

Standard Type NS Material 1.4435 (AISI 316L)

Nominal diameter	Inside diameter	Outside diameter	Standard wall thickness of membrane	Compressed length per convolution	Free length per convolution	Working stroke per convolution	Extended length per convolution	Effective area of differential pressure (cm ²)	Spring constant per convolution [N/mm]	Largest bending angle per convolution [°]	Smallest bending radius	
DN	Ø	ID	OD	t	lc	lf	z ₀	le ₀	EA	SRCz	Θ ₀	R ₀
		6	13	0.08	0.35	0.55	0.25	0.60	0.7	130	1.10	24.7
		6.6	16	0.05	0.20	0.56	0.47	0.67	1.1	21	1.68	14.8
		8	16	0.08	0.35	0.60	0.40	0.75	1.2	80	1.43	22.0
DN	10	9	20	0.10	0.40	0.80	0.60	1.00	1.7	87	1.72	23.3
		10	20	0.10	0.40	0.85	0.60	1.00	1.8	79	1.72	23.3
		13	26	0.10	0.34	0.86	0.86	1.20	3.1	88	1.90	23.3
DN	16	16	31.5	0.13	0.43	1.18	1.21	1.64	4.6	50	2.20	26.9
		19	37	0.13	0.45	1.60	1.70	2.15	6.4	91	2.63	28.3
		21	41	0.13	0.48	1.83	1.80	2.28	7.8	54	2.52	31.4
DN	25	26	46	0.13	0.40	1.75	1.90	2.30	10.4	62	2.37	32.7
		31	51	0.13	0.50	2.20	1.90	2.40	13.5	39	2.13	38.9
		36	56	0.13	0.50	1.90	1.95	2.45	16.9	40	2.00	42.4
DN	40	39	59	0.13	0.44	2.19	2.00	2.44	19.1	41	1.94	42.5
		46	62.5	0.13	0.50	1.60	1.50	2.00	23.3	90	1.38	52.1
		46	71	0.13	0.50	2.50	2.30	2.80	27.3	44	1.86	50.9
DN	50	51	76	0.13	0.50	2.75	2.40	2.90	32.1	38	1.81	53.8
		60	88	0.15	0.51	2.50	2.80	3.31	43.5	65	1.82	60.0
DN	63	65	90	0.15	0.70	2.70	2.70	3.40	47.6	72	1.72	68.3
		70.5	95	0.15	0.75	2.50	2.65	3.40	54.2	81	1.60	74.4
		75	100	0.15	0.60	2.80	2.90	3.50	60.5	69	1.66	70.7
		77	107	0.15	0.74	2.60	2.86	3.60	67.1	50	1.53	81.2
		83.5	108	0.15	0.66	2.11	2.53	3.19	72.4	77	1.34	82.2
		90	120	0.15	0.65	2.87	2.80	3.45	87.2	55	1.34	87.9
DN	100	102	132	0.15	0.51	2.91	3.10	3.61	108	60	1.35	87.7
		127	157	0.20	0.75	2.96	3.20	3.95	159	130	1.17	115.3
		132.5	165	0.20	0.75	3.10	3.25	4.00	174	120	1.13	120.6
DN	160	150	185	0.20	0.75	3.40	3.40	4.15	221	112	1.05	133.3
		162.5	195	0.20	0.75	3.10	3.00	3.75	252	144	0.88	146.3
		170	200	0.20	0.75	3.00	3.20	3.95	269	140	0.92	146.9
		180	215	0.20	0.75	2.90	3.40	4.15	307	124	0.91	154.9
DN	200	200	235	0.20	0.75	3.30	3.40	4.15	372	120	0.83	169.3
DN	250	250	285	0.20	0.80	3.30	3.20	4.00	563	180	0.64	213.8
		270	310	0.20	0.75	3.50	3.70	4.45	662	140	0.68	217.8
DN	320	320	360	0.20	0.80	3.80	3.80	4.60	909	145	0.60	255.8
		335	360	0.20	1.00	2.30	1.90	2.90	948	450	0.30	370.0

All dimensions in [mm]

Additional sizes, materials and specifications are available on request.

Technical data may be revised.

