

SPF Anvil® Figures C9-CL and C9-SL Rigid Couplings

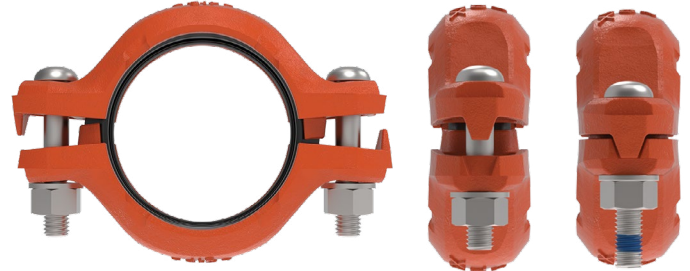
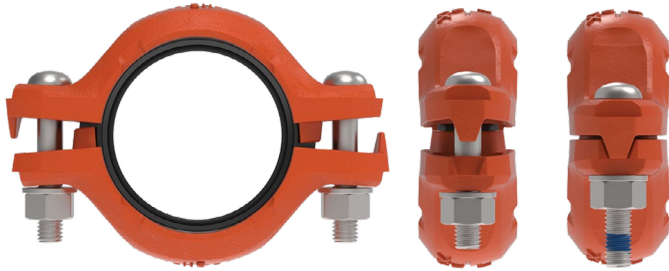


Fig. C9-CL

Fig. C9-SL



PRODUCT OVERVIEW

APPLICATION

- Designed for fire protection sprinkler systems
- Rigid, ready-for-installation coupling features patented ASC Sabertooth™ installation technology enabling rapid visual and tactile proper assembly confirmation and protection from over-tightening
- CenterLOK™ and SlideLOK® patented gasket options available as needed
- Designed to be used with roll, cut or swage grooved steel and stainless steel pipe in accordance with AWWA C606, as well as SPF/Anvil® grooved-end fittings, and valves. See [Coupling Working Pressure Ratings Guide](#) for more details.
- Provide a rigid connection enabling pipe hanging practices per ASME B31 Pipe Codes



SIZES

- 1-¼ inch through 6 inch

MAXIMUM WORKING PRESSURE

- From full vacuum (29.9 in Hg/760 mm Hg) up to 400 psi/ 27 bar (pipe material, size and wall thickness dependent)

OPERATING TEMPERATURES

- -40°F to 150°F (Service Temperature Range) (-40°C to 66°C)

PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

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MATERIALS

HOUSING MATERIAL

- Ductile iron conforming to ASTM A536, Grade 65-45-12

HOUSING COATING: (Select)

- Orange Rust-inhibiting Paint
- Hot-dipped Zinc Galvanized conforming to ASTM A123

GASKET TYPE

- CenterLOK™ Pressure Responsive Gasket (Figure C9-CL)
- SlideLOK® Pressure Responsive Gasket (Figure C9-SL)

GASKET / SEAL MATERIAL

- Properties as designated in accordance with ASTM D2000
- Pre-Lubricated Grade “E” EPDM, Type A Gasket (Violet color code) -40°F to 150°F (Service Temperature Range) (-40°C to 66°C) Recommended for wet and dry (oil free air) pipe fire protection sprinkler systems. For dry pipe systems and freezer applications, Gruvlok® Xtreme Lubricant is recommended.

HARDWARE

Bolts

- SAE J429, Grade 5, Zinc Electroplated (standard)

Nuts

- Heavy Hex Nut, ASTM A563 Grade A, with corrosion-resistant coating PER ASC-ES STD-7531

Speed Plates

- ANSI/ASME spec B18.22.1, Coating conforming to ASTM A123

HARDWARE KITS

304 Stainless Steel (available in sizes up to ½")

Kit includes:

- (2) Bolts per ASTM A193, Grade B8
- Heavy Hex Nuts Per ASTM A563 Grade A (UNS K05802)



