



# Servometer

## Flexible Shaft Couplings for Motion Control

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Couplings adapted to  
your specific needs

Integral Clamp Bellows Couplings

Set Screw Bellows Couplings

Split Hub Bellows Couplings



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# Introducing Servometer Precision Motion Control Couplings

Servometer®, an MW Components company, produces precision motion control couplings. As a premier provider of extremely flexible and highly dependable bellows and beam couplings, we offer a wide variety of standard parts for replacement, testing and development, and custom assemblies designed for peak efficiency and reliable 24/7 operation even in extreme environments, and applications. We have design engineers on staff to assist with custom requirements. Feel free to contact us.

## Why Use Servometer Motion Control Couplings?

Motion control couplings connect rotating shafts, allowing torque and rotational position to be accurately transferred, with very low wind-up and Zero-backlash, while accommodating for minor angular and offset misalignments between the shafts. Motion control couplings minimize machine wear and tear and ensure lower maintenance costs.

Precision motion control applications require mechanically tight systems, especially between motors, driven loads, and feedback devices, to ensure accurate positioning. Such systems often require shaft couplings that are both torsionally rigid to accurately transmit rotational position, and laterally flexible to accommodate shaft misalignments.

Servometer flexible bellows couplings are produced using seamless precision electrodeposited nickel bellows which offer superior quality and performance even in critical applications. Servometer bellows couplings exhibit low wind-up, due to torsional rigidity, and low side thrust because of lateral flexibility. Other types of couplings only offer one or the other, not both.

## Key Benefits & Unique Characteristics of Bellows Couplings

- Zero Backlash
- Very Low Elastic Wind-up
- Zero Cyclic Speed Variation during 360° Rotation
- Low Side Thrust on Bearings
- Vibration Damping Capability

## Applications We Support

- Resolvers
- Encoders
- Stepper and Servo Motors
- Small Pumps Fans and Blowers
- CNC Machines
- Robotics
- Medical Devices
- Semiconductor Manufacturing
- Automation Systems
- Aerospace Applications
- Precision Positioning
- Others

## Safety Warning

Servometer urges you to follow OSHA and/or ASME safety precautions and equipment manufacturer's instructions during installation, start-up and operation of any coupling assembly regardless of style, size or configuration. Servometer/PMG, LLC is not responsible for any liabilities due to misuse, improper handling, installation or monitoring that result in system failure or breakage, personal injury, or death. Do not exceed the parameters of the catalog ratings. Shaft engagements should not exceed the length of the hub of a bellows coupling.



## Coupling Selection

Matching your application requirements with the right coupling depends upon the coupling design. First, you want to consider the performance characteristics of bellows couplings. Bellows couplings can flex laterally and axially within their design limitations, so when considering the selection of a bellows coupling, the alignment of a coupling is a great starting point. Because bellows couplings are commonly selected for their misalignment capability, understanding the types of misalignments and how they can impact coupling performance and lifecycle is critical to design engineers. Misalignment of shafts, with axes parallel but offset, is the severest load condition that can be applied to a coupling. Angular misalignment, or arc bend, is also a critical factor which can change the performance capability when combined with a parallel offset. Finally, understanding the extension or compression of the bellows is also important. If the bellows operates in compression, only 75% of the rated torque value is possible.

## Important Parameters to consider before selecting a coupling

- Maximum instantaneous torque when the coupling is extended and compressed
- Extension/Compression required during operation
- Maximum parallel misalignment of the shafts
- Maximum angular misalignment of the shafts
- Maximum allowable windup
- Space Limitation (i.e. overall length of the coupling, maximum outside diameter)

In addition to our standard coupling offerings, custom bellows coupling configurations are possible and can be produced to meet multiple requirements that are not listed within this catalog. This includes several hub styles outside of the standard connectors which include set screw styles, split hub with clamping collar, or the integral clamp hub style. If your application parameters cannot be accomplished with standard couplings and require a custom coupling solution, contact us to discuss custom design and/or prototyping options.



## “ Making the Impossible... Possible!

### About Servometer®

Servometer has been a trusted supplier and contract manufacturer to the OEM industry for more than 60 years. We take pride in developing the highest level of quality products from design, through production, to delivery. Servometer employs a unique patented manufacturing technology that ensures precision products with exceptional performance characteristics. Our products are specified in thousands of applications across multiple industries including Aerospace, Military and Defense, Medical, Oil and Gas, Semiconductor and Instrumentation.

Our company practices lean manufacturing techniques and standards and recognizes the importance of ITAR, RoHS and DFARS compliance. Servometer is ISO 9001 certified.



Durable, reliable and accurate, our products are made to last. Our primary product lines include the following.

#### Our Products

- Electrodeposited Bellows and Bellows Assemblies
- Electroforms
- Flexible Shaft Couplings
- Gold-Plated Contact Springs
- Complete Bellows Sub-Assembly Services

#### Sub-Assembly Services Offered

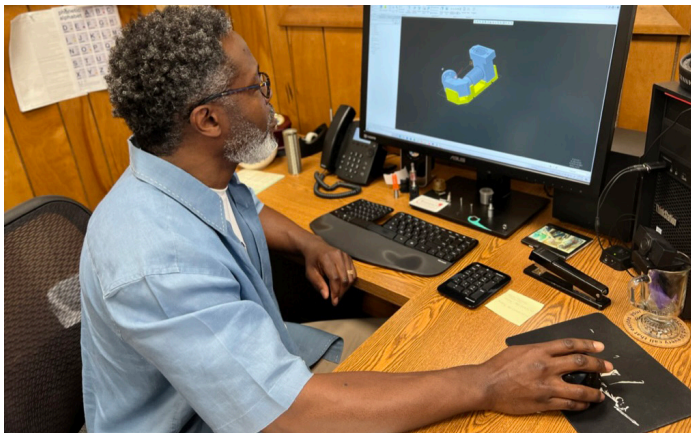
- Flameless Solder and Brazing
- Adhesive Bonding
- Ultra Clean EB Weld
- Post Assembly Sealing, Backfilling, Coating
- Engraving
- Machining
- Testing
- Secondary Assembly



## Engineering Partnership

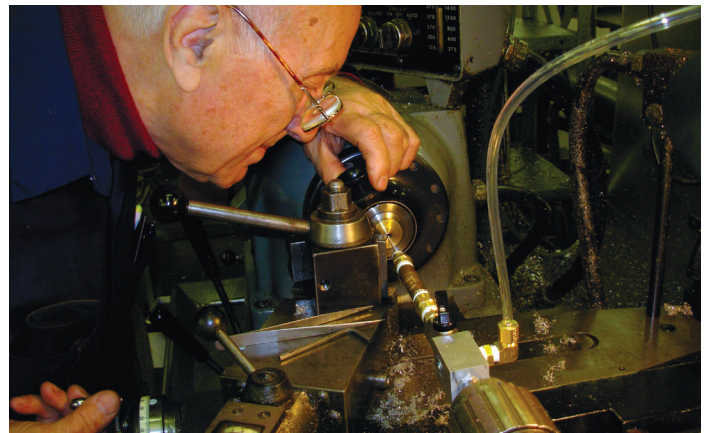
Rely on Servometer's team of engineers to operate as an extension of your organization. They will work with you to help select a standard part from our inventory or help modify a standard part to meet your needs. Servometer's design engineers will also collaborate with you to develop a unique design to meet your specific custom requirements. With thousands of designs at our fingertips we can borrow from the large volume of design ideas and match your requirements with a unique new bellows solution.