Standard Type NS Material AM350 (AISI 633)

Nominal diameter	Inside diameter	Outside diameter	Standard wall thickness of membrane	Compressed length per convolution	Free length per convolution	Working stroke per convolution	Extended length per convolution	Effective area of differential pressure (cm ²)	Spring constant per convolution [N/mm]	Largest bending angle per convolution [°]	Smallest bending radius	
DN	Ø	ID	OD	t	lc	lf	z ₀	le ₀	EA	SRCz	Θ ₀	R ₀
		6	13	0.08	0.40	0.75	0.50	0.90	0.7	130	2.20	16.9
		6.6	16	0.05	0.20	0.56	0.47	0.67	1.1	21	1.68	14.8
		8	16	0.08	0.45	0.90	0.50	0.95	1.2	99	1.79	22.4
DN	10	9	20	0.08	0.40	1.05	1.30	1.70	1.7	59	3.72	16.2
		10	20	0.08	0.30	1.00	1.00	1.30	1.8	80	2.86	16.0
		11	24	0.08	0.40	1.40	1.60	2.00	2.5	40	3.82	18.0
		13	26	0.08	0.40	1.45	1.70	2.10	3.1	42	3.75	19.1
DN	16	16	31.5	0.10	0.34	1.52	1.72	2.06	4.6	37	3.13	22.0
		19	37	0.10	0.40	1.90	2.30	2.70	6.4	68	3.56	24.9
		21	41	0.10	0.40	2.24	2.50	2.90	7.8	36	3.49	27.1
DN	25	25.4	44.45	0.10	0.45	2.00	2.55	3.00	9.8	50	3.29	30.0
		26	46	0.10	0.50	2.10	2.90	3.40	10.4	49	3.61	30.9
		31	51	0.10	0.50	2.40	3.10	3.60	13.5	39	3.48	33.7
		36	56	0.10	0.50	2.40	3.20	3.70	16.9	49	3.27	36.8
DN	40	39	59	0.10	0.50	2.55	3.30	3.80	19.1	37	3.20	38.4
		46	62.5	0.10	0.40	2.00	2.70	3.10	23.3	77	2.48	40.5
		46	71	0.13	0.55	2.90	4.00	4.55	27.3	54	3.23	45.3
DN	50	51	76	0.13	0.60	2.95	3.18	3.78	32.1	41	2.40	52.3
		60	88	0.13	0.55	2.85	3.70	4.25	43.5	57	2.25	58.0
DN	63	65	90	0.13	0.75	2.72	3.90	4.65	47.6	63	2.48	62.3
		70.5	95	0.13	0.80	2.70	3.20	4.00	54.2	52	1.93	71.3
		75	100	0.13	0.60	2.60	4.10	4.70	60.5	50	2.35	64.6
		77	107	0.13	0.73	3.05	4.27	5.00	67.1	42	2.29	71.8
		90	120	0.13	0.76	3.30	3.74	4.50	87.2	43	1.79	84.4
DN	100	102	132	0.13	0.70	2.81	3.85	4.55	108.1	46	1.67	90.0
		127	157	0.15	0.75	3.40	4.20	4.95	159.0	94	1.53	106.5
		132.5	165	0.20	0.75	3.60	3.80	4.55	175	80	1.32	115.1
DN	160	150	185	0.15	0.75	3.60	4.40	5.15	221.2	166	1.36	124.0
		162.5	195	0.15	0.70	3.30	4.00	4.70	251.6	140	1.18	131.6
		180	215	0.15	0.70	3.85	4.40	5.10	307.2	142	1.17	141.7
DN	200	200	235	0.15	0.70	3.80	4.40	5.10	372.3	71	1.07	154.9
DN	250	250	285	0.15	0.70	3.80	4.40	5.10	562.8	78	0.88	187.8
		270	310	0.20	0.80	3.50	4.60	5.40	661.6	90	0.85	208.9
DN	320	320	360	0.20	0.80	4.20	4.80	5.60	909.0	95	0.76	240.0

All dimensions in [mm]

Additional sizes, materials and specifications are available on request.

Technical data may be revised.

