

VE270FSD and VE271FSD

PIPE ROLL GROOVING TOOLS



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.

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.

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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 VE270FSD is designed only for roll grooving pipe. Use of this tool requires dexterity and mechanical skills, as well as sound safety habits. Although this tool is manufactured for safe, dependable operation, it is impossible to anticipate all combinations of circumstances that could result in an accident. The following instructions are recommended for safe operation of this tool. The operator is cautioned to always practice “safety first” during each phase of use, including setup and maintenance. It is the responsibility of the owner, lessee, or user of this tool to ensure that all operators read this manual and fully understand the operation of this tool.

Read this manual before operating or servicing this tool. Become familiar with the tool's operations, applications, and limitations. Be particularly aware of its specific hazards. Store this manual in a clean area where it is always readily available. Additional copies of this manual are available upon request through Victaulic.

1. The VE270FSD tool is designed ONLY for roll grooving pipe sizes, materials, and wall thicknesses listed in the applicable “Tool Rating and Roll Selection” section.
2. Avoid using the tool in 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.
3. Ground the motor/drive to protect the operator from electric shock. The motor/drive must be connected to an internally-grounded electrical source.
4. Prevent back injury. Always practice safe lifting techniques.

5. Inspect the equipment. Before using the tool, check all moveable parts for any obstructions. Make sure guards and tool components are installed and adjusted properly.
6. Prevent accidental startups. Disconnect the tool from the electrical source when the tool is not in use.
7. Wear proper apparel. Do not wear loose clothing, jewelry, or anything that can become entangled in moving parts.
8. Wear protective items when working with tools. Always wear safety glasses, hardhat, foot protection, and hearing protection.
9. Stay alert. Do not operate the tool if you are drowsy from medication or fatigue. Avoid horseplay around the equipment.
10. Keep visitors away from the immediate work area. All visitors should be kept a safe distance from the equipment at all times.
11. Keep work areas clean. Keep the work area around the tool clear of any obstructions that could limit the movement of the operator. Clean up any oil or other spills.
12. Secure the work, tool, and accessories. Make sure the tool is stable. Refer to the applicable "Tool Setup" section.
13. Support the work. Support long pipe lengths with a pipe stand that is secured to the floor or the ground.
14. Operate the tool only with a safety foot switch. The motor/drive must 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.
15. Keep hands and tools away from grooving rolls and stabilizer roller during the grooving operation. Grooving rolls can crush or cut fingers and hands.
16. Do not reach inside the pipe ends during tool operation. Pipe edges can be sharp and can snag gloves, hands, and shirt sleeves. Fingers and hands can be crushed between the pipe and lower roll.
17. Do not over-reach. Maintain proper footing and balance at all times. Make sure the safety foot switch is easily accessible for the operator.
18. Do not force the tool. Do not force the tool or accessories to perform any functions beyond their capabilities. Do not overload the tool.
19. Do not abuse the foot switch cord. Keep the cord away from heat, oil, and sharp objects.
20. Always disconnect the tool from the electrical source before servicing or adjusting the tool. Only authorized personnel should attempt to perform maintenance on the tool.
21. Maintain tools with care. Keep tools clean at all times to ensure proper and safe performance. Follow the instructions for lubricating tool components.
22. Use only Victaulic replacement parts and accessories. Use of any other parts may result in a voided warranty, improper operation, and hazardous situations.
23. 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 Company.**

VE270FSD Roll Grooving Tools are semi-automated, hydraulic-feed tools for roll grooving pipe to receive Victaulic grooved pipe products. The standard VE270FSD tool is supplied with rolls for grooving 2 - 12-inch/60.3 - 323.9-mm carbon steel pipe. VE270FSD rolls are marked with the size and part number, and they are color coded to identify the pipe material. For roll grooving to other specifications and materials, refer to the applicable "Tool Rating and Roll Selection" section. Grooving rolls for other specifications, sizes, and materials must be purchased separately.

**CAUTION**

- **These tools must be used ONLY for roll grooving pipe designated in the applicable "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 damage to the tool.

RECEIVING THE TOOL

VE270FSD tools are palletized individually and enclosed in a cardboard sleeve, which is designed for use in re-shipping the tool back to Victaulic upon completion of the rental contract, when applicable. Optional roll sets and pipe stabilizer/mounting hardware are shipped in a separate container.

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

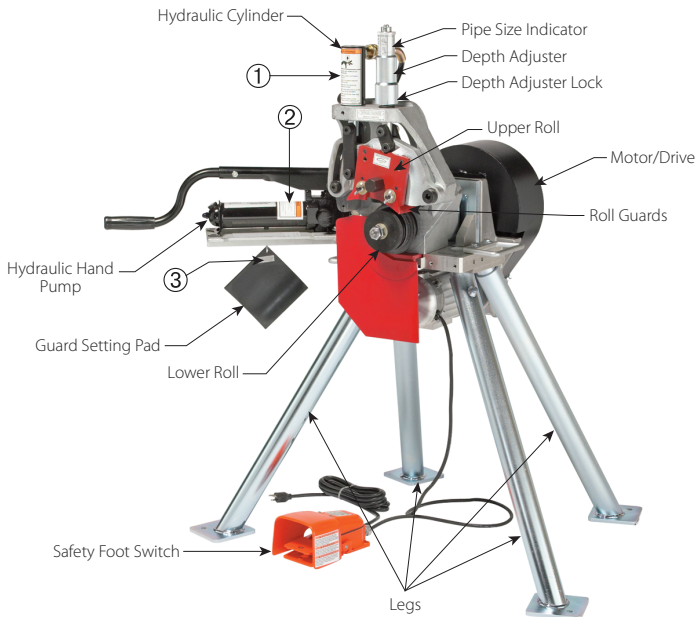
VE270FSD CONTAINER CONTENTS

Qty.	Description
1	VE270FSD Tool Head with Mounting Table and Motor/Drive, Four Legs, Safety Foot Switch with Cord, and Hydraulic Hand Pump/Pump Support Assembly
1	Lower Roll for 2 - 3 1/2-inch/60.3 - 101.6-mm Carbon Steel Pipe
1	Lower Roll for 4 - 6-inch/114.3 - 168.3-mm Carbon Steel Pipe.
1	Upper Roll for 2 - 6-inch/60.3 - 168.3-mm Carbon Steel Pipe.
1	Roll Set for 8 - 12-inch/219.1 - 323.9-mm Carbon Steel Pipe Mounted on the Tool (Unless Ordered Otherwise)
2	TM-VE270FSD Operating and Maintenance Instructions Manual
2	RP-270FSD Repair Parts List
1	Guard Setting Pad
1	Lower Roll Removal Wedge
1	Pipe Diameter Tape
1	Can of Mechanical Assembly Spray
1	Roll Storage Bag

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.



①

WARNING

Grooving rolls can crush or cut fingers and hands.

- Always disconnect the tool from the power source before making any tool adjustments.
- Make sure the guard is adjusted properly before grooving pipe.
- Loading/unloading pipe will place your hands close to the grooving rolls. 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.
- Never groove pipe that is shorter than the recommended lengths listed in the operating and maintenance manual.
- Never wear loose clothing, loose gloves, or anything that can become entangled in moving parts.

234 Rev. D R0772LB

②

WARNING

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

- Before operating or servicing any pipe preparation tools, read all instructions in the Operating and Maintenance Instructions Manual and all labels on the tool.
- Wear safety glasses, hardhat, foot protection, and hearing protection when working around tools.

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 1-800-792-6126, Ext. 5, E-Mail: prodsvic@victaulic.com.

997 Rev. D R01172AB

③

ALWAYS KEEP THIS PAD WITH THE TOOL. USE IT TO SET THE GUARDS IN ACCORDANCE WITH THE TOOL OPERATION AND MAINTENANCE MANUAL.

496B Rev. D R068272LAB

TOOL SETUP**⚠ WARNING**

- **DO NOT connect the tool to the electrical source until instructed otherwise.**
- **The tool MUST be leveled and anchored securely on a concrete floor or base.**

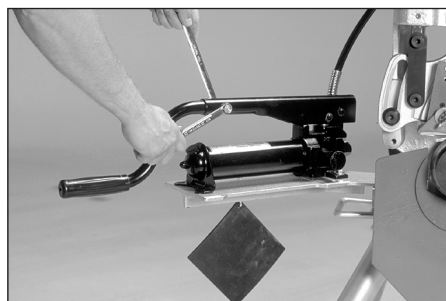
Failure to follow these instructions could result in serious personal injury.

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



2. The VE270FSD Roll Grooving Tool must be located on a level concrete floor or base. After an appropriate location is chosen, the tool must be leveled front to back and anchored securely. **NOTE:** The tool's legs are adjustable to aid in leveling the tool. A non-level tool can severely affect grooving operation. When checking tool level, place the level on top of the hydraulic cylinder, as shown above.

3. Select a location for the tool and pipe stand by taking into consideration the following factors:
 - 3a. The required power supply (refer to the "Power Requirements" section)
 - 3b. Ambient temperature requirements of 20° F to 104° F/-21°C to 26° C
 - 3c. A level concrete floor or base for the tool and pipe stand
 - 3d. Adequate space to handle pipe lengths
 - 3e. Adequate clearance around the tool and stabilizer assembly (if equipped) for adjustment and maintenance (refer to drawings on following page)



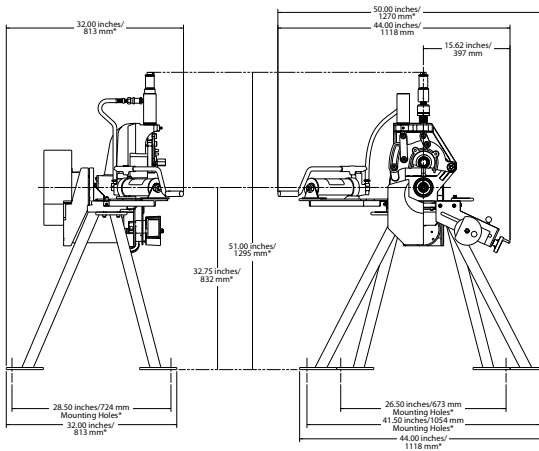
4. Insert the hand pump handle into the lever arm of the hydraulic hand pump. Position the hand pump handle with the handle grip facing down. Lock the handle in this position with the set screw or nut/bolt provided.



5. Connect the hydraulic line from the hydraulic hand pump to the hydraulic cylinder using the connectors provided.

VE270FSD tool setup is complete.

VE270FSD OVERALL DIMENSIONS AND MOUNTING HOLE LOCATIONS



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 tool from the electrical source.

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

The VE270FSD is equipped with a 120 VAC 50/60-Hz motor. Maximum current draw is 15 amps. The VE271FSD is equipped with a 220 VAC 50/60-Hz motor. Maximum current draw is 8 amps. In addition, tools are equipped with the corresponding grounded plug.



