Style W256 AGS™ Expansion Barrel Installation and Maintenance Procedures

24 – 42-inch/DN600 – DN1050 Sizes with Style W07 AGS™ Rigid Coupling Connections

PATENT PENDING

⚠ 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.
- These installation instructions are intended for an experienced, trained installer. The installer shall understand the use of this product and why it was specified for the particular application.
- The installer shall understand common industry safety standards and potential consequences of improper product installation.
- Wear safety glasses, hardhat, and foot protection.

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

⚠ CAUTION

- The drawings featured in this maintenance procedures manual are for reference only.
- Only Victaulic-supplied replacement parts shall be used.

Failure to use Victaulic-supplied replacement parts will void the warranty and could cause improper product operation, resulting in personal injury and property damage.

To order replacement parts, contact your local Victaulic sales representative or your local Victaulic branch.

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HAZARD IDENTIFICATION

Definitions for identifying the various hazard levels are provided below. When you see this symbol, be alert to the possibility of personal injury. Carefully read and fully understand the message that follows.

⚠ WARNING

- **The use of the word "WARNING" identifies the presence of hazards or unsafe practices that could result in death or serious personal injury and property damage if instructions are not followed.**

⚠ CAUTION

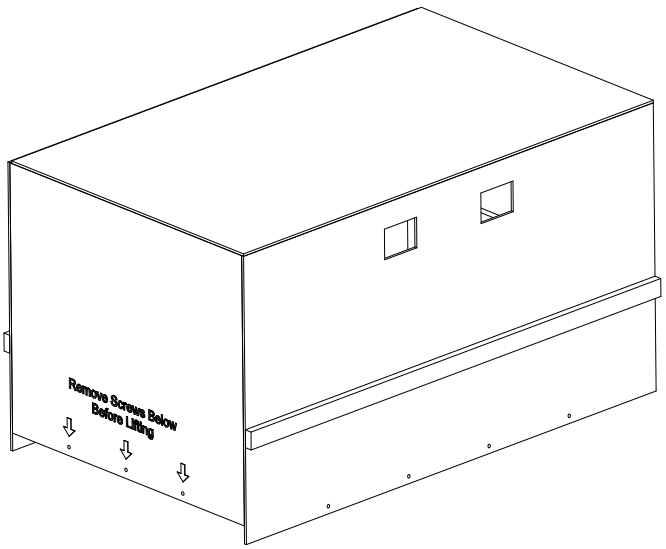
- **The use of the word "CAUTION" identifies possible hazards or unsafe practices that could result in personal injury and product or property damage if instructions are not followed.**

NOTICE

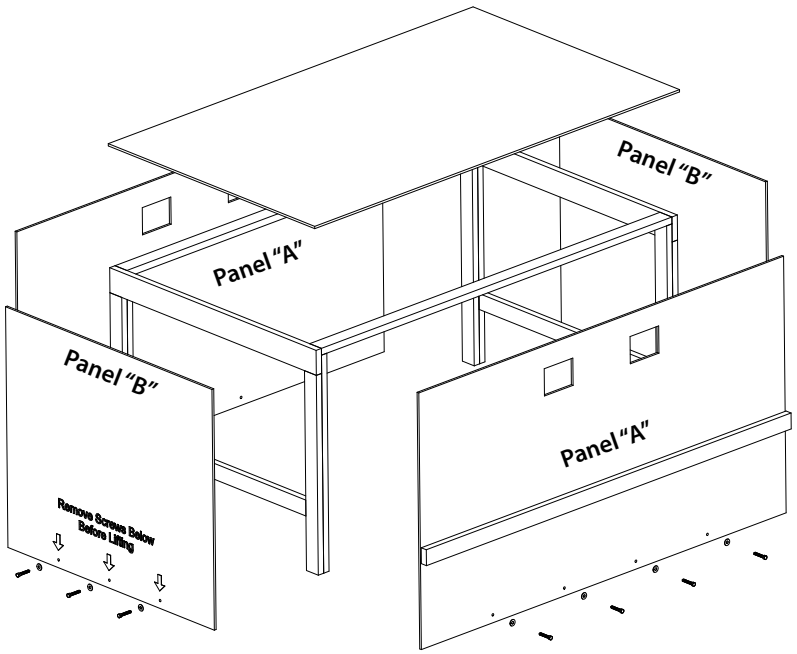
- **The use of the word "NOTICE" identifies special instructions that are important but not related to hazards.**

SECTION I

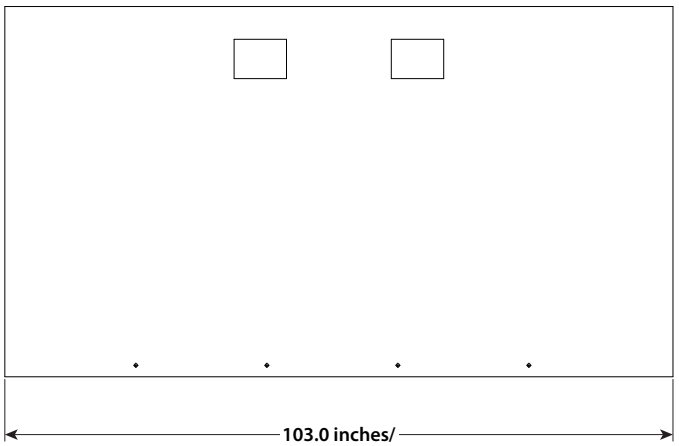
- **Receiving the Shipment**



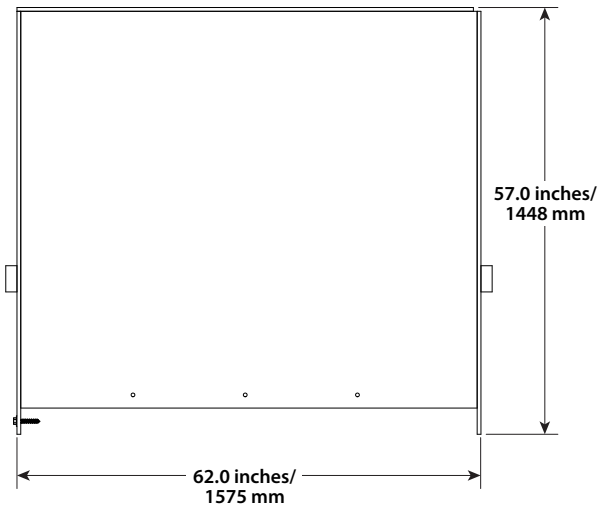
CRATE DIMENSIONS



Overall Width - Panel "A"



Overall Depth and Height - Panel "B"



EXPANSION BARREL ASSEMBLY WEIGHTS

The following weights are provided so that provisions can be made for safe and proper handling of the Expansion Barrel assembly.

Nominal Style W256 Expansion Barrel Size inches/DN	Approximate Weight lbs/kg
24 DN600	4435 2012
26 DN650	4814 2184
28 DN700	5200 2359
30 DN750	5639 2558

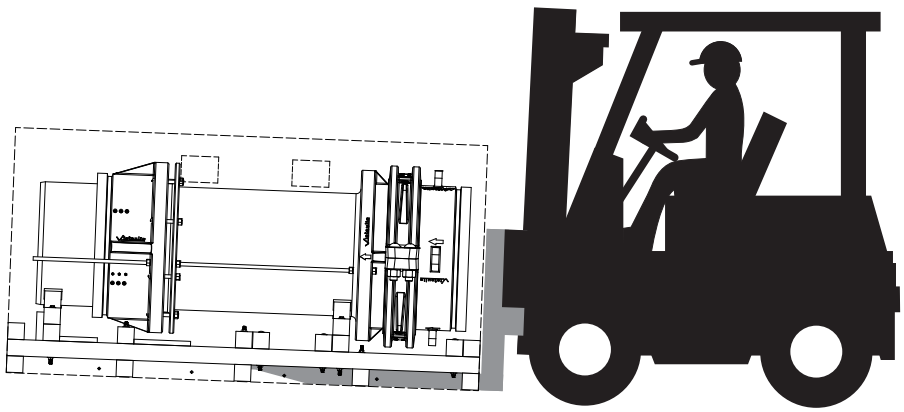
Nominal Style W256 Expansion Barrel Size inches/DN	Approximate Weight lbs/kg
32 DN800	6131 2781
36 DN900	7163 3249
42 DN1050	10270 4658

CRATE/EXPANSION BARREL ASSEMBLY LIFTING REQUIREMENTS

⚠ WARNING

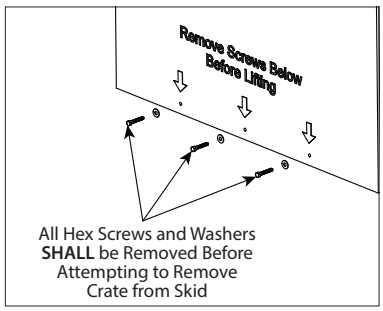
- **Proper forklift operation and material handling techniques are critical when transporting the Expansion Barrel assembly.**
- **Only licensed forklift operators shall perform material handling duties.**

