

# RG3212 Roll Grooving Tool



OGS

WARNING



## WARNING



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

- Before operating or servicing any 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*





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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” always signifies an immediate hazard with a likelihood of severe personal injury or death if instructions, including recommended precautions, are not followed.

### WARNING

- The use of the word “WARNING” signifies the presence of hazards or unsafe practices which could result in severe personal injury if instructions, including recommended precautions, are not followed.

### CAUTION

- The use of the word “CAUTION” signifies possible hazards or unsafe practices which could result in minor injury and product or property damage if instructions, including recommended precautions, are not followed.

### NOTICE

- The use of the word “NOTICE” signifies special instructions which are important but not related to hazards.

## OPERATOR SAFETY INSTRUCTIONS

The RG3212 Roll Grooving Tool is designed for the sole purpose of roll grooving pipe. The RG3212 is designed ONLY for roll grooving pipe sizes, materials, and wall thicknesses listed in the “Tool Ratings” section. 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 setup and maintenance. Each operator must become familiar with the tool’s operations, applications, and limitations. Particular care should be given to reading and understanding the dangers, warnings, and cautions described throughout these operating instructions.

Operators shall follow all appropriate OSHA guidelines and training. Use of 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, or can be downloaded at [victaulic.com](http://victaulic.com).

 **DANGER**

1. **Avoid using the tool in potentially dangerous environments.** Do not expose the tool to rain, and do not use the tool in damp or wet locations. Do not use the tool on sloped or uneven surfaces. Keep the work area well lit. Allow sufficient space to operate the tool properly.
2. **Ground the motor to protect the operator from electric shock.** Ensure that the 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.** Always follow OSHA guidelines for safe lifting techniques when handling tool components.
2. **Wear proper apparel.** Do not wear loose clothing, jewelry, or anything that can become entangled in moving parts.
3. **Wear protective items when working with tools.** Always wear safety glasses, 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. Never reach across moving parts.
6. **Do not over-reach.** Maintain proper footing and balance at all times.

 **CAUTION**

1. **This tool is designed ONLY for roll grooving pipe sizes, materials, and wall thicknesses listed in the “Tool Ratings” section.**
2. **Inspect the equipment.** Before using the tool, check all moveable parts for any obstructions. Verify 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 work area.** All visitors should be kept a safe distance from equipment at all times, and should be offered the opportunity to review this manual.
5. **Keep work areas clean.** Keep the work area around the tool clear of any obstructions that could limit movement of the operator. Clean up any spills on the floor to prevent slips or falls.
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.
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 RG3212 is a hydraulic feed tool for roll grooving pipe to receive Victaulic grooved pipe products. The standard RG3212 tool is supplied with grooving rolls for 2–12 inch/50–300 mm steel pipe. Rolls are marked with the size and part number, and are color coded to identify the pipe/tubing material. For roll grooving to other specifications and materials, refer to the “Tool Rating and Roll Selection” section. Grooving rolls for other specifications, sizes, and materials must be purchased separately.

### CAUTION

- The RG3212 should only be used for roll grooving pipe designated in the “Tool Ratings for Steel Pipe” section of this manual.

**Use of the tool for other purposes, or use exceeding the pipe thickness maximums, will overload the tool, shortening tool life and potentially causing tool damage.**

## RECEIVING THE TOOL

RG3212 tools are packed individually in sturdy containers that are designed for repeated shipping. Save the 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	Tool with Motor and Hydraulic Pump Handle
1	Foot Switch
1	PS3212 Pipe Stand
1	Roll Set for 2–3.5-inch Steel Pipe - Original Groove System Specification
1	Roll Set for 4–6-inch Steel Pipe - Original Groove System Specification
1	Roll Set for 8–12-inch Steel Pipe - Original Groove System Specification
1	Lower Roll Removal Wedge
1	Go/No-Go Grooved Pipe Diameter Tape
1	Storage Bag with Accessories
2	Operating and Maintenance Instructions Manual

## POWER REQUIREMENTS

DANGER

- To reduce the risk of electric shock, check the electrical source for proper grounding and follow all instructions.**

**• Before performing any repair or maintenance, disconnect the tool from the electrical source.**

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

Maximum current draw is 15 amps. Tool motor is set to the appropriate specifications for the region.

The RG3212 tool must be grounded properly in accordance with all local and national electrical code requirements.

If an extension cord is required, refer to the “Extension Cord Requirements” section.

## 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 (gauge). Cord size selection is based upon tool rating and cord length. Use of a cord size (gauge) thinner than required will cause significant voltage drop at the motor while the tool is operating. Voltage drops may cause damage to the motor and can result in improper tool operation. **NOTE:** It is acceptable to use a cord size that is thicker than required.

Listed in the chart below are recommended cord size (gauge) for cord lengths up to and including 31 meters. Use of extension cords beyond 31 meters in length should be avoided.

Extension cords must meet all applicable local codes and facility rules for safe and proper use.

