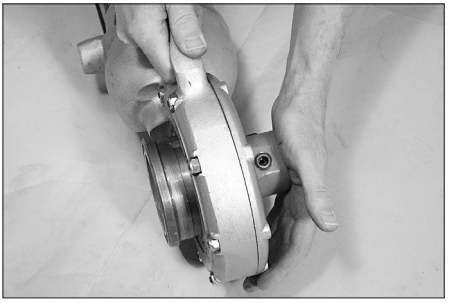
- **To prevent electric shock, ensure that the power drive/ foot switch is unplugged from the electrical source before attempting to remove or install any components.**
- **DO NOT plug power drive/ foot switch into power source until instructed.**

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

WARNING

- **DO NOT operate the power drive without a safety foot switch.**

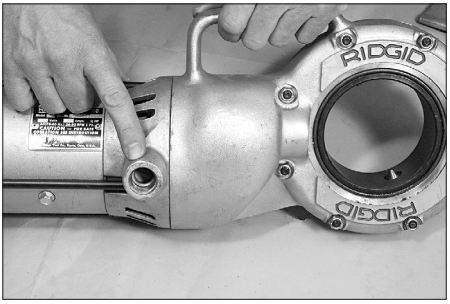
Failure to follow these instructions could result in serious personal injury.



8. Remove the existing drive adapter or threading die from the power drive.

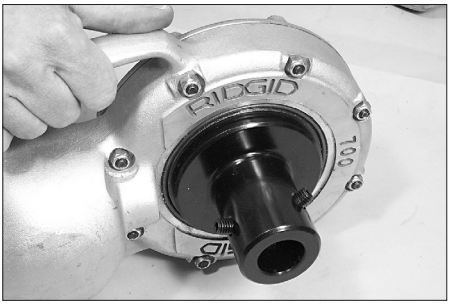
9. Locate the drive tangs on the Ridgid 700 Power Drive.

10. Locate the recesses in the power drive adapter.

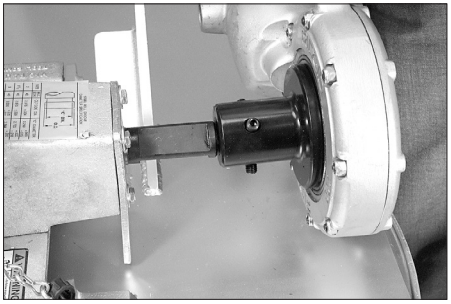


11. Locate the tapped hole in the body of the power drive.

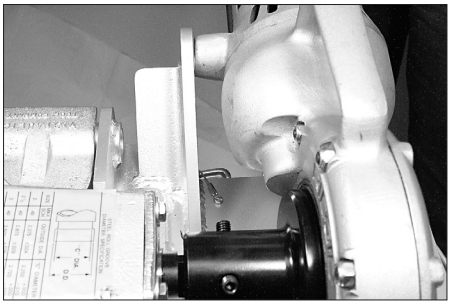
12. Install the power drive adapter into the power drive by aligning the drive tangs (shown in Step 9) with the recesses in the adapter (shown in Step 10). Ensure that the shaft of the adapter (shown in Step 10) faces the side of the power drive that has the tapped hole (shown in Step 11).



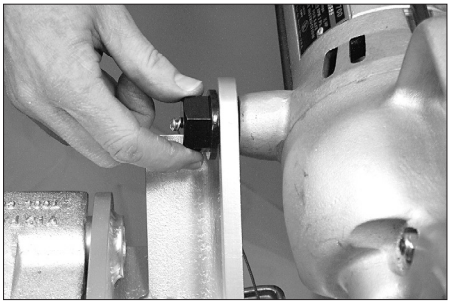
13. Ensure that the power drive adapter engages completely into the power drive, as shown above.



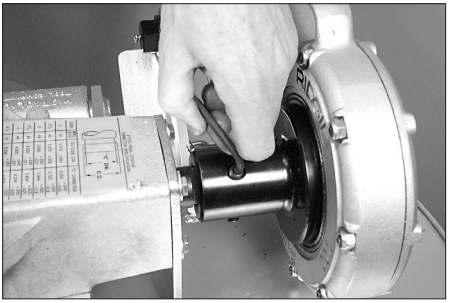
14. Install the power drive onto the VE226 tool, aligning the set screws of the power drive adapter shaft with the flats on the tool drive shaft, as shown above. If necessary, rotate the VE226 tool drive shaft by hand for proper alignment.



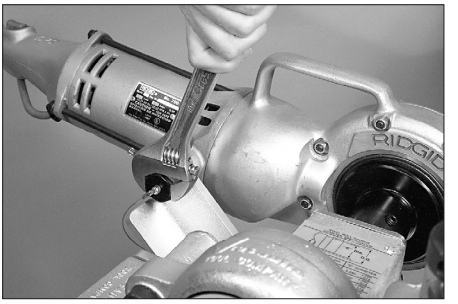
15. Align the tapped hole in the power drive body with the hole in the adapter plate, as shown above.



