

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

Victaulic Bolted Split-Sleeve Products (VBSP) Style 233S stainless steel restrained couplings (formerly Depend-O-Lok FxF Modified) provide a fully restrained, flexible pipe joint that satisfies the requirements set forth by the AWWA C227 Standard for Bolted, Split-Sleeve Restrained and Non-Restrained Couplings for Plain-End Pipe.

This style of coupling is typically used in buried or exposed pipe applications for field joint connections where joint flexibility and thrust restraint is required. Style 233S couplings are designed to allow for dynamic (in-service) joint deflection and are most commonly used in pairs outside of a structure to accommodate differential settlement between the structure and the pipeline. The Style 233S couplings can also allow for up to 1"/25 mm of axial pipe movement at the joint due to thermal pipe movement. Typical applications include water and wastewater treatment pipelines, ethanol and other chemical plant piping, pulp and paper industry piping, and other piping applications where corrosion resistant, flexible restrained joints are required.

The dual-arched mechanical coupling body houses the o-ring gaskets that provide a radial seal around the circumference of the pipe, while a sealing plate provides for the axial seal across the coupling body and pipe joint. The Style 233S coupling incorporates a restraint ring welded to each pipe end (furnished with the coupling), allowing the coupling housing to straddle the restraint rings and confining the rings under the coupling body in order to prevent joint separation. The coupling housing and restraint ring welds are designed to accommodate hoop stress and end loads to meet system pressure requirements. Style 233S restrained couplings also perform at negative pipe pressures up to full vacuum. The o-ring gasket is not pressure responsive and therefore does not require internal pipe pressure to assist with the seal. The arched cross-sectional design provides stiffness to resist forces encountered during negative pressure (submerged) or vacuum service.

Style 233S couplings are available in standard nominal sizes from 8 – 96"/200 – 2400 mm, with other sizes available based on design and application requirements. The Style 233S restrained coupling can accommodate operating pressures up to 300 psi/2065 kPa (with higher pressure available) depending on the actual pipe diameter and wall thickness. For pressures and sizes not shown in the dimension and performance tables contact Victaulic for information on our engineered products by visiting our web site.

All flexible mechanical couplings should be properly supported to minimize or eliminate undesirable loads at the joint. Pipe support requirements are defined within the Victaulic Application Guidelines document. Please see publication 26.20.

For proper closure tool selection see column marked Tool Type on pages 6-7.



8 – 96"/200 – 2400mm

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<b>JOB/OWNER</b>	<b>CONTRACTOR</b>	<b>ENGINEER</b>
System No. _____	Submitted By _____	Spec Sect _____ Para _____
Location _____	Date _____	Approved _____
		Date _____

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

**PRODUCT GUIDE**

Product Style Guide			
Submittal Number	Style Number	Coupling/Body Material	Application
60.01	230	Carbon Steel	Non-Restrained Coupling
60.02	230S	Stainless Steel	Non-Restrained Coupling
60.03	231	Carbon Steel	Expansion Coupling
60.04	231S	Stainless Steel	Expansion Coupling
60.05	232	Carbon Steel	Restrained Coupling
60.06	232S	Stainless Steel	Restrained Coupling
60.07	233	Carbon Steel	Restrained Coupling For Dynamic Joint Deflection
60.08	233S	Stainless Steel	Restrained Coupling For Dynamic Joint Deflection
60.09	234	Carbon Steel	Restrained Single-Gasket Coupling
60.10	234S	Stainless Steel	Restrained Single-Gasket Coupling

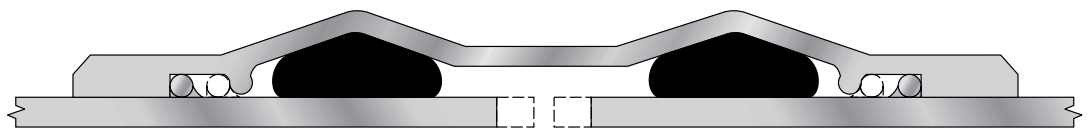
**SEGMENTED COUPLINGS**

The Style 233S dimension tables list the minimum number of coupling housing segments for a particular pipe size. For special applications, restrained couplings are available in two (or more) segments to allow for installation of the coupling over an existing pipe joint or to facilitate ease of handling for larger size couplings. The o-ring gaskets (except Silicone) can be furnished "split" to allow for field bonding when an existing pipe joint configuration does not allow for installation of a complete o-ring onto the pipe end.

**BODY TYPE**

**Cross-Section**

NOTE: Body type is not optional and will be determined by system requirements.