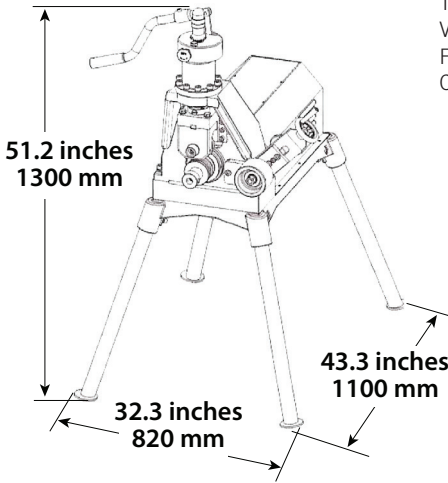
		Cord Lengths		
		25 feet	50 feet	100 feet
Cord Size (Gauge)	12 gauge	12 gauge	10 gauge	

## TOOL NOMENCLATURE





### TOOL DIMENSIONS



### TOOL SPECIFICATIONS

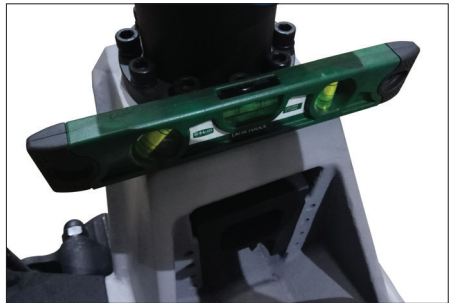
Tool weight: 302 pounds/137 kg  
Voltage: 120-volt, single phase  
Frequency: 60 Hz 15A  
Capacity of oil reservoir: 5 fl oz/150 ml

### TOOL SETUP

**⚠ WARNING**

- Do not connect power until instructed otherwise.
- Tool must be lifted with a hoist and plate clamp to safely handle the tool weight (302 pounds/137 kg).

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



1. Remove all components and check to ensure that all necessary items are included. Refer to the “Receiving the Tool” section.
2. Select a location for the tool and pipe stand. Choose a location that has:
  - a. The required power. Refer to the “Power Requirements” section
  - b. The space necessary to adequately handle the pipe to be grooved
  - c. A level surface for the tool and pipe stand
3. Place the tool on a level surface. Place a level on top of the plate and cylinder to verify that the tool is level front to back and side to side.



4. Verify that the hydraulic system is full of oil. Refer to the “Maintenance” section for hydraulic oil requirements.

## PRE-OPERATION ADJUSTMENTS

Every RG3212 tool is checked and tested at the factory prior to shipment. Before grooving, however, the following adjustments should be made to ensure proper tool operation.

### WARNING

- **Always disconnect the tool from the electrical source before making any tool adjustments.**

**Accidental startup of tool may result in serious personal injury.**

## GROOVING ROLLS

Ensure that the proper roll set is on the tool. Rolls are marked with the pipe size and part number. Refer to the “Tool Rating and Roll Selection” section. If proper rolls are not on the tool, please refer to relative sections to change the rolls.

### CAUTION

- **Ensure that roll retaining bolts are tight.**

**Loose retaining bolts could seriously damage both the tool and the rolls.**

## PREPARING PIPE FOR GROOVING

### CAUTION

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

**Foreign material may interfere with or damage grooving rolls, resulting in distorted grooves and grooves that are not within Victaulic specifications.**

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

1. Victaulic recommends square-cut pipe for use with grooved-end pipe products.

2. 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.

3. 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 and result in difficulties during coupling assembly.

## SHORT PIPE LENGTHS

The RG3212 tool is capable of grooving short pipe lengths without the use of a pipe stand. Table 1 identifies the minimum and maximum pipe lengths that can be grooved without the use of a pipe stand.

Pipe lengths longer than those listed in this table (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 the tables, shorten the next-to-last piece so that the last piece is as long (or longer) than the minimum length specified. Refer to the example below.

**EXAMPLE:** A 20-foot, 4-inch/6.2-m length of 10-inch/250 mm 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/0.1-m length of steel pipe, follow these steps:

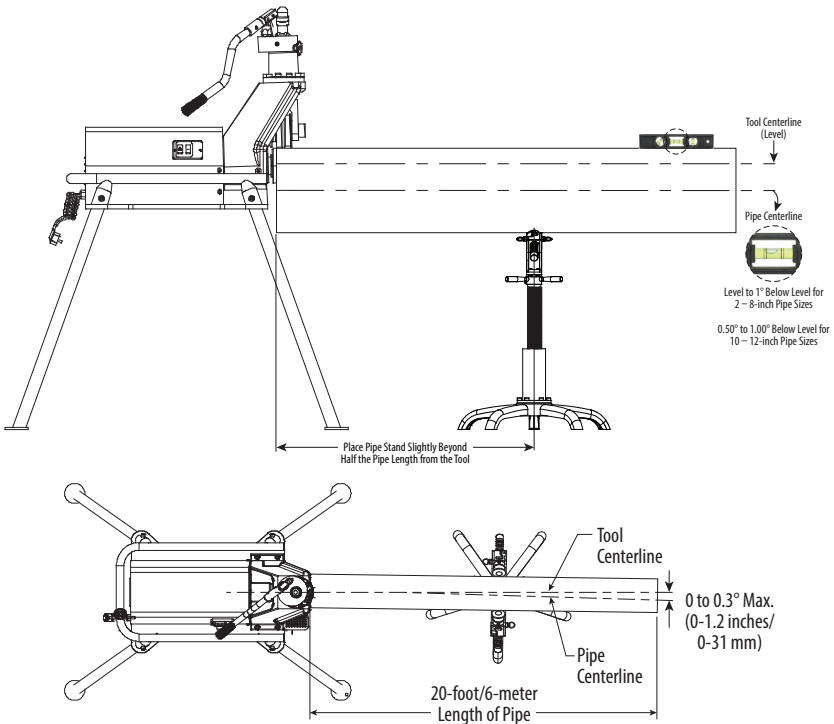
1. Refer to Table 1 and note that for 10-inch/250 mm diameter steel pipe, the minimum length that should be roll grooved is 10 inches/255 mm.
2. Roll groove a 19-foot, 6-inch/5.9-m length of pipe and a 10-inch/255-mm length of pipe. Refer to the “Long Pipe/Tubing Lengths” section.

**Table 1- Carbon Steel and Schedule 40 Stainless Steel Pipe Lengths Suitable for Grooving without a Pipe Stand**

Nominal Size inches or mm	Length inches	
	Min	Max
2 – 4 inches	8	36
4 ½ – 5 inches	8	32
152.4 mm	10	30
6 inches	10	28
203.2 mm – 8 inches	10	24
10 inches	10	20
12 inches	12	18

**LONG PIPE LENGTHS**

1. A pipe stand must be used with pipe that is longer than the maximum length listed in the tables above. Place the pipe stand at a distance slightly beyond half the pipe length from the tool.
2. Position a length of pipe on the tool's lower roll. For 2 – 8-inch pipe sizes, adjust the pipe stand height to position the pipe level to 1° below level. For 10 – 12-inch pipe sizes, adjust the pipe stand height to position the pipe angle between 0.50° and 1.00° below level (when necessary, raise the tool to achieve the required angle of pipe).



*Drawings are exaggerated for clarity*

**⚠ CAUTION**

- Right-to-left tracking angle must be kept to a minimum. Keep the pipe as centered as possible on the lower roll.
- Verify that the tool is level. The pipe may not track properly if the back end of the pipe is higher than the end being grooved.

Failure to follow these instructions may result in grooves that are not within specification.

**GROOVE DIAMETER STOP ADJUSTMENT**

**⚠ WARNING**

- Always disconnect the tool from the electrical source before making any tool adjustments.

Accidental startup of tool may result in serious personal injury.

The groove diameter stop must be adjusted each time rolls are changed and for each change in pipe size or wall thickness.



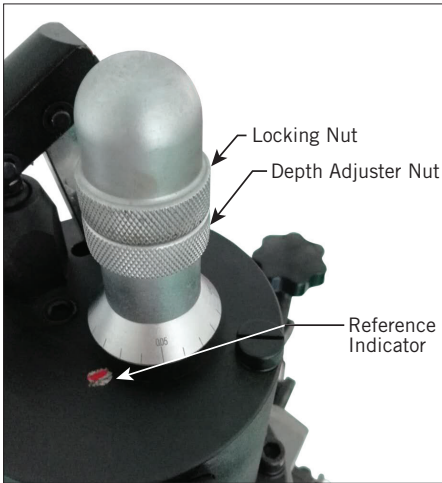
1. Verify that the correct, matching roll set is installed on the tool. Rolls are marked with the pipe size and part number. If the correct, matching rolls are not on the tool, the roll set must be changed by following the steps on pages 16 – 18.

**NOTICE**

- To perform the following adjustments, use several short scrap sections of pipe that are the proper material, diameter, and wall thickness. Refer to Tables 1 and 2 for the minimum pipe lengths required for grooving.



2. Insert a piece of pipe of the correct size and wall thickness onto the lower roll.
3. Close the hydraulic pump valve.
- 4a. Use the hydraulic pump handle to bring the slide down until the upper roll contacts the pipe.
- 4b. Adjust depth adjuster nut and locking nut high enough that the slide has room to travel to the pipe.



5. Loosen the locking nut from the depth adjuster nut. Tighten the depth adjuster nut downward against the top of the tool head.
6. Adjust the depth adjuster nut upward to a distance equal to the required groove depth. One full rotation of the depth adjuster nut equals .20-inch change in diameter (.10-inch change in depth). Each tick mark on the barrel is a .01-inch change in diameter.
7. Prevent the depth adjuster nut from rotating. Tighten the locking nut downward against the top of the depth adjuster nut.

