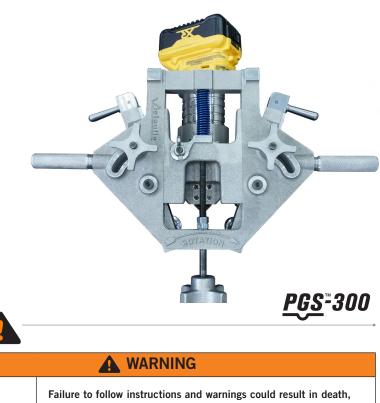
# **CPVC/PVC Cut Grooving Tool**





WARNING

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** 



TM-CG1100

# TABLE OF CONTENTS

Hazard Identification 4
Operator Safety Instructions 4
Introduction
Receiving The Tool6
Container Contents
Returning The Tool6
Power Requirements 7
Temperature Requirements
Battery and Charger Information7
Tool Nomenclature
Tool Dimensions and Specifications 9
Pipe Setup
Tool Setup
Setup for 2-4 inch Pipe11
2–4 Inch Arm Setup11
2–4 Inch "A" Dimension Set Up 12
2–4 Inch Cutter Bit Setup
Setup for 6–12 inch Pipe16
6–12 Inch Arm Setup16
6–12 Inch "A" Dimension Set Up 18
6–12 Inch Cutter Bit Setup18
Tool Mounting 22
Grooving Operation 24
Maintenance
Troubleshooting
PGS-300 Groove Dimensions for
CPVC and PVC Products 28
Cut Groove Specifications 30



#### 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.

# 

 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 CG1100 CPVC/PVC Cut Grooving Tool is designed for the sole purpose of cut grooving CPVC and PVC pipe. These instructions must be read and understood by each operator PRIOR to working with the tool. These instructions describe safe operation of the tool, including set up and maintenance. Each operator must become familiar with the tool's operations, applications, and limitations. Particular care should be given to reading and understanding the dangers, warnings, and cautions described throughout these operating instructions.

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

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.



REV\_C

# **DANGER**

- 1. Avoid using the tool in dangerous environments. Do not use the tool on sloped or uneven surfaces. Do not use the tool in wet locations. Keep the work area well lit. Allow sufficient space to operate the tool properly.
- 2. Disconnect battery before servicing the tool. Only authorized personnel should perform maintenance on the tool. Always disconnect the battery before servicing or adjusting the tool.
- Prevent accidental startups. Place the power switch in the "OFF" position before connecting the battery to the tool.

# **WARNING**

- 1. Prevent back injury. Always use proper 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, foot protection, and hearing protection.
- Keep hands and tools away from cutter bit and rollers during the grooving operation. Grooving area can crush or cut fingers and hands.
- 5. Do not reach inside the pipe ends during tool operation. Pipe edges can be sharp and can snag gloves, hands, and shirt sleeves.
- 6. Do not make any modifications to the tool. Do not remove any safety features or any components that would affect tool performance.

# **A** CAUTION

- 1. Inspect the equipment. Before using the tool, check all moveable parts for any obstructions. Ensure that tool components are installed and adjusted properly.
- 2. Stay alert. Do not operate the tool if you are drowsy from medication or fatigue.
- 3. Keep visitors, trainees, and observers away from the immediate work area. All visitors should be kept a safe distance from the equipment at all times.
- 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.
- 5. Secure the work, tool, and accessories. Ensure that the tool is stable. Refer to the "Tool Set Up" section.
- 6. Support the work. Pipe should be supported by a pipe stand that is secured to the floor or to the ground.
- 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.
- 8. Maintain tool with care. Keep the tool clean at all times to ensure proper and safe performance. Follow the instructions for servicing tool components.
- 9. Use only Victaulic replacement parts and accessories. Use of any other parts may result in a voided warranty, improper operation, and hazardous situations.
- **10.** 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.

The Victaulic CG1100 CPVC/PVC Cut Grooving Tool is a portable tool for cut grooving CPVC and PVC pipe to to be compatible with Victaulic grooved piping products. The standard CG1100 tool is equipped to groove 2–12 inch/DN50-DN300 CPVC and PVC pipe to Victaulic's proprietary PGS-300 groove specifications.