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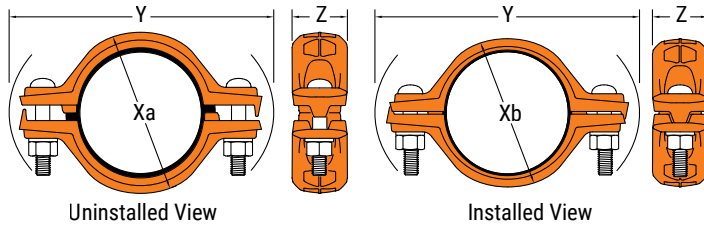


Fig. C9-CL

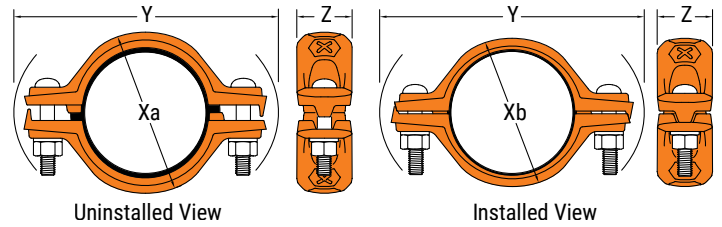


Fig. C9-SL

C9-CL/C9-SL							Coupling Dimensions				Coupling Bolts		Approx Wt. Ea.
Nominal Size	O.D.	Max. Working Pressure		Max. End Load	Max Pipe End Separation CL	Max Pipe End Separation SL	Xa	Xb	Y	Z	Qty.	Size	
In.	In.	PSI Sch 10	PSI Sch 40	Lbs.	In.	In.	In.	In.	In.	In.		In.	Lbs.
1 ¼	1.66	400	400	866	0.14	0.26	3.05	2.80	5.33	1.69	2	¾ x 2¼	1.62
1 ½	1.90	400	400	1134	0.14	0.26	3.29	3.04	5.58	1.75	2	¾ x 2¼	1.77
2	2.375	400	400	3323	0.13	0.26	3.73	3.47	6.13	1.75	2	½ x 3	2.34
2 ½	2.875	400	400	4869	0.13	0.26	4.36	4.04	6.62	1.75	2	½ x 3	2.60
3	3.50	400	400	7216	0.13	0.26	4.99	4.67	7.23	1.75	2	½ x 3	2.81
4	4.50	400	400	11928	0.15	0.31	5.95	5.71	8.59	1.95	2	½ x 3	3.82
5	5.563	400	400	18928	0.15	0.31	7.24	8.00	9.84	1.98	2	⅝ x 4¼	6.00
6	6.625	400	400	24130	0.15	0.31	8.29	9.84	11.00	1.98	2	⅝ x 4¼	7.02

- Note:**
- Maximum end load is defined as the max allowable force from the combination of internal pressure thrust at the pipe joint and external loads based on the use of standard ASME B36.10 pipe that is grooved in accordance with ASC's groove specification.
 - Pressure ratings and end loads may differ for other pipe materials and/or wall thicknesses.
 - See [ASC Coupling Working Pressure Ratings](#) document for pressure ratings on alternate pipe materials.
 - Range of Pipe End Separation values are for system layout reference only. Actual installation spacing may vary based on pipe condition.
 - For use in Dry Pipe Systems: The CenterLOK and SlideLOK pressure responsive gaskets are featured with four sealing surfaces to increase protection in low temperature applications.
 - Once the CenterLOK or SlideLOK gasket is installed, the performance of the gasket is equivalent to the Gruklok Flush Gap Gasket. Note: The Flush Gap Gasket is not interchangeable with the CenterLOK or SlideLOK gasket.
 - WARNING: For dry pipe systems and freezer applications lubrication of the gasket is required, Gruklok Xtreme Lubricant is recommended.