Power must be supplied to the motor/drive through a safety foot switch to ensure safe operation. Make sure the motor/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 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). Cord sizes (gauges) thinner than required will cause significant voltage drop at the motor/drive while the tool is operating. Voltage drops may cause damage to the motor/drive and can result in improper tool operation. **NOTE:** It is acceptable to use a heavier cord size (gauge) than what is required.

The required cord sizes (gauges) for cord lengths, up to and including 100 feet/30 m, are listed in the table below. Use of extension cords longer than 100 feet/30 m must be avoided.

Motor/Drive Rating	Cord Lengths		
Volts (Amps)	25 feet/ 8 m	50 feet/ 15 m	100 feet/ 30 m
115 15	12 gauge	12 gauge	10 gauge
220 8	16 gauge	16 gauge	14 gauge

PREPARING PIPE FOR GROOVING

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

Victaulic recommends square-cut pipe for use with grooved-end pipe products. Square-cut pipe **MUST** 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.

1. For 12-inch/323.9-mm and smaller pipe sizes, raised internal and external weld beads and seams must be ground flush with the pipe surface 2 inches/50 mm back from the pipe ends.
2. All coarse scale, dirt, and other foreign material must be removed from the interior and exterior surfaces of the pipe ends.



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 and grooves that are out of Victaulic specifications.

PIPE LENGTH REQUIREMENTS

VE270FSD 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. Refer to the “Grooving Short Pipe Lengths” section for instructions on how to groove short pipe lengths. **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), must be supported with a pipe stand. Pipe lengths, from 20 feet/6 meters up to double-random lengths (approximately 40 feet/12 meters), must be supported with two pipe stands. Refer to the “Long Pipe Lengths” section for instructions on how to groove long pipe lengths.

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 steel pipe and a 4-inch/102-mm length of steel pipe, follow these steps:

1. Refer to Table 1, and note that for 10-inch diameter 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

Pipe Size		Length – inches/mm	
Nominal Pipe Size inches or mm	Actual Outside Diameter inches/mm	Minimum	Maximum
¾ 20	1.050	8	36
	26.9	203.2	914.4
1 25	1.315	8	36
	33.7	203.2	914.4
1¼ 32	1.660	8	36
	42.4	203.2	914.4
1½ 40	1.900	8	36
	48.3	203.2	914.4
2 50	2.375	8	36
	60.3	203.2	914.4
2½ 65	2.875	8	36
	73.0	203.2	914.4
3 80	3.500	8	36
	88.9	203.2	914.4
3½ 90	4.000	8	36
	101.6	203.2	914.4
108.0 mm	4.250	8	36
	108.0	205	915
4	4.500	8	36
	114.3	205	915
4½	5.000	8	32
	127.0	205	815
133.0 mm	5.250	8	32
	133.0	205	815
139.7 mm	5.500	8	32
	139.7	205	815
5	5.563	8	32
	141.3	205	815

Pipe Size		Length – inches/mm	
Nominal Pipe Size inches or mm	Actual Outside Diameter inches/mm	Minimum	Maximum
152.4 mm	6.000	10	30
	152.4	255	765
159.0 mm	6.250	10	30
	159.0	255	765
165.1 mm	6.500	10	30
	165.1	255	765
6	6.625	10	28
	168.3	255	715
203.2 mm	8.000	10	24
	203.2	255	610
216.3 mm	8.516	10	24
	216.3	255	610
8	8.625	10	24
	219.1	255	610
254.0 mm	10.000	10	20
	254.0	255	510
267.4 mm	10.528	10	20
	267.4	255	510
10	10.750	10	20
	273.0	255	510
304.8 mm	12.000	12	18
	304.8	305	460
318.5 mm	12.539	12	18
	318.5	305	460
12	12.750	12	18
	323.9	305	460

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 disconnect the 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

Make sure the proper roll set is installed on the tool for the pipe/tubing 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 applicable “Tool Rating and Roll Selection” section. If the proper rolls are not installed on the tool, refer to the “Roll Changing” section.

CAUTION

- Make sure roll retaining bolts and nuts are tight.

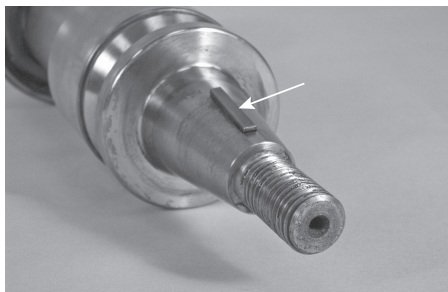
Loose roll retaining bolts and nuts could cause damage to the tool and rolls.

KEYLESS ARBORS AND UNIVERSAL LOWER ROLLS

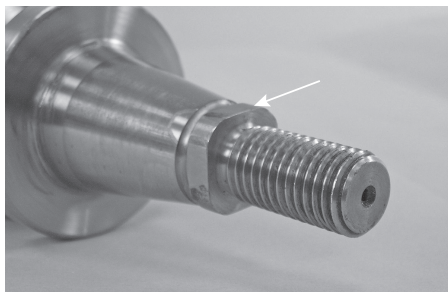
Victaulic has introduced an improved “keyless” method for transmitting grooving power between the arbor and lower roll. This “keyless” design applies to the lower rolls and arbor only. All existing upper roll sets are compatible with all lower roll types, as described in this section. The possibility of losing or shearing Woodruff keys is eliminated with this “keyless” method.

The patented “keyless” lower grooving rolls still allow hands-free grooving for short pipe lengths listed in the “Pipe Length Requirements” section of this manual.

1. It is important to determine what type of arbor is available for the tool.

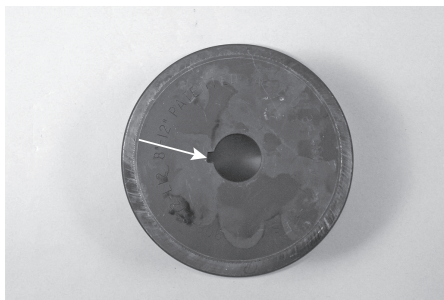


The keyed-type arbor contains a Woodruff key and can be used with new, universal-type lower rolls and older-type lower rolls.

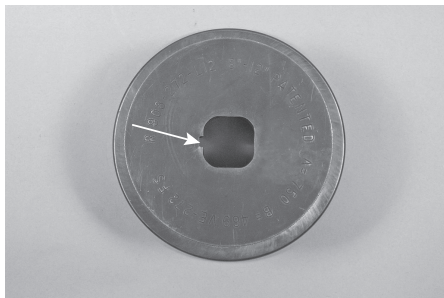


The “keyless-type” arbor contains a square drive and can be used ONLY with the new, universal-type lower rolls.

2. It is important to determine what type of lower rolls are available for the tool.



The “key-drive only” lower rolls, shown in the photo above, have a circular bore and can be used ONLY with the keyed-type arbors that contain the Woodruff key. Refer to the photo in the previous column for the keyed-type arbor.



The “universal” lower rolls, shown in the photo above, have a square bore that allows for easy installation onto the “keyless” arbor. In addition, these “universal” lower rolls contain a keyway for use with keyed-type arbors.

⚠ CAUTION

- **DO NOT attempt to install a “key-drive only” lower roll onto a tool that has a “keyless” arbor.**

Failure to follow this instruction could result in damage to the arbor and lower roll.

GROOVE DIAMETER STOP ADJUSTMENT

The groove diameter stop must be adjusted for each pipe size or change in wall thickness. The groove diameter, which is identified as the “C” dimension, is listed under the “Roll Groove Specifications” section. In addition, a label is affixed to the tool, which lists the “C” dimensions.

NOTICE

- **To perform the following adjustments, Victaulic recommends the use of several short, scrap sections of pipe that are the proper material, diameter, and thickness to be grooved. Make sure 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. The pipe size indicator barrel can be rotated for easy viewing.



3. Unlock the depth adjuster from the depth adjuster lock.

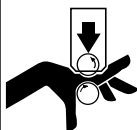
- 3a. Align the top edge of the depth adjuster with the lowest line position of the proper size and schedule markings.
- 3b. Hold the depth adjuster to prevent it from turning.
- 3c. Turn the depth adjuster lock counterclockwise to lock the depth adjuster in this position. Back off the depth adjuster lock. Align the depth adjuster with the proper diameter and thickness indicated on the pipe size indicator. Lock the depth adjuster in position with the depth adjuster lock.

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.**



4. Insert a length of pipe over the lower roll with the pipe end against the lower-roll backstop flange.

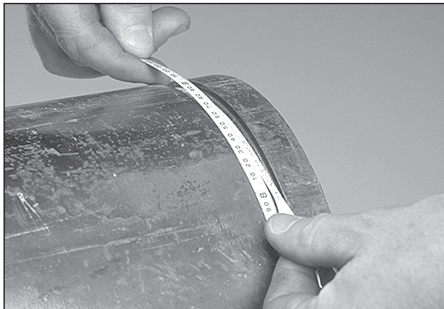
! WARNING

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 applicable "Grooving Operation" section.



6. After a trial groove is prepared and the pipe is removed from the tool, check the groove diameter ("C" dimension) carefully. Refer to the "Roll Groove Specifications" section. 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 must be within the required groove diameter specification.

! CAUTION

- The "C" dimension (groove diameter) must conform to Victaulic specifications to ensure proper joint performance.

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

7. If the groove diameter ("C" dimension) is not within Victaulic specifications, the diameter stop must be adjusted.
 - 7a. Unlock the depth adjuster from the depth adjuster lock.
 - 7b. To adjust for a smaller groove diameter, turn the depth adjuster counterclockwise (when viewed from above the tool). Turn the depth adjuster lock counterclockwise to lock the depth adjuster in this position.
 - 7c. To adjust for a larger groove diameter, turn the depth adjuster clockwise (when viewed from above the tool). Turn the depth adjuster lock counterclockwise to lock the depth adjuster in this position.

NOTE: A quarter turn either way will change the groove diameter by 0.031 inch/.79 mm or 0.125 inch/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.

ADJUSTING THE ROLL GUARDS

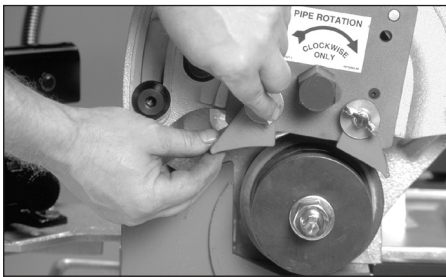
⚠ WARNING

- Always unplug the power cord before making any roll guard adjustments.

Accidental start up of tool may result in serious personal injury.

The VE270FSD guards must be adjusted every time rolls are changed or the pipe size or wall thickness is different from previous pipe grooved.

1. Make sure the proper roll set is installed on the tool for the pipe size and material to be grooved. Rolls are marked with the pipe size, part number, and they are color-coded according to the pipe material. Refer to the applicable “Tool Rating and Roll Selection” section.