16. Loosely install the bolt attached to the adapter plate through the adapter plate hole and into the tapped hole in the power drive body, as shown above.



17. Before tightening the three set screws, ensure that the flats on the VE226 tool drive shaft are aligned with the set screws of the power drive adapter shaft. Tighten the three set screws on the power drive adapter shaft with the hex key wrench that is provided with the VE226 tool.

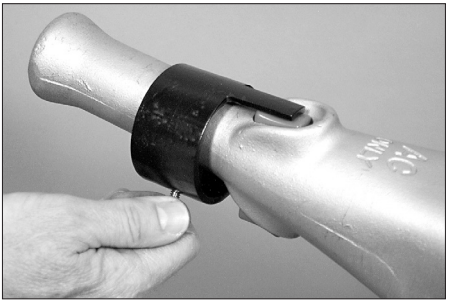


18. Tighten the bolt installed in Step 16.

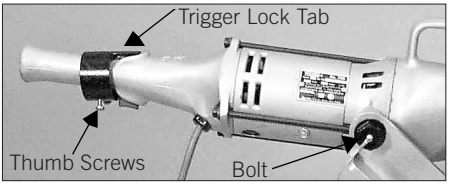
⚠ WARNING

- **Ensure that the power drive/foot switch is unplugged before installing the power drive trigger lock.**

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



19. Install the power drive trigger lock onto the power drive. Tighten the two thumbscrews on the underside of the trigger lock.

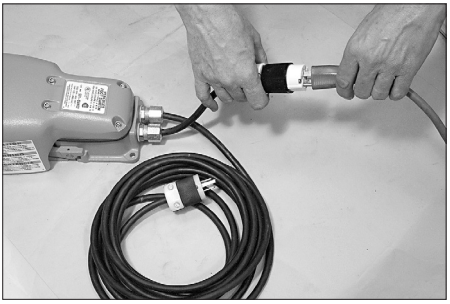


20. It is important that the trigger lock tab pushes down on the topside trigger in order to produce correct rotation of the grooving rolls.

⚠ WARNING

- **DO NOT operate power drive without a safety foot switch. A foot switch is required to operate the tool safely.**

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



21. Plug the power drive into the foot switch, as shown above. Plug the foot switch cord into a grounded electrical outlet that meets the guidelines in the "Power Requirements" section. In addition, refer to the power drive operator's manual for any additional requirements.

PIPE SETUP

For satisfactory tool operation the following pipe preparation tips should be carefully observed.

1. Pipe must be square cut. See the groove specification charts for details.

2. The end of the pipe, both inside and out, should be cleaned to remove dirt, scale, and other materials that might interfere with the grooving rolls or distort the groove.

PIPE LENGTH

The chart below lists the minimum length of pipe to be grooved, and the maximum length of pipe to be grooved without support.

Pipe		Length – inches/mm	
Nominal Size inches/mm	**Actual Outside Diameter inches/mm**	**Min.**	**Max.**
1¼ 31	1.660 42.4	8 205	36 915
1½ 38	1.900 48.3	8 200	36 915
2 50	2.375 60.3	8 200	36 915
2½ 65	2.875 73.0	8 200	36 915
3 80	3.500 88.9	8 200	36 915
3½ 90	4.000 101.6	8 200	36 915
4 100	4.500 114.3	8 200	36 915
4½ 120	5.000 127.0	8 200	32 815
5 125	5.563 141.3	8 200	32 815
6 OD	6.000 152.4	10 250	30 760
6 150	6.625 168.3	10 250	28 710
8 OD	8.000 203.2	10 250	24 610
8 200	8.625 219.1	10 250	24 610
10 250	10.750 273.0	10 250	20/15 * 510/380 *
12 300	12.750 323.9	12 300	18/14 † 460/350 †
14 350	14.000 355.6	12 300	16/13 § 400/330 §
16 400	16.000 406.4	12 300	16 ^ 406 ^

* 20"/508 mm long for aluminum, PVC, and light-wall steel and stainless steel. 15"/380 mm long for Schedule 30 and standard wall steel and stainless steel.

† 18"/457 mm long for aluminum, PVC, and light-wall steel and stainless steel. 14"/360 mm long for Schedule 30 and standard wall steel and stainless steel.

§ 16"406 mm long for aluminum, PVC, and light-wall steel and stainless steel. 13"/330 mm long for Schedule 30 and standard wall steel and stainless steel.

^ 16"/406 mm long for aluminum, PVC, and light-wall steel and stainless steel.

PIPE SUPPORT

Pipe longer than the lengths listed in the previous chart must be supported and kept in line with a well-secured V-rest roller-type stand, positioned at a point slightly beyond one-half the pipe length from the tool.

The V-rest must be firmly positioned so that the pipe will be level, or not more than ½ a degree below level with the pipe end resting on the tool's lower roll. See Figure 1, below.