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PERFORMANCE / DIMENSIONS

Manufacturer	Groove	Pipe	Size (in.)	Pressure Rating			
				cULus		FM	
				PSI/bar		PSI/bar	
C9-CL	Roll	Sch. 10*	1¼, 1½, 2, 2½, 3, 4, 5, 6	400	2757	400	2755
C9-CL	Roll, Cut	Sch. 40*	1¼, 1½, 2, 2½, 3, 4, 5, 6	400	2757	400	2755
C9-CL	Roll	Bull Moose Tube Eddy-Flow	1¼, 1½, 2, 2½, 3, 4	300	2068	300	2065
C9-CL	Roll	Bull Moose Tube Eddy-Thread 40	1¼, 1½, 2	300	2068	300	2065
C9-CL	Roll	Wheatland Tube Mega-Flow	1¼, 1½, 2, 2½, 3, 4, 5, 6	300	2068	300	2065
C9-CL	Roll	Wheatland Tube Mega-Thread	1¼, 1½, 2	300	2068	300	2065
C9-CL	Roll	Nucor Hydroflow	1¼, 1½, 2, 2½, 3, 4			300	2065
C9-CL	Roll	Youngstown Tube EZ-Thread	1¼, 1½, 2			300	2065
C9-CL	Roll	Youngstown Tube Fire-Flo	1½, 2, 2½, 3, 4	300	2068	300	2065
C9-CL	Roll	Tex-Tube Co Tex-Flow	6			300	2065
C9-CL	Roll	Wuppermann Austria GmbH WGALWELD7	3, 4			300	2065
C9-SL	Roll	Sch. 10*	1¼, 1½, 2, 2½, 3, 4, 5, 6	400	2757	400	2755
C9-SL	Roll	Sch. 40*	1¼, 1½, 2, 2½, 3, 4, 5, 6	400	2757	400	2755
C9-SL	Roll	Bull Moose Tube Eddy-Flow	1¼, 1½, 2, 2½, 3, 4	300	2068	300	2065
C9-SL	Roll	Bull Moose Tube Eddy-Thread 40	1¼, 1½, 2	300	2068	300	2065
C9-SL	Roll	Wheatland Tube Mega-Flow	1¼, 1½, 2, 2½, 3, 4, 5, 6	300	2068	300	2065
C9-SL	Roll	Wheatland Tube Mega-Thread	1¼, 1½, 2	300	2068	300	2065
C9-SL	Roll	Nucor Hydroflow	1¼, 1½, 2, 2½, 3, 4			300	2065
C9-SL	Roll	Youngstown Tube EZ-Thread	1¼, 1½, 2			300	2065
C9-SL	Roll	Youngstown Tube Fire-Flo	1½, 2, 2½, 3, 4	300	2068	300	2065
C9-SL	Roll	Tex-Tube Co Tex-Flow	6			300	2065
C9-SL	Roll	Wuppermann Austria GmbH WGALWELD7	3, 4			300	2065

Note:

- For the latest cULus pressure ratings, FM pressure ratings, and pipe approvals, please visit asc-es.com or contact your local ASC Engineered Solutions Representative.
- *Schedule 40 pipe to ASTM A795/A53/ASME B36.10 in accordance with NFPA-13.
- * Schedule 10 pipe to ASTM A135/A795/A53 in accordance with NFPA-13.



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CERTIFICATIONS / LISTINGS



ADDITIONAL RESOURCES

- Technical Data Sheet: [Working Pressure Ratings](#)
- Technical Data Sheet: [Gasket Styles](#)
- [Pipe Fitter's Handbook](#)
- Gasket Information: [ASC Gasket Compatibility Chart](#)

SAFETY



Read and understand all instructions before use.

WARNING

Ensure system is drained and depressurized before installation or service.

Use appropriate personal protective equipment.