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

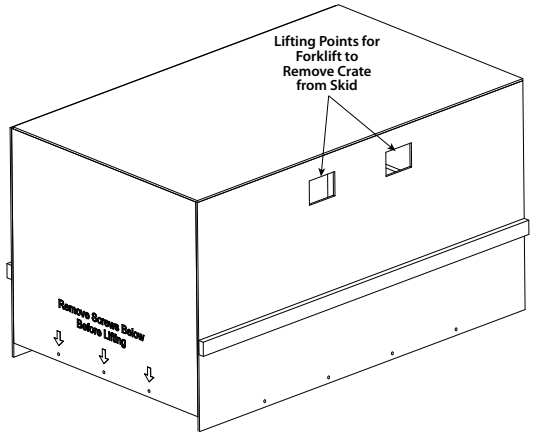


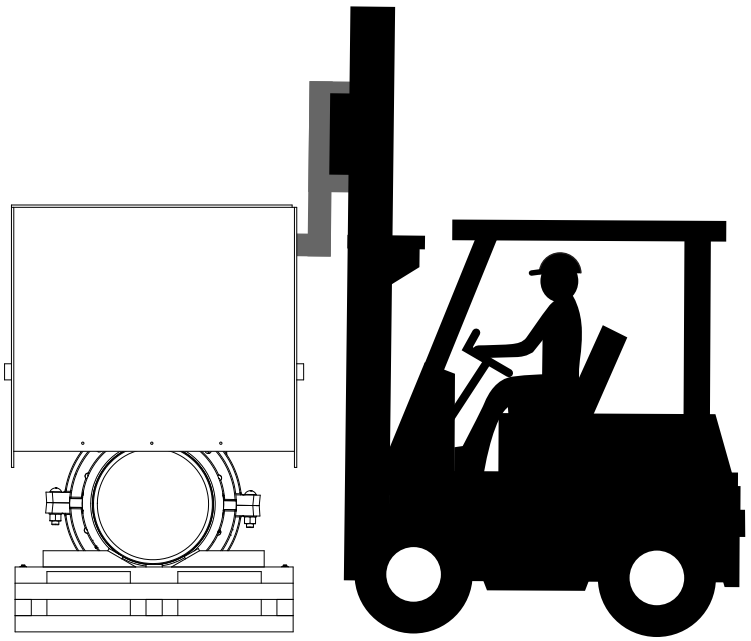
Crate shown in outline for clarity of contents

1. Lifting of the crate/Expansion Barrel assembly shall be performed only by engaging the forks of the forklift with the end of the crate/skid with the inlet segment/coupling/inner barrel, as shown above. **NOTE:** Extensions may be required to extend the forks in order to balance the weight of the crate/Expansion Barrel assembly if the regular forks do not reach the center rail.



2. Remove all of the hex screws and washers from the lower portion of the crate/skid to allow for removal of the crate in the following step.





3. Engage the forks of the forklift with the two locations of the top of the crate, as shown above. DO NOT attempt to lift the crate from the bottom.
4. Remove all straps from the Expansion Barrel assembly/skid and inspect the assembly to ensure no damage has occurred to the Expansion Barrel.

STRAPPING METHODS FOR LIFTING THE EXPANSION BARREL ASSEMBLY

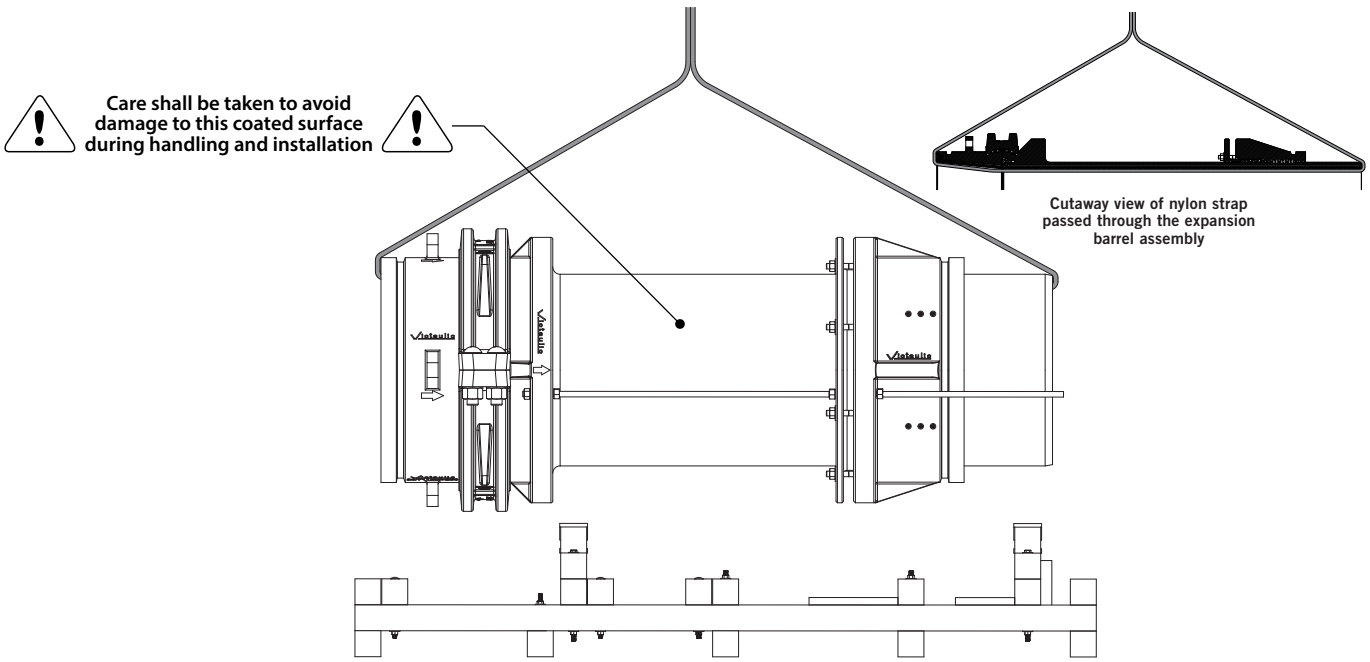
⚠ WARNING

- **DO NOT lift the Expansion Barrel by the threaded assembly rods, Style W07 AGS Rigid Coupling, or lug on the inlet segment.**

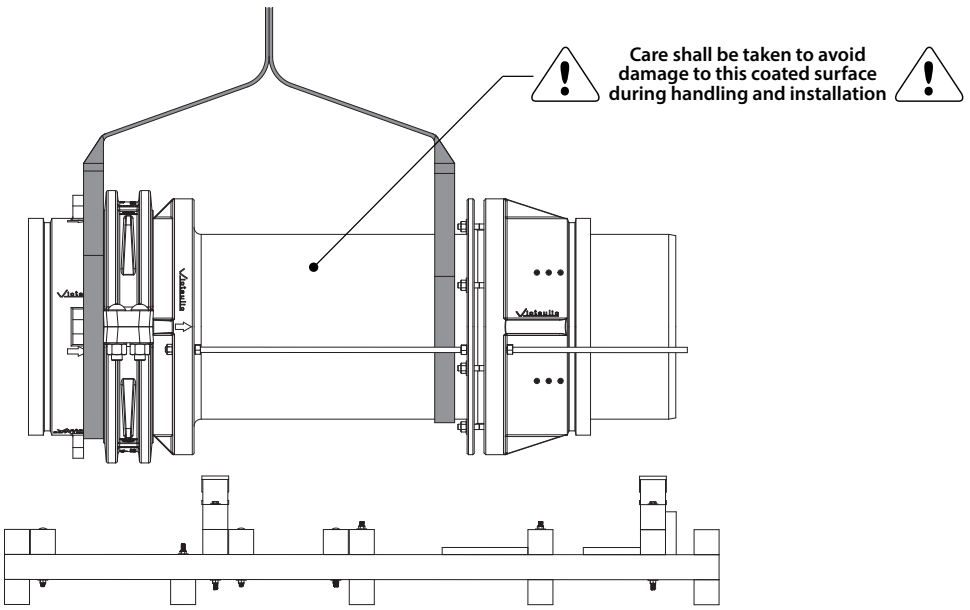
The threaded assembly rods, Style W07 AGS Rigid Coupling, or lug on the inlet segment can break away under the weight of the Expansion Barrel, resulting in death or serious personal injury and property damage.

- **The threaded assembly rods SHALL be removed after installation and anchoring are complete. Refer to Section III.**

Failure to remove the threaded assembly rods after installation and anchoring are complete will result in improper product operation and will void the Victaulic warranty.