The pipe support must be moved about ½ a degree to the right, facing the tool at the outer edge of the pipe. This angle is necessary for the pipe to track properly, and will hold the pipe securely against the flange stop on the lower roll while grooving. See Figuere 2, below.

If a burr or flare forms at the pipe end, either the angle is too great and should be reduced, or the pipe is above horizontal and should be lowered to a level position.

If the angle is not sufficient, the pipe will tend to draw away from the flange stop.

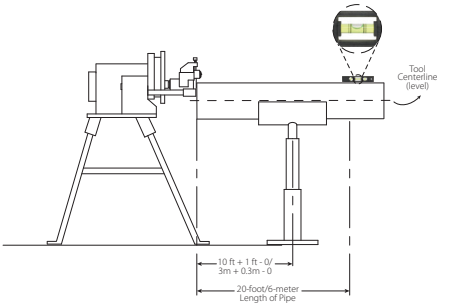


FIGURE 1

FIGURE 2

GROOVE DIAMETER STOP SETTING

NOTE: To perform the following adjustments, several short scrap sections of pipe should be used. These pieces should be of the same diameter and wall thickness as the pipe to be grooved.

The Groove Diameter Stop must be adjusted for each change in pipe diameter or wall thickness. Groove diameter (identified as the "C" dimension for each pipe size) is listed in the groove specifications charts. For your convenience, a "C" diameter chart for the most common pipe sizes is also listed on the tool.

1. Using a ⅜-inch square drive ratchet (not supplied), retract the feed screw/upper roll to a distance that will allow the pipe to be fully slipped over the lower roll.
2. Insert the pipe over the lower roll, placing it against the lower roll flange stop.
3. Again using the ratchet, advance the feed screw to put the upper roll into light but firm contact with the outside surface of the pipe. The groove diameter stop should be adjusted upward sufficiently so that the proper downward travel of the upper roll is attainable.
4. Identify the pipe size to be grooved, then locate the appropriate groove depth gauge attached to the machine.
5. Using the 3⁄16-inch hex wrench supplied with the tool, loosen the groove diameter stop. Adjust the distance between the stop and the hex nut on top of the machine until it matches the thickness of the groove depth gauge.

6. Lock the diameter stop to the feed screw with the 3⁄16-inch hex wrench, maintaining the adjustment made in Step 5.
7. Prepare a trial groove as described in the "Grooving Operation" section.
8. After a trial groove is prepared and the pipe is removed from the tool, carefully check the "C" dimension as listed in the groove specifications charts.

   The "C" dimension is best checked with a Pi-tape, but may also be checked with a vernier caliper or a narrow-land micrometer at two locations that are 90 degrees apart around the groove. The average reading must equal the required groove diameter.

   NOTE: The "C" dimension must always conform to specifications. See the groove specification charts for details.
9. If the "C" dimension is not within tolerance, the diameter stop must be adjusted to obtain the proper dimension. To decrease groove diameter and increase groove depth, turn the diameter stop **counterclockwise**. To increase groove diameter and decrease groove depth, turn the diameter stop **clockwise**. A quarter turn in either direction will alter the groove diameter by .013 inches.
10. Prepare another trial groove and check the groove diameter, again following steps 8 and 9. Repeat this process until the groove diameter is within tolerance.

GROOVING OPERATION

NOTE: Vic-Easy Series 226 tools are designed only for the roll grooving of pipe that falls within the specifications listed. Using the tool to groove pipe that is not within recommended parameters will not produce grooves of proper configuration or dimension for applying Victaulic products.

Before grooving, check to ensure that the tool is properly configured as detailed in the "Tool Setup" section.

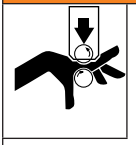
⚠ CAUTION

Before setting up and operating Victaulic pipe preparation tools, read and understand the Operator's Instruction Manual supplied with each tool. Additional copies are available upon request from Victaulic.

Learn the operation, application, and potential hazards particular to the tool. Failure to do so could cause joint failure, resulting in personal injury and/or property damage.

1. Plug the power drive into an appropriate electrical source, ensuring that it is properly grounded.
2. The VE226 tool must be operated with a safety foot pedal switch. Actuate the switch by pressing down on the pedal to ensure that the tool is operational and that the power supply is available.

⚠ WARNING



Grooving rolls can crush or cut fingers and hands.

- **Before making any tool adjustments, always turn the switch on the power drive to the "OFF" position, or disconnect the power cord from the electrical source.**
- **Loading and unloading pipe will place your hands close to the rollers. Keep hands are away from the grooving rolls during operation.**
- **Never reach inside pipe end or across the tool or pipe during operation.**
- **Always groove pipe in a CLOCKWISE direction only.**
- **Never groove pipe that is shorter than the recommended lengths listed in this manual.**
- **Never wear loose clothing, jewelry, or anything else that can become entangled in moving parts.**

3. Using a ⅜-inch square drive ratchet (not supplied), rotate the feed screw counterclockwise to move the upper roll to the fully up position.
4. Slide the pipe over the lower roll until the end is flush against the lower roll flange stop.