Whether you need a prototype quickly or one thousand pieces, we are able to adjust convolution lengths, material, plating thickness, spring rate and then test for function before production. Using an iterative process (producing, testing, modifying), we can optimize the form and function of our bellows to fit your application needs.



## Committed to Product Quality

We are committed to maintaining the highest level of product standards from manufacturing through delivery. Our Quality Control department is "hands on"—inspecting and evaluating each and every part as required. Quality Control engineers work closely with the Inspection Department personnel assuring that our raw materials and products pass our stringent performance and quality control tests. We operate by the principles of root cause and corrective action and in the true spirit of continuous improvement. We are committed to satisfying our customers' expectations and requirements.



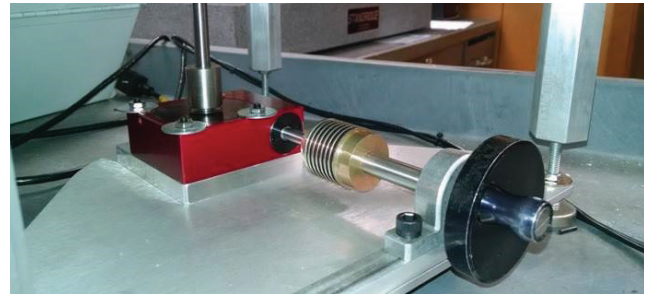
## Customer Service

Servometer is the approved supplier to leading OEM manufacturers around the world. Every product we manufacture is backed by our continuous customer support and a global sales presence in Europe, Asia and North America.

We offer both written and verbal quotes as requested and price breaks for higher quantities on standard parts. We strive for on time or just in time delivery and will split shipments to suit your delivery requirements and help manage your inventory needs.



# Bellows Coupling with Set Screw End Pieces



## SMC 300 Series (Adhesive Assembly)

Precision bellows couplings are characterized by diameter and the number and spacing of the convolutions. The convolutions allow for a highly flexible, yet rotationally rigid coupling. Electrodeposited nickel bellows have a precisely controlled wall thickness that gives it an exceptional combination of sensitivity and high torsional stiffness for precise rotational adjustment and positioning. The SMC 300 series features set screw style Stainless Steel hubs and is available in various diameters and lengths.

### Features

- Quality 303 Stainless Steel hub with FlexNickel® bellows
- Temperature range -58 to 260° F
- Torque range from 2 in-oz to 4,000 in-oz
- Extremely low wind-up
- Zero backlash
- Performance rated for minimum 100 million cycles\*
- Low moment of inertia
- Metric hardware (set screw)
- Operating temperatures up to 120°C
- Wide selection of bore sizes ([see page 10](#))

### Notes

- 01 Minimum life expectancy of 10<sup>8</sup> cycles for values shown in tables (1 Revolution = 2 Cycles)
- 02 Parallel misalignment, angular misalignment & compression stroke values are mutually exclusive. If combinations of these are required, consult factory.



## SMC 300 Performance Specifications

Part No.	Rated Torque (in-oz)	Static Torsional Stiffness (N*m/rad)	Wind-up (arc-s/in-oz)	Side Thrust (oz/.001 in)	Misalignment		
					Angular <sup>2</sup> (deg)	Parallel <sup>2</sup> (in)	Axial <sup>2</sup> (in) (stroke)
SMC - 301	2	2.36	616	.02	31	.076	.107
SMC - 302	5	4.76	306	.18	15	.017	.051
SMC - 303	7	7.21	202	.64	9	.007	.032
SMC - 304	9	9.58	152	1.55	7	.004	.023
SMC - 305	7	10.9	134	.07	27	.066	.139
SMC - 306	9	15	99	.17	20	.036	.103
SMC - 307	14	22	67	.58	13	.015	.066
SMC - 308	18	26	55	1.00	10	.010	.054
SMC - 309	33	39	37	.32	18	.044	.125
SMC - 310	50	61	24	1.13	12	.018	.081
SMC - 311	65	81	18	2.73	9	.010	.059
SMC - 312	105	132	11	.59	14	.046	.149
SMC - 313	140	173	8.4	1.40	11	.026	.112
SMC - 314	188	235	6.2	3.50	8	.014	.083
SMC - 315	152	275	5.3	.54	17	.068	.230
SMC - 316	280	470	3.1	2.85	9	.020	.121
SMC - 331	4	3.52	413	.03	17	.050	.060
SMC - 332	7	7.11	205	.18	9	.017	.032
SMC - 333	11	10.8	135	.64	7	.007	.023
SMC - 334	9	9.58	152	1.55	7	.004	.023
SMC - 335	11	16	90	.07	17	.066	.090
SMC - 336	14	22	67	.17	13	.036	.066
SMC - 337	21	32	45	.58	8	.015	.042
SMC - 338	26	37	39	1.39	6	.009	.030
SMC - 339	49	58	25	.32	12	.044	.082
SMC - 340	75	91	16	1.13	9	.018	.059
SMC - 341	97	121	12	2.73	5	.010	.038
SMC - 342	158	182	8	.59	9	.046	.096
SMC - 343	210	260	5.6	1.40	7	.026	.067
SMC - 344	281	347	4.2	4.41	5	.013	.053
SMC - 345	227	405	3.6	.54	11	.068	.149
SMC - 346	420	694	2.1	2.85	5	.020	.067
SMC - 360	1500	1714	.85	8.1	6	.018	.129
SMC - 370	2500	3642	.40	5.35	8	.042	.240
SMC - 380	4000	8569	.17	20.6	4	.014	.160

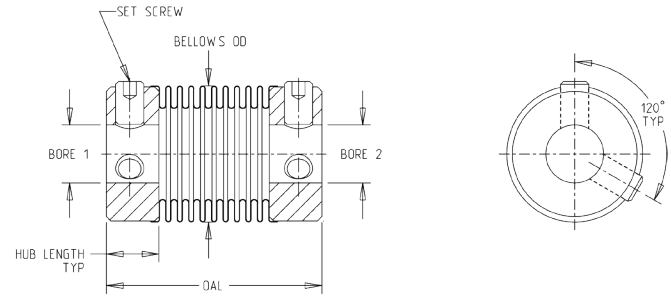
# Bellows Coupling with Set Screw End Pieces