<b>⚠ WARNING</b>	
	<p><b>Grooving rolls can crush or cut fingers and hands.</b></p> <ul style="list-style-type: none"> <li>• Keep hands away from grooving rolls.</li> </ul>
<ul style="list-style-type: none"> <li>• Never reach inside pipe end or across the tool or pipe during operation.</li> <li>• Always groove pipe in a clockwise direction only.</li> <li>• Never groove pipe shorter than what is recommended.</li> <li>• Never wear loose clothing, loose gloves, or jewelry while operating tool.</li> </ul>	

8. Groove the sample pipe by following the “Grooving Operation” section. Continue the grooving operation until the depth adjuster nut contacts the tool head. Allow the pipe to rotate an additional one to two turns to ensure groove completion.
9. After a trial groove is prepared and the pipe is removed from the tool, carefully check the “C” groove diameter. Refer to the “Roll Groove Specifications” section. The “C” groove diameter dimension is best checked with a pipe tape. If a vernier caliper or narrow-land micrometer is used, the groove must be checked at two locations, 90° apart. The average reading must equal the required groove diameter specification.
10. If the “C” groove diameter is too large (too shallow), loosen the locking nut and adjust the depth adjuster nut upward to the distance of the value of the desired adjustment to the “C” groove diameter.
11. If the “C” groove diameter is too small (too deep), loosen the locking nut and adjust the depth adjuster nut downward to the distance of the value of the desired adjustment to the “C” groove diameter.
12. Prepare another trial groove and check the “C” groove diameter again. Follow all steps in this section until the “C” groove diameter is within specification.

<b>⚠ CAUTION</b>
<ul style="list-style-type: none"> <li>• The “C” groove diameter must always conform to the dimensions listed in the “Roll Groove Specifications” section to ensure proper joint performance.</li> </ul> <p><b>Failure to follow this instruction could cause joint leakage or failure, resulting in personal injury and property damage.</b></p>

## GROOVING OPERATION

### DANGER



- To reduce the risk of electric shock, check the electrical source for proper grounding.

- Before operating the tool, review the “Operator Safety Instructions” section of this manual.

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

### CAUTION

- RG3212 tools are designed **ONLY** for roll grooving pipe sizes and wall thicknesses outlined in the “Tool Rating and Roll Selection” section.

Failure to follow the instructions in this manual will result in improper tool operation.

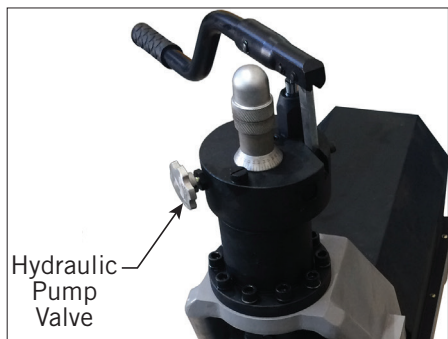
1. Before grooving, verify that all instructions in the previous sections of this manual have been followed.
2. Plug the RG3212 into an internally-grounded electrical source.
3. Turn the switch on the side of the tool to the “ON” position to verify that the tool is operational and that the lower roll is turning clockwise.
4. Turn the switch on the side of the tool to the “OFF” position.



5. Open the hydraulic pump valve by turning the knob counterclockwise. This will raise the slide and upper roll to their highest positions.




6. Insert a piece of pipe of the correct size and wall thickness onto the lower roll.



7. Close the hydraulic pump valve by turning the knob clockwise.

**⚠ WARNING**



**Grooving rolls can crush or cut fingers and hands.**

- Keep hands away from grooving rolls.

- Never reach inside pipe end or across the tool or pipe during operation.
- Always groove pipe in a clockwise direction only.
- Never groove pipe shorter than what is recommended.
- Never wear loose clothing, loose gloves, or jewelry while operating tool.



8. Operator should be positioned as shown.
9. Use the hydraulic pump handle to bring the slide down until the upper roll contacts the pipe.
10. Turn the switch on the side of the tool to the “ON” position. Check the tracking of the pipe as it rotates to verify that it remains against the lower roll.

**NOTE:** If the pipe does not remain against the lower roll, stop the tool by turning the switch to the “OFF” position. Verify that the pipe is level and positioned properly.

11. With the switch in the “ON” position, the pipe will begin to rotate clockwise. As the pipe rotates, begin grooving by using the hydraulic pump handle.

**NOTICE**

- Do not pump the hydraulic pump handle too fast, but at a rate sufficient to groove the pipe and maintain a moderate load on the tool’s motor.

12. Continue the grooving operation until the locking nut/depth adjuster nut contact the tool head. Allow the pipe to rotate an additional one to two turns to ensure groove completion.

13. Turn the switch on the side of the tool to the “OFF” position.



14. To release the pipe, open the hydraulic pump valve by turning the knob counterclockwise (be prepared to support short pipe lengths when opening the hydraulic pump valve). Remove pipe from tool.

**NOTICE**

- The “C” groove diameter should be checked periodically and adjusted, as necessary, to ensure that the dimension remains within specification.

## LOWER ROLL REMOVAL

### WARNING

- Always disconnect the tool from the electrical source before making any tool adjustments.

Accidental startup of tool may result in serious personal injury.

The lower roll must be removed before the upper roll.



1. Open the hydraulic pump valve by turning the knob counterclockwise. This will raise the slide and upper roll to their highest positions.