NOTE: If grooving a long length, check to ensure that the pipe is level and is properly supported as detailed in "Pipe Support".

5. Rotate the feed screw clockwise to bring the upper roll into light but firm contact with the pipe.

NOTE: Ensure that the groove diameter stop has been set to the proper "C" dimension as detailed in "Groove Diameter Stop Setting".

6. If grooving a short piece of pipe (one that does not require pipe stand support), pull the pipe to the right and downward with your left hand. Do not lift up on the pipe or push it to the left, because the pipe will not track and may walk out of the rolls.

   To initiate power, press and hold down the safety foot pedal switch. This will produce rotation of the lower roll and the pipe, which in turn rotates the upper roll.
7. Before grooving, check the tracking of the pipe as it rotates to ensure that it remains snug against the lower roll flange stop. If it does not, stop the tool rotation by releasing the safety foot pedal switch. Check to ensure that the pipe is level and is properly positioned, and that the pipe is turning counterclockwise.
8. As the pipe rotates, begin grooving by slowly rotating the feed screw clockwise using a ⅜-inch square drive ratchet. Groove copper tubing and light-wall pipe at a moderate rate by forming consistent grooves in five to ten pipe rotations. Schedule 40 pipe will require more rotations to reach proper grooving depth.

NOTE: A shear pin is used to connect the drive socket to the feed screw. Should excessive force be applied to the ⅜-inch ratchet, the pin will shear, thereby preventing damaging force from being applied to the machine components. If a pin shears, refer to the "Troubleshooting" section to correct the problem, and replace the sheared pin with one of the spare pins provided.

9. Continue grooving until the groove diameter stop comes into full contact with the top of the machine body. Perform several more pipe rotations to ensure groove completion.
10. Release the safety foot pedal switch and retract the upper roll. Do not remove the pipe from the machine until it has stopped rotating.

NOTE: Groove diameter should be correct for the pipe diameter and wall thickness for which it was set under the "Groove Diameter Stop Setting" section. Groove diameter should be checked periodically and adjusted as necessary.

MAINTENANCE

1. Keep the machine clean for safe and efficient performance.
2. Adequate lubrication is essential for satisfactory machine performance.

   a. After every two hours of operation, apply a No. 2 EP Lithium-based grease to the feed screw. Apply the grease by hand to the screw threads or through the grease fitting at this location. Keep this screw generously lubricated to ensure a long service life. Also apply grease underneath the toggle pad, to the ball and socket joint of the toggle pad, and to the locations where the roll arm slides against the body. Apply a light oil (SAE 10W-30, 3-in-1, or equivalent) to the shoulder bolts that hold the roll arm to the body.

   b. After every eight hours of operation, grease the bearings at the two grease fittings provided for this purpose.

HYDRAULIC OIL

High Pressure, Anti-Wear Hydraulic Oil – ISO Grade 32

Manufacturer	Product
Amoco Oil	Rykon Oil #32
Arco Petroleum Prod. Co.	Duro AW 32
Ashland Oil, Inc. / Valvoline Oil Co.	AW Oil #15
Exxon Co., USA	Nuto H 32
Gulf Oil Corp.	Harmony 32 AW
Kendall Refining Co.	Kenoil R&O AW-32
Lubriplate	HO-O
Mobil Oil Corp.	Mobil DTE 24
Pennzoil Prod. Co.	AW 32 Hydraulic Oil/ Penreco
Oil 32	Alvania EP2
Shell Oil Co.	Tellus 32
Sun Refining	Survis 706, 816 WR
Texaco Inc.	Rando Oil HD 32

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-VE226 Repair Parts List for detailed drawings and parts listings.

1. Tool Model Number – VE226
2. Tool Serial Number – The serial number can be found on the tool's nameplate.
3. Quantity, Item Number, Part Number, and Description – Example: (1) #R-001-226-MCH, Main Shaft
4. Where to send the part(s) – Company Name and Address
5. To whose attention to send the part(s) – Person's Name
6. Purchase Order Number
7. Billing Address

ACCESSORIES

VAPS 112 VICTAULIC ADJUSTABLE PIPE STAND

The Victaulic VAPS 112 is a portable, adjustable, roller-type pipe stand that contains four legs for additional stability. Ball transfer rollers, adjustable for ¾ to 12-inch/20 to 300 mm pipe, accommodate linear and rotational movement. The turnstile design permits ease of grooving for both pipe ends. Contact Victaulic for details.

VAPS 224 VICTAULIC ADJUSTABLE PIPE STAND

The Victaulic VAPS 224 contains features that are similar to the VAPS 112, but it is suitable for 2 to 24-inch/50 to 600 mm pipe sizes. Contact Victaulic for details.