## SMC 300 Dimensional Data

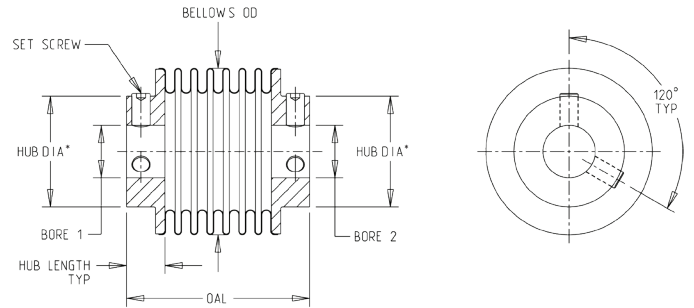
Part No.	Bellows Diameter		Max Bore Size		Overall Length (OAL)		Set Screw	Hub Length	
	in	mm	in	mm	in	mm		in	mm
SMC - 301	0.250	6.35	0.125	3.18	1.035	26.29	M2	0.146	3.71
SMC - 302	0.250	6.35	0.125	3.18	0.665	16.89	M2	0.146	3.71
SMC - 303	0.250	6.35	0.125	3.18	0.540	13.72	M2	0.146	3.71
SMC - 304	0.250	6.35	0.125	3.18	0.480	12.19	M2	0.146	3.71
SMC - 305	0.375	9.53	0.237	6.00	1.035	26.29	M2	0.146	3.71
SMC - 306	0.375	9.53	0.236	6.00	0.845	21.46	M2	0.146	3.71
SMC - 307	0.375	9.53	0.236	6.00	0.665	16.89	M2	0.146	3.71
SMC - 308	0.375	9.53	0.236	6.00	0.600	15.24	M2	0.146	3.71
SMC - 309	0.500	12.70	0.250	6.35	1.087	27.61	M2.5	0.172	4.37
SMC - 310	0.500	12.70	0.250	6.35	0.837	21.26	M2.5	0.172	4.37
SMC - 311	0.500	12.70	0.250	6.35	0.717	18.21	M2.5	0.172	4.37
SMC - 312	0.750	19.05	0.500	12.70	1.327	33.71	M3	0.172	4.37
SMC - 313	0.750	19.05	0.500	12.70	1.077	27.36	M3	0.172	4.37
SMC - 314	0.750	19.05	0.500	12.70	0.887	22.53	M3	0.172	4.37
SMC - 315	1.000	25.40	0.630	16.00	1.623	41.22	M3	0.195	4.95
SMC - 316	1.000	25.40	0.630	16.00	1.123	28.52	M3	0.195	4.95



### SMC-301 thru SMC-311 SMC-331 thru SMC-341



### SMC-312-thru SMC-316 SMC-342 thru SMC-380



\* Hub Diameter Varies with Bore Size, See Table 1

SMC - 331	0.250	6.35	0.125	3.18	0.920	23.37	M2	0.246	6.25
SMC - 332	0.250	6.35	0.125	3.18	0.665	16.89	M2	0.246	6.25
SMC - 333	0.250	6.35	0.125	3.18	0.540	13.72	M2	0.246	6.25
SMC - 334	0.250	6.35	0.125	3.18	0.480	12.19	M2	0.246	6.25
SMC - 335	0.375	9.53	0.236	6.00	1.035	26.29	M2	0.370	9.40
SMC - 336	0.375	9.53	0.236	6.00	0.845	21.46	M2	0.370	9.40
SMC - 337	0.375	9.53	0.236	6.00	0.665	16.89	M2	0.370	9.40
SMC - 338	0.375	9.53	0.236	6.00	0.568	14.43	M2	0.370	9.40
SMC - 339	0.500	12.70	0.250	6.35	1.087	27.61	M2.5	0.493	12.52
SMC - 340	0.500	12.70	0.250	6.35	0.837	21.26	M2.5	0.493	12.52
SMC - 341	0.500	12.70	0.250	6.35	0.717	18.21	M2.5	0.493	12.52
SMC - 342	0.750	19.05	0.500	12.70	1.327	33.71	M3	0.741	18.82
SMC - 343	0.750	19.05	0.500	12.70	1.077	27.36	M3	0.741	18.82
SMC - 344	0.750	19.05	0.500	12.70	0.847	21.51	M3	0.741	18.82
SMC - 345	1.000	25.40	0.630	16.00	1.623	41.22	M3	0.990	25.15
SMC - 346	1.000	25.40	0.630	16.00	1.123	28.52	M3	0.990	25.15

SMC - 360	1.430	36.32	0.630	16.00	1.510	38.35	M4	1.415	35.94
SMC - 370	2.000	50.80	1.000	25.40	2.162	54.91	M5	1.990	50.55
SMC - 380	2.400	60.96	1.000	25.40	1.600	40.64	M5	2.384	60.55



## Table 1: Hub Diameter vs. Bore Size

SMC-312 thru SMC-314 SMC-332 thru SMC-344		SMC-315 thru SMC-316 SMC-345 thru SMC-346		SMC-360		SMC-370		SMC-380	
Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)
≤ 8mm	0.500"	≤ .375"	0.625"	≤ .375"	0.875"	≤ 17mm	1.250"	≤ 17mm	1.250"
≥ .375"	0.730"	≥ 10mm	0.975"	≥ 10mm	1.000"	≥ 18mm	1.625"	≥ 18mm	1.625"
				≥ 15mm	1.400"			≥ 1.125"	2.000"

# Bellows Coupling with Clamping End Pieces

## SMC 400 Series (Adhesive Assembly)

These electrodeposited nickel bellows couplings offer the highest lateral flexibility and radial rigidity in coupling types. Their unique high performance characteristics offer a desirable combination of both low wind-up and low side thrust for high precision positioning systems. The SMC 400 series features integral clamp style Stainless Steel hubs and is available in various diameters and lengths.



### Features

- Quality 303 Stainless Steel hub with FlexNickel® bellows
- Extremely low wind-up
- Zero backlash
- Torque range from 2 in-oz to 4,000 in-oz
- Low moment of inertia
- Metric hardware (set screw)
- Operating temperatures up to 120°C
- Wide selection of bore sizes ([see page 10](#))

### Notes

- 01 Minimum life expectancy of 10<sup>8</sup> cycles for values shown in tables (1 Revolution = 2 Cycles)
- 02 Parallel misalignment, angular misalignment & compression stroke values are mutually exclusive. If combinations of these are required, consult factory.