### WARNING



- DO NOT strike the lower roll/main shaft with a hammer or other blunt object.

Striking the lower roll/main shaft can cause fragmentation, resulting in serious personal injury.



2. To remove the lower roll from the arbor, loosen the lower roll retaining nut until it reaches the end of the lower shaft. Do not fully remove the nut.

**NOTE:** Lower roll retaining nut in above photograph has been fully removed for visibility.

Place the aluminum wedge (supplied with the tool) behind the lower roll, then strike the wedge with a soft-faced hammer to break the roll loose from the arbor. **DO NOT STRIKE THE ROLL DIRECTLY WITH A HAMMER.**

Once the lower roll is loosened, remove the lower roll retaining nut and lower roll. Store the lower roll in a safe location for future use.



## UPPER ROLL REMOVAL

### WARNING

- Always disconnect the tool from the electrical source before making any tool adjustments.

Accidental startup of tool may result in serious personal injury.



1. Open the hydraulic pump valve by turning the knob counterclockwise. This will raise the slide and upper roll to their highest positions.



2. Loosen the upper shaft retaining screw. It is not necessary to completely remove the screw.



3. While supporting the upper roll, remove the upper shaft from the slide/upper roll holder by pulling it straight outward. Remove the upper roll, and store it in a safe location for future use.

## UPPER ROLL INSTALLATION

Clean the upper shaft to remove any dirt before installation of the upper roll. Inspect the roller bearing inside the upper roll for proper lubrication and condition.

**The upper roll must be installed before the lower roll.**



1. Carefully insert the desired size upper roll behind the slide/upper roll holder with the markings on the upper roll facing outward.
2. While supporting the upper roll, insert the upper shaft into the slide/upper roll holder and upper roll.
3. Tighten the upper shaft retaining screw to retain the upper roll on the upper shaft.
4. Lubricate upper roll bearing with a No. 2EP lithium-based grease. Refer to the "Maintenance" section for additional information.

## LOWER ROLL INSTALLATION

Clean the main shaft and lower roll bore to remove any dirt before installation of the lower roll. **NOTE:** To aid in removing the lower roll at a later time, apply a thin film of oil or grease (anti-seize lubricant) to the main shaft before installing the lower roll.



1. Slide the desired size lower roll fully onto main shaft with the marked side facing outward.
2. Tighten the lower roll retaining nut completely to retain the lower roll on the main shaft.

## MAINTENANCE

### WARNING

- Always disconnect the tool from the electrical source before making any tool adjustments.

Accidental startup of tool may result in serious personal injury.

Prior to the start of each shift, verify that the tool and roll sets are clean. Lubricate the tool at the grease ports.

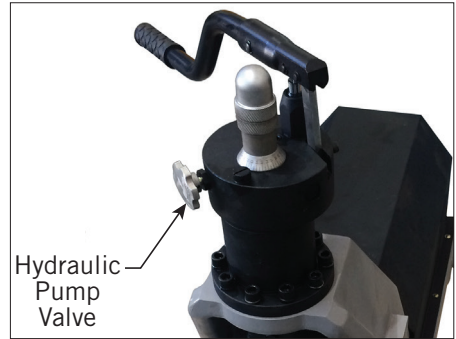
Always lubricate upper roll bearings and main shaft bearings when rolls are changed by utilizing the grease ports. Use a No. 2EP lithium-based grease.

On a monthly basis, lubricate the gear motor with a spray-type, heavy-duty open gear lubricant.

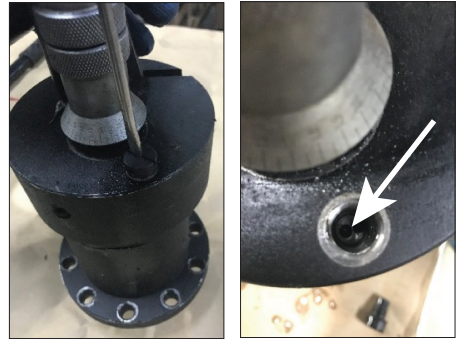
### HYDRAULIC SYSTEM

The level of hydraulic fluid should be checked before operation and **must** be checked several times per year, especially if the hydraulic pump is not operating properly. Use an ISO Viscosity Grade 22 oil for the hydraulic pump. The level of the oil should be no higher than the inlet hole when the hydraulic pump valve is released.

