

## RESSORTS DE COMPRESSION EXTRA-RAIDES – NORME US NAMMS

Les Ressorts de compression extra raide sont spécialement étudiés pour une utilisation demandant des efforts très élevés dans un encombrement réduit, l'outillage de presse par exemple .

Peuvent être utilisés comme des ressorts de compression de forte puissance dans des applications classiques.

Les exigences importantes imposées sur ces ressorts résultent de la fréquence de fonctionnement très élevée des outils de presse.

Chaque groupe de ressorts est divisé en plages croissantes de charge et peut être identifié par un système de code couleurs soit:

Moyen = Bleu  
Moyen raide = Rouge  
Raide = Cuivre  
Extra raide = Vert

### TOLÉRANCES SUR LES LONGUEURS LIBRES

Longueur (mm)	Tolérance (mm)
0-60	+2.5
61-105	+3.5
106-200	+5.0
201-250	+6.5
251-305	+10

### INDEX DES DIMENSIONS

Lo = Longueur libre  
L<sub>1</sub> = Longueur en charge recommandée  
P<sub>1</sub> = Charge à L<sub>1</sub>  
P/f = Raideur du ressort  
H = Diamètre de logement (min)  
R = Diamètre d'axe (max)

## DONNEES TECHNIQUES ADDITIONNELLES

L'utilisation de l'acier au chrome vanadium de haute qualité (SAE6150) permet de combiner un maximum d'effort et de longévité.

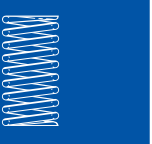
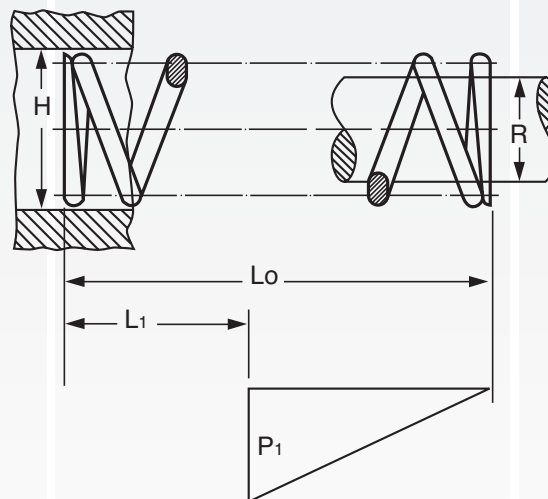
La gamme de ressorts de compression extra raide SPEC est composée de 8 groupes par diamètre. De cette façon il est possible de sélectionner des ressorts à caractéristiques de forces différentes pour le même outillage adapté préalablement pour des pièces embouties, le résultat étant une longévité d'outillage augmentée.

La hauteur en charge donnée en colonne L<sub>1</sub> peut être utilisée avec une fréquence maximum de 1000 compressions par heure.

Dans le cas de fréquences plus importantes, la plage d'utilisation efficace sera:

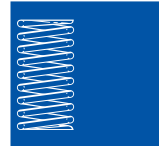
Bleu = 25-30% de la longueur libre  
Rouge = 20-25% de la longueur libre  
Cuivre = 15-20% de la longueur libre  
Vert = 15% de la longueur libre

Pour déterminer la charge à une longueur d'utilisation donnée utilisez la formule: taux x déflexion proposée (Lo - L<sub>1</sub>)