## SMC 400 Performance Specifications

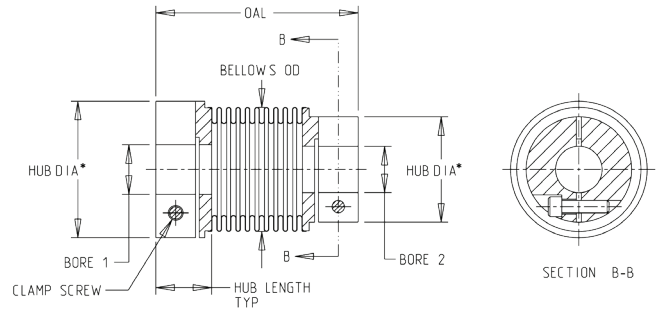
Part No.	Rated Torque (in-oz)	Static Torsional Stiffness (N*m/rad)	Wind-up (arc-sec/in-oz)	Side Thrust (oz/.001")	Misalignment		
					Angular <sup>2</sup> (deg)	Parallel <sup>2</sup> (in)	Axial <sup>2</sup> (in) (stroke)
SMC - 401	2	2.36	616	0.03	31	.076	.107
SMC - 402	5	4.76	306	0.18	15	.017	.051
SMC - 403	7	7.21	202	0.64	9	.007	.032
SMC - 404	9	9.58	152	1.55	7	.004	.023
SMC - 405	7	10.9	134	0.07	27	.066	.139
SMC - 406	9	15	99	0.17	20	.036	.103
SMC - 407	14	22	67	0.58	13	.015	.066
SMC - 408	18	26	55	1.00	10	.010	.054
SMC - 409	33	39	37	0.32	18	.044	.125
SMC - 410	50	61	24	1.13	12	.018	.081
SMC - 411	65	81	18	2.73	9	.010	.059
SMC - 412	105	132	11	0.59	14	.046	.149
SMC - 413	140	173	8.4	1.40	11	.026	.112
SMC - 414	188	235	6.2	3.50	8	.014	.083
SMC - 415	152	275	5.3	0.54	17	.068	.230
SMC - 416	280	470	3.1	2.85	9	.020	.121
SMC - 431	4	3.52	413	0.03	17	.050	.060
SMC - 432	7	7.11	205	0.18	9	.017	.032
SMC - 433	11	10.8	135	0.64	7	.007	.023
SMC - 434	9	9.58	152	1.55	7	.004	.023
SMC - 435	11	16	90	0.07	17	.066	.090
SMC - 436	14	22	67	0.17	13	.036	.066
SMC - 437	21	32	45	0.58	8	.015	.042
SMC - 438	26	37	39	1.39	6	.009	.030
SMC - 439	49	58	25	0.32	12	.044	.082
SMC - 440	75	91	16	1.13	9	.018	.059
SMC - 441	97	121	12	2.73	5	.010	.038
SMC - 442	158	182	8	0.59	9	.046	.096
SMC - 443	210	260	5.6	1.40	7	.026	.067
SMC - 444	281	347	4.2	4.41	5	.013	.053
SMC - 445	227	405	3.6	0.54	11	.068	.149
SMC - 446	420	694	2.1	2.85	5	.020	.067
SMC - 460	1500	1714	.85	8.10	6	.018	.129
SMC - 470	2500	3642	.40	5.35	8	.042	.240
SMC - 480	4000	8569	.17	20.60	4	.014	.160



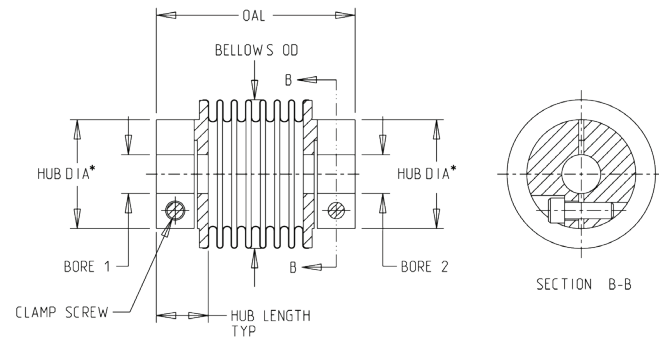
# Bellows Coupling with Clamping End Pieces

## SMC 400 Dimensional Data

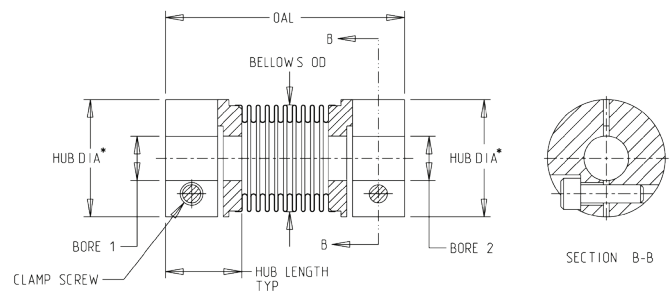
Part No.	Bellows Diameter		Max Bore Size		Overall Length (OAL)		Clamp Screw Size	Hub Length	
	in	mm	in	mm	in	mm		in	mm
SMC - 401	0.250	6.35	1.57	4.0	1.243	31.57	M1.6	0.250	6.35
SMC - 402	0.250	6.35	1.57	4.0	0.873	22.17	M1.6	0.250	6.35
SMC - 403	0.250	6.35	1.57	4.0	0.748	19.00	M1.6	0.250	6.35
SMC - 404	0.250	6.35	1.57	4.0	0.688	17.48	M1.6	0.250	6.35
SMC - 405	0.375	9.53	1.57	4.0	1.279	32.49	M1.6	0.268	6.81
SMC - 406	0.375	9.53	1.57	4.0	1.089	27.66	M1.6	0.268	6.81
SMC - 407	0.375	9.53	1.57	4.0	0.909	23.09	M1.6	0.268	6.81
SMC - 408	0.375	9.53	1.57	4.0	0.844	21.44	M1.6	0.268	6.81
SMC - 409	0.500	12.70	0.25	6.4	1.343	34.11	M2.0	0.300	7.62
SMC - 410	0.500	12.70	0.25	6.4	1.093	27.76	M2.0	0.300	7.62
SMC - 411	0.500	12.70	0.25	6.4	0.973	24.71	M2.0	0.300	7.62
SMC - 412	0.750	19.05	5.12	13.0	1.637	41.58	M2.5	0.327	8.31
SMC - 413	0.750	19.05	5.12	13.0	1.387	35.23	M2.5	0.327	8.31
SMC - 414	0.750	19.05	5.12	13.0	1.197	30.40	M2.5	0.327	8.31
SMC - 415	1.000	25.40	0.63	1.6	1.887	47.93	M2.5	0.327	8.31
SMC - 416	1.000	25.40	0.63	1.6	1.387	35.23	M2.5	0.327	8.31
SMC - 431	0.250	6.35	1.57	4.0	1.128	28.65	M1.6	0.25	6.35
SMC - 432	0.250	6.35	1.57	4.0	0.873	22.17	M1.6	0.25	6.35
SMC - 433	0.250	6.35	1.57	4.0	0.748	19.00	M1.6	0.25	6.35
SMC - 434	0.250	6.35	1.57	4.0	0.688	17.48	M1.6	0.25	6.35
SMC - 435	0.375	9.53	1.57	4.0	1.279	32.49	M1.6	0.268	6.81
SMC - 436	0.375	9.53	1.57	4.0	1.089	27.66	M1.6	0.268	6.81
SMC - 437	0.375	9.53	1.57	4.0	0.909	23.09	M1.6	0.268	6.81
SMC - 438	0.375	9.53	1.57	4.0	0.812	20.62	M1.6	0.268	6.81
SMC - 439	0.500	12.70	0.25	6.4	1.343	34.11	M2.0	0.300	7.62
SMC - 440	0.500	12.70	0.25	6.4	1.093	27.76	M2.0	0.300	7.62
SMC - 441	0.500	12.70	0.25	6.4	0.973	24.71	M2.0	0.300	7.62
SMC - 442	0.750	19.05	5.12	13.0	1.637	41.58	M2.5	0.327	8.31
SMC - 443	0.750	19.05	5.12	13.0	1.387	35.23	M2.5	0.327	8.31
SMC - 444	0.750	19.05	5.12	13.0	1.157	29.39	M2.5	0.327	8.31
SMC - 445	1.000	25.40	0.63	15.9	1.887	47.93	M2.5	0.327	8.31
SMC - 446	1.000	25.40	0.63	15.9	1.387	35.23	M2.5	0.327	8.31
SMC - 460	1.430	36.32	6.69	17.0	1.850	46.99	M4.0	0.465	11.81
SMC - 470	2.000	50.80	1.00	25.4	2.442	62.03	M4.0	0.465	11.81
SMC - 480	2.400	60.96	1.00	25.4	1.998	50.75	M5.0	0.524	13.31