### Fill Hydraulic System

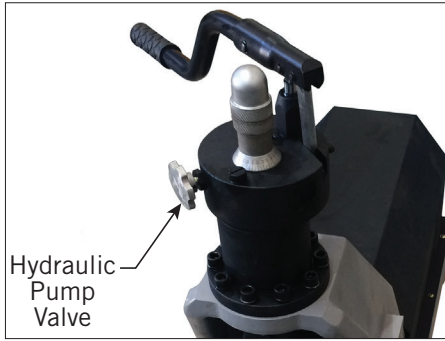


1. Open the hydraulic pump valve by turning the knob counterclockwise.



2. Loosen the reservoir cap and put it aside. Fill with oil until the oil level comes close to the inlet hole.

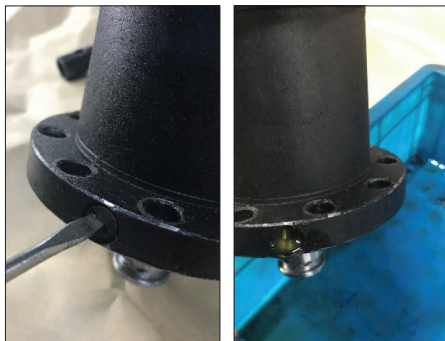
**Drain Hydraulic System**



1. Open the hydraulic pump valve by turning the knob counterclockwise.

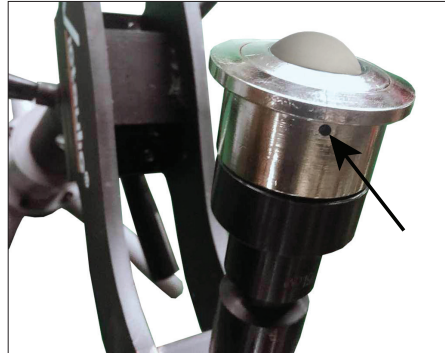


2. Remove the bolts supporting the cylinder.



3. Remove the plug at the bottom of the cylinder. Drain the oil in the tank.

**PS3212 PIPE STAND**



Regular lubrication is required for the PS3212 Pipe Stand. On a weekly basis, apply a light machine oil to the location shown above at each universal ball unit. Work the light machine oil in by rotating the universal ball units.

**PARTS ORDERING INFORMATION**

When ordering parts, the following information is required for Victaulic to process the order and send the correct part(s). Parts can be ordered by calling 1-800-PICK-VIC.

1. Tool Model Number
2. Tool Serial Number
3. Quantity, Item Number, Part Number, and Description
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

**TROUBLESHOOTING**

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>SOLUTION</b>
Pipe will not stay in grooving rolls.	Incorrect pipe positioning of long pipe.	Refer to "Long Pipe Lengths" section.
Pipe stops rotating during grooving.	Rust or dirt has built up on lower roll.	Remove accumulation from lower roll with stiff wire brush.
	Worn grooving rolls.	Inspect lower roll for worn knurls. Replace if worn.
	Motor has stalled due to excess pumping of the hydraulic pump handle.	Open the hydraulic pump valve to free the pipe, then close hydraulic pump valve. Continue grooving, pumping at a moderate rate.
	Circuit breaker has tripped or fuse has blown on electrical circuit supplying motor.	Reset breaker or replace fuse.
While grooving, loud squeaks echo through the pipe.	Incorrect pipe support positioning on long pipe. Pipe is "overtracking".	Refer to the "Long Pipe Lengths" section.
	Pipe end is not cut square.	Cut pipe end squarely.
	Pipe is rubbing excessively hard on the lower roll.	Remove pipe from tool and apply a film of grease to the face of the lower roll, as needed.
During grooving, loud thumps or bangs occur about once every revolution of the pipe.	Pipe has a pronounced weld seam.	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.
Tool won't groove pipe.	Hydraulic pump valve is not closed tightly.	Tighten the hydraulic pump valve.
	Hydraulic pump is low on oil.	Refer to the "Maintenance" section.
	Pipe is beyond tool's wall thickness capability.	Refer to the "Tool Rating and Roll Selection" section.

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

## TOOL RATING AND ROLL SELECTION

### ORIGINAL GROOVE SYSTEM (OGS) ROLLS FOR CARBON STEEL AND STAINLESS STEEL PIPE

Pipe Size		Dimensions - inches/millimeters				OGS Roll Set Part Numbers
Nominal Size inches or mm	Actual Outside Diameter inches/mm	Steel Pipe Wall Thickness †		Stainless Steel Pipe Wall Thickness		
		Minimum	Maximum	Minimum	Maximum	
2	2.375	0.065	0.154	0.154	0.154	Roll Set R902321203
	60.3	1.7	3.9	3.9	3.9	
2½	2.875	0.083	0.203	0.203	0.203	
	73.0	2.1	5.2	5.2	5.2	
3	3.500	0.083	0.216	0.216	0.216	
	88.9	2.1	5.5	5.5	5.5	
3½	4.000	0.083	0.226	0.226	0.226	
	101.6	2.1	5.7	5.7	5.7	
4	4.500	0.083	0.237	0.237	0.237	Roll Set R904321206
	114.3	2.1	6.0	6.0	6.0	
5	5.563	0.109	0.258	0.258	0.258	
	141.3	2.8	6.6	6.6	6.6	
6	6.625	0.109	0.280	0.280	0.280	
	168.3	2.8	7.1	7.1	7.1	
8	8.625	0.109	0.322	0.322	0.322	Roll Set R908321212
	219.1	2.8	8.2	8.2	8.2	
10	10.750	0.134	0.250	0.250	0.250	
	273.0	3.4	6.4	6.4	6.4	
12	12.750	0.156	0.250	0.250	0.250	
	323.9	4.0	6.4	6.4	6.4	