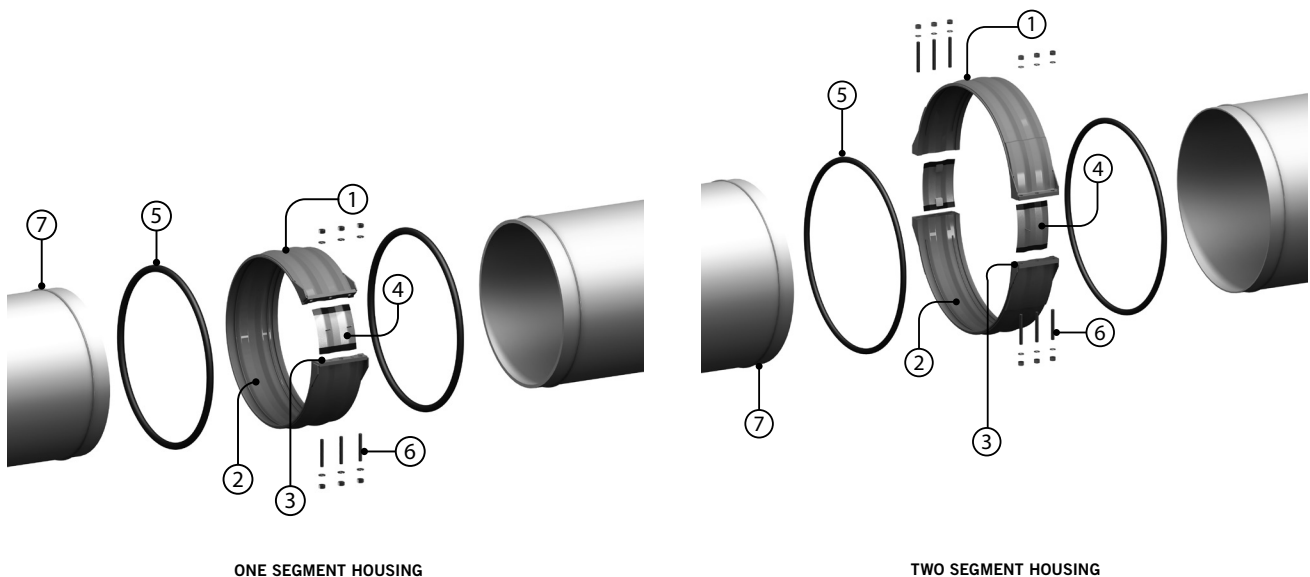


**Type 2** coupling is a shouldered coupling. This is a heavy duty coupling to accommodate higher pressures for certain pipe diameters. The shoulders welded to the edge of the coupling body provide a vertical bearing surface for the restraint rings and provide additional cross-sectional stiffness. The limit rings on the inside of the coupling body ensure that any axial movement or dynamic joint deflection is distributed across the coupling between both sides of the joint.

## Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

### COUPLING COMPONENTS

- 1. Body** – Dual arch cross-section.
- 2. Shoulders** – Provide additional stiffness, allow for larger o-ring gasket and provide vertical bearing surface for restraint rings.
- 3. Closure Plates** – Low profile bolt pads for installation and tightening of coupling; gap between plates of installed coupling allows for field flexibility.
- 4. Sealing Plate** – Provides axial seal across the coupling body and pipe joint.
- 5. O-ring Gaskets** – Provide circumferential seal.
- 6. Fasteners**
  - Studs – High Strength Threaded Rod
  - Nuts – Heavy Hex Nuts
  - Washers – SAE small pattern flat washers
- 7. Restraint Rings** – Attached to pipe ends to create a restrained joint.



## Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

### MATERIAL SPECIFICATIONS

#### Body

Stainless Steel conforming to ASTM A240 316/316L

#### Shoulders

Stainless Steel conforming to ASTM A240 316L

#### Closure Plates

Stainless Steel conforming to 316L

#### Sealing Plate

Stainless Steel conforming to ASTM A240 316L

#### O-ring Gaskets

Standard (Specify choice on order):

- **EPDM** -30°F to +230°F/-34°C to +110°C  
Cold and hot water within allowable temperature range; dilute acids; excellent resistance to the deteriorative effects of ozone, oxygen, heat and most chemicals not involving hydrocarbons. NOT RECOMMENDED FOR PETROLEUM SERVICES.
  - **Silicone** -30°F to +350°F/-34°C to +177°C  
Dry, hot air applications; excellent resistance to many chemicals. NOT RECOMMENDED FOR HOT WATER OR STEAM APPLICATIONS.
  - **Isoprene** -40°F to +160°F/-40°C to +71°C  
Water; salt water; sewage; good resistance to oxygen and dilute acids  
  
Services listed are general service recommendations only. Refer to a chemical elastomer guide for specific applications and suitability of gasket material for services that are not listed.
- Optional gasket (specify choice on order):
- **Nitrile** -20°F to +180°F/-28°C to +82°C  
Water; petroleum products, vegetable and mineral oils; air with oil vapors within allowable temperature range; good resistance to hydrocarbons; acids and bases.
  - **Fluoroelastomer** +20°F to +300°F/-7°C to +149°C  
Outstanding resistance to heat and most chemicals.
  - **Neoprene** -30°F to +180°F/-34°C to +82°C  
Water and wastewater; good resistance to ozone, effects of UV and some oils.