\* Hub Diameter Varies with Bore Size, See Table 2



\* Hub Diameter Varies with Bore Size, See Table 2



\* Hub Diameter Varies with Bore Size, See Table 2

**Table 2: Hub Diameter vs. Bore Size**

SMC-401 thru SMC-408 SMC-431 thru SMC-438		SMC-409 thru SMC-411 SMC-439 thru SMC-441		SMC-412 thru SMC-414 SMC-442 thru SMC-444		SMC-415 thru SMC-416 SMC-435 thru SMC-436		SMC-460		SMC-470 & 480	
Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)
All	0.413"	≤ 4mm	0.472"	≤ 0.250"	0.610"	≤ 0.250"	0.610"	≤ 10mm	1.000"	≤ 19mm	1.500"
		≥ 0.1875"	0.571"	≥ 0.3125"	0.866"	≥ 0.3125"	0.866"	≥ 11mm	1.390"	≥ 0.750"	1.750"
						≥ 0.500"	1.004"				

## Bellows Coupling SMC Bore Size Chart

Series	Bore Size*																													
	2 mm	0.0903"	0.094"	3 mm	0.120"	0.125"	4 mm	0.188"	5 mm	6 mm	0.250"	0.313"	8 mm	0.375"	10 mm	11 mm	12 mm	0.500"	13 mm	14 mm	15 mm	0.625"	16 mm	17 mm	18 mm	19 mm	0.75"	20 mm	0.875"	1.000"
SMC 301 - 304	●	●	●	●	●	●																								
SMC 331 - 334																														
SMC 305 - 308	●	●	●	●	●	●	●	●	●	●																				
SMC 335 - 338																														
SMC 309 - 311		●	●	●	●	●	●	●	●	●																				
SMC 339 - 341																														
SMC 312 - 314				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												
SMC 342 - 344																														
SMC 315 - 316				●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SMC 345 - 346																														
SMC 360											●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SMC 370 & SMC 380											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SMC 401 - 408	●	●	●	●	●	●	●																							
SMC 431 - 438																														
SMC 409 - 411				●	●	●	●	●	●	●	●																			
SMC 439 - 441																														
SMC 412 - 414				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												
SMC 442 - 444																														
SMC 415 - 416											●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SMC 445 - 446																														
SMC 460											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
SMC 470 & SMC 480												●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

\*Tolerance: +0.001"

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Part Number Configuration SMC Series						
Model	Series	Bore Ø 1	Bore Ø 2			
SMC	- 460	- 8mm	X	.250		
<b>Example:</b> SMC - 460 - 8mm X .250						
*Bore sizes can match						

# Bellows Coupling with Set Screw End Pieces

## SSC 300 Series (Soldered Assembly)

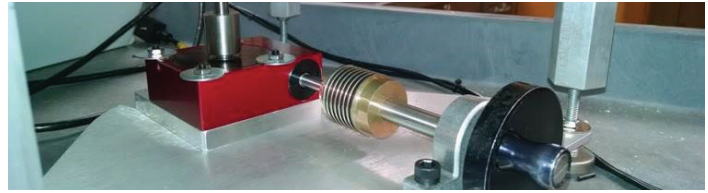
Precision bellows couplings are characterized by diameter and the number and spacing of the convolutions. The convolutions allow for a highly flexible, yet rotationally rigid coupling. Electrodeposited nickel bellows have a precisely controlled wall thickness that gives it an exceptional combination of sensitivity and high torsional stiffness for precise rotational adjustment and positioning. The SSC 300 series features set screw style Stainless Steel hubs and is available in various diameters and lengths.

### Features

- Quality 303 Stainless Steel hub with FlexNickel® bellows
- Temperature range -58 to 260° F
- Torque range from 2 in-oz to 4,000 in-oz
- Extremely low wind-up
- Zero backlash
- Performance rated for minimum 100 million cycles\*
- Low moment of inertia
- Metric hardware (set screw)
- Operating temperatures up to 176°C
- Wide selection of bore sizes ([see page 15](#))

### Notes

- 01 Minimum life expectancy of 10<sup>8</sup> cycles for values shown in tables (1 Revolution = 2 Cycles)
- 02 Parallel misalignment, angular misalignment & compression stroke values are mutually exclusive. If combinations of these are required, consult factory.