† Maximum ratings on steel are limited to pipe of a Brinell Hardness Number (BHN) of 150 BHN and less

**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	Maximum	
2	2.375	0.065	0.109	Roll Set RX02321203
	60.3	1.7	2.8	
2½	2.875	0.083	0.120	
	73.0	2.1	3.0	
3	3.500	0.083	0.120	Roll Set RX04321206
	88.9	2.1	3.0	
3½	4.000	0.083	0.120	
	101.6	2.1	3.0	
4	4.500	0.083	0.120	Roll Set RX08321212
	114.3	2.1	3.0	
5	5.563	0.109	0.134	
	141.3	2.8	3.4	
6	6.625	0.109	0.134	
	168.3	2.8	3.4	
8	8.625	0.109	0.148	
	219.1	2.8	3.8	
10	10.750	0.134	0.165	
	273.0	3.4	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

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; and 203.2 mm. Contact Victaulic for details.

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

Pipe Size		Dimensions - inches/millimeters				Roll Part Numbers
Nominal Size inches or mm	Actual Outside Diameter inches/mm	Aluminum Pipe Wall Thickness †		PVC Plastic Pipe Wall Thickness *		
		Minimum	Maximum	Minimum	Maximum	
2	2.375 60.3	0.065 1.7	0.154 3.9	0.154 3.9	0.154 3.9	Roll Set RP02321203
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	Roll Set RP04321206
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	
152.4mm	6.000 152.4	0.109 2.8	0.258 6.6	—	—	
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	Roll Set RP08321212
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	—	—	

† Alloys 6061-T4 and 6063-T4

\* PVC Type 1. Grade 1 – PVC 1120; PVC Type 1. Grade II – PVC 1220; PVC Type II. Grade I – PVC 2116

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; 159.0 mm; and 165.1 mm. Contact Victaulic for details.

A special lower roll is available for grooving 2-inch Schedule 80 PVC plastic pipe (part number RP02272L02). Contact Victaulic for details.



**ROLLS FOR CTS US STANDARD – ASTM DRAWN COPPER TUBING –  
COLOR-CODED COPPER**

Pipe Size		Dimensions – inches/millimeter		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	Roll Set RR02321206
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	Roll Set RR08321208

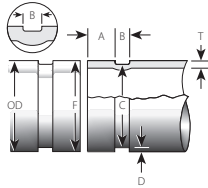
† ASTM B-306, Type DWV and ASTM B-88, Types K, L, M copper tubing  
The wall thicknesses listed are nominal minimum and maximum

## EXPLANATION OF CRITICAL 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.



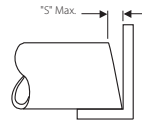
#### Standard Roll Groove

*Exaggerated for clarity*

**Pipe Outside Diameter** – 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.

#### The maximum allowable tolerance from square-cut pipe ends is:

$\frac{1}{32}$  inch/0.8mm for 2 – 3 ½-inch/60.3 – 101.6-mm sizes and  $\frac{1}{16}$  inch/1.6 mm for 4-inch/114.3-mm and larger sizes. This is measured from the true square line.



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. 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 and 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.

## EXPLANATION OF CRITICAL ROLL GROOVE DIMENSIONS (CONT.)

**“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 roll grooving.

NOTICE
<ul style="list-style-type: none"><li>• <b>Coatings that are applied to the interior surfaces of Victaulic grooved pipe couplings must not exceed 0.010 inch/0.25 mm. This includes bolt pad mating surfaces.</b></li><li>• <b>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.</b></li></ul>

**ROLL GROOVE SPECIFICATIONS**  
**STANDARD (OGS) ROLLS FOR CARBON STEEL, STAINLESS STEEL, ALUMINUM, AND PVC PIPE**

Pipe Size			Dimensions – inches/millimeters													
Nominal Size inches/mm	Actual Outside 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. "F"		
		Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.					
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	0.049	2.48
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	1.2	63.0
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	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	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	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	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	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	91.4
¾	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	0.078	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	2.0	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	0.078	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	2.0	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	0.078	4.60
100	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	2.0	116.8
4½	5.000	5.050	4.969	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	4.834	4.814	0.078	5.10
120	127.0	128.3	126.2	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	122.8	122.3	2.0	129.5
133.0 mm	5.250	5.303	5.219	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	5.084	5.064	0.078	5.35
	133.0	134.7	132.6	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	129.1	128.6	2.0	135.9
139.7 mm	5.500	5.556	5.469	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	5.334	5.314	0.078	5.60
	139.7	141.1	138.9	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	135.5	135.0	2.0	142.2
5	5.563	5.619	5.532	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	5.395	5.375	0.078	5.66
125	141.3	142.7	140.5	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	137.0	136.5	2.0	143.8
152.4 mm	6.000	6.056	5.969	0.625	0.656	0.594	0.344	0.375	0.313	0.344	0.375	0.313	5.830	5.808	0.078	6.10
	152.4	153.8	151.6	15.9	16.7	15.1	8.7	9.5	8.0	8.7	9.5	8.0	148.1	147.5	2.0	154.9

Table continued on the following page.