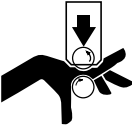
2. Loosen the wing nuts and move the adjustable guards to the full up position. Tighten the wing nuts.



3. Set the groove diameter stop to the pipe size and schedule/thickness to be grooved by backing off the depth adjuster lock and aligning the depth adjuster with the proper

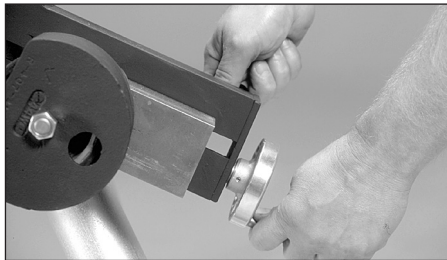
pipe diameter and thickness marking. Lock the depth adjuster in position with the depth adjuster lock.

⚠ WARNING



Grooving rolls can crush or cut fingers and hands.

- 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.



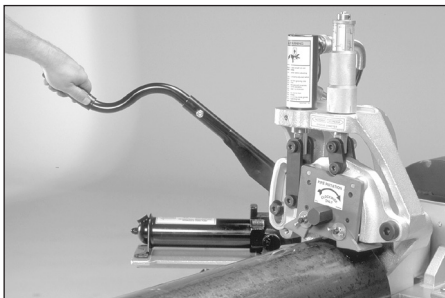
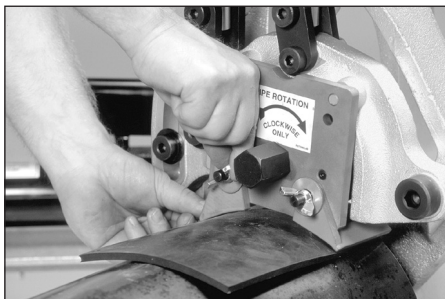
4. **If the tool is equipped with the optional pipe stabilizer:** Retract the pipe stabilizer, if necessary, to insert the pipe onto the lower roll by loosening the locking handle and retracting the stabilizer roller with the handwheel.



5. Insert a length of pipe that is the correct size and schedule over the lower roll. Make sure the pipe end contacts the lower-roll backstop flange. The pipe must rest directly on top of the roll and must not be skewed to one side or the other.



6. Close the valve on the hydraulic hand pump by turning it clockwise.



7. Pump the handle of the hydraulic hand pump to bring the upper roll down into firm contact with pipe.



9. Loosen the wing nuts and adjust each guard to conform to and lightly pinch the pad against the pipe. Tighten the wing nuts to secure each guard in position. Remove the guard setting pad.
10. Remove the guard setting pad. Store the pad on the hook provided under the hydraulic hand pump support.



8. Remove the guard setting pad from its storage hook under the hydraulic hand pump support. Hold the guard setting pad firmly down against the pipe while pushing it under the adjustable guards until it contacts the upper roll.



11. Open the valve on the hydraulic hand pump by turning it counterclockwise to allow the upper roll and arm to move to the full up position.

PIPE STABILIZER ADJUSTMENT

Applies only to tools equipped with the optional pipe stabilizer

 **WARNING**

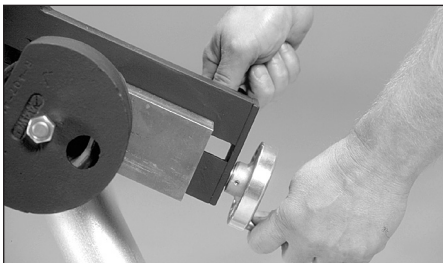
- Always disconnect the tool from the electrical source before making any tool adjustments.
- DO NOT reach over pipe while making adjustments.
- DO NOT make adjustments while the tool/pipe is in operation/motion.

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

The pipe stabilizer for the VE270FSD is designed to prevent sway of short and long pipe lengths in 8 - 12-inch/219.1 - 323.9-mm sizes. The pipe stabilizer is required when grooving light-wall stainless steel pipe and 8-inch/206.4-mm copper tubing.

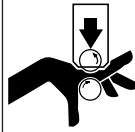
When the pipe stabilizer is adjusted for a selected pipe size and wall thickness, it does not require further adjustment unless pipe of a different size and wall thickness will be grooved. Pipe of the same size and wall thickness can be moved in and out of the tool without retracting the stabilizer.

1. Make sure the proper roll set is installed on the tool for the pipe size and material to be grooved. Rolls are marked with the pipe size, part number, and they are color-coded according to the pipe material. Refer to the applicable "Tool Rating and Roll Selection" section.



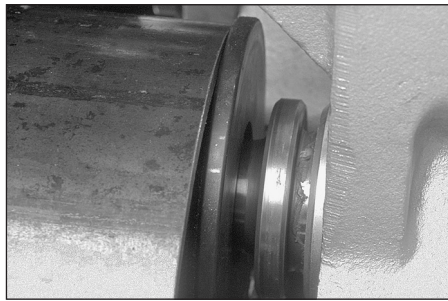
2. Loosen the stabilizer locking handle.

- 2a. Using the stabilizer handwheel, retract the stabilizer roller to clear the pipe when it is inserted onto the lower roll.

 **WARNING**


Grooving rolls can crush or cut fingers and hands.

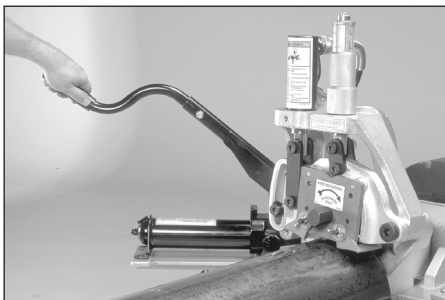
- Loading/unloading pipe will place your hands close to the rollers. Keep hands away from the grooving rolls and the roller on the pipe stabilizer.



3. Insert a length of pipe that is the correct size and schedule over the lower roll. Make sure the pipe end contacts the lower-roll backstop flange. The pipe must rest directly on top of the roll and must not be skewed to one side or the other.



4. Close the valve on the hydraulic hand pump by turning it clockwise.

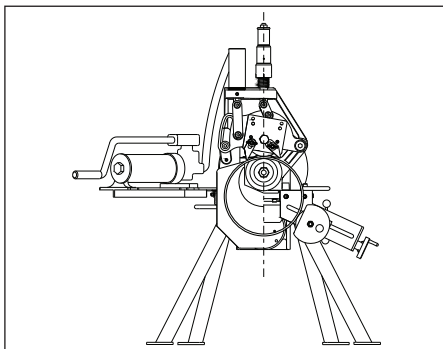


5. Pump the handle of the hydraulic hand pump to bring the upper roll down into firm contact with pipe.

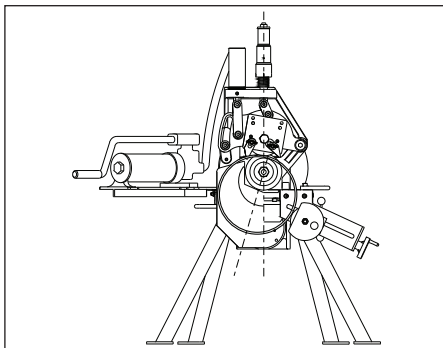
CAUTION

- **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 personal injury and/or property damage.



"CORRECT"



"INCORRECT"

6. Using the stabilizer handwheel, adjust the stabilizer roller inward to the correct position (shown in the drawing above). Tighten the locking handle.
7. Complete all adjustments and groove the pipe. Refer to the applicable "Grooving Operation" section. Observe the stabilizer roller while grooving. It should remain in contact with the pipe, and the pipe should rotate smoothly without swaying from side to side. If the pipe is not rotating smoothly or is swaying from side to side, discontinue grooving and adjust the stabilizer roller further. Continue the grooving operation and make further adjustments, as necessary. **DO NOT** adjust the stabilizer roller too far inward, since it will skew the pipe to the left and off center, resulting in excessive pipe-end flare.

GROOVING SHORT PIPE LENGTHS

CAUTION

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

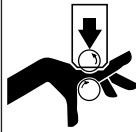
Failure to follow this instruction could overload the tool, resulting in reduced tool life and/or damage to the tool.

1. Before grooving, make sure all instructions in the previous sections of this manual have been followed.
2. Connect the tool to an internally-grounded electrical source.



3. Depress the safety foot switch momentarily to ensure the tool is operational. The lower roll should be rotating clockwise when viewed from the front of the tool. Remove foot from the switch.

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.



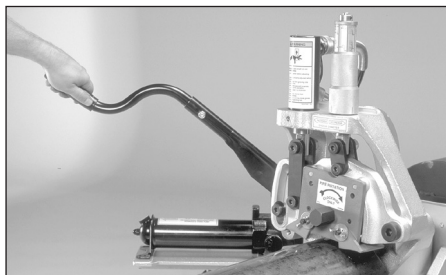
4. Open the valve on the hydraulic hand pump by turning it counterclockwise to allow the upper roll and arm to move to the full up position.



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



6. Close the valve on the hydraulic hand pump by turning it clockwise.



7. The operator should be positioned on the safety foot switch/hydraulic hand pump side of the tool. While manually supporting the pipe, pump the handle of the hydraulic hand pump to bring the upper roll down into firm contact with the pipe.
- 7a. Remove hands from the pipe.



8. Depress and hold down the safety foot switch. The pipe will begin to rotate clockwise when viewed from the front of the tool. As the pipe rotates, begin forming the groove by pumping the handle of the hydraulic hand pump slowly.

NOTICE

- Do not pump the handle of the hydraulic hand pump too fast. The rate should be sufficient to groove the pipe and maintain audible, moderate-to-heavy load on the motor/drive.



9. Continue the grooving process until the depth adjuster lock comes into contact with the top of the tool body. Continue pipe rotation for several revolutions to ensure groove completion.
- 9a. Release the safety foot switch, and withdraw foot from the switch.



10. Prepare to support the pipe. Open the valve on the hydraulic hand pump by turning it counterclockwise to release the pipe. Remove the pipe from the tool.
11. If no more roll grooving will be performed for a while, disconnect the tool from the electrical source.

NOTICE

- **The groove diameter must 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

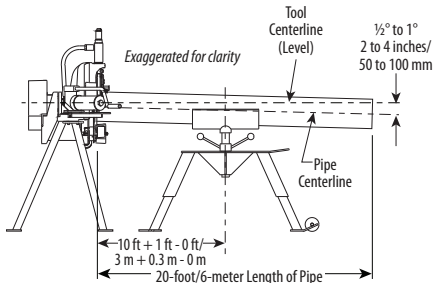
CAUTION

- For long pipe lengths, make sure 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 roll grooving pipe designated in the applicable “Tool Rating and Roll Selection” section of this manual.
- Always refer to the applicable “Roll Groove Specifications” table for details.