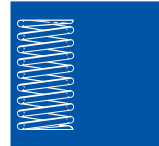
DIE SPRINGS – NAMMS				
Lo (mm)	L <sub>1</sub> (mm)	P <sub>1</sub> (N)	P/f (N/mm)	Part No.
		<b>H min. 9.53mm R max. 4.75mm</b>		
25.4	19.05	66.70	10.5	St50300
	19.05	100.08	15.8	St50310
	21.59	73.42	19.3	St50320
	21.59	146.69	38.5	St50330
31.75	23.83	74.93	9.5	St50340
	23.83	101.29	12.8	St50350
	27.00	81.70	17.2	St50360
	27.00	133.14	28.0	St50370
38.1	28.58	66.64	7.0	St50380
	28.58	111.74	11.7	St50390
	32.39	80.03	14.0	St50400
	32.39	125.04	21.9	St50410
44.45	33.35	66.12	6.0	St50420
	33.35	112.89	10.2	St50430
	37.80	97.86	14.7	St50440
	37.80	133.98	20.1	St50450
50.8	38.10	62.30	4.9	St50460
	38.10	111.25	8.8	St50470
	43.18	96.11	12.6	St50480
	43.18	120.15	15.8	St50490
63.5	47.63	66.72	4.2	St50500
	47.63	116.77	7.4	St50510
	53.98	91.73	9.7	St50520
	53.98	116.75	12.3	St50530
76.2	57.15	70.00	3.7	St50540
	57.15	100.12	5.3	St50550
	64.77	84.10	7.4	St50560
	64.77	130.10	11.4	St50570
304.8	228.6	80.10	1.0	St50580
	228.6	120.15	1.6	St50590
	259.08	96.11	2.1	St50600
	259.08	120.15	2.6	St50610
		<b>H min. 12.7mm R max. 7.14mm</b>		
25.4	19.05	122.37	19.3	St50620
	19.05	186.90	29.4	St50630
	21.59	157.52	41.3	St50640
	21.59	213.60	56.0	St50650
31.75	23.83	113.78	14.4	St50660
	23.83	180.37	22.8	St50670
	26.97	155.76	32.6	St50680
	26.97	200.98	42.0	St50690
38.1	28.58	113.41	11.9	St50700
	28.58	158.44	16.6	St50710
	32.39	155.05	27.1	St50720
	32.39	200.06	35.0	St50730
44.45	33.35	116.67	10.5	St50740
	33.35	165.29	14.9	St50750
	37.77	161.50	24.2	St50760
	37.77	198.95	29.8	St50770
50.8	38.10	122.37	9.6	St50780
	38.10	166.87	13.1	St50790
	43.18	146.84	19.3	St50800
	43.18	186.89	24.5	St50810
63.5	47.63	125.11	7.9	St50820
	47.63	166.82	10.5	St50830
	53.98	140.10	14.7	St50840
	53.98	191.80	20.1	St50850
76.2	57.15	116.81	6.1	St50860
	57.15	190.23	10.0	St50870
	64.77	148.18	13.0	St50880
	64.77	180.22	15.8	St50890
88.9	66.68	116.78	5.3	St50900
	66.68	155.71	7.0	St50910
	75.57	140.12	10.5	St50920
	75.57	186.82	14.0	St50930
304.8	228.6	93.45	1.2	St50940
	228.6	160.19	2.1	St50950
	259.08	128.15	2.8	St50960
	259.08	200.24	4.4	St50970
114.3	85.73	125.12	4.4	St50901

DIE SPRINGS – NAMMS				
Lo (mm)	L <sub>1</sub> (mm)	P <sub>1</sub> (N)	P/f (N/mm)	Part No.
		<b>H min. 12.7mm R max. 7.14mm</b>		
139.7	104.78	128.46	3.7	St50902
165.1	123.83	115.66	2.8	St50903
190.5	142.88	91.76	1.9	St50904
		<b>H min. 15.88mm R max. 8.71mm</b>		
25.4	19.05	182.44	28.7	St50980
	19.05	333.74	52.5	St50990
	21.59	283.00	74.3	St51000
	21.59	420.51	110.4	St51010
31.75	23.8	178.27	22.4	St51020
	23.8	299.44	37.7	St51030
	26.97	247.87	51.8	St51040
	26.97	393.58	82.3	St51050
38.1	28.58	180.12	18.9	St51060
	28.58	316.88	33.3	St51070
	32.39	272.10	47.6	St51080
	32.39	380.13	66.6	St51090
44.45	33.32	187.19	16.8	St51100
	33.32	327.58	29.4	St51110
	37.77	280.86	42	St51120
	37.77	374.48	56	St51130
50.8	38.1	195.79	15.4	St51140
	38.1	329.28	25.9	St51150
	43.18	277.67	36.4	St51160
	43.18	387.13	50.8	St51170
63.5	47.63	166.81	10.5	St51180
	47.63	319.73	20.1	St51190
	53.98	283.53	29.8	St51200
	53.98	366.92	38.5	St51210
76.2	57.15	186.89	9.8	St51220
	57.15	333.74	17.5	St51230
	64.77	288.35	25.2	St51240
	64.77	380.46	33.3	St51250
88.9	66.68	186.85	8.4	St51260
	66.68	330.88	14.9	St51270
	75.57	284.90	21.4	St51280
	75.57	373.64	28	St51290
101.6	76.2	195.79	7.7	St51300
	76.2	338.18	13.3	St51310
	86.38	287.97	18.9	St51320
	86.38	359.96	23.6	St51330
304.8	228.6	213.59	2.8	St51340
	228.6	360.43	4.7	St51350
	259.08	240.29	5.3	St51360
	259.08	360.43	7.9	St51370
		<b>H min. 19.05mm R max. 9.53mm</b>		
25.4	19.05	347.08	54.7	St51380
	19.05	556.23	87.6	St51390
	21.59	720.87	189.2	St51400
	21.59	934.46	245.3	St51410
31.75	23.8	356.55	44.8	St51420
	23.8	529.47	66.6	St51430
	26.97	736.92	154	St51440
	26.97	921.15	192.7	St51450
38.1	28.58	333.56	35.0	St51460
	28.58	534.00	56.1	St51470
	32.39	656.22	114.9	St51480
	32.39	890.30	155.9	St51490
44.45	33.32	343.17	30.8	St51500
	33.32	561.56	50.4	St51510
	37.77	702.16	105.1	St51520
	37.77	877.70	131.4	St51530
50.8	38.1	320.39	25.2	St51540
	38.1	551.78	43.4	St51550
	43.18	662.13	86.9	St51560
	43.18	907.76	119.1	St51570
63.5	47.63	333.63	21.0	St51580
	47.63	533.81	33.6	St51590
	53.98	667.12	70.0	St51600
	53.98	833.90	87.6	St51610
76.2	57.15	320.38	16.8	St51620