**STANDARD (OGS) ROLLS FOR CARBON STEEL, STAINLESS STEEL, ALUMINUM, AND PVC PIPE (CONTINUED)**

Pipe Size			Dimensions – inches/millimeters											
Nominal Size inches/ mm	Actual Outside Diameter inches/mm	Pipe Outside Diameter		Gasket Seat "A"			Groove Width "B"			Groove Diameter "C"		Groove Depth "D" (ref.)	Min. Allow. Wall Thick. "E"	Max. Allow. Flare Dia. "F"
		Max.	Min.	Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.			
159.0 mm	6.250 159.0	6.313 160.4	6.219 158.0	0.625 15.9	0.594 15.1	0.656 16.7	0.344 8.7	0.375 9.5	0.313 8.0	6.002 152.5	6.032 153.2	0.109 2.8	0.109 2.8	6.35 161.3
165.1 mm	6.500 165.1	6.563 166.7	6.469 164.3	0.625 15.9	0.594 15.1	0.656 16.7	0.344 8.7	0.375 9.5	0.313 8.0	6.330 160.2	6.330 160.8	0.085 2.2	0.078 2.0	6.60 167.6
6 150	6.625 168.3	6.688 169.9	6.594 167.5	0.625 15.9	0.594 15.1	0.656 16.7	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 2.0	6.73 170.9
203.2 mm	8.000 203.2	8.063 204.8	7.969 202.4	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	7.791 198.5	7.816 199.2	0.092 2.4	0.109 2.8	8.17 207.5
216.3 mm	8.515 216.3	8.578 217.9	8.484 215.5	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	8.331 211.6	8.331 211.0	0.092 2.4	0.109 2.8	8.69 220.7
8 200	8.625 219.1	8.688 220.7	8.594 218.3	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	8.441 214.4	8.416 213.8	0.092 2.4	0.109 2.8	8.80 223.5
254.0 mm	10.000 254.0	10.063 255.6	9.969 253.2	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	9.812 249.2	9.785 248.5	0.094 2.4	0.134 3.4	10.17 258.3
267.4 mm	10.528 267.4	10.591 269.0	10.497 266.6	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	10.340 262.0	10.340 262.0	0.094 2.4	0.134 3.4	10.70 271.8
10 250	10.750 273.0	10.813 274.7	10.719 272.3	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	10.562 267.6	10.535 267.6	0.094 2.4	0.134 3.4	10.92 277.4
304.8 mm	12.000 304.8	12.063 306.4	11.969 304.0	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	11.781 299.2	11.751 298.5	0.109 2.8	0.156 4.0	12.17 309.1
318.5 mm	12.539 318.5	12.602 320.1	12.508 317.7	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	12.321 313.0	12.291 312.2	0.109 2.8	0.156 4.0	12.71 322.8
12 300	12.750 323.9	12.813 325.5	12.719 323.1	0.750 19.1	0.719 18.3	0.781 19.8	0.469 11.9	0.500 12.7	0.438 11.1	12.531 318.3	12.501 317.5	0.109 2.8	0.156 4.0	12.92 328.2

**COPPER TUBING TO CTS US STANDARD – ASTM B-88 AND ASTM B-306**

Dimensions – inches/millimeters												
Nominal inches/ Actual mm	Copper Tubing 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.				
2	2.127	2.123	0.610	0.640	0.580	0.330	0.300	2.029	0.048	DWV *	2.220	
54.0	54.0	53.9	15.5	16.3	14.7	8.4	7.6	51.5	1.2		56.4	
2½	2.627	2.623	0.610	0.640	0.580	0.330	0.300	2.525	0.050		2.720	
66.7	66.7	66.6	15.5	16.3	14.7	8.4	7.6	64.1	1.2		69.1	
3	3.127	3.123	0.610	0.640	0.580	0.330	0.300	3.025	0.050	DWV *	3.220	
79.4	79.4	79.3	15.5	16.3	14.7	8.4	7.6	76.8	1.2		81.8	
4	4.127	4.123	0.610	0.640	0.580	0.330	0.300	4.019	0.053	DWV *	4.220	
104.8	104.8	104.7	15.5	16.3	14.7	8.4	7.6	102.1	1.4		107.2	
5	5.127	5.123	0.610	0.640	0.580	0.330	0.300	4.999	0.063	DWV *	5.220	
130.2	130.2	130.1	15.5	16.3	14.7	8.4	7.6	127.0	1.6		132.6	
6	6.127	6.123	0.610	0.640	0.580	0.330	0.300	5.999	0.063	DWV *	6.220	
155.6	155.6	155.5	15.5	16.3	14.7	8.4	7.6	152.3	1.6		158.0	
8	8.127	8.121	0.610	0.640	0.580	0.330	0.300	7.959	0.083	DWV *	8.220	
206.4	206.4	206.3	15.5	16.3	14.7	8.4	7.6	202.2	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 0.030 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.



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# RG3212 Roll Grooving Tool

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**UPDATED 10/2021**

**TM-RG3212 13505 REV C**

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