- The method above shows a nylon strap passed through the Expansion Barrel assembly. **DO NOT USE THIS LIFTING METHOD FOR URETHANE AND RUBBER LINED PIPE VERSIONS.** Lift the Expansion Barrel slowly up and away from the skid and guide the assembly into place within the pipeline. **Nylon straps shall be used for this lifting method. DO NOT lift the Expansion Barrel by the coupling, threaded assembly rods, or lug on the inlet segment.**

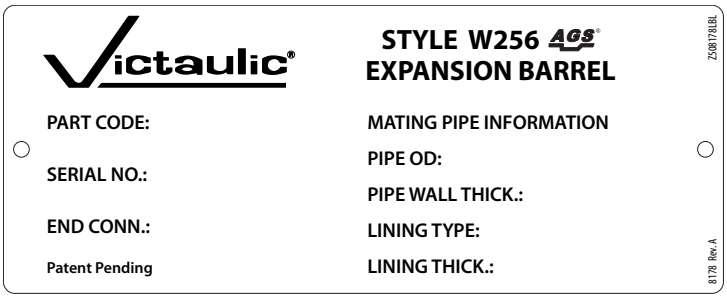


- The method above shows nylon straps wrapped around the outside of the inlet segment and inner barrel. The straps shall be placed to balance the weight of the assembly. **NOTE: This is the recommended lifting method for urethane and rubber lined pipe versions.** Lift the Expansion Barrel slowly up and away from the skid and guide the assembly into place within the pipeline. **Nylon straps shall be used for this lifting method. DO NOT lift the Expansion Barrel by the coupling, threaded assembly rods, or lug on the inlet segment.**

SECTION II

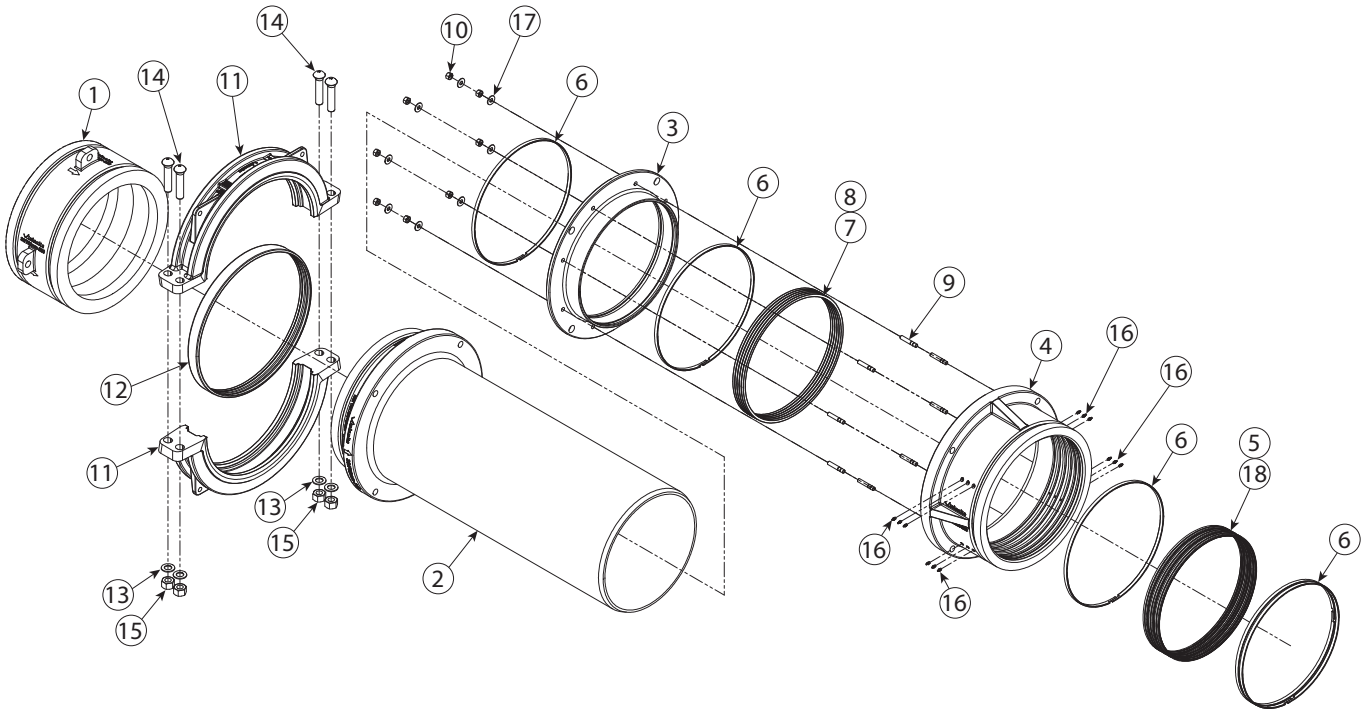
• Exploded View Drawing

NOTICE



- To order replacement parts for an expansion barrel, contact your local Victaulic sales representative or your local Victaulic branch. A project-specific parts document is provided with the order and contains part codes for the particular expansion barrel configuration. In cases where this project-specific parts document is not available, refer to the identification tag that is provided on the inner barrel's flange section, and provide the part code and serial number that is etched on the tag (refer to example tag shown above).

EXPANSION BARREL (UNLINED PIPE VERSION) EXPLODED VIEW DRAWING AND BILL OF MATERIALS



Item	Description
1	Inlet Segment (Unlined)
2	Inner Barrel (Unlined)
3	Packing Follower
4	Outer Barrel
5	Seal (Part of Seal System Kit 1)
6	Guide Strip (Part of Seal System Kits 1 and 2)
7	Outer Packing (Part of Seal System Kit 2)
8	Inner Packing (Part of Seal System Kit 2)
9	Stud
10	Heavy Hex Nut for Packing Follower
11	Style W07 AGS Rigid Coupling Housing
12	FlushSeal™ Gasket for Style W07 AGS Rigid Coupling
13	Plain Washer (Carbon Steel) for Style W07 AGS Rigid Coupling
14	Oval Neck Track Bolt for Style W07 AGS Rigid Coupling
15	Heavy Hex Nut for Style W07 AGS Rigid Coupling
16	Lubrication Port
17	Plain Washer (Stainless Steel) for Packing Follower
18	Gap Preventer (Part of Seal System Kit 1)

To order replacement parts, including replacement threaded assembly rods, contact your local Victaulic sales representative or your local Victaulic branch.

SECTION III

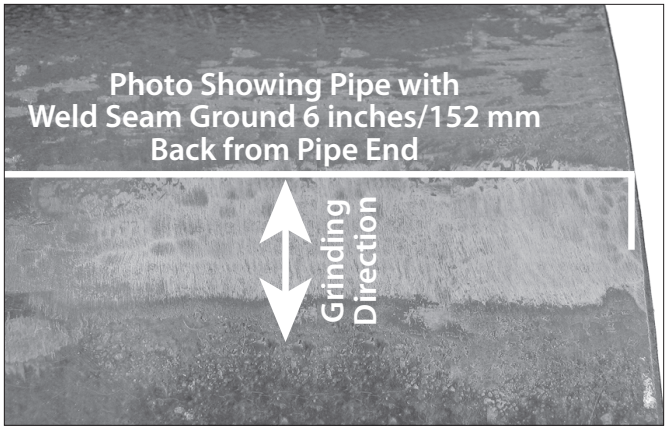
- **Installation of Style W07 AGS Rigid Couplings for Connection of Expansion Barrel to Pipeline**

INSTALLATION OF STYLE W07 AGS RIGID COUPLINGS FOR CONNECTION OF EXPANSION BARREL TO PIPELINE

⚠ WARNING

- **ALWAYS REFERENCE THE SET LENGTH SUBMITTAL DRAWING THAT IS PROVIDED AT THE TIME OF ORDER.**
- **Joining a Style W256 Expansion Barrel to the pipeline with Style W07 AGS Rigid Couplings requires pipe that is prepared with a Victaulic Type "B" or Type "D" *Vic-Ring* welded onto each mating pipe end. DO NOT attempt to join the Style W256 and Style W07 with mating pipe ends that are direct-grooved.**
- **It is the welder's responsibility to verify that AGS *Vic-Rings* are welded correctly to the pipe, in accordance with project/site-specific welding standards and in conformance with the AGS *Vic-Ring* Weldment submittal drawing(s) provided for the specific project.**
- **The weld shall be capable of withstanding all thrust loads, in accordance with appropriate American Welding Society (AWS) specifications or other local or national codes and requirements. All welds shall be leak-tight.**
- **Applicable safety procedures shall be followed during the welding process.**

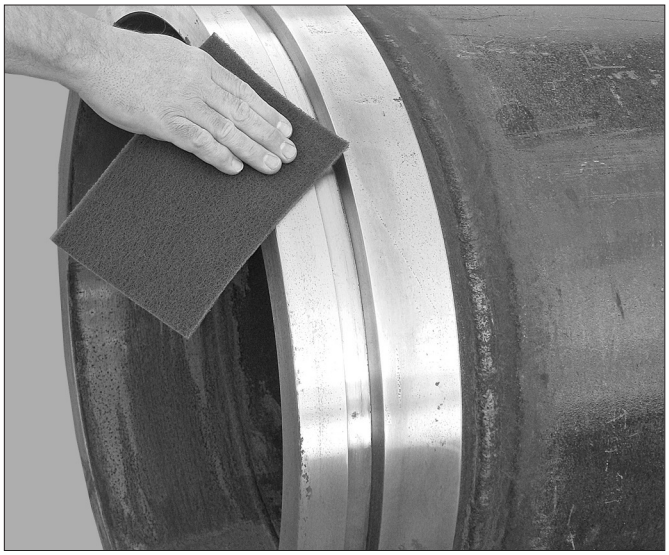
Failure to follow these instructions could cause improper product installation, resulting in death or serious personal injury and property damage.