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

The Figures C9–CL and C9–SL Rigid Couplings have a patent pending indicator on both ends allowing the installer to verify that the coupling is properly tightened. Failure to properly tighten the coupling nuts as shown by the indicator will cause excessive or inadequate load on the coupling, which could result in the following conditions:

- Separation of the coupling from the pipes
- Leakage from the joint
- Fracture or damage to the coupling
- Excessive stress within the coupling leading to future fracture or damage
- Voiding the warranty
- Property damage, personal injury, or death

Continuing to tighten the coupling nuts beyond the point where the indicator is aligned will not improve the performance of the coupling and may result in the conditions listed above.

Never exceed the Maximum Bolt Torque values shown in the table below. Proper installation of the coupling, as demonstrated by proper indicator position on both sides, should occur within the Typical Installation Torque shown in the table below.

The following conditions will assist in achieving proper installation within the Typical Installation Torque:

- Install the coupling in accordance with these instructions
- Ensure that the groove dimensions are within specifications. Required installation torque can be reduced by using a groove with a diameter in the smaller portion of the allowable range.
- Evenly tighten the hardware, as indicated in these instructions.
- Use an appropriately sized wrench or impact driver for the bolt size and torque required.
- Avoid pinched gaskets. If torque exceeding the Typical Installation Torque is required for installation of a coupling, that is a sign of possible improper coupling placement, groove dimensions or other mounting issue. Disassemble and inspect the coupling, groove, and gasket. Replace couplings with evidence of a pinched gasket.
- Tighten coupling nuts only until the indicators are aligned on both sides of the coupling. DO NOT continue tightening coupling nuts beyond the alignment of the indicators. Over tightening the coupling nuts, as shown by the indicators, may cause joint failure, resulting in property damage, personal injury, or death. In addition, over tightening the coupling nuts may cause excessive stress in the coupling and future joint failure, resulting in property damage, personal injury, or death.



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INSTALLATION

READY FOR INSTALLATION – RIGHT OUT OF THE BOX

Do not disassemble the SPF/Anvil® Figure C9-CL / C9-SL coupling – it is ready for installation. The bolts and gasket do not need to be removed.

PIPE PREPARATION

Pipe ends are to be rolled or cut grooved according to ASC Engineered Solutions™ specifications. Not for use on “EG” rolled or cut grooved pipe ends. The pipe end must be smooth and free from metal burrs, sharp edges or projections.



INSTALLATION TOOLS

The coupling nuts may be tightened with an impact driver or manual socket wrench. Follow the manufacturer’s instructions for the use of all tools. Only use deep-well sockets of the correct size. Couplings with hardware $\frac{3}{8}$ -inch and smaller should not be tightened with an impact driver larger than $\frac{1}{4}$ -inch.

METHOD 1 ASSEMBLY – SPF ANVIL® FIGURE C9-CL WITH CENTERLOK™ GASKET

The SPF/Anvil Fig. C9-CL coupling gasket features an integrated center rib that serves as a positive stop during installation. As the coupling slides onto the pipe or fitting, the rib prevents it from over-traveling, automatically positioning it at the correct depth. This design eliminates the need for manual alignment of the coupling keys with the pipe grooves.



INSTALLATION STEPS

1. POSITION THE COUPLING

Slide the Fig. C9-CL coupling onto the pipe or fitting until the center rib contacts the pipe end. The coupling will naturally stop in the correct position with the keys aligned to the groove.



2. JOIN THE MATING PIPE, VALVE, OR FITTING

Bring the second pipe, valve, or fitting into place and slide it onto the opposite side of the center rib, ensuring it seats fully against the rib. Both pipe ends should be firmly butted against the center stop.



3. TIGHTEN THE BOLTS

Tighten the nuts in the following sequence: first side half way, second side tightened until the indicator is aligned, first side tightened until the indicator is aligned.

Notice: Once fully tightened, the gasket should not be visible between the coupling segments.