Wide Type BS Material 1.4435 (AISI 316L)

Shaft diameter	Inside diameter	Outside diameter	Standard wall thickness of membrane	Compressed length per convolution	Free length per convolution	Working stroke per convolution	Extended length per convolution	Effective area of differential pressure (cm ²)	Spring constant per convolution [N/mm]	Largest bending angle per convolution [°]	Smallest bending radius	
W	Ø	ID	OD	t	lc	lf	le ₀	EA	SRCz	Θ ₀	R ₀	
8	1/4"	9	31.5	0.13	0.48	1.90	1.40	1.88	3.60	52	2.55	26.6
20	3/4"	21	49	0.13	0.50	1.75	2.10	2.60	10.1	47	2.46	36.2
35	1 3/8"	36.8	72	0.15	0.60	3.05	3.00	3.60	24.1	72	2.39	50.4
40	1 5/8"	41.5	81	0.20	0.70	3.06	3.40	4.10	30.5	97	2.41	57.2
45	1 3/4"	47	88	0.20	0.70	3.95	3.40	4.10	36.9	86	2.21	62.1
50	2"	52	95	0.20	0.80	3.65	3.60	4.40	43.6	88	2.17	68.6
55	2 1/4"	56	102	0.20	0.75	4.20	3.70	4.45	50.4	81	2.08	71.7
70	2 3/4"	72	115	0.20	0.75	4.10	3.60	4.35	69.9	77	1.79	81.5
75	3"	77.5	120	0.20	0.75	3.60	3.40	4.15	77.8	88	1.62	86.5
80	3 1/8"	82	125	0.20	0.85	3.71	3.45	4.30	85.3	70	1.58	93.3
90	3 1/2"	90.5	135	0.20	0.83	3.80	3.77	4.60	101	73	1.60	97.2
91	3 1/2"	92	142	0.20	1.10	4.42	3.90	5.00	109.0	53	1.57	111.1
100	4"	102.5	150	0.20	1.25	4.70	4.35	5.60	127	60	1.66	118.1
105	4 1/8"	107.5	155	0.20	1.10	5.10	4.90	6.00	130	65	1.81	112.3
130	5"	132.5	165	0.20	0.75	3.10	3.25	4.00	174	120	1.13	120.6
150	6"	162.5	210	0.20	1.00	5.15	5.00	6.00	274	49	1.36	147.0
275	10"	280	329.4	0.20	1.28	4.60	5.00	6.28	731	55	0.87	249.0
400	15"	403	460.9	0.30	1.00	3.70	5.00	6.00	1468	200	0.62	322.6
500	19"	506	564.3	0.30	1.00	3.80	5.20	6.20	2251	250	0.53	390.7

Wide Type BS Material AM350 (AISI 633)

Shaft diameter	Inside diameter	Outside diameter	Standard wall thickness of membrane	Compressed length per convolution	Free length per convolution	Working stroke per convolution	Extended length per convolution	Effective area of differential pressure (cm ²)	Spring constant per convolution [N/mm]	Largest bending angle per convolution [°]	Smallest bending radius	
W	Ø	ID	OD	t	lc	lf	le ₀	EA	SRCz	Θ ₀	R ₀	
8	1/4"	9	31.5	0.13	0.45	1.90	2.10	2.55	3.6	51	3.82	22.5
20	3/4"	21	49	0.13	0.60	3.40	3.50	4.10	10.1	43	4.09	32.9
35	1 3/8"	36.8	72	0.13	0.60	3.90	3.80	4.40	24.1	68	3.02	47.4
40	1 5/8"	41.5	81	0.13	0.60	3.60	4.20	4.80	30.5	45	2.97	52.1
45	1 3/4"	47	88	0.13	0.60	4.70	4.40	5.00	36.9	75	2.86	56.0
50	2"	52	95	0.13	0.60	4.70	4.40	5.00	43.6	80	2.65	60.5
55	2 1/4"	56	102	0.15	0.68	5.10	5.10	5.78	50.4	75	2.86	64.6
70	2 3/4"	72	115	0.15	0.68	4.60	4.80	5.48	69.9	55	2.39	73.8
75	3"	77.5	120	0.15	0.68	4.30	4.00	4.68	77.8	72	1.91	80.4
80	3 1/8"	82	125	0.15	0.75	4.50	4.60	5.35	85.3	100	2.11	82.9
90	3 1/2"	90.5	135	0.15	0.75	4.20	4.10	4.85	101.0	80	1.74	92.2
100	4"	102.5	150	0.20	1.25	5.00	5.55	6.80	126.7	55	1.91	111.0
105	4 1/8"	107.5	155	0.20	1.20	5.50	5.00	6.20	136.8	65	1.85	114.7
130	5"	132.5	165	0.20	0.75	3.60	3.80	4.55	174.5	80	1.32	115.1
150	6"	162.5	210	0.20	1.10	5.15	7.00	8.10	273.9	85	1.91	138.0

All dimensions in [mm]

Additional sizes, materials and specifications are available on request.

Technical data may be revised.