1. Prior to welding a *Vic-Ring* onto the mating pipe ends, weld seams shall be ground flush to the pipe surface (outside diameter). Grind the weld seam from the pipe end to a minimum distance of 6 inches/ 152 mm back from the pipe end. This area shall be generally free from indentations, projections, and roll marks.

2. Weld the *Vic-Ring* onto the pipe end per the literature provided with the shipment and the specifications listed in Victaulic publication 16.11 for Style W07 AGS Rigid Couplings.

3. Support both prepared pipe ends and Expansion Barrel securely during assembly. Support shall be maintained throughout the entire installation procedure.



4. Clean the outside surface of the *Vic-Rings* on the prepared pipe ends, along with the outside surface of the Expansion Barrel's outer barrel and inlet segment ends, to remove all dirt and other foreign material.

⚠ CAUTION

- **A thin coat of a compatible lubricant shall be applied to the gasket sealing lips, gasket exterior, and the interior surface of each coupling housing to help prevent the gasket from pinching, rolling, or tearing during installation.**

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

5a. CHECK GASKET: Check the gasket to verify that it is suitable for the intended service. The color code identifies the material grade. **For complete compatibility information, reference Victaulic publications 05.01 and GSG-100, which can be downloaded at victaulic.com.**

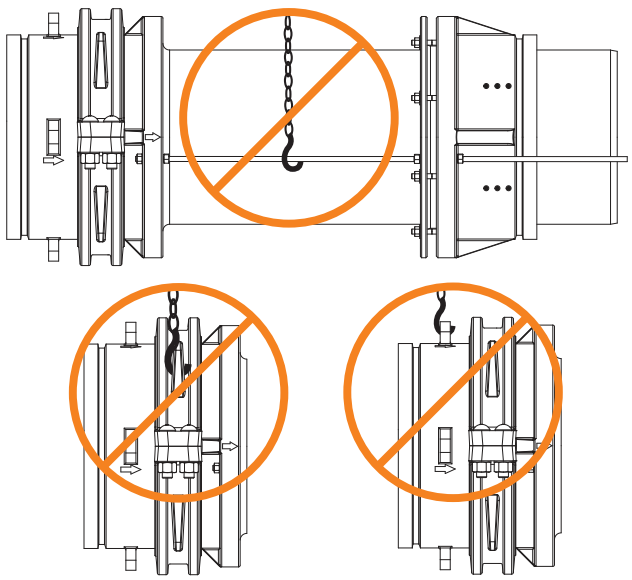
5b. LUBRICATE GASKET AND HOUSINGS: Apply a thin coat of a compatible lubricant, Victaulic Lubricant or silicone grease, to the gasket sealing lips, gasket exterior, and the interior surface of both coupling housings (silicone spray is not a compatible lubricant).

NOTICE

- **STYLE W07 AGS RIGID COUPLINGS HAVE AN ASSEMBLY TORQUE REQUIREMENT. REFER TO THE INSTRUCTIONS IN THIS SECTION OR THE MARKINGS ON THE HOUSINGS FOR THE SPECIFIC ASSEMBLY TORQUE REQUIREMENT.**
- **When the gasket is positioned over the prepared pipe end, the gasket sealing lips shall maintain full circumferential contact with the prepared pipe end.**
- **The gasket shall fit snug to the prepared pipe end. No gaps/sags shall be present between the gasket sealing lips and outside diameter of the prepared pipe end.**
- **A gasket that does not fit snug to the outside diameter of the prepared pipe end shall be replaced with a new gasket prior to installation of the coupling housings.**

6. Position a gasket over each prepared pipe end. Verify that the gasket does not overhang the prepared pipe ends.

⚠ WARNING



- **DO NOT lift the Expansion Barrel by the threaded assembly rods, Style W07 AGS Rigid Coupling, or inlet segment.**

The threaded assembly rods, Style W07 AGS Rigid Coupling, or inlet segment can break away under the weight of the Expansion Barrel, resulting in death or serious personal injury and property damage.

- **The threaded assembly rods SHALL be removed after installation and anchoring are complete.**

Failure to remove the threaded assembly rods after installation and anchoring are complete will result in improper product operation and will void the Victaulic warranty.

7. POSITION EXPANSION BARREL: Position the Expansion Barrel so that the grooved end of the outer barrel is aligned with the downstream prepared pipe end. **NOTE:** Verify that the arrow on the Style W256 body is pointing in the direction of flow.

8. MOVE LOWER COUPLING HOUSINGS INTO POSITION: Move the two lower coupling housings into position underneath the prepared pipe ends and expansion barrel.

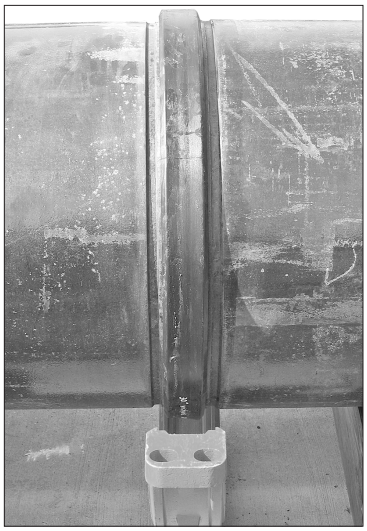
NOTICE

- **The following installation steps feature photos of a Style W07 AGS Rigid Coupling on two AGS direct-grooved pipe ends. Note that the same installation steps apply when mating prepared pipe ends with the outer barrel and inlet segment of the Expansion Barrel.**
- **In situations where the prepared pipe ends will not allow for ease of installing the Expansion Barrel, the inlet segment can be disassembled from the Expansion Barrel by removing the Style W07 AGS Rigid Coupling. The Style W07 AGS Rigid Coupling and inlet segment shall be re-installed by following all steps in this section.**

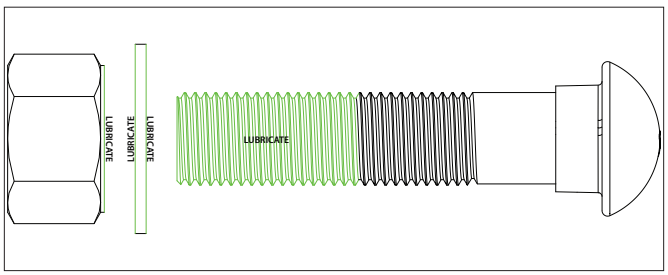
⚠ CAUTION

- **The coated inner barrel shall telescope into the pipeline.**
- **Use caution to prevent any damage to the coating of the inner barrel during installation.**

Failure to follow these instructions could cause joint leakage and will void the Victaulic warranty.



9. JOIN OUTER BARREL AND DOWNSTREAM PREPARED PIPE END: Align and bring the outer barrel and downstream prepared pipe end to within the appropriate pipe end separation dimension. Slide the gasket into position and center it between the groove in the outer barrel and prepared pipe end. Verify that the gasket does not extend into the groove of the outer barrel or prepared pipe end at any point throughout the installation. **The gasket shall fit snug. No gaps/sags shall be present between the gasket sealing lips and outside diameter of the outer barrel and prepared pipe end.**



10. LUBRICATE BOLT THREADS: At the time of hardware installation, apply a thin coat of Victaulic Lubricant or equivalent bolt thread lubricant to the bolt threads, as indicated above. **NOTE:** If stainless steel hardware is special ordered, apply an anti-seize compound to the bolt threads in the same manner indicated above.