DIE SPRINGS – NAMMS				
Lo (mm)	L <sub>1</sub> (mm)	P <sub>1</sub> (N)	P/f (N/mm)	Part No.
<b>H 19.05mm</b>		<b>R max. 9.53mm</b>		
76.2	57.15	480.58	25.2	St51630
	64.77	680.82	59.6	St51640
	64.77	810.98	70.9	St51650
88.9	66.68	311.42	14	St51660
	66.68	498.27	22.4	St51670
	75.57	653.88	49	St51680
	75.57	805.67	60.4	St51690
101.6	76.2	320.38	12.6	St51700
	76.2	533.98	21	St51710
	86.36	667.47	43.8	St51720
	86.36	800.97	52.5	St51730
114.3	85.73	320.26	11.2	St51740
	85.73	560.58	19.6	St51750
	97.16	660.61	38.5	St51760
	97.16	795.73	46.4	St51770
127	95.25	333.74	10.5	St51780
	95.25	500.61	15.8	St51790
	107.95	650.79	34.2	St51800
	107.95	784.28	41.2	St51810
139.7	104.78	336.47	9.6	St51820
	104.78	489.41	14	St51830
	118.75	623.94	29.8	St51840
	118.75	789.10	37.6	St51850
152.4	114.3	333.75	8.8	St51860
	114.3	500.61	13.1	St51870
	129.54	640.77	28	St51880
	129.54	780.94	34.2	St51890
304.8	228.6	320.39	4.2	St51900
	228.6	480.38	6.3	St51910
	259.08	640.77	14	St51920
	259.08	760.92	16.6	St51930
165.1	123.83	281.91	6.8	St51861
190.5	142.88	275.24	5.8	St51862
<b>H min. 25.4mm</b>		<b>R max. 12.7mm</b>		
25.4	19.05	611.85	96.4	St51940
	19.05	845.47	133.1	St51950
	21.59	1388.35	364.4	St51960
31.75	23.8	626.74	78.8	St51970
	23.8	869.08	109.3	St51980
	26.97	1433.64	299.9	St51990
38.1	28.58	583.73	61.3	St52000
	28.58	827.23	86.9	St52010
	32.39	1184.40	207.4	St52020
	32.39	1600.54	280.3	St52030
44.45	33.32	584.96	52.6	St52040
	33.32	857.94	77.1	St52050
	37.77	1217.08	182.2	St52060
50.8	38.1	578.48	45.5	St52070
	38.1	889.97	70.1	St52080
	43.18	1201.45	157.7	St52090
	43.18	1548.54	203.2	St52100
63.5	47.63	556.00	35	St52110
	47.63	861.88	54.3	St52120
	53.98	1134.11	119.1	St52130
	53.98	1494.36	157	St52140
76.2	57.15	550.67	28.9	St52150
	57.16	833.90	43.8	St52160
	64.77	1089.32	95.3	St52170
	64.77	1473.78	128.9	St52180
88.9	66.68	583.91	26.3	St52190
	66.68	840.83	37.8	St52200
	75.57	1064.89	79.9	St52210
	75.57	1457.22	109.3	St52220
101.6	76.2	533.98	21	St52230
	76.2	818.77	32.2	St52240
	86.36	1067.96	70	St52250
	86.36	1473.78	96.7	St52260
114.3	86.73	502.32	18.2	St52270
	85.73	850.88	29.8	St52280
	97.14	1058.20	61.7	St52290