OPTIONAL ROLLS

Refer to the "Tool Rating and Roll Selection" section for rolls that are available for different materials and groove specifications.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pipe will not stay in grooving rolls.	Incorrect pipe positioning of long pipe length.	Refer to the "Pipe Support" section on page 15.
	Improper manual grooving technique.	Refer to the "Grooving Operation" section on page 16.
	Power drive is not rotating counterclockwise.	Refer to the "Tool Setup" section on page 10.
Pipe stops rotating during grooving.	Rust or dirt build-up is present on the lower roll.	Remove any rust or dirt accumulation from the lower roll with a stiff wire brush.
	The grooving rolls are worn.	Inspect the lower roll for worn knurls and replace if worn.
	The power drive chuck is not properly engaged into the drive shaft notched flats.	Refer to the "Tool Setup" section on page 10.
	The circuit breaker has tripped or a fuse has blown out on the electrical circuit that supplies the power drive.	Reset the breaker, or replace the fuse.
Pipe flare is excessive.	Pipe support adjusted too high for long pipe length.	Refer to the "Pipe Support" section on page 15.
	Tool is tilted forward (out of level) while grooving long pipe length.	Refer to the "Tool Setup" section on page 10.
	Incorrect pipe support positioning.	Move the pipe support to the left. Refer to the "Pipe Support" section on page 15.
The tool will not groove the pipe.	Pipe is beyond the tool's capabilities in diameter or wall thickness.	Refer to the "Tool Rating and Roll Selection" section on page 21.
	Pipe material is incorrect.	Use correct pipe material.
The shear pin has broken.	Rolls were being fed too fast.	Replace the shear pin, and groove the pipe at a slower rate.
	Pipe is beyond the wall thickness capacity of the tool, or the pipe material is too hard.	Replace the pin, and groove pipe that is within the capacity of the tool. Refer to the "Tool Rating and Roll Selection" section on page 21.
	The feed mechanism is binding, damaged, or insufficiently lubricated.	Repair and lubricate the feed mechanism, as required.

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

TOOL RATING AND ROLL SELECTION

VE226S

Pipe Size		Dimensions - inches/millimeters				
		Steel Pipe Wall Thickness		Stainless Steel Wall Thickness		
Nominal Size inches	Actual Outside Diameter inches/mm	Minimum	Maximum	Minimum	Maximum	Roll Part Numbers
1¼	1.669 42.4	0.065 1.651	0.140 3.556	0.065 1.651	0.140 3.556	
1½	1.902 48.3	0.065 1.651	0.145 3.683	0.065 1.651	0.145 3.683	
2	2.374 60.3	0.065 1.651	0.154 3.912	0.065 1.651	0.154 3.912	
2½	2.874 73.0	0.083 2.108	0.203 5.156	0.083 2.108	0.203 5.156	
3	3.500 88.9	0.083 2.108	0.120 3.048	0.083 2.108	0.120 3.048	Lower Roll R901226L064
4	4.500 114.3	0.083 2.108	0.120 3.048	0.083 2.108	0.120 3.048	Upper Roll R901226U063
4½	5.000 127.0	0.095 2.413	0.134 3.404	0.095 2.413	0.134 3.404	
5	5.563 141.3	0.109 2.769	0.134 3.404	0.109 2.769	0.134 3.404	
6 OD	6.000 152.4	0.109 2.769	0.134 3.404	0.109 2.769	0.134 3.404	
6	6.626 168.3	0.109 2.769	0.134 3.404	0.109 2.769	0.134 3.404	

VE226B

Pipe Size		Dimensions - inches/millimeters								Roll Part Numbers
		Steel Pipe Wall Thickness		Stainless Steel Wall Thickness		Aluminum Wall Thickness		PVC Wall Thickness		
Nominal Size inches	Actual Outside Diameter inches/mm	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
¾	1.059 26.9	0.065 1.651	0.113 2.870	0.065 1.651	0.113 2.870	0.065 1.651	0.113 2.870	0.113 2.870	0.113 2.870	
1	1.327 33.7	0.065 1.651	0.113 2.870	0.065 1.651	0.113 2.870	0.065 1.651	0.113 2.870	0.113 2.870	0.179 4.546	Lower Roll R900226L013
1¼	1.669 42.4	0.065 1.651	0.140 3.556	0.065 1.651	0.140 3.556	0.065 1.651	0.140 3.556	0.140 3.556	0.191 4.851	Upper Roll R900226U013
1½	1.902 48.3	0.065 1.651	0.145 3.683	0.065 1.651	0.145 3.683	0.065 1.651	0.145 3.683	0.145 3.683	0.200 5.080	

VE226M

Pipe Size		Dimensions - inches/millimeters				Roll Part Numbers
		Steel Pipe Wall Thickness		Stainless Steel Wall Thickness		
Nominal Size inches	Actual Outside Diameter inches/mm	Minimum	Maximum	Minimum	Maximum	
2	2.374 60.3	0.065 1.651	0.154 3.912	0.065 1.651	0.154 3.912	
2½	2.874 73.0	0.083 2.108	0.203 5.156	0.083 2.108	0.203 5.156	
3	3.500 88.9	0.083 2.108	0.216 5.486	0.083 2.108	0.216 5.486	
4	4.500 114.3	0.083 2.108	0.237 6.019	0.083 2.108	0.237 6.019	Lower Roll R902226L064
4½	5.000 127.0	0.109 2.769	0.188 4.775	0.095 2.413	0.134 3.404	Upper Roll R902226U063
5	5.563 141.3	0.109 2.769	0.188 4.775	0.109 2.769	0.134 3.404	
6 OD	6.000 152.4	0.109 2.769	0.188 4.775	0.109 2.769	0.134 3.404	
6	6.626 168.3	0.109 2.769	0.188 4.775	0.109 2.769	0.134 3.404	