⚠ CAUTION

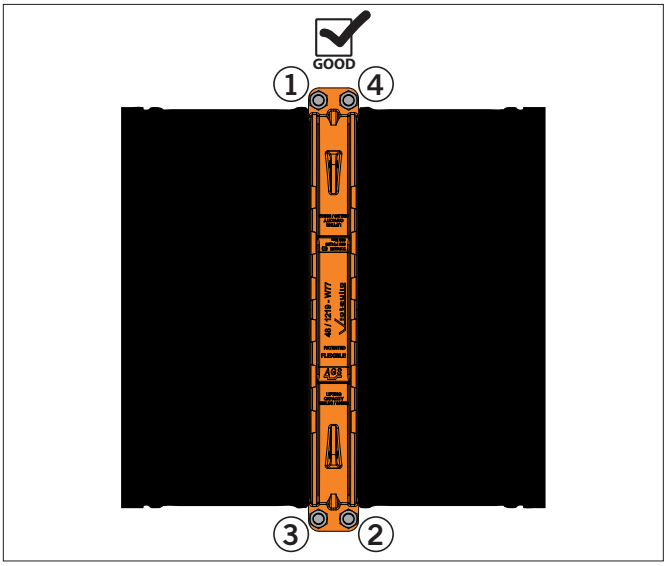
- **Verify that the gasket does not become rolled or pinched while installing the housings.**

Failure to follow this instruction could cause damage to the gasket, resulting in joint leakage.

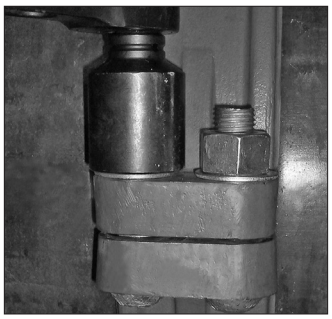
11. INSTALL UPPER HOUSINGS: Using a strapping method, similar to the examples shown above with a lubricated bolt installed in each bolt hole, install the upper housings over the gasket. Verify that the housings' keys completely engage the groove in the outer barrel and prepared pipe end. Maintain support of the housings while preparing to install the flat washers and nuts.

12. INSTALL FLAT WASHERS/ NUTS: Install a flat washer onto the end of each bolt, and thread a nut onto each bolt. **NOTE:** Verify that the oval neck of each bolt seats properly in the bolt hole.

13. PRIOR TO FINAL TIGHTENING OF THE COUPLING HARDWARE ON THE OUTER BARREL SIDE: Align the inlet segment to the upstream prepared pipe end. This can be accomplished by using the threaded assembly rods to move the inlet segment to mate up to the upstream section of piping. Perform steps 9 - 12 for the inlet segment and upstream section of piping.



REPEAT THE TIGHTENING SEQUENCE shown above until the installation requirements in Step 14 BELOW are achieved.



14. TIGHTEN NUTS: Tighten the nuts evenly by alternating sides at each coupling location, maintaining nearly uniform bolt pad gaps during tightening (refer to tightening sequence shown above). **Continue to tighten the nuts evenly by alternating sides until metal-to-metal bolt pad contact AND the specified torque value are achieved.** Refer to the "Required Torque" and "Helpful Information" tables on the following page. **NOTE:** It is important to tighten the nuts evenly by alternating sides to prevent gasket pinching. Deep-well sockets are required for proper installation due to the longer bolt lengths associated with these couplings.

TO PREVENT LUBRICATION FROM DRYING OUT AND CAUSING GASKET PINCHING, ALWAYS BRING THE BOLT PADS INTO METAL-TO-METAL CONTACT IMMEDIATELY AFTER ASSEMBLING THE COUPLING ONTO PREPARED PIPE ENDS.

⚠ WARNING

- **Nuts shall be tightened evenly by alternating sides, maintaining nearly uniform bolt pad gaps, until both conditions of metal-to-metal bolt pad contact AND the specified torque value are achieved.**
- **Always bring the bolt pads into metal-to-metal contact immediately after assembling the coupling onto prepared pipe ends.**
- **Keep hands away from coupling openings during tightening.**

Failure to follow instructions for tightening coupling hardware could result in:

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

15. Visually inspect the bolt pads at each joint to verify that metal-to-metal contact is achieved across the entire bolt pad section.

16. Remove the threaded assembly rods from the Expansion Barrel assembly after installation and anchoring are complete. Keep these threaded assembly rods for maintenance/reinstallation purposes.

Required Torque

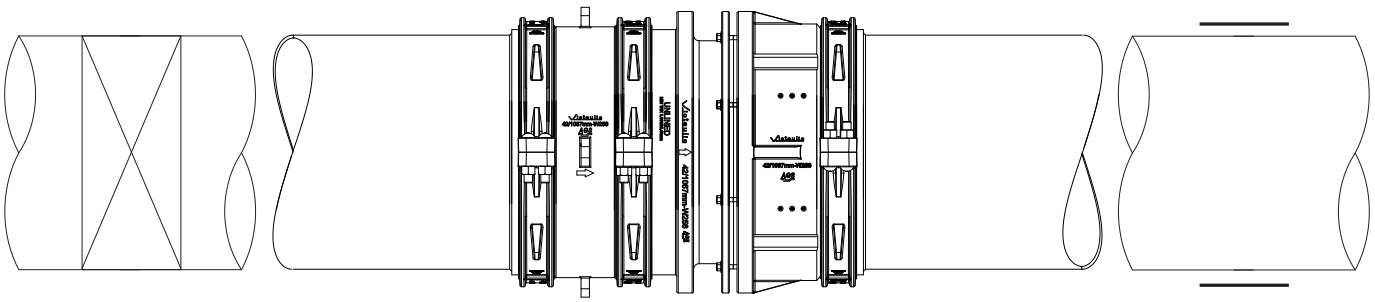
Nominal Coupling Size inches/DN	Actual Pipe Outside Diameter inches/mm	Nominal Style W256 Expansion Barrel Size inches/DN	Required Torque
26 DN650	24.000 609.6	24 DN600	375 ft-lbs 500 N•m
28 DN700	26.000 660.4	26 DN650	375 ft-lbs 500 N•m
30 DN750	28.000 711.2	28 DN700	500 ft-lbs 678 N•m
32 DN800	30.000 762.0	30 DN750	500 ft-lbs 678 N•m
34 DN850	32.000 812.8	32 DN800	500 ft-lbs 678 N•m
38 DN950	36.000 914.4	36 DN900	500 ft-lbs 678 N•m
44 DN1100	42.000 1066.8	42 DN1050	600 ft-lbs 814 N•m

Helpful Information

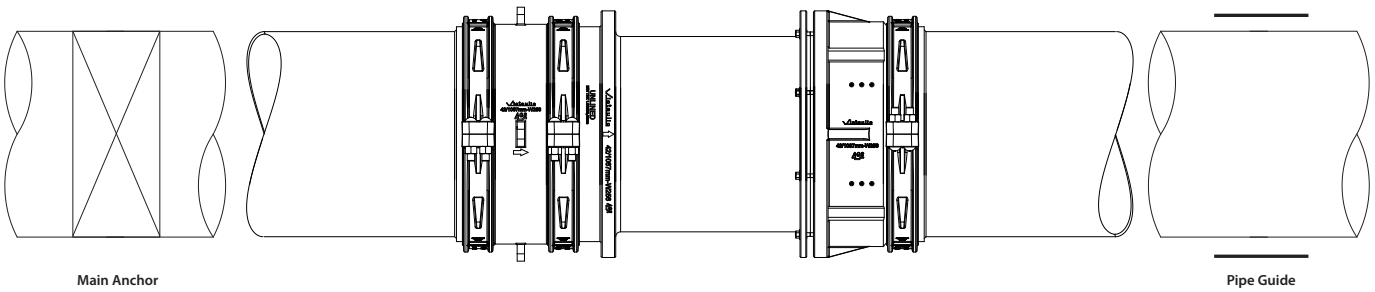
Nominal Coupling Size inches/DN	Actual Pipe Outside Diameter inches/mm	Number of Bolts/Nuts/Washers	Nut Size inches/Metric	Socket Size inches/mm
26 – 28 DN650 – DN700	24.000 – 26.000 609.6 – 660.4	4	1 ⅛ M27	1 13/16 41
30 – 38 DN750 – DN950	28.000 – 36.000 711.2 – 914.4	4	1 ¼ M30	2 46
44 DN1100	42.000 1066.8	4	1 ½ M36	2 ⅜ 55

NOTICE
• **The pipeline shall be supported and guided to prevent bending moments or shear loads on the adjoining couplings. Refer to the examples below.**