#### Restraint Rings

Stainless Steel conforming to ASTM A276 316L

#### Permanent Fasteners

**Studs** - Stainless Steel conforming to ASTM A193 Grade B8M 316 Class 2

**Nuts** - Heavy hex nuts

Stainless Steel conforming to ASTM A194 Grade 8M 316

**Washers** - Stainless Steel Type 316 SAE pattern

#### Installation Fasteners (for installation purposes only)

**Studs** - Carbon Steel conforming to ASTM A193 Grade B7 zinc plated

**Nuts** - Heavy hex nuts

Carbon Steel conforming to ASTM A194 Grade 2H zinc plated

**Washers** - Carbon Steel SAE small pattern flat washers conforming to ASTM F436 SAE pattern zinc plated

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## Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

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### PIPE END DIMENSIONAL TOLERANCE AND OVALITY

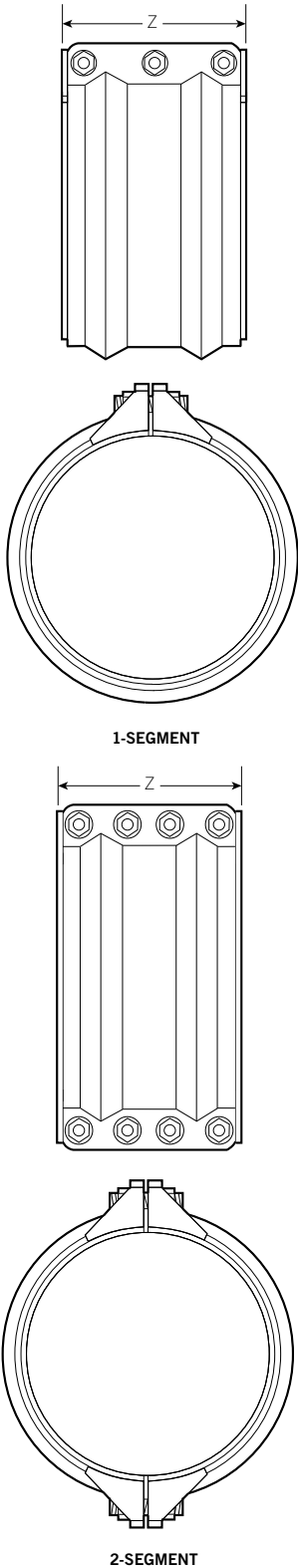
For specific pipe diameter tolerances, pipe ovality (roundness) requirements and minimum/maximum pipe diameter allowance, refer to the tables included in the Installation Manuals (below) and 26.20 Application Guidelines.

I-233.S1 - Styles 233/233S Restrained Flexible Coupling For Dynamic Joint Deflection (Type 2, One-Segment)

I-233.S2 - Styles 233/233S Restrained Flexible Coupling For Dynamic Joint Deflection (Type 2, Two-Segments)