VE226C

Tube Size		Nominal Wall Thickness				
Nominal Size inches	Actual Outside Diameter inches/mm	DWV ASTM B-306	Type M ASTM B-88	Type L ASTM B-88	Type K ASTM B-88	Roll Part Numbers
2	2.125 54.0	—	0.058	0.070	0.083	Lower Roll RR02226L064 Upper Roll RR02226U063
2½	2.625 66.7	—	0.065	0.080	0.095	
3	3.125 79.4	0.045	0.072	0.090	0.109	
4	4.125 104.8	0.058	0.095	0.110	0.134	
5	5.125 130.2	0.072	0.109	0.125	0.160	
6	6.125 155.6	0.083	0.122	0.140	0.192	

VE226BSS

Pipe Size		Dimensions - inches/millimeters		
		Stainless Steel Wall Thickness		
Nominal Size inches	Actual Outside Diameter inches/mm	Schedule 5S	Schedule 10S	Roll Part Numbers
¾	1.050 26.7	0.065 1.651	0.083 2.108	Lower Roll RX00226L013 Upper Roll RX00226U013
1	1.315 33.4	0.065 1.651	0.109 2.767	
1¼	1.660 42.2	0.065 1.651	0.109 2.767	
1½	1.900 48.3	0.065 1.651	0.109 2.767	

VE226MSS

Pipe Size		Dimensions - inches/millimeters		
		Stainless Steel Wall Thickness		
Nominal Size inches	Actual Outside Diameter inches/mm	Schedule 5S	Schedule 10S	Roll Part Numbers
2	2.375 60.3	0.065 1.651	0.109 2.767	Lower Roll RX02226L064 Upper Roll RX02226U063
2½	2.875 73.0	0.083 2.108	0.120 3.048	
3	3.500 88.9	0.083 2.108	0.120 3.048	
3½	4.000 101.6	0.083 2.108	0.120 3.048	
4	4.500 114.3	0.083 2.108	0.120 3.048	
5	5.563 141.3	0.109 2.767	0.134 3.404	
6	6.625 168.3	0.109 2.767	0.134 3.404	

VE226P

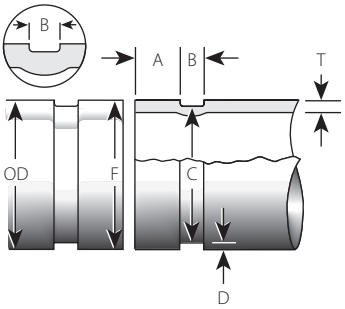
Pipe Size		Dimensions - inches/millimeters					
		Aluminum Wall Thickness			PVC Wall Thickness		
Nominal Size inches	Actual Outside Diameter inches/mm	Schedule 5	Schedule 10	Schedule 40	Schedule 40	Schedule 80	Roll Part Numbers
1¼	1.660 42.2	0.065 1.651	0.109 2.767	0.140 3.556	0.140 3.556	0.191 4.851	
1½	1.900 48.3	0.065 1.651	0.109 2.767	0.145 3.683	0.145 3.683	0.200 5.080	
2	2.375 60.3	0.065 1.651	0.109 2.767	0.154 3.912	0.154 3.912	0.218 5.537	
2½	2.875 73.0	0.083 2.108	0.120 3.048	0.203 5.156	0.203 5.156	0.276 7.010	
3 OD	3.000 76.2	0.083 2.108	0.120 3.048	0.203 5.156	0.203 5.156	—	
3	3.500 88.9	0.083 2.108	0.120 3.048	0.216 5.486	0.216 5.486	—	Lower Roll RP01226L06
3½	4.000 101.6	0.083 2.108	0.120 3.048	0.226 5.740	0.226 5.740	—	Upper Roll RP01226U06
4	4.500 114.3	0.083 2.108	0.120 3.048	0.237 6.019	0.237 6.019	—	
4½	5.000 127.0	0.095 2.413	0.120 3.048	—	0.247 6.274	—	
5	5.563 141.3	0.109 2.767	0.134 3.404	—	0.258 6.553	—	
6 OD	6.000 152.4	0.109 2.767	0.109 2.767	—	0.250 6.350	—	
6	6.625 168.3	0.109 2.767	0.134 3.404	—	0.280 7.112	—	

EXPLANATION OF CRITICAL ROLL GROOVE DIMENSIONS FOR ORIGINAL GROOVE SYSTEM (OGS) PRODUCTS

⚠ WARNING

- **Pipe dimensions and groove dimensions must be within the tolerances specified in the tables on the following pages to ensure proper joint performance.**

Failure to follow these specifications could cause joint failure, resulting in serious personal injury and/or property damage.