This tool should only be used to groove pipe with specifications that fall within the designated parameters.

# 

• This tool must be used ONLY for grooving pipe with specifications that fall within the designated parameters.

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

#### RECEIVING THE TOOL

The CG1100 Cut Grooving Tool is packed in a sturdy box that is designed for repeated shipping. Save the original container for return shipment of rental tools.

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

#### **CONTAINER CONTENTS**



Qty.	Description						
1	CG1100 Tool						
2	Handle						
1	Set of Tool Arms (2–4 inch)*						
1	Set of Tool Arms (6–12 inch)*						
2	Cutter Bit (2–4 inch)						
2	Cutter Bit (6–12 inch)						
1	Alignment Block (2–4 inch)						
1	Alignment Block (6–12 inch)						
2	Batteries						
1	Battery Charger						
1	Flathead Screwdriver						
1	<sup>1</sup> ‰-inch Wrench						
1	¾6-inch T-Handle Hex Key						
1	%4-inch T-Handle Hex Key						
1	Go/No-Go Groove Diameter Cable						
1	Operating and Maintenance Instructions Manual						
1	Motor Instructions Manual						

 $^{\ast}$  One set of tool arms will be installed on the tool. The second set will be included in the tool box.

#### RETURNING THE TOOL

When packing the tool for return shipping, ensure that the handles, bits, and alignment blocks are removed and secured. The bits must be returned to their original packaging to protect the blades. Hand tools must be secured separately.



#### POWER REQUIREMENTS



 Before performing any maintenance on the tool, disconnect the battery from the tool.

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

The CG1100 tool connects directly to a 20V Max, 6.0 Ah lithium ion battery pack for cordless operation.

A spare battery and charger are provided with the tool. Keep the spare battery charged for uninterrupted use of the CG1100 tool.

# WARNING

- Do not use batteries that have been damaged or modified.
- Do not substitute alternate batteries.

Contact Victaulic for additional batteries. Consult the battery manufacturer's documentation for additional information.

#### TEMPERATURE REQUIREMENTS FOR CHARGING BATTERIES

Do not charge batteries at ambient temperatures below  $40^{\circ}$  F/5°C or above  $105^{\circ}$  F/41°C.

# TEMPERATURE REQUIREMENTS FOR TOOL

Do not use or store the tool at ambient temperatures above  $105^{\circ}$  F/ $40^{\circ}$  C.

#### BATTERY AND CHARGER INFORMATION

Battery Charger Input (AC 120 volts, 50-60 Hz)

Battery Charger Output (DC 12 volts – 20 volts)

The battery must be charged completely before attempting to groove pipe. Only the battery charger supplied with the tool should be used. Refer to the "Temperature Requirements for Charging Batteries" section.

- **1a.** Plug the battery charger into a proper AC power source.
- 1b. Insert the battery into the battery charger.
- 1c. When a battery is inserted into the battery charger, the red indicator light will blink on and off. When charging is complete, the red indicator light will remain on continuously. Always refer to the instruction sheet supplied with the battery charger for complete information.
- 2. Remove the battery from the battery charger.
- **3.** After charging a battery, always unplug the battery charger from the AC power source.

If the battery is not charged sufficiently at the beginning of a grooving operation, or if the battery runs low during grooving operation, the tool may not complete the groove to specification. The battery must be charged or replaced with a fully-charged battery before grooving resumes.

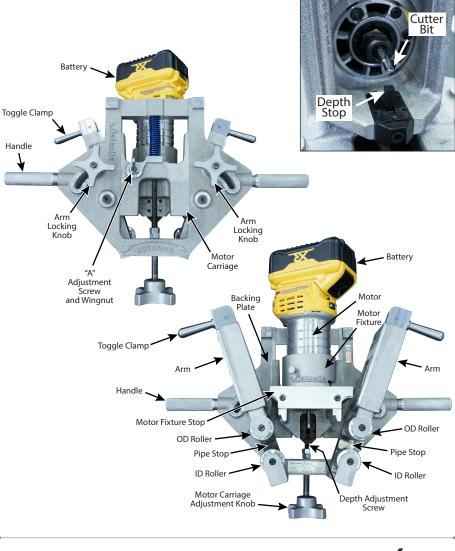
The battery must be removed when the tool is not in use.



