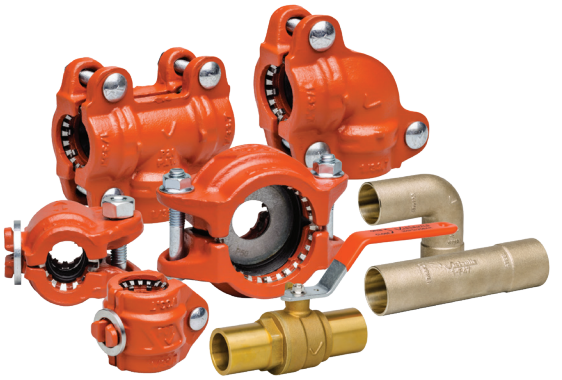
I-P100

FIELD INSTALLATION HANDBOOK

Victaulic® QuickVic™ SD Installation-Ready™ System



Revision D 10/2021

⚠ WARNING

- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, foot protection, and hearing protection.

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

Contact Victaulic with any questions regarding safe and proper installation of products featured in this handbook.
Visit victaulic.com for the most up-to-date information on Victaulic products.

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INTRODUCTION

This I-P100 Field Installation Handbook contains important information regarding pipe preparation and installation of Victaulic® QuickVic™ SD Installation-Ready™ System products for plain-end carbon steel and aluminum pipe.

Always follow good piping practices and local building codes and requirements. Specified pressures, temperatures, external loads, internal loads, performance standards, and tolerances shall never be exceeded.

Qualified engineers shall reference Victaulic publication 34.01 for additional information regarding special conditions, code requirements, and the use of safety factors.

Products featured in this handbook are designed for use only with pipe that is specified by a system designer/engineer or contractor and then prepared to Victaulic specifications. In addition, the products featured in this handbook are designed for use with Victaulic® QuickVic™ SD Installation-Ready™ System plain-end fittings and related plain-end components. **DO NOT use Victaulic® QuickVic™ SD Installation-Ready™ System products with grooved- or threaded-end pipe and/or fittings.**

Victaulic gaskets are designed to perform in a wide range of temperatures and operating conditions. As with all installations, there is a direct relationship between temperature, continuity of service, and gasket life. Always reference Victaulic publication 05.01 to determine gasket material grades that may be specified for each application.

In addition to this I-P100, Victaulic offers field installation handbooks, installation sheets, or installation tags for mechanical piping products that join alternate piping materials or other dedicated groove profile technologies. These instructions are shipped with the applicable product and can be downloaded at victaulic.com.

SCAN QR CODE FOR ADDITIONAL FIELD INSTALLATION HANDBOOKS THAT VICTAULIC OFFERS

NOTICE

- **Victaulic maintains a policy of continuous product improvement. Therefore, Victaulic reserves the right to change product specifications, designs, and standard equipment without notice and without incurring obligation.**
- **VICTAULIC IS NOT RESPONSIBLE FOR SYSTEM DESIGN, NOR DOES THE COMPANY ASSUME ANY RESPONSIBILITY FOR SYSTEMS THAT ARE DESIGNED IMPROPERLY.**
- **This handbook is not intended to be a substitute for competent, professional engineering/piping system design and installation, which are prerequisites for any product application.**
- **This handbook is intended for use only by professional piping system designers, engineers, and installers.**
- **The information published in this handbook and other Victaulic literature supersedes all previously published information.**
- **Drawings and/or pictures in this manual may be exaggerated for clarity.**
- **The field installation handbook contains trademarks, copyrights, and products with patented features that are the exclusive property of Victaulic.**
- **WHILE EVERY EFFORT HAS BEEN MADE TO ENSURE ITS ACCURACY, VICTAULIC, ITS SUBSIDIARIES, AND ITS AFFILIATED COMPANIES MAKE NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND REGARDING THE INFORMATION CONTAINED OR REFERENCED IN THIS HANDBOOK. ANYONE WHO USES THE INFORMATION CONTAINED HEREIN DOES SO AT THEIR RISK AND ASSUMES ANY LIABILITY THAT RESULTS FROM SUCH USE.**

California Customers – Proposition 65 Compliance:

WARNING: The painted surface of these products can expose you to chemicals, including BBP, which are known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.p65warnings.ca.gov.

WARNING: Brass components, even those manufactured from "low lead" or "no lead" brass, can expose you to trace amounts of chemicals, such as lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.p65warnings.ca.gov.

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 throughout this handbook, 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.**

Assembly Tool Requirements

Important Assembly Tool Information
¼-inch Impact Driver Usage Guidelines
¼-inch Impact Driver Selection

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IMPORTANT ASSEMBLY TOOL INFORMATION

QuickVic™ SD Installation-Ready™ couplings and fittings are designed with appropriate-sized bolting, which does not require high-output (torque) assembly tools to complete installation.

A standard socket wrench with a deep-well socket can be used to bring the bolt pads into metal-to-metal contact. Refer to the "Helpful Information" table included in each product's installation section for nut sizes and corresponding deep-well socket sizes.

When using a power tool for installation, use ONLY a ¼-inch impact driver. The ¼-inch impact driver's torque output shall not exceed the maximum allowable bolt torques specified in the table on the following page.

¼-INCH IMPACT DRIVER USAGE GUIDELINES

⚠ WARNING

- **DO NOT exceed the "Maximum Allowable Bolt Torque" values specified in the table on the following page for the applicable bolt/nut size.**

Failure to follow these instructions could cause joint failure, resulting in property damage, serious personal injury, or death.

Assemble QuickVic™ SD Installation-Ready™ couplings and fittings per the applicable installation section within the handbook.

Continue to tighten the nut(s) until the visual inspection requirements are achieved. Visual inspection of each joint is required for verification of proper assembly.

During the installation process, the installation torque shall not exceed the "Maximum Allowable Bolt Torque" values specified in the table on the following page for the applicable bolt/nut size. Conditions that may result in excessive bolt torque include, but are not limited to, the following:

- **Uneven tightening of hardware –** Nuts shall be tightened evenly per the sequence shown in the applicable product's installation section within this handbook.
- **Out-of-specification pipe end dimensions –** If proper visual assembly is not achieved, remove the coupling and confirm that the pipes' outside diameters are within Victaulic specifications. If pipe outside diameters are not within Victaulic specifications, new pipe ends shall be prepared.
- **Continued tightening of nut(s) after the visual inspection requirements are achieved –** DO NOT continue to tighten the nut(s) after the visual inspection requirements are achieved. Continuing to tighten the hardware after proper visual inspection requirements are achieved will cause joint failure, resulting in property damage, serious personal injury, or death. In addition, continued tightening may cause excessive stresses that compromise the long-term integrity of the bolts and may cause joint failure, resulting in property damage, serious personal injury, or death. Additional bolt torque will not provide a better installation; bolt torque that exceeds the "Maximum Allowable Bolt Torque" values specified in the table on the following page could damage or fracture the bolts and/or the coupling's bolt pads during installation.

- **Pinched gasket –** A pinched gasket could result in the inability to achieve proper visual inspection requirements. The coupling shall be disassembled and inspected to verify that the gasket is not pinched. If the gasket is pinched, a new coupling assembly shall be used.
- **Coupling was not assembled per the applicable installation instructions within this handbook –** Adherence to installation instructions will help to avoid the conditions covered in this section.

If you suspect that any hardware has been over-torqued, the entire coupling assembly shall be replaced immediately (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.).

Maximum Allowable Bolt Torque

Bolt/Nut Size		Maximum Allowable Bolt Torque*
inches	Metric	
⅜	M10	55 ft-lbs 75 N•m

Bolt/Nut Size		Maximum Allowable Bolt Torque*
inches	Metric	
7⁄16	M11	100 ft-lbs 136 N•m

*Maximum allowable bolt torque values have been derived from actual test data

¼-INCH IMPACT DRIVER SELECTION

Appropriate selection of a ¼-inch impact driver is required to ensure proper installation in accordance with the applicable product instructions within this handbook. Improper ¼-inch impact driver selection could cause coupling mis-assembly and damage, resulting in property damage, serious personal injury, or death.

To determine the suitability of a ¼-inch impact driver, perform trial installation assemblies with a standard socket wrench or a torque wrench. These trial coupling assemblies shall meet the visual installation requirements for the particular coupling or fitting. After visual installation requirements are achieved, measure the torque applied to each nut with a torque wrench. Using the torque value measured, select a ¼-inch impact driver with a torque output that conforms to the measured value but does not exceed the "Maximum Allowable Bolt Torque" values specified in the table on this page. Selection of a ¼-inch impact driver with an output torque considerably higher than the required installation torque could result in hardware and/or coupling damage due to the possibility of hardware over-torque.

For safe and proper use of ¼-inch impact drivers, always refer to the ¼-inch impact driver manufacturer's operating instructions. In addition, verify that proper grade sockets are being used for coupling installation.

⚠ WARNING

Failure to follow instructions for tightening hardware could result in:
- **Bolt damage or fracture**
- **Damaged or broken bolt pads or fractures to housings**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**

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Pipe Specifications and Preparation Requirements

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PIPE SPECIFICATIONS

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe in sizes NPS 2"|DN150 and smaller with Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

Scan QR Code for Application Note AN-001

QuickVic™ SD Installation-Ready™ products shall be used only for joining plain-end Schedules 5 – 80 carbon steel pipe (150 Brinell Hardness Number [BHN] maximum) and Schedule 40 aluminum (6061-T6) pipe in ½ – 2-inch sizes. Refer to the table below for the allowable pipe outside diameter dimensions that can be used with QuickVic™ SD Installation-Ready™ products. **NOTE:** QuickVic™ SD Installation-Ready™ products that are used on carbon steel pipe shall not be removed and reassembled on aluminum pipe, and vice versa. In addition, QuickVic™ SD Installation-Ready™ products shall not be used as a transition from carbon steel pipe to aluminum pipe. For complete pipe material and coating thickness specifications, application information, and pressure ratings, always reference Victaulic publication 34.01, which can be downloaded at victaulic.com.

Allowable Pipe Outside Diameter Dimensions

Nominal Diameter inches	Actual Pipe Outside Diameter inches/mm	Allowable Pipe Outside Diameter Dimensions inches/mm		
		Maximum for Carbon Steel and Aluminum Pipe	Minimum for Carbon Steel Pipe	Minimum for Aluminum Pipe
½	0.840 21.3	0.855 21.7	0.825 21.0	0.809 20.5
¾	1.050 26.9	1.065 27.1	1.035 26.3	1.019 25.9
1	1.315 33.7	1.330 33.8	1.300 33.0	1.284 32.6
1 ¼	1.660 42.4	1.675 42.5	1.645 41.8	1.629 41.4
1 ½	1.900 48.3	1.915 48.6	1.885 47.9	1.869 47.5
2	2.375 60.3	2.406 61.1	2.344 59.5	2.344 59.5

MINIMUM PIPE NIPPLE LENGTH REQUIREMENTS

⚠ WARNING

- **Pipe for use with QuickVic™ SD Installation-Ready™ products shall meet the minimum pipe-nipple length requirements specified in the table below.**

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

To ensure satisfactory performance of QuickVic™ SD Installation-Ready™ products, pipe shall be inserted to the appropriate depth. The following table provides the minimum pipe nipple lengths necessary for adequate insertion depth and clearance for back-to-back coupling/fitting installation. **NOTE:** Pipe nipple lengths shorter than 3⅜ inches/86 mm shall be manually marked (reference "Insertion Depth Requirements" table on page 12).

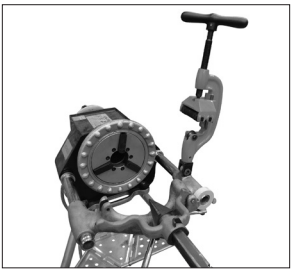
Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Minimum Pipe Nipple Length Required inches/mm
½ – 1 ¼	0.840 – 1.660 21.3 – 42.4	2⅜ 60
1 ½ – 2	1.900 – 2.375 48.3 – 60.3	3⅛ 79

PREFERRED PIPE PREPARATION METHOD USING THE VICTAULIC PC3110 CUT AND MARK TOOL

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**
- **Wear tight-fitting, cut-resistant gloves when preparing pipe for use with Victaulic® QuickVic™ SD Installation-Ready™ System Products.**

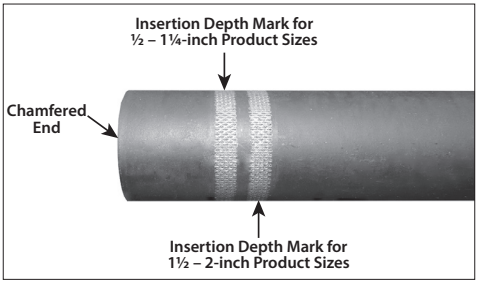
Failure to follow these instructions could result in serious personal injury and property damage.



The Victaulic PC3110 Cut and Mark Tool is a portable tool that operates with a power drive for preparing pipe to receive QuickVic™ SD Installation-Ready™ products. The PC3110 is the preferred method for preparing pipe, as it is specifically designed to cut, mark, chamfer, and deburr plain-end Schedules 5 – 80 carbon steel pipe (150 Brinell Hardness Number [BHN] maximum) and Schedule 40 aluminum (6061-T6) pipe in ½ – 2-inch sizes.

For complete setup and operating instructions, refer to the TM-PC3110, which can be downloaded at victaulic.com by scanning the link below.

SCAN QR CODE ABOVE FOR THE TM-PC3110 OPERATING MANUAL



The PC3110 automatically chamfers the pipe's outside diameter "OD" and produces two knurled marks on the pipe end at the required insertion depth.

The mark closest to the pipe end indicates the required insertion depth for ½ – 1¼-inch product sizes, as shown above.

The second mark indicates the required insertion depth for 1½ – 2-inch product sizes, as shown above.

ALTERNATE POWER DRIVE AND MANUAL PIPE PREPARATION METHODS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**
- **Wear tight-fitting, cut-resistant gloves when preparing pipe for use with Victaulic® QuickVic™ SD Installation-Ready™ System Products.**

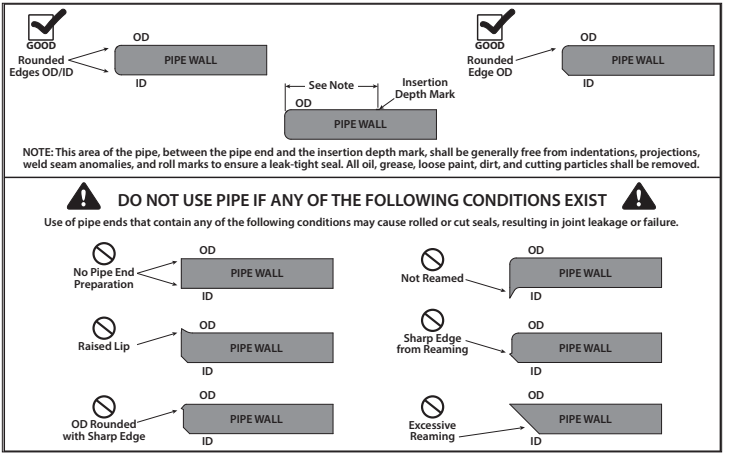
Failure to follow these instructions could result in serious personal injury and property damage.

- **Burrs and sharp edges shall be removed from the pipe ends in accordance with the instructions listed in this section.**

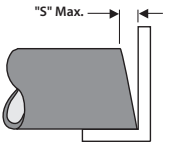
Failure to remove burrs and sharp edges from the pipe ends will result in joint leakage or failure and property damage.

Introduction

Regardless of the method chosen for cutting pipe, there are two alternate methods to prepare pipe ends for use with Victaulic QuickVic SD Installation-Ready System Products when the Victaulic PC3110 Cut and Mark Tool is not used: power drive pipe preparation method and manual pipe preparation method. The end result shall comply with the "GOOD" pipe end images shown below. **NOTE: If a roller pipe cutter is used, the outside diameter "OD" of the pipe shall be measured to verify that it is still within the specifications listed on page 6.**



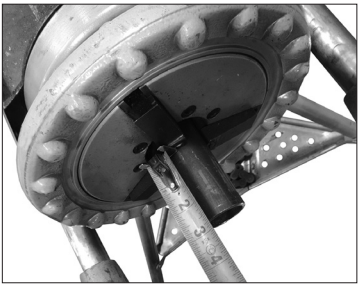
OD = Outside Diameter of Pipe End
ID = Inside Diameter of Pipe End

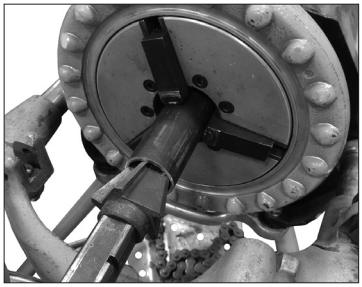


Before proceeding with the instructions on the following pages, verify that the pipe is square cut to within 0.030 inch/ 0.8 mm ("S" dimension shown).

Power Drive Pipe Preparation Method

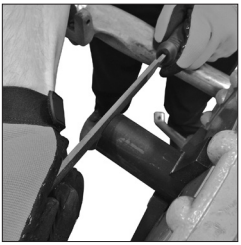
The following power drive pipe preparation method shall be used only for pipe nipples that are 6 inches/152 mm or longer. For pipe nipples shorter than 6 inches/152 mm, the manual pipe preparation method shall be followed to prevent jaw marks on the gasket sealing surface of the pipe end. For complete setup and operation requirements, always reference the power drive manufacturer's instructions.

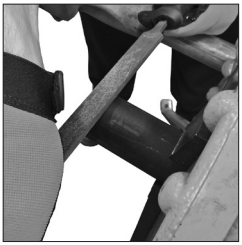




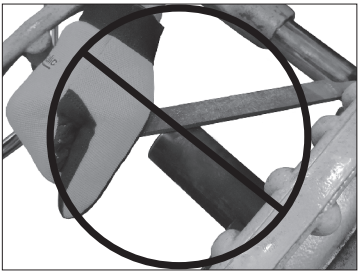
1. Install pipe into power drive. Verify that a minimum of 2 inches/51 mm is exposed in order to prevent jaw marks on the gasket sealing surface of the pipe end.

2. Ream the pipe's interior diameter (ID), if not completed previously.

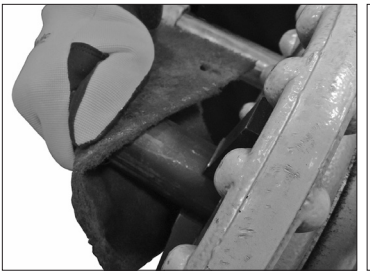


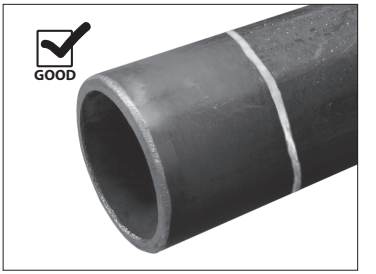


3. Turn power drive on. Using a flat-mill file, remove all sharp edges and burrs while creating the rounded-over pipe end detail that is shown on the previous page. **NOTE:** The file shall remain perpendicular to the pipe during this operation. Once completed, the pipe end shall not contain sharp edges or burrs (refer to photo of good pipe end on the following page). For additional clarification, scan the QR code on page 11 to access the pipe preparation video.



DO NOT hold the file at an angle, as shown. This will push burrs toward the pipe end, resulting in an unacceptable condition. For additional clarification, scan the QR code on page 11 to access the pipe preparation video.





4. While the power drive is running, use an abrasive pad or emery cloth to refine the rounded-over portion of the pipe end. Turn power drive off and inspect pipe end per the requirements shown on page 8.