STANDARD ROLL GROOVE

Illustration is exaggerated for clarity

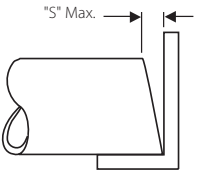
NOTICE

FOR STANDARD COUPLINGS WITH RATINGS ON LIGHT-WALL STAINLESS STEEL PIPE:

- **Victaulic RX rolls MUST be used when roll grooving light-wall stainless steel pipe for use with standard couplings.**

Pipe Outside Diameter – Nominal NPS Pipe Size (ANSI B36.10) and Basic Metric Pipe Size (ISO 4200) – The average pipe outside diameter must not vary from the specifications listed in the tables on the following pages. Maximum allowable pipe ovality shall comply with the requirements of ASTM A-999 and API 5L. Greater variations between the major and minor diameters will result in difficult coupling assembly.

For NPS pipe, the maximum allowable tolerance from square-cut pipe ends is: 1/16 inch/1.6 mm for 4 to 24-inch/114.3 to 610-mm sizes and 3/32 inch/2.4 mm for 26-inch/660-mm and larger sizes. This is measured from the true square line.



Any internal and external weld beads or seams must be ground flush to the pipe surface. The inside diameter of the pipe end must 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 or result in difficulties during coupling assembly.

"A" Dimension – The "A" dimension, or the distance from the pipe end to the groove, identifies the gasket seating area. This area must be free from indentations, projections (including weld seams), and roll marks from the pipe end to the groove to ensure a leak-tight seal. All foreign material, such as loose paint, scale, oil, grease, chips, rust, and dirt must be removed.

"B" Dimension – The "B" dimension, or groove width, controls expansion, contraction, and angular deflection of flexible couplings by the distance it is located from the pipe and its width in relation to the coupling housings' "key" width. The bottom of the groove must be free of all foreign material, such as dirt, chips, rust, and scale that may interfere with proper coupling assembly.

"C" Dimension – The "C" dimension is the average diameter at the base of the groove. This dimension must be within the diameter's tolerance and concentric with the OD for proper coupling fit. The groove must be of uniform depth for the entire pipe circumference.

"D" Dimension – The "D" dimension is the normal depth of the groove and is a reference for a "trial groove" only. Variations in pipe OD affect this dimension and must be altered, if necessary, to keep the "C" dimension within tolerance. The groove diameter must conform to the "C" dimension described above.

"F" Dimension – Maximum allowable pipe-end flare diameter is measured at the extreme pipe-end diameter. **NOTE:** This applies to average (pi tape) and single-point readings.

"T" Dimension – The "T" dimension is the lightest grade (minimum nominal wall thickness) of pipe that is suitable for cut or roll grooving. Pipe that is less than the minimum nominal wall thickness for cut grooving may be suitable for roll grooving or adapted for Victaulic couplings by using Vic-Ring® Adapters. Vic-Ring Adapters can be used in the following situations (contact Victaulic for details):

- When pipe is less than the minimum nominal wall thickness suitable for roll grooving
- When pipe outside diameter is too large to roll or cut groove
- When pipe is used in abrasive services

NOTICE

- **Coatings that are applied to the interior surfaces of Victaulic grooved and plain-end pipe couplings must not exceed 0.010 inch/0.25 mm. This includes the bolt pad mating surfaces.**
- **In addition, the coating thickness applied to the gasket-sealing surface and within the groove on the pipe exterior must not exceed 0.010 inch/0.25 mm.**