#### TOOL NOMENCLATURE

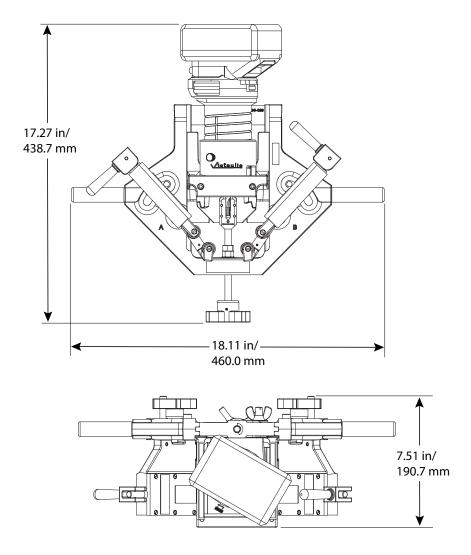
#### NOTICE

- 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.









Tool weight is 20.7 pounds/9.4 kilograms when using 2-4 inch arms, and 21.9 pounds/ 9.9 kilograms when using 6-12 inch arms. Tool weight includes the tool assembly, motor, handles, and arms.



#### PIPE SET UP

All coarse scale, dirt, and other foreign material must be removed from the interior and exterior surfaces of the pipe ends.

Plpe ends must be square cut from the centerline and have a square face. Chamfered or beveled pipe may only be used if it complies with the requirements on pages 28–30 of this manual.

Select a location for the grooving operation by taking into consideration the following factors (refer to "Tool Dimensions And Specifications" for overall dimensions):

- **a.** Adequate space to handle pipe lengths
- **b.** A firm and level surface for the pipe stand(s)
- **c.** Anchoring requirements for the pipe stand(s)

Pipe must be secured with a pipe stand or similar restraint to prevent movement. The system used must be capable of bearing the weight of the tool (see "Tool Dimensions and Specifications") in addition to the weight of the pipe being grooved.

Position the pipe to overhang the pipe stand by approximately 8 inches/203 mm so that the pipe stand will not obstruct the grooving process.

### TOOL SET UP



- \*
- DO NOT connect the battery until instructed otherwise.

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

The CG1100 tool is intended for field or shop set up.

1. Remove all components from the packaging, and ensure that all necessary items are included. Refer to the "Receiving the Tool" section. If any parts are missing, contact Victaulic.



**2.** While supporting the tool on a level surface, screw the handles into the sides of the tool until hand-tight. Do not overtighten.

**3.** Determine the pipe size to be grooved, then refer to the corresponding section for appropriate setup instructions.



#### **SETUP FOR 2–4 INCH PIPE**

#### 2-4 Inch Arm Set Up



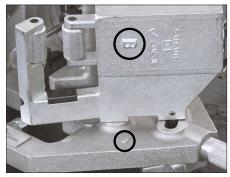
1. Unscrew and remove the arm locking knobs.



**2.** Loosen and remove the shoulder bolts using the provided hex key.



**3.** Pull the 6–12 inch arms straight out from the body of the tool. When not in use, store the arms in the provided tool box.





**4.** The 2–4 inch arms must be mounted on the tool in a specific orientation. Match the "A" or "B" etched on the arm with the corresponding letter on the tool body, then insert the arms into the tool body so that the matching letters face each other.



**5.** Replace and tighten the shoulder bolts to finger-tight.





**6.** Replace the arm locking knobs and screw down until the arms are secure against the body of the tool.



**7.** Tighten the shoulder bolts using the provided hex key.



**8.** Using the motor carriage adjustment knob, verify that the bit is positioned high enough to clear the pipe OD when mounting the tool. Rotate the knob counterclockwise to raise the bit and clockwise to lower the bit.

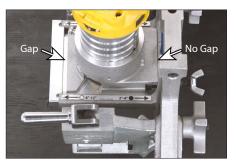
The bit should not touch the pipe during mounting or dismounting. This will prevent the bit from being chipped and protect the integrity of the gasket sealing surface. 2-4 Inch "A" Dimension Set Up



**1.** Loosen the wing nut on the "A" adjustment screw, located on the front of the tool.



**2.** Using a flat-head screwdriver, rotate the "A" adjustment screw counterclockwise to adjust the groove location.



**3.** Adjust the 'A' adjustment screw so that the back edge of the motor fixture is drawn firmly against the motor carriage with no gap. There should be a gap between the front edge of the motor fixture and the motor fixture stop.