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

## DIMENSIONS

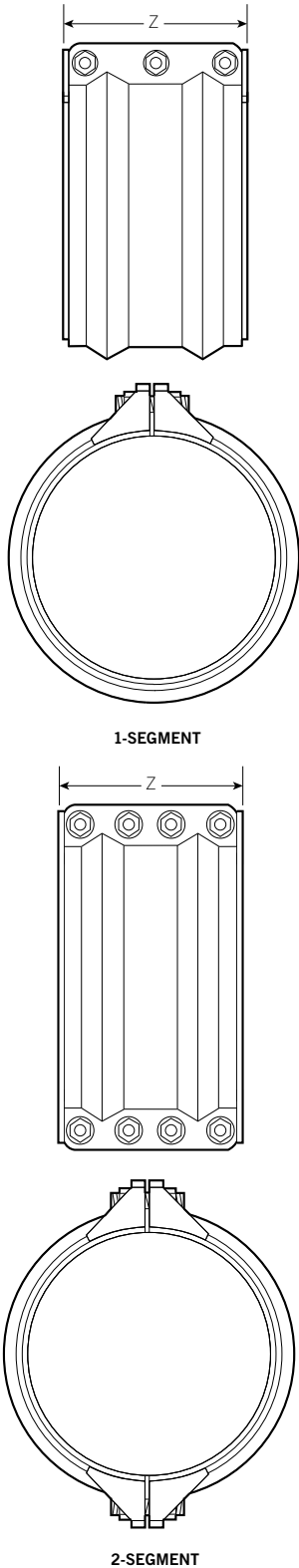


(1) Nominal Pipe Size In./mm	(2) Actual Pipe O.D. Range In./mm	(3) Maximum Working Pressure psi/kPa	Coupling Dimensions		(4) Min. No. of Coupling Segments	No. of Fasteners - Fastener Dimensions Dia. x Length In. x In.	(5) Approximate Weight Each Lbs/Kg.	Body Type	(6) Tool Type
			Body Thickness In.	Width (Z) In./mm					
8 200	7.00 - 8.88 177.8 - 225.6	300 2065	10 ga.	12.50 317.5	1	3 - 3/4 x 6	45 20	2	B,C
10 250	9.00 - 10.88 228.6 - 276.4	250 1725	10 ga.	12.50 317.5	1	3 - 3/4 x 6	49 22	2	B,C
12 300	11.00 - 12.88 279.4 - 327.2	250 1725	3/16	12.50 317.5	1	3 - 3/4 x 6	62 28	2	B,C
14 350	13.00 - 14.88 330.2 - 378	250 1725	3/16	12.50 317.5	1	3 - 3/4 x 6	69 31	2	B,C
16 400	15.00 - 16.88 381 - 428.8	250 1725	3/16	12.50 317.5	1	3 - 3/4 x 6	78 35	2	B,C
18 450	17.00 - 18.88 431.8 - 479.6	200 1375	3/16	12.50 317.5	1	3 - 3/4 x 6	85 39	2	B,C
20 500	19.00 - 21.88 482.6 - 555.8	200 1375	3/16	12.50 317.5	1	3 - 3/4 x 6	92 42	2	B,C
24 600	22.00 - 26.88 558.8 - 682.8	100 690	3/16	12.50 317.5	1	3 - 3/4 x 6	109 49	2	B,C
		200 1375	1/4	12.50 317.5	1	3 - 3/4 x 6	145 66	2	C
30 750	27.00 - 32.88 685.8 - 835.2	100 690	3/16	12.50 317.5	1	3 - 3/4 x 6	130 59	2	B,C
		150 1035	1/4	12.50 317.5	1	3 - 3/4 x 6	175 79	2	C
		200 1375	3/8	12.50 317.5	2	6 - 7/8 x 8	343 156	2	C
36 900	33.00 - 38.88 838.2 - 987.6	100 690	3/16	12.50 317.5	1	3 - 3/4 x 6	152 69	2	B,C
		150 1035	1/4	12.50 317.5	1	3 - 3/4 x 6	206 93	2	C
		175 1200	3/8	12.50 317.5	2	6 - 7/8 x 8	393 178	2	C
		200 1375	1/2	14.75 374.7	2	8 - 1 x 8	620 281	2	C
42 1050	39.00 - 44.88 990.6 - 1140.0	100 690	1/4	12.50 317.5	1	3 - 3/4 x 6	236 107	2	C
		150 1035	3/8	12.50 317.5	2	6 - 7/8 x 8	444 201	2	C
		200 1375	1/2	14.75 374.7	2	8 - 1 x 8	699 317	2	C
48 1200	45.00 - 50.88 1143.0 - 1292.4	50 345	1/4	12.50 317.5	1	3 - 3/4 x 6	267 121	2	C
		100 690	3/8	12.50 317.5	2	6 - 7/8 x 8	494 224	2	C
		150 1035	1/2	14.75 374.7	2	8 - 1 x 8	779 353	2	C

- (1) Couplings must be used on pipe with a minimum wall thickness that meets the requirements of AWWA C220 for stainless steel pipe.
  - (2) Actual pipe O.D. required at time of order. For actual pipe O.D. round down to the nearest 1/8" to determine proper coupling size required.
  - (3) For allowable test or transient pressure, the maximum working pressure may be increased to 1 1/2 times the values shown.
  - (4) 1-segment couplings may be available as 2-segment couplings to allow for in-place pipe installations. Contact Victaulic for details.
  - (5) Coupling weights are based on nominal pipe diameter and include all accessories. Weight may vary based on actual size of pipe.
  - (6) Closure Tool Recommendations: \*  
 B= CTM-02 Large Manual Closure Tool  
 C= CTH-01 10-Ton Hydraulic Closure Tool  
 \*For more details on closure tools refer to page 12.
- Note: The data in this table only applies when stainless steel couplings are being used on stainless steel pipe.