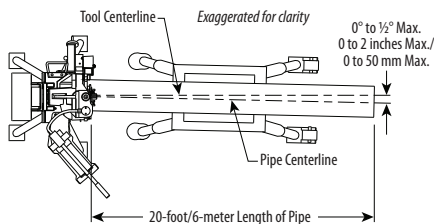
Failure to follow these instructions could cause product failure, resulting in property damage.

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

1. Make sure 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 the drawing above.



3. Position the pipe stand approximately 0 - 1/2 a degree to the left for the tracking angle. Refer to the drawing above. **NOTE:** When pipe flare is excessive, right-to-left tracking must be kept to a minimum. It may be necessary to use less than 1/2 a degree for the tracking angle.
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, make sure all instructions in the previous sections of this manual have been followed.
6. Connect the tool to an internally-grounded electrical source.



7. Depress the safety foot switch momentarily to ensure the tool is operational. The lower roll should be rotating clockwise when viewed from the front of the tool. Remove foot from the switch.

! 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.



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



10. Close the valve on the hydraulic hand pump by turning it clockwise.



8. Open the valve on the hydraulic hand pump by turning it counterclockwise to allow the upper roll and arm to move to the full up position.



11. The operator should be positioned on the safety foot switch/hydraulic hand pump side of the tool, as shown above. Pump the handle of the hydraulic hand pump to bring the upper roll down into firm contact with the pipe.
- 11a. Depress and hold down the safety foot switch. The pipe will begin to rotate clockwise when viewed from the front of the tool. As the pipe rotates, begin forming the groove by pumping the handle of the hydraulic hand pump slowly.

NOTICE

- **Do not pump the handle of the hydraulic hand pump too fast. The rate should be sufficient to groove the pipe and maintain audible, moderate-to-heavy load on the motor/drive.**



12. Continue the grooving process until the depth adjuster lock comes into contact with the top of the tool body. Continue pipe rotation for several revolutions to ensure groove completion.

- 12a. Release the safety foot switch, and withdraw foot from the switch.



13. Open the valve on the hydraulic hand pump by turning it counterclockwise to release the pipe. Remove the pipe from the tool.
14. If no more roll grooving will be performed for a while, disconnect the tool from the electrical source.

NOTICE

- **The groove diameter must 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

VE270FSD Roll Grooving 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 must be changed. For proper roll selection, refer to the “Tool Rating and Roll Selection” section.

LOWER ROLL REMOVAL FOR ¾-INCH/ 26.9-MM AND 1 – 1 ½-INCH/33.7 – 48.3-MM SIZES

⚠ WARNING

- Always disconnect the tool from the electrical source before changing rolls.

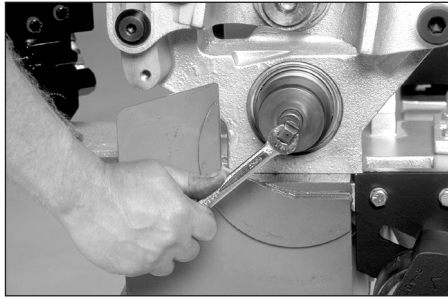
Failure to follow this instruction could result in serious personal injury.

NOTICE

- The ¾-inch/26.9-mm and 1 – 1 ½-inch/33.7 – 48.3-mm lower roll assembly is held in position with left-hand threads and must be loosened by turning clockwise.



1. Open the valve on the hydraulic hand pump by turning it counterclockwise to allow the upper roll and arm to move to the full up position.



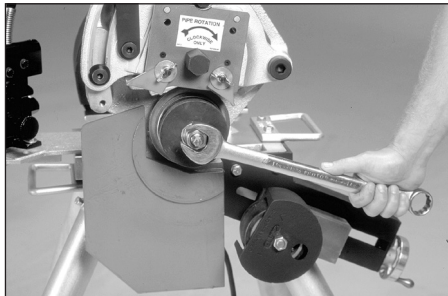
2. With a wrench engaged on the square end of the lower roll assembly, loosen and remove the lower roll assembly by turning **clockwise**. Store the lower roll assembly in the roll storage bag provided with the tool.

LOWER ROLL REMOVAL FOR 2-INCH/ 60.3-MM AND LARGER SIZES

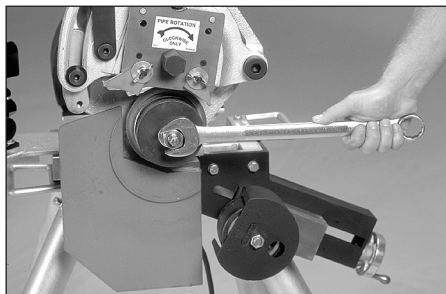
⚠ WARNING

- Always disconnect the tool from the electrical source before changing rolls.

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



1. Using a wrench, loosen and remove the thin jam nut that secures the large nut on the arbor.




- Using a wrench, loosen the large nut on the arbor, and back it off $\frac{1}{4}$ inch/6 mm. DO NOT remove the large nut.



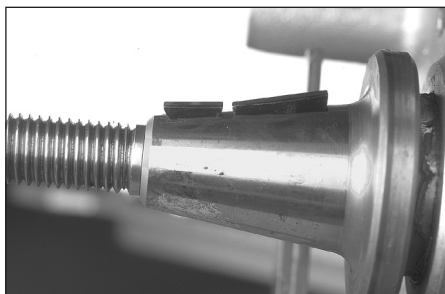
- Remove the nut, washer, and lower roll. Store these components in the tool cabinet.

⚠ WARNING

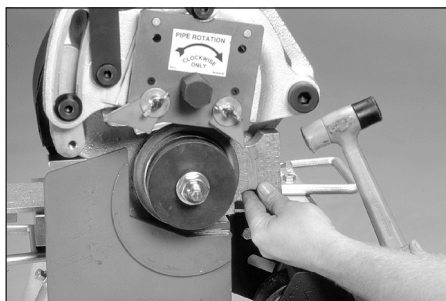


- Use only the aluminum wedge with a soft-faced hammer for removing the lower roll. Never strike the lower roll directly for any reason.
- Always wear eye protection when using the aluminum wedge.

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

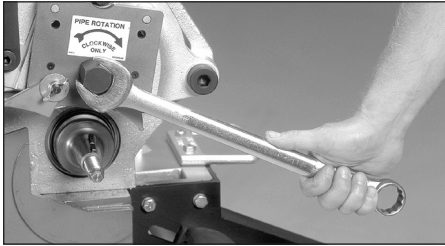


FOR KEYED-TYPE ARBORS ONLY: Be careful not to lose the Woodruff key. The Woodruff key should remain in the arbor. Inspect the Woodruff key and replace, if damaged. Spare Woodruff keys are supplied with the tool shipment. Replacement Woodruff keys must be filed or sanded until the key drags slightly in the keyway of the arbor. NEVER force a replacement key by hammering it into the arbor.

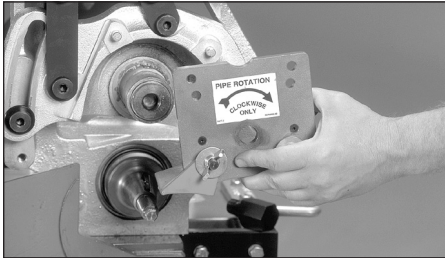


- To loosen the lower roll from the tapered arbor, use the aluminum wedge supplied with the tool. Place the wedge behind the lower roll, and strike the wedge with a soft-faced hammer to break the lower roll loose from the taper. DO NOT strike the lower roll directly with a hammer.

UPPER ROLL REMOVAL – ALL SIZES



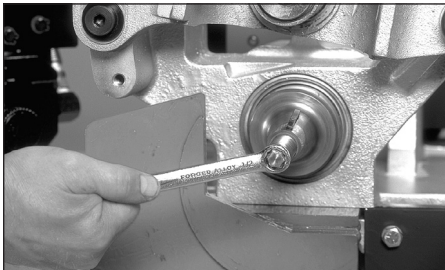
1. Using a wrench, loosen and remove the upper roll bolt. Place the upper roll bolt in a safe location.



2. Remove the upper roll assembly by pulling it straight out of the tool. Store the upper roll assembly in the roll storage bag provided with the tool.

ARBOR REMOVAL FOR 2-INCH/60.3-MM AND LARGER SIZES

1. Remove the lower roll from the tool by referring to the “Lower Roll Removal for 2-inch/60.3-mm and Larger Sizes” section.



2. With a wrench engaged on the hex portion of the stud, loosen the stud by turning **counterclockwise**. The arbor should move outward as the stud is loosened.



3. When the stud has stopped moving the arbor outward, pull the arbor assembly out of the tool's main shaft. Store the arbor assembly in a safe location.

NOTICE

- The arbor could become difficult to remove from the main shaft if insufficient lubrication was applied. The arbor features three ¼ – 20 UNC tapped holes so that jack bolts can be used to push out the arbor.

CAUTION

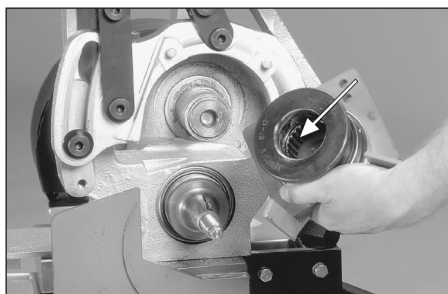
- Never operate the tool with jack bolts installed in the arbor.

Failure to follow this instruction could result in personal injury and tool damage.

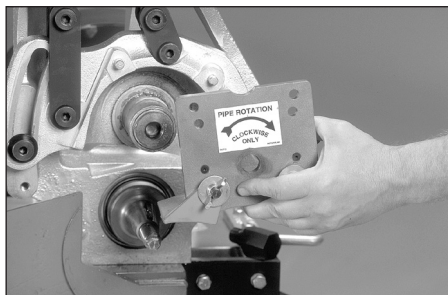
UPPER ROLL INSTALLATION – ALL SIZES



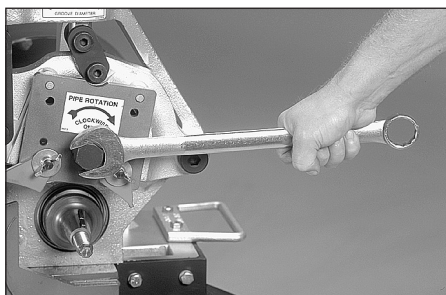
1. Prior to installation, clean all shaft surfaces and roll bores to remove any dirt and scale.



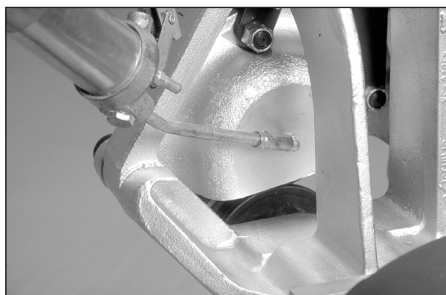
2. Inspect the roller bearing inside the upper roll for proper lubrication and movement. Inspect the roll guards for wear and freedom of movement. Repair or replace any damaged components, if necessary.