**4.** Tighten the wing nut on the "A" adjustment screw, located on the front of the tool.

#### 2-4 Inch Cutter Bit Setup



**1.** Retrieve the 2" THRU 4" alignment block. Alignment blocks are etched with the pipe size in inches.

## A WARNING

- This tool uses a multi-blade cutter bit. Handle the bit with care.
- The cutter bit may be hot after grooving. Do NOT handle the bit immediately after grooving.

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

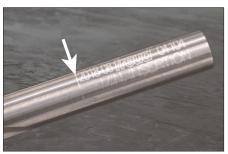


**2a.** Retrieve the 2–4 inch cutter bit from its packaging. Retain the packaging for future storage.

#### A WARNING

 The bits shipped with the CG1100 tool have a custom radius for grooving. Do not substitute off-the-shelf square bits. Always use bits provided by Victaulic.

Failure to follow these instructions will cause improper product assembly and joint failure, and could result in serious personal injury and property damage.



**2b.** Take note of the line etched on the base of the bit. This marks the minimum depth of insertion when installing the bit into the tool.

# NOTICE

- Do not lock the collet if no bit is installed. This can damage the collet.
- Do not lock the collet before the bit has been aligned, as shown in the following steps.





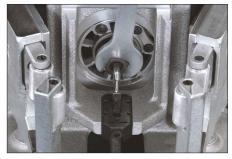


**3.** While pressing the spindle lock button, use the  $\frac{1}{16}$ -inch wrench to loosen the collet. Remove the 6–12 inch bit.



**4.** Insert the 2–4 inch cutter bit into the collet to just past the minimum insertion depth.





**5.** While pressing the spindle lock button, use the  $\frac{1}{16}$ -inch wrench to tighten the collet. Do not overtighten.



**6.** Verify that the cutter bit is inserted deeply enough for the etched line to be partially or fully covered by the collet.





**7.** Use the provided 5/4-inch T-Handle hex key to loosen the set screw. This will allow the depth stop to move.



8. Align the notch on the back of the alignment block with the depth stop behind the bit. Slide the alignment block over the depth stop until fully seated.



**9a.** Select the appropriate cutter bit location by matching the pipe size to the corresponding line on the alignment block.

### NOTICE

 Ensure that it is the TIP of the bit that is meeting the line on the alignment block, rather than a radiused corner or other edge of the bit. Visually confirm the accuracy of this adjustment from all angles.



**9b.** To set the depth stop, use the provided  $\frac{3}{6}$ -inch T-Handle hex key to turn the adjustment screw, which will move the depth stop back and forth. Align the tip of the cutting bit with the line on the alignment block that matches the pipe size to be grooved.

Turning the screw clockwise will produce a shallower groove and result in a larger "C" dimension. Turning the screw counterclockwise will produce a deeper groove and result in a smaller "C" dimension. One quarter turn of the depth adjustment screw will move the smaller indicator mark on the groove diameter cable by one complete width.





**9c.** Verify the alignment of the tip of the cutter bit with the appropriate line on the alignment block. The cutter bit pictured above is set for 2.5 to 4-inch pipe.

**10.** Remove the alignment block and store it in the provided tool box.



**11.** Hold the  $\frac{3}{6}$ -inch hex key in the adjustment screw to stop any movement and tighten the set screw to lock the depth stop in place.

Consult the motor manufacturer's documentation for further information.

#### SETUP FOR 6-12 INCH PIPE

#### 6–12 Inch Arm Set Up



1. Unscrew and remove the arm locking knobs.



**2.** Loosen and remove the shoulder bolts using the provided hex.



**3.** Pull the 2–4 inch arms straight out from the body of the tool. When not in use, store the arms in the provided tool box.





**4.** The 6–12 inch arms are interchangeable and may be mounted on the tool in either orientation. Insert the arms into the body of the tool.