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

**DIMENSIONS**



(1)	(2)	(3)	Coupling Dimensions		(4)	(5)	(6)	Body Type	Tool Type
			Body Thickness In.	Width (Z) In./mm					
Nominal Pipe Size In./mm	Actual Pipe O.D. Range In./mm	Maximum Working Pressure psi/kPa			Min. No. of Coupling Segments	No. of Fasteners - Fastener Dimensions Dia. x Length In. x In.	Approximate Weight Each Lbs/Kg.		
54 1350	51.00 - 56.88 1295.4 - 1444.8	50 345	1/4	12.50 317.5	1	3 - 7/8 x 8	319 145	2	C
		100 690	3/8	12.50 317.5	2	6 - 7/8 x 8	534 242	2	C
		150 1035	1/2	14.75 374.7	2	8 - 1 x 8	858 389	2	C
60 1500	57.00 - 62.88 1447.8 - 1597.2	50 345	1/4	12.50 317.5	2	6 - 7/8 x 8	394 179	2	C
		100 690	3/8	12.50 317.5	2	6 - 7/8 x 8	584 265	2	C
		150 1035	1/2	14.75 374.7	2	8 - 1 x 8	938 425	2	C
66 1650	63.00 - 68.88 1600.2 - 1749.6	50 345	3/8	12.50 317.5	2	6 - 7/8 x 8	622 282	2	C
		100 690	1/2	14.75 374.7	2	8 - 1 x 8	1000 454	2	C
72 1800	69.00 - 74.88 1752.6 - 1902.0	50 345	3/8	12.50 317.5	2	6 - 7/8 x 8	673 305	2	C
		100 690	1/2	14.75 374.7	2	8 - 1 x 8	1080 490	2	C
78 1950	75.00 - 80.88 1905.0 - 2054.4	50 345	3/8	12.50 317.5	2	6 - 7/8 x 8	712 323	2	C
		100 690	1/2	14.75 374.7	2	8 - 1 x 8	1159 526	2	C
84 2100	81.00 - 86.88 2057.4 - 2206.8	50 345	3/8	12.50 317.5	2	6 - 7/8 x 8	763 346	2	C
		100 690	1/2	14.75 374.7	2	8 - 1 x 8	1222 554	2	C
90 2250	87.00 - 92.88 2209.8 - 2359.2	50 345	3/8	12.50 317.5	2	6 - 7/8 x 8	802 364	2	C
		100 690	1/2	14.75 374.7	2	8 - 1 x 8	1283 582	2	C
96 2400	93.00 - 102.00 2362.2 - 2590.8	50 345	3/8	12.50 317.5	2	6 - 7/8 x 8	863 391	2	C
		75 515	1/2	14.75 374.7	2	8 - 1 x 8	1379 626	2	C

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- (3) For allowable test or transient pressure, the maximum working pressure may be increased to 1 1/2 times the values shown.
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 \*For more details on closure tools refer to page 12.

Note: The data in this table only applies when stainless steel couplings are being used on stainless steel pipe.

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

**PERFORMANCE**

Nominal Pipe Size In./mm	(1)			Body Type	(2) (3) Pipe End Separation Min - Max In./mm	(3) (4) Max. Allow. Deflection Degrees	(5) Max. Permissible End Load lbf/N
	Maximum Working Pressure psi/kPa Carbon Steel	Maximum Working Pressure psi/kPa Stainless Steel	Maximum Working Pressure psi/kPa Ductile Iron				
8 200	300 2065	300 2065	300 2065	2	0.50 - 1.50 12.7 - 38.1	4° 0'	15079 67075
10 250	250 1725	250 1725	250 1725	2	0.50 - 1.50 12.7 - 38.1	3° 30'	19634 87336
12 300	250 1725	250 1725	250 1725	2	0.50 - 1.50 12.7 - 38.1	3° 15'	28274 125769
14 350	250 1725	250 1725	250 1725	2	0.50 - 1.50 12.7 - 38.1	3° 0'	38484 171185
16 400	250 1725	250 1725	200 1375	2	0.50 - 1.50 12.7 - 38.1	3° 0'	50265 223590
18 450	200 1375	200 1375	175 1200	2	0.50 - 1.50 12.7 - 38.1	3° 0'	50893 226383
20 500	200 1375	200 1375	150 1035	2	0.50 - 1.50 12.7 - 38.1	2° 30'	62831 279486
24 600	100 690	100 690	100 690	2	0.50 - 1.50 12.7 - 38.1	2° 0'	45238 201229
	200 1375	200 1375	200 1375	2	0.50 - 1.50 12.7 - 38.1	2° 0'	90477 402462
30 750	100 690	100 690	100 690	2	0.50 - 1.50 12.7 - 38.1	1° 45'	70685 314423
	150 1035	150 1035	150 1035	2	0.50 - 1.50 12.7 - 38.1	1° 45'	106028 471636
	200 1375	200 1375	150 1035	2	0.50 - 1.50 12.7 - 38.1	1° 45'	141371 628850
36 900	100 690	100 690	100 690	2	0.50 - 1.50 12.7 - 38.1	1° 30'	101787 452771
	150 1035	150 1035	125 860	2	0.50 - 1.50 12.7 - 38.1	1° 30'	152681 679159
	175 1200	175 1200	125 860	2	0.50 - 1.50 12.7 - 38.1	1° 30'	178128 792353
	200 1375	200 1375	175 1200	2	1.00 - 2.00 25.4 - 50.8	1° 30'	203575 905547
42 1050	100 690	100 690	100 690	2	0.50 - 1.50 12.7 - 38.1	1° 15'	138544 616274
	150 1035	150 1035	125 860	2	0.50 - 1.50 12.7 - 38.1	1° 15'	207816 924412
	200 1375	200 1375	150 1035	2	1.00 - 2.00 25.4 - 50.8	1° 15'	277088 1232549
48 1200	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	1° 7'	90477 402462
	100 690	100 690	100 690	2	0.50 - 1.50 12.7 - 38.1	1° 7'	180955 804928
	150 1035	150 1035	125 860	2	1.00 - 2.00 25.4 - 50.8	1° 7'	271433 1207394