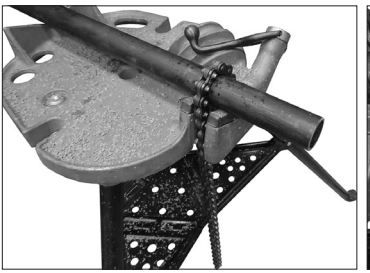
5. Measure and mark each pipe end by following the "Pipe Marking Requirements" section in this handbook. **Insertion depth shall be measured and marked on each pipe end for visual confirmation that the pipe is inserted fully into the coupling or fitting.**

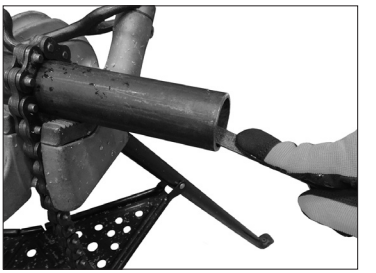
⚠ CAUTION

- **Always verify that burrs and sharp edges have been removed from the pipe, as instructed in this section.**

Failure to remove burrs and sharp edges could cause gasket damage, resulting in joint leakage and property damage.

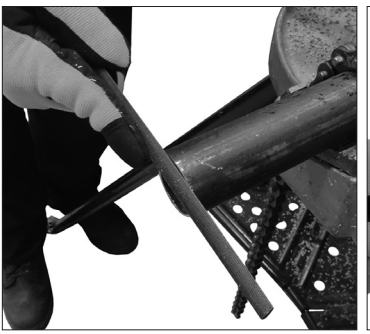
Manual Pipe Preparation Method

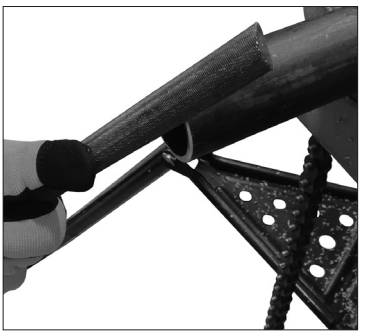




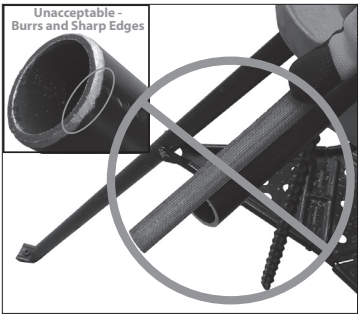
1. Clamp the pipe to a stable surface.

2. Ream the pipe's interior diameter (ID) using an appropriate metal removal technique.

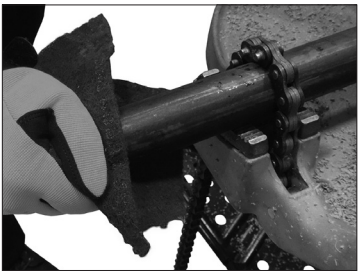


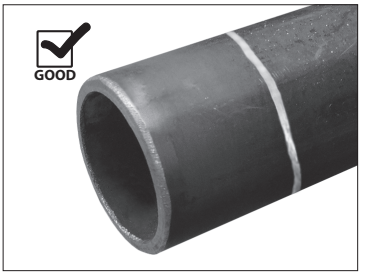


3. Using a flat-mill file, remove all sharp edges and burrs while creating the rounded-over pipe end detail that is shown on page 8. Once completed, the pipe end shall not contain sharp edges or burrs (refer to photo of good pipe on the following page). For additional clarification, scan the QR code on the following page to access the pipe preparation video.



DO NOT file toward the pipe end. This will push burrs toward the pipe end, resulting in an unacceptable condition. For additional clarification, scan the QR code below to access the pipe preparation video.





4. Using an abrasive pad or emery cloth, refine the rounded-over portion of the pipe end. Inspect pipe end per the requirements shown on page 8.

5. Measure and mark each pipe end by following the "Pipe Marking Requirements" section in this handbook. **Insertion depth shall be measured and marked on each pipe end for visual confirmation that the pipe is inserted fully into the coupling or fitting.**

SCAN QR CODE ABOVE FOR THE PIPE PREPARATION REFERENCE VIDEO

⚠ CAUTION

- **Always verify that burrs and sharp edges have been removed from the pipe, as instructed in this section.**

Failure to remove burrs and sharp edges could cause gasket damage, resulting in joint leakage and property damage.

MANUAL PIPE MARKING REQUIREMENTS

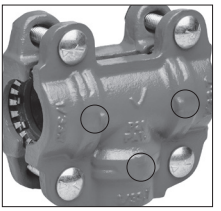
⚠ WARNING

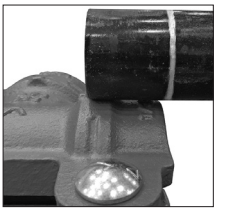
- **Insertion depth shall be measured and marked on each pipe end for visual confirmation that the pipe is inserted fully into the coupling or fitting.**

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

There are two methods for manually marking pipe ends when the Victaulic PC3110 Cut and Mark Tool is not used, or when pipe nipples shorter than 3⅜ inches/86 mm are used.

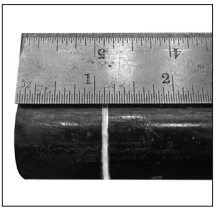
Using the Insertion Depth Indicators on an Elbow or Tee Fitting





Each elbow or tee fitting contains an insertion depth indicator at each pipe insertion location, as shown. Place the pipe end up against the raised portion of the fitting, and place marks around the pipe circumference with a marker or paint pen at this required insertion depth.

Using a Ruler or Measuring Tape



Refer to the table below for the insertion depth requirements. Using a ruler or measuring tape, measure back from the pipe end. Place marks around the pipe circumference with a marker or paint pen, as shown.

Insertion Depth Requirements

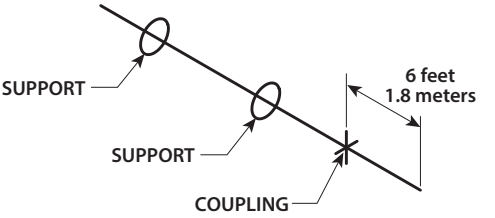
Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Insertion Depth Requirements inches/mm
½ – 1 ¼	0.840 – 1.660 21.3 – 42.4	1 ⅛ 29
1 ½ – 2	1.900 – 2.375 48.3 – 60.3	1 ½ 38

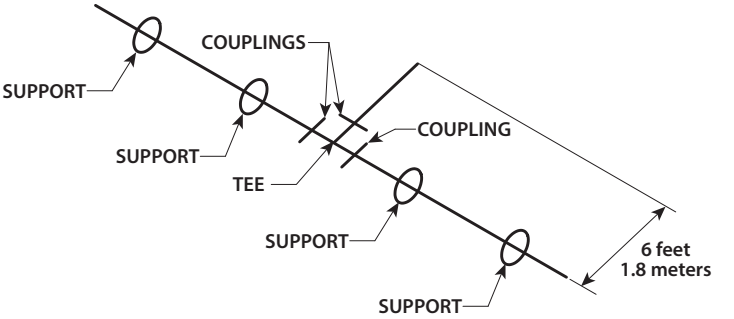
Piping Support Requirements

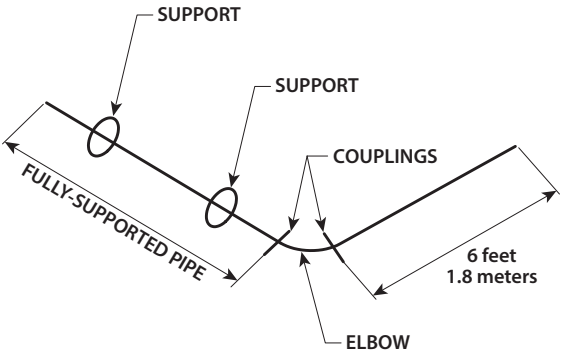
I-P100_13

PIPE SUPPORT REQUIREMENTS DURING CONSTRUCTION PHASE

QuickVic™ SD Installation-Ready™ products require pipe support during construction of the piping system to prevent coupling or joint damage, which can reduce or eliminate rigidity of the finished assembly. Listed below are maximum allowable unsupported overhung pipe lengths. Pipe lengths longer than what is listed below shall be supported per the table on the following page.







PIPING SUPPORT FOR SCHEDULES 5 – 80 CARBON STEEL PIPE AND SCHEDULE 40 ALUMINUM PIPE

⚠ WARNING

- **These values are not intended to be used as specifications for all installations, and they DO NOT apply where critical calculations are made or where there are concentrated loads between supports. The installer shall adhere to the design engineer's calculations for each project.**
- **DO NOT attach supports directly to couplings. Attach supports only to adjoining pipe and equipment.**
- **DO NOT use piping joined with QuickVic™ SD Installation-Ready™ products as a lift point. DO NOT climb or hang on pipe joined with these products.**
- **Victaulic is not responsible for system design, nor does the Company assume any responsibility for systems that are designed improperly.**
- **Piping support/design shall comply with any local code requirements and shall be verified by a system designer/engineer.**

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

Piping that is joined with QuickVic™ SD Installation-Ready™ products requires support to carry the weight of pipes and equipment. The support or hanging method shall eliminate stress on joints, piping, piping contents (fluids), and other components. In addition, the method of support shall allow for pipeline movement, where required, along with other design requirements, such as drainage.

The following tables list the suggested maximum span between pipe supports for horizontal, straight runs of pipe carrying water or similar liquids.

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Suggested Maximum Span Between Supports feet/meters			
		Water Service		Air Service	
		B31.1	B31.9	B31.1	B31.9
½	0.840 21.3	6 1.8	7 2.1	8 2.4	7 2.1
¾	1.050 26.9	7 2.1	8 2.4	9 2.7	8 2.4
1	1.315 33.7	7 2.1	9 2.7	9 2.7	9 2.7
1 ¼	1.660 42.4	7 2.1	11 3.4	9 2.7	11 3.4
1 ½	1.900 48.3	7 2.1	12 3.7	9 2.7	13 4.0
2	2.375 60.3	10 3.1	13 4.0	13 4.0	15 4.6

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Important Gasket and Lubricant Information

Victaulic®

GASKET SELECTION AND LUBRICANT REQUIREMENTS

⚠ CAUTION

- **To ensure gasket performance, always specify the material grade that is suitable for the intended service.**

Failure to select the proper material grade for the service may result in joint leakage and property damage.

During selection and verification of gasket material grades, always refer to Victaulic publication 05.01 for the Seal Selection Guide, which can be downloaded at victaulic.com. Do not subject gaskets to temperatures beyond the specified limits. Excessive temperatures will degrade gasket performance.

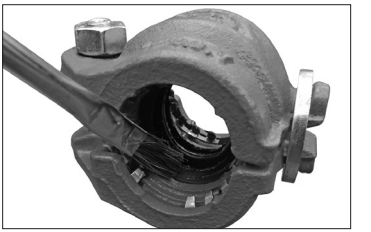
Gasket Color Code Reference

Grade	Compound	Color Code
EHP	EPDM	Red and Green Stripes
T	Nitrile	Orange Stripe

⚠ CAUTION

- **A thin coat of a compatible lubricant shall be applied on the pipe ends or gasket sealing lips to help prevent the gasket from pinching, rolling, or tearing during installation.**
- **DO NOT use excessive lubricant on the pipe ends or gasket sealing lips.**

Failure to use a compatible lubricant may cause gasket damage, resulting in joint leakage and property damage.



Lubrication of the pipe ends or gasket sealing lips with a thin coating of Victaulic Lubricant, or another compatible lubricant, is required to help prevent gasket pinching and to ease installation onto the pipe end. Refer to the “Lubricant Compatibility for Gaskets” table on the following page. Publication 05.02, Victaulic Lubricant Safety Data Sheet (SDS), can be downloaded at victaulic.com.

NOTICE

- **Prior to assembly, Victaulic recommends maintaining lubricant and gaskets at temperatures above 0°C/32°F to prevent the lubricant from freezing and to ease installation onto the pipe ends.**

Lubricant Compatibility for Gaskets

The following recommendations are for the gasket materials listed. Commercial lubricants may contain multiple ingredients. Always refer to the lubricant manufacturer's recommendations for material compatibility.

	Victaulic Lubricant	Soap-Based Solutions	Glycerin	Silicone Grease	Silicone Spray	Corn Oil	Soybean Oil	Hydrocarbon-Based Oils	Petroleum-Based Greases
Compatible with EPDM Gaskets?	Yes	Yes	Yes	Yes	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
Compatible with Nitrile Gaskets?	Yes	Yes	Yes	Yes	Not Recommended	Yes	Yes	Yes	Yes

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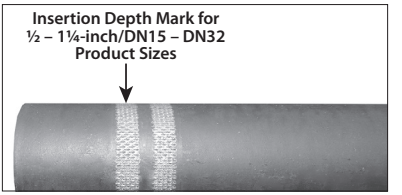
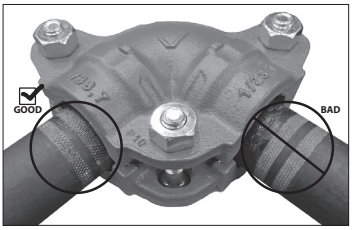
Installation and Inspection Overview

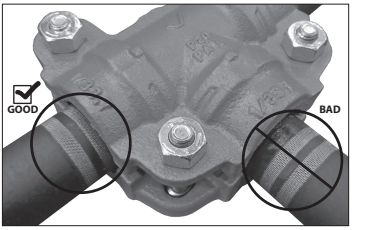
PIPE INSERTION REQUIREMENTS – ½ – 1 ¼-INCH PRODUCT SIZES MARKED WITH THE PC3110 CUT AND MARK TOOL (FIRST INSERTION MARK)

Prior to tightening any hardware, verify that the pipe marks indicate full insertion into the coupling or fitting, as shown in the examples below.





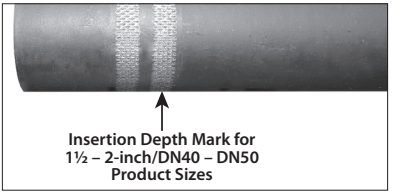
Example P10



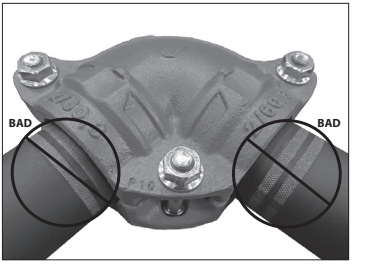
Example P20

PIPE INSERTION REQUIREMENTS – 1 ½ – 2-INCH PRODUCT SIZES MARKED WITH THE PC3110 CUT AND MARK TOOL (SECOND INSERTION MARK)

Prior to tightening any hardware, verify that the pipe marks indicate full insertion into the coupling or fitting, as shown in the examples below.



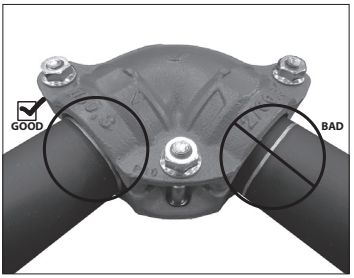
Example P10



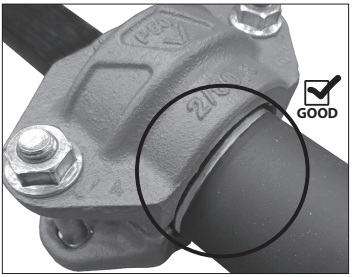
Example P10

PIPE INSERTION REQUIREMENTS – PIPE MARKED BY USING A MARKER OR PAINT PEN

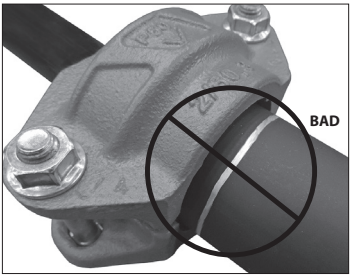
Prior to tightening any hardware, verify that the pipe marks indicate full insertion into the coupling or fitting, as shown in the examples below.



Example P10



Example P50



Example P50

⚠ WARNING

- **Always verify that pipe is inserted fully into the coupling or fitting before proceeding with installation.**

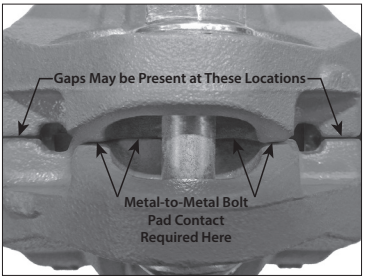
Failure to verify that pipe is inserted fully could cause joint failure, resulting in death or serious personal injury and property damage.

INSTALLATION VERIFICATION

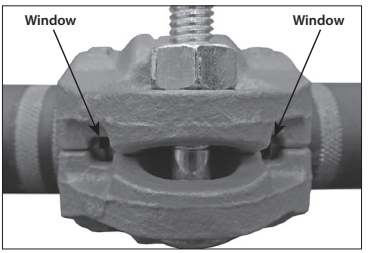
Prior to initial system test, verify that the following installation requirements have been achieved.

Verify that Pipe Marks Indicate Full Insertion Into the Coupling or Fitting – Refer to the applicable "Pipe Insertion Requirements" section on the previous pages for examples.

Verify that Metal-To-Metal Bolt Contact is Achieved at Each Bolt Pad – Refer to the applicable installation section of this manual for examples. If metal-to-metal bolt pad contact cannot be achieved, verify that the pipe tolerances are within Victaulic specifications. Contact Victaulic with any questions concerning installation.



Verify that Retainers are Installed Within the Housings – QuickVic™ SD Installation-Ready™ couplings and fittings contain "windows" that can be used to verify the presence of retainers after the product is installed on pipe. **If a retainer is not visible through a window after the product is installed on pipe:** If a retainer is missing, the coupling or fitting shall be removed so that a retainer can be installed (refer to the "Reuse Instructions" section of this handbook), or the coupling or fitting shall be removed and replaced completely.



⚠ WARNING

- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**

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

Patented "Leak-if-Not-Tightened" Technology – QuickVic™ SD Installation-Ready™ products are designed with a feature that will allow the joint to leak during an initial system test (following the first assembly of the product on pipe) if the hardware is not tightened adequately. If any leakage occurs during the initial system test, the system shall be depressurized and drained completely so that the installer can tighten the hardware to achieve metal-to-metal bolt pad contact or to correct any other misassembly condition.

No. P10 (90° Elbow) and No. P11 (45° Elbow) QuickVic™ SD Installation-Ready™ Fittings for Plain-End Carbon Steel and Aluminum Pipe

Installation Instructions

NO. P10

NO. P11

Victaulic®

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

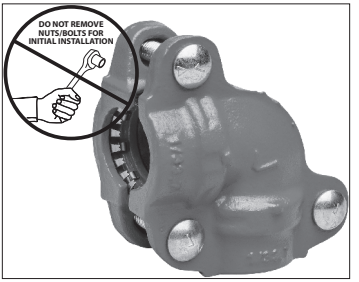
Failure to follow these instructions could result in death or serious personal injury and property damage.

Verify that all instructions in the previous sections of this handbook have been followed:

Assembly Tool Requirements
Pipe Specifications and Preparation Requirements
Piping Support Requirements
Important Gasket and Lubricant Information
Installation and Inspection Overview

NOTICE

- **The installation steps on the following pages feature photos of a No. P10 (90° Elbow). However, the same installation steps apply to a No. P11 (45° Elbow).**



DO NOT DISASSEMBLE THE NO. P10 OR P11 FOR INITIAL INSTALLATION: The No. P10 and P11 are designed so that the installer does not need to remove the nuts and bolts for initial installation. This facilitates assembly by allowing the installer to directly install the No. P10 or P11 onto marked plain-end pipe.