**5.** Replace and tighten the shoulder bolts to finger-tight.



**6.** Replace the arm locking knobs and screw down until the arms are secure against the body of the tool.



**7.** Tighten the shoulder bolts using the provided hex key.



**8.** Using the motor carriage adjustment knob, verify that the bit is positioned high enough to clear the pipe OD when mounting the tool. Rotate the knob counterclockwise to raise the bit and clockwise to lower the bit.

The bit should not touch the pipe during mounting or dismounting. This will prevent the bit from being chipped and protect the integrity of the gasket sealing surface.



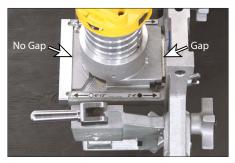
#### 6-12 Inch "A" Dimension Set Up



**1.** Loosen the wing nut on the "A" adjustment screw, located on the front of the tool.



**2.** Using a flat-head screwdriver, rotate the "A" adjustment screw clockwise to adjust the groove location.



**3.** Adjust the "A" adjustment screw so that the front edge of the motor fixture is drawn firmly against the motor fixture stop with no gap. There should be a gap between the back edge of the motor fixture and the motor carriage.



**4.** Tighten the wing nut on the "A" adjustment screw, located on the front of the tool.

6-12 Inch Cutter Bit Setup



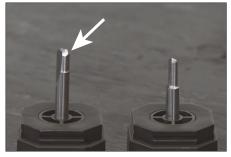
**1.** Retrieve the 6" THRU 12" alignment block. Alignment blocks are etched with the pipe size in inches.

#### WARNING

- This tool uses a multi-blade cutter bit. Handle the bit with care.
- The cutter bit may be hot after grooving. Do NOT handle the bit immediately after grooving.

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





**2a.** Retrieve the 6–12 inch cutter bit from its packaging. Retain the packaging for future storage.

#### 

• The bits shipped with the CG1100 tool have a custom radius for grooving. Do not substitute off-the-shelf square bits. Always use bits provided by Victaulic.

Failure to follow these instructions will cause improper product assembly and joint failure, and could result in serious personal injury and property damage.



**2b.** Take note of the line etched on the base of the bit. This marks the minimum depth of insertion when installing the bit into the tool.

# NOTICE

- Do not lock the collet if no bit is installed. This can damage the collet.
- Do not lock the collet before the bit has been aligned, as shown in the following steps.





**3.** While pressing the spindle lock button, use the 11/16-inch wrench to loosen the collet. Remove the 2–4 inch bit.



**4.** Insert the 6–12 inch cutter bit into the collet to just past the minimum insertion depth.







**7.** Use the provided  $\frac{1}{64}$ -inch T-handle hex key to loosen the set screw. This will allow the depth stop to move.



**8.** Align the notch on the back of the alignment block with the depth stop behind the bit. Slide the alignment block over the depth stop until fully seated.



**5.** While pressing the spindle lock button, use the  $\frac{1}{16}$ -inch wrench to tighten the collet. Do not overtighten.



**6.** Verify that the cutter bit is inserted deeply enough for the etched line to be partially or fully covered by the collet.





**9a.** Select the appropriate cutter bit location by matching the pipe size to the corresponding line on the alignment block.

#### NOTICE

• Ensure that it is the TIP of the bit that is meeting the line on the alignment block, rather than a radiused corner or other edge of the bit. Visually confirm the accuracy of this adjustment from all angles.



**9b.** To set the depth stop, use the provided  $\frac{3}{6}$ -inch T-Handle hex key to turn the adjustment screw, which will move the depth stop back and forth. Align the tip of the cutting bit with the line on the alignment block that matches the pipe size to be grooved.

Turning the screw clockwise will produce a shallower groove and result in a larger "C" dimension. Turning the screw counterclockwise will produce a deeper groove and result in a smaller "C" dimension. One quarter turn of the depth adjustment screw will move the smaller indicator mark on the groove diameter cable by one complete width.



**9c.** Verify the alignment of the tip of the cutter bit with the appropriate line on the alignment block. The cutter bit pictured above is set for 6-inch pipe.

**10.** Remove the alignment block and store it in the provided tool box.



11. Hold the  $\frac{3}{6}$ -inch hex key in the adjustment screw to stop any movement and tighten the set screw to lock the depth stop in place.