3. Slide the upper roll assembly carefully onto the upper shaft with the red plate facing out. Loosen the roll guards, if necessary, to ease installation. Make sure the red plate engages the two pins on the arm and that it contacts the front of the upper shaft.



4. Insert the upper roll bolt, and tighten it securely with a wrench.



5. Lubricate upper roll bearing. Refer to the “Maintenance” section for the recommended lubricant.

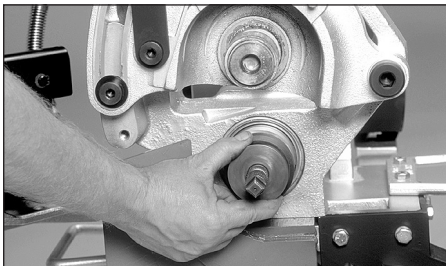
**LOWER ROLL ASSEMBLY INSTALLATION FOR
3/4-INCH/26.9-MM AND 1 – 1 1/2-INCH/
33.7 – 48.3-MM SIZES**



1. Clean the bore of the main shaft and the lower roll assembly with a soft cloth.



2. Apply a light coating of mechanical assembly spray (supplied with the tool and available from Victaulic) to the lower roll assembly.



3. Insert the lower roll assembly carefully into the main shaft, making sure it is seated fully. It may be necessary to rotate the lower roll assembly to align its square back end with the main shaft.
- 3a. With a wrench engaged on the square end of the lower roll assembly, tighten the lower roll assembly by turning **counterclockwise**.

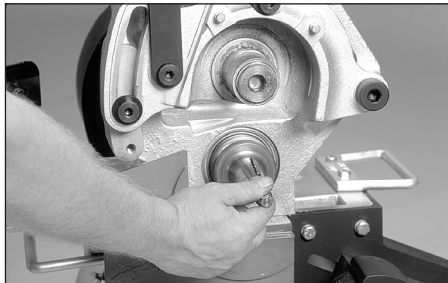
**ARBOR INSTALLATION PROCEDURE FOR
2-INCH/60.3-MM AND LARGER SIZES**



1. Clean the bore of the main shaft and the arbor with a soft cloth.



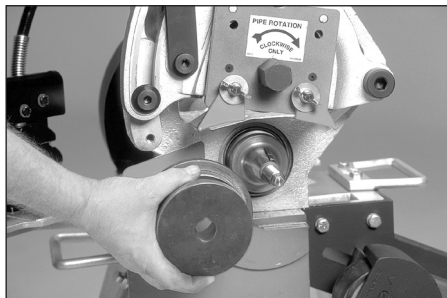
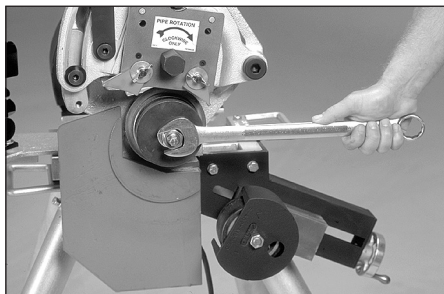
2. Apply a light coating of mechanical assembly spray (supplied with the tool and available from Victaulic) to the lower roll assembly.



3. Insert the arbor carefully into the main shaft, making sure it is seated fully. It may be necessary to rotate the arbor to align its square back end with the main shaft.
- 3a. With a wrench engaged on the hex portion of the stud, tighten the stud by turning **clockwise**. The arbor should move inward as the stud is tightened.

**LOWER ROLL INSTALLATION FOR
2-INCH/60.3-MM AND LARGER SIZES****NOTICE**

- The arbor must be installed prior to installing 2-inch/60.3-mm and larger size lower rolls. Refer to the “Arbor Installation Procedure for 2-inch/60.3-mm and Larger Sizes” section.



1. Install the lower roll onto the arbor. Re-position the roll guards, if necessary, to ease installation. **FOR KEYED-TYPE ARBORS:** Make sure the lower roll fits fully onto arbor with the keys aligned with the keyway. **FOR KEYLESS-TYPE ARBORS:** Align the square drive of the lower roll with the square drive of the arbor.



2. Install the flat washer and large nut onto the threaded arbor stud. Fasten the large nut securely with a wrench to set the lower roll in position. **DO NOT** over-tighten the large nut.

3. **FOR KEYED-TYPE ARBORS ONLY:** Install the thin jam nut onto the threaded arbor stud. Tighten the thin jam nut securely against the large nut.
4. Roll set installation is now complete. Before grooving, make sure 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.

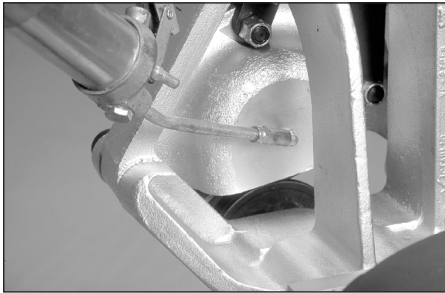
Failure to follow this instruction could result in death or serious personal injury.

This section provides information about keeping tools in proper operating condition and guidance for making repairs when it becomes necessary. Preventive maintenance during operation will pay for itself in repair and operating savings.

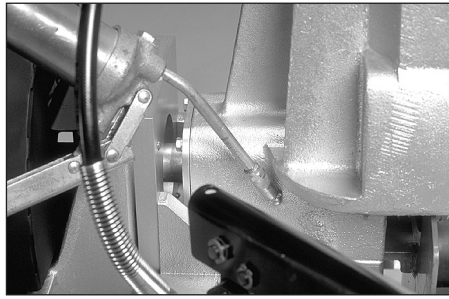
Replacement parts must be ordered from Victaulic to ensure proper and safe operation of the tool.

LUBRICATION

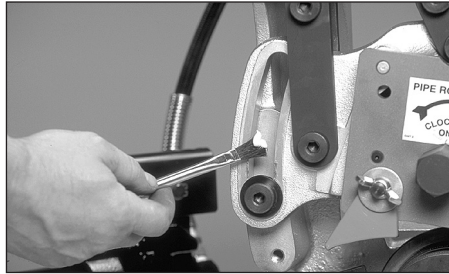
After every 8 hours of operation, lubricate the tool. Always lubricate the upper roll bearings when rolls are changed.



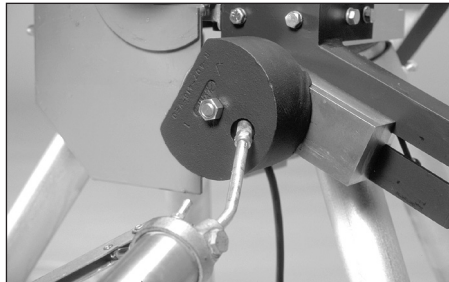
1. Grease the upper roll bearings every time roll changes are made and after every 8 hours of operation. A grease fitting is provided, as shown above. Refer to the applicable "Recommended Lubricants" table for the proper grease.



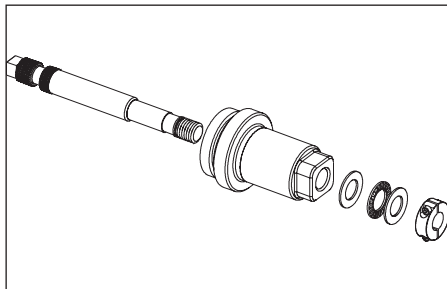
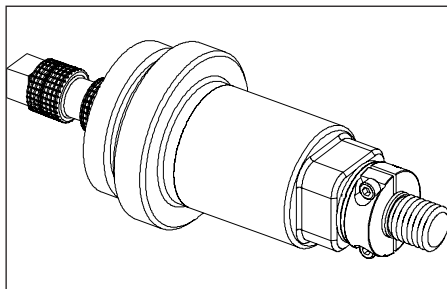
2. Grease the main shaft bearings through the grease fitting on the side of the tool, as shown above. Refer to the applicable "Recommended Lubricants" table for the proper grease.



3. Lubricate the linkage mechanisms, the arm pivot point, and the arm sliding surfaces. A heavy-duty spray lubricant can be used, or apply grease by hand. Refer to the applicable "Recommended Lubricants" table for the proper grease.



4. Lubricate the stabilizer wheel (if equipped) through the grease fitting, as shown above. Refer to the applicable "Recommended Lubricants" table for the proper grease.



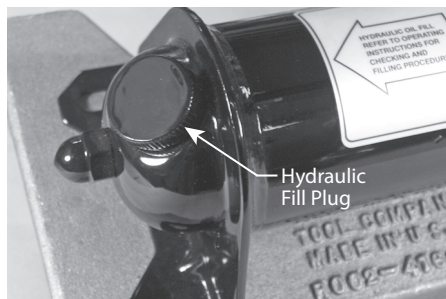
5. After every 40 hours of operation, clean and lubricate the ¾-inch/26.9 and 1 - 1 ½-inch/33.7 - 48.3-mm lower roll assemblies.
- 5a. Remove the cap screws and disassemble the two-piece collar. Remove the collar, needle bearing, and washers.
- 5b. Remove the lower roll from the arbor. Clean the ¾-inch/26.9 and 1 - 1 ½-inch/33.7 - 48.3-mm lower roll and lightly lubricate with the proper lubricant (mechanical assembly spray supplied with the tool and available from Victaulic).
- 5c. Reassemble the ¾-inch/26.9 and 1 - 1 ½-inch/33.7 - 48.3-mm lower roll assembly. Lubricate the needle bearing.

CHECKING AND FILLING HYDRAULIC HAND PUMP HYDRAULIC FLUID

The hydraulic fluid level in the hydraulic hand pump must be checked a minimum of every six months (depending on tool usage) or if pumping feels spongy.



1. Open the valve on the hydraulic hand pump by turning it counterclockwise.



2. Remove the hydraulic fill plug at the back end of the hydraulic hand pump.
- 2a. Check the hydraulic fluid level. Add hydraulic jack oil to the bottom of the threaded port.
- 2b. Re-install the hydraulic fill plug.
- 2c. Follow the "Air Bleeding" section.

AIR BLEEDING



1. Remove the hydraulic hand pump/pump support assembly from the tool base.



2. Close the valve on the hydraulic hand pump by turning it clockwise.



3. To bleed air from the system, hold the entire hydraulic hand pump so that the hydraulic fill plug end is ABOVE the hydraulic cylinder. This will prevent siphoning of fluid from the hydraulic cylinder through the hydraulic hand pump.
4. Open the hydraulic fill plug one full turn.
5. Pump the handle of the hydraulic hand pump several strokes to build pressure.
6. Open the valve on the hydraulic hand pump by turning it counterclockwise. Allow air to escape.
7. Repeat steps 2 – 6 several times to bleed all air from the system.
8. Continue to hold the hydraulic hand pump above the hydraulic cylinder, and close the hydraulic fill plug.
9. Re-install the hydraulic hand pump/pump support assembly securely to the tool base.