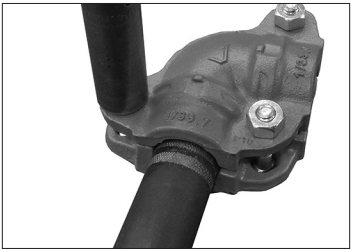
⚠ WARNING

- **Never leave a No. P10 or P11 partially assembled. ALWAYS TIGHTEN THE HARDWARE IMMEDIATELY, IN ACCORDANCE WITH THESE INSTRUCTIONS. A partially assembled No. P10 or P11 poses a drop or fall hazard during installation and a burst hazard during testing.**
- **Keep hands away from the opening of the No. P10 or P11 when attempting to insert marked plain-end pipe. Retainer teeth are sharp and may cause injury.**

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

INSTALLATION METHOD 1

1. INSERT FIRST PIPE END: Assemble the joint by inserting a marked plain-end pipe into one opening of the No. P10 or P11. Verify that the pipe is inserted until the mark indicates full insertion into the fitting, as shown. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.



1a. TIGHTEN NUT AT FIRST OUTSIDE LOCATION: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nut at the first outside location until the fitting is secured safely to the pipe, but do not tighten past initial metal-to-metal bolt pad contact. Verify that the pipe marks still indicate full insertion into the fitting and that the oval neck of the bolt seats properly in the bolt hole.

Refer to the "No. P10 and P11 Helpful Information" table on the following page and the "Assembly Tool Requirements" section.

OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

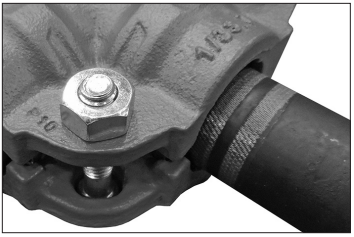
NOTICE

- **Never force installation. Pipe should insert easily into the fitting.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

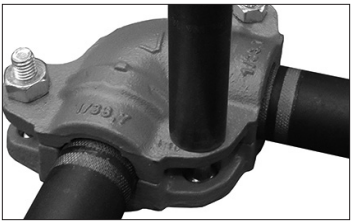
⚠ WARNING

- **At this point, the fitting is only partially installed.**
- **The fitting shall be treated as a potential drop hazard and shall not be left unattended.**

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

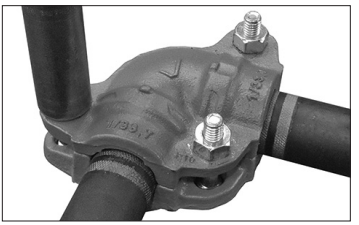


2. INSERT SECOND PIPE END: Insert the second marked plain-end pipe into the second opening of the fitting. Verify that the pipe is inserted until the mark indicates full insertion into the fitting. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.



2a. COMPLETELY TIGHTEN NUT AT INSIDE LOCATION: Completely tighten the nut at the inside location until metal-to-metal contact occurs at the bolt pad. Verify that the pipe marks still indicate full insertion into the fitting and that the oval neck of the bolt seats properly in the bolt hole.

3. COMPLETELY TIGHTEN NUT AT SECOND OUTSIDE LOCATION: Completely tighten the nut at the second outside location until metal-to-metal contact occurs at the bolt pad. Verify that the pipe marks still indicate full insertion into the fitting and that the oval neck of the bolt seats properly in the bolt hole.



4. COMPLETELY TIGHTEN NUT AT FIRST OUTSIDE LOCATION: Go back and completely tighten the nut at the first outside location to confirm metal-to-metal contact at the bolt pads.

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "No. P10 and P11 Helpful Information" table below and the "Assembly Tool Requirements" section.

NO. P10 AND P11 HELPFUL INFORMATION

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Bolt Size inches/Metric	Deep-Well Socket Size inches/mm	Maximum Allowable Bolt Torque*
½ – 1 ½	0.840 – 1.900 21.3 – 48.3	⅜ M10	11/16 17	55 ft-lbs 75 N•m
2	2.375 60.3	7/16 M11	11/16 17	100 ft-lbs 136 N•m

*Maximum allowable bolt torque values have been derived from actual test data

⚠ WARNING

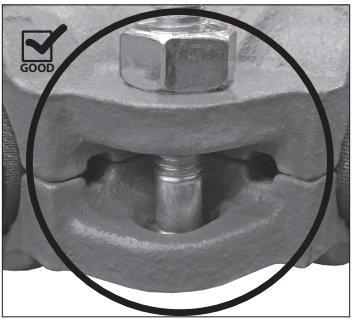
Nuts shall be tightened in the sequence shown on pages 27 – 28 until metal-to-metal contact occurs at the bolt pads.

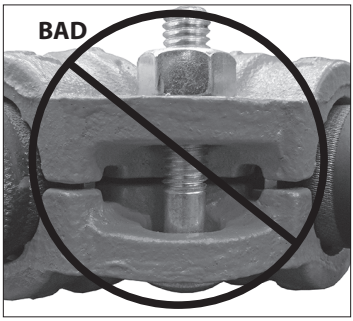
Failure to tighten nuts in the sequence shown will cause increased loading of the hardware, resulting in the following conditions:

- **Excessive bolt torque required to assemble the joint (incomplete assembly)**
- **Damage to the assembled joint (damaged or broken bolt pads or fractures to housings)**
- **Bolt damage or fracture**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved.

- **Failure to follow this instruction could result in the conditions listed above.**





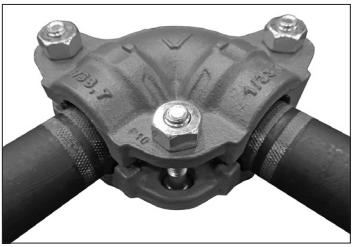
5. VERIFY THAT ALL NUTS ARE TIGHTENED APPROPRIATELY AND THAT METAL-TO-METAL CONTACT IS ACHIEVED AT ALL BOLT PADS: Visually inspect all bolt pads at each joint to verify that metal-to-metal contact is achieved.

⚠ WARNING

- **Visual inspection of each joint is required.**
- **Improperly assembled joints shall be corrected before the system is tested or placed into service.**
- **Any components that exhibit physical damage due to improper assembly shall be replaced before the system is tested or placed into service.**

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

INSTALLATION METHOD 2



1. When practical, both marked plain-end pipes may be inserted into the fitting prior to tightening. Verify that the mark on each pipe indicates full insertion into the fitting and that the oval neck of each bolt seats properly in the bolt hole. The hardware shall be tightened evenly by alternating bolt pad locations until the installation requirements listed in these instructions are achieved.

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No. P20 (Straight Tee) and No. P25 (Reducing Tee) QuickVic™ SD Installation-Ready™ Fittings for Plain-End Carbon Steel and Aluminum Pipe

Installation Instructions

NO. P20
1 – 2-INCH SIZES WITH
4-BOLT CONFIGURATION SHOWN

NO. P25
1 – 2-INCH SIZES WITH
4-BOLT CONFIGURATION SHOWN

Victaulic®

No. P20 (Straight Tee)
No. P25 (Reducing Tee)

QuickVic™ SD Installation-Ready™ Fittings for Plain-End Carbon Steel and Aluminum Pipe
½ – ¾-inch Run Sizes with 3-Bolt Configuration
1 – 2-inch Run Sizes with 4-Bolt Configuration

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

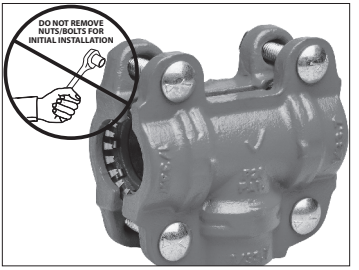
Failure to follow these instructions could result in death or serious personal injury and property damage.

Verify that all instructions in the previous sections of this handbook have been followed:

Assembly Tool Requirements
Pipe Specifications and Preparation Requirements
Piping Support Requirements
Important Gasket and Lubricant Information
Installation and Inspection Overview

NOTICE

- **The installation steps on the following pages feature photos of a No. P20 (Straight Tee). However, the same installation steps apply to a No. P25 (Reducing Tee).**



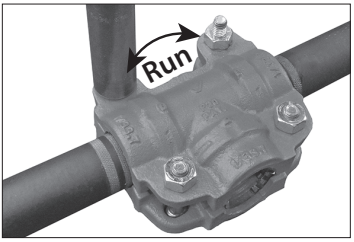
DO NOT DISASSEMBLE THE NO. P20 OR P25 FOR INITIAL INSTALLATION: The No. P20 and P25 are designed so that the installer does not need to remove the bolts and nuts for installation. This facilitates assembly by allowing the installer to directly install the No. P20 or P25 onto marked plain-end pipe.

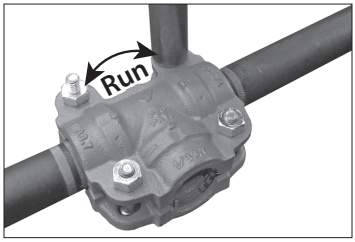
⚠ WARNING

- **Never leave a No. P20 or P25 partially assembled. ALWAYS TIGHTEN THE HARDWARE IMMEDIATELY, IN ACCORDANCE WITH THESE INSTRUCTIONS. A partially assembled No. P20 or P25 poses a drop or fall hazard during installation and a burst hazard during testing.**
- **Keep hands away from the opening of the No. P20 or P25 when attempting to insert marked plain-end pipe. Retainer teeth are sharp and may cause injury.**

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

INSTALLATION METHOD 1 – PIPE INSERTED INTO RUN ENDS FIRST





OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

1. INSERT PIPE INTO RUN ENDS: Insert a marked plain-end pipe into each run end of the fitting. Verify that each pipe is inserted until the mark indicates full insertion into the fitting. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.
For No. P25 Reducing Tees: Verify that the corresponding pipe size is inserted into the run ends.

1a. TIGHTEN NUT(S) ALONG THE RUN ENDS: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nut(s) along the run ends until the fitting is secured safely to the pipe, but do not tighten past initial metal-to-metal bolt pad contact. Verify that the pipe marks still indicate full insertion into the fitting and that the oval neck of the bolt(s) seats properly in the bolt hole. Refer to the "No. P20 and P25 Helpful Information" table on the following page and the "Assembly Tool Requirements" section.

NOTICE

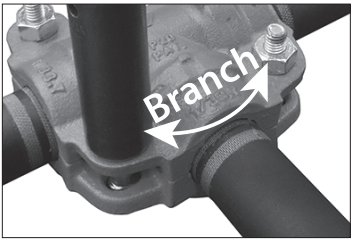
- **DO NOT insert only one marked plain-end pipe into the run end of the fitting and then tighten the hardware. Doing so will prevent insertion of the pipe into the second run end of the fitting.**
- **Never force installation. Pipe should insert easily into the fitting.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

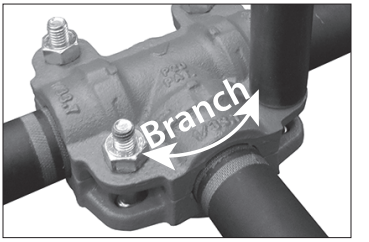
⚠ WARNING

- **At this point, the fitting is only partially installed.**
- **The fitting shall be treated as a potential drop hazard and shall not be left unattended.**

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

INSTALLATION METHOD 1 – PIPE INSERTED INTO RUN ENDS FIRST (CONTINUED)





OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

2. INSERT PIPE INTO BRANCH END: Insert the third marked plain-end pipe into the opening of the branch end. Verify that the pipe mark indicates full insertion into the fitting. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.
For No. P25 Reducing Tees: Verify that the corresponding pipe size is inserted into the branch end.

2a. TIGHTEN NUTS ALONG THE BRANCH END: Tighten the nuts along the branch end until metal-to-metal contact occurs at the bolt pads. Verify that the pipe mark still indicates full insertion into the fitting and that the oval neck of each bolt seats properly in the bolt hole.

NO. P20 AND P25 HELPFUL INFORMATION

RUN SIZE Nominal inches	Actual Pipe Outside Diameter inches/mm	Bolt Size inches/Metric	Deep-Well Socket Size inches/mm	Maximum Allowable Bolt Torque*
½ – 1 ½	0.840 – 1.900 21.3 – 48.3	⅜ M10	11⁄16 17	55 ft-lbs 75 N•m
2	2.375 60.3	7⁄16 M11	11⁄16 17	100 ft-lbs 136 N•m

*Maximum allowable bolt torque values have been derived from actual test data

⚠ WARNING

Nuts shall be tightened in the sequence shown on pages 33 – 35 until metal-to-metal contact occurs at the bolt pads.

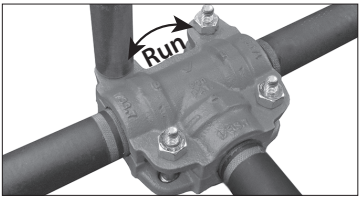
Failure to tighten nuts in the sequence shown will cause increased loading of the hardware, resulting in the following conditions:

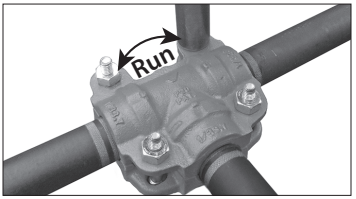
- **Excessive bolt torque required to assemble the joint (incomplete assembly)**
- **Damage to the assembled joint (damaged or broken bolt pads or fractures to housings)**
- **Bolt damage or fracture**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved.

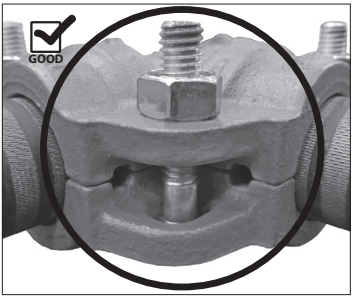
- **Failure to follow this instruction could result in the conditions listed above.**

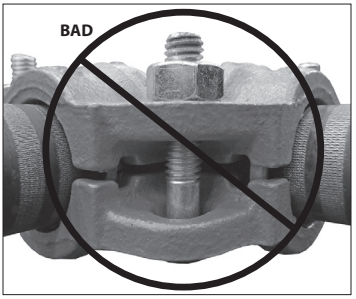
INSTALLATION METHOD 1 – PIPE INSERTED INTO RUN ENDS FIRST (CONTINUED)





3. COMPLETELY TIGHTEN NUT(S) ALONG THE RUN ENDS: Tighten the nut(s) along the run ends until metal-to-metal contact occurs at the bolt pads. DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "No. P20 and P25 Helpful Information" table on the previous page and the "Assembly Tool Requirements" section.





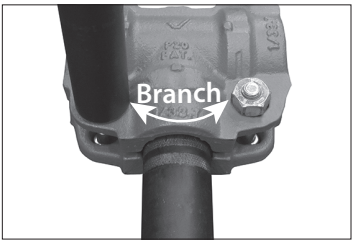
4. VERIFY THAT ALL NUTS ARE TIGHTENED APPROPRIATELY AND THAT METAL-TO-METAL CONTACT IS ACHIEVED AT ALL BOLT PADS: Visually inspect all bolt pads at each joint to verify that metal-to-metal contact is achieved.

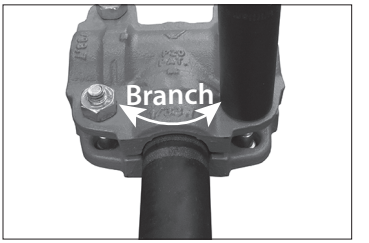
⚠ WARNING

- **Visual inspection of each joint is required.**
- **Improperly assembled joints shall be corrected before the system is tested or placed into service.**
- **Any components that exhibit physical damage due to improper assembly shall be replaced before the system is tested or placed into service.**

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

INSTALLATION METHOD 2 – PIPE INSERTED INTO BRANCH END FIRST





OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

1. INSERT PIPE INTO BRANCH END: Insert a marked plain-end pipe into the opening of the branch end. Verify that the pipe mark indicates full insertion into the fitting. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.

For No. P25 Reducing Tees: Verify that the corresponding pipe size is inserted into the branch end.

1a. TIGHTEN NUTS ALONG THE BRANCH END: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nuts along the branch end until the fitting is secured safely to the pipe, but do not tighten past initial metal-to-metal bolt pad contact. Verify that the pipe marks still indicate full insertion into the fitting and that the oval neck of the bolts seats properly in the bolt hole. Refer to the "No. P20 and P25 Helpful Information" table on the following page and the "Assembly Tool Requirements" section.

NOTICE

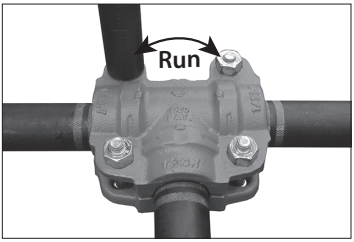
- **Never force installation. Pipe should insert easily into the fitting.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

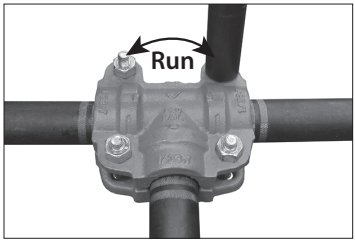
⚠ WARNING

- **At this point, the fitting is only partially installed.**
- **The fitting shall be treated as a potential drop hazard and shall not be left unattended.**

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

INSTALLATION METHOD 2 – PIPE INSERTED INTO BRANCH END FIRST (CONTINUED)





OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

2. INSERT PIPE INTO RUN ENDS: Insert a marked plain-end pipe into each run end of the fitting. Verify that each pipe is inserted until the mark indicates full insertion into the fitting. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23. **NOTE:** If the pipe ends cannot be inserted into the fitting, incrementally loosen the nut(s) that were tightened in step 1a just until all pipe ends can be inserted (refer to the warning on the previous page).

For No. P25 Reducing Tees: Verify that the corresponding pipe size is inserted into the run ends.

2a. TIGHTEN NUT(S) ALONG THE RUN ENDS: Tighten the nut(s) along the run ends until metal-to-metal contact occurs at the bolt pads. Verify that the pipe marks still indicate full insertion into the fitting and that the oval neck of the bolt(s) seat properly in the bolt hole.

NO. P20 AND P25 HELPFUL INFORMATION

RUN SIZE Nominal inches	Actual Pipe Outside Diameter inches/mm	Bolt Size inches/Metric	Deep-Well Socket Size inches/mm	Maximum Allowable Bolt Torque*
½ – 1 ½	0.840 – 1.900 21.3 – 48.3	⅜ M10	11⁄16 17	55 ft-lbs 75 N•m
2	2.375 60.3	7⁄16 M11	11⁄16 17	100 ft-lbs 136 N•m

*Maximum allowable bolt torque values have been derived from actual test data

⚠ WARNING

Nuts shall be tightened in the sequence shown on pages 36 – 37 until metal-to-metal contact occurs at the bolt pads.

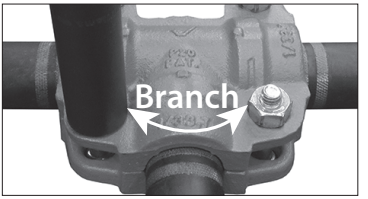
Failure to tighten nuts in the sequence shown will cause increased loading of the hardware, resulting in the following conditions:

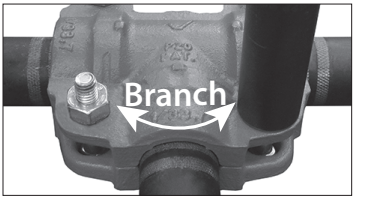
- **Excessive bolt torque required to assemble the joint (incomplete assembly)**
- **Damage to the assembled joint (damaged or broken bolt pads or fractures to housings)**
- **Bolt damage or fracture**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved.