Consult the motor manufacturer's documentation for further information.



#### TOOL MOUNTING



• DO NOT connect the battery until instructed otherwise.

DANGER

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

**1.** If grooving for the first time, or if grooving a different diameter or wall thickness pipe than the previous groove, perform all steps in the "Tool Set Up" section to verify proper tool settings for the pipe to be grooved.

Always prepare a trial groove to ensure that all settings are appropriate and that the groove is within specification.



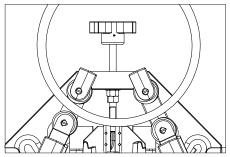
**2.** Using the motor carriage adjustment knob, verify that the bit is positioned high enough to clear the pipe OD when mounting the tool. Rotate the knob counterclockwise to raise the bit and clockwise to lower the bit.

The bit should not touch the pipe during mounting or dismounting. This will prevent the bit from being chipped and protect the integrity of the gasket sealing surface.



**3.** Loosen the arm locking knobs to allow room to mount the tool onto the pipe.





**4.** Lift the tool with both hands on the handles. The bit should face towards the pipe.

Push the tool onto the pipe, placing the pipe wall between the two sets of rollers on the tool arms. The tool is positioned correctly when the pipe stops meet the pipe edge.







DISENGAGED

ENGAGED





**5.** Put the toggle clamps in the engaged position, then twist until the OD and ID rollers are touching the pipe. Do not over-tighten.



**6.** Tighten the arm locking knobs to hand-tight. Do not over-tighten.

### 

• Do NOT leave the tool unsupported by the operator while mounted on pipe.

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



**7a.** Push the tool through one complete clockwise rotation to check for obstructions and to allow the tool to track onto the pipe. Verify that the tool moves freely throughout the entire rotation.



**7b.** If the tool tracks properly and the pipe stops retain contact with the pipe end, the arm setting is correct.

# **WARNING**

• The tool is designed to travel clockwise during the grooving process. Do NOT turn the tool counterclockwise.

Failure to follow this instruction will damage the groove, and could result in tool damage or personal injury.



#### **GROOVING OPERATION**

**1.** Mount the tool as directed in the "Tool Mounting" section.

#### **WARNING**

• Ensure that the motor switch is turned OFF before connecting the battery to the tool.

Failure to follow this instruction could result in personal injury.

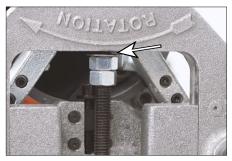


2. Connect the battery to the tool.



3. Turn the motor on.





**4.** Turn the motor carriage adjustment knob clockwise to raise the bit into the pipe until the depth stop rests on the pipe. When the depth stop rests on the pipe, the adjustment knob will turn easily and the washer will move away from the tool body, leaving a gap.



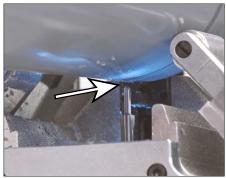
**5.** Grasp both handles and slowly push the tool through one complete clockwise rotation. At the end of the rotation, push the tool slightly past vertical to ensure that the groove is complete.





6. Turn the motor off.





7. Turn the motor carriage adjustment knob counterclockwise to remove the bit from the groove. The bit must clear the pipe when the tool is removed.



**8.** Put the toggle clamps in the disengaged position.

**9.** Ensure that the tool bit is clear of the pipe and cannot damage the pipe "'A" dimension (groove location) during removal.

Lift the tool with both hands on the handles to remove it from the pipe.

#### NOTICE

- When grooving additional pipe ends with the same specifications, mount the CG1100 tool onto the pipe and engage the handles without resetting the tool.
- After tool set-up is complete, reset is only necessary when changing pipe specifications.



**10.** After the pipe is grooved and the tool is removed, carefully clean chips from the groove with a soft cloth or compressed air.





**11.** Once the groove is clean, check the groove diameter ("C" dimension). A pipe diameter cable, supplied with the tool, is the recommended method for checking the "C" dimension.

Verify other groove dimensions by referring to the "Cut Groove Specifications" chart on page 30.