RECOMMENDED LUBRICANTS**BEARING AND SLIDE GREASE**

(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

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

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-270FSD Repair Parts List for detailed drawings and parts listings.

1. Tool Model Number – VE270FSD
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.

ACCESSORIES

VAPS112 VICTAULIC ADJUSTABLE PIPE STAND



The Victaulic VAPS112 is a portable, adjustable, roller-type pipe stand that contains four legs for additional stability. Ball transfer rollers, adjustable for 2 - 12-inch/60.3 - 323.9-mm pipe, and the “V” rest for $\frac{3}{4}$ - $1\frac{1}{2}$ -inch/26.9 - 48.3-mm pipe accommodate linear and rotational movement. The turnstile design permits ease of grooving for both pipe ends. Contact Victaulic for details.

VAPS224 VICTAULIC ADJUSTABLE PIPE STAND

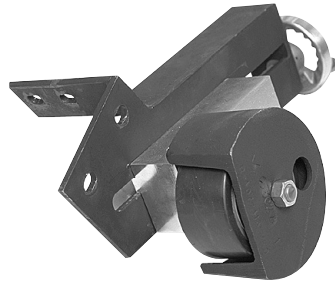


The Victaulic VAPS224 contains features that are similar to the VAPS112, but it is suitable for 2 – 24-inch/60.3 - 610.0-mm pipe sizes. Contact Victaulic for details.

OPTIONAL ROLLS

Refer to the applicable “Tool Rating and Roll Selection” section, which identifies rolls that are available for different pipe materials and groove specifications.

PIPE STABILIZER



The pipe stabilizer for the VE270FSD is designed to prevent sway of short and long pipe lengths in 8 - 12-inch/219.1 - 323.9-mm sizes. The pipe stabilizer is required when grooving light-wall stainless steel pipe and 8-inch/206.4-mm copper tubing. Contact Victaulic for details.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pipe will not stay in grooving rolls.	Incorrect pipe positioning of long pipe length.	Refer to the "Long Pipe Lengths" section.
	Lower roll and pipe are not rotating clockwise.	Contact Victaulic.
Pipe stops rotating during the grooving operation.	Rust or dirt buildup is present on the lower roll.	Remove rust or dirt accumulation from the lower roll with a stiff wire brush.
	Rust or dirt is excessively heavy inside the pipe end.	Remove heavy rust and dirt from inside the pipe end.
	Worn grooving rolls.	Inspect the lower roll for worn knurls. Replace the lower roll if excessive wear is present.
	The motor/drive has stalled due to excessive pumping of the hydraulic hand pump.	Open the valve on the hydraulic hand pump to release the pipe. Close the valve on the hydraulic hand pump and continue grooving. Pump the hydraulic hand pump at a moderate rate.
	The main breaker has tripped and/or a fuse has blown on the electrical circuit supplying the motor/drive.	Reset the breaker and/or replace the fuse.
	The Woodruff keys are broken or missing.	Remove the lower roll and insert the punch tool into the key removal hole(s). Press out the broken key(s) and install the new keys (supplied with the tool). Re-install the lower roll.
While grooving, loud squeaks echo through the pipe.	Incorrect pipe support positioning of a long pipe length. Pipe is "over-tracking."	Move the pipe support to the right. Refer to the "Long Pipe Lengths" section.
	Pipe is not cut square.	Cut the pipe end squarely.
	Pipe is rubbing excessively on the lower-roll backstop flange.	Remove the pipe from the tool, and apply a light coating of bandsaw blade wax to the face of the pipe end.
During grooving, loud thumps or bangs occur approximately once every revolution of the pipe.	Pipe has a pronounced weld seam.	For 12-inch/323.9-mm and smaller pipe sizes, raised internal and external weld beads and seams must be ground flush with the pipe surface 2 inches/50 mm back from the pipe ends.
Pipe flare is excessive.	Pipe support is adjusted too high for long pipe.	Refer to the "Long Pipe Lengths" section.
	Tool is tilted forward (out of level) while grooving long pipe.	Refer to the applicable "Tool Setup" section.
	Incorrect pipe support positioning of long pipe. Pipe is "over-tracking."	Move the pipe support to the right. Refer to the "Long Pipe Lengths" section.
	Pipe stabilizer is adjusted too far inward.	Back off the pipe stabilizer to the furthest point where it still stabilizes the pipe effectively.
Larger diameter pipe sways or vibrates from side to side.	Incorrect pipe stabilizer adjustment.	Move the pipe stabilizer in or out until the pipe rotates smoothly. If the pipe stabilizer is not installed, contact Victaulic to order the kit.

TROUBLESHOOTING (CONTINUED)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Tool will not groove the pipe.	The valve on the hydraulic hand pump is not closed tightly.	Tighten the valve on the hydraulic hand pump.
	The hydraulic hand pump is low on hydraulic fluid.	Refer to the "Checking and Filling Hydraulic Hand Pump Hydraulic Fluid" section.
	Air is present in the hydraulic system.	Refer to the "Air Bleeding" section.
	Pipe is beyond the wall thickness or pipe yield strength capacity of the tool.	Refer to the applicable "Tool Rating and Roll Selection" section.
Pipe groove diameters do not meet Victaulic specifications.	Groove diameter stop is not adjusted properly.	Refer to the "Groove Diameter Stop Adjustments" section.
	Pipe is beyond the wall thickness or pipe yield strength capacity of the tool.	Refer to the applicable "Tool Rating and Roll Selection" section.
The "A" Gasket Seat or "B" Groove Width dimensions do not meet Victaulic specifications.	Upper roll bearing is not lubricated adequately.	Refer to the "Maintenance" section.
	Incorrect upper roll, lower roll, or both installed on the tool	Install the correct rolls. Refer to the applicable "Tool Rating and Roll Selection" section.
	Pipe not inserted fully onto the lower roll, or pipe is not tracking properly.	Make sure pipe is against the lower-roll backstop flange. Refer to the "Long Pipe Lengths" section for proper pipe stand positioning.

TOOL RATING AND ROLL SELECTION

ORIGINAL GROOVE SYSTEM AND “ES” ROLLS FOR STEEL AND SCHEDULE 40 STAINLESS STEEL PIPE - COLOR CODED BLACK

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

Pipe Size		Dimensions inches/millimeters				Original Groove System Type	“ES” Type
Nominal Size inches	Actual Outside Diameter inches/mm	Steel Pipe Wall Thickness		Stainless Steel Pipe Wall Thickness		Roll Part Numbers	Roll Part Numbers
		Minimum	Maximum*	Minimum	Maximum		
¾	1.050 26.9	0.065 1.7	0.113 2.9	0.065 1.7	0.113 2.9	Lower Roll R900268LA1 Upper Roll R9A0268U02	
1	1.315 33.7	0.065 1.7	0.133 3.4	0.065 1.7	0.133 3.4	Lower Roll R901268LA2 Upper Roll R9A0268U02	
1¼	1.660 42.4	0.065 1.7	0.140 3.6	0.065 1.7	0.140 3.6		
1½	1.900 48.3	0.065 1.7	0.145 3.7	0.065 1.7	0.145 3.7		
2	2.375 60.3	0.065 1.7	0.154 3.9	0.154 3.9	0.154 3.9	Lower Roll R902272L03 Upper Roll R9A2272U06	Lower Roll RZ02272L03 Upper Roll RZA2272U03
2½	2.875 73.0	0.083 2.1	0.203 5.2	0.203 5.2	0.203 5.2		
3	3.500 88.9	0.083 2.1	0.216 5.5	0.216 5.5	0.216 5.5		
3½	4.000 101.6	0.083 2.1	0.226 5.7	0.226 5.7	0.226 5.7		
4	4.500 114.3	0.083 2.1	0.375 9.5	0.237 6.0	0.237 6.0	Lower Roll R904272L06 Upper Roll R9A2272U06	Lower Roll RZ04272L06 Upper Roll RZA4272U06
4½	5.000 127.0	0.095 2.4	0.375 9.5	0.237 6.0	0.237 6.0		
5	5.563 141.3	0.109 2.8	0.375 9.5	0.258 6.6	0.258 6.6		
6	6.625 168.3	0.109 2.8	0.375 9.5	0.280 7.1	0.280 7.1		
8	8.625 219.1	0.109 2.8	0.375 9.5	0.250 6.4	0.322 8.2	Lower Roll R908272L12 Upper Roll R9A8272U12	Lower Roll RZ08272L12 Upper Roll RZA8272U12
10	10.750 273.0	0.134 3.4	0.375 9.5	0.250 6.4	0.365 9.3		
12	12.750 323.9	0.156 4.0	0.375 9.5	0.250 6.4	0.375 9.5		

* When roll grooving pipes at or near the maximum rated thickness, the pipe must not exceed the yield strength of API-5L Grade “B”, ASTM Grade “B”, 150 Brinell Hardness Number (BHN) maximum.

Types 304/304L and 316/316L stainless steel pipe

The wall thicknesses listed are nominal minimum and maximum

In addition, the following pipe sizes may be roll grooved: 76.1 mm; 108.0 mm; 133.0 mm; 139.7 mm; 152.4 mm; 159.0 mm; 165.1 mm; 203.2 mm; 216.3 mm; 254.0 mm; 267.4 mm; 304.8 mm; and 318.5 mm. Contact Victaulic for details.

**ORIGINAL GROOVE SYSTEM ROLLS FOR ALUMINUM AND PVC PLASTIC PIPE -
COLOR CODED YELLOW ZINC**

Pipe Size		Dimensions inches/millimeters				RP
Nominal Size inches	Actual Outside Diameter inches/mm	Aluminum Pipe Wall Thickness		PVC Plastic Pipe Wall Thickness		
		Minimum	Maximum	Minimum	Maximum	Roll Part Numbers
2	2.375 60.3	0.065 1.7	0.154 3.9	0.154 3.9	0.154 3.9	Lower Roll RP02272L03 Upper Roll RPA2272U06
2½	2.875 73.0	0.083 2.1	0.203 5.2	0.203 5.2	0.276 7.0	
3	3.500 88.9	0.083 2.1	0.216 5.5	0.216 5.5	0.300 7.6	
3½	4.000 101.6	0.083 2.1	0.226 5.7	0.226 5.7	0.318 8.1	
4	4.500 114.3	0.083 2.1	0.237 6.0	0.237 6.0	0.337 8.6	Lower Roll RP04272L06 Upper Roll RPA2272U06
4½	5.000 127.0	0.095 2.4	0.237 6.0			
5	5.563 141.3	0.109 2.8	0.258 6.6	0.258 6.6	0.375 9.5	
6	6.625 168.3	0.109 2.8	0.280 7.1	0.280 7.1	0.432 11.0	
8	8.625 219.1	0.109 2.8	0.322 8.2	0.322 8.2	0.322 8.2	Lower Roll RP08272L12 Upper Roll RPA8272U12
10	10.750 273.0	0.134 3.4	0.250 6.4			
12	12.750 323.9	0.156 4.0	0.250 6.4			

Aluminum Alloys 6061-T4 and 6063-T4

PVC Type 1, Grade 1 - PVC 1120; PVC Type 1, Grade II - PVC 1220; PVC Type II, Grade 1 - PVC 2116

The wall thicknesses listed are nominal minimum and maximum

For aluminum pipe, the following additional pipe sizes may be roll grooved: 76.1 mm; 108.0 mm; 133.0 mm; 139.7 mm; 152.4 mm; 159.0 mm; 165.1 mm; 203.2 mm; 216.3 mm; 254.0 mm; 267.4 mm; 304.8 mm; and 318.5 mm. Contact Victaulic for details.

