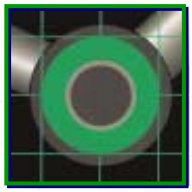
SIMPLE BUSHINGS



DESCRIPTION

A flexible bushing, having an elastomeric element bonded between an outer tubular metal bushing and a center tubular metal bushing, used in lieu of a greased bushing or joint. Flexible bushings enable and allow for, minor misalignment, some degree of rotation in an active assembly while eliminating bushing play completely and isolating high frequency vibrations.

MATERIALS

Standard materials:

- Outer Sleeve: Mild Steel
- Center Core: Medium Carbon Steel
- Resilient Element: Natural Rubber

Corrosion resistance of the steel parts is provided by a layer of phosphate which gives them a grey appearance, the whole being protected by a layer of oil.

GENERAL TOLERANCES AND HOUSING DIMENSIONS

- Length L (internal tube) : ± 0.004 in
- Length *l* (external tube) : JS15, according to NF E02 100-1 and NF E02 100-2 (See table JS15, converted from Metric for reference)
- Longitudinal overhang : (L-l)/2 = ± 0.1575 in

Tolerance on the internal diameter d: H10

d mm	d in	3 - 6	.118 - .236 in	6 - 10	.236 - .394 in	10 - 18	.394 - .709 in	18 - 30	.709 - 1.18 in	30 - 50	1.181 - 1.97 in
H10		+ 0.048	+ .00189	+ 0.058	+.0023	+ 0.070	+.0028	+ 0.084	+.0033	+ 0.1	+.004
		+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0

Tolerance on the external diameter D

D ≤ 25 mm	D ≤ .9843 in	25mm < D ≤ 40 mm	.197 < D ≤ 1.575 in	D > 40 mm	D > 1.575 in
+ 0.05	+.00197	+ 0.1	+.00394	+ 0.15	+.0059
+ 0	+ 0	+ 0	+ 0	+ 0	+ 0

Installation of simple bushings is done with a press fit of the outer diameter into the equipment structural housing while the centre tube is held in position to the supported equipment with a fastener and washer on both ends. This forces relative movements between the tubes to be attenuated by the elastomer.

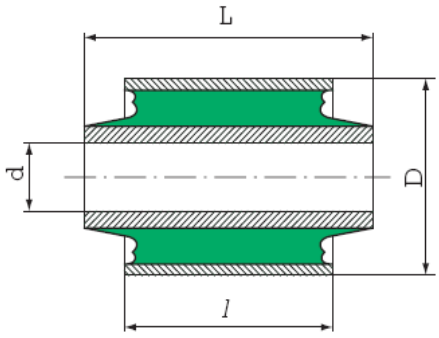
Recommended tolerance for mating ID; Ø D': N9

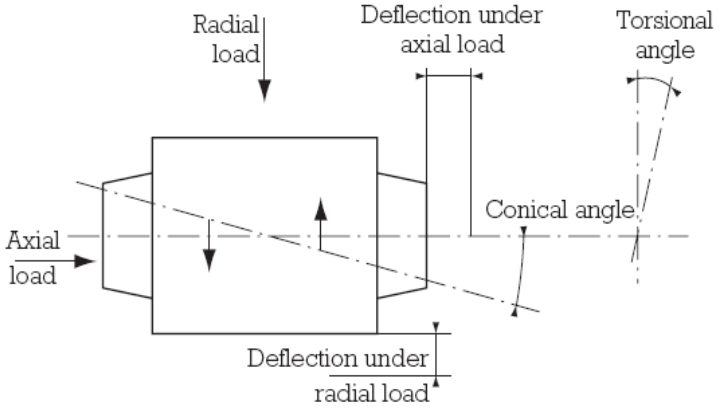
D' mm	D' in	10 - 18	.394 - .709 in	18 - 30	.709 - 1.181 in	30 - 50	1.181 - 1.97 in	50 - 80	1.97 - 3.15 in	80 to 120	3.15 to 4.725 in
N9		- 0	- 0	- 0	- 0	- 0	- 0	- 0	- 0	- 0	- 0
		- 0.043	- .0017	- 0.052	-.002	- 0.062	-.0025	- 0.074	-.0029	- 0.087	-.00343

BARRY CONTROLS
82 South Street, Hopkinton, MA 01748
Tel: 508 417 7000 Fax: 508 417 7224
www.barrycontrols.com

HUTCHINSON® WORLDWIDE

DIMENSIONS





Dimensions					Radial		Torsion	Axial		Conical	
Ø d in	Ø D in	L in	*l* in	LB = Lateral Stop	Static Load Lbs	Deflection in	Max angle degree	Static Load Lbs	Deflection in	Max angle degree	Part Number
0.236	0.630	0.551	0.472		22	0.0028	30°	11	0.0118	7°	861601
0.315	0.630	0.669	0.591		66	0.0039	15°	33	0.0512	3°	561102
0.315	0.630	1.102	0.984		144	0.0012	20°	99	0.0079	1°	861103
0.315	0.787	0.669	0.591		33	0.0039	30°	22	0.0118	7°	861603
0.315	0.787	0.748	0.591		44	0.0039	30°	22	0.0118	7°	861783
0.315	1.260	0.913	0.709		66	0.0197	35°	44	0.0591	6°	561418
0.394	0.866	0.669	0.591		88	0.0118	25°	33	0.0315	6°	561205
0.394	0.866	0.906	0.787		121	0.0012	20°	77	0.0157	1°	861112
0.394	0.866	1.181	0.984		221	0.0079	20°	88	0.0591	3°	561207
0.394	0.866	1.299	1.181		243	0.0012	20°	155	0.0236	1°	861114
0.394	0.866	1.339	1.181		121	0.0039	30°	77	0.0118	3°	861607
0.394	1.063	0.866	0.669		144	0.0197	30°	55	0.0591	3°	561613
0.394	1.102	1.063	0.787	LB	177	0.0197	20°	66	0.0394	5°	561424
0.472	0.984	0.906	0.787		121	0.0016	20°	55	0.0079	3°	861118
0.472	0.984	1.102	0.984		221	0.0079	20°	88	0.0394	4°	561212
0.472	0.984	1.339	1.181		265	0.0079	20°	110	0.0315	3°	561213
0.472	0.984	1.496	1.378	LB	320	0.0016	20°	210	0.0157	1°	864105
0.472	0.984	1.732	1.378		320	0.0016	20°	210	0.0157	1°	861197
0.472	0.984	2.126	1.969		1214	0.0118	15°	99	0.0236	1°	561250
0.472	1.024	0.945	0.787		77	0.0024	30°	44	0.0157	7°	861611
0.472	1.024	1.063	0.906		199	0.0039	15°	110	0.0591	4°	561283
0.472	1.024	1.339	1.260		177	0.0028	30°	110	0.0157	3°	861613
0.472	1.102	1.102	0.984		110	0.0028	30°	55	0.0157	7°	861614
0.472	1.102	1.496	1.260		265	0.0098	20°	132	0.0591	3°	561446
0.472	1.181	1.181	0.945		243	0.0197	35°	88	0.0591	6°	561302
0.472	1.181	1.654	1.417	LB	464	0.0217	30°	77	0.0433	2°	561395
0.472	2.087	1.831	1.339		309	0.0591	50°	110	0.0787	6°	561122
0.551	1.063	1.102	0.984		265	0.0079	20°	110	0.0709	4°	561227
0.551	1.063	1.102	0.984		199	0.0016	20°	99	0.0157	3°	861128
0.551	1.063	1.772	1.575	LB	265	0.0079	25°	177	0.0591	2°	561269
0.551	1.063	1.929	1.772		552	0.0016	20°	364	0.0276	1°	861132
0.551	1.063	2.028	1.713		552	0.0039	10°	177	0.0394	1°	561493
0.551	1.063	2.126	1.969	LB	618	0.0016	20°	408	0.0197	1°	864109
0.551	1.102	1.732	1.575		552	0.0039	15°	177	0.0276	1°	561458

BARRY CONTROLS
82 South Street, Hopkinton, MA 01748
Tel: 508 417 7000 Fax: 508 417 7224
www.barrycontrols.com

HUTCHINSON® WORLDWIDE

Dimensions (cont.)					Radial		Torsion	Axial		Conical	
Ø d in	Ø D in	L in	/ in	LB = Lateral Stop	Static Load Lbs	Deflection in	Max angle degree	Static Load Lbs	Deflection in	Max angle degree	Part Number
0.551	1.102	2.126	1.969	LB	552	0.0039	15°	155	0.0276	1°	561617
0.551	1.181	1.102	0.984		110	0.0031	30°	55	0.0157	7°	861618
0.551	1.181	1.181	0.984		110	0.0031	30°	55	0.0157	7°	861619
0.551	1.181	1.654	1.496		331	0.0079	30°	155	0.0748	3°	561305
0.551	1.181	1.654	1.496		221	0.0031	30°	144	0.0157	3°	861620
0.551	1.260	1.299	1.181		287	0.0157	25°	132	0.0787	4°	561307
0.551	1.260	2.126	1.811	LB	420	0.0031	25°	276	0.0236	2°	864403
0.551	1.260	2.756	2.559		662	0.0079	30°	442	0.0433	1°	561309
0.563	1.189	2.748	2.500		817	0.0039	20°	420	0.0354	1°	861251
0.630	1.260	1.024	0.787		155	0.0020	20°	77	0.0118	2°	861136
0.630	1.260	1.102	0.984		309	0.0079	20°	110	0.0630	5°	561312
0.630	1.260	1.181	0.866		177	0.0020	20°	88	0.0118	3°	861138
0.630	1.260	1.260	1.102		287	0.0020	20°	144	0.0157	3°	861141
0.630	1.260	2.126	1.969		729	0.0020	20°	486	0.0157	1°	861143
0.630	1.260	2.126	1.969	LB	729	0.0020	20°	486	0.0157	1°	864108
0.630	1.260	2.323	2.165		883	0.0020	20°	574	0.0157	1°	861145
0.630	1.260	2.598	2.362		994	0.0020	20°	662	0.0157	1°	861146
0.630	1.417	1.496	1.378		199	0.0039	30°	99	0.0197	7°	861624
0.630	1.575	1.575	1.260		210	0.0236	5°	-	-	4°	861810
0.630	2.047	1.890	1.575		199	0.0394	40°	110	0.1575	7°	561520
0.709	1.339	1.299	1.181		331	0.0020	20°	166	0.0157	3°	861151
0.709	1.339	1.417	1.260		353	0.0020	20°	177	0.0157	3°	861152
0.709	1.339	2.598	2.362		1082	0.0020	20°	707	0.0591	1°	861153
0.709	1.339	2.795	2.559		1192	0.0020	20°	795	0.0591	1°	861154
0.709	1.417	1.811	1.575		486	0.0016	20°	320	0.0157	1°	861156
0.709	1.654	1.496	1.378		221	0.0039	30°	110	0.0197	7°	861627
0.787	1.496	1.654	1.496		508	0.0079	25°	166	0.0394	3°	561384
0.787	1.496	2.323	2.165		662	0.0059	20°	110	0.0394	2°	561335
0.787	1.496	2.323	2.165		905	0.0016	20°	596	0.0591	1°	861160
0.787	1.496	2.992	2.756		1391	0.0016	20°	927	0.0591	1°	861162
0.787	1.496	3.189	2.953		1546	0.0016	20°	1027	0.0591	1°	861163
0.787	1.654	1.654	1.496		662	0.0118	25°	199	0.0591	4°	561404
0.787	1.969	1.969	1.575		342	0.0197	5°	331	0.0276	4°	861817
0.866	1.575	1.772	1.575		552	0.0020	20°	1236	0.0157	3°	861166
0.866	1.575	3.386	3.150		1877	0.0024	20°	375	0.0591	1°	861167
0.945	1.654	1.969	1.772		751	0.0024	20°	442	0.0157	3°	861169
0.945	1.654	2.165	1.969		883	0.0020	20°	1612	0.0157	3°	861170
0.945	1.654	3.780	3.543		2429	0.0008	20°	132	0.0394	1°	861171
0.945	1.890	1.732	1.575		353	0.0118	20°	265	0.0591	2°	561411
0.945	1.890	2.283	1.969		773	0.0118	20°	817	0.0787	2°	561400
0.945	2.283	2.283	1.890		475	0.0394	5°	353	-	4°	861818
1.024	1.732	2.598	2.362	LB	1104	0.0079	15°	353	0.0394	1°	561454
1.102	1.890	1.417	1.339		696	0.0020	20°	464	0.0197	3°	861173
1.102	1.890	2.598	2.362		883	0.0059	20°	596	0.0433	2°	561409
1.102	1.890	2.598	2.362		1192	0.0024	20°	1987	0.0197	3°	861175
1.102	2.047	4.252	3.937		1766	0.0039	30°	309	0.0276	3°	861637
1.102	2.598	2.598	2.205		1104	0.0591	40°	221	0.1378	7°	561601

BARRY CONTROLS
82 South Street, Hopkinton, MA 01748
Tel: 508 417 7000 Fax: 508 417 7224
www.barrycontrols.com

HUTCHINSON® WORLDWIDE

Dimensions (cont.)					Radial		Torsion	Axial		Conical	
Ø d in	Ø D in	L in	/ in	LB = Lateral Stop	Static Load Lbs	Deflection in	Max angle degree	Static Load Lbs	Deflection in	Max angle degree	Part Number
1.102	2.598	2.598	2.205		773	0.0394	5°	707	0.1181	4°	861819
1.181	1.969	5.039	4.724		4195	0.0028	20°	574	0.0984	1°	861178
1.260	2.047	2.598	2.362		1325	0.0059	10°	662	0.0866	1°	561503
1.260	2.047	2.598	2.362		1325	0.0024	20°	674	0.0118	3°	861180
1.260	2.205	2.165	1.969		684	0.0031	30°	331	0.0276	7°	861638
1.260	2.205	4.567	4.252		2208	0.0039	30°	1435	0.0276	3°	861639
1.417	2.283	5.118	4.724		4195	0.0031	20°	2208	0.0394	1°	861182
1.496	2.520	2.992	2.756		1987	0.0028	20°	994	0.0197	3°	861183
1.496	2.520	5.315	4.921		5299	0.0039	20°	2870	0.0591	1°	861184
1.496	2.598	2.362	2.165		994	0.0039	30°	486	0.0276	7°	861642
1.654	3.071	2.598	2.362		1501	0.0028	30°	751	0.0394	7°	862601
1.654	3.071	3.386	3.150		2208	0.0197	10°	442	0.0630	1°	561701
1.654	3.071	3.386	3.150		2804	0.0031	20°	1391	0.0315	3°	862101
1.654	3.071	5.512	5.118		4416	0.0236	20°	883	0.0787	1°	561702
2.205	3.661	9.843	6.693		5741	0.0236	15°	3091	0.0787	0,3°	561901

Notes:
1. LB = Lateral Bumper
2. P/N's beginning with 560 and 561 have the elastomer bonded to the inner and outer tubes.
3. P/N's beginning with 862, 862 and 864 have the elastomer compression fit between the inner and outer tubes.

TABLE JS15 (REFERENCE ONLY) CONVERTED TO SOFT INCHES FROM METRIC STANDARDS			TABLE H10 (REFERENCE ONLY) CONVERTED TO SOFT INCHES FROM METRIC STANDARDS		
NOMINAL DIMENSION (in)		TOLERANCE ZONE (in)	NOMINAL DIMENSION (in)		TOLERANCE ZONE (in)
OVER Ø	TO Ø	PER ISO JS15	OVER Ø	TO Ø	PER ISO H10
0.039	0.118	+/- 0.008	0	0.118	+/- 0.008
0.118	0.236	+/- 0.009	0.039	0.118	+/- 0.008
0.236	0.394	+/- 0.011	0.118	0.236	+/- 0.009
0.394	0.709	+/- 0.014	0.236	0.394	+/- 0.011
0.709	1.181	+/- 0.017	0.394	0.709	+/- 0.014
1.181	1.969	+/- 0.020	0.709	1.181	+/- 0.017
1.969	3.150	+/- 0.024			
3.15	4.724	+/- 0.028			
4.724	7.087	+/- 0.031			
7.087	9.843	+/- 0.036			
9.843	12.402	+/- 0.041			
12.402	15.748	+/- 0.045			
15.748	19.685	+/- 0.049			

BARRY CONTROLS
82 South Street, Hopkinton, MA 01748
Tel: 508 417 7000 Fax: 508 417 7224
www.barrycontrols.com

HUTCHINSON® WORLDWIDE