- (1) For allowable test or transient pressure, the maximum working pressure may be increased to 1½ times the value shown.
- (2) Maximum allowable axial pipe movement at the joint is the difference between the maximum and minimum pipe separation. At maximum pipe end separation, axial movement can only occur via pipe expansion into the joint and vice versa.
- (3) Pipe end movement and deflection are non-concurrent.
- (4) Published deflection values are intended and available for both static (installed) and dynamic (in-service) joint deflection. The coupling closure should be located 90 degrees from the direction of joint deflection.
- (5) The maximum permissible end loads listed in the table are calculated using the nominal pipe O.D. The actual maximum permissible end load will be less or greater than the published figures depending on the actual pipe O.D.



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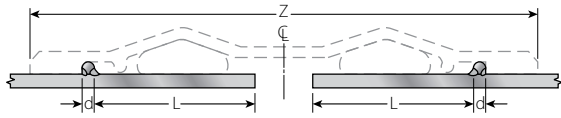
**PERFORMANCE**

Nominal Pipe Size In./mm	(1)			Body Type	(2) (3) Pipe End Separation Min - Max In./mm	(3) (4) Max. Allow. Deflection Degrees	(5) Max. Permissible End Load lbf/N
	Maximum Working Pressure psi/kPa Carbon Steel	Maximum Working Pressure psi/kPa Stainless Steel	Maximum Working Pressure psi/kPa Ductile Iron				
54 1350	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	1° 0'	114511 509370
	100 690	100 690	75 515	2	0.50 - 1.50 12.7 - 38.1	1° 0'	229022 1018741
	150 1035	150 1035	125 860	2	1.00 -2.00 25.4 - 50.8	1° 0'	343533 1528111
60 1500	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 54'	141371 628850
	100 690	100 690	75 1035	2	0.50 - 1.50 12.7 - 38.1	0° 54'	282743 1257704
	150 1035	150 1035	100 690	2	1.00 -2.00 25.4 - 50.8	0° 54'	424115 1886558
66 1650	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 49'	171059 760908
	100 690	100 690	100 690	2	1.00 -2.00 25.4 - 50.8	0° 49'	342119 1521821
72 1800	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 45'	203575 905547
	100 690	100 690	100 690	2	1.00 -2.00 25.4 - 50.8	0° 45'	407150 1811094
78 1950	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 42'	238918 1062760
	100 690	100 690	75 515	2	1.00 -2.00 25.4 - 50.8	0° 42'	407150 1811094
84 2100	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 39'	277088 1232549
	100 690	100 690	75 515	2	1.00 -2.00 25.4 - 50.8	0° 39'	554176 2465098
90 2250	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 36'	318086 1414917
	100 690	100 690	75 515	2	1.00 -2.00 25.4 - 50.8	0° 36'	636172 2829834
96 2400	50 345	50 345	50 345	2	0.50 - 1.50 12.7 - 38.1	0° 33'	361911 1609860
	75 515	75 515	50 345	2	1.00 -2.00 25.4 - 50.8	0° 33'	542867 2414793

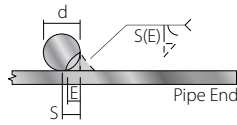
- (1) For allowable test or transient pressure, the maximum working pressure may be increased to 1½ times the value shown.
- (2) Maximum allowable axial pipe movement at the joint is the difference between the maximum and minimum pipe separation. At maximum pipe end separation, axial movement can only occur via pipe expansion into the joint and vice versa.
- (3) Pipe end movement and deflection are non-concurrent.
- (4) Published deflection values are intended and available for both static (installed) and dynamic (in-service) joint deflection. The coupling closure should be located 90 degrees from the direction of joint deflection.
- (5) The maximum permissible end loads listed in the table are calculated using the nominal pipe O.D. The actual maximum permissible end load will be less or greater than the published figures depending on the actual pipe O.D.