For PVC pipe, the following additional pipe sizes may be roll grooved: 76.1 mm; 108.0 mm; 133.0 mm; 139.7 mm; 159.0 mm; 165.1 mm; and 216.3 mm. Contact Victaulic for details.

ORIGINAL GROOVE SYSTEM RX ROLLS FOR SCHEDULE 5S AND 10S STAINLESS STEEL PIPE - COLOR CODED SILVER

Pipe Size		Dimensions inches/millimeters		RX Roll Part Numbers
Nominal Size inches	Actual Outside Diameter inches/mm	Stainless Steel Pipe Wall Thickness		
		Minimum for Schedule 5S	Maximum for Schedule 10S	
2	2.375 60.3	0.065 1.7	0.109 2.8	Lower Roll RX02272L03 Upper Roll RXA2272U06
2½	2.875 73.0	0.083 2.1	0.120 3.0	
3	3.500 88.9	0.083 2.1	0.120 3.0	
3½	4.000 101.6	0.083 2.1	0.120 3.0	
4	4.500 114.3	0.083 2.1	0.120 3.1	Lower Roll RX04272L06 Upper Roll RXA2272U06
5	5.563 141.3	0.109 2.8	0.134 3.4	
6	6.625 168.3	0.109 2.8	0.134 3.4	
8	8.625 219.1	0.109 2.8	0.148 3.8	Lower Roll RX08272L12 Upper Roll RXA8272U12
10	10.750 273.0	0.134 3.1	0.165 4.2	
12	12.750	0.156	0.180	
	323.9	4.0	4.6	

Types 304/304L and 316/316L stainless steel pipe. The wall thicknesses listed are nominal minimum and maximum.

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

Tube Size		Dimensions inches/millimeters		Copper Roll Part Numbers
Nominal Size inches	Actual Outside Diameter inches/mm	Copper Tubing Wall Thickness *		
		Minimum	Maximum	
2	2.125 54.0	0.042 1.1	0.083 2.1	Lower Roll RR02272L06 Upper Roll RRA2272U08
2½	2.625 66.7	0.065 1.7	0.095 2.4	
3	3.125 79.4	0.045 1.1	0.109 2.8	
4	4.125 104.8	0.058 1.5	0.134 3.4	
5	5.125 130.2	0.072 1.8	0.160 4.1	
6	6.125 155.6	0.083 2.1	0.192 4.9	
8	8.125 206.4	0.109 2.8	0.271 6.9	Lower Roll RR08272L08 Upper Roll RRA2272U08

* ASTM B306, Type DWV and ASTM B88, Types K, L, M copper tubing. For grooving copper tubing to other standards, contact Victaulic. The wall thicknesses listed are nominal minimum and maximum.

EXPLANATION OF CRITICAL ROLL GROOVE DIMENSIONS

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 should not vary by more than 1%. Greater variations between the major and minor diameters will result in difficult coupling assembly. For IPS pipe, the maximum allowable tolerance from square-cut pipe ends is 0.030 inch/0.8 mm for ¾ - 3½-inch/26.9 - 101.6-mm sizes; 0.045 inch/1.1 mm for 4 - 6-inch/114.3 - 168.3-mm sizes; and 0.060 inch/1.5 mm for 8-inch/219.1-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.

“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 from all foreign material, such as dirt, chips, rust, and scale that may interfere with proper coupling assembly.

“C” Dimension – The “C” dimension is the proper 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. This groove must conform to the “C” dimension described above.

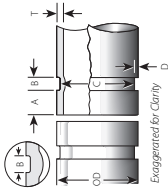
“F” Dimension (Original Roll Groove Only) – Maximum allowable pipe-end flare diameter is measured at the extreme pipe-end diameter.

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

ROLL GROOVE SPECIFICATIONS

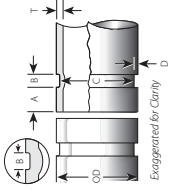
ORIGINAL GROOVE SYSTEM FOR STEEL AND STAINLESS STEEL PIPE



Pipe Size		Dimensions – Inches/millimeters															
		Pipe Outside Diameter		Gasket Seat "A"		Groove Width "B"			Groove Diameter "C"		Groove Depth "D" (ref.)	Min. Allow. Wall Thick. "T"	Max. Allow. Flare Dia.				
		Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Max.				Min.			
Nominal Size inches or mm	Actual Out. Diameter inches/mm	Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.	Max.	Min.	Max.
¾	1.050	1.060	1.040	0.625	0.656	0.594	0.281	0.312	0.250	0.281	0.312	0.250	0.938	0.923	0.056	0.049	1.15
20	26.9	26.9	26.4	15.9	16.7	15.1	7.1	7.9	6.4	7.1	7.9	6.4	23.8	23.4	1.5	1.2	29.2
25	1.315	1.328	1.302	0.625	0.656	0.594	0.281	0.312	0.250	0.281	0.312	0.250	1.190	1.175	0.063	0.049	1.43
32	1.660	1.676	1.644	0.625	0.656	0.594	0.281	0.312	0.250	0.281	0.312	0.250	1.535	1.520	0.063	0.049	1.77
40	48.3	48.7	47.8	15.9	16.7	15.1	7.1	7.9	6.4	7.1	7.9	6.4	39.0	38.6	1.6	1.2	45.0
2	2.375	2.399	2.351	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	2.250	2.235	0.063	0.049	2.01
50	60.3	60.9	59.7	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	57.2	56.8	1.6	1.2	51.1
2½	2.875	2.904	2.846	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	2.720	2.702	0.078	0.078	2.98
65	73.0	73.8	72.3	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	69.1	68.6	2.0	2.0	75.7
76.1 mm	3.000	3.030	2.970	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	2.845	2.827	0.078	0.078	3.10
	76.1	77.0	75.4	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	72.3	71.8	2.0	2.0	78.7
3	3.500	3.535	3.469	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	3.344	3.326	0.078	0.078	3.60
80	88.9	89.8	88.1	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	84.9	84.5	2.0	2.0	91.4
3½	4.000	4.040	3.969	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	3.834	3.814	0.083	0.078	4.10
90	101.6	102.6	100.8	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	97.4	96.9	2.2	2.0	104.1
108.0 mm	4.250	4.293	4.219	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	4.084	4.064	0.083	0.078	4.35
	108.0	109.0	107.2	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	103.7	103.2	2.2	2.0	110.5
4	4.500	4.545	4.469	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	4.334	4.314	0.083	0.078	4.60
	114.3	115.4	113.5	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	110.1	109.6	2.2	2.0	116.8

Table continued on the following page.

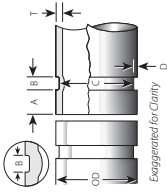
ROLL GROOVE SPECIFICATIONS
ORIGINAL GROOVE SYSTEM FOR STEEL AND STAINLESS STEEL PIPE (CONTINUED)



Pipe Size		Dimensions – Inches/millimeters													
		Actual Out. Diameter		Gasket Seat "A"			Groove Width "B"			Groove Diameter "C"			Groove Depth "D" (ref.)	Min. Wall Thick. "T"	Max. Allow. Flare Dia.
		inches/mm	inches/mm	Basic	Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.			
4½	5.000	4.969	0.625	0.656	0.594	0.344	0.375	0.313	4.834	4.814	0.083	0.078	5.10		
	127.0	126.2	15.9	16.7	15.1	8.7	9.5	8.0	122.8	122.3	2.2	2.0	129.5		
133.0 mm	5.250	5.219	0.625	0.656	0.594	0.344	0.375	0.313	5.084	5.064	0.083	0.078	5.35		
	133.0	132.6	15.9	16.7	15.1	8.7	9.5	8.0	129.1	128.6	2.2	2.0	135.9		
139.7 mm	5.500	5.469	0.625	0.656	0.594	0.344	0.375	0.313	5.334	5.314	0.083	0.078	5.60		
	139.7	141.1	138.9	15.9	16.7	15.1	8.7	9.5	135.5	135.0	2.2	2.0	142.2		
5	5.563	5.619	0.625	0.656	0.594	0.344	0.375	0.313	5.395	5.373	0.084	0.078	5.66		
	141.3	142.7	140.5	15.9	16.7	15.1	8.7	9.5	137.0	136.5	2.2	2.0	143.8		
152.4 mm	6.000	6.056	0.625	0.656	0.594	0.344	0.375	0.313	5.830	5.808	0.085	0.078	6.10		
	152.4	153.8	151.6	16.7	15.1	8.7	9.5	8.0	148.1	147.5	2.2	2.0	154.9		
159.0 mm	6.260	6.313	0.625	0.656	0.594	0.344	0.375	0.313	6.032	6.002	0.109	0.109	6.35		
	159.0	160.4	158.0	15.9	16.7	15.1	8.7	9.5	153.2	152.5	2.8	2.8	161.3		
165.1 mm	6.500	6.563	0.625	0.656	0.594	0.344	0.375	0.313	6.330	6.308	0.085	0.078	6.60		
	165.1	166.7	164.3	15.9	16.7	15.1	8.7	9.5	160.8	160.2	2.2	2.8	167.6		
6	6.625	6.688	0.625	0.656	0.594	0.344	0.375	0.313	6.455	6.433	0.085	0.078	6.73		
	168.3	169.9	167.5	15.9	16.7	15.1	8.7	9.5	164.0	163.4	2.2	2.8	170.9		
203.2 mm	8.000	8.063	0.750	0.781	0.719	0.469	0.500	0.438	7.816	7.791	0.109	0.109	8.17		
	203.2	204.8	202.4	19.1	19.8	18.3	11.9	12.7	198.5	197.9	2.4	2.8	207.5		
216.3 mm	8.515	8.578	0.750	0.781	0.719	0.469	0.500	0.438	8.331	8.306	0.092	0.109	8.69		
	216.3	217.9	215.5	19.1	19.8	18.3	11.9	12.7	211.6	211.0	2.4	2.8	220.7		
8	8.625	8.688	0.750	0.781	0.719	0.469	0.500	0.438	8.441	8.416	0.092	0.109	8.80		
	219.1	220.7	218.3	19.1	19.8	18.3	11.9	12.7	214.4	213.8	2.4	2.8	223.5		

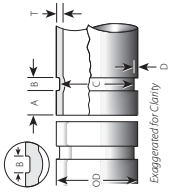
Table continued on the following page.