FULL CONTRACTION



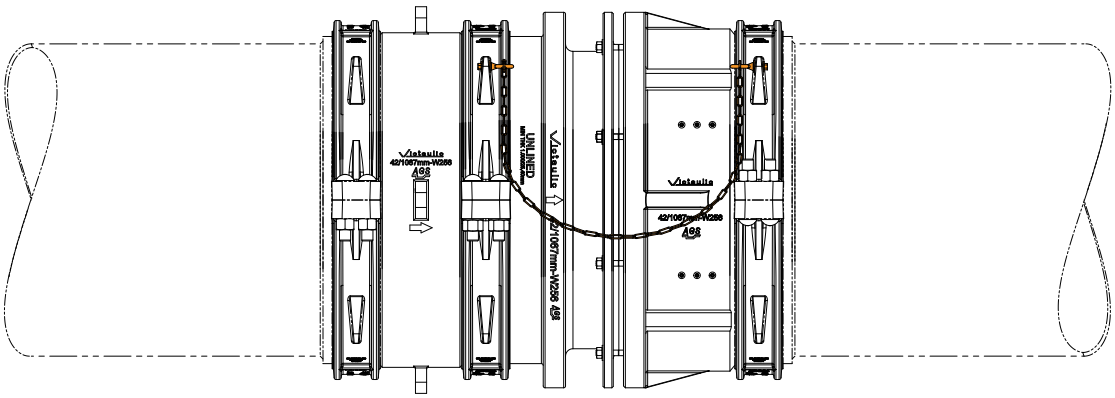
FULL EXPANSION



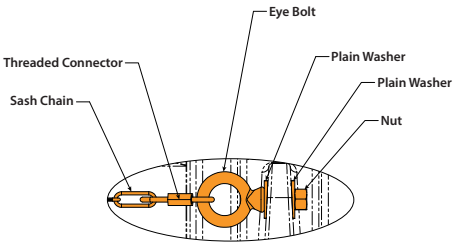
SECTION IV

- **Installation of the Optional Length Indicator Kit**

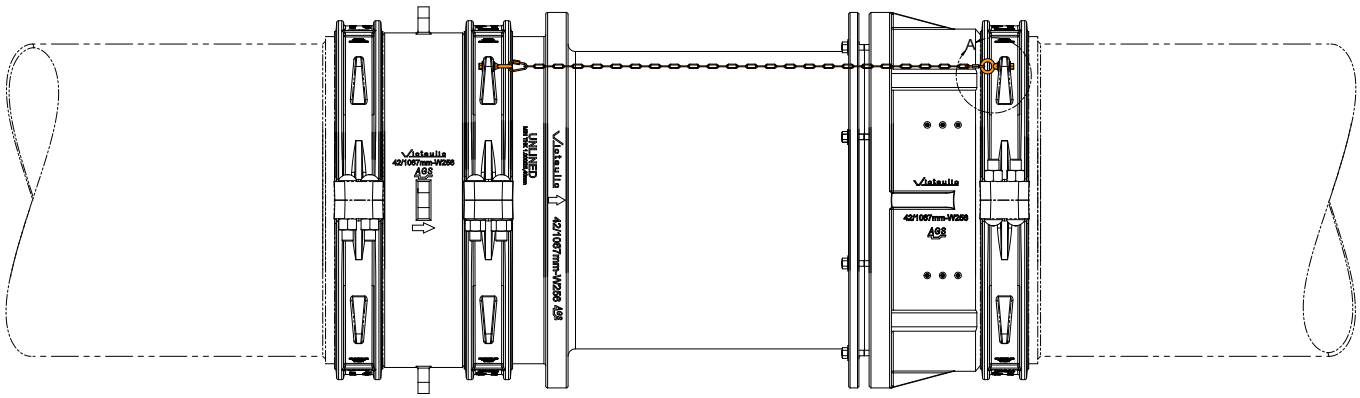
INSTALLATION OF THE OPTIONAL LENGTH INDICATOR KIT



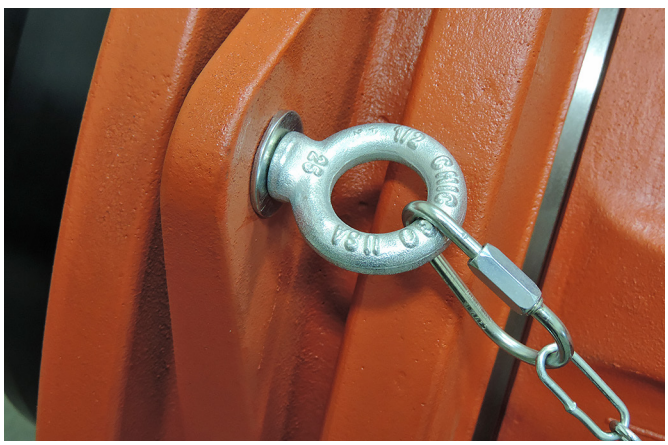
FULL CONTRACTION

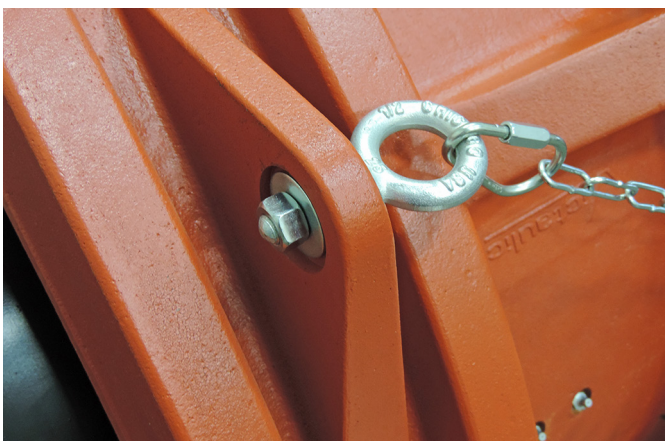


DETAIL A



FULL EXPANSION





SECTION V

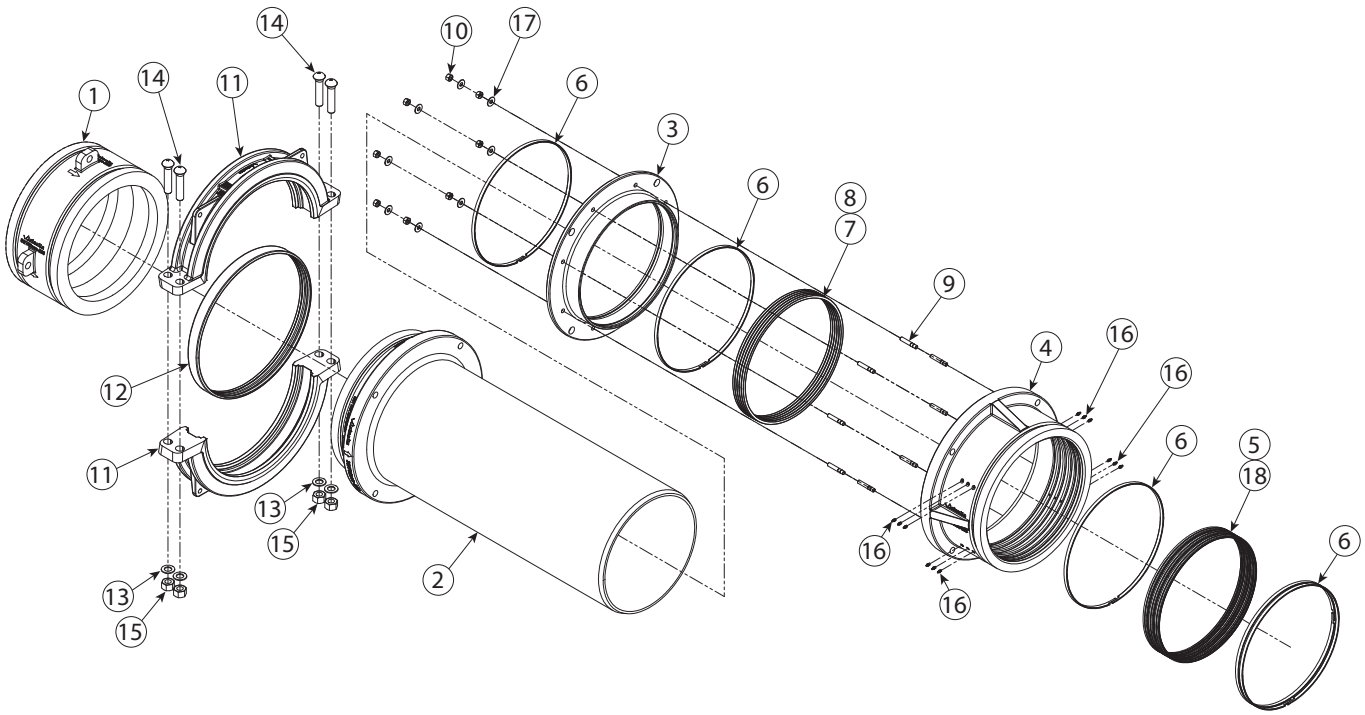
- **Complete Disassembly of the Expansion Barrel**

COMPLETE DISASSEMBLY OF THE EXPANSION BARREL

⚠ 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.



1. Verify that the system is depressurized and drained completely before attempting to disassemble the Style W256 Expansion Barrel.

2. Support the Style W256 assembly while removing the two Style W07 AGS Rigid Couplings that connect the assembly to the pipeline.

3. Remove the Style W07 AGS Rigid Coupling assembly (Items 11 - 15) that connects the inlet segment (Item 1) to the inner barrel (Item 2).