**12a.** If the "A" dimension does not meet Victaulic specifications, the motor fixture may be in the wrong position. Return to the appropriate ""A" Dimension Set Up" section to verify that the motor fixture is in the correct position, as noted in step 3.

If the "C" dimension does not meet Victaulic specifications, adjust to the position of the depth stop. On the diameter cable, note the distance the smaller indicator mark is away from the larger mark and whether the groove is too deep or too shallow. Follow the appropriate steps below.

**12b.** Insert the <sup>3</sup>/<sub>16</sub>-inch hex key into the adjustment screw and hold it in position.

**12c.** While holding the  $\frac{3}{6}$ -inch hex key in position, use the  $\frac{3}{6}$ -inch hex key to loosen the set screw. This will allow the depth stop to move.

**12d.** Turn the adjustment screw to correct the "C" dimension. Turning the screw clockwise will produce a shallower groove and result in a larger "C" dimension. Turning the screw counterclockwise will produce a deeper groove and result in a smaller "C" dimension. One quarter turn of the depth adjustment screw will move the smaller indicator mark on the groove diameter cable by one complete width.

**12e**. Once adjustment is complete, continue to hold the  $\frac{3}{6}$ -inch hex key in position, and tighten the set screw using the  $\frac{3}{6}$ -inch hex key.

**12f.** Perform another trial groove to verify that the correction has brought the "C" dimension to meet Victaulic specifications.

#### MAINTENANCE

# DANGER

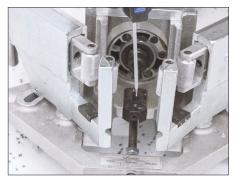
Before making any adjustments and before performing any maintenance:



- Turn the power switch to the OFF position.
- Remove the battery from the tool.

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

The tool must be cleaned after grooving each piece of pipe to remove chips and debris from all components. Pay particular attention to the rollers, where chips can build up and affect traction.



Clean chips from the tool with a soft cloth or compressed air.



#### TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION Adjust cutter bit position. Refer to the "Cutter Bit Set Up" section.			
"C" dimension too large.	Cutter bit set too shallow.				
"C" dimension too small.	Cutter bit set too deep.	Adjust cutter bit position. Refer to the "Cutter Bit Set Up" section.			
"A" dimension does not meet specifications.	Motor fixture not positioned correctly.	Adjust motor fixture position. Refer to the "A Dimension Set Up" section.			
	Foreign material is affecting motor fixture position.	Ensure that motor carriage surfaces are free of debris.			
Tool has difficulty tracking.	Foreign material is affecting roller grip.	Clean pipe and rollers.			
	Arm position is incorrect.	Adjust arm position. Refer to the "Arm Set Up" section.			
	Tool is clamped too tightly.	Adjust tool mounting. Refer to the "Tool Mounting" section.			
Tool bit chatters.	Tool bit is loose or overextended.	Tighten tool bit, or insert tool bit deeper into the collet.			
	Tool bit is damaged.	Replace tool bit.			
	Cutting speed is too fast.	Adjust cutting speed.			
	Rollers are too loose on the pipe.	Adjust rollers.			
Excessive tool bit wear.	Scale or other foreign material is present on the pipe.	Clean pipe to remove foreign material.			
	Cutting speed is too fast.	Adjust cutting speed. Do not force the tool.			
Rough surface finish.	Tool bit is chipped or dull.	Replace tool bit.			
	Cutting speed is incorrect.	Adjust cutting speed.			
Improper groove depth.	Groove bit position not set correctly.	Adjust groove bit position.			
	Foreign material caught between depth stop and pipe.	Clean depth stop and rollers to remove foreign material.			

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

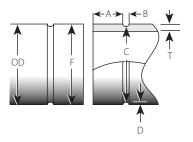


#### PGS-300 GROOVE DIMENSIONS FOR CPVC AND PVC PRODUCTS

#### WARNING

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

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

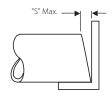


PGS-300 GROOVE

Illustration is exaggerated for clarity

**Pipe Outside Diameter – Nominal Pipe Size (C-ASTM F441)** – The average pipe outside diameter must not vary from the specifications listed in the tables on the following pages. Maximum allowable pipe ovality shall comply with the requirements of C-ASTM F441. Greater variations between the major and minor diameters will result in difficult coupling assembly.

