

# Style 234S Restrained Flexible Single-Gasket Coupling

Victaulic Bolted Split-Sleeve Products (VBSP) Style 234S stainless steel couplings (formerly Depend-O-Lok Air/FluidMaster) are single-arch couplings that are commonly used in buried or exposed pipe applications for field joint connections where joint flexibility and thrust restraint is required. This style of coupling is ideally suited for applications that require a narrow restrained coupling or where contact of the medium flowing through the pipe with the interior of the coupling body is undesirable.

Typical applications include water and wastewater treatment piping, ethanol and other chemical plant piping, pulp and paper industry piping, and other piping applications where corrosion resistant flexible, restrained joints are required.

The single-arch mechanical coupling body houses a "C" shaped gasket that provides the radial seal around the circumference of the pipe. Style 234S couplings incorporate 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 234S system couplings also perform at negative pipe pressures up to full vacuum. The 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 234S couplings are available in standard nominal sizes from 8 – 60"/200 – 1500 mm, with larger sizes available based on design and application requirements. Style 234S couplings can accommodate operating pressures up to 200 psi/1375 kPa depending on the actual pipe diameter. For pressures and sizes not shown in the dimensions and performance tables contact Victaulic for information on our engineered products.

Victaulic restrained split-sleeve couplings provide a flexible pipe connection and are not designed or intended to transfer significant shear or bending loads across the pipe joint. Therefore, a single coupling will not allow for differential settlement to occur at the joint. However, a minimum of two flexible couplings designed to allow dynamic (in-service) deflection and installed in combination can be used to accommodate differential settlement at a pipe joint or between a pipeline and a structure. Victaulic recommends Style 233/233S couplings for this purpose as they are specifically designed to allow for dynamic deflection and provide thrust restraint at the joint. Refer to submittal publications 60.07 and 60.08 for product details and 26.20 for guidelines regarding the use of these couplings in a differential settlement application.

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



8 – 60"/200 – 1500mm

**JOB/OWNER**

System No. \_\_\_\_\_

Location \_\_\_\_\_

**CONTRACTOR**

Submitted By \_\_\_\_\_

Date \_\_\_\_\_

**ENGINEER**

Spec Sect \_\_\_\_\_ Para \_\_\_\_\_

Approved \_\_\_\_\_

Date \_\_\_\_\_

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# Style 234S Restrained Flexible Single-Gasket Coupling

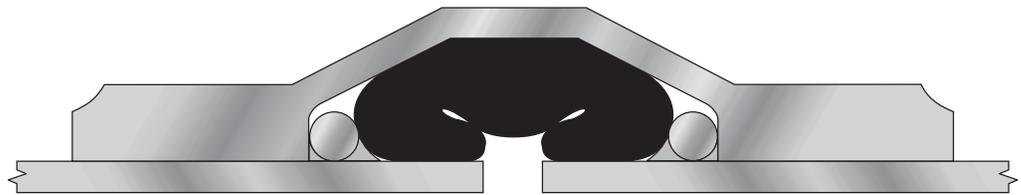
**PRODUCT GUIDE**

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

**BODY TYPE**

**Cross-Section**

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

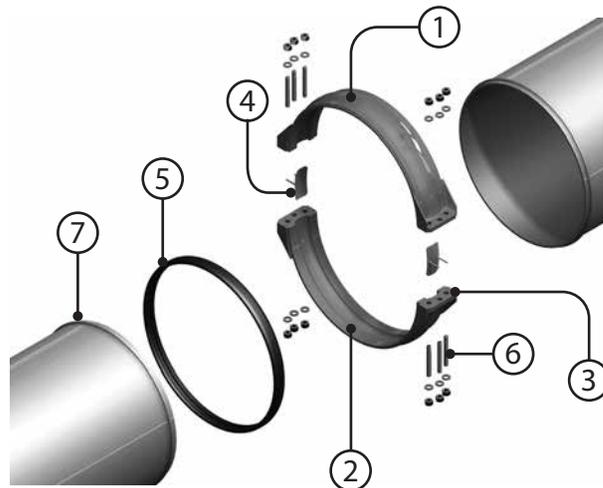


**Type 2** coupling is a shouldered coupling. The shoulders welded to the edge of the coupling body provide a vertical bearing surface for the restraint rings and provide additional cross-section stiffness.

## Style 234S Restrained Flexible Single-Gasket Coupling

### COUPLING COMPONENTS

1. **Body** – Arched cross-section.
  2. **Shoulders** – Provide additional stiffness and 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 Plates** – Provide gasket support at the closures.
  5. **Gasket** – Provides circumferential seal.
- . 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 234S Restrained Flexible Single-Gasket Coupling

### 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

#### Gasket

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.