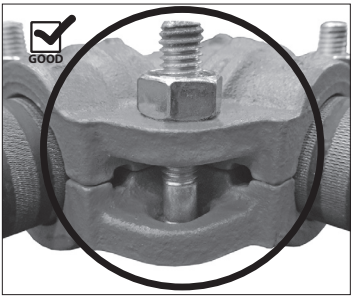
- **Failure to follow this instruction could result in the conditions listed above.**

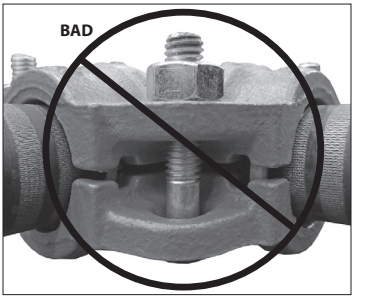
INSTALLATION METHOD 2 – PIPE INSERTED INTO BRANCH END FIRST (CONTINUED)





3. COMPLETELY TIGHTEN NUTS ALONG THE BRANCH END: Tighten the nuts along the branch end until metal-to-metal contact occurs at the bolt pads. DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "No. P20 and P25 Helpful Information" table on the previous page and the "Assembly Tool Requirements" section.





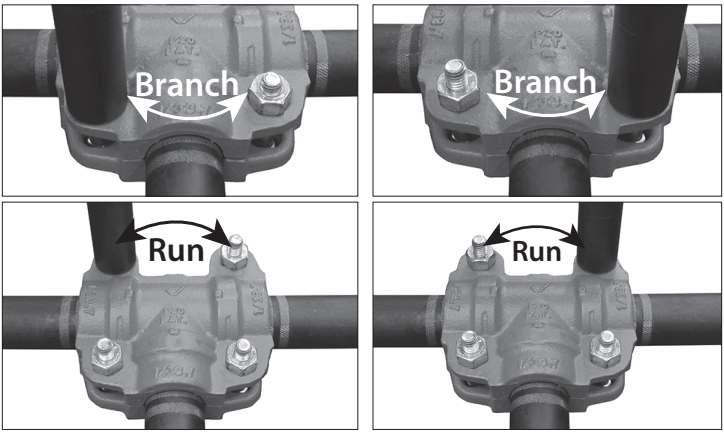
4. VERIFY THAT ALL NUTS ARE TIGHTENED APPROPRIATELY AND THAT METAL-TO-METAL CONTACT IS ACHIEVED AT ALL BOLT PADS: Visually inspect all bolt pads at each joint to verify that metal-to-metal contact is achieved.

⚠ WARNING

- **Visual inspection of each joint is required.**
- **Improperly assembled joints shall be corrected before the system is tested or placed into service.**
- **Any components that exhibit physical damage due to improper assembly shall be replaced before the system is tested or placed into service.**

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

INSTALLATION METHOD 3 – ALL PIPES INSERTED



OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

1. When practical, all marked plain-end pipes may be inserted into the fitting prior to tightening. Verify that the mark on each pipe indicates full insertion into the fitting and that the oval neck of each bolt seats properly in the bolt hole.
For No. P25 Reducing Tees: Verify that the corresponding pipe size is inserted into the run ends and the branch end.

NOTICE

- **Never force installation. Pipe should insert easily into the fitting.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

2. Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nuts along the branch end until metal-to-metal bolt pad contact occurs, but do not tighten past initial metal-to-metal bolt pad contact. Refer to the "No. P20 and P25 Helpful Information" table on page 37 and the "Assembly Tool Requirements" section.

3. Tighten nut(s) along run ends until metal-to-metal contact occurs at the bolt pads.

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "No. P20 and P25 Helpful Information" table on page 37 and the "Assembly Tool Requirements" section.

4. VERIFY THAT ALL NUTS ARE TIGHTENED APPROPRIATELY AND THAT METAL-TO-METAL CONTACT IS ACHIEVED AT ALL BOLT PADS: Visually inspect all bolt pads at each joint to verify that metal-to-metal contact is achieved, as shown in step 4 on the previous page.

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Style P07 QuickVic™ SD Installation-Ready™ Coupling for Plain-End Carbon Steel and Aluminum Pipe

Installation Instructions

Victaulic®

I-P100_41

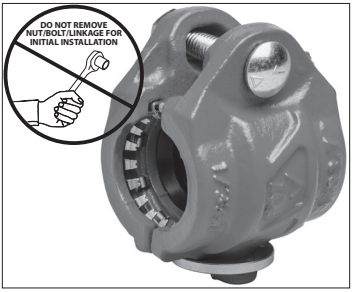
⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

Verify that all instructions in the previous sections of this handbook have been followed:

Assembly Tool Requirements
Pipe Specifications and Preparation Requirements
Piping Support Requirements
Important Gasket and Lubricant Information
Installation and Inspection Overview

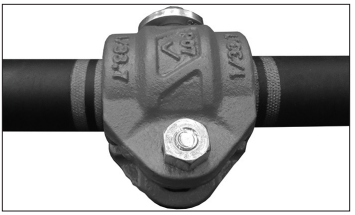


DO NOT DISASSEMBLE THE STYLE P07 FOR INITIAL INSTALLATION: The Style P07 is designed so that the installer does not need to remove the nut, bolt, or linkage for initial installation. This facilitates assembly by allowing the installer to directly install the Style P07 onto marked plain-end pipe.

⚠ WARNING

- **Never leave a Style P07 partially assembled. ALWAYS TIGHTEN THE HARDWARE IMMEDIATELY, IN ACCORDANCE WITH THESE INSTRUCTIONS. A partially assembled Style P07 poses a drop or fall hazard during installation and a burst hazard during testing.**
- **Keep hands away from the opening of the Style P07 when attempting to insert marked plain-end pipe. Retainer teeth are sharp and may cause injury.**

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



1. ASSEMBLE JOINT: Assemble the joint by inserting a marked plain-end pipe into each opening of the Style P07. Verify that the pipe is inserted until the mark indicates full insertion into the coupling, as shown. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.

NOTICE

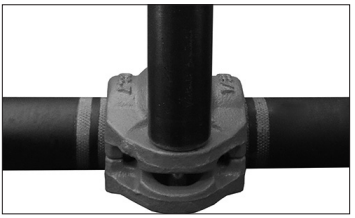
- **Never force installation. Pipe should insert easily into the coupling.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

⚠ WARNING

- **The nut shall be tightened until metal-to-metal contact occurs at the bolt pads.**
- **DO NOT continue to tighten the nut after metal-to-metal bolt pad contact is achieved.**

Failure to follow instructions for tightening hardware could result in:

- **Damage to the assembled joint (damaged or broken bolt pads or fractures to housings)**
- **Bolt damage or fracture**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**



2. TIGHTEN NUT: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nut until metal-to-metal contact occurs at the bolt pads. Verify that the pipe marks indicate full insertion into the coupling and that the oval neck of the bolt seats properly in the bolt hole.

DO NOT continue to tighten the nut after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "Style P07 Helpful Information" table below and the "Assembly Tool Requirements" section.

OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

STYLE P07 HELPFUL INFORMATION

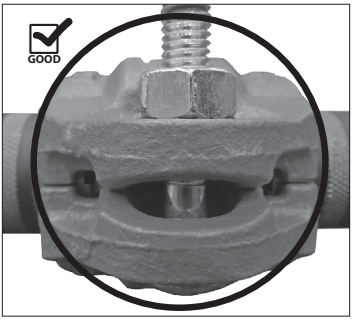
Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Bolt Size inches/Metric	Deep-Well Socket Size inches/mm	Maximum Allowable Bolt Torque*
½ – 1 ¼	0.840 – 1.660 21.3 – 42.4	⅜ M10	11⁄16 17	55 ft-lbs 75 N•m
1 ½ – 2	1.900 – 2.375 48.3 – 60.3	7⁄16 M11	11⁄16 17	100 ft-lbs 136 N•m

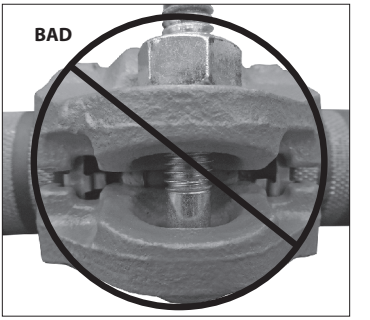
*Maximum allowable bolt torque values have been derived from actual test data

⚠ WARNING

- **Visual inspection of each joint is required.**
- **Improperly assembled joints shall be corrected before the system is tested or placed into service.**
- **Any components that exhibit physical damage due to improper assembly shall be replaced before the system is tested or placed into service.**

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

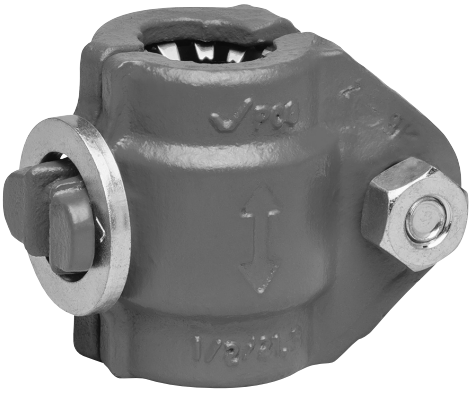




3. Visually inspect the bolt pads at each joint to verify that metal-to-metal contact is achieved in accordance with step 2.

Style P08 QuickVic™ SD Installation-Ready™ Slip Coupling for Plain-End Carbon Steel and Aluminum Pipe

Installation Instructions



Victaulic®

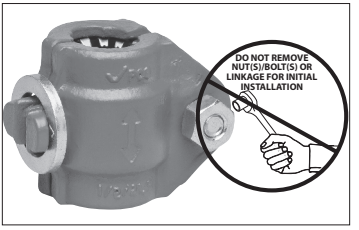
⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

Verify that all instructions in the previous sections of this handbook have been followed:

Assembly Tool Requirements
Pipe Specifications and Preparation Requirements
Piping Support Requirements
Important Gasket and Lubricant Information
Installation and Inspection Overview



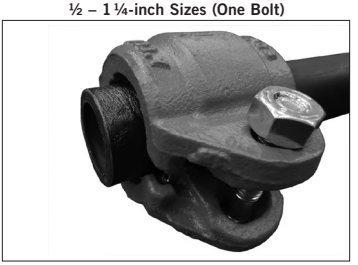
DO NOT DISASSEMBLE THE STYLE P08 FOR INITIAL INSTALLATION: The Style P08 is designed so that the installer does not need to remove the nut(s), bolt(s), or linkage for initial installation. This facilitates assembly by allowing the installer to directly install the Style P08 onto marked plain-end pipe.

⚠ WARNING

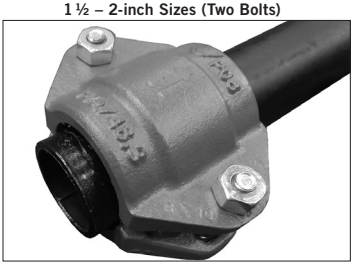
- **Never leave a Style P08 partially assembled. ALWAYS TIGHTEN THE HARDWARE IMMEDIATELY, IN ACCORDANCE WITH THESE INSTRUCTIONS. A partially assembled Style P08 poses a drop or fall hazard during installation and a burst hazard during testing.**
- **Keep hands away from the opening of the Style P08 when attempting to insert marked plain-end pipe. Retainer teeth are sharp and may cause injury.**

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

½ – 1 ¼-inch Sizes (One Bolt)



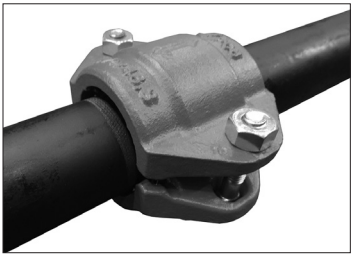
1 ½ – 2-inch Sizes (Two Bolts)



1. PUSH STYLE P08 OVER PIPE END: Apply an additional coat of Victaulic Lubricant or silicone lubricant to the face of the pipe. Push the Style P08 completely over one marked plain-end pipe.

½ – 1 ¼-inch Sizes (One Bolt)

1 ½ – 2-inch Sizes (Two Bolts)



2. ASSEMBLE JOINT: Align and bring the second marked plain-end pipe into position. Pull the Style P08 onto the other pipe end and verify that the pipe marks on both sides indicate full insertion into the coupling, as shown. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.

NOTICE

- **Never force installation. Pipe should insert easily into the coupling.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

Instructions continue on the following page

⚠ WARNING

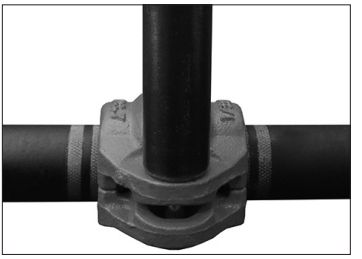
- **For ½ – 1 ¼-inch sizes the nut shall be tightened until metal-to-metal contact occurs at the bolt pads.**
- **For 1 ½ – 2-inch sizes, the nuts shall be tightened evenly by alternating sides, maintaining nearly uniform bolt pad gaps, until metal-to-metal contact occurs at the bolt pads.**

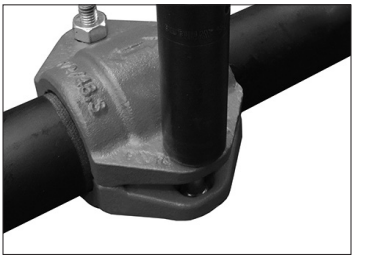
Failure to tighten nut(s) as instructed will cause increased loading of the hardware, resulting in the following conditions:

- **Excessive bolt torque required to assemble the joint (incomplete assembly)**
- **Damage to the assembled joint (damaged or broken bolt pads or fractures to housings)**
- **Bolt damage or fracture**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved.

- **Failure to follow this instruction could result in the conditions listed above.**





3a. FOR ½ – 1 ¼-INCH SIZES: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nut until metal-to-metal contact occurs at the bolt pads. Verify that the pipe marks indicate full insertion into the coupling and that the oval neck of the bolt seats properly in the bolt hole.

3b. FOR 1 ½ – 2-INCH SIZES: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nuts evenly by alternating sides, maintaining nearly uniform bolt pad gaps, until metal-to-metal contact occurs at the bolt pads. Verify that the pipe marks still indicate full insertion into the coupling and that the oval neck of each bolt seats properly in the bolt hole. **NOTE:** It is important to tighten the nuts evenly to prevent gasket pinching.

3c. DO NOT continue to tighten the nut(s) after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "Style P08 Helpful Information" table on the following page and the "Assembly Tool Requirements" section.

OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

STYLE P08 HELPFUL INFORMATION

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Bolt Size inches/Metric	Deep-Well Socket Size inches/mm	Maximum Allowable Bolt Torque*
½ – 1 ½	0.840 – 1.900 21.3 – 48.3	⅜ M10	11⁄16 17	55 ft-lbs 75 N•m
2	2.375 60.3	7⁄16 M11	11⁄16 17	100 ft-lbs 136 N•m

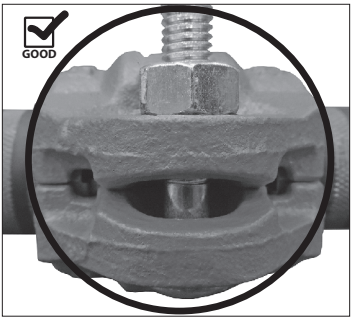
*Maximum allowable bolt torque values have been derived from actual test data

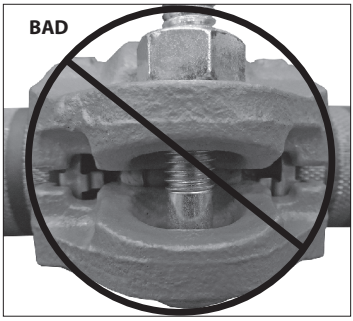
⚠ WARNING

- **Visual inspection of each joint is required.**
- **Improperly assembled joints shall be corrected before the system is tested or placed into service.**
- **Any components that exhibit physical damage due to improper assembly shall be replaced before the system is tested or placed into service.**

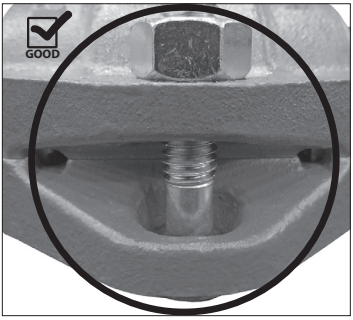
Failure to follow these instructions could cause joint failure, resulting in death or serious personal injury and property damage.

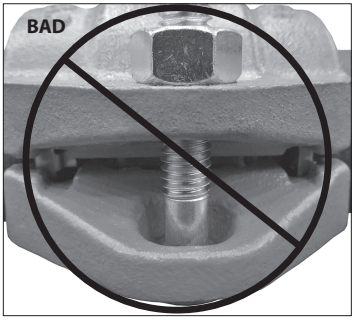
½ – 1 ¼-inch Sizes (One Bolt)





1 ½ – 2-inch Sizes (Two Bolts)





4. Visually inspect the bolt pads at each joint to verify that metal-to-metal contact is achieved in accordance with step 3a or 3b.

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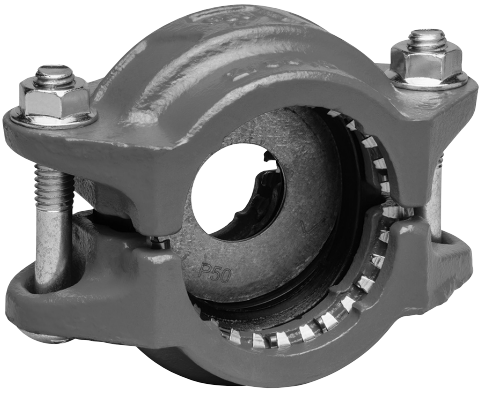
Style P50 QuickVic™ SD Installation-Ready™ Reducing Coupling for Plain-End Carbon Steel and Aluminum Pipe

Installation Instructions



Victaulic®

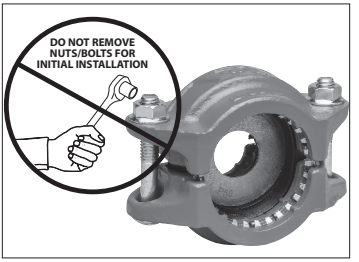
⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

Verify that all instructions in the previous sections of this handbook have been followed:

Assembly Tool Requirements
Pipe Specifications and Preparation Requirements
Piping Support Requirements
Important Gasket and Lubricant Information
Installation and Inspection Overview

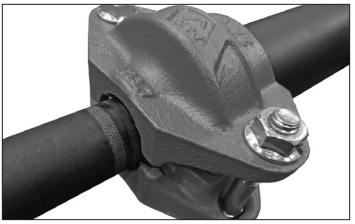


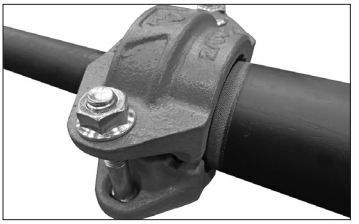
DO NOT DISASSEMBLE THE STYLE P50 FOR INITIAL INSTALLATION: The Style P50 is designed so that the installer does not need to remove the nuts and bolts for initial installation. This facilitates assembly by allowing the installer to directly install the Style P50 onto marked plain-end pipe.

⚠ WARNING

- **Never leave a Style P50 partially assembled. ALWAYS TIGHTEN THE HARDWARE IMMEDIATELY, IN ACCORDANCE WITH THESE INSTRUCTIONS. A partially assembled Style P50 poses a drop or fall hazard during installation and a burst hazard during testing.**
- **Keep hands away from the opening of the Style P50 when attempting to insert marked plain-end pipe. Retainer teeth are sharp and may cause injury.**

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





1. ASSEMBLE JOINT: Assemble the joint by inserting a marked plain-end pipe of each size into the corresponding opening of the Style P50. Verify that the pipe is inserted until the mark indicates full insertion into the coupling, as shown. Refer to the "Pipe Insertion Requirements" section on pages 22 – 23.