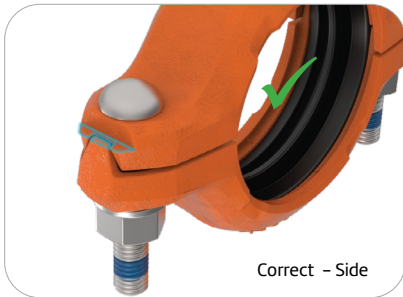
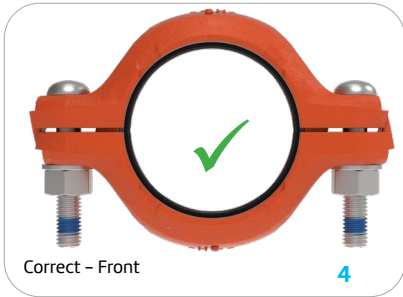


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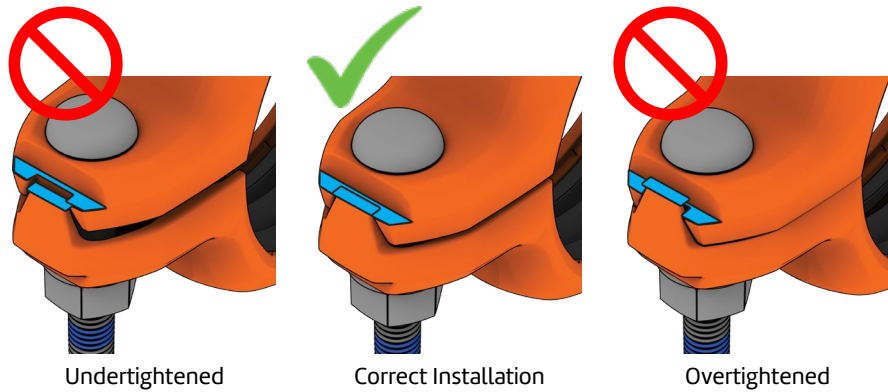
INSTALLATION



4. CONFIRM PROPER INSTALLATION – VISUAL INDICATORS

Inspect the casting alignment indicators located on both sides of the coupling. When the coupling is properly installed, the male and female end of the indicator will form a straight line across the seam—on both sides.

- Coupling keys are fully engaged in both pipe grooves
- If either indicator is misaligned or bolt pad gaps are uneven, recheck pipe positioning and re-tighten as needed. The coupling must be visually aligned on both sides before being placed into service.



FOR DRY PIPE AND FREEZER APPLICATIONS:

Ensure the gasket is suitable for the intended application by referring to the [ASC Gasket Compatibility Chart](#). For dry pipe systems and freezer applications, lubrication of the gasket is required. Gruvlok® Xtreme Lubricant is recommended.

INSTALLATION TORQUE

Nominal Pipe Size Inches (DN)	Nominal Bolt Diameter Inches	Typical Installation Torque lb-ft (N-m)	Maximum Bolt Torque lb-ft (N-m)
1 ¼ (32)	¾	20 (27)	40 (54)
1 ½ (40)	¾	20 (27)	40 (54)
2 (50)	½	25 (35)	45 (61)
2 ½ (65)	½	20 (27)	45 (61)
3 (80)	½	20 (27)	45 (61)
4 (100)	½	45 (61)	80 (108)
5 (125)	⅝	55 (75)	120 (163)
6 (150) [168mm]	⅝	110 (149)	140 (190)



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INSTALLATION

ASSEMBLY METHOD 2 – SPF/ANVIL® FIG. C9-SL WITH SLIDELOK™ GASKET

INSTALLATION STEPS



1. SLIDE COUPLING OVER PIPE END

Slide the Figure C9-SL coupling completely over the grooved pipe end. This will allow a clear and un-obstructed view of the pipe for correct alignment.



2. ALIGN PIPE, VALVE, OR FITTING ENDS

Align the mating pipe, valve, or fitting end. Align the two adjoining pipes together.