Small Type DS Material 1.4435 (AISI 316L)

Shaft diameter	Inside diameter	Outside diameter	Standard wall thickness of membrane	Compressed length per convolution	Free length per convolution	Working stroke per convolution	Extended length per convolution	Effective area of differential pressure (cm ²)	Spring constant per convolution [N/mm]	Largest bending angle per convolution [°]	Smallest bending radius
W	Ø	ID	OD	t	lc	lf	le ₀	EA	SRCz	Θ ₀	R ₀
18	5/8"	19	31.7	0.13	0.43	1.00	1.43	5.2	175	1.81	29.5
20	3/4"	21.3	34	0.10	0.40	0.90	1.50	6.1	100	1.26	35.1
22	7/8"	23.8	36.5	0.10	0.40	0.90	1.15	7.2	116	1.18	37.7
24	7/8"	25.4	38.1	0.10	0.40	0.90	1.35	8.0	102	1.13	39.4
25	1"	27	39.7	0.10	0.40	1.15	1.55	8.8	98	1.15	39.7
28	1 1/8"	30.2	42.9	0.10	0.40	1.15	1.20	10.6	109	1.07	42.9
30	1 1/8"	31.8	44.5	0.10	0.40	1.15	1.25	11.5	96	1.09	43.2
32	1 1/4"	33.3	46	0.10	0.40	1.15	1.25	12.5	126	1.06	44.6
33	1 1/4"	34.3	47	0.10	0.40	1.15	1.25	13.1	91	1.04	45.6
35	1 3/8"	36.5	49.2	0.10	0.40	1.15	1.25	14.5	106	0.99	47.8
38	1 1/2"	39.7	52.4	0.10	0.40	1.15	1.30	16.8	137	0.98	49.5
40	1 5/8"	42.8	55.5	0.13	0.44	1.20	1.34	19.1	194	0.93	54.9
45	1 3/4"	46	57	0.13	0.44	1.10	1.24	20.9	197	0.80	59.9
45	1 3/4"	46	58.7	0.13	0.44	1.20	1.34	21.6	179	0.88	58.0
48	1 7/8"	49.2	61.9	0.13	0.44	1.20	1.34	24.3	198	0.83	61.2
50	2"	52.4	65.1	0.13	0.40	1.10	1.65	27.2	236	0.79	64.4
53	2 1/8"	55	67	0.13	0.44	1.10	1.24	29.3	232	0.68	70.4
55	2 1/4"	58.7	71.4	0.13	0.44	1.20	1.39	33.3	230	0.76	68.8
60	2 3/8"	61.9	74.6	0.13	0.44	1.20	1.39	36.7	321	0.73	71.9
63	2 1/2"	65.1	81	0.13	0.44	1.40	1.39	42.1	150	0.67	78.0
65	2 5/8"	68.3	84.1	0.13	0.44	1.40	1.44	45.8	226	0.68	79.1
70	2 3/4"	70.5	84.1	0.13	0.44	1.25	1.29	47.1	213	0.58	85.6
75	2 7/8"	76.2	92.1	0.13	0.44	1.60	1.64	55.8	142	0.75	79.8
80	3 1/8"	84	98.4	0.13	0.44	1.40	1.34	65.5	205	0.52	97.3
85	3 3/8"	88.9	104.8	0.13	0.44	1.50	1.54	73.8	174	0.60	94.3
90	3 1/2"	92.1	108	0.13	0.40	1.45	1.90	78.8	175	0.61	95.3
95	3 3/4"	98.4	114.3	0.13	0.44	1.45	1.54	89.0	197	0.55	102.9
100	3 7/8"	101.6	117.5	0.13	0.44	1.45	1.59	94.4	203	0.56	103.7
105	4 1/8"	107.9	123.8	0.13	0.44	1.45	1.59	105.6	216	0.53	109.3
110	4 1/4"	111.1	127	0.13	0.44	1.45	1.59	111.5	210	0.52	112.1
125	4 7/8"	127	143	0.13	0.44	1.45	1.59	143.3	246	0.46	126.2

All dimensions in [mm]

Additional sizes, materials and specifications are available on request.

Technical data may be revised.