NOTICE

- **Never force installation. Pipe should insert easily into the coupling.**
- **If experiencing difficultly inserting the pipe, verify that the gasket is lubricated and seated properly within the housings, that the pipe ends are prepared in accordance with the "Pipe Specifications and Preparation Requirements" section of this handbook, and that the hardware is loose enough to accommodate pipe insertion.**

⚠ WARNING

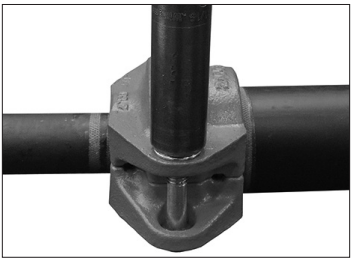
Nuts shall be tightened evenly by alternating sides, maintaining nearly uniform bolt pad gaps, until metal-to-metal contact occurs at the bolt pads.

Failure to tighten nuts evenly by alternating sides will cause increased loading of the hardware, resulting in the following conditions:

- **Excessive bolt torque required to assemble the joint (incomplete assembly)**
- **Damage to the assembled joint (damaged or broken bolt pads or fractures to housings)**
- **Bolt damage or fracture**
- **Joint leakage and property damage**
- **A negative impact on system integrity**
- **Personal injury or death**

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved.

- **Failure to follow this instruction could result in the conditions listed above.**



2. TIGHTEN NUTS: Using a ¼-inch impact driver or standard socket wrench with a deep-well socket, tighten the nuts evenly by alternating sides, maintaining nearly uniform bolt pad gaps, until metal-to-metal contact occurs at the bolt pads. Verify that the pipe marks still indicate full insertion into the coupling and that the oval neck of each bolt seats properly in the bolt hole. **NOTE:** It is important to tighten the nuts evenly to prevent gasket pinching.

DO NOT continue to tighten the nuts after metal-to-metal bolt pad contact is achieved. **If you suspect that any hardware has been over-tightened (as indicated by a bend in the bolt, bulging of the nut at the bolt pad interface, or damage to the bolt pad, etc.), the entire coupling assembly shall be replaced immediately.** Refer to the "Style P50 Helpful Information" table on the following page and the "Assembly Tool Requirements" section.

OVAL NECK OF BOLT SEATED PROPERLY

OVAL NECK OF BOLT NOT SEATED PROPERLY

STYLE P50 HELPFUL INFORMATION

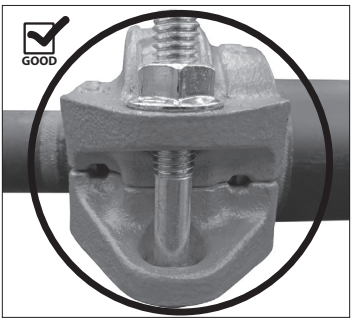
Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Bolt Size inches/Metric	Deep-Well Socket Size inches/mm	Maximum Allowable Bolt Torque*
½ – 1 ½	0.840 – 1.900 21.3 – 48.3	⅜ M10	11⁄16 17	55 ft-lbs 75 N•m
2	2.375 60.3	7⁄16 M11	11⁄16 17	100 ft-lbs 136 N•m

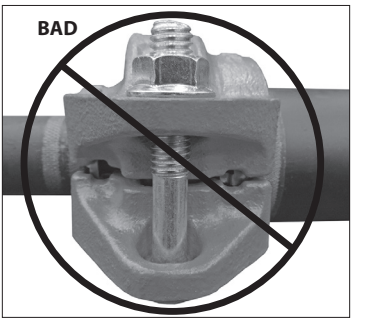
*Maximum allowable bolt torque values have been derived from actual test data

⚠ WARNING

- **Visual inspection of each joint is required.**
- **Improperly assembled joints shall be corrected before the system is tested or placed into service.**
- **Any components that exhibit physical damage due to improper assembly shall be replaced before the system is tested or placed into service.**

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





3. Visually inspect the bolt pads at each joint to verify that metal-to-metal contact is achieved in accordance with step 2.

No. P47 (Straight) and No. P97 (90° Elbow) Dielectric Adapters (Plain End x Sweat)

Installation Instructions

NO. P47

NO. P97

Victaulic®

No. P47 – Straight Dielectric Adapter (Plain End x Sweat)
No. P97 – 90° Elbow Dielectric Adapter (Plain End x Sweat)

⚠ WARNING

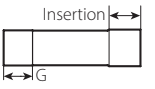
- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

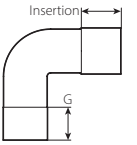
Failure to follow these instructions could result in death or serious personal injury and property damage.

Instructions for Sweating to "COPPER" Side of No. P47 or P97 Dielectric Adapters

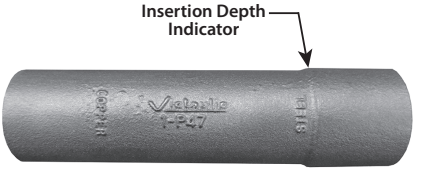
The "COPPER" side of No. P47 and P97 Dielectric Adapters shall be sweat to the copper tubing and allowed to cool to ambient temperature before making the connection to the Victaulic Plain-End, Installation-Ready™ System Product and carbon steel pipe. Refer to the table below for the sweat depths.

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	"G" Sweat Depth inches/mm	Insertion Depth inches/mm
½	0.840 21.3	0.50 13	1.125 29
¾	1.050 26.9	0.75 19	1.125 29
1	1.315 33.7	1.00 25	1.125 29
1 ¼	1.660 42.4	1.00 25	1.125 29





Instructions for Connecting to "STEEL" Side of No. P47 or P97 Dielectric Adapters



The instructions for the applicable coupling or fitting shall be followed for proper installation on the "STEEL" side of No. P47 and P97 Dielectric Adapters. **NOTE:** Any of the couplings and fittings featured in this handbook can be used to connect to the "STEEL" side of the No. P47 and P97 Dielectric Adapters. The dielectric adapter shall be inserted into the coupling or fitting up to the insertion depth indicator, as shown above. Refer to the table above for the insertion depth.

No. P40 (Male NPT x Plain End) and No. P80 (Female NPT x Plain End) Threaded Adapters

Installation Instructions

NO. P40

NO. P80

Victaulic®

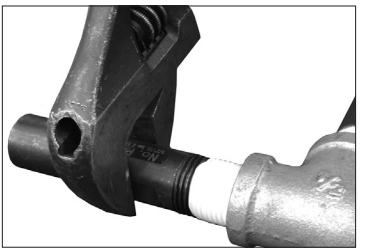
I-P100_57

No. P40 – Threaded Adapter (Male NPT x Plain End)

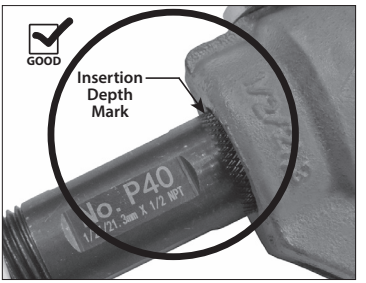
⚠ WARNING

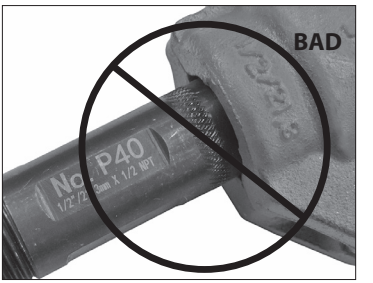
- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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



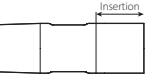
1. Make the threaded connection to the No. P40 Threaded Adapter before making the plain-end pipe connection. Tighten the No. P40 into the threaded fiting by engaging the wrench ONLY with the wrench flats. To prevent damage to the sealing surface, DO NOT engage the wrench with the end of the No. P40 where the plain-end pipe connection will be made.





2. The instructions for the applicable coupling or fitting shall be followed for proper installation of the plain-end pipe connection. **NOTE:** Any of the couplings and fittings featured in this handbook can be used to connect to the plain-end pipe connection. The No. P40 shall be inserted into the coupling or fitting up to the insertion depth mark, as shown above.

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Insertion Depth inches/mm
½ – 1 ¼	0.840 – 1.660 21.3 – 42.4	1.125 29
1 ½ – 2	1.900 – 2.375 48.3 – 60.3	1.500 38



⚠ CAUTION

- **After the plain-end pipe connection is complete, DO NOT attempt to rotate the No. P40 within the coupling or fitting.**

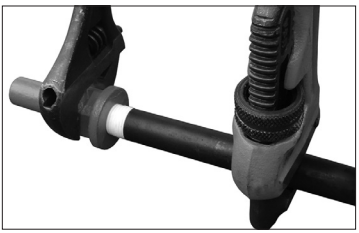
Failure to follow this instruction may result in joint leakage and property damage.

No. P80 – Threaded Adapter (Female NPT x Plain End)

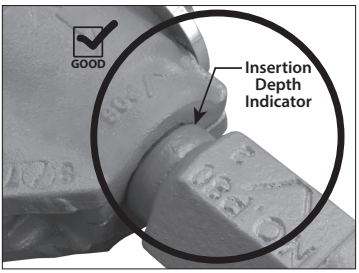
⚠ WARNING

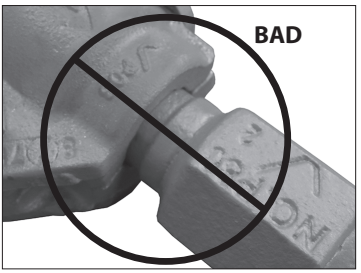
- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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



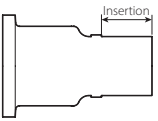
1. Make the threaded connection to the No. P80 Threaded Adapter before making the plain-end pipe connection. Tighten the No. P80 onto the threaded fiting by engaging the wrench ONLY with the wrench flats. To prevent damage to the sealing surface, DO NOT engage the wrench with the end of the No. P80 where the plain-end pipe connection will be made.





2. The instructions for the applicable coupling or fitting shall be followed for proper installation of the plain-end pipe connection. **NOTE:** Any of the couplings and fittings featured in this handbook can be used to connect to the plain-end pipe connection. The No. P80 shall be inserted into the coupling or fitting up to the insertion depth indicator, as shown above. **DO NOT attempt to engage the coupling or fitting past the insertion depth indicator.**

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Insertion Depth inches/mm
½ – 1 ¼	0.840 – 1.660 21.3 – 42.4	1.125 29
1 ½ – 2	1.900 – 2.375 48.3 – 60.3	1.500 38



⚠ CAUTION

- **After the plain-end pipe connection is complete, DO NOT attempt to rotate the No. P80 within the coupling or fitting.**

Failure to follow this instruction may result in joint leakage and property damage.

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No. P60 Cap

Installation Instructions

NO. P60

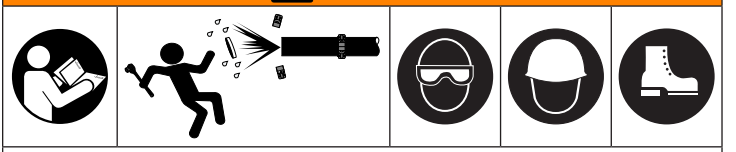
Victaulic®

I-P100_61

No. P60 – Cap

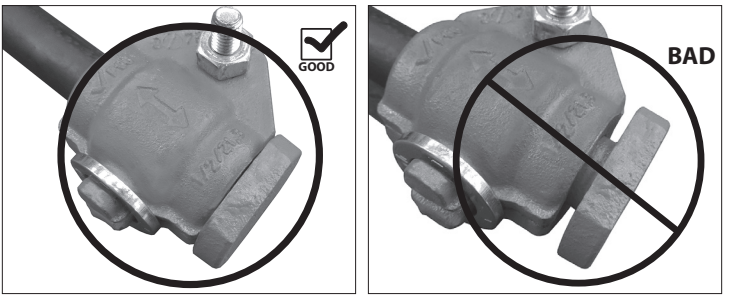
(Tapped Cap Option Available for System Pressure Testing)

⚠ WARNING



- **Read and understand all instructions before attempting to install, remove, adjust, or maintain the coupling/end cap, any end cap connections, and any other Victaulic products.**
- **Always depressurize and drain the piping system completely before attempting to install, remove, adjust, or maintain the coupling/end cap, any end cap connections, and any other Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of the coupling/end cap, any end cap connections, and any other Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Under no circumstances should coupling hardware or any other system component be loosened to check if the system is pressurized or to depressurize the system.**
- **Wear safety glasses, hardhat, and foot protection.**

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



The instructions for the applicable coupling or fitting shall be followed for proper installation of the No. P60 Cap. **NOTE:** Any of the couplings and fittings featured in this handbook can be used to connect to the No. P60 Cap. The cap shall be inserted into the coupling or fitting until metal-to-metal contact occurs between the cap and the coupling or fitting, as shown above.

⚠ CAUTION

- **After the coupling or fitting connection is complete, DO NOT attempt to rotate the No. P60 within the coupling or fitting.**

Failure to follow this instruction may result in joint leakage and property damage.

SAFETY INSTRUCTIONS FOR NO. P60 CAPS INSTALLED FOR SYSTEM PRESSURE TESTING

- Victaulic No. P60 Caps that are installed for system pressure testing shall be ordered as tapped and then equipped with an appropriately-rated ball valve for the system conditions. The ball valve can then be opened to verify if the system is depressurized.
- **Under no circumstances should coupling hardware or any other system component be loosened to check if the system is pressurized or to depressurize the system.**
- Before system pressure testing, verify that no valves within the tested system (or portion of the system being tested) are closed in order to prevent pressure from being trapped inadvertently.
- Immediately after completing the system pressure test, the system pressure shall be relieved through an appropriate valve.

NOTICE

- **A pressure gauge alone is not an acceptable method of verifying system pressure. Always use a secondary means of verification, such as a second pressure gauge or valve, to confirm that the system is depressurized in accordance with national and local codes and standards for the jobsite.**

VICTAULIC END CAP REMOVAL SAFETY INSTRUCTIONS

⚠ WARNING

- **COUPLING/END CAP MAY BE PRESSURIZED.**
- **Always depressurize and drain the piping system completely before attempting to install, remove, adjust, or maintain the coupling/end cap, any end cap connections, and any other Victaulic piping products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of the coupling/end cap, any end cap connections, and any other Victaulic piping products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Under no circumstances should coupling hardware or any other system component be loosened to check if the system is pressurized or to depressurize the system.**
- **Wear safety glasses, hardhat, and foot protection.**

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

1. Depressurize and drain the piping system completely, and verify that there is no residual pressure.
2. Loosen the nuts of the coupling slowly and, depending on the orientation of the coupling and end cap, be prepared to support the end cap as it releases from the coupling.

Instructions continue on the following page

VICTAULIC RECOMMENDS

- Hydrostatic (water) testing instead of pneumatic (air) testing whenever possible
- Use of a tapped end cap with a pressure-relieving device at each test point location (tapped No. P60 Caps are available from Victaulic)
- Removal of pressure immediately after completing a test (follow all applicable national and local codes and standards for the specific jobsite)
- Lockout/tagout procedures approved by the installing contractor
- Following the testing procedures recommended by technical experts, such as those found in the "Guide to Pressure Testing Safety" published by the Mechanical Contractors Association of America, Inc. (MCAA)

Series P89 Ball Valve

Installation and Handle Extension Kit Instructions

Victaulic®

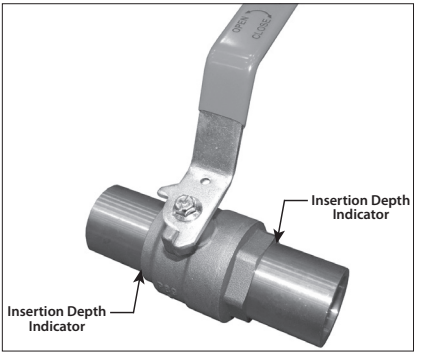
I-P100_65

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

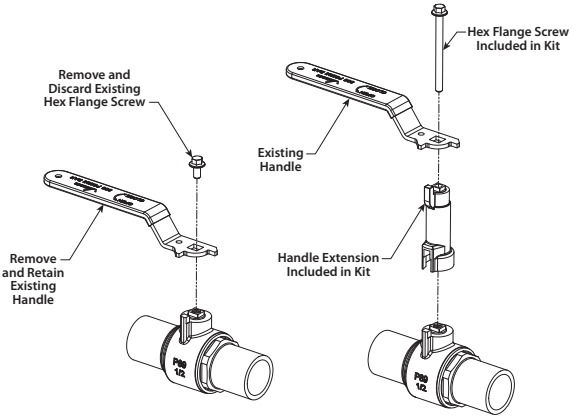
Failure to follow these instructions could result in death or serious personal injury and property damage.

Installation of the Ball Valve



If changeout of the Series P89 Ball Valve is anticipated, it is recommended that the valve be installed with two Style P08 Slip Couplings, in accordance with the instructions on pages 45 – 49 of this handbook. However, any of the couplings and fittings featured in this handbook can be used to connect to the Series P89 Ball Valve. The ends of the Series P89 Ball Valve shall be inserted into the coupling or fitting to within ⅛ inch/ 3.2 mm from the insertion depth indicator, as shown to the left.

Installation of the Handle Extension Kit



1. Remove and discard the existing hex flange screw, then remove and retain the existing handle, as shown above.
2. Install the handle extension (provided in kit) onto the ball valve body in the orientation shown above. Place the handle onto the handle extension, then use the hex flange screw (provided in kit) to retain the handle and handle extension on the ball valve body.

QuickVic™ SD Installation-Ready™ System Products

Reuse Instructions

Victaulic®

I-P100_67

QUICKVIC™ SD INSTALLATION-READY™ SYSTEM PRODUCTS REUSE INSTRUCTIONS

REMOVAL OF A COUPLING OR FITTING FROM THE PIPING SYSTEM

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

NOTICE

- **QuickVic™ SD Installation-Ready™ System Products do not need to be fully disassembled for removal from the pipe ends. However, if a coupling or fitting is fully disassembled during maintenance or for any other reason, refer to the "Full Inspection of a Gasket Removed from a Coupling or Fitting" and "Full Inspection of Retainers Removed from a Coupling or Fitting" sections on the following pages.**

1. Verify that the system is depressurized and drained completely before attempting to remove any couplings or fittings from the pipe.

2a. FOR NO. P10 90° ELBOWS: Loosen the nuts only on the outside and inside locations of the fitting end where the first pipe is to be removed (nuts should be backed off no further than flush with the end of the bolts). Remove the pipe from the loosened side. While supporting the fitting, loosen the nut at the other outside location. Carefully remove the fitting from the pipe.

2b. FOR NO. P20 STRAIGHT TEES: Loosen the nuts only along the branch side of the fitting (nuts should be backed off no further than flush with the end of the bolts). Remove the pipe from the loosened branch side. While supporting the fitting, loosen the nuts along the run side of the fitting. Carefully remove the fitting from the pipe.

2c. FOR STYLE P07 COUPLINGS, STYLE P08 SLIP COUPLINGS, AND STYLE P50 REDUCING COUPLINGS: Be prepared to support the coupling. Loosen the nut(s) until backed off no further than flush with the end of the bolt(s). Carefully remove the coupling from the pipe.

3. Follow the "Inspection of Gasket and Retainers Still Installed Within a Coupling or Fitting" and "Inspection of Pipe Ends" sections on the following pages.