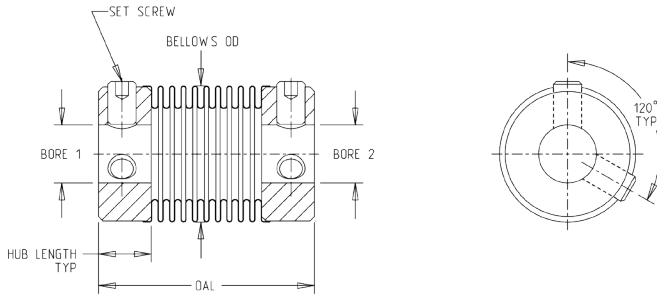
## SSC 300 Performance Specifications

Part No.	Rated Torque (in-oz)	Static Torsional Stiffness (N*m/rad)	Wind-up (arc-s/in-oz)	Side Thrust (oz/.001 in)	Misalignment		
					Angular <sup>2</sup> (deg)	Parallel <sup>2</sup> (in)	Axial <sup>2</sup> (in) (stroke)
SSC - 301	2	2.36	616	.02	31	.076	.107
SSC - 302	5	4.76	306	.18	15	.017	.051
SSC - 303	7	7.21	202	.64	9	.007	.032
SSC - 304	9	9.58	152	1.55	7	.004	.023
SSC - 305	7	10.9	134	.07	27	.066	.139
SSC - 306	9	15	99	.17	20	.036	.103
SSC - 307	14	22	67	.58	13	.015	.066
SSC - 308	18	26	55	1.00	10	.010	.054
SSC - 309	33	39	37	.32	18	.044	.125
SSC - 310	50	61	24	1.13	12	.018	.081
SSC - 311	65	81	18	2.73	9	.010	.059
SSC - 312	105	132	11	.59	14	.046	.149
SSC - 313	140	173	8.4	1.40	11	.026	.112
SSC - 314	188	235	6.2	3.50	8	.014	.083
SSC - 315	152	275	5.3	.54	17	.068	.230
SSC - 316	280	470	3.1	2.85	9	.020	.121
SSC - 331	4	3.52	413	.03	17	.050	.060
SSC - 332	7	7.11	205	.18	9	.017	.032
SSC - 333	11	10.8	135	.64	7	.007	.023
SSC - 334	9	9.58	152	1.55	7	.004	.023
SSC - 335	11	16	90	.07	17	.066	.090
SSC - 336	14	22	67	.17	13	.036	.066
SSC - 337	21	32	45	.58	8	.015	.042
SSC - 338	26	37	39	1.39	6	.009	.030
SSC - 339	49	58	25	.32	12	.044	.082
SSC - 340	75	91	16	1.13	9	.018	.059
SSC - 341	97	121	12	2.73	5	.010	.038
SSC - 342	158	182	8	.59	9	.046	.096
SSC - 343	210	260	5.6	1.40	7	.026	.067
SSC - 344	281	347	4.2	4.41	5	.013	.053
SSC - 345	227	405	3.6	.54	11	.068	.149
SSC - 346	420	694	2.1	2.85	5	.020	.067
SSC - 360	1500	1714	.85	8.1	6	.018	.129
SSC - 370	2500	3642	.40	5.35	8	.042	.240
SSC - 380	4000	8569	.17	20.6	4	.014	.160

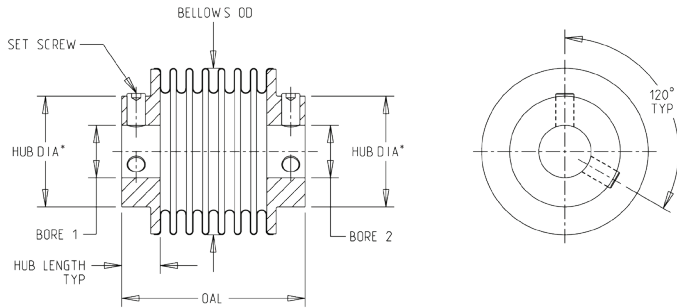
# Bellows Coupling with Set Screw End Pieces



SSC-301 thru SSC-311  
SSC-331 thru SSC-341



SSC-312-thru SSC-316  
SSC-342 thru SSC-380



\* Hub Diameter Varies with Bore Size, See Table 1



## SSC 300 Dimensional Data

Part No.	Bellows Diameter		Max Bore Size		Overall Length (OAL)		Set Screw	Hub Length	
	in	mm	in	mm	in	mm		in	mm
SSC - 301	0.250	6.35	0.125	3.18	1.035	26.29	M2	0.146	3.71
SSC - 302	0.250	6.35	0.125	3.18	0.665	16.89	M2	0.146	3.71
SSC - 303	0.250	6.35	0.125	3.18	0.540	13.72	M2	0.146	3.71
SSC - 304	0.250	6.35	0.125	3.18	0.480	12.19	M2	0.146	3.71
SSC - 305	0.375	9.53	0.237	6.00	1.035	26.29	M2	0.146	3.71
SSC - 306	0.375	9.53	0.236	6.00	0.845	21.46	M2	0.146	3.71
SSC - 307	0.375	9.53	0.236	6.00	0.665	16.89	M2	0.146	3.71
SSC - 308	0.375	9.53	0.236	6.00	0.600	15.24	M2	0.146	3.71
SSC - 309	0.500	12.70	0.250	6.35	1.087	27.61	M2.5	0.172	4.37
SSC - 310	0.500	12.70	0.250	6.35	0.837	21.26	M2.5	0.172	4.37
SSC - 311	0.500	12.70	0.250	6.35	0.717	18.21	M2.5	0.172	4.37
SSC - 312	0.750	19.05	0.500	12.70	1.327	33.71	M3	0.172	4.37
SSC - 313	0.750	19.05	0.500	12.70	1.077	27.36	M3	0.172	4.37
SSC - 314	0.750	19.05	0.500	12.70	0.887	22.53	M3	0.172	4.37
SSC - 315	1.000	25.40	0.630	16.00	1.623	41.22	M3	0.195	4.95
SSC - 316	1.000	25.40	0.630	16.00	1.123	28.52	M3	0.195	4.95

SSC - 331	0.250	6.35	0.125	3.18	0.920	23.37	M2	0.246	6.25
SSC - 332	0.250	6.35	0.125	3.18	0.665	16.89	M2	0.246	6.25
SSC - 333	0.250	6.35	0.125	3.18	0.540	13.72	M2	0.246	6.25
SSC - 334	0.250	6.35	0.125	3.18	0.480	12.19	M2	0.246	6.25
SSC - 335	0.375	9.53	0.236	6.00	1.035	26.29	M2	0.370	9.40
SSC - 336	0.375	9.53	0.236	6.00	0.845	21.46	M2	0.370	9.40
SSC - 337	0.375	9.53	0.236	6.00	0.665	16.89	M2	0.370	9.40
SSC - 338	0.375	9.53	0.236	6.00	0.568	14.43	M2	0.370	9.40
SSC - 339	0.500	12.70	0.250	6.35	1.087	27.61	M2.5	0.493	12.52
SSC - 340	0.500	12.70	0.250	6.35	0.837	21.26	M2.5	0.493	12.52
SSC - 341	0.500	12.70	0.250	6.35	0.717	18.21	M2.5	0.493	12.52
SSC - 342	0.750	19.05	0.500	12.70	1.327	33.71	M3	0.741	18.82
SSC - 343	0.750	19.05	0.500	12.70	1.077	27.36	M3	0.741	18.82
SSC - 344	0.750	19.05	0.500	12.70	0.847	21.51	M3	0.741	18.82
SSC - 345	1.000	25.40	0.630	16.00	1.623	41.22	M3	0.990	25.15
SSC - 346	1.000	25.40	0.630	16.00	1.123	28.52	M3	0.990	25.15

SSC - 360	1.430	36.32	0.630	16.00	1.510	38.35	M4	1.415	35.94
SSC - 370	2.000	50.80	1.000	25.40	2.162	54.91	M5	1.990	50.55
SSC - 380	2.400	60.96	1.000	25.40	1.600	40.64	M5	2.384	60.55