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.

#### 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

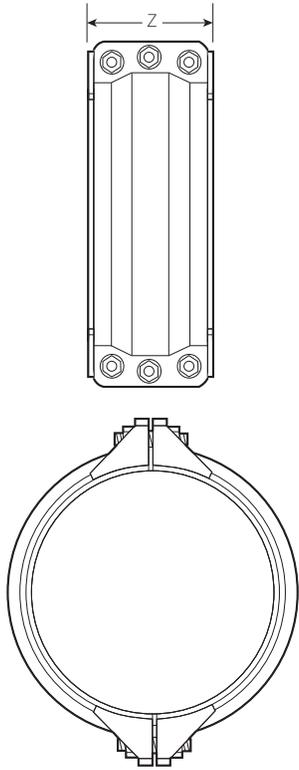
### PIPE END DIMENSIONAL TOLERANCE AND OVALITY

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

I-234 - Style 234/234S Restrained Single-Gasket Coupling

# Style 234S Restrained Flexible Single-Gasket Coupling

## DIMENSIONS



(1) Nominal Pipe Size In./mm	(2) Actual Pipe O.D. Range In./mm	(3) Maximum Working Pressure psi/kPa	Coupling Dimensions		Min. No. of Coupling Segments	No. of Fasteners - Fastener Dimensions Dia. x Length In. x In.	(4) Approximate Weight Each Lbs/Kg.
			Body Thickness In.	Width (Z) In./mm			
8 200	8.00 - 8.88 203.2 - 225.6	200 1375	11 ga.	4.50 114.3	2	4 - 3/4 x 6	21.0 9.5
10 250	9.00 - 10.88 228.6 - 276.4	200 1375	10 ga.	4.50 114.3	2	4 - 3/4 x 6	23.0 10.4
12 300	11.00 - 12.88 279.4 - 327.2	200 1375	10 ga.	4.50 114.3	2	4 - 3/4 x 6	26.0 11.8
14 350	13.00 - 14.88 330.2 - 378	200 1375	10 ga.	4.50 114.3	2	4 - 3/4 x 6	28.0 12.7
16 400	15.00 - 16.88 381.0 - 428.8	200 1375	3/16	4.50 114.3	2	4 - 3/4 x 6	33.0 15.0
18 450	17.00 - 18.88 431.8 - 479.6	200 1375	3/16	4.50 114.3	2	4 - 3/4 x 6	36.0 16.3
20 500	19.00 - 21.88 482.6 - 555.8	200 1375	3/16	4.50 114.3	2	4 - 3/4 x 6	38.0 17.2
24 600	22.00 - 26.88 558.8 - 682.8	100 700	3/16	4.50 114.3	2	4 - 3/4 x 6	43.0 19.5
		200 1375	1/4	6.50 165.1	2	6 - 3/4 x 6	90.0 40.8
30 750	27.00 - 32.88 685.8 - 835.2	100 700	3/16	4.50 114.3	2	4 - 3/4 x 6	51.0 23.1
		150 1050	1/4	6.50 165.1	2	6 - 3/4 x 6	109.0 49.4
		200 1375	3/8	6.50 165.1	2	6 - 3/4 x 8	130.0 59.0
36 900	33.00 - 38.88 838.2 - 987.6	50 345	3/16	4.50 114.3	2	4 - 3/4 x 6	59.0 26.8
		100 700	1/4	6.50 165.1	2	6 - 3/4 x 6	128.0 58.1
		200 1375	3/8	6.50 165.1	2	6 - 3/4 x 6	153.0 69.4
42 1050	39.00 - 44.88 990.6 - 1140.0	100 700	1/4	6.50 165.1	2	4 - 3/4 x 6	147.0 66.7
		150 1050	3/8	6.50 165.1	2	6 - 3/4 x 6	176.0 79.8
		200 1375	1/2	6.63 168.3	2	6 - 3/4 x 6	234.0 106.1
48 1200	45.00 - 50.88 1143.0 - 1292.4	50 345	1/4	6.50 165.1	2	6 - 7/8 x 8	166.0 75.3
		100 700	3/8	6.50 165.1	2	6 - 7/8 x 8	211.0 95.7
		150 1050	1/2	6.63 168.3	2	6 - 7/8 x 8	263.0 119.3
54 1350	51.00 - 56.88 1295.4 - 1444.8	50 350	1/4	6.50 165.1	2	6 - 3/4 x 6	185.0 83.9
		100 700	3/8	6.50 165.1	2	6 - 7/8 x 8	234.0 106.1
		150 1050	1/2	6.63 168.3	2	6 - 7/8 x 8	293.0 132.9
60 1500	57.00 - 63.00 1447.8 - 1600.2	50 345	1/4	6.50 165.1	2	6 - 3/4 x 6	203.0 92.1
		100 700	3/8	6.50 165.1	2	6 - 7/8 x 8	257.0 116.6
		150 1050	1/2	6.63 168.3	2	6 - 7/8 x 8	323.0 146.5