3. POSITION COUPLING

Slide the coupling back over the grooves so that the coupling keys are located over the respective grooves on both pipe ends.



4. TIGHTEN THE BOLTS

Tighten the nuts in the following sequence: first side half way, second side tightened until the indicator is aligned, first side tightened until the indicator is aligned.

Notice: Once fully tightened, the gasket should not be visible between the coupling segments.



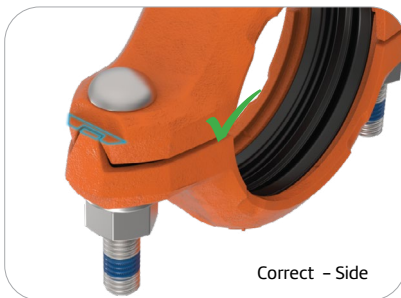
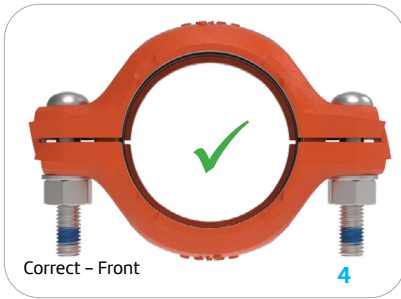
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INSTALLATION (Continued)

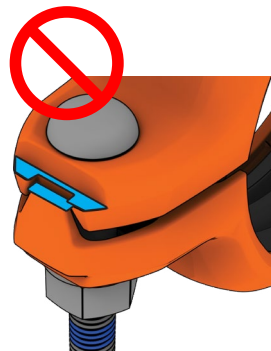
METHOD 2 ASSEMBLY – SPF ANVIL® FIGURE C9-SL WITH SLIDELOK™ GASKET



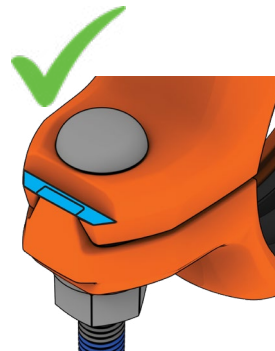
5. CONFIRM PROPER INSTALLATION – VISUAL INDICATORS

Inspect the casting alignment indicators located on both sides of the coupling. When the coupling is properly installed, the male and female end of the indicator will form a straight line across the seam—on both sides.

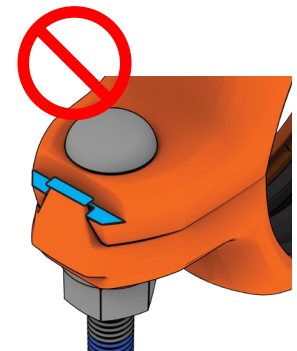
- Coupling keys are fully engaged in both pipe grooves
- If either indicator is misaligned or bolt pad gaps are uneven, recheck pipe positioning and re-tighten as needed. The coupling must be visually aligned on both sides before being placed into service.



Undertightened



Correct Installation



Overtightened

FOR DRY PIPE AND FREEZER APPLICATIONS:

Ensure the gasket is suitable for the intended application by referring to the [ASC Gasket Compatibility Chart](#). For dry pipe systems and freezer applications, lubrication of the gasket is required. Gruvlok® Xtreme Lubricant is recommended.

INSTALLATION TORQUE

Nominal Pipe Size Inches (DN)	Nominal Bolt Diameter Inches	Typical Installation Torque lb-ft (N-m)	Maximum Bolt Torque lb-ft (N-m)
1 1/4 (32)	3/8	20 (27)	40 (54)
1 1/2 (40)	3/8	20 (27)	40 (54)
2 (50)	1/2	25 (35)	45 (61)
2 1/2 (65)	1/2	20 (27)	45 (61)
3 (80)	1/2	20 (27)	45 (61)
4 (100)	1/2	45 (61)	80 (108)
5 (125)	5/8	55 (75)	120 (163)
6 (150) [168mm]	5/8	110 (149)	140 (190)



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