4a. Remove the heavy hex nuts (Item 10), studs (Item 9), and plain washers (Item 17) from the packing follower (Item 3) and outer barrel (Item 4).

4b. Remove the outer barrel (Item 4) and packing follower (Item 3) from the inner barrel (Item 2).

4c. Remove and discard the packing (Items 7 and 8), guide strips (Item 6), seals (Item 5), and gap preventers (Item 18) from the outer barrel (Item 4).

4d. Remove and discard the guide strips (Item 6) from the packing follower (Item 3).

SECTION VI

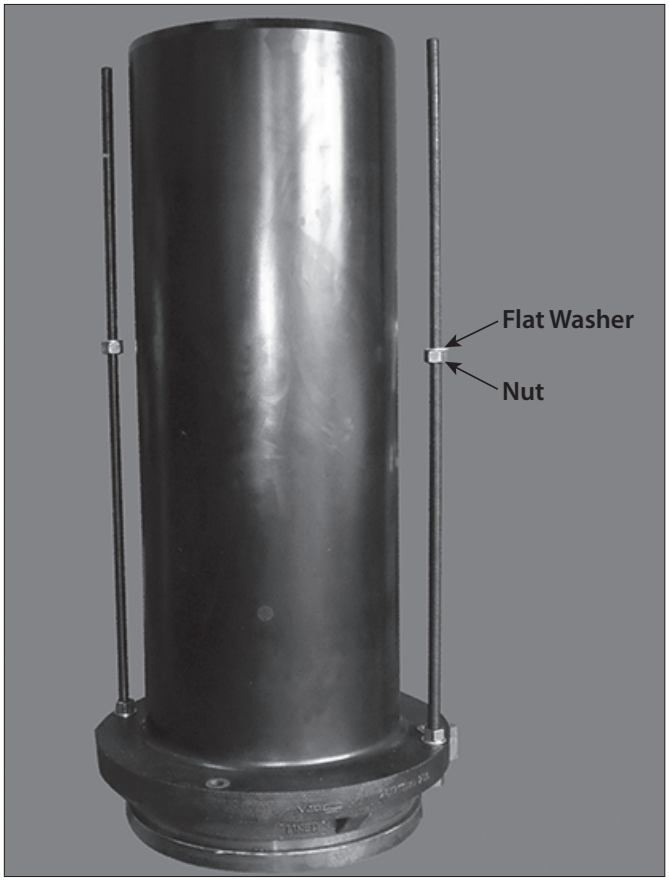
- **Complete Reassembly of the Expansion Barrel**

COMPLETE REASSEMBLY OF THE EXPANSION BARREL

⚠CAUTION

- **Only Victaulic-supplied replacement parts shall be used.**

Failure to use Victaulic-supplied replacement parts will void the warranty and could cause improper operation and leakage from the Expansion Barrel.



1. Rotate the inner barrel (Item 2, page 7) to the vertical position, with the grooved end on the ground, to allow for packing follower (Item 3, page 7) and outer barrel (Item 4, page 7) installation.

2. Install a 6-foot/2-meter long x 1¼-inch/32 mm diameter threaded assembly rod into two holes (opposite each other, as shown above) in the inner barrel's flange section. The threaded assembly rods shall have a nut with flat washer on both sides of the flange to allow for proper retention of the threaded assembly rods. Thread an additional nut with flat washer halfway down each threaded assembly rod, as shown above.

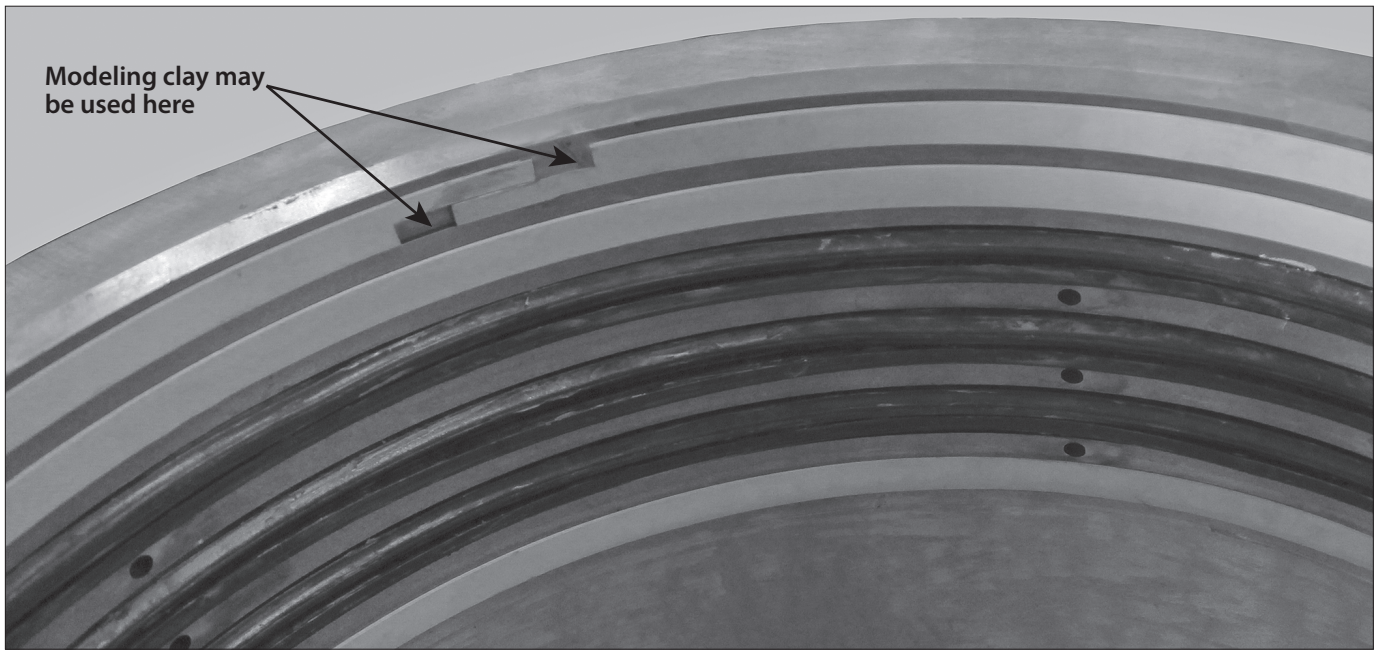
⚠CAUTION

- **Use caution to prevent damage to the coating of the inner barrel during reassembly.**

Failure to follow this instruction could cause improper operation and leakage from the Expansion Barrel.

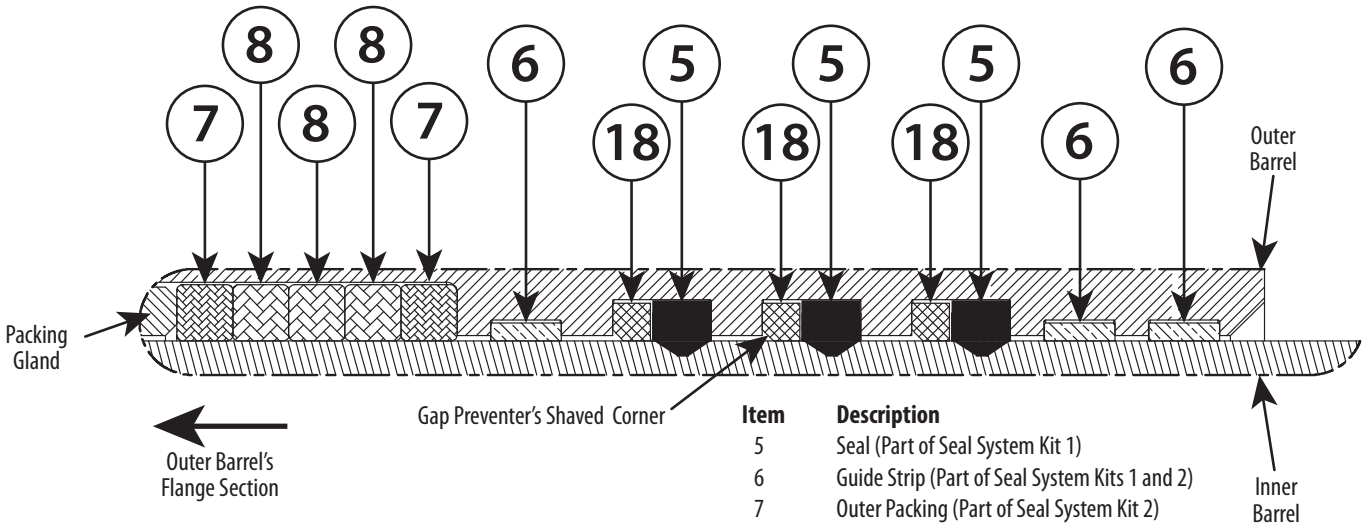
3. Install guide strips (Item 6, page 7) into the packing follower. **NOTE:** Modeling clay may be used to hold the guide strips in place.