ROLL GROOVE SPECIFICATIONS

STEEL PIPE AND ALL MATERIALS GROOVED WITH STANDARD ROLLS, RX ROLLS, AND ROLLS FOR PVC/ALUMINUM

Size		Dimensions – inches/millimeters												
		Pipe Outside Diameter		Gasket Seat "A"			Groove Width "B"			Groove Diameter "C"				
Nominal Size inches	Actual Outside Diameter inches/mm	Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.	Groove Depth "D" (ref.)	Min. Allow. Wall Thick. "T"	Max. Allow. Flare Dia. "F"
¾	1.050 26.9	1.060 26.9	1.040 26.4	0.625 15.9	0.656 16.7	0.594 15.1	0.281 7.1	0.312 7.9	0.250 6.4	0.938 23.8	0.923 23.4	0.056 1.4	0.049 1.2	1.15 29.2
1	1.315 33.7	1.328 33.7	1.302 33.1	0.625 15.9	0.656 16.7	0.594 15.1	0.281 7.1	0.312 7.9	0.250 6.4	1.190 30.2	1.175 29.9	0.063 1.6	0.049 1.2	1.43 36.3
1 ¼	1.660 42.4	1.676 42.6	1.644 41.8	0.625 15.9	0.656 16.7	0.594 15.1	0.281 7.1	0.312 7.9	0.250 6.4	1.535 39.0	1.520 38.6	0.063 1.6	0.049 1.2	1.77 45.0
1 ½	1.900 48.3	1.919 48.7	1.881 47.8	0.625 15.9	0.656 16.7	0.594 15.1	0.281 7.1	0.312 7.9	0.250 6.4	1.775 45.1	1.760 44.7	0.063 1.6	0.049 1.2	2.01 51.1
2	2.375 60.3	2.399 60.9	2.351 59.7	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	2.250 57.2	2.235 56.8	0.063 1.6	0.049 1.2	2.48 63.0
2 ½	2.875 73.0	2.904 73.8	2.846 72.3	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	2.720 69.1	2.702 68.6	0.078 2.0	0.078 2.0	2.98 75.7
3	3.500 88.9	3.535 89.8	3.469 88.1	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	3.344 84.9	3.326 84.5	0.078 2.0	0.078 2.0	3.60 91.4
3 ½	4.000 101.6	4.040 102.6	3.969 100.8	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	3.834 97.4	3.814 96.9	0.083 2.2	0.078 2.0	4.10 104.1
4	4.500 114.3	4.545 115.4	4.469 113.5	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	4.334 110.1	4.314 109.6	0.083 2.2	0.078 2.0	4.60 116.8
5	5.563 141.3	5.619 142.7	5.532 140.5	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	5.395 137.0	5.373 136.5	0.084 2.2	0.078 2.0	5.66 143.8
6	6.625 168.3	6.688 169.9	6.594 167.5	0.625 15.9	0.656 16.7	0.594 15.1	0.344 8.7	0.375 9.5	0.313 8.0	6.455 164.0	6.433 163.4	0.085 2.2	0.078 2.8	6.73 170.9

CTS US STANDARD – ASTM B-88 HARD-DRAWN COPPER TUBING AND DWV PER ASTM B-306

Copper Tubing Size	Dimensions – inches/millimeters											
Nominal inches/ Actual mm	Actual Outside Diameter †		Gasket Seat "A"			Groove Width "B"		Groove Diameter "C"		Groove Depth "D" (ref.)	Min. Allow. Wall Thick. "T"	Max. Allow. Flare Dia. "F"
	Max.	Min.	Basic	Max.	Min.	Max.	Min.	Max.	Min.			
2 54.0	2.127 54.0	2.123 53.9	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	2.029 51.5	2.009 51.0	0.048 1.2	DWV*	2.220 56.4
2½ 66.7	2.627 66.7	2.623 66.6	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	2.525 64.1	2.505 63.6	0.050 1.2	0.065 1.7	2.720 69.1
3 79.4	3.127 79.4	3.123 79.3	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	3.025 76.8	3.005 76.3	0.050 1.2	DWV*	3.220 81.8
4 104.8	4.127 104.8	4.123 104.7	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	4.019 102.1	3.999 101.6	0.053 1.4	DWV*	4.220 107.2
5 130.2	5.127 130.2	5.123 130.1	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	4.999 127.0	4.979 126.5	0.063 1.6	DWV*	5.220 132.6
6 155.6	6.127 155.6	6.123 155.5	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	5.999 152.3	5.979 151.9	0.063 1.6	DWV*	6.220 158.0
8 206.4	8.127 206.4	8.121 206.3	0.610 15.5	0.640 16.3	0.580 14.7	0.330 8.4	0.300 7.6	7.959 202.2	7.939 201.7	0.083 2.1	DWV*	8.220 208.8

† The outside diameter of roll grooved copper tubing cannot vary from the tolerance listed. The maximum allowable tolerance from square cut ends is 0.030 inch (0.8 mm) for 2 – 3 inch (54.0 – 79.4 mm) sizes and 0.045 inch (1.1 mm) for 4 – 6 inch (104.8 – 155.6 mm) sizes; this is measured from the true square line.

* ASTM B-306 drain-waste and vent (DWV) is the minimum wall thickness of copper tubing that can be roll grooved.

EC DECLARATION OF INCORPORATION

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 Model:	VE-226 Models (VE-226S, VE-226C, VE-226B, VE-226BSS, VE-226M, VE-226MSS, VE-226P)
Serial No. :	Refer to Machinery Nameplate
Product Description:	Portable Pipe Roll Grooving Tool
Conformity Assessment:	2006/42/EC, Annex I
Technical Documentation:	The relevant technical documentation prepared in accordance with Annex VII (B) of the Machinery Directive 2006/42/EC, will be made available upon request to the governing authorities.
Compatible Power Drives:	When installed with any of the following power drive units, each having an appropriate EC Declaration of Conformity in accordance with Annex II (A) of the Directive 2006/42/EC, all VE-226 models listed above may be commissioned for their full intended purpose:

Victaulic VPD752	Victaulic VPD753	Ridgid* 300

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: April 11, 2016

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VE226 Pipe Roll Grooving Tool

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