- (1) Restrained Single-Gasket couplings must be used on pipe with a minimum wall thickness that meets the requirements of AWWA C220 for stainless steel pipe.
- (2) 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) Coupling weights are based on nominal pipe diameter and include all accessories. Weight may vary based on actual size of pipe.

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

# Style 234S Restrained Flexible Single-Gasket Coupling

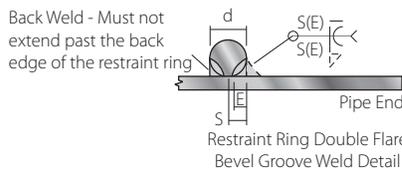
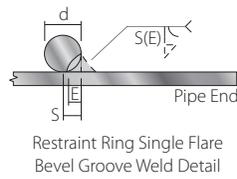
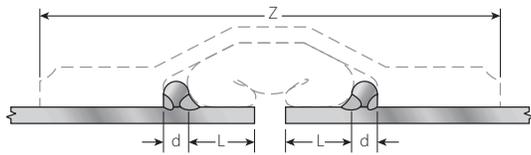
## PERFORMANCE

Nominal Pipe Size In./mm	(1)			(2) (3)	(3) (4)	(5)
	Maximum Working Pressure psi/kPa Carbon Steel	Maximum Working Pressure psi/kPa Stainless Steel	Maximum Working Pressure psi/kPa Ductile Iron	Pipe End Separation Min - Max In./mm	Max. Allow. Static Deflection Degrees	Max. Permissible End Load lbf/N
8 200	200 1375	200 1375	200 1375	0.13 - 0.38 3.3 - 9.7	1° 35'	10053 44718
10 250	200 1375	200 1375	200 1375	0.13 - 0.38 3.3 - 9.7	1° 18'	15708 69873
12 300	200 1375	200 1375	200 1375	0.13 - 0.38 3.3 - 9.7	1° 6'	28274 125769
14 350	200 1375	200 1375	200 1375	0.13 - 0.38 3.3 - 9.7	0° 57'	22619 100616
16 400	200 1375	200 1375	200 1375	0.13 - 0.38 3.3 - 9.7	0° 50'	30788 136950
18 450	200 1375	200 1375	175 1200	0.13 - 0.38 3.3 - 9.7	0° 47'	50894 226387
20 500	200 1375	200 1375	150 1035	0.13 - 0.38 3.3 - 9.7	0° 39'	62832 279490
24 600	100 690	100 690	100 690	0.13 - 0.38 3.3 - 9.7	0° 31'	45239 201233
	200 1375	200 1375	200 1375	0.13 - 0.38 3.3 - 9.7	0° 31'	90478 402466
30 750	100 690	100 690	100 690	0.13 - 0.38 3.3 - 9.7	0° 26'	70686 314426
	150 1035	150 1035	150 1035	0.13 - 0.38 3.3 - 9.7	0° 26'	106029 471639
	200 1375	200 1375	150 1035	0.13 - 0.38 3.3 - 9.7	0° 26'	141372 628853
36 900	50 345	50 345	50 345	0.13 - 0.38 3.3 - 9.7	0° 22'	50894 226387
	100 690	100 690	100 690	0.13 - 0.38 3.3 - 9.7	0° 22'	101788 452774
	200 1375	200 1375	125 860	0.13 - 0.38 3.3 - 9.7	0° 22'	203575 905548
42 1050	100 690	100 690	100 690	0.13 - 0.38 3.3 - 9.7	0° 19'	138544 616276
	150 1035	150 1035	125 860	0.13 - 0.38 3.3 - 9.7	0° 19'	207816 924413
	200 1375	200 1375	150 1035	0.25 - 0.50 6.3 - 12.7	0° 19'	277088 1232551
48 1200	50 345	50 345	50 345	0.13 - 0.38 3.3 - 9.7	0° 17'	90478 402466
	100 690	100 690	100 690	0.13 - 0.38 3.3 - 9.7	0° 17'	180956 804931
	150 1035	150 1035	125 860	0.25 - 0.50 6.3 - 12.7	0° 17'	271434 1207397
54 1350	50 345	50 345	50 345	0.13 - 0.38 3.3 - 9.7	0° 15'	114511 509371
	100 690	100 690	75 515	0.13 - 0.38 3.3 - 9.7	0° 15'	229022 1018741
	150 1035	150 1035	125 860	0.25 - 0.50 6.3 - 12.7	0° 15'	343533 1528112
60 1500	50 345	50 345	50 345	0.13 - 0.38 3.3 - 9.7	0° 13'	141372 628853
	100 690	100 690	75 515	0.13 - 0.38 3.3 - 9.7	0° 13'	282743 1257705
	150 1035	150 1035	100 690	0.25 - 0.50 6.3 - 12.7	0° 13'	424115 1886558