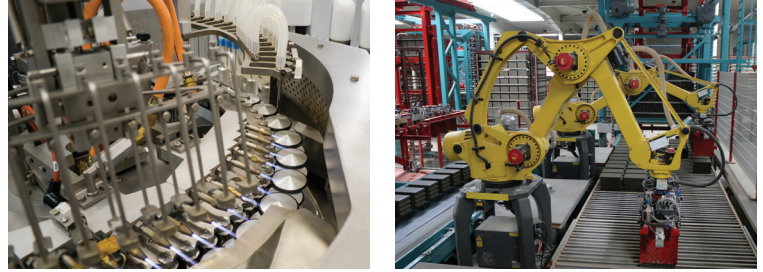
Table 1: Hub Diameter vs. Bore Size

SSC-312 thru SSC-314 SSC-332 thru SSC-344		SSC-315 thru SSC-316 SSC-345 thru SSC-346		SSC-360		SSC-370		SSC-380	
Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)
≤ 8mm	0.500"	≤ .375"	0.625"	≤ .375"	0.875"	≤ 17mm	1.250"	≤ 17mm	1.250"
≥ .375"	0.730"	≥ 10mm	0.975"	≥ 10mm	1.000"	≥ 18mm	1.625"	≥ 18mm	1.625"
				≥ 15mm	1.400"			≥ 1.125"	2.000"

# Bellows Coupling with Clamping End Pieces

## SSC 400 Series (Soldered Assembly)

These electrodeposited nickel bellows couplings offer the highest lateral flexibility and radial rigidity in coupling types. Their unique high performance characteristics offer a desirable combination of both low wind-up and low side thrust for high precision positioning systems. The SSC 400 series features integral clamp style Stainless Steel hubs and is available in various diameters and lengths.



### Features

- Quality 303 Stainless Steel hub with FlexNickel® bellows
- Extremely low wind-up
- Zero backlash
- Torque range from 2 in-oz to 4,000 in-oz
- Low moment of inertia
- Metric hardware (set screw)
- Operating temperatures up to 176°C
- Wide selection of bore sizes ([see page 15](#))

### Notes

- 01 Minimum life expectancy of 10<sup>8</sup> cycles for values shown in tables (1 Revolution = 2 Cycles)
- 02 Parallel misalignment, angular misalignment & compression stroke values are mutually exclusive. If combinations of these are required, consult factory.



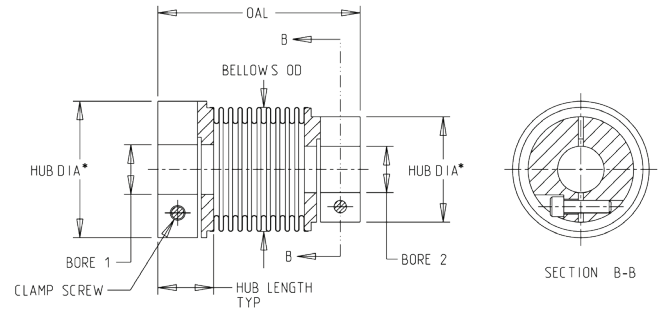
### SSC 400 Performance Specifications

Part No.	Rated Torque (in-oz)	Static Torsional Stiffness (N*m/rad)	Wind-up (arc-sec/in-oz)	Side Thrust (oz/.001")	Misalignment		
					Angular <sup>2</sup> (deg)	Parallel <sup>2</sup> (in)	Axial <sup>2</sup> (in) (stroke)
SSC - 401	2	2.36	616	0.03	31	.076	.107
SSC - 402	5	4.76	306	0.18	15	.017	.051
SSC - 403	7	7.21	202	0.64	9	.007	.032
SSC - 404	9	9.58	152	1.55	7	.004	.023
SSC - 405	7	10.9	134	0.07	27	.066	.139
SSC - 406	9	15	99	0.17	20	.036	.103
SSC - 407	14	22	67	0.58	13	.015	.066
SSC - 408	18	26	55	1.00	10	.010	.054
SSC - 409	33	39	37	0.32	18	.044	.125
SSC - 410	50	61	24	1.13	12	.018	.081
SSC - 411	65	81	18	2.73	9	.010	.059
SSC - 412	105	132	11	0.59	14	.046	.149
SSC - 413	140	173	8.4	1.40	11	.026	.112
SSC - 414	188	235	6.2	3.50	8	.014	.083
SSC - 415	152	275	5.3	0.54	17	.068	.230
SSC - 416	280	470	3.1	2.85	9	.020	.121
SSC - 431	4	3.52	413	0.03	17	.050	.060
SSC - 432	7	7.11	205	0.18	9	.017	.032
SSC - 433	11	10.8	135	0.64	7	.007	.023
SSC - 434	9	9.58	152	1.55	7	.004	.023
SSC - 435	11	16	90	0.07	17	.066	.090
SSC - 436	14	22	67	0.17	13	.036	.066
SSC - 437	21	32	45	0.58	8	.015	.042
SSC - 438	26	37	39	1.39	6	.009	.030
SSC - 439	49	58	25	0.32	12	.044	.082
SSC - 440	75	91	16	1.13	9	.018	.059
SSC - 441	97	121	12	2.73	5	.010	.038
SSC - 442	158	182	8	0.59	9	.046	.096
SSC - 443	210	260	5.6	1.40	7	.026	.067
SSC - 444	281	347	4.2	4.41	5	.013	.053
SSC - 445	227	405	3.6	0.54	11	.068	.149
SSC - 446	420	694	2.1	2.85	5	.020	.067
SSC - 460	1500	1714	.85	8.10	6	.018	.129
SSC - 470	2500	3642	.40	5.35	8	.042	.240
SSC - 480	4000	8569	.17	20.60	4	.014	.160

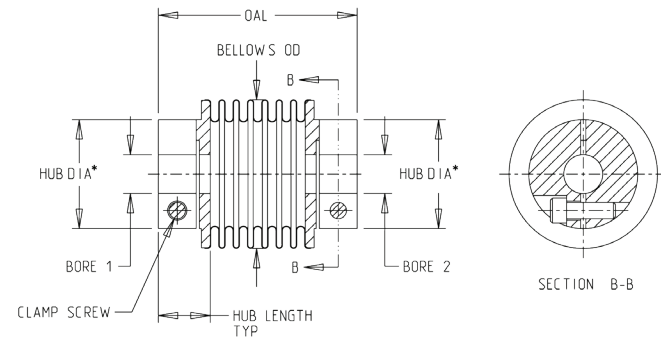
# Bellows Coupling with Clamping End Pieces

## SSC 400 Dimensional Data

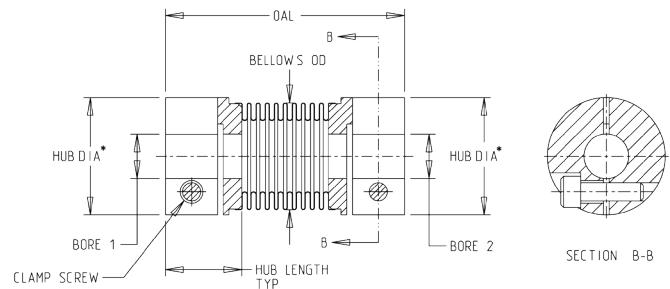
Part No.	Bellows Diameter		Max Bore Size		Overall Length (OAL)		Clamp Screw	Hub Length	
	in	mm	in	mm	in	mm	Size	in	mm
SSC - 401	0.250	6.35	1.57	4.0	1.243	31.57	M1.6	0.250	6.35
SSC - 402	0.250	6.35	1.57	4.0	0.873	22.17	M1.6	0.250	6.35
SSC - 403	0.250	6.35	1.57	4.0	0.748	19.00	M1.6	0.250	6.35
SSC - 404	0.250	6.35	1.57	4.0	0.688	17.48	M1.6	0.250	6.35
SSC - 405	0.375	9.53	1.57	4.0	1.279	32.49	M1.6	0.268	6.81
SSC - 406	0.375	9.53	1.57	4.0	1.089	27.66	M1.6	0.268	6.81
SSC - 407	0.375	9.53	1.57	4.0	0.909	23.09	M1.6	0.268	6.81
SSC - 408	0.375	9.53	1.57	4.0	0.844	21.44	M1.6	0.268	6.81
SSC - 409	0.500	12.70	0.25	6.4	1.343	34.11	M2.0	0.300	7.62
SSC - 410	0.500	12.70	0.25	6.4	1.093	27.76	M2.0	0.300	7.62
SSC - 411	0.500	12.70	0.25	6.4	0.973	24.71	M2.0	0.300	7.62
SSC - 412	0.750	19.05	5.12	13.0	1.637	41.58	M2.5	0.327	8.31
SSC - 413	0.750	19.05	5.12	13.0	1.387	35.23	M2.5	0.327	8.31
SSC - 414	0.750	19.05	5.12	13.0	1.197	30.40	M2.5	0.327	8.31
SSC - 415	1.000	25.40	0.63	1.6	1.887	47.93	M2.5	0.327	8.31
SSC - 416	1.000	25.40	0.63	1.6	1.387	35.23	M2.5	0.327	8.31
SSC - 431	0.250	6.35	1.57	4.0	1.128	28.65	M1.6	0.25	6.35
SSC - 432	0.250	6.35	1.57	4.0	0.873	22.17	M1.6	0.25	6.35
SSC - 433	0.250	6.35	1.57	4.0	0.748	19.00	M1.6	0.25	6.35
SSC - 434	0.250	6.35	1.57	4.0	0.688	17.48	M1.6	0.25	6.35
SSC - 435	0.375	9.53	1.57	4.0	1.279	32.49	M1.6	0.268	6.81
SSC - 436	0.375	9.53	1.57	4.0	1.089	27.66	M1.6	0.268	6.81
SSC - 437	0.375	9.53	1.57	4.0	0.909	23.09	M1.6	0.268	6.81
SSC - 438	0.375	9.53	1.57	4.0	0.812	20.62	M1.6	0.268	6.81
SSC - 439	0.500	12.70	0.25	6.4	1.343	34.11	M2.0	0.300	7.62
SSC - 440	0.500	12.70	0.25	6.4	1.093	27.76	M2.0	0.300	7.62
SSC - 441	0.500	12.70	0.25	6.4	0.973	24.71	M2.0	0.300	7.62
SSC - 442	0.750	19.05	5.12	13.0	1.637	41.58	M2.5	0.327	8.31
SSC - 443	0.750	19.05	5.12	13.0	1.387	35.23	M2.5	0.327	8.31
SSC - 444	0.750	19.05	5.12	13.0	1.157	29.39	M2.5	0.327	8.31
SSC - 445	1.000	25.40	0.63	15.9	1.887	47.93	M2.5	0.327	8.31
SSC - 446	1.000	25.40	0.63	15.9	1.387	35.23	M2.5	0.327	8.31
SSC - 460	1.430	36.32	6.69	17.0	1.850	46.99	M4.0	0.465	11.81
SSC - 470	2.000	50.80	1.00	25.4	2.442	62.03	M4.0	0.465	11.81
SSC - 480	2.400	60.96	1.00	25.4	1.998	50.75	M5.0	0.524	13.31



\* Hub Diameter Varies with Bore Size, See Table 2



\* Hub Diameter Varies with Bore Size, See Table 2



\* Hub Diameter Varies with Bore Size, See Table 2

**Table 2: Hub Diameter vs. Bore Size**

SSC-401 thru SSC-408 SSC-431 thru SSC-438		SSC-409 thru SSC-411 SSC-439 thru SSC-441		SSC-412 thru SSC-414 SSC-442 thru SSC-444		SSC-415 thru SSC-416 SSC-435 thru SSC-436		SSC-460		SSC-470 & 480	
Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)	Bore Size	Hub Diameter (in.)
All	0.413"	≤ 4mm	0.472"	≤ 0.250"	0.610"	≤ 0.250"	0.610"	≤ 10mm	1.000"	≤ 19mm	1.500"
		≥ 0.1875"	0.571"	≥ 0.3125"	0.866"	≥ 0.3125"	0.866"	≥ 11mm	1.390"	≥ 0.750"	1.750"
						≥ 0.500"	1.004"				

## Bellows Coupling SSC Bore Size Chart

Series	Bore Size*																													
	2 mm	0.0903"	0.094"	3 mm	0.120"	0.125"	4 mm	0.188"	5 mm	6 mm	0.250"	0.313"	8 mm	0.375"	10 mm	11 mm	12 mm	0.500"	13 mm	14 mm	15 mm	0.625"	16 mm	17 mm	18 mm	19 mm	0.75"	20 mm	0.875"	1.000"
SSC 301 - 304	●	●	●	●	●	●																								
SSC 331 - 334																														
SSC 305 - 308	●	●	●	●	●	●	●	●	●	●																				
SSC 335 - 338																														
SSC 309 - 311		●	●	●	●	●	●	●	●	●																				
SSC 339 - 341																														
SSC 312 - 314				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												
SSC 342 - 344																														
SSC 315 - 316				●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
SSC 345 - 346																														
SSC 360											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
SSC 370 & SSC 380											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SSC 401 - 408	●	●	●	●	●	●	●																							
SSC 431 - 438																														
SSC 409 - 411				●	●	●	●	●	●	●	●																			
SSC 439 - 441																														
SSC 412 - 414				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												
SSC 442 - 444																														
SSC 415 - 416											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
SSC 445 - 446																														
SSC 460											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
SSC 470 & SSC 480												●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

\*Tolerance: +0.001"

Contact us for custom bore sizes.

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Part Number Configuration SSC Series						
Model	Series	Bore Ø 1	Bore Ø 2			
SSC	- 460	- 8mm	X	.250		
<b>Example:</b> SSC - 460 - 8mm X .250						
*Bore sizes can match						



# About MW Components

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MW Components is focused on accelerating the entire process of delivering custom, stock, and standard parts to virtually any volume and against demanding deadlines. We work to highly complex tolerances. We help simplify the management of any number of different components. And we take a no-compromise approach to quality. With MW Components, you can be sure you'll get the right part to the right specification when and where you need it.

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