For CPVC/PVC pipe, the maximum allowable tolerance from square-cut pipe ends is: 3/100 inch/0.8 mm for 3/4 to 3 1/2-inch/20 to 90-mm sizes, 9/200 inch/1.1 mm for 4 to 6-inch/100 to 150-mm sizes, and 9/100 inch/1.5 mm for 8-inch/200-mm and larger sizes. This is measured from the true square line.



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



**"A" Dimension** – The "A" dimension, or the distance from the pipe end to the groove, identifies the gasket seating area. This area must be free from indentations, projections, 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 must be concentric with the OD for proper coupling fit. The groove must be of uniform depth for the entire pipe circumference.

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

**"T" Dimension** – The "T" dimension is the lightest grade (minimum nominal wall thickness) of pipe that is suitable for grooving.

# NOTICE

 Coatings that are applied to the interior surfaces of Victaulic grooved and plain-end pipe couplings must not exceed 0.010 inch/0.25 mm. This includes the bolt pad mating surfaces.



# CUT GROOVE SPECIFICATIONS PGS-300 FOR CPVC/PVC PIPE

∞ ∙

> } 1

Dimensions – inches/millimeters	Min. Wall Thickness "T"		0.154 3.9	0.203 5.2	0.216 5.5	0.237 6.0	0.280 7.1	0.322 8.2	0.365 9.3	0.406 10.3
	Pipe End Chamfer "X" Max.		0.094 2.4	0.094 2.4	0.094 2.4	0.094 2.4	0.125 3.2	0.125 3.2	0.188 4.8	0.188 4.8
	Groove Depth "D" (ref.)		0.070 1.8	0.090 2.3	0.090 2.3	0.090 2.3	0.140 3.6	0.160 4.1	0.160 4.1	0.180 4.6
	Groove Diameter "C"	Min.	2.220 56.4	2.677 68.0	3.302 83.9	4.300 109.2	6.323 160.6	8.280 210.3	10.403 264.2	12.360 313.9
		Max.	2.235 56.8	2.695 68.5	3.320 84.3	4.320 109.7	6.345 161.2	8.305 211.0	10.430 264.9	12.390 314.7
	Groove Width "B"	Min.	0.183 4.6	0.183 4.6	0.183 4.6	0.183 4.6	0.245 6.2	0.245 6.2	0.245 6.2	0.245 6.2
		Max.	0.193 4.9	0.193 4.9	0.193 4.9	0.193 4.9	0.255 6.5	0.255 6.5	0.255 6.5	0.255 6.5
		Basic	0.188 4.8	0.188 4.8	0.188 4.8	0.188 4.8	0.250 6.4	0.250 6.4	0.250 6.4	0.250 6.4
	Gasket Seat "A"	Min.	0.860 21.8	0.860 21.8	0.860 21.8	0.860 21.8	0.985 25.0	0.985 25.0	0.985 25.0	0.985 25.0
		Max.	0.890 22.6	0.890 22.6	0.890 22.6	0.890 22.6	1.015 25.8	1.015 25.8	1.015 25.8	1.015 25.8
		Basic	0.875 22.2	0.875 22.2	0.875 22.2	0.875 22.2	1.000 25.4	1.000 25.4	1.000 25.4	1.000 25.4
	Pipe Outside Diameter	Min.	2.369 60.2	2.868 72.9	3.492 88.7	4.491 114.1	6.614 168.0	8.610 218.7	10.735 272.7	12.735 323.5
		Max.	2.381 60.5	2.882 73.2	3.508 89.1	4.509 114.5	6.636 168.6	8.640 219.5	10.765 273.4	12.765 324.2
		Basic	2.375 60.3	2.875 73.0	3.500 88.9	4.500 114.3	6.625 168.3	8.625 219.1	10.750 273.1	12.750 323.9
Nominal Size inches			2 DN50	21/2	3 DN80	4 DN100	6 DN150	8 DN200	10 DN250	12 DN300

#### TM-CG1100 / Operating and Maintenance Instructions Manual



This page intentionally blank



# **CPVC/PVC Cut Grooving Tool**