ROLL GROOVE SPECIFICATIONS
ORIGINAL GROOVE SYSTEM FOR STEEL AND STAINLESS STEEL PIPE (CONTINUED)



Pipe Size		Dimensions – Inches/millimeters												
Nominal Size inches or mm	Actual Out. Diameter inches/mm	Pipe Outside Diameter		Gasket Seat "A"			Groove Width "B"			Groove Diameter "C"		Groove Depth "D" (ref.)	Min. Allow. Wall Thick. "T"	Max. Allow. Flare Dia.
		Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.			
254.0 mm	10.000	10.063	9.969	0.750	0.781	0.719	0.469	0.500	0.438	9.812	9.785	0.094	0.134	10.17
	254.0	255.6	253.2	19.1	19.8	18.3	11.9	12.7	11.1	249.2	248.5	2.4	3.4	258.3
267.4 mm	10.528	10.591	10.497	0.750	0.781	0.719	0.469	0.500	0.438	10.340	10.313	0.094	0.134	10.70
	267.4	269.0	266.6	19.1	19.8	18.3	11.9	12.7	11.1	262.6	262.0	2.4	3.4	271.8
10	10.750	10.813	10.719	0.750	0.781	0.719	0.469	0.500	0.438	10.562	10.535	0.094	0.134	10.92
	273.0	274.7	272.3	19.1	19.8	18.3	11.9	12.7	11.1	268.3	267.6	2.4	3.4	277.4
304.8 mm	12.000	12.063	11.969	0.750	0.781	0.719	0.469	0.500	0.438	11.781	11.751	0.109	0.156	12.17
	304.8	306.4	304.0	19.1	19.8	18.3	11.9	12.7	11.1	299.2	298.5	2.8	4.0	309.1
318.5 mm	12.539	12.602	12.508	0.750	0.781	0.719	0.469	0.500	0.438	12.321	12.291	0.109	0.156	12.71
	318.5	320.1	317.7	19.1	19.8	18.3	11.9	12.7	11.1	313.0	312.2	2.8	4.0	322.8
12	12.750	12.813	12.719	0.750	0.781	0.719	0.469	0.500	0.438	12.531	12.501	0.109	0.156	12.92
	323.9	325.5	323.1	19.1	19.8	18.3	11.9	12.7	11.1	318.3	317.5	2.8	4.0	328.2

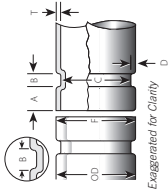
ROLL GROOVE SPECIFICATIONS
ORIGINAL GROOVE SYSTEM FOR STEEL PIPE AND ALL MATERIALS GROOVED WITH "ES" ROLLS



Pipe Size		Dimensions – inches/millimeters													
Nominal Size inches/ mm	Actual Out. Diameter inches/ mm	Pipe Outside Diameter		Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth "D" (ref.)	Min. Allow. Wall Thick. "T"	Max. Allow. Flare Dia.			
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.						
4	4.500	4.545	4.469	0.610	0.590	0.320	0.300	4.314	4.314	0.083	0.237	4.600			
	114.3	115.4	113.5	15.5	15.0	8.1	7.6	110.1	109.6	2.1	6.0	116.8			
6	6.625	6.688	6.594	0.610	0.590	0.320	0.300	6.455	6.433	0.085	0.280	6.730			
	168.3	169.9	167.5	15.5	15.0	8.1	7.6	164.0	163.4	2.2	7.1	170.9			
8	8.625	8.688	8.594	0.719	0.699	0.410	0.390	8.441	8.416	0.092	0.322	8.800			
	219.1	220.7	218.3	18.3	17.8	10.4	9.9	214.4	213.8	2.3	8.2	223.5			
10	10.750	10.813	10.719	0.719	0.699	0.410	0.390	10.562	10.535	0.094	0.365	10.920			
	273.0	274.7	272.3	18.3	17.8	10.4	9.9	268.3	267.6	2.4	9.3	277.4			
12	12.750	12.813	12.719	0.719	0.699	0.410	0.390	12.531	12.501	0.109	0.375	12.920			
	323.9	325.5	323.1	18.3	17.8	10.4	9.9	318.3	317.5	2.8	9.5	328.2			

ROLL GROOVE SPECIFICATIONS

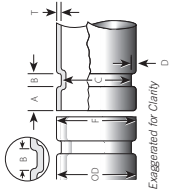
CTS US STANDARD - ASTM B-88 HARD-DRAWN COPPER TUBING AND DWV PER ASTM B-306



Copper Tubing Size		Dimensions – inches/mm											
		Copper Tubing Outside Diameter †		Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth "D" (Ref. Only)	Min. Allow. Wall Thick. "U"	Max. Allow. Flare Dia. "T"	
Nominal Size inches/Actual mm	Max.	Min.	Basic	Max.	Min.	Max.	Min.	Max.	Min.				Max.
2	2.127	2.123	0.610	0.640	0.580	0.330	0.300	2.029	2.009	0.048	DWV*	2.220	
54.0	54.0	53.9	15.5	16.3	14.7	8.4	7.6	51.5	51.0	1.2		56.4	
2½	2.627	2.623	0.610	0.640	0.580	0.330	0.300	2.525	2.505	0.050	0.065	2.720	
66.7	66.7	66.6	15.5	16.3	14.7	8.4	7.6	64.1	63.6	1.2	1.7	69.1	
3	3.127	3.123	0.610	0.640	0.580	0.330	0.300	3.025	3.005	0.050	DWV*	3.220	
79.4	79.4	79.3	15.5	16.3	14.7	8.4	7.6	76.8	76.3	1.2		81.8	
4	4.127	4.123	0.610	0.640	0.580	0.330	0.300	4.019	3.999	0.053	DWV*	4.220	
104.8	104.8	104.7	15.5	16.3	14.7	8.4	7.6	102.1	101.6	1.4		107.2	
5	5.127	5.123	0.610	0.640	0.580	0.330	0.300	4.999	4.979	0.063	DWV*	6.220	
130.2	130.2	130.1	15.5	16.3	14.7	8.4	7.6	127.0	126.5	1.6		132.6	
6	6.127	6.123	0.610	0.640	0.580	0.330	0.300	5.999	5.979	0.063	DWV*	6.220	
155.6	155.6	155.5	15.5	16.3	14.7	8.4	7.6	152.3	151.9	1.6		158.0	
8	8.127	8.121	0.610	0.640	0.580	0.330	0.300	7.959	7.939	0.083	DWV*	8.220	
206.4	206.4	206.3	15.5	16.3	14.7	8.4	7.6	202.2	201.7	2.1		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 0.030inch/0.8mm for 2 – 3-inch/54.0 – 79.4-mm sizes and 0.045inch/1.1mm 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.



ROLL GROOVE SPECIFICATIONS
EUROPEAN STANDARD – EN 1057 R250 (HALF-HARD) COPPER TUBING

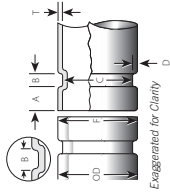
European Standard Copper Tubing Nominal Size † mm		Dimensions – mm/inches											
		Actual OD*		Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth "D" (Ref. Only)		Max. Allow. Flare Dia. "F"	
		Max.	Min.	Basic	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
54	54.07 2.129	53.93 2.123	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	51.51 2.028	51.00 2.008	1.25 0.049	56.38 2.220		
64	64.07 2.522	63.93 2.517	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	61.47 2.420	60.96 2.400	1.27 0.050	66.41 2.615		
66.7	66.77 2.629	66.63 2.623	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	64.14 2.525	63.63 2.505	1.27 0.050	69.09 2.720		
76.1	76.17 2.999	76.03 2.993	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	73.41 2.890	72.90 2.870	1.35 0.053	78.61 3.095		
88.9	88.97 3.503	88.83 3.497	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	85.70 3.374	85.19 3.354	1.60 0.063	91.63 3.607		
108	108.07 4.255	107.93 4.249	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	104.80 4.126	104.29 4.106	1.60 0.063	110.54 4.352		
133	133.20 5.244	132.80 5.228	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	129.29 5.090	128.78 5.070	1.85 0.073	135.79 5.346		
159	159.20 6.280	158.80 6.252	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	155.30 6.114	154.79 6.094	1.85 0.073	161.80 6.370		

† European Standard Copper Tubing: Nominal EN 1057 drawn copper tubing size

* The outside diameter of roll grooved copper tubing cannot vary from the tolerance listed. The maximum allowable tolerance from square cut ends is 0.8mm/0.030inch for 54 – 88.9-mm sizes and 1.1 mm 0.045inch for 108 – 159-mm sizes; this is measured from the true square line.

ROLL GROOVE SPECIFICATIONS

AUSTRALIAN STANDARD – AS 1432 TABLES A, B, AND D COPPER TUBING



Australian Standard Copper Tubing Nominal Size (Actual Size)		Dimensions – mm/inches											
		Actual OD*		Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth "D" (Ref. Only)		Max. Allow. Flare Dia. "F"	
Max.	Min.	Basic	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
DN 50 (50.8)	50.80 2.000	50.67 1.995	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	47.70 1.878	48.21 1.898	1.25 0.049	53.06 2.089		
DN 65 (63.5)	63.50 2.500	63.35 2.494	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	60.88 2.397	60.88 2.397	1.27 0.050	65.38 2.592		
DN 80 (76.2)	76.20 3.000	76.02 2.993	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	73.05 2.876	73.56 2.896	1.27 0.050	78.51 3.091		
DN 100 (101.6)	101.60 4.000	101.35 3.990	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	98.78 3.869	98.78 3.869	1.35 0.053	103.88 4.090		
DN 125 (127.0)	127.00 5.000	126.75 4.990	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	123.16 4.849	123.67 4.869	1.60 0.063	128.77 5.070		
DN 150 (152.4)	152.40 6.000	152.10 5.988	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	148.54 5.848	149.05 5.868	1.60 0.063	154.66 6.089		

† Nominal AS 1432 drawn copper tubing size

* The outside diameter of roll grooved copper tubing cannot vary from the tolerance listed. The maximum allowable tolerance from square cut ends is 0.8mm/0.030inch for DN 50 – 80-mm sizes and 1.1mm/0.045inch for DN 100 – 150-mm sizes; this is measured from the true square line.

VE270FSD and VE271FSD

PIPE ROLL GROOVING TOOLS

For complete contact information, visit www.victaulic.com

TM-VE270/271FSD 2469 REV C UPDATED 03/2010 RM00270000

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