DIE SPRINGS – NAMMS				
Lo (mm)	L <sub>1</sub> (mm)	P <sub>1</sub> (N)	P/f (N/mm)	Part No.
<b>H min. 25.4mm</b>		<b>R max. 12.7mm</b>		
114.3	97.16	1465.35	85.5	St52300
	95.25	533.98	16.8	St52310
127.0	95.25	800.97	25.2	St52320
	107.95	1041.26	54.7	St52330
	107.95	1441.74	75.7	St52340
139.7	104.78	538.35	15.4	St52350
	104.78	783.06	22.4	St52360
	118.75	1057.03	50.5	St52370
152.4	114.3	533.98	14.0	St52380
	114.3	800.97	21.0	St52390
	129.54	1025.24	44.8	St52400
	129.54	1441.74	63.1	St52410
177.8	133.35	560.68	12.6	St52420
	133.35	778.72	17.5	St52430
	151.13	1046.60	39.2	St52440
203.2	152.4	533.98	10.5	St52450
	152.4	783.17	15.4	St52460
	172.72	1025.34	33.6	St52470
304.8	228.6	533.98	7.0	St52480
	228.6	830.58	10.9	St52490
	259.08	961.16	21.0	St52500
	259.08	1409.70	30.8	St52510
<b>H min. 31.75mm</b>		<b>R max. 15.88mm</b>		
38.1	28.58	827.23	86.9	St52520
	28.58	1907.97	200.4	St52530
	32.39	2120.71	371.4	St52540
44.45	33.32	826.74	74.3	St52550
	33.32	1965.46	176.6	St52560
	37.77	2125.21	318.1	St52570
50.8	38.1	783.17	61.7	St52580
	38.1	1922.32	151.4	St52590
	43.18	1997.08	262.1	St52600
63.5	43.18	2563.10	336.4	St52610
	47.63	800.72	50.5	St52620
	47.63	1734.89	109.3	St52630
	53.98	1961.34	206	St52640
76.2	53.98	2401.64	252.3	St52650
	57.15	800.97	42	St52660
	57.15	1708.73	89.7	St52670
	64.77	1906.31	166.8	St52680
88.9	64.77	2370.87	207.4	St52690
	66.68	778.54	35	St52700
	66.68	1712.80	77.1	St52710
	75.57	1756.13	131.7	St52720
101.6	75.57	2353.96	176.6	St52730
	76.2	783.17	30.8	St52740
	76.2	1637.54	64.5	St52750
	86.36	1772.81	116.3	St52760
114.3	86.36	2242.71	147.2	St52770
	85.73	800.83	28	St52780
	85.73	1601.66	56.1	St52790
	97.16	1753.61	102.3	St52800
127	97.16	2354.16	137.3	St52810
	95.25	756.47	23.8	St52820
	95.25	1613.06	50.8	St52830
	107.95	1768.81	92.9	St52840
139.7	107.95	2269.41	119.1	St52850
	104.78	783.10	22.4	St52860
	104.78	1615.06	46.3	St52870
	118.75	1732.35	82.7	St52880
152.4	114.3	800.97	21	St52890
	114.3	1668.68	43.8	St52900
	129.54	1698.05	74.3	St52910
	129.54	2242.71	98.1	St52920
177.8	133.35	809.87	18.2	St52930
	133.35	1557.44	35	St52940
	151.13	1719.41	64.5	St52950
203.2	152.4	783.17	15.4	St52960
	152.4	1637.54	32.2	St52970
	172.72	1751.45	57.5	St52980