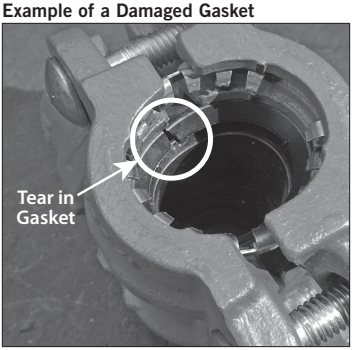
INSPECTION OF GASKET AND RETAINERS STILL INSTALLED WITHIN A COUPLING OR FITTING

⚠ CAUTION

- **If you suspect that any damage or wear has occurred to the gasket and retainers, the coupling or fitting shall be fully disassembled so that the affected components can be replaced.**

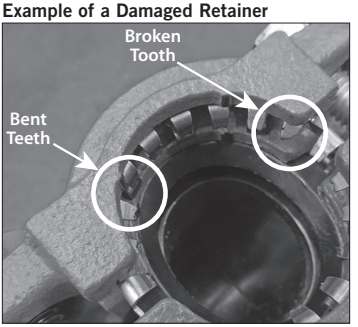
Failure to follow this instruction will result in joint leakage and property damage.

Example of a Damaged Gasket



1. Inspect the gasket for any damage or wear (tears in gasket lips, deformities in gasket lips, or pinched sections at the bolt pad locations). If any gasket damage or wear is present, fully disassemble the coupling or fitting so that the gasket can be replaced with a new Victaulic-supplied gasket of the same material grade and style number. **If in doubt, always fully disassemble the coupling or fitting to perform a more thorough inspection of the gasket, in accordance with the "Full Inspection of a Gasket Removed from a Coupling or Fitting" section.**

Example of a Damaged Retainer



2. Inspect the retainers for any damage (broken, bent, or missing teeth or deformities in the shape of the retainers). If any retainer damage is present, fully disassemble the coupling or fitting so that the retainers can be replaced with new Victaulic-supplied retainers. **If in doubt, always fully disassemble the coupling or fitting to perform a more thorough inspection of the retainers, in accordance with the "Full Inspection of Retainers Removed from a Coupling or Fitting" section.**

3a. After inspection of the gasket and retainers, if it is determined that the coupling or fitting **CAN** be reused in its current condition, follow the applicable installation section of this handbook. **NOTE:** Following the first assembly of the product on pipe, the functionality of the patented "Leak-if-Not-Tightened" technology may not operate as described in the "General Information" section.

3b. After inspection of the gasket and retainers, if it is determined that the coupling or fitting **CANNOT** be reused in its current condition and requires full disassembly, refer to the "Full Inspection of a Gasket Removed from a Coupling or Fitting" and "Full Inspection of Retainers Removed from a Coupling or Fitting" sections on the following pages.

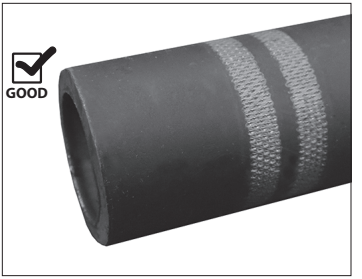
INSPECTION OF PIPE ENDS

Perform a thorough inspection of the pipe ends that are to be reused.

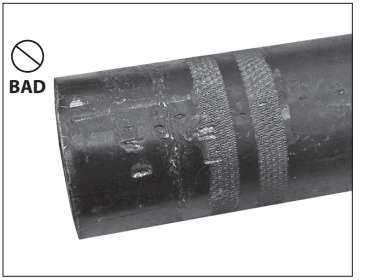
1. The pipe OD shall not contain burrs, sharp edges, raised weld beads, axial score marks, scratches, or indentations a minimum of 1½ inches/38 mm back from the pipe end. All oil, grease, loose paint, dirt, and cutting particles shall be removed.

2. Verify that the insertion depth mark(s) on each pipe end are still clearly visible (particularly for pipe ends that were marked originally with a paint pen).

If there are any doubts concerning the condition of the pipe ends, always cut off the end and re-mark the pipe. Refer to the "General Information" section for complete pipe preparation requirements.



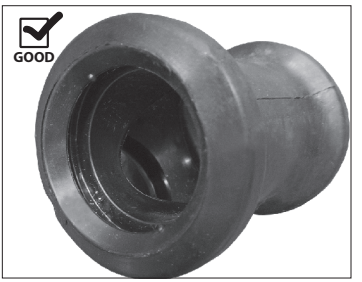
EXAMPLE OF PIPE END IN GOOD CONDITION THAT CAN BE REUSED (NO DAMAGE AND CLEAR INSERTION DEPTH MARKS)



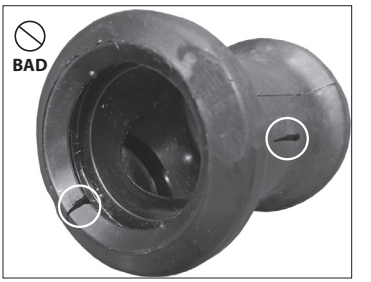
EXAMPLE OF PIPE END IN BAD CONDITION THAT SHALL NOT BE REUSED (IMPROPER CUT, SCRATCHES ON GASKET SEALING SURFACE, DEFORMITIES)

FULL INSPECTION OF GASKET REMOVED FROM A COUPLING OR FITTING

Perform a thorough inspection of the full gasket prior to reassembly of a coupling or fitting. **If there are any doubts concerning the condition of the gasket, always replace it with a new Victaulic-supplied gasket of the same material grade and style number. NOTE:** In cases where both the gaskets and retainers will be replaced with new Victaulic-supplied gaskets and retainers, the functionality of the patented "Leak-if-Not-Tightened" technology will operate as described in the "General Information" section.



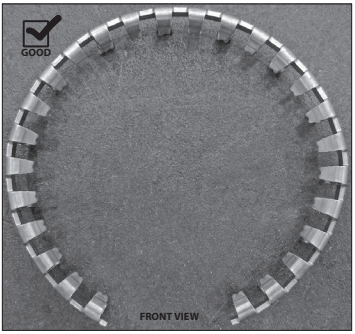
EXAMPLE OF GASKET IN GOOD CONDITION THAT CAN BE REUSED (NO DAMAGE, WEAR, OR DEFORMITIES)

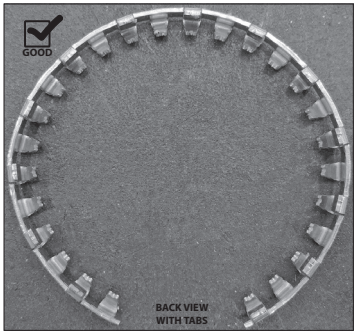


EXAMPLE OF GASKET IN BAD CONDITION THAT SHALL NOT BE REUSED (CONTAINS DAMAGE)

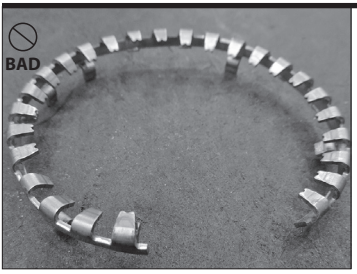
FULL INSPECTION OF RETAINERS REMOVED FROM A COUPLING OR FITTING

Perform a thorough inspection of each retainer prior to reassembly of a coupling or fitting. **If there are any doubts concerning the condition of the retainers, always replace them with new Victaulic-supplied retainers of the same size. Refer to the "Number of Teeth Per Retainer" table below as a second means of identifying that the correct size retainer is being used for the product size. NOTE:** In cases where both the gaskets and retainers will be replaced with new Victaulic-supplied gaskets and retainers, the functionality of the patented "Leak-if-Not-Tightened" technology will operate as described in the "General Information" section.

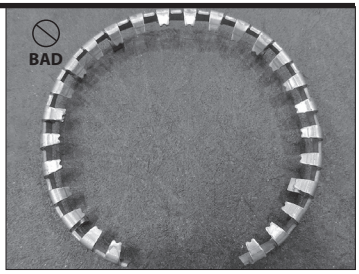




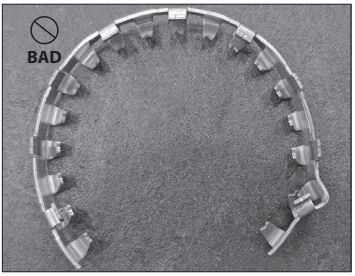
EXAMPLES OF RETAINERS IN GOOD CONDITION THAT CAN BE REUSED (TEETH ARE UNIFORM, NO DAMAGE TO TEETH, NO DEFORMITIES IN SHAPE)



EXAMPLE OF RETAINER IN BAD CONDITION THAT SHALL NOT BE REUSED (TEETH ARE BENT, SHAPE IS DEFORMED)



EXAMPLE OF RETAINER IN BAD CONDITION THAT SHALL NOT BE REUSED (TEETH ARE BENT AND NOT UNIFORM)



EXAMPLE OF RETAINER IN BAD CONDITION THAT SHALL NOT BE REUSED (COMPRESSED AT BOLT PAD LOCATION AS A RESULT OF INCORRECT SIZE BEING USED)

Number of Teeth Per Retainer

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Number of Teeth
½	0.840 21.3	11
¾	1.050 26.9	13
1	1.315 33.7	16
1 ¼	1.660 42.4	19
1 ½	1.900 48.3	21
2	2.375 60.3	26

REASSEMBLY OF A NO. P10 ELBOW OR NO. P20 STRAIGHT TEE

NOTICE

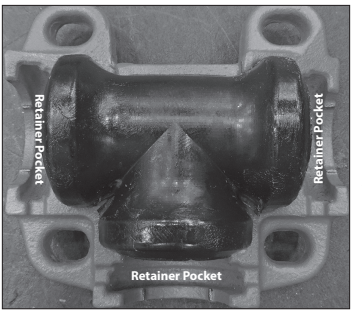
- **The following steps shall be completed if a coupling or fitting is fully disassembled during removal from the pipe ends or to replace the gasket or retainers.**
- **Only genuine Victaulic replacement parts shall be used for reassembly of a No. P10 Elbow or No. P20 Straight Tee.**
- **The coupling or fitting shall be reassembled, as shown in the steps below, before attempting to reinstall the product onto pipe ends.**

⚠ CAUTION

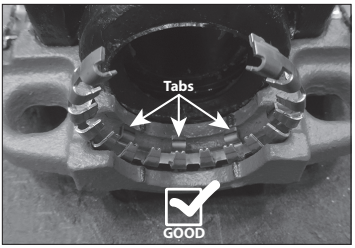
- **A thin coat of a compatible lubricant shall be used to help prevent the gasket from pinching, rolling, or tearing during reassembly.**

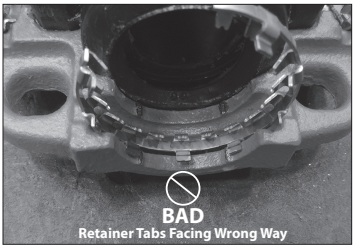
Failure to use a compatible lubricant may cause gasket damage, resulting in joint leakage and property damage.

1. LUBRICATE CORRECT SIZE GASKET: Apply a thin coat of Victaulic Lubricant, or another compatible lubricant, to the correct size gasket's sealing lips and exterior portion outside the sealing lips, as shown. Refer to the "Lubricant Compatibility for Gaskets" table on page 19.

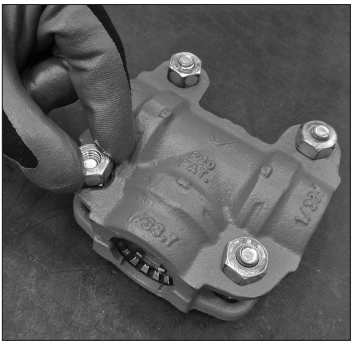


2. INSTALL GASKET INTO FIRST FITTING HOUSING: Install the gasket into one of the housings. Verify that the ends of the gasket are seated fully in the housing's pockets, as shown.





3. INSTALL CORRECT SIZE RETAINERS INTO HOUSING: Install the correct size retainer into each retainer pocket of the housing (refer to the "Number of Teeth Per Retainer" table on page 71). Verify that the tabs are facing toward the gasket and that the gap of each retainer is facing away from the bolt pad locations, as shown.



4. INSTALL SECOND FITTING HOUSING: Install the second fitting housing. Verify that the ends of the gasket are seated in the housings' pockets and that the retainers are seated fully in the housings' retainer pockets.

5. INSTALL BOLTS AND NUTS: Install the bolts, and thread a nut onto each bolt. **NOTE:** Verify that the oval neck of each bolt seats properly in the bolt hole. DO NOT tighten the nuts completely. The bolt pads need to be set at a gap for reinstallation of the fitting. Two to three full bolt threads, exposed above each nut, will provide the proper gap.

6. Follow all steps of the No. P10 or No. P20 installation section of this handbook to reinstall the fitting.

REASSEMBLY OF A STYLE P07 COUPLING OR STYLE P08 SLIP COUPLING

NOTICE

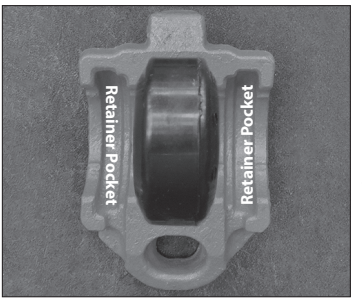
- **The following steps shall be completed if a coupling or fitting is fully disassembled during removal from the pipe ends or to replace the gasket or retainers.**
- **Only genuine Victaulic replacement parts shall be used for reassembly of a Style P07 Coupling or Style P08 Slip Coupling.**
- **Always verify that the correct linkage is being used for reassembly of a Style P07 Coupling or Style P08 Slip Coupling. Genuine Victaulic linkage contains a ✓ mark.**
- **The coupling or fitting shall be reassembled, as shown in the steps below, before attempting to reinstall the product onto pipe ends.**

⚠ CAUTION

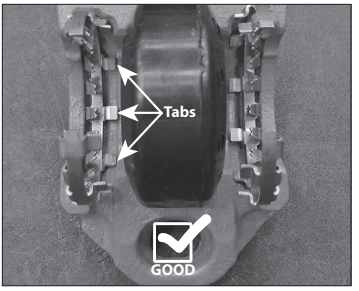
- **A thin coat of a compatible lubricant shall be used to help prevent the gasket from pinching, rolling, or tearing during reassembly.**

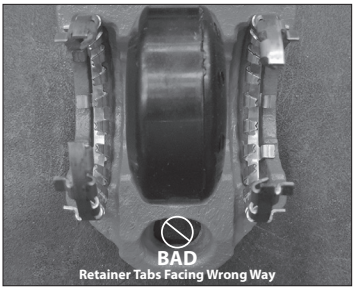
Failure to use a compatible lubricant may cause gasket damage, resulting in joint leakage and property damage.

1. LUBRICATE GASKET: Apply a thin coat of Victaulic Lubricant, or another compatible lubricant, to the gasket sealing lips and exterior, as shown. Refer to the "Lubricant Compatibility for Gaskets" table on page 19.



2. INSTALL GASKET INTO FIRST COUPLING HOUSING: Install the gasket into one of the housings. Verify that the gasket is seated fully in the housing's pocket.





3. INSTALL RETAINERS INTO HOUSING: Install the correct size retainer into each retainer pocket of the housing (refer to the "Number of Teeth Per Retainer" table on page 71). Verify that the tabs are facing toward the gasket and that the gap of each retainer is facing away from the bolt pad locations, as shown.

4a. FOR ALL SIZES OF STYLE P07 COUPLINGS AND ½ – 1¼-INCH STYLE P08 SLIP COUPLINGS INSTALL SECOND COUPLING HOUSING AND LINKAGE: Install the second coupling housing. Verify that the gasket is seated in the housings' pockets and that the retainers are seated fully in the housings' retainer pockets. Install the correct-size linkage onto the housings, as shown above.

4b. INSTALL BOLT AND NUT: Install the bolt, and thread a nut onto the bolt. **NOTE:** Verify that the oval neck of the bolt seats properly in the bolt hole. DO NOT tighten the nut completely. The bolt pads need to be set at a gap for reinstallation of the coupling. The nut should be flush with the top of the bolt to provide the proper gap.

4c. FOR 1½ – 2-INCH STYLE P08 SLIP COUPLINGS INSTALL SECOND COUPLING HOUSING: Install the second coupling housing. Verify that the gasket is seated in the housings' pockets and that the retainers are engaged with the housings' retainer pockets.

4d. INSTALL BOLTS AND NUTS: Install the bolts, and thread a nut onto the bolts. **NOTE:** Verify that the oval neck of each bolt seats properly in the bolt holes. DO NOT tighten the nuts completely. The bolt pads need to be set at a gap for reinstallation of the coupling. Two to three full bolt threads, exposed above the nuts, will provide the proper gap.

5. Follow all steps of the Style P07 or Style P08 installation section of this handbook to reinstall the coupling.

REASSEMBLY OF A STYLE P50 REDUCING COUPLING

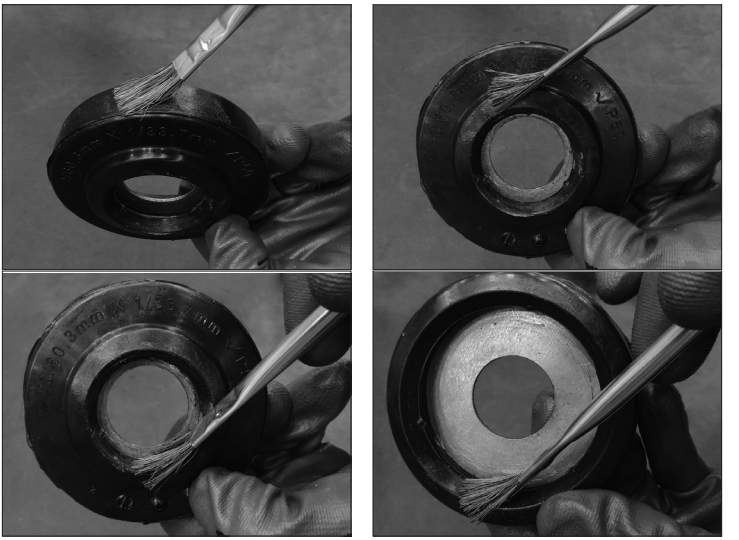
NOTICE

- **The following steps shall be completed if a coupling or fitting is fully disassembled during removal from the pipe ends or to replace the gasket or retainers.**
- **Only genuine Victaulic replacement parts shall be used for reassembly of a Style P50 Reducing Coupling.**
- **The coupling or fitting shall be reassembled, as shown in the steps below, before attempting to reinstall the product onto pipe ends.**

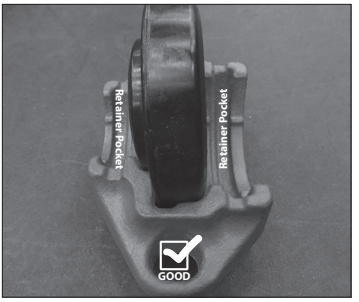
⚠ CAUTION

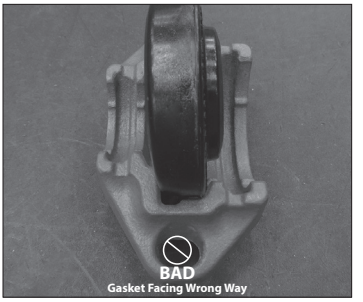
- **A thin coat of a compatible lubricant shall be used to help prevent the gasket from pinching, rolling, or tearing during reassembly.**

Failure to use a compatible lubricant may cause gasket damage, resulting in joint leakage and property damage.



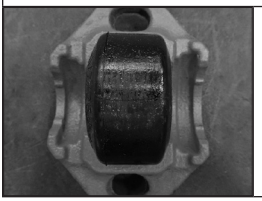
1. LUBRICATE GASKET: Apply a thin coat of Victaulic Lubricant, or another compatible lubricant, to the four surfaces of the gasket, as shown. Refer to the “Lubricant Compatibility for Gaskets” table on page 19.