4. Slowly lower the packing follower toward the inner barrel with the holes in the packing follower's flange aligned with the threaded assembly rods. **NOTE:** The packing follower shall move freely over the inner barrel.



5. Install guide strips (Item 6, page 7) into the outer barrel (Item 4, page 7). **NOTE:** Modeling clay may be used to hold the guide strips in place.

6. Lube the seals (Item 5, page 7) and gap preventers (Item 18, page 7) with Dow-Corning* MolyKote* 55 O-Ring Grease (or an equivalent, compatible silicone-based grease) on all surfaces.



Item	Description
5	Seal (Part of Seal System Kit 1)
6	Guide Strip (Part of Seal System Kits 1 and 2)
7	Outer Packing (Part of Seal System Kit 2)
8	Inner Packing (Part of Seal System Kit 2)
18	Gap Preventer (Part of Seal System Kit 1)

NOTE: Item numbers correspond with the exploded view drawing on page 7.

7. Install the seals and gap preventers into the grooves in the outer barrel. Verify that the orientation matches the graphic shown:

- Gap preventers on the side of the outer barrel closest to the flange
- Shaved corners of the gap preventers facing toward packing gland
- Pointed edge of seals facing toward centerline of barrel

8. Apply another coating of Dow-Corning* MolyKote* 55 O-Ring Grease (or an equivalent, compatible silicone-based grease) to the inner surface of the seals and gap preventers.

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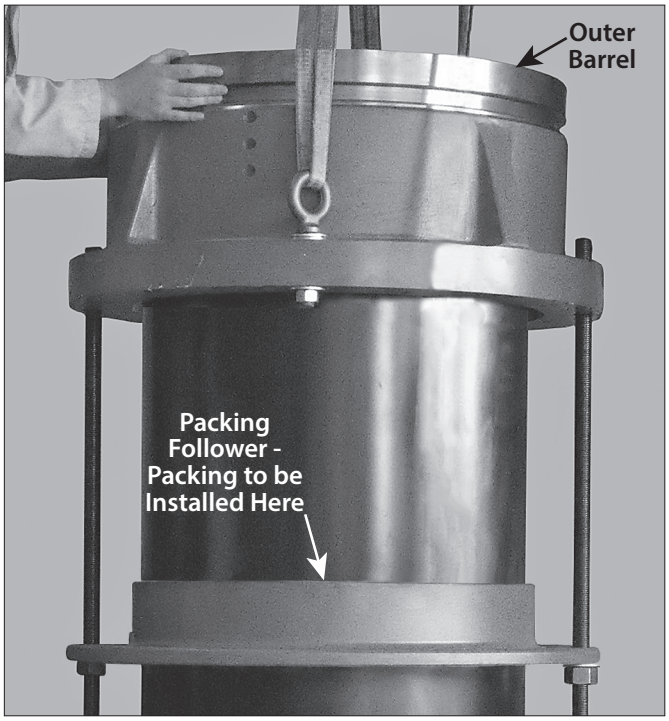
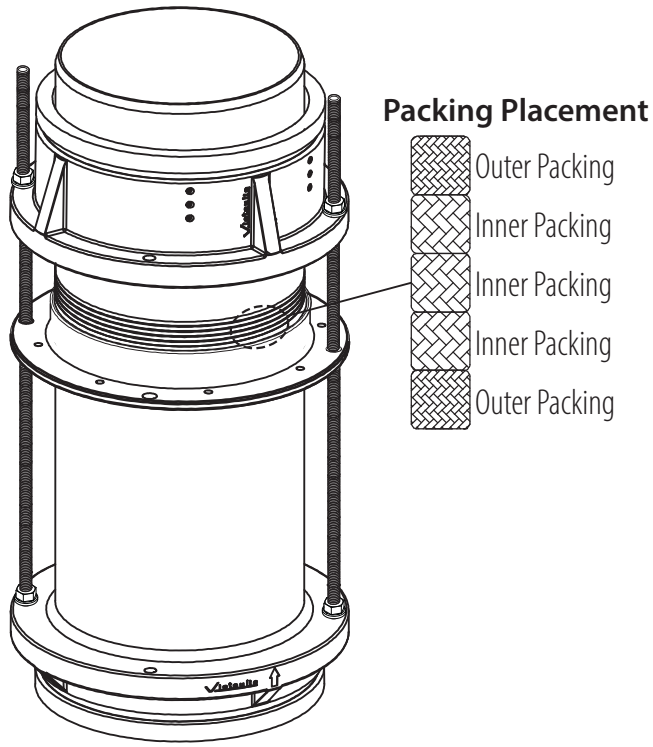




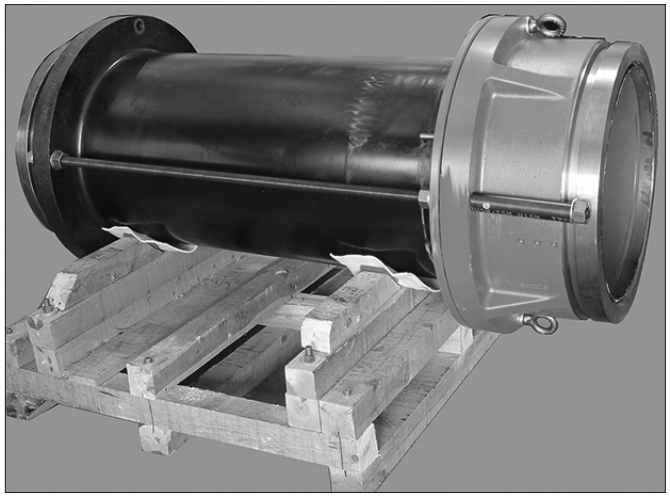
9a. Slowly lower the outer barrel toward the inner barrel with the holes in the outer barrel's flange aligned with the threaded assembly rods. Pay special attention as each seal passes by the leading edge of the inner barrel to prevent pinching or tearing of the seals. Allow space between the outer barrel and packing follower for installation of the packing.

9b. Install the packing onto the packing follower in the orientation shown above.

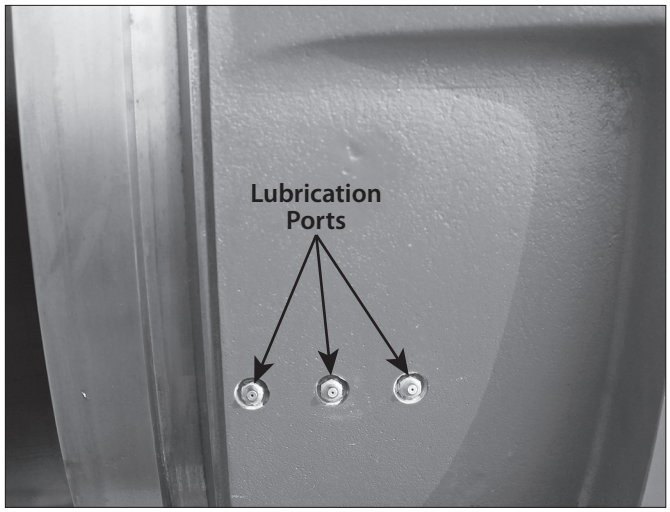
10a. Slowly lower the outer barrel to the packing follower to allow the packing to fill the space between the outer barrel and packing follower.

10b. Install a nut with flat washer onto the end of each threaded assembly rod.

11. Insert a stud (Item 9, page 7) with plain washer (Item 17, page 7) and heavy hex nut (Item 10, page 7) into each hole of the packing follower and outer barrel. Tighten each nut to 275 ft-lbs/375 N•m. **NOTE:** If leakage is observed at the packing follower when the Expansion Barrel is placed back in service, apply additional torque to each nut (evenly by alternating sides) until leakage stops.



12. Lower the inner/outer barrel assembly to the horizontal position.



There are sets of lubrication ports positioned around the Expansion Barrel's outer barrel.

13a. Remove the lubrication ports from one of the uppermost positions, while leaving the rest installed.

13b. Using a powered grease gun, pump Dow-Corning* MolyKote* 55 O-Ring Grease (or an equivalent, compatible silicone-based grease) into one of the lubrication ports at the lowest position until grease flows out the corresponding top open port. Repeat this procedure for the remaining lubrication ports at the lowest position.

NOTE: Depending on the Expansion Barrel size, it may take half to one full tube of grease to fill each lubricant pocket. This procedure shall be completed any time movement of the Expansion Barrel becomes erratic, or at regular maintenance intervals.

14. Install the inlet segment to the inner barrel by using a Style W07 AGS Rigid Coupling. Refer to the instructions in Section III for Style W07 AGS Rigid Coupling installation requirements.

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Style W256 AGS™ Expansion Barrel Installation and Maintenance Procedures

24 – 42-inch/DN600 – DN1050 Sizes with Style W07 AGS™ Rigid Coupling Connections