DIE SPRINGS – NAMMS				
Lo (mm)	L <sub>1</sub> (mm)	P <sub>1</sub> (N)	P/f (N/mm)	Part No.
Hole Dia. min. 31.75mm		Rod Dia. max. 15.88mm		
	172.72	2221.35	72.9	St52990
	190.5	800.97	12.6	St53000
254	190.5	1613.06	25.4	St53010
	215.9	1708.73	44.8	St53020
	215.9	2242.71	58.9	St53030
	228.6	800.97	10.5	St53040
304.8	228.6	1655.34	21.7	St53050
	259.08	1666.01	36.4	St53060
	259.08	2114.55	46.3	St53070
Hole Dia. min. 38.1mm		Rod Dia. max. 19.05mm		
	38.1	1179.20	92.9	St53080
50.8	38.1	2402.91	189.2	St53090
	43.18	2541.74	333.6	St53100
	43.18	5019.40	658.7	St53110
	47.63	1251.12	78.8	St53120
63.5	47.63	2379.91	149.9	St53130
	53.98	2585.10	271.5	St53140
	53.98	4910.03	515.8	St53150
	57.15	1201.45	63.1	St53160
76.2	57.15	2082.52	109.3	St53170
	64.77	2603.15	227.7	St53180
	64.77	4629.60	405	St53190
	66.68	1168.00	52.6	St53200
88.9	66.68	2055.85	92.5	St53210
	75.57	2484.74	186.4	St53220
	75.57	4577.15	343.3	St53230
	76.2	1201.45	47.3	St53240
101.6	76.2	2135.92	84.1	St53250
	86.36	2434.94	159.8	St53260
	86.36	4570.86	299.9	St53270
	85.73	1151.20	40.3	St53280
114.3	85.73	2162.24	75.7	St53290
	97.16	2354.16	137.3	St53300
	97.16	4444.08	259.3	St53310
	95.25	1168.08	36.8	St53320
127	95.25	2046.92	64.5	St53330
	107.95	2376.20	124.7	St53340
	107.95	4538.82	238.3	St53350
	104.78	1131.76	32.4	St53360
139.7	104.78	2104.47	60.3	St53370
	118.75	2348.95	112.1	St53380
	114.3	1134.71	29.8	St53390
152.4	114.3	2029.12	53.3	St53400
	129.54	2338.83	102.3	St53410
	129.54	4421.35	193.4	St53420
	133.35	1129.14	25.4	St53430
177.8	133.35	2055.82	46.3	St53440
	151.13	2317.47	86.9	St53450
	152.4	1139.16	22.4	St53460
203.2	152.4	1957.92	38.5	St53470
	172.72	2306.79	75.7	St53480
	172.72	4314.55	141.6	St53490
	190.5	1112.46	17.5	St53500
254	190.5	1957.92	30.8	St53510
	215.9	2296.11	60.3	St53520
	215.9	4485.42	117.7	St53530
	228.6	1067.96	14	St53540
304.8	228.6	1922.32	25.2	St53550
	259.08	2306.79	50.5	St53560
	259.08	4357.27	95.3	St53570
Hole Dia. min. 50.8mm		Rod Dia. max. 25.4mm		
	47.63	2780.27	175.19	St53580
63.5	47.63	3291.83	207.4	St53590
	53.98	4336.30	455.5	St53600
	53.98	6364.36	668.5	St53610
	57.15	2770.02	145.4	St53620
76.2	57.15	3203.87	168.2	St53630
	64.77	4004.84	350.4	St53640
	64.77	6247.56	546.6	St53650
88.9	66.68	2522.48	113.5	St53660

DIE SPRINGS – NAMMS				
Lo (mm)	L <sub>1</sub> (mm)	P <sub>1</sub> (N)	P/f (N/mm)	Part No.
Hole Dia. min. 50.8mm		Rod Dia. max. 25.4mm		
88.9	66.68	3114.18	140.2	St53670
	75.57	3969.98	297.8	St53680
	75.57	5940.96	445.7	St53690
	76.2	2669.90	105.1	St53700
101.6	76.2	2954.68	116.3	St53710
	86.36	4004.84	262.8	St53720
	86.36	5873.77	385.4	St53730
	85.73	2652.74	92.9	St53740
114.3	85.73	3003.11	105.1	St53750
	97.16	3603.31	210.2	St53760
	97.16	5669.20	330.8	St53770
	95.25	2614.27	82.3	St53780
127	95.25	3114.88	98.1	St53790
	107.95	3671.11	192.7	St53800
	107.95	5766.73	302.7	St53810
	104.78	2398.11	68.7	St53820
139.7	104.78	3083.29	88.3	St53830
	118.75	3670.23	175.2	St53840
	114.3	2603.15	68.3	St53850
152.4	114.3	3150.48	82.7	St53860
	129.54	3764.55	164.7	St53870
	129.54	5670.96	248.07	St53880
	133.35	2429.60	54.7	St53890
177.8	133.35	3114.88	70	St53900
	151.13	3831.30	143.7	St53910
	152.4	2536.40	49.9	St53920
203.2	152.4	3132.68	61.7	St53930
	172.72	3898.05	127.6	St53940
	172.72	5339.79	175.2	St53950
	190.5	2313.90	36.4	St53960
254	190.5	2892.39	45.5	St53970
	215.9	3671.11	96.4	St53980
	215.9	5606.78	147.2	St53990
	228.6	2336.16	30.7	St54000
304.8	228.6	2990.28	39.2	St54010
	259.08	3365.00	73.6	St54020
	259.08	5702.90	124.7	St54030