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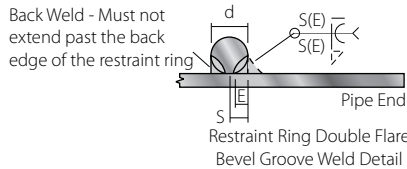
## RESTRAINT RINGS



Type 2 - Restraint Ring Location



Restraint Ring Single Flare Bevel Groove Weld Detail



Restraint Ring Double Flare Bevel Groove Weld Detail

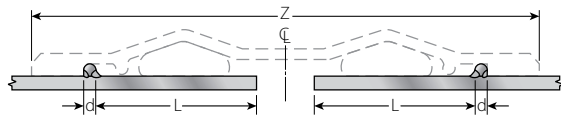
Nominal Pipe Size In./mm	(1) Maximum Working Pressure psi/kPa	(2) Body Type	Width (Z) In./mm	Restraint Ring		
				Diameter (d) In.	Location (L) In./mm	Weld Size (E) In.
8 200	300 2065	2	12.50 317.5	1/4	4.00 101.6	3/32
10 250	250 1725	2	12.50 317.5	1/4	4.00 101.6	3/32
12 300	250 1725	2	12.50 317.5	1/4	4.00 101.6	3/32
14 350	250 1725	2	12.50 317.5	1/4	4.00 101.6	3/32
16 400	250 1725	2	12.50 317.5	1/4	4.00 101.6	3/32
18 450	200 1375	2	12.50 317.5	1/4	4.00 101.6	3/32
20 500	200 1375	2	12.50 317.5	1/4	4.00 101.6	3/32
24 600	100 690	2	12.50 317.5	1/4	4.00 101.6	3/32
	200 1375	2	12.50 317.5	3/8	3.88 98.4	1/8
30 750	100 690	2	12.50 317.5	1/4	4.00 101.6	3/32
	150 1035	2	12.50 317.5	3/8	3.88 98.4	1/8
	200 1375	2	12.50 317.5	3/8	3.88 98.4	1/8
36 900	100 690	2	12.50 317.5	1/4	4.00 101.6	3/32
	150 1035	2	12.50 317.5	3/8	3.88 98.4	1/8
	175 1200	2	12.50 317.5	3/8	3.88 98.4	1/8
	200 1375	2	14.75 374.7	1/2	4.38 111.1	5/32
42 1050	100 690	2	12.50 317.5	3/8	3.88 98.4	1/8
	150 1035	2	12.50 317.5	3/8	3.88 98.4	1/8
	200 1375	2	14.75 374.7	1/2	4.38 111.1	5/32
48 1200	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	12.50 317.5	3/8	3.88 98.4	1/8
	150 1035	2	14.75 374.7	1/2	4.38 111.1	5/32

- (1) For allowable test or transient pressure, the maximum working pressure may be increased to 1/2 times the values shown.
- (2) For applications other than air or gas, where a liquid or other medium is flowing through pipe, restraint ring weld requirements are as follows:  
Type 2 couplings require a full circumferential double flare bevel groove weld based on the weld sizes shown in the table. For low pressure air or gas applications, where the weight of the medium flowing through the pipe is not a consideration, a single flare bevel groove weld and/or less than a full circumference of weld may be allowed to attach the restraint rings. Contact Victaulic for specific details. Each restraint ring shipment includes restraint ring placement and welding data that is specific to application or project requirements.
- (3) Restraint rings must be welded perpendicular to the pipe axis with a tolerance of  $\pm 1/16$  in. (1.6 mm).
- (4) Flare bevel groove weld size in table is the minimum requirement. Depth of preparation  $S = (d) \div 2$ ;  
Weld size  $E \approx S * 0.625$  per AWS D1.1. For a double flare bevel groove weld, the weld on the back side of the restraint ring must not extend beyond the outermost edge of the ring. The coupling shoulder must have unrestricted contact with the ring and the pipe O.D.

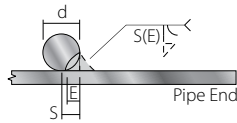
Note: The data in this table only applies when stainless steel couplings are being used on stainless steel pipe.

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

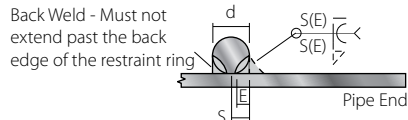
## RESTRAINT RINGS



Type 2 - Restraint Ring Location



Restraint Ring Single Flare Bevel Groove Weld Detail



Restraint Ring Double Flare Bevel Groove Weld Detail

Nominal Pipe Size In./mm	(1) Maximum Working Pressure psi/kPa	(2) Body Type	Width (Z) In./mm	Restraint Ring		
				Diameter (d) In.	Location (L) In./mm	Weld Size (E) In.
54 1350	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	12.50 317.5	3/8	3.88 98.4	1/8
	150 1035	2	14.75 374.7	1/2	4.38 111.1	5/32
60 1500	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	12.50 317.5	3/8	3.88 98.4	1/8
	150 1035	2	14.75 374.7	1/2	4.38 111.1	5/32
66 1650	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	14.75 374.7	1/2	4.38 111.1	5/32
72 1800	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	14.75 374.7	1/2	4.38 111.1	5/32
78 1950	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	14.75 374.7	1/2	4.38 111.1	5/32
84 2100	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	14.75 374.7	1/2	4.38 111.1	5/32
90 2250	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	100 690	2	14.75 374.7	1/2	4.38 111.1	5/32
96 2400	50 345	2	12.50 317.5	3/8	3.88 98.4	1/8
	75 515	2	14.75 374.7	1/2	4.38 111.1	5/32