- (1) For allowable test or transient pressure, the maximum working pressure may be increased to 1½ times the values shown.
- (2) Pipe end separations shown in the table assume the pipe is in a non-deflected state. Maximum allowable axial pipe movement at the joint is the difference between the maximum and minimum pipe end 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 static deflection values are intended for installation only. For allowable in-service or dynamic deflection, use 75% of the published static values. 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 OD. The actual maximum permissible end load will be less or greater than the published figures depending on the actual pipe OD.

# Style 234S Restrained Flexible Single-Gasket Coupling

## RESTRAINT RINGS



Nominal Pipe Size In./mm	(1) Maximum Working Pressure psi/kPa	Width (Z) In./mm	Restrainer Rings (2)		
			Diameter (d) In.	Location (L) In./mm	Weld Size (E) In.
8 200	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
10 250	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
12 300	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
14 350	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
16 400	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
18 450	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
20 500	200 1375	4.50 114.3	1/4	0.81 20.6	3/32
24 600	100 700	4.50 114.3	1/4	0.81 20.6	3/32
	200 1375	6.50 165.1	3/8	0.94 23.8	1/8
30 750	100 700	4.50 114.3	1/4	0.81 20.6	3/32
	150 1050	6.50 165.1	3/8	0.94 23.8	1/8
	200 1375	6.50 165.1	3/8	0.94 23.8	1/8
36 900	50 345	4.50 114.3	1/4	0.81 20.6	3/32
	100 700	6.50 165.1	3/8	0.94 23.8	1/8
	200 1375	6.63 168.3	3/8	0.94 23.8	1/8
42 1050	100 700	6.50 165.1	3/8	0.94 23.8	1/8
	150 1050	6.50 165.1	3/8	0.94 23.8	1/8
	200 1375	6.63 168.3	1/2	1.31 33.3	5/32
48 1200	50 345	6.50 165.1	3/8	0.94 23.8	1/8
	100 700	6.50 165.1	3/8	0.94 23.8	1/8
	150 1050	6.63 168.3	1/2	1.31 33.3	5/32
54 1350	50 345	6.50 165.1	3/8	0.94 23.8	1/8
	100 700	6.50 165.1	3/8	0.94 23.8	1/8
	150 1050	6.63 168.3	1/2	1.31 33.3	5/32
	200 1375	6.63 168.3	1/2	1.31 33.3	5/32
60 1500	50 345	6.50 165.1	3/8	0.94 23.8	1/8
	100 700	6.50 165.1	3/8	0.94 23.8	1/8
	150 1050	6.63 168.3	1/2	1.31 33.3	5/32
	200 1375	6.63 168.3	1/2	1.31 33.3	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) 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.
- (4) Restraint rings must be welded perpendicular to the pipe axis with a tolerance of  $L \pm 1/16 \text{ } \approx 1.6 \text{ mm}$ .

Note: this data applies when stainless steel couplings are being used on stainless steel pipe.

# Style 234S Restrained Flexible Single-Gasket Coupling

**PRODUCT CONFIGURATOR**

**C 0234 0060 50 X 2 D L 0 X XO**

Class	Style	Actual Pipe O.D. *		Body Type	Segments	PSI/kPa Rating	Rubber Compound	Paint	Hardware	Ring and Pipe Material
		Inches^	Fraction							
C	0234	0008 through 0063	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	2 - Two	B - 50/345 C - 75/515 D - 100/690 E - 125/860 F - 150/1035 G - 175/1200 H - 200/1375	E - EPDM L - Silicone T - Nitrile	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

^ Couplings are available in a range of nominal sizes from 8 - 60".  
\* For actual pipe O.D. round down to the nearest 1/8" to determine proper coupling size required.

**ENGINEERED PRODUCTS OPTIONS**

**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 234S 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 234S 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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