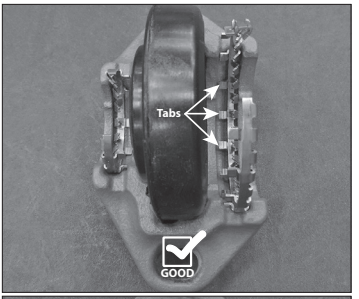


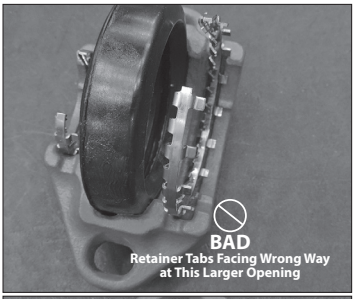
2. INSTALL GASKET INTO FIRST COUPLING HOUSING: Install the gasket into one of the housings. Verify that the smaller opening of the gasket is facing toward the smaller opening of the housing, as shown above, and that the gasket is seated fully in the housing's pocket. **NOTE:** The gasket design for 1 ¼ x ¾-inch and larger sizes is shown above.

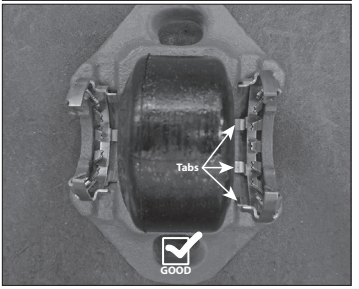
NOTICE

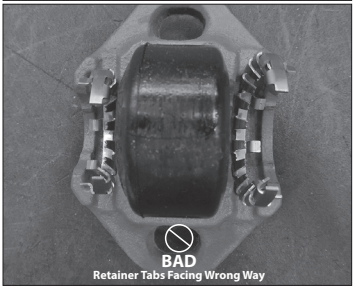


- **Gaskets for the ¾ x ½-inch and 1 x ¾-inch configurations do not contain a metal insert or the defined section for the smaller opening, as shown above. Take additional care to verify that the smaller side of the gasket is facing toward the smaller opening of the housing, as shown to the left.**

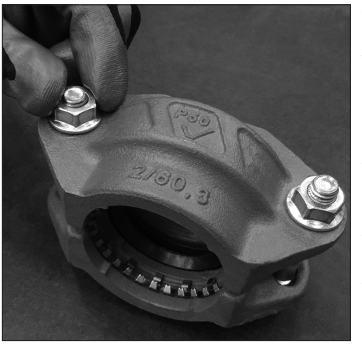








3. INSTALL RETAINERS INTO HOUSING: Install the correct size retainer into each corresponding retainer pocket of the housing (refer to the "Number of Teeth Per Retainer" table on page 71). Verify that the tabs are facing toward the gasket and that the gap of each retainer is facing away from the bolt pad locations, as shown. **NOTE:** Due to the similarity in retainers for the ¾ x ½-inch and 1 x ¾-inch configurations, it is especially important to reference the "Number of Teeth Per Retainer" table on page 71 as a verification that the correct size retainers are being used.



4. INSTALL SECOND FITTING HOUSING: Install the second fitting housing. Verify that the gasket is seated in the housings' pockets and that the retainers are seated fully in the housings' retainer pockets.

5. INSTALL BOLTS AND NUTS: Install the bolts, and thread a nut onto each bolt. **NOTE:** Verify that the oval neck of each bolt seats properly in the bolt hole. DO NOT tighten the nuts completely. The bolt pads need to be set at a gap for reinstallation of the fitting. Two to three full bolt threads, exposed above each nut, will provide the proper gap.

6. Follow all steps of the Style P50 installation section of this handbook to reinstall the coupling.

Resources

English and Metric Conversion Chart

Convert Imperial (U.S.) to Metric				Convert Metric to Imperial (U.S.)		
25.4	×	inch (in)	⇔	millimeter (mm)	×	0.03937
0.3048	×	feet (ft)	⇔	meter (m)	×	3.281
0.4536	×	pound mass (lb)	⇔	kilogram (kg)	×	2.205
28.35	×	ounce (oz)	⇔	gram (g)	×	0.03527
6.894	×	pound per square inch (psi)	⇔	kilopascal (kPa)	×	0.145
.069	×	pound per square inch (psi)	⇔	Bar (bar)	×	14.5
4.45	×	pound force (lbf)	⇔	newton (N)	×	0.2248
1.356	×	pound-foot (lbf-ft)	⇔	Newton-meter (N•m)	×	0.738
(F – 32) ÷ 1.8		Fahrenheit (°F)	⇔	Celsius (°C)		(C + 17.78) × 1.8
745.7	×	Horsepower (hp)	⇔	Watts (W)	×	1.341×10^{-3}
3.785	×	Gal. per Min. (GPM)	⇔	Liters per min. (L/min)	×	0.2642
0.0038	×	Gal. per Min. (GPM)	⇔	Cubic Meters per min. (m^3/min)	×	264.2

Decimal Equivalents of Fractions

Fraction in inches	Decimal Equivalent inches	Decimal Equivalent millimeters
1/64	0.016	0.397
1/32	0.031	0.794
3/64	0.047	1.191
1/16	0.063	1.588
5/64	0.781	1.984
3/32	0.094	2.381
7/64	0.109	2.778
1/8	0.125	3.175
9/64	0.141	3.572
5/32	0.156	3.969
11/64	0.172	4.366
3/16	0.188	4.763
13/64	0.203	5.159
7/32	0.219	5.556
15/64	0.234	5.953
1/4	0.250	6.350
17/64	0.266	6.747
9/32	0.281	7.144
19/64	0.297	7.541
5/16	0.313	7.938
21/64	0.328	8.334
1/3	0.333	8.467
11/32	0.344	8.731
23/64	0.359	9.128
3/8	0.375	9.525
25/64	0.391	9.922
13/32	0.406	10.319
27/64	0.422	10.716
7/16	0.438	11.113
29/64	0.453	11.509
15/32	0.469	11.906
1/2	0.500	12.700

Fraction in inches	Decimal Equivalent inches	Decimal Equivalent millimeters
33/64	0.516	13.097
17/32	0.531	13.494
35/64	0.547	13.891
9/16	0.563	14.288
37/64	0.578	14.684
19/32	0.594	15.081
39/64	0.609	15.478
5/8	0.625	15.875
41/64	0.641	16.272
21/32	0.656	16.669
43/64	0.672	17.066
11/16	0.688	17.463
45/64	0.703	17.859
23/32	0.719	18.256
47/64	0.734	18.653
3/4	0.750	19.050
49/64	0.766	19.447
25/32	0.781	19.844
51/64	0.797	20.241
13/16	0.813	20.638
53/64	0.828	21.034
27/32	0.844	21.431
55/64	0.859	21.828
7/8	0.875	22.225
57/64	0.891	22.622
29/32	0.906	23.019
59/64	0.922	23.416
15/16	0.938	23.813
61/64	0.953	24.209
31/32	0.969	24.606
63/64	0.984	25.003
1	1.000	25.400

Minutes Converted to Decimals of a Degree

Minutes	Degrees
1	.0166
2	.0333
3	.0500
4	.0666
5	.0833
6	.1000
7	.1166
8	.1333
9	.1500
10	.1666
11	.1833
12	.2000
13	.2166
14	.2333
15	.2500

Minutes	Degrees
16	.2666
17	.2833
18	.3000
19	.3166
20	.3333
21	.3500
22	.3666
23	.3833
24	.4000
25	.4166
31	.5166
32	.5333
33	.5500
34	.5666
35	.5833

Minutes	Degrees
26	.4333
27	.4500
28	.4666
29	.4833
30	.5000
41	.6833
42	.7000
43	.7166
44	.7333
45	.7500
46	.7666
47	.7833
48	.8000
49	.8166
50	.8333

Minutes	Degrees
36	.6000
37	.6166
38	.6333
39	.6500
40	.6666
51	.8500
52	.8666
53	.8833
54	.9000
55	.9166
56	.9333
57	.9500
58	.9666
59	.9833
60	1.0000

Pressure to Feet-of-Head of Water

Pounds Per Square Inch	Feet of Head
1	2.31
2	4.62
3	6.93
4	9.24
5	11.54
6	13.85
7	16.16
8	18.47
9	20.78
10	23.09
15	34.63
20	46.18
25	57.72
30	69.27
40	92.36
50	115.45
60	138.54
70	161.63
80	184.72
90	207.81

Pounds Per Square Inch	Feet of Head
100	230.90
110	253.93
120	277.07
130	300.16
140	323.25
150	346.34
160	369.43
170	392.52
180	415.61
200	461.78
250	577.24
300	692.69
350	808.13
400	922.58
500	1154.48
600	1385.39
700	1616.30
800	1847.20
900	2078.10
1000	2309.00

Feet-of-Head of Water to Pressure

Feet of Head	Pounds Per Square Inch
1	0.43
2	0.87
3	1.30
4	1.73
5	2.17
6	2.60
7	3.03
8	3.46
9	3.90
10	4.33
15	6.50
20	8.66
25	10.83
30	12.99
40	17.32
50	21.65
60	25.99
70	30.32
80	34.65
90	39.98

Feet of Head	Pounds Per Square Inch
100	43.31
110	47.64
120	51.97
130	56.30
140	60.63
150	64.96
160	69.29
170	73.63
180	77.96
200	86.62
250	108.27
300	129.93
350	151.58
400	173.24
500	216.55
600	259.85
700	303.16
800	346.47
900	389.78
1000	433.00

Pressure to Meter Water Column

kPa	Meter Water Column
10	1.02
15	1.53
20	2.04
25	2.55
30	3.06
40	4.08
50	5.10
60	6.12
70	7.14
80	8.16
90	9.18
100	10.20
110	11.22
120	12.24
130	13.26
140	14.28
150	15.30
160	16.32
170	17.34
180	18.36

kPa	Meter Water Column
180	18.36
190	19.38
200	20.40
250	25.50
300	30.60
400	40.80
500	51.00
600	61.20
700	71.40
800	81.60
900	91.80
1000	102.00
1500	153.00
2000	204.00
2500	255.00
3000	306.00
4000	408.00
5000	510.00
6000	612.00
7000	714.00

Meter Water Column to Pressure

Meter Water Column	kPa
1	9.8
2	19.6
3	29.4
4	39.2
5	49.0
6	58.8
7	68.6
8	78.4
9	88.2
10	98.0
11	108.0
12	118.0
13	127.0
14	137.0
15	147.0
20	196.0
25	245.0
30	194.0
35	343.0
40	392.0

Meter Water Column	kPa
45	441.0
50	490.0
55	539.0
60	588.0
70	686.0
80	784.0
90	882.0
100	980.0
150	1470.0
200	1960.0
250	2450.0
300	2940.0
350	3430.0
400	3920.0
450	4410.0
500	4900.0
550	5390.0
600	5880.0
650	6370.0
700	6860.0

Where to Find Installation Instructions for Additional Products

The following table provides a general listing of products and their respective installation instructions. Scan the QR code to the left to search for and download the applicable product instructions. **NOTE:** If two sources of instructions are referenced in this index, Victaulic recommends the use of both to ensure proper product installation. Contact Victaulic with any questions regarding this list (scan QR code on back cover for Victaulic locations).

Product	Where to Find Instructions on victaulic.com
Victaulic® End Caps	Search I-ENDCAP
VicFlex™ Products	Search I-VICFLEX
Aquamine™ Spline Couplings	Search I-Aquamine
Victaulic® Bolted Split-Sleeve Couplings	Instructions Shipped with Coupling (or search for specific coupling)
FireLock® Automatic Sprinkler Products	Search I-40
FireLock™ Fire Protection Valves and Accessories	Manual Shipped with Valve or Accessory (or search for specific valve or accessory)
Pipe Preparation Tools	Manual and Repair Parts List Shipped with Tool (or search for specific tool)
Vic-Press Schedule 10S System Products	Search I-P500
Series 76G Automatic Balancing Valve	Search I-76G
Series 76B/76K/76S/76T/76V Automatic Balancing Valves	Search I-76T
Series 121, 122, 124, and E125 Installation-Ready™ Butterfly Valves Installation and Gear Operator Conversion Instructions	Search I-120
Series 247 FireLock Residential Zone Control Riser Module Assembly	Search I-247
Series 317 AWWA Check Valve	Search I-317
Series 365 AWWA Vic-Plug® Valve (3 – 12-inch/88.9 – 323.9-mm Sizes)	Search I-365sm and I-300
Series 377 Vic-Plug Balancing Valve	Search I-365sm and I-100
Series 608N Copper Connection Butterfly Valve	Search I-600
Series 700 Butterfly Valve	Search I-100
Series 705 FireLock™ Butterfly Valve	Search I-765-705, I-BFV_KIT, and I-100
Series 707C FireLock™ Butterfly Valve with Supervised-Closed Switches	Search I-766_707C, I-BFV_KIT, and I-100
Series 712/712S Swinger® Check Valve	Search I-100
Series 713 Swinger Check Valve	Search I-100
Series W715 AGS™ Dual-Disc Vic-Check Valve	Search I-W100
Series 716H/716 Check Valves	Search I-100
Series 717H/717 FireLock™ Check Valves	Search I-100

Product	Where to Find Instructions on victaulic.com
Series 717HR/717R FireLock™ Check Valves	Search I-100
Series 722 Brass Body Ball Valve	Search I-100
Series 723/723S Diverter Ball Valve	Search I-100
Series 726/726S Ball Valve	Search I-100
Series 728 FireLock™ Ball Valve	Search I-728 and I-100
Series 730 *Vic-Strainer* Tee Type	Search I-730_732AGS
Series W730 AGS™ *Vic-Strainer* Tee Type	Search I-730_732AGS
Series 731-D Suction Diffuser	Search I-731-D_W731-D
Series W731-D AGS™ Suction Diffuser	Search I-731-D_W731-D
Series 732 *Vic-Strainer* Wye Type	Search I-730_732AGS
Series W732 AGS *Vic-Strainer* Wye Type	Search I-730_732AGS
Series 733 Venturi Indicator	Search I-100
Series 747M FireLock™ Zone Control Riser Module Assembly	Search I-747M
Series 761 Vic-300 MasterSeal™ Butterfly Valve	Search I-VIC300MS and I-100
Series W761 AGS™ Vic-300 Butterfly Valve	Search I-AGS.GO and I-W100
Series 765 FireLock™ Butterfly Valve	Search I-765-705 and I-100
Series 766 FireLock™ Butterfly Valve with Supervised-Closed Switches	Search I-766_707C, I-BFV_KIT, and I-100
Series 779 Venturi Check Valve and Flow Measuring Kit	Search I-100
TA Series Valves and Meters	Instructions Shipped with Valve or Meter
Series 795 Knife Gate Valve	Search I-795 and I-900
Series 871 Gate Valve	Search I-871
Series 906 Knife Gate Valve	Search I-795 and I-900
Style 005 FireLock™ Rigid Coupling	Search I-100
Style 009N FireLock EZ™ Installation-Ready™ Rigid Coupling	Search I-100
Style 07 Zero-Flex® Rigid Coupling (1 – 12-inch/33.7 – 323.9-mm Sizes)	Search I-100
Style 07 Zero-Flex Rigid Coupling (14 – 24-inch/355.6 – 610-mm Sizes)	Search I-100
Style W07 AGS™ Rigid Coupling	Search I-W100
Style W77/W77B/W77N AGS™ Flexible Couplings	Search I-W100
Style 22, 26, 28, 31, 41, and 44 Couplings for *Vic-Ring* Applications and Shouldered-End Pipe	Search I-6000
Style 31 Coupling for Grooved AWWA Ductile Iron Pipe	Search I-300

Product	Where to Find Instructions on victaulic.com
Style 71 Composite Coupling for PVC and Stainless Steel Pipe (Regional Availability Only)	Search I-100
Style 72 Outlet Coupling	Search I-100
Style 75 Flexible Coupling	Search I-100
Style 77/77A/77S Flexible Coupling	Search I-100
Style 77DX Duplex Stainless Steel Flexible Coupling	Search I-100
Style 78/78A Snap-Joint™ Coupling	Search I-100
Style 89 Rigid Coupling for Stainless Steel	Search I-100
Style W89 AGS™ Rigid Coupling for Stainless Steel or Carbon Steel Pipe	Search I-W100
Style 99 *Roust-A-Bout* Coupling for Plain-End Steel Pipe	Search I-100
No. 101 (90° Elbow) FireLock™ Installation-Ready™ Fitting	Search I-100
No. 103 (45° Elbow) FireLock™ Installation-Ready™ Fitting	Search I-100
No. 102 Straight Tee FireLock™ Installation-Ready™ Fitting	Search I-100
No. 104 Bullhead Tee FireLock™Installation-Ready™ Fitting	Search I-100
Style 107N QuickVic™ Installation-Ready™ Rigid Coupling for Steel Pipe	Search I-100
Style 108 FireLock™ IGS™ Installation-Ready™ Rigid Coupling	Search I-100
Style 109 FireLock™ Installation-Ready™ Rigid Coupling	Search I-100
Style 115 FireLock EZ™ Installation-Ready™ Reducing Coupling	Search I-100
No. 142 Welded Outlet	Search I-142 and I-100
No. 142F Welded Outlet	Search I-142F and I-100
Style 150 *Mover* Expansion Joint	Search 09.06
Style 152A Expansion Joint Coupling	Search I-152A
Style 155 Expansion Joint	Search 09.06
Style W155 AGS™ Expansion Joint	Search 09.06
Series 159 Flexible Loop	Search I-159
Style 171 Installation-Ready Composite Flexible Coupling	Search I-100
Style 177N QuickVic™ Flexible Coupling	Search I-100
Style 307 AWWA Transition Coupling	Search I-300
Style 341 *Vic-Flange* Adapter	Search I-300
Style 441 *Vic-Flange* Adapter	Search I-100

Product	Where to Find Instructions on victaulic.com
Style 475 Lightweight, Flexible Stainless Steel Coupling	Search I-100
Style 475DX Duplex Stainless Steel Flexible Coupling	Search I-100
Style 489 Rigid Coupling for Stainless Steel Pipe	Search I-100
Style 489DX Duplex Stainless Steel Rigid Coupling	Search I-100
Style 606-EN and 606-AS Rigid Coupling for Copper Tubing	Search I-600
Style 607 QuickVic™ Rigid Coupling for Copper Tubing	Search I-600
Style 622 *Mechanical-T* Bolted Branch Outlet for Copper Tubing	Search I-600
Style 641 *Vic-Flange* Adapter for Copper Tubing	Search I-600
Style 707-IJ NPS-to-JIS Transition Coupling	Search I-100
Style 720 TestMaster™ II Alarm Test Module	Search I-720
Style 720 TestMaster™ II Alarm Test Module with Pressure Relief Option	Search I-720PR
Style 735 Fire Pump Test Meter	Search I-100
Style 741 *Vic-Flange* Adapter	Search I-100
Style W741 AGS™ *Vic-Flange* Adapter	Search I-W100
Style 743 *Vic-Flange* Adapter	Search I-100
Style 744 FireLock™ Flange Adapter	Search I-100
Style 750 Reducing Coupling	Search I-100
Style 791 *Vic-Boltless* Coupling	Search I-100
Style 808 High-Pressure Coupling	Search I-808
Style 870 High-Performance Rigid Coupling	Search I-870
Style 904 Flange Adapter for HDPE-to-Flanged Pipe	Search I-900
Style 905 Coupling for Plain-End HDPE Pipe	Search I-900
Style 907 Transition Coupling for HDPE to Steel Pipe	Search I-900
Style 908 Coupling for Double-Grooved HDPE Pipe	Search I-900
Style 912 FireLock™ Low-Profile Sprinkler-Tee (Regional Availability Only)	Search I-100
Style 920 and 920N *Mechanical-T* Outlets	Search I-100
Style 922 FireLock™ Outlet-T	Search I-100
Style 923 Strapless Outlet	Search I-100
Style 924 Strapless Thermometer Outlet	Search I-100

Product	Where to Find Instructions on victaulic.com
Style 926 *Mechanical-T* Spigot Assembly	Search I-100
Style 994 *Vic-Flange* Adapter for HDPE Pipe	Search I-900
Style 995N Coupling for Plain-End HDPE Pipe	Search I-900
Style 997 Transition Coupling for Plain-End HDPE Pipe to Grooved-End Steel Pipe	Search I-900
Style 2970 Aquamine™ Plain-End Pipe Coupling	Search IT-2970
Style 2971 Aquamine™ Transition Coupling for Plain-End PVC Pipe to Plain-End HDPE Pipe	Search IT-2971
Style 2972 Aquamine™ Transition Coupling for Plain-End PVC Pipe to Grooved Steel Pipe	Search IT-2972
Style HP-70 Rigid Coupling	Search I-100
Style HP-70ES Rigid Coupling with EndSeal® Gasket	Search I-100
Style XL77 Flexible Coupling for Joining "XL" Elbows to NPS Carbon Steel Pipe	Search IT-XL77
Style XL79 Flexible Coupling for Joining "XL" Elbows to "XL" Elbows	Search IT-XL79

Product Data

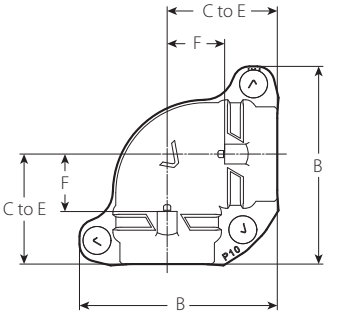
The following information contains center-to-end, end-to-end, take-out, and similar overall dimensions for QuickVic™ SD Installation-Ready™ System products.