- (1) For allowable test or transient pressure, the maximum working pressure may be increased to 1½ times the values shown.
- (2) For applications other than air or gas, where a liquid or other medium is flowing through pipe, restraint ring weld requirements are as follows:  
Type 2 couplings require a full circumferential double flare bevel groove weld based on the weld sizes shown in the table. For low pressure air or gas applications, where the weight of the medium flowing through the pipe is not a consideration, a single flare bevel groove weld and/or less than a full circumference of weld may be allowed to attach the restraint rings. Contact Victaulic for specific details. Each restraint ring shipment includes restraint ring placement and welding data that is specific to application or project requirements.
- (3) Restraint rings must be welded perpendicular to the pipe axis with a tolerance of  $L \pm 1/16$ "/1.6 mm.
- (4) Flare bevel groove weld size in table is the minimum requirement. Depth of preparation  $S = (d) \div 2$ ;  
Weld size  $E \approx S * 0.625$  per AWS D1.1. For a double flare bevel groove weld, the weld on the back side of the restraint ring must not extend beyond the outermost edge of the ring. The coupling shoulder must have unrestricted contact with the ring and the pipe O.D.

Note: The data in this table only applies when stainless steel couplings are being used on stainless steel pipe.

## Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

### CLOSURE TOOLS



MANUAL TOOL



HYDRAULIC TOOL

#### Manual Tools

- CTM-01: for use on 5" and 8" body widths
- CTM-02: for use on 10" body widths  
for use on 12" body widths with thickness of  $\frac{3}{16}$ " or less

#### Hydraulic Tools

- CTH-01\*: for use on 12" body widths with thickness of  $\frac{1}{4}$ " or greater  
for use on 14", 16" and 18" body widths
- CTH-02: for use on all type 3 couplings

- Hydraulic tool package comes standard with:

- one (1) tool head
- one (1) hydraulic cylinder
- one (1) hydraulic hose
- one (1) hand pump

\* A CTH-01 hydraulic closure tool can be used in applications where the CTM-02 manual closure tool is recommended.

Note: The closure tools listed above are designed specifically for Victaulic Style 230, 231, 232 and 233 couplings. If ordering custom product, contact Victaulic for appropriate tool selection.

# Style 233S Restrained Flexible Coupling For Dynamic Joint Deflection

**PRODUCT CONFIGURATOR**

**C 0233 0096 50 X 2 C E O X XO**

Class	Style	Actual Pipe O.D.*		Body Type	Segments	PSI/kPa Rating	Rubber Compound	Paint	Hardware	Ring and Pipe Material
		Inches <sup>^</sup>	Fraction							
C	0233	0007 through 0102	00 - 0 13 - 1/8 25 - 1/4 38 - 3/8 50 - 1/2 63 - 5/8 75 - 3/4 88 - 7/8	X - Stainless	1 - One 2 - Two	B - 50/345 C - 75/515 D - 100/690 E - 125/860 F - 150/1035 G - 175/1200 H - 200/1375 J - 250/1725 K - 300/2065	E - EPDM I - Isoprene L - Silicone T - Nitrile V - Neoprene O - Fluoro-elastomer	0 - None	X - Stainless	XO - Stainless Steel Ring on Stainless Steel Pipe SO - Carbon Steel Ring on Carbon Steel Pipe DO - Carbon Steel Ring on Ductile Iron Pipe

<sup>^</sup> Couplings are available in a range of nominal sizes from 8 - 96".  
\* For actual pipe O.D. round down to the nearest 1/8" to determine proper coupling size required.

**ENGINEERED PRODUCTS OPTIONS**

For non-standard products the Victaulic Engineered Products group can assist with specialty joints designed to meet the specific size, pressure and temperature requirements of your system.

**WARRANTY**

Refer to the Warranty section of the current Price List or contact Victaulic for details.

**NOTE**

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

**TESTING**

Victaulic Style 233S couplings are designed to allow for a 50 percent increase over the published maximum working pressure for test and/or transient pressures. Due to the huge volume of air that can be involved in jobsite air testing and the nature of air or gas that is pressurized, jobsite air testing should be limited to 25 psi/175 kPa or less.

Victaulic offers a dished head assembly prepared with a restraint ring for the Style 233S coupling for field testing a section of pipeline or to end a pipeline and allow for future expansion. Contact Victaulic for details.

For complete contact information, visit [www.victaulic.com](http://www.victaulic.com)

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