Small Type DS Material AM350 (AISI 366)

Shaft diameter	Inside diameter	Outside diameter	Standard wall thickness of membrane	Compressed length per convolution	Free length per convolution	Working stroke per convolution	Extended length per convolution	Effective area of differential pressure (cm ²)	Spring constant per convolution [N/mm]	Largest bending angle per convolution [°]	Smallest bending radius	
W	Ø	ID	OD	t	lc	lf	le ₀	EA	SRCz	Θ ₀	R ₀	
13	1/2"	14	26.7	0.10	0.35	1.45	1.35	1.70	3.4	60	2.90	20.3
18	5/8"	19	31.7	0.10	0.40	1.40	1.20	1.60	5.2	120	2.17	26.4
20	3/4"	21.3	34	0.10	0.40	1.40	1.00	1.40	6.1	125	1.69	30.6
22	7/8"	23.8	36.5	0.10	0.40	1.40	1.00	1.40	7.2	129	1.57	32.9
24	7/8"	25.4	38.1	0.10	0.40	1.45	1.20	1.60	8.0	135	1.80	31.8
25	1"	27	39.7	0.10	0.40	1.45	1.10	1.50	8.8	140	1.59	34.3
28	1 1/8"	30.2	42.9	0.10	0.40	1.40	1.05	1.45	10.6	157	1.40	37.8
30	1 1/8"	31.8	44.5	0.10	0.40	1.45	1.20	1.60	11.5	113	1.55	37.1
32	1 1/4"	33.3	46	0.10	0.35	1.38	1.65	2.00	12.5	134	2.06	32.8
33	1 1/4"	34.3	47	0.10	0.40	1.50	1.20	1.60	13.1	107	1.46	39.2
35	1 3/8"	36.5	49.2	0.10	0.40	1.55	1.20	1.60	14.5	112	1.40	41.0
38	1 1/2"	39.7	52.4	0.10	0.40	1.40	1.20	1.60	16.8	164	1.31	43.7
40	1 5/8"	42.8	55.5	0.10	0.33	1.55	1.60	1.93	19.1	105	1.65	39.2
45	1 3/4"	46	57	0.10	0.40	1.30	1.10	1.50	20.9	146	1.11	49.2
45	1 3/4"	46	58.7	0.10	0.40	1.40	1.25	1.65	21.6	178	1.22	48.1
48	1 7/8"	49.2	61.9	0.10	0.40	1.40	1.25	1.65	24.3	192	1.16	50.8
50	2"	52.4	65.1	0.10	0.40	1.50	1.25	1.65	27.2	131	1.10	53.4
53	2 1/8"	55	67	0.10	0.40	1.40	1.20	1.60	29.3	167	1.03	55.8
55	2 1/4"	58.7	71.4	0.10	0.40	1.40	1.30	1.70	33.3	167	1.04	57.7
60	2 3/8"	61.9	74.6	0.13	0.44	1.40	1.30	1.74	36.7	371	1.00	62.5
63	2 1/2"	65.1	81	0.13	0.50	1.80	1.50	2.00	42.1	170	1.06	67.5
65	2 5/8"	68.3	84.1	0.13	0.44	1.45	1.30	1.74	45.8	266	0.89	70.5
70	2 3/4"	70.5	84.1	0.13	0.44	1.42	1.71	2.15	47.1	281	0.89	70.5
75	2 7/8"	76.2	92.1	0.13	0.44	1.95	1.55	1.99	55.8	171	0.96	72.2
80	3 1/8"	84	98.4	0.13	0.44	1.90	1.50	1.94	65.5	234	0.87	78.1
85	3 3/8"	88.9	104.8	0.13	0.44	1.70	1.40	1.84	73.8	205	0.77	85.3
90	3 1/2"	92.1	108	0.13	0.44	1.95	1.55	1.99	78.8	201	0.82	84.7
95	3 3/4"	98.4	114.3	0.13	0.44	1.85	1.50	1.94	89.0	219	0.75	90.7
100	3 7/8"	101.6	117.5	0.13	0.44	1.70	1.40	1.84	94.4	226	0.68	95.7
105	4 1/8"	107.9	123.8	0.13	0.43	1.68	1.97	2.40	105.6	261	0.91	88.9
110	4 1/4"	111.1	127	0.13	0.44	1.70	1.40	1.84	111.5	249	0.63	103.4
120	4 3/4"	123	139	0.15	0.51	1.80	1.30	1.81	134.9	424	0.54	124.0
125	4 7/8"	127	143	0.13	0.50	1.75	1.90	2.40	143.3	450	0.56	116.4
330	13"	335	360	0.15	0.90	2.76	2.90	3.80	948.0	288	0.46	292.0

All dimensions in [mm]

Additional sizes, materials and specifications are available on request.

Technical data may be revised.