NOTICE

- **Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information and for products not listed in this section. Publication 34.01 can be downloaded at victaulic.com.**

FITTINGS

No. P10 – 90° Elbow

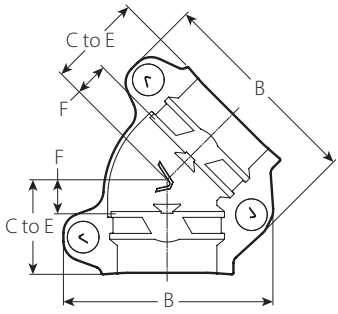


Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm		
		F Takeout	C to E	B
½	0.840 21.3	0.88 22	2.13 54	3.88 99
¾	1.050 26.9	1.00 25	2.13 54	4.00 102
1	1.315 33.7	1.13 29	2.25 57	4.38 111
1 ¼	1.660 42.4	1.25 32	2.50 64	4.75 121
1 ½	1.900 48.3	1.38 35	3.00 76	5.38 137
2	2.375 60.3	1.63 41	3.25 83	5.88 149

Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information. Publication 34.01 can be downloaded at victaulic.com.

FITTINGS

No. P11 – 45° Elbow

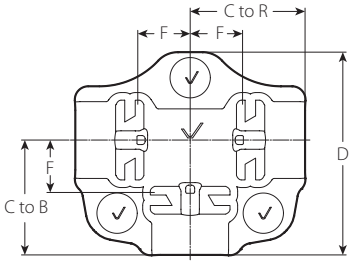


Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm		
		F Takeout	C to E	B
½	0.840 21.3	0.63 16	1.75 44	3.50 89
¾	1.050 26.9	0.75 19	1.88 48	3.75 95
1	1.315 33.7	0.75 19	1.88 48	4.00 102
1 ¼	1.660 42.4	0.75 19	1.88 48	4.38 111
1 ½	1.900 48.3	0.75 19	2.25 57	4.75 121
2	2.375 60.3	0.88 22	2.38 60	5.38 137

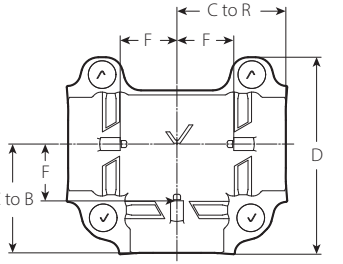
Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information. Publication 34.01 can be downloaded at victaulic.com.

FITTINGS

No. P20 – Tee



½ – ¾-INCH SIZES

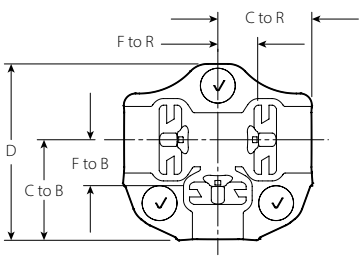


1 – 2-INCH SIZES

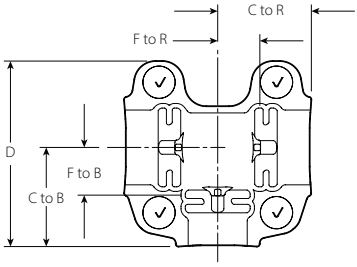
Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm			
		F Takeout	C to B	C to R	D
½	0.840 21.3	0.88 22	2.13 54	2.13 54	3.63 92
¾	1.050 26.9	1.00 25	2.25 57	2.25 57	3.88 99
1	1.315 33.7	1.13 29	2.25 57	2.25 57	4.38 111
1 ¼	1.660 42.4	1.25 32	2.50 64	2.50 64	4.75 121
1 ½	1.900 48.3	1.38 35	3.00 76	3.00 76	5.38 137
2	2.375 60.3	1.63 41	3.25 83	3.25 83	5.88 149

Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information. Publication 34.01 can be downloaded at victaulic.com.

No. P25 – Reducing Tee



¾-INCH RUN SIZE



1 – 2-INCH RUN SIZES

Nominal Size inches Run x Run x Branch	Actual Pipe Outside Diameter inches/mm Run x Run x Branch	Dimensions – inches/mm F to B Takeout	F to R Takeout	C to B	C to R	D
¾ x ¾ x ½	1.050 x 1.050 x 0.840 26.9 26.9 21.3	1.13 29	1.00 25	2.25 57	2.13 54	3.88 99
1 x 1 x ½	1.315 x 1.315 x 0.840 33.7 33.7 21.3	1.13 29	1.00 25	2.38 60	2.13 54	4.38 111
x ¾	x 1.050 26.9	1.13 29	1.13 29	2.38 60	2.25 57	4.63 117
1¼ x 1¼ x ½	1.660 x 1.660 x 0.840 42.4 42.4 21.3	1.38 35	1.00 25	2.50 64	2.13 54	4.75 121
x ¾	1.660 x 1.660 x 1.050 42.4 42.4 26.9	1.38 35	1.13 29	2.50 64	2.25 57	4.75 121
x 1	x 1.315 33.7	1.38 35	1.25 32	2.50 64	2.38 60	4.75 121
1½ x 1½ x ½	1.900 x 1.900 x 0.840 48.3 48.3 21.3	1.63 41	0.88 22	2.75 70	2.38 60	5.00 127
x ¾	x 1.050 26.9	1.63 41	1.00 25	2.75 70	2.50 64	5.13 130
x 1	x 1.315 33.7	1.63 41	1.13 29	2.75 70	2.75 70	5.13 130
x 1¼	x 1.660 42.4	1.63 41	1.38 35	2.75 70	3.00 76	5.00 127
2 x 2 x ½	2.375 x 2.375 x 0.840 60.3 60.3 21.3	1.88 48	0.88 22	3.13 79	2.38 60	5.63 143
x ¾	x 1.050 26.9	1.88 48	1.13 29	3.00 76	2.63 67	5.63 143
x 1	x 1.315 33.7	1.88 48	1.38 35	3.00 76	2.88 73	5.63 143
x 1¼	x 1.660 42.4	1.88 48	1.38 35	3.00 76	3.00 76	5.63 143
x 1½	x 1.900 48.3	1.88 48	1.63 41	3.25 83	3.13 79	5.75 146

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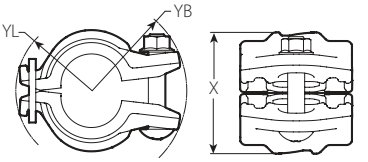
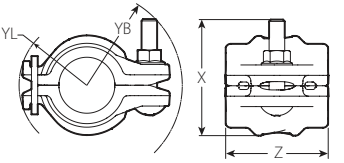
COUPLINGS

Style P07 – Coupling



PRE-ASSEMBLED



ASSEMBLED

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm							
		Pipe End Separation	Pre-Assembled			Assembled			
			Y_L	Y_B	X	Y_L	Y_B	X	Z
½	0.840 21.3	0.14 3.6	1.50 38	2.00 51	2.38 60	1.50 38	2.13 54	2.50 64	2.50 64
¾	1.050 26.9	0.14 3.6	1.63 41	2.13 54	2.38 60	1.50 38	2.13 54	2.63 67	2.50 64
1	1.315 33.7	0.14 3.6	1.75 44	2.25 57	2.75 70	1.63 41	2.25 57	2.75 70	2.50 64
1 ¼	1.660 42.4	0.14 3.6	1.88 48	2.38 60	3.00 76	1.88 48	2.50 64	2.88 73	2.50 64
1 ½	1.900 48.3	0.14 3.6	2.13 54	2.63 67	3.38 86	2.00 51	2.63 67	3.50 89	3.25 83
2	2.375 60.3	0.14 3.6	2.38 60	3.00 76	3.88 99	2.25 57	3.25 83	3.88 99	3.25 83

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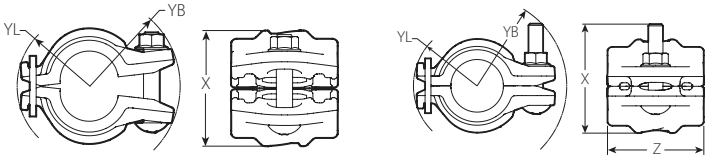
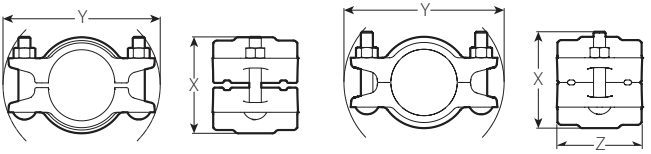
Style P08 – Slip Coupling



PRE-ASSEMBLED ASSEMBLED

½ – 1 ¼-INCH SIZES



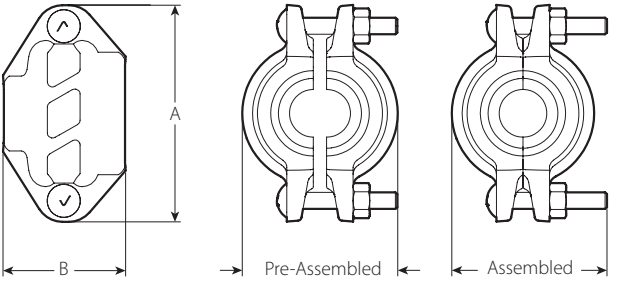
PRE-ASSEMBLED ASSEMBLED

1 ½ – 2-INCH SIZES

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm									
		Pipe End Separation	Pre-Assembled				Assembled				
			Y_L	Y_B	Y	X	Y_L	Y_B	Y	X	Z
½	0.840 21.3	0.00 0	1.50 38	2.00 51	–	2.38 60	1.50 38	2.13 54	–	2.50 64	2.38 60
¾	1.050 26.9	0.00 0	1.63 41	2.13 54	–	2.38 60	1.63 41	2.13 54	–	2.63 67	2.38 60
1	1.315 33.7	0.00 0	1.75 44	2.25 57	–	2.75 70	1.75 44	2.25 57	–	2.75 70	2.38 60
1 ¼	1.660 42.4	0.00 0	1.88 48	2.38 60	–	3.00 76	1.88 48	2.50 64	–	2.88 73	2.38 60
1 ½	1.900 48.3	0.00 0	–	–	4.88 124	3.13 80	–	–	5.00 127	2.88 73	3.13 80
2	2.375 60.3	0.00 0	–	–	5.75 146	3.50 89	–	–	5.88 149	3.50 89	3.13 80

⚠ Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information. Publication 34.01 can be downloaded at victaulic.com.

Style P50 – Reducing Coupling

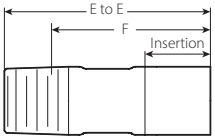


Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Pipe End Separation	Dimensions – inches/mm			
			A	B	Pre-Assembled	Assembled
¾ x ½	1.050 x 0.840 26.9 21.3	0.15 4	3.63 92	2.50 64	2.50 64	2.50 64
1 x ¾	1.315 x 1.050 33.7 26.9	0.20 5	3.88 99	2.50 64	2.75 70	2.63 67
1 ¼ x ¾	1.660 x 1.050 42.4 26.9	0.06 2	4.63 118	2.50 64	3.25 83	3.00 76
1	1.315 33.7	0.06 2	4.63 118	2.50 64	3.25 83	3.00 76
1 ½ x ¾	1.900 x 1.050 48.3 26.9	0.06 2	4.88 124	2.75 70	3.50 89	3.25 83
1	1.315 33.7	0.06 2	4.88 124	2.75 70	3.50 89	3.25 83
1 ¼	1.660 42.4	0.06 2	4.88 124	2.75 70	3.50 89	3.25 83
2 x 1	2.375 x 1.315 60.3 33.7	0.06 2	5.25 133	2.75 70	4.00 102	3.75 95
1 ¼	1.660 42.4	0.06 2	5.25 133	2.75 70	4.13 105	3.75 95
1 ½	1.900 48.3	0.06 2	5.25 133	3.13 79	4.00 102	3.88 99

Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information. Publication 34.01 can be downloaded at victaulic.com.

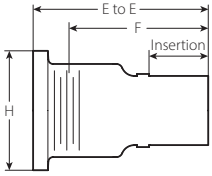
THREADED ADAPTERS

No. P40 – Threaded Adapter (Male NPT x Plain End)



Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm		
		E to E	F Takeout	Insertion Depth
½	0.840 21.3	3.75 95	3.25 83	1.125 29
¾	1.050 26.9	3.75 95	3.25 83	1.125 29
1	1.315 33.7	4.00 102	3.25 83	1.125 29
1 ¼	1.660 42.4	4.00 102	3.38 86	1.125 29
1 ½	1.900 48.3	4.38 111	3.75 95	1.500 38
2	2.375 60.3	4.38 111	3.75 95	1.500 38

No. P80 – Threaded Adapter (Female NPT x Plain End)

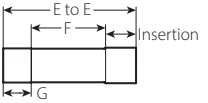


Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm			
		E to E	F Takeout	H	Insertion Depth
½	0.840 21.3	3.25 83	2.63 67	1.75 44	1.125 29
¾	1.050 26.9	3.25 83	2.63 67	2.00 51	1.125 29
1	1.315 33.7	3.38 86	2.63 67	2.25 57	1.125 29
1 ¼	1.660 42.4	3.38 86	2.63 67	2.63 67	1.125 29
1 ½	1.900 48.3	3.75 95	3.00 76	2.88 73	1.500 38
2	2.375 60.3	3.75 95	3.00 76	3.50 89	1.500 38

⚠ Always refer to the current Victaulic publication 34.01 for the most up-to-date dimensional information. Publication 34.01 can be downloaded at victaulic.com.

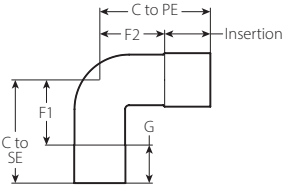
DIELECTRIC ADAPTERS

No. P47 – Straight Dielectric Adapter (Plain-End x Sweat)



Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm			
		E to E	F Takeout	G (Sweat Depth)	Insertion Depth
½	0.840 21.3	4.50 114	4.00 102	0.50 13	1.125 29
¾	1.050 26.9	4.75 121	4.00 102	0.75 19	1.125 29
1	1.315 33.7	4.88 124	4.00 102	0.88 23	1.125 29
1 ¼	1.660 42.4	5.00 127	4.00 102	1.00 25	1.125 29
1 ½	1.900 48.3	5.13 130	4.00 102	1.13 29	1.500 38
2	2.375 60.3	5.38 137	4.00 102	1.38 35	1.500 38

No. P97 – 90° Elbow Dielectric Adapter (Plain-End x Sweat)



Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm					
		C to SE (Center to Sweat End)	C to PE (Center to Plain End)	F1 Copper Takeout	F2 Steel Takeout	G (Sweat Depth)	Insertion Depth
½	0.840 21.3	1.88 48	2.63 67	1.38 35	2.63 67	0.50 13	1.125 29
¾	1.050 26.9	2.13 54	2.63 67	1.38 35	2.63 67	0.75 19	1.125 29
1	1.315 33.7	2.50 64	2.75 70	1.63 41	2.75 70	0.88 22	1.125 29
1 ¼	1.660 42.4	2.88 73	2.88 73	1.88 48	2.88 73	1.00 25	1.125 29
1 ½	1.900 48.3	2.88 73	2.88 73	1.75 44	2.88 73	1.13 29	1.500 38
2	2.375 60.3	3.25 83	3.25 83	1.88 48	3.25 83	1.38 35	1.500 38

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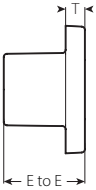
CAP

No. P60 – Cap



NOTE: A tapped cap is available as an option.
Reference Victaulic publication 34.01 for additional information.

Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm	
		E to E	T
½	0.840 21.3	1.50 38	0.38 10
¾	1.050 26.9	1.50 38	0.38 10
1	1.315 33.7	1.50 38	0.38 10
1 ¼	1.660 42.4	1.50 38	0.38 10
1 ½	1.900 48.3	1.88 48	0.38 10
2	2.375 60.3	1.88 48	0.38 10

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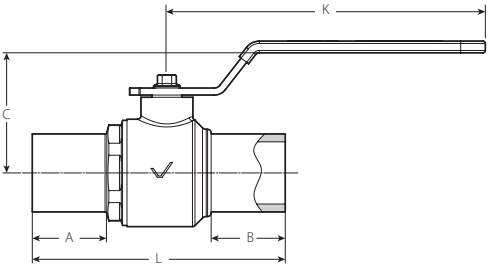
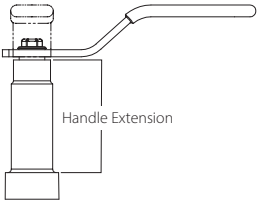
VALVE

Series P89 – Ball Valve



Nominal Size inches	Actual Pipe Outside Diameter inches/mm	Dimensions – inches/mm				
		A	B	C	L	K
½	0.840 21.3	1.25 32	1.25 32	2.50 64	4.00 102	4.25 108
¾	1.050 26.9	1.25 32	1.25 32	2.63 67	4.13 105	4.25 108
1	1.315 33.7	1.25 32	1.25 32	2.75 70	4.50 114	5.25 133
1 ¼	1.660 42.4	1.25 32	1.25 32	2.88 73	4.75 121	5.25 133
1 ½	1.900 48.3	1.63 41	1.63 41	3.00 76	6.13 156	6.13 156
2	2.375 60.3	1.63 41	1.63 41	3.63 92	6.38 162	6.38 162

Series P89 Ball Valve Handle Extension Kit Part Codes



Nominal Size inches	Actual Pipe Outside Diameter inches/mm	2-inch/51-mm Handle Extension Part Code	4-inch/102-mm Handle Extension Part Code
½ – ¾	0.840 – 1.050 21.3 – 26.9	P-004-78Y-2HL	P-004-78Y-4HL
1 – 1 ¼	1.315 – 1.660 33.7 – 42.4	P-012-78Y-2HL	P-012-78Y-4HL
1 ½ – 2	1.900 – 2.375 48.3 – 60.3	P-020-78Y-2HL	P-020